

Notes on the Ecological Dimension

Marxists and the Environment: Is Marx's Critique of Science and Technology Radical Enough?

By Mitchel Cohen

*O, pardon me, thou bleeding piece of earth,
That I am meek and gentle with these butchers!*

- William Shakespeare, Julius Caesar

For years, as I've been active in social justice movements I've worked with people who call themselves Marxists. I taught an underground course at Stony Brook for 15 years called "Marxism for Beginners". And the group that I founded with other students at Stony Brook in the late 1960s, the Red Balloon Collective, saw itself as an anarcho-marxist direct action organization.

And yet, as I became more and more involved in environmental and related issues, I found that the Marxists with whom I marched in antiwar demonstrations and social justice protests were nowhere to be found on certain issues and indeed were hostile to my attempts to raise these issues with them. I also found that as I wrote about these issues for various Marxist journals they would invariably be rejected, even though many of my articles and essays were being published by other publications and books. I had to find out why.

After years of experiencing what I can only call a major blindspot among Marxists, I came to several conclusions, and that's what this talk will be about.

Let me give some examples of positions taken by many Marxist groups in our recent history, positions that have hurt the Left:

- U.S. communist parties endorsed nuclear power plants in the 1960s, and so did not join the anti-nuke movements that came to a head in the late 1970s.
- they also endorsed fluoridation of drinking water, believing the government's assurances and as a result never realizing that fluoridation was actually a means for the burgeoning aluminum industry to get rid of its waste products in the 1940s and 50s by dumping them into the nation's water supply;
- they endorsed mass vaccination of children for diseases that children in societies like ours SHOULD get, we WANT them to get so that they don't get these diseases as adults where they are far more dangerous -- diseases such as chicken pox, measles, mumps, etc. Of course, this requires that they have access to healthy food, clean water and adequate sanitation; otherwise children in impoverished or colonized countries would be victimized by these diseases. Measles, for instance, is among the top killers of young children in the so-called "Third World";
- the Communist parties also endorsed mass spraying of pesticides and over-application of antibiotics;

- they continue to endorse the torture of animals by cosmetic companies like Gillette under the guise of "scientific research," and refuse to hear, let alone heed, the wide-scale protests of young people involved in animal rights struggles, ruling them out as part of the Left;
- and they even uphold genetic engineering -- rationalizing it, as they did with the Rockefeller-sponsored Green Revolution, as a technological means for ending world hunger! -- *yea, right!* -- instead of examining the real causes of hunger to begin with.
- In the early 1990s I was organizing with ACT-UP in New York City. Despite my pleadings with members of Marxist organizations, very few of them would get involved with this gay-organized but not exclusive organization, perhaps the most dynamic and large group in recent City history.

Which leads directly to the movement for universal health care -- or, should we call it, "Subsidize the Pharmaceutical Industry" cult.

We need to call for free universal health care -- of course! BUT we also need to engage in a continent-wide discussion of *what that health care should consist of*, instead of the factory model of healthcare that the Left promotes today! Where is that discussion, the understanding that free universal health care is by itself not enough and may even be counterproductive when not combined with those contextual demands, such as access to acupuncture, homeopathy, chiropractic, nutrition, and herbology? How about a movement to de-toxify the environment of the pollutants dumped there by industry which is causing us to be sick to begin with?

Why are there 3 times as many episiotomies performed on women in the U.S. than in Europe, percentage-wise? Is it that women in the U.S. are genetically inferior to those elsewhere in the world, or that they just don't know how to give birth properly? Obviously, that's not the case; but I'm sure some enterprising corporation will soon try to market genetic implants to "correct" that "defect." In reality, it's the ridiculous on-your-back feet-in-stirrups position -- the standard operating position in the U.S. hospitals -- that is the cause of the higher percentage here of difficult births. Yet doctors insist on that position because it is more convenient for *them* and for connecting all the technological gadgetry that now is part and parcel of giving birth in this country.

In Cuba, women squat in a sort-of rocking chair with the bottom removed and rock the baby out, a traditional method that generates a much lower need for C-sections.

Similarly with hysterectomies -- in the U.S. the removal of the uterus is performed at a rate that is at least double that of other industrialized countries. WHY AREN'T THESE AND SIMILAR ISSUES BEING RAISED BY THE LEFT as part of the demands for Universal Health coverage? Why doesn't the Left address widespread concerns over what that coverage should consist of, instead of leaving that to the so-called capitalist-trained "experts"? Increasingly, the choice is the Capitalist system vs. the Immune system. The left needs to stand on the side of the Immune system -- don't you agree?

Leftists have long thought that we could just take over Science and Technology as though

they were “neutral” and run them communistically for the good of all. But we cannot, any more than we can take over the State, which itself a form of “technology,” as though it were an empty shell, an impartial mechanism. Technology is an ensemble of social relations, and as such every product, and every means for making it (whether it be an assembly line, State, or genetically engineered crop) is a crystallization of the history of the exploitation, organization of production, and destruction of the Commons that went into making it. But, like the state, the factory form has become a model that official Marxism seeks to emulate, take over and administer, not smash. Big mistake! So, stop treating science and technology as the answer to our problems. Let’s try to imagine a different *kind* of future, one that is not based on factories, assembly lines, industrial farming, and factory-type health care.

In the *Communist Manifesto*, Marx & Engels explain that the **internal dynamic** of capitalism propels it to nestle everywhere, batter down all the so-called “Chinese Walls” that try to keep it out -- remember that? That phrase stuck in my mind the very first time I read the Manifesto, and we discussed it in SDS and in the Red Balloon Collective at Stony Brook. What does it mean? It means that capital, in its propulsion to expand, colonizes whole areas of the globe geographically and supplants their prior forms of production with forms more conducive to the extraction of raw materials, exploitation of labor, and the ideological dominance of America, Progress, and the “Good Life”.

