A socialist view of global warming

Change the system, not the climate!

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Capitalism Is Leading Us to Total Disaster

By Dave Holmes

The fundamental problem facing humanity today is catastrophic climate change brought on by runaway greenhouse gas emissions. The relatively narrow band of climatic conditions within which we can function has been destabilised. As average temperatures rise extreme weather events are increasing (cyclones, floods, heat waves and droughts) and ocean levels look like rising dramatically, potentially making refugees of hundreds of millions of people. The very survival of the human race has now been called into question.

Human societies have always impacted on their environment. But the source of our current crisis is quite specific: it is the operations of modern capitalism. The drive for profits by the giant corporations (predominantly Western) has been relentless and has been pursued in complete disregard of any impact on the environment.

A recent letter to *Green Left Weekly* attributed the problem to overpopulation. In my opinion this notion is dead wrong. Increasing populations obviously put some pressure on resources but the fundamental conditions under which we live — how we generate our power, how we get around, how our food is grown, etc. — are not decided by us but rather by the big corporations that control society's means of production. Without the rule of corporate capital we could set in place radically different and ecologically sustainable arrangements.

For example, the cars which most of us use are a significant source of greenhouse gas emissions. But what choice do we really have? The favouring of private motor vehicles over public transport hasn't come about because we are a society of petrol-heads but is a consequence of the deliber-

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ate policies of a succession of capitalist governments loyally protecting the interests of their big business masters. The auto industry and its associated sectors make up a very large part of each national capitalist economy.

CAN CAPITALISM MAKE A COURSE CORRECTION?

Having brought about the climate change crisis, there is little evidence that capitalism is capable of making the course correction required to deal with it.

Trying to stabilise the carbon dioxide level in the atmosphere and then reduce it is a life-and-death challenge for humanity. We need to phase out fossil fuels and all the problems that go with them (carbon dioxide emissions and the fact that they will not last forever). But big business thinks it can make a few adjustments and carry on as usual. The changes required are simply too wrenching, too fundamentally in contradiction with huge economic interests, to be easily contemplated. That's why John Howard dragged his feet on the whole issue of climate change.

For example, by any rational criterion Australia's massive coal industry should be progressively phased out but instead it is looking to develop new mines and boost exports. At the November 2006 G20 gathering in Melbourne, federal treasurer Peter Costello was raving about developing an "energy freeway" toAsia. Does he live on the same planet as the rest of us? Hasn't he noticed lately that something isn't quite right with the weather? Or perhaps he thinks the sun and the wind need our help to get around!

Even if the sheer pressure of circumstances forces neoliberal governments to alter course we can be certain that they will drag their feet and that particular capitalist sectors will resist and sabotage the required changes. Of course, some specific industries will orient to the crisis and profit from it, offering new technology and so on, but this is not the main game.

COPING WITH THE SOCIAL CRISIS

The social fallout from climate change and any attempt to deal with it will be immense. Here too, we should be extremely sceptical of capitalism's ability to cope.

In 2005 Hurricane Katrina wrecked the city of New Orleans and many settlements on the Gulf of Mexico. The response of the US authorities was shambolic from the start. Over a year later it is clear that several hundred thousand poor people have simply been abandoned. The authorities have neither moved to rebuild the city nor to build new permanent settlements anywhere else.

And this is the human fallout from one just city in the developed West. What happens when whole regions — both in the West and in the Third World — are rendered uninhabitable by climate change? What happens when hundreds of millions of people have to be relocated? What happens

when our food supplies are disrupted — are we to be left to the tender mercies of the market? The Australian banana crisis of 2006 will become generalised to basic foodstuffs, resulting in dietary deficiencies, if not mass starvation.

Furthermore, to bring greenhouse gas emissions under control whole economic sectors will have to be run down or phased out and large numbers of workers redeployed into new ones. Can we have any confidence that the neoliberal Howard government that introduced the savage Work Choices and the Dickensian Welfare-to-Work legislation will manage such a huge social transformation with justice and equity? Simply to pose such a question is to supply the answer.