I’ve just had the privilege to read and grade dozens of Bertell’s students’ papers for his class on socialism. These included a section on the *Communist Manifesto*. After reading them, I feel the need to point out that capital’s vast expansion, its mad denuding of forests and its privatization of everything we hold as beautiful, occurs whether individual capitalists like it or not. Except for certain instances, individual capitalists can’t do anything about this so long as they wish to remain competitive with other capitalists in that industry. The system takes on a life of its own. The destruction of the natural environment is inevitably as much a part of capitalism as is the tendency for the rich to get richer and the poor to get poorer -- the polarization of wealth. This is all fundamentally a consequence of what economists call the “natural motion” of capitalism and not just a result of evil policies.

Let’s think about language for a moment, the way it, too, is being colonized. “*Natural*” motion of capitalism? Hmmm. And how about that “organic” composition of capital? Must be good for you, it’s organic!

More about language: With what perverse irony did some alienated Urban Planner in Queens decide to cross Union Turnpike with Utopia Parkway? And, as long as we’re speaking about highways, did you know that the first mention of the automobile was actually in the Bible? Remember, God DROVE Adam and Eve out of the Garden of Eden IN HIS FURY.

Some of the papers I examined were like that, but not as funny. Not all, but some. And I wondered “What is going on in this person’s mind that they have no conception that a fundamentally different way of looking at life existed in the past? Some of the students are unable to get out of their own heads, at least to the extent needed to question their own assumptions about the world around them and their own part in it, and they transplant those assumptions -- the things they take for granted without even knowing it -- onto societies in the past. They’re

unable to appreciate different qualities of life, different ways of eating, making decisions, growing food, having sex, and relating to other people and to their natural environments. To some extent, this is true about many of the Marxists I've met; and, my friends from other countries tell me that this is true about me as well! Some of these alternative ways of experiencing the world persist even today, not only ELSEWHERE among, say, the remaining Mayan peoples of Chiapas and indigenous people in the South Pacific, but as residual memories within our OWN minds, our own relationships. They help generate our own hopes for the possibility of another world.

Aspecter is haunting this planet -- the specter of biological devastation and ecological catastrophe, and it is ravaging the ecosystems sustaining life. Butterflies, frogs, bees, whole familiar species are in sudden danger of being wiped out. And, mechanisms for propagation -- even seeds! -- are coming under the private ownership of a tiny number of very large agro-chemical corporations. These multinationals are, at this very moment, altering the reproductive capacities of entire species in order to further their control over land and monopolize the world's food supply.

All the good things that human beings have achieved, and all the natural beauty of the world around us are being grabbed, privatized and pillaged by corporate, technological and political powers. This **colonization** is legitimized by new Enclosure Acts similar to those of centuries ago, a legal framework validating the shameless orgy of conquest and profiteering.

In the last 40 years, fully one-half of the world's forests have been chopped down. Please think about that for a moment, what that means. Forests prevent floods, maintain soil health, defuse hurricanes, and detoxify drinking water. They oxygenate the air, and serve as habitats for millions of species. In Argentina and Brazil today, huge swathes of primeval rainforest are being cut down in order to monocrop genetically engineered soybeans for export to the United States and other countries. In Brazil this is occurring under the so-called "socialist" president, Ignacio Lula da Silva. In Indonesia millions of acres of forest have been burned for cattle grazing, and in Mexico the Lacandona forest -- the home of the Zapatista rebellion -- is under siege by international paper companies as much as it is by federal troops. **Under Clinton and Gore more trees were clearcut in the U.S. than under any other administration in recent history.** I'll repeat that: Clinton and Gore presided over the clearcutting of more forests in the U.S. than George Bush, Richard Nixon, Dwight Eisenhower, John Kennedy, Gerald Ford, Jimmy Carter, Harry Truman, Franklin Roosevelt ... The destruction of the forests, along with automobile and CFC emissions from refrigerators, are the most important contributors to global warming.

Tell Al Gore to think about that the next time he preaches about global climate change! Why, if we didn't know better we'd think "hey, this guy might make a good Vice-President some day!"

We're beginning to learn about peak oil and its possible ramifications, but what about "peak forests"? Almost gone. And still the government, including the Democrats, allows the timber industry their "natural right" to cut down the rest. The media defend the corporations under the guise of "property rights," "protecting individual freedom" and "freedom of en-

trepreneurial spirit" -- the "freedom," that is, to exploit and to plunder. (The NY Times, for instance, cuts down 17,000 trees a week to publish its Sunday paper, so it can't stray too far from this mantra of "rights" even if it wanted to ... which it doesn't.)

The ideological spin dominates our language and shapes our thoughts. Suddenly we are no longer talking of global climate change or the murder of Nature, but of the so-called "rights" of corporations as though they are people. The paper and lumber industry's "Wise Use" movement spins the clearcutting for public consumption, and calls it a "salvage sale." Magnificent giant redwoods, the oldest living beings on the planet, are, to capital, merely "standing inventory." Beautiful mountain vistas are considered "view sheds." The last few clumps of trees stretched in a thin line along the highway en route to the mall to give the impression of the vast and wild nature on the other side are "scenic corridors." Carting the strip-mined carcasses of trees off the mountain is portrayed as "sanitizing a unit." Industry casts the technology required to do all that in the dubious forge of "Progress." And you don't want to be opposed to "Progress," do you?

Underlying it all is belief in GOD -- **Grow Or Die** -- which permeates every moment of production and reproduction under capitalism.

The bottom line? No more the once magnificent old growth forests; no more the pristine drinking water, healthy soils, seas teeming with fish -- the entire North Atlantic has been "fished out," if you can even call what industrial trawlers do these days "fishing" -- dragging miles of giant steel mesh through the ocean sweeping up everything in their path.

This critique is all straight Marxism. There's nothing in the *mechanisms* I've described here that Karl Marx didn't analyze 150 years ago. No, he didn't talk about automobile emissions, genetic engineering, television, nuclear power plants or the mass drugging of children; but he did analyze *the mechanisms, the processes* by which *all* technologies under capitalism would develop, and how capitalist relations would come to prevail over all other ways of experiencing our lives so that we would eventually take them for granted as "natural," as having always been this way -- Marx called it the move from the formal to the real domination of capital -- and as being this way everywhere. Wasn't it Karl Marx who, in his earliest adult essays, spoke out forcefully in defense of the forest against privatization and in favor of the rights of peasants to glean dead wood from the Rhineland's trees -- lands traditionally unrestricted by law and used in common? Wasn't it Marx who railed against the jack-booted stormtroopers of the state, who were expropriating the Commons on behalf of the capitalist class in the 18th and 19th centuries? Wasn't it Marx who, despite some foolish and urban-centric comments, called this expropriation "primitive accumulation" and explained how the capitalists legalized their plunder after the fact, through legislation and their increasing control of the State? Wasn't it Marx who pointed out that by 1842, 85 percent of all prosecutions in the Rhineland dealt with a new crime: The theft of wood, which applied only to peasants while corporations were being freed to strip whole forests -- of all the trees in them with impunity?

How did it happen that public lands and early machinery were becoming privatized and re-shaped by the needs of capital? We can ask the same today: How did our once-public universities, hospitals, beaches, libraries and parks suddenly start disappearing, prisons become

privatized and rivers so polluted that drinking water would be sold now in bottles, their sources owned by some of the hugest corporations in the world? Yes, it was Marx, especially, who explained how such "enclosures" came to receive acceptance socially and sanction by law. Remember, his entire critique of capital started with his analysis and denunciation of the enclosure of lands used in common and the criminalization of peasants for taking dead wood for heating and cooking.

One of the things I'm *not* going to do here is to go through all of Marx's writings and select quotations pertaining to ecology. I will just note here that Marx raised these questions in his earliest writings. This is how he got involved, how he began to develop his analysis when he was in his early 20s. On his birthday thirty-three years later, Marx -- now in his late 50s -- drew upon those early observations and wrote a blistering critique of his fellow Leftists for focusing solely upon the exploitation of labor. "Nature," Marx wrote, "is just as much the source of use values" as labor, "and it is surely of such that material wealth consists."¹

So what happened? Since his death in 1883, Marx's followers have done exactly what Marx had warned against. They ignore his formulation of the twin sources of value, and concentrate narrowly on the exploitation of labor alone -- and even there, too often they do so within capital's framework. In omitting the expropriation of Nature, which was central to Marx's analysis of capitalist accumulation, Marxists have allowed capital's industrial form of production to go unchallenged.

Marxists argue primarily for bringing technological development under public ownership and control, administered through centralized state planning; ecological anarchists argue for bringing development under the self-managed decision-making of workers at the industrial workplace and community town meeting. All of the Marxists and a number of Anarchists are agog over what the Committees of Correspondence (Campaign for Socialism & Democracy) terms "the *genie* of technology," hoping that technology would bring what they consider to be "the good life" to workers through the wonders of conspicuous consumption and the factory production of ever more commodities in whose manufacture ever more natural and human-made resources are used up, permanently destroyed, and eventually just passed into the waste stream as garbage, poisoning the planet.

On the whole, anarchists have been far more challenging than Marxists about technology. One prominent anarchist tendency, typified by Fifth Estate, the longest-surviving anarchist newspaper in the U.S. -- has made its skepticism about technology the centerpiece of its politics. (Fifth Estate's politics were shaped in Detroit during the hub and decline of automobile production there, and involved such luminaries as Fredy and Loraine Perlman, Peter Werbe and Peter Watson, to name a few.) They critiqued fellow anarchist (and long-ago Trotskyist) Murray Bookchin in the anarchist press for insisting there could be a new, liberatory technology, qualitatively different from capitalist technology. On the far end of that spectrum, there are the anarcho-primitivists -- Zerzan, in Oregon, for example -- who say they want to abolish civilization altogether.

In calling for expanding technology to achieve their laudable goals, Marxism, Anarchism, and other philosophies of liberation are transformed into their opposite: instruments of rapid

industrialization. Here's the question I'd like to pose to you: Are the Marxist and Anarchist anti-capitalist, anti-patriarchal, and anti-Statist frameworks sufficient for turning back and repairing the destruction wrought on the natural environment, or is something more required -- the overthrow of the technological industrial system itself?

Most of us think of technology simply as machinery; we see "progress" — social evolution — in terms of technological development and expanded production, which allows society to manipulate nature in a supposedly rational and planned manner to meet our needs. Technology, for most activists, is an instrument needed to create abundance, and is as fundamental to a post-revolutionary society as a capitalist one. I'd like us to think about technology, its history, and its relation to capitalism more carefully.

One unexpected environmentalist posed this question: "Should we expect that densely populated countries such as China, India, Indonesia, will have as many automobiles in proportion to their population as North America and Western Europe?" He answered his own question: "Well, it's necessary; the expansion of capital requires it. It's also impossible; the earth cannot sustain it."

That was Cuba's president, Fidel Castro. Unfortunately, Fidel's concern has not been picked up by most of those in Marxist parties. In fact, the defense of the forests has been led not by Marxists, but by direct action anarchist groups like Earth First!, the Earth Liberation Front and the Greens. For the most part Marxists have not only taken a back seat on these fundamental issues of our time (hmm, even our metaphors are technologically derived), but they continue to chain all working class initiatives and the possibility of a qualitatively different world to the expansion of the factory form of production, furthering the environmental devastation already underway. Today, when radical environmental activists point to the devastation the earth is facing, Marxists just examine their finger.

With all of this in mind, I offer the following five proposals for greening Marxism, which is essential if we are going to both save the planet and transform in a socially and economically meaningful way the societies in which we live. I call this framework "Deep Marxism":

1. We, leftists, need to understand that the privatization of the biological cell, of natural genetic sequences, is the mechanism through which a new and fundamental expansion of capitalism is taking place. This is a new form of colonization.

Today, with the globalization of capital -- with the "help" of the International Monetary Fund and World Bank's "structural adjustment programs" (also known as "neo-liberalism") -- capitalism is colonizing not only other countries' economic, political, agricultural, and health care systems -- the natural world "out there" -- but it is now seeking to clone and to colonize the very cells of living organisms, the "nature within."

This is what genetic engineering is about. No more the democratic idea that people have the right to own and control our own bodies. We have been struggling to control our own reproductive capacities for many years; but now the legal authority to own and to sell our genes themselves has been handed to private corporations. What does it mean to speak of "self-determination" and "working class democracy" when our own cells, and the genetic sequences of

whole societies (like Iceland, for example) -- that is, our "selves" -- can now be legally owned and sold by private corporations? Whose "self" is doing the determining?