Emergency mobilisation needed

What is needed to cope with the crisis is a sharp change of direction. We need an emergency mobilisation of society, a five-or-10-year plan to achieve adrastic reorientation of our economy and use of energy. Anything else is simply not serious.

Some of the key elements in a program to meet the crisis are:

● The entire power and energy sector should be put under public control and run as public utilities under democratic control. At the moment the private power operators (and the corporatised entities still under nominal state ownership) have a direct interest in making things worse! The more power they sell, the more profits they make. The more air conditioners that are bought, the more electricity is consumed and the more it helps their corporate bottom line.

We need to break with the neoliberal privatisation policies pursued by both Labor and the Coalition. Bring the whole power and energy sector under public control so that this key lever is in the hands of society. Then we can steer the ship where we want it to go.

● We are endlessly told that we need more and more power and hence more and more power stations. What about getting serious about energy conservation — really serious? Then we might be able to begin phasing out coal-fired power stations, the main source of our greenhouse gas emissions.

For example, what if the only lightbulbs permitted were the low-power high efficiency ones, all other ones being taken off the market? Furthermore, what if they were distributed free to households by the state-owned power company? Think of how much power could be saved. What if a similar approach were applied to household refrigerators? After all, what is a few hundred million or even a few billion dollars if it could achieve the closing down of several big coal-fired power stations?

What if gas-powered cogeneration were far more widely encouraged? The efficiency of the big coal-fired power stations is very low (about 30%).

With cogeneration the low-grade "waste" heat is used, thereby boosting overall efficiency to far higher levels (around 70-80%). This means siting the plants, not far away in the coalfields, but much closer to home where the output is actually used. Of course, this would be a transitional form of power generation since it still uses fossil fuels but it would greatly assist in reducing our dependence on coal and helping make big cuts in greenhouse gas emissions.

Under the national plan each sector of industry and each firm should be set hard annual targets for energy efficiency. Consistent failure of an enterprise to achieve the goals set would result in nationalisation and reorganisation.

Energy use by offices and homes could be slashed by setting strict new energy standards for new construction and embarking on a vast program to retrofit the existing stock of buildings.

The scope for energy efficiency measures is enormous. Very significant gains could be achieved relatively easily — provided there is the political will.

● We need a big switch to renewable energy. There is a wealth of possibilities. But Howard has gone the other way, abolishing the Mandatory Renewable Energy Target, minimal though it was. Victoria has its own MRET but this is just greenwash. The real line of the state government is the oxymoronic one of "clean coal".

Nuclear power — currently being pushed by Howard — is no solution to anything (except the corporations' thirst for ever more profits and hang the consequences for the rest of us). Apart from all the safety and waste disposal issues, nuclear plants actually require very big energy inputs for their construction.

NATIONALISE PUBLIC TRANSPORT AND FREIGHT

● Cars and trucks are a major source of fossil fuel consumption and greenhouse gas emissions. We need to achieve a drastic substitution of public transport for cars and rail freight for trucks. This has to be done and serious results obtained quickly.

Let's make sure that all metropolitan public transport systems are firmly in public hands. Stop all expenditure on roads (except for essential maintenance) and put the funds into covering the big cities with dense integrated networks of trains, trams and buses which run frequently and at all times. Only then will it be possible to radically reduce the use of cars in cities and towns.

● We also need to nationalise the freight industry (road and rail) to bring about a big reduction in the use of trucks for moving goods. Real planning for the sort of economic shifts that are needed cannot be done if the key economic levers remain in the hands of the profit-crazed corporations.

● Big business should be forced to pay realistic prices for the power it uses. This will focus their minds on the task at hand. In Victoria, for example, one particular running sore in this regard is the Portland aluminium smelter which consumes a very significant proportion of the state's electricity at concessional rates. We need to assess how sustainable such operations are.

Levers for change

If our society were simply an egalitarian collection of people, we could have a big society-wide discussion, work out a plan to meet the crisis of climate change and begin collectively trying to implement it.