Is nothing sacred? Is all life and every stretch of wilderness (and "the wilderness within") for sale? **In my view Marxists *must* take on this and related issues, if we want to truly confront one of the key mechanisms upon which capitalism as a system relies. We must fight to:**

- a) **Ban all genetic engineering of agriculture, plants, pesticides, and foods -- this demand becomes essential to the new anti-colonial movements of the 21st century, which are fighting everywhere to retain control of their indigenous plants and animals, and to their own biological legacies.**
- b) **Abolish the private patenting of genetic sequences and seeds -- so-called "intellectual property rights."**
- c) **Take private profit out of research and development of genetically engineered health-related drugs.**
- d) **In the meantime, require all bio-engineered products and those derived from them to be clearly labeled.**
- e) **Prioritize developing the theoretical framework to reveal the ways in which biotechnology is not just another interesting issue, but fundamental to the expansion of capitalism in this era. (Although limited by misunderstandings concerning Marxism, some really good work on this score has been done by Chaia Heller and her dissertation advisor, Arturo Escobar.)**

Portions of the right wing grassroots have also rallied against genetic engineering, which they see as humans violating the sanctity of species and the sanctity of "God's work." Aside from all the economic, social, ethical, class and environmental questions involved, the Left is missing the opportunity to organize the right wing's base out from under its leadership. Marxists need to break with the liberal capitalist ideological framework and understand that opposition to genetic engineering is not just another issue but one of **the** crucial and heretofore hidden *class* issues driving the system -- the "color line" (in W.E.B. Dubois' words) of this new century.

2. We need to deepen Marxism so that it challenges the capitalist-manufactured consensus underlying what we mean by "Progress" and "the Good Life." We need to reject the notion that the "good life" is based on the mass production and accumulation of commodities, and its consequent massive and unregulated consumption of Nature.

"Progress," for capital and its apologists, is always technologically framed. We can hardly think of "progress" that does not involve production and accumulation of more *stuff*. Rarely do other aspects of what we'd like to see in a new and humane society ever get discussed, such as the way we treat each other or organize our lives. We need to think about the way the industrial *form* of production itself -- not just who owns it or how it is administered -- propels anti-social, anti-loving behavior.

Here's a relevant article from the *New York Daily News*. In 1995, two subway trains crashed

in New York City. The driver was killed and dozens of passengers were seriously injured. The *News* describes the scene as follows:

"The nearly 200 passengers aboard the J and M trains [the newspaper wrote] survived two harrowing ordeals yesterday -- first the crash, then a nail-biting rescue marked by panic and chaos high above the East River. ... The crash left the suddenly terrified passengers stranded 15 feet above the inner roadway of the Williamsburg Bridge at a point where the aging bridge rises about 100 feet above the east side of the swirling East River.

"The first rescue workers arrived about 10 minutes after the collision. By then, a man in a business suit who was in the same car as [Eva] Grimes [a diet technician from Brooklyn] was beside himself with fear and screaming incoherently.

"He was cursing and banging on the walls," Grimes said. "He was saying, 'I've got to get to work! I've got to get off this train! I've got to go make money.'" ²

For workers under capitalism there's only one thing worse than being exploited -- *not* being exploited. Being unemployed in the United States is worse than in any other developed capitalist society. So much of the politics of the left has revolved around the demand for jobs. "Money for jobs, not for war!" was one chant that predominated the antiwar movement. What kind of job doesn't seem to matter.

How quickly Marxists forget the history of working class resistance around the world to the imposition of wage labor itself, and the wrenching and twisting of people's lives to make them fit into the factories capitalism needed for mass-production. In a society in which one needs money to buy basic necessities and pay rent, of course people end up willing to accept a job -- that is, wage labor; but it is only in recent years that acceptance of the reality of needing a job under capitalism has been seen not only as necessary but as desirable, as part of human nature.

Workers in the past had a very different conception of what work should be about, a different conception of "the good life." It took enormous effort by capitalists to coerce their potential workforce into accepting a different view of life. All the way into the 1940s workers in the U.S. fought against what today we take for granted, the imposition of the factory, the artificial rhythms that technology imposed upon the working class, the unnatural mechanical motions, the need to "make money."

But for many Marxists the institutionalization of the factory was a progressive facet of capitalism, one in which the "good life" became increasingly defined in terms of *ownership of things* and *access to services* rather than as communal relationships among people. The memory of small town America with its idealized community-based relationships remains fixed in the American psyche, true, but the real communities of workers were uprooted and shifted to the shop floor where they were tightly regulated and controlled both by the boss, the needs of the massive technological infrastructure, and eventually by the workers' own union. The factory

model jumped from the factory floor to the other institutions of society, coming to pervade education, recreation and all other areas of daily life. As Phil Ochs sang, "Every school is a factory of despair." He meant that literally. So do I.

How does Marx look at the process historically, by which entire populations were driven insane in this manner, torn from their lands and communities and "proletarianized"? Marx sums it up in this way: "Thus were the agricultural people first forcibly expropriated from the soil, driven from their homes, turned into vagabonds, and then whipped, branded, tortured by laws grotesquely terrible into the discipline necessary for the wage system." (Karl Marx, "Capital," Volume I, Chapter 28, International Publishers. p. 737.)

Wherever capitalism installs its newest pendulum of accumulation the pit of slave labor is never far behind. Its long knife ransacks the globe. Its emissaries -- Democrats and Republicans, bankers and corporate CEOs, media moguls and military contractors -- slash this way and that, shrieking at the workers, at the exploited and oppressed: "Get your cut throat off my knife! (That's beat poet Diane DiPrima's apt phrase).

But, as I wrote in the first pamphlet in my Zen-Marxism series ("Those Not Busy Being Born Are Busy Dying"), the Old Left -- by that I mean the Marxist-Leninist parties -- had for so long immersed itself in campaigns to win unionized North American workers a bigger piece of the pie at any cost that it began to see "the good life," and thus the purpose of its efforts, as gaining for the working class greater access to the glut of commodities produced under capitalism. As NY Green Party member John Moran puts it, "the world crisis of overproduction and the ecological crisis are converging, and socialism is necessary to make a serious start at a solution." But socialism alone is not enough.

We need to envision a society based on a very different organization of productive forces, one that projects a different way of producing the goods we need and desire. (We also need to investigate where our desires themselves come from. They are not innate, they're manufactured by the society we live in. Failing to apply a "ruthless critique to everything existing" in Marx's words -- i.e., failing to fully examine our own desires, ways of relating, the way we've been manufactured and spit out by the system -- will mean that we will find ourselves chaining all working class initiatives and the possibility of a qualitatively different world to those implanted dreams and the expansion of the factory form. As Che Guevara discussed so eloquently, unless we confront the desires manufactured in us by capitalism and patriarchy and begin to transform ourselves *now* into human beings fit to live in the new world we seek to create, we will end up undermining the revolutionary project, and further poison the earth even as we struggle to change it.

In projecting a superficial and ecologically destructive notion of "the good life," official Marxists -- and many anarchists -- literally miss the forest for the trees, reproducing the dominant paradigm of capitalism and technological progress even when meaning to oppose it. To start, they've forgotten that a non-capitalist society need not accept efficiency *per se* as the measure of progress, nor labor alone as the measure of value.

Two hundred years ago, in 1811, the Luddites -- like the Iroquois and other American Indian communities -- offered a different measure of progress, one not defined by artificial disci-

pline, efficiency or the expropriation of Nature or exploitation of Labor. Contrary to popular mythology, the Luddites did **not** oppose machines *per se*, but "machinery hurtful to Commonality." In England they wielded hammers against the newly installed giant mechanical looms; in France, their counterparts threw wooden shoes (called in French "sabots") into the gears. (From that came the term "sabotage"). The emerging industrial system found it needed to crush the Luddites, which was becoming a widespread and well organized mass movement. The bourgeois presses distorted and then obliterated memory of the Luddites' radical direct action "critique" of factory production from history texts. So did the Marxist parties, who falsely caricature the Luddites in order to dismiss them. So in that sense, I am proud to be a Luddite, an Iroquois, a Saboteur ... a Zapatista! And so should all of us.

In Havana, as far back as 1992 when I visited there along with Bertell and others from the Radical Philosophy Association, everyone not on bicycles would ride the old rickety Hungarian buses which got four miles to the gallon and were falling apart. The fare was only ten cents. To say that the buses were "overcrowded" is like saying there is but a slight tear in the ozone layer. Adults as well as kids, doctors, professors, construction workers, orange juice squeezers, seamstresses, municipal officials and clerks raced after the buses and jumped onto whatever toehold they could find, arms wrapped around the window posts, clinging like ants to the sugar cube as it hurtled down the streets.

Most buses had three, sometimes four sets of exit doors through which the sea of humanity attempted to board. Often the drivers wouldn't even bring their buses to a halt in the general vicinity of the bus stop, people would just sprint at them as they slowed down and leap hoping to grab a hold. The best analogy to our experiences here in New York that I could think of would be jumping headfirst off the stage at a punk rock concert expecting all the screaming maniacs below to catch you. Those able to enter through the back doors would voluntarily pass their 10 cents forward — sort of an honor system; no one even *thinks* of pocketing another worker's money, even though everyone needs it. I had similar experiences in Nicaragua during the Sandinista government 9 years earlier, and in Harlem when Nelson Mandela first visited upon being released from prison in South Africa after 28 years. (There, in Harlem, I was at first astounded and then swept up in the mass emotion as the huge number of people on 125th Street emptied their pockets and passed tens of thousands of dollars over their heads to the stage, the entire crowd laughing and cheering the whole time. What a moment!) Revolutionary success can be measured not only in government policies but in the morality and social consciousness of a people.

But why were the buses in Cuba so awful? Was it only due to the U.S. embargo, as many Marxists here make it seem? That's part of it, but I don't think that's the whole story.

In 1990, Cuba's president Fidel Castro blasted the shoddy Eastern European machinery, including the buses: "Let's speak clearly once and for all ... We Cubans don't export garbage. But often what we get back in trade [from the East] is junk! No one else in the world buys Bulgarian forklifts," Fidel said. "They are such garbage, only *we* bought them! How many hundreds, thousands of them stand idle today in our warehouses? The Hungarian buses ... pollute the city with fumes and poison everyone around. Who knows how many people have died from the fumes of those buses just because they put in a defective fuel pump? On top of it all, those

buses have a two-speed Czech transmission that alone wastes 30 percent of the fuel! Oh, how happy I am to speak with such openness! It's been difficult to talk about these things in the past, but thanks to these new circumstances" — the "new circumstances" being the collapse of the Eastern European socialist bloc — "we have been relieved of our previous compromises."³

Among other stop-gap measures taken to ease the transportation crisis, all government vehicles in Cuba are demarcated by red license plates, and people flag them down. They are required to carry people wherever they're going along the way. It is not unusual to find 7 or 8 people surrounding a government Toyota and somehow squeezing into it.

While I was there they also imported hundreds of thousands of bicycles from China, and distributed them around the country.

Cuba is an example of people being forced to make due with what they have. Because they have a social consciousness and a government that works for them and not for private corporations, they sometimes are able to take a different approach the problems their society is facing.

3. We in the industrialized capitalist world need to train ourselves to see "holistically". This is not something that will come about on its own within the capitalist or patriarchal frameworks -- nor will it come about in the kind of socialist framework based on industrial development.

Take this item, about a malaria outbreak in Borneo in the 1950s. The World Health Organization (WHO) sprayed DDT to kill mosquitoes. But the DDT also killed parasitic wasps which were controlling thatch-eating caterpillars. As a result, the thatched roofs of many homes fell down, and the DDT-poisoned insects were eaten by geckoes, which were in turn eaten by cats. The cats perished from the poisoning, which led to the multiplication of rats, and then outbreaks of sylvatic plague and typhus. To put an end to this destructive chain of events, WHO had to parachute 145,000 live cats into the area to control the rats.

The Left, like the rest of society, is steeped in the same linear thinking. It finds a problem and then looks for the magic bullet approach for addressing it. I talk about this in a number of other essays, grouped under the general heading, "Zen-Marxism." Leftists need to practice *holistic* thinking. This will not occur automatically. It takes a lot of work; it takes conscious effort.