But under capitalism this is impossible. Society is sharply divided between a handful of capitalists who own the economy (the mines, the factories, the supermarkets, the banks, the media, etc.) and the great working-class majority, who are forced to work for them in order to live. Nothing can be done which seriously hurts the interests of the ruling rich. Governments claim to be governing on behalf of everybody but in reality they represent only the capitalists. So the obvious route of a democratic social plan is ruled out.

Instead, as we approach absolute disaster the capitalists are screaming ever louder for "carbon trading" whereby the notorious "hidden hand" of the market is supposed to achieve the desired outcome. But in our opinion this simply will not work.

We reject the idea that everything can be left up to the market through various economic mechanisms, incentives and disincentives. The normal operations of the so-called "free market" have brought us to where we are now. We need less of it, not more. At most, market mechanisms can play a minor role. Energy waste and inefficiency by big business should be penalised but the main levers for change should be enforceable targets, direct control and regulation coupled with the sorts of measures sketched above.

CLIMATE CHANGE: A MARXIST ANALYSIS

By Terry Townsend

Al Gore's film, *An Inconvenient Truth*, has helped dramatise for a whole new generation the enormity of the global environmental crisis we face. Global warming is just the latest manifestation of the environmental crisis of capitalism, a crisis of such enormity that the web of life of the entire planet is at risk of fundamental degradation and with it human civilisation itself.

The scale of the threat posed by industrially induced global warming, and the short time in which we have to take meaningful action to prevent the potentially catastrophic consequences, makes the issue of global warming and how to seriously combat it arguably the most urgent question facing humanity.

As they come to understand the depth of the problem, and move into action around it, more and more people will conclude that to avert global warming — let alone achieve the ultimate goal of an ecologically sustainable society — very radical measures need to be taken in a very short period of time.

What is required — the rapid, far-reaching reorganisation of industry, energy, transport, mass consumption patterns, and the massive transfer of clean technology to the Third World — is simply not possible under capitalism.

Gore's film offers graphic evidence of some of the better known impacts and threats of global warming — rapidly shrinking glaciers, the receding and possible collapse of the vast polar ice sheets, rising sea levels, more intense and destructive weather events — as well as lesser known consequences such as the widespread disruption of ecosystems. Seagulls were spotted in theArctic for the first time in 2000; polar bears are drowning due

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to the shrinking ice. Disease-carrying mosquitoes are spreading from the tropics, threatening the health of billions.

The heat is on

Globally, the 10 hottest years on record have been in the past 14 years, with 2005 being the hottest and 2006 the sixth hottest. There is near unanimous agreement among scientists. The concentration of greenhouse gases in the atmosphere — primarily carbon dioxide (CO2) from the burning of fossil fuels, as well as methane, nitrous oxides, water vapour and other gases — is rapidly rising. These gases trap heat and cause warming.

The average global temperature is already 0.6°C hotter than at the end of the 19th century and even if CO2 levels were stabilised today, the temperature would continue to rise for the next 30 years. The level of CO2 in the atmosphere today is higher than at any time in more than 650,000 years.

In 2001, Intergovernmental Panel on Climate Change (IPCC) warned that unless CO2 levels are stabilised at around twice the pre-industrial level, the Earth's average atmospheric temperature will rise by up to 5.8°C by 2100. To keep warming to below 2°C, at which it is hoped the worst effects could be avoided, the IPCC recommended that global human-generated greenhouse gas emissions be slashed by at least 60%-80% by 2050 at the latest.

If greenhouse gas emissions are not reduced, it is forecast, there will be a sea level rise of between 20 centimetres and 1 metre by 2100. And that's on the increasingly fragile assumption that the ice caps remain intact. Without urgent action, some of the world's most densely populated cities will be flooded. Global warming will trigger severe storms and floods, worse droughts and expanding deserts, severe shortages of fresh water and increased epidemics of dangerous tropical diseases. The world's impoverished majority will and already are bearing the brunt.

And every day brings more evidence that not only strengthens these conclusions, but suggests they are underestimates.