To begin with, holistic thinking attempts to look at entire ecosystems, at totalities, at their underlying Unity as the starting point. In the West, we're accustomed to examining pieces and trying to fit them together in some sort of totality. A holistic approach, on the other hand, invites us to examine how the Whole informs interactions of the "Parts." We need to do that with **every** issue. One important effect of that type of approach is the minimization of unintended consequences (which are rampant, as Edward Tenner informs us in his fascinating book, "Why Things Bite Back: Technology and the Revenge of Unintended Consequences"). But that's not the only effect of looking at things holistically.

Reductionist science claims that our "sameness" over time is the result of genes, which pre-

determine and program each cell. It tries to explain each level of causality by searching for ever-smaller determining factors. (This reductionist process occurs in reverse as well. As kids growing up in the Projects in Brooklyn in the late 1950s and early 1960s, we'd always argue about whether God exists. And for years the arguments would come down to: If God is all-powerful and all-knowing and created everything in the universe, then who created God?) Since each cell in an individual's body contains the same "genetic code" as every other cell in that body, how is it that the genes "know" which sequence of chemicals to turn on and which to turn off so that the cell becomes a particular kind? Scientists today attribute it to special "regulator" genes that tell the other genes what to do and when to do it. Well, you might wonder, what tells *them*?

That's the kind of infinite regression one gets bogged down in when trying to build up a picture of how a complex organism works by adding up the separate parts.

In actuality, it is the position of each new cell with respect to the surrounding cells, and not its genetic component alone, that defines what each cell does. Will it be a muscle cell? A blood cell? A bone cell? A skin cell? The kind of cell each becomes is as strongly influenced by its context and location – its relationship to its surrounding environment – as much as by the type of parent cells it had.

Note, for example, the Mississippi alligator. Alligator eggs developing in the temperature range 26-30° C. hatch females; change nothing but the temperature, raise it to 34-36° C., and *the same eggs* will hatch only males. Eggs that develop between 31-33° C. produce alligators of either sex, with the probabilities changing from female to male as the temperature rises. What causes temperatures to change? Well, the macro temperature is important -- global climate change may play a role here and cause more male alligators to be born. On the other hand, there are counteracting factors, such as cooling rains -- also the result of global climate change.

For some reason, I'm fascinated by all of this, the unexpected implications of what we do on all sorts of seemingly unrelated factors. What about the temperature variations in the micro-environment around the egg? It turns out that the most important factor is the egg's location within the nest. Eggs surrounded by other eggs tend to be slightly warmer and, thus, tend to hatch males. Eggs around the circumference tend to be slightly cooler and tend to hatch females. (I hope this is not construed as a "potential female" alligator *nurturing* the "potential male" eggs.)

Clearly, *genes* are not strict determining entities as claimed by, among others, Richard Dawkins in his popular book *The Selfish Gene*. They depend upon and interact with the surrounding micro-environment – in this case, the temperature of the air in the immediate vicinity – which, in turn, influences environments at other levels, such as the chemistry of the cell, the genes' immediate environment. The problem of where to draw the boundary of the immediate environment or community, in this case the gene's, plays a critical role in what will actually happen.

One other important factor: the 3-dimensional configuration of DNA, something that's guided by non-transcribed segments of the genome that geneticists until recently called 'junk DNA'. How do these interact with the micro-environment in order guide the shaping the

sequences of which they themselves are a part? I'm reminded of Escher's famous drawing of one hand drawing the other. Paradoxes on this recursive level abound, that cannot be addressed by the linear thinking that dominates much of Western science, and especially the magic-bullet approach of corporate science.

Understanding an organism's relationship to the ecosystem in which it lives (as well as the ecosystem *within*) requires ways of seeing that carry beyond the "cause and effect" linearity to which we are accustomed. The sex of individual alligators, as well as the sexual dispersal over the population, is not determined by one isolated "gene" but, at the very least, by environmental temperatures working in a sort of "feedback loop" with the full genetic complement; it is influenced by the interaction of variables from different levels of complexity: temperature, genes, location of the egg in the nest, and environment within the eggs.

Philosophically, it is not that the whole is more than the sum of its parts, but that by being parts of a particular whole the *parts* acquire new properties. And as the parts acquire new properties they impart new properties to the Whole, which are reflected in changes to the parts, and so on. Yet this essential relationship between parts and wholes, individual and environment, is generally given short shrift by many scientists, even ignored. Instead, they pursue a reductionist unidirectional causality – the parts, pieced together (they say) *determine* the whole in cause and effect sequence. Their linear framework provides the basis for the mechanistic formulations (such as reductionism, positivism, empiricism, and behaviorism) that, I would argue, are not only incorrect in application but are intrinsic to Science as it has emerged since the Enlightenment and particularly under capitalism. It is a framework that has come to dominate western rational thought.⁴

These meditations on Wholes and Parts, Holism and Reductionism, Freedom and Determinism, grew out of discussions of a paper I presented at the Radical Philosophy Association conference in Havana, Cuba, in 1992 titled "A Call for a Revolutionary Science." I offered the radical idea that *the Whole* – any "whole" (an organism, a species, a political era, a set of numbers) – shapes and defines the parts and their interactions as much as the parts shape and define the whole. As well as being interactive and multi-dimensional, this relation is always in motion. I use the term "dialectical" to encapsulate all of this back-and-forth between different levels of complexity.

4. We need to stop fetishizing science and technology.

Have you heard about the efficiency expert who was hired to observe the work habits of a company's employees with the idea of streamlining the work process and getting more production out of each worker?

"You're a very good worker," said the efficiency expert schooled in the time-and-motion studies of Frederick Taylor, as he watched a carpenter plane a piece of wood. "Now if we can just stick a buffer on your elbow you could plane and buff the wood with the same motion."

"Yea," the carpenter responded, "and if you'd stick a broomstick up your ass you could take your notes and sweep the floor at the same time."

In the movie "Modern Times," Charlie Chaplin plays an assembly-line worker whose job is to wrench bolts all day as they come flooding down the conveyor belt, faster, ever faster. Charlie has no idea why. He just gets paid for it, and it warps his mind as well as his body.

The film is a blistering indictment of industrial production under capitalism. Like other assembly-line workers, Charlie is a victim of the "science" of mass production. In the early 1900s, Frederick Taylor introduced Time-and-Motion studies into industry, examining the fragmentary repetitive motions of the industrial labor process with the aim of increasing output and efficiency by subdividing each task and reducing each worker's movements as much as possible to mimic the mechanical motions of a machine. Lenin became a huge fan of these studies and applied them to organizing production in the Soviet Union. (I review this fully in my Green pamphlet, "Big Science, Fragmentation of Work, & the Left's Curious Notion of Progress.")

Every moment of mass production reproduces capitalist and patriarchal relations in their entirety. It's like a "fractal" -- every piece, no matter how small you slice it, contains within it the totality of which it itself is a part. (Douglas Hofstadter addresses this relationship between holism and reductionism in his wonderful book, "Godel, Escher & Bach: An Eternal Golden Braid, which I highly recommend.) The ensemble of capitalist *and* patriarchal *and* anti-ecological relations exist and are reproduced through every moment of industrial production, as much under socialist governments as capitalist ones, under state-centralized planning as what passes for "democracy" -- which is really just another name for the dictatorship of the "free market." Technology is not some "neutral force"; it is dripping with the ideology and power relations of the system in which it was manufactured.

Leftists, over and over again, fall for the "Technological Imperative" -- the attempt to technologize one's way out the contradictions of existence in a world shaped and controlled by capitalism. In so doing they reproduce the very relations that they'd hoped to overcome.

Let me give one example of how these contradictions play out: **The fight over stem cell research.**

Some leftists believe that the primary struggle today is between science and theocracy. So when George Bush steps forward to ban stem cell research, they ally with the Democratic Party and the capitalist intelligentsia and argue for underwriting with public funds billions of dollars in stem cell research by giant biotech pharmaceutical corporations.

Bush has threatened to ban this research for theocratic reasons. Yes, the theocracy must be stopped. But does this mean that the reverse is true, that this new technology will cure the diseases we face today? Is it the proper way to proceed to address those diseases?

Since Richard Nixon declared the "war on cancer" in 1971 -- that's Nixon, mind you, now known fondly as the "environmental president"(!) -- childhood cancers have increased 26 percent overall. Rates of some specific cancers have increased even more dramatically: acute lymphocyte leukemia by 62 percent, brain cancer by 50 percent, and bone cancer by 40 percent.⁵ Increased exposure to pesticides is seen as the main reason for this cancer explosion in children, NOT faulty genes. A growing number of scientists see pesticides, diet sodas (particularly aspartame) and cellphone towers as related to MS, Parkinson's, and other neurological and immune compromising diseases, and genetically engineered hi-fructose corn syrup to diabetes

and overweight youth.

But of course neither the Left nor the government nor the corporations involved will address those diseases from that perspective. Gene therapies, cloning, and stem cell experimentation are patentable, and thus lucrative. Dealing with chemical pollution, pesticides, etc. as the real causes of disease are not.

What's often forgotten in this debate is that not only are the biotech companies eagerly seeking patents for any new products or processes (that is, privatizing them), but there's no discussion in this frenzy (Are you for or against it?) of the underlying causes of disease that stem cells are allegedly being developed to treat. Stem Cell proponents, including (unfortunately) a number of prominent Marxists, in effect are buying into the dominant corporate ideology that disease is caused by an individual's faulty genetics. Thus, the alternative to Bush's ban actually rewards billions of tax dollars to the same companies that are polluting the environment and causing these diseases to begin with, to "cure" the very diseases that their activities have created.

Stem Cell developments should also require a much fuller discussion on this and other leftist list-serves of the slippery slope of genetic cloning and organ cloning, and even animal and human cloning. How can we stop this profit making juggernaut once the Left has bought into the Biotech and Pharmaceutical companies' framework?

The recent Food and Drug Administration's ruling to allow the sale of meat and dairy from cloned animals follows an intersecting track, in the name of "Progress." One would have to be deaf dumb and blind not to see the direction the stem cell industry is moving in, with the Left's blessings.

The approach that the Left is taking is kind of like helping the ice to melt at the north pole so that we can help the oil companies find new shipping routes and enhanced opportunities for oil drilling in the arctic as the ice cap melts. According to Walter Gibbs in his July 11, 2000 Pre-Bush New York Times article *Research Predicts Summer Doom for Northern Icecap*: "While an ice-free Arctic Ocean would most likely disrupt the global environment, researchers said, it could have positive economic aspects. It could shorten shipping routes, for example, and expand the range of offshore oil drillers". A true visionary for our times. That's the kind of reductionist thinking we're stuck in.

The social and economic conditions in which the factory form of production developed have indelibly stamped the rapaciousness of capitalism into every moment of the production process. Capitalism -- the system of exploitation of people's work and of Nature -- is "in its genes," so to speak. The drudgery of the assembly line and office, the inferno of rancid relationships and rancid dreams, the privatization of everything and twisting of everybody into things to be bought and sold, the reproduction and consolidation of hierarchy, domination, exploitation and patriarchy, the subjugation of Nature (and of Nature within us) to the exigencies of production and the market, the exploitation of natural and human resources, the permanent destruction of the environment -- all of these are embedded in technology as such -- not just in the end product, but in the social conditions that manufacture the instruments that make those commodities (which themselves are commodities one step removed), and not just

the form it takes under capitalism. And we, raised in those same conditions, can barely conceive of human relations or modern societies producing to satisfy human needs in any other way. Industrial production seems, to us, most "natural" and integral to our notions of progress.

Unfortunately, many post-Marx Marxists believe in "developing the forces of production" at any cost, rarely going even as far as Marx in asserting -- let alone analyzing -- the central role played by the exploitation of Nature, along with Labor, in the production of capital and the reproduction of the capitalist system. Even when they fight to save the environment they do so from a liberal scientific perspective. At best they attempt to curtail some of capitalism's more extreme abuses by relying with religious fervor upon "the genie of technology" to get us out of the social-ecological crisis we are in, seeing the politics of technology as merely a matter of which class owns it and to what use it's put. In so doing, they unwittingly reproduce the devastating conditions they had aspired to change.