Radical British columnist George Monbiot convincingly argues, based on the less well-publicised concentrations of more powerful greenhouse gases than CO2, that the more accurate target for emission cuts by the advanced industrialised countries should be an average of 90% by 2030. For the US andAustralia, he urges a 94% cut. The "60% by 2050" being loudly proclaimed by the ALP here won't avert the crisis.[1]

The price of prolonged inaction could be climate catastrophe. If the Greenlandand West Antarctic ice sheets collapse, sea levels could rise by up to 10 metres in the space of a few decades. More moderate melting could slow or shut down the circulation of ocean currents in the North Atlantic, which are responsible for the relatively mild temperatures of Northern Europe.

More recent studies reveal that warming could cause the abrupt release of large quantities of methane — a greenhouse gas 21 times more powerful than carbon dioxide — stored in frozen, but quickly thawing, tundra; and this would greatly accelerate the process of warming. There many such "feedback loops" that may greatly speed global warming, all of which are unpredictable.

CAPITALISM 'FIDDLES WHILE ROME BURNS'

The scientists' and environmental movement's warnings on global warming are certainly not the first serious alert about the developing global environmental crisis that has been sounded.

In 1992, the *World Scientists' Warning to Humanity*, a document signed by 1575 of the world's leading scientists, including more than half the living scientists awarded the Nobel prize, cautioned: "Human beings and the natural world are on a collision course. Human activities inflict harsh and often irreversible damage on the environment and on critical resources. If not checked, many of our current practices put at risk the future we wish for human society and the plant and animal kingdom, and may so alter the living world that it will be unable to sustain life in the manner that we know. Fundamental changes are urgent if we are to avoid the collision our present course will bring."[2]

The world scientists went on:"The environment is suffering critical stress in such areas as the atmosphere, the oceans, water resources, soil, forests and living species. The irreversible loss of species, which by 2100 may reach one-third of all species now living is especially serious."

Their conclusion was blunt: "A great change in our stewardship of the Earth and the life on it is required if vast human misery is to be avoided and our global home on this planet is not to be irretrievably mutilated."

The ecology of the entire planet is threatened with "irretrievable mutilation" because of the rapidly rising rate and scale at which human society, primarily by the richest capitalist economies, is exceeding the capacity of the Earth's natural processes to deal with its activities.

Some examples of this: somewhere between a third and a half of the land surface of the Earth has been transformed by human action; more than half of the fresh water sources are now put to use by human beings; the species extinction rate today is the highest in 65 million years, with the extinction rate approaching 1000-times the "benchmark" or natural rate.[3]

A 2002 study by the US National Academy of Sciences concluded that the world economy had exceeded Earth's regenerative capacity in 1980. By 1999, it was beyond that point by as much as 20%.

There is a growing global fresh water shortage, a problem being made worse by global warming. According to the World Health Organisation, 1.1 billion people today do not have access to safe drinking water. About

2.6 billion people — half the developing world — lack adequate sanitation. As a direct consequence, 1.6 million people die every year of disease; 90% are children under five, mostly in developing countries.

Another serious global environmental problem that needs to be tackled immediately is the state of our oceans. The November issue of Science just reported that a major study had found that if the current unsustainable rate of industrial fishing continues the world may run out of seafood by 2048. Nearly one-third of all commercially fished species in the open ocean and coastal regions have collapsed — meaning that the catch has plummeted by more than 90% since 1950. The rate is accelerating; in 1980 just 13% of fished species had collapsed. According to the UN Food and Agriculture Organisation, three-quarters of commercially viable fish stocks around the world are being over fished.

Due to declines in biodiversity of 50% or more, the study found, significant coastal marine ecosystems have also begun to unravel, resulting in dead zones caused by the remaining sea life, such as oysters, being unable to filter and detoxify the water. The cloudier water stunts the growth of sea grasses, which are essential nursery habitats for many fish species. As the study director Boris Worm remarked: "Through this research, it became clear … that we hardly appreciate living on a blue planet. The oceans define our planet, and their fate may to a large extent determine our fate."[4]

Yet, as the planet-wide crisis has gathered pace and the scientific warnings have multiplied and become louder, the long-drawn out response of the ruling capitalist classes and their governments has been first to deny that there is a crisis at all, then assert that the warnings are exaggerated and anyway we can adapt. When it is finally obvious something really has to be done, they "fiddle while Rome burns", opting for inadequate, voluntary, gradual measures that will cost big business as little as possible to implement.

As the UN Environment program's 1997 *Global State of the Environment Report* despaired: "Progress towards a global sustainable future is just too slow. A sense of urgency is lacking. Internationally and nationally, the funds and political will are insufficient to halt further environmental degradation … even though technology and knowledge are available to do so … As a result, the gap between what has been done thus far and what is realistically needed is widening."

Kyoto Protocol: too little, too late

We can see this being played out yet again. While scientists began warning of global warming in the 1980s, it was not until December 1997 that an international treaty, the Kyoto Protocol, was finally agreed upon. It did not come into force until February 2005. The US, the world's largest emitter of industrial greenhouse gases — 23% of the total — and Australia refuse to

ratify the treaty, and US President George Bush and John Howard (backed by the powerful fossil-fuel, oil and car industries) continue to question the reality of industrially induced global warming.

And yet, after more than 20 years of knowing that global warming is happening, not only are the Kyoto treaty's formal emission reduction targets minuscule compared to what is required, the corporate-friendly, market-based mechanisms contained in it to achieve these are counterproductive.

Under the treaty, the rich industrialised countries, which have historically been and remain the major emitters, are only required to cut their greenhouse gas emissions on average by 5.2% below 1990 levels. They have until 2012 to achieve this. However, despite the need to achieve a minimum 60-80% reduction in emissions by 2050 (let alone Monbiot's much more accurate estimate), no reduction targets or timetables are yet established for beyond 2012.

Under the treaty, rich countries that cannot or do not want to reduce greenhouse gas emissions below their target can buy "right to pollute" credits from other countries that have bettered their Kyoto promises. It should be remembered that the Kyoto baseline of 1990 conveniently ignores the fact that after 1990-91, the economies of the Soviet Union and Eastern Europe(including East Germany) collapsed, resulting in a 40% reduction in emissions from those countries. Russia and Ukraine will sell to other industrialised countries the right to increase their greenhouse gas emissions by that amount, and unified Germany's emissions have been artificially reduced on paper.

Individual corporations are also allowed to buy and sell the right to pollute. Under the Kyoto Protocol's Clean Development Mechanism (CDM), rich-country corporations can earn credits for investing in projects that claim to reduce greenhouse gas emissions in underdeveloped countries. The evidence so far is that many of these projects are of questionable benefit, may have taken place anyway or have other serious environmental impacts.

For example, a CDM project might allow the Australian government to finance a factory producing energy-efficient appliances in India, but not do it in Australia; or BHP Billiton might construct wind generators in Mozambique but continue to pump CO2 into the atmosphere from its operations in Australia and South Africa.

A further likely result of the CDM will be that rich country governments and corporations will dump obsolete technology on the poor countries as the First World introduces new energy-generation plant and equipment. Because this out-of-date technology may be "cleaner" than existing Third World factories and power plants, the First World will be awarded greenhouse credits, while the Third World will be stuck with obsolete (and uncompetitive) infrastructure considered too dirty to use in the rich coun-

tries.

According to the *New Scientist* website,[5] the treaty's initial loopholes and scams meant that even if the industrialised countries achieve Kyoto's 5.2% reduction on paper, the real-world reduction would be just 1.5%.

However, figures released in October show that since 1990 annual greenhouse gas emissions from the richest countries are continuing to rise and, adjusted for the paper reductions that followed the collapse of the Eastern European economies, were more than 11% greater in 2004. Of the 41 richest Kyotoratifiers, 34 had increased emissions between 1990 and 2004. US emissions are up 21.1%, Australia's by 25.1%. Emissions from transportation jumped 24%. Conveniently, car and airplane emissions are not covered by the treaty.

At the same time, the concentration of CO2 in the atmosphere continues to rise and at an increasing rate. The World Meteorological Organisation reported in November that CO2 increased to 379.1 parts per million in 2005. To keep global warming to 2°C, CO2 concentration must be stabilised at around 450ppm by 2050. According to Oxford University's Myles Allen, one of Britain's leading climate scientists, "at these rate, it certainly sounds like we'll end up towards the high-end of the emission scenarios", translating at above 5°C by 2100.

As all this shows, even when confronted with the greatest environmental challenge yet, capitalist governments and the capitalist economic system they defend simply cannot put people or the planet before profits.

Individual solutions not enough

Which brings us back to the "former next president of the United States".

Gore's *An Inconvenient Truth* does an excellent job in making the threat we face understandable and dramatises the need for emergency action. But it is precisely on what needs to be done, and how, that he falls far short.

The main solutions Gore offers are individual actions: that we all install long-life light bulbs, insulate our homes, drive hybrid cars, vote for the "right" respectable candidates. Beyond that, Gore makes few serious demands on big business, and endorses the largely voluntary market-based measures, such as emissions trading, contained in the Kyoto treaty. Gore also mentions in passing and approvingly "geosequestration", so-called clean coal, and nuclear power.

Unfortunately, such an approach is both inadequate and politically misleading, given the magnitude and source of the global environmental crisis. Gore and others urge us to lead "carbon-neutral" lives — but how is that possible, if the Australian and world economy is not carbon neutral because the unaccountable, unelected giant multinational car makers, fossil fuel combines, huge mineral processors and the major power generating

corporations and corporatised public utilities spew greenhouse gases into the air at increasing rates?

However well intentioned, appeals to people to change their individual habits — "Don't drive a car", "Don't keep your appliances on stand-by", "Stop being a consumer" — bring trivial results when measured against the problem. If there's no adequate public transportation, if there's no adequate city planning that lets workers live close to jobs, schools, hospitals and recreation, how can they stop driving cars? If every appliance the big corporations churn out is designed be on standby by default, it makes it bloody difficult.

As a leading liberal wealthy capitalist politician who so recently sought to take the political reins of the world's most powerful capitalist government, someone who believes that capitalism and the market can solve the world's problems, Gore is unwilling to and sees no reason to confront the world's most powerful corporations, and the ruling capitalist class. He doesn't blame the political and economic system run for and by the tiny minority class of capitalists who are prepared to gamble with the fate of the Earth in order to maximise their profits.

Of course, Gore is not alone in pushing the onus of solving global warming and other manifestations of the broader environmental crisis onto individuals, while also relying on the capitalist market, nudged along by so-called "green" taxes and legislative regulations. This is also the underlying approach of most mainstream environmental groups and the major Greens parties. Even Monbiot's otherwise radical proposals include a form of carbon trading, albeit much more egalitarian. As a result, this consensus is accepted by most environmental activists.

Such views among genuine environmental activists reflect a well-meaning but ultimately utopian belief that if only enough of us decide to drastically reduce our demand on the world's resources — via greatly reduced personal consumption, purchasing from firms with sustainable production techniques and non-polluting technologies — big business and governments will respond to "market signals" and accept and adapt to a slow-growth or no-growth economy.

Of course, we should not dismiss the importance of environmental consciousness and radicalisation, which is often expressed in attempts to live in ways consistent with sustainability. It is a good thing if people try to organise their lives so that they live more ecologically.

But we have to be clear that that alone will not be enough to halt the crisis. It certainly cannot be the main strategy of the mass environment movement, as it will let the real culprits off the hook and divert precious activist energy away from the underlying systemic dynamic that is driving ecological degradation.

As Marxist ecologist John Bellamy Foster explained in a very useful and

accessible article published in the *Monthly Review* magazine in February 1995,[6] behind most appeals for individual "ecological morality", "there lies the presumption that we live in a society where the morality of the individual is the key to the morality of society. If people as individuals could simply change their moral stance with respect to nature and alter their behaviour in areas such as propagation, consumption, and the conduct of business, all would be well."

However, Foster continues: "What is all too often overlooked in such calls for moral transformation is the central institutional fact of our [capitalist] society: what might be called the global 'treadmill of production'."

The 'treadmill' of capitalist production and capital accumulation

Foster draws directly from the scientific socialist analysis of capitalism first made by Karl Marx and Frederick Engels to illustrate how, despite the assertions of many environmental movement theorists over the years, Marxism not only provides essential insights into the fundamental cause of the environmental crisis, but also offers the best political guide to its solution. Only far-reaching social revolution aimed at replacing the anti-environmental capitalist system can pull the planet back from the brink of disaster.

Foster breaks down the logic of the capitalist "treadmill" into six elements. "First … constituting its central rationale, is the increasing accumulation of wealth [capital] by a relatively small section of the population at the top of the social pyramid. Second, there is a long-term movement of workers away from self-employment and into wage jobs that are contingent on the continual expansion of production. Third, the competitive struggle between businesses necessitates, on pain of extinction, the allocation of accumulated wealth to new, revolutionary technologies that serve to expand production. Fourth, wants are manufactured in a manner that creates an insatiable hunger for more. Fifth, government becomes increasingly responsible for promoting national economic development" … and "Sixth, the dominant means of communication and education are part of the treadmill, serving to reinforce its priorities and values."

Foster is summarising and paraphrasing Karl Marx's account of the essential operation of the capitalist system, and identifies its fundamentally anti-ecological trait, captured by Marx's general formula for the creation of capital.

During the long period of pre-capitalist simple commodity production, peasants and artisans sold their surplus produce for money to buy goods to meet their other immediate needs (for example, wheat sold to buy shoes).

This circuit of commodities and money takes the form ofCommodity-Money-Commodity, and usually ends with the consumption of the com-

modity. However, under the capitalist mode of production — in which commodity production is now generalised — the circuit begins and ends with money. The capitalist buys or produces commodities in order to sell them for a profit, and then buys or produces more to sell more again. The formula is nowM-C-M', in which M' represents the original outlay to buy or produce the commodities, plus the surplus value created by human labour during their production.

Unlike simple commodity production, there is no end to the process, since the capitalists' aim is the reinvestment of the surplus, or accumulation of the capital, from the previous cycle. Competition between capitalists ensures that each one must continue to reinvest their "earnings", increase their production of commodities and continue to expand in order to survive. Production tends to expand exponentially until interrupted by crises (depressions and wars) and it is this dynamic at the very core of capitalism that places enormous, unsustainable pressure on the environment.

Capitalism is a system that pursues accumulation and growth for its own sake, whatever the consequences. It is a juggernaut driven by the single-minded need on the part of business for ever-greater accumulation of capital. "Accumulate, accumulate! That is Moses and the Prophets!", wrote Marx inCapital.[7] Capitalism is like the proverbial scorpion, who, after stinging the frog as he was being carried across the river on its back, meaning the death of both, could only say: "I could not help myself. It is my nature."

This is why all schemes based on the hope of a no-growth, slow-growth or sustainable-growth form of capitalism are pipe dreams. As too are strategies based on a critical mass of individual consumers deciding to go "green" in order to reform the system. A "stationary" or "steady-state" capitalism is an impossibility.

As Foster points out: "Everyone … is part of this treadmill and unable or unwilling to get off. Investors and managers are driven by the need to accumulate wealth and to expand the scale of their operations in order to prosper within a globally competitive milieu. For the vast majority, the commitment to the treadmill is more limited and indirect: they simply need to obtain jobs at livable wages. But to retain those jobs and to maintain a given standard of living … it is necessary, like the Red Queen in *[Alice] Through the Looking Glass*, to run faster and faster in order to stay in the same place"

This, Foster notes, also allows us to quickly dispose of that other related but even more utopian approach: appeal to the heads of corporations to do the right thing. To quote Noam Chomsky: "The chair of the board will always tell you that they spend every waking hour labouring so that people will get the best possible products at the cheapest possible price and work in the best possible conditions. But