Radical ecological movements such as Earth First!, on the other hand, offer a profoundly different analysis: Unless leftists also dismantle the factory *form*, capitalist and patriarchal relations will continue to be pushed up from within technology and destroy Nature, ecological and human alike, even under a "socialist" government. Even in the hands of well-intentioned people without competition or monetary profit as a motive, they assert, there is a complex internal dynamic within technology itself that goes beyond which class owns and controls it (the "social relations"), calling into question the whole industrial schema of what constitutes progress and challenging both bourgeois and traditional leftist notions of growth and development.

The idea that science and technology are (or could be) somehow "neutral" or "objective" is itself an ideological construct and a figment of capitalist mythology. Calls for more intensive technological development ignore the capitalist relations embedded in technology, and facilely peel away the critical Marxian category "forces of production" from the intricate constraints of its dialectical integuments.

5. We need to actively search for the ecological dimension in every social justice issue and raise it as part of that fight.

Bob Dylan sang: "I'll let you be in my dream if I can be in yours." For many years the left acted similarly; organizations made alliances that led to raising each others' issues and concatenating them into laundry lists of seemingly unrelated programmatic points. But the globalization of capital has changed all that. EVERY issue is multidimensional. Every issue has an ecological dimension that is fundamental to it. It is our job, as revolutionaries, to search for that green dimension and unpeel it, reveal it, and organize around it even when it does not seem obvious at first. This must become a fundamental component of every fight that we enter.

We need to practice unpeeling that ecological dimension to every issue so that it can be revealed and organized around. By this I do not mean frivolous or surface connections. We are not the kind of environmentalists who argue that police clubs must be made from organic, non-rainforest wood, or that police use non-GMO soy-based ink to take our fingerprints when

we are arrested. Maybe we should demand that they use recycled paper for all tickets and citations, and that their bullets be made from recycled metal -- oops, they're already doing that in Iraq. None of that is what I'm proposing here -- although the ink may in fact injure people who suffer from Multiple Chemical Sensitivities.

Here's an example of what I mean: there is currently being organized an international boycott of CocaCola (www.killercoke.org), called to protest Coke's murder of indigenous working class organizers in Colombia. Green activists have brought to that struggle Coke's support for the mass herbicide poisoning of the entire countryside with Monsanto's RoundUp -- the same deadly herbicide that they are spraying to kill weeds in New York City, and on corn in Mexico. Monsanto has patented a procedure for genetically modifying what they call "RoundUp Ready" corn so that it is resistant to the mass-spraying of RoundUp and ONLY RoundUp. As a consequence, corporate farms pour thousands of tons of RoundUp onto the crops, killing every living organism -- weeds, butterflies, frogs, earthworms, bees. The only organism left standing is the corn itself. And then we eat it, saturated with poisons. The overwhelming majority of GMOs do nothing but aid the marketing of more herbicides! A liberal approach might be to demand an end to Monsanto's monopoly on this aspect of biotechnology, so that other company's herbicides would work on genetically engineered Round-Up Ready crops as well!

But we are not liberals. We are not seeking to make capitalism more fair for its corporations. We are challenging the technology itself. And so we search out the deeper Green dimension, which reveals that Coke is one of the world's leading buyers of genetically engineered hi-fructose corn syrup; it permeates every processed food, and is responsible -- as I've already mentioned -- in large part for the epidemic of overweight children in the United States. So we raise THAT as part of the reason for boycotting Coca Cola even though that was not part of the organizers' original rationale.

I'll give another example: When Greyhound went on strike a few years back, some of us not only did strike support -- of course, we all do that -- but also challenged the workers to begin thinking about how to reconfigure the entire transportation system, to raise the issue of alternatives to petroleum-based fuels, and to see such expansion of working class domain as valid and necessary.

Unpeeling the ecological dimension is crucial to expanding the Left, and in successfully vying for workplace democracy and reparation of the damages inflicted upon the communities we, as workers, live in.

Imagine, for instance, how different things would be if workers at General Electric's plant in Schenectady N.Y. had fought against the company's dumping of PCBs into the Hudson river and demanded that G.E. clean up its toxic wastes from the river as part of its union organizing and contractual demands.

The best example of actively looking for the ecological dimension of a particular issue occurred in Australia in the late 70s when unions issued "Green Bans" and refused to construct highways and malls unless they were first approved by the communities that would be impacted by such "development" at public meetings. [I talk about this more in my pamphlet "What is Direct Action?"] *Nothing* was built without both the workers and the community's

approval regardless of the developers' plans.

We can, and must, teach ourselves to do the same with every issue -- even those that seem to have no ecological connections whatsoever at first glance. We need to (1) oppose genetic engineering not only as a social justice issue but from our understanding that it is a new and fundamental mechanism through which capitalism is colonizing and exploiting new dimensions of life. (2) We need to oppose and reframe what is presented as "the good life." (3) We need to train ourselves in how to think holistically, and (4) stop fetishizing science and technology. (5) We need to practice how to bring out the ecological dimension to issues that are perceived solely as moral or economic social justice struggles

All of these (and more, of course) are necessary in enabling our movements and the working class in general to reveal and explore the deeper connections, which then would allow us to take actions that strike more deeply into the system itself and provide the basis for more powerful, successful, and radical social movements.

Hic Rhodus! Hic Salta!

Here is the rose. Here we must dance.

¹ "Critique of the Gotha Programme," May 5, 1875.

² *New York Daily News*, June 6, 1995.

³ *Village Voice*, May 1, 1990.

⁴ See, among others who challenge reductionist constructs, Stuart Newman, "Idealist Biology," *Perspectives in Biology and Medicine*, 31:3, Spring 1988, pp353-368; and Paul Weiss, "The Living System: Determinism Stratified," in *Beyond Reductionism: New Perspectives in the Life Sciences*, ed. by Arthur Koestler and J.R. Smythies, Beacon Press, 1971.

⁵ Dr. Samuel Epstein, M.D., and Dr. Quentin Young, M.D., as quoted in *Pesticides and You* v.22 no.2, Summer 2002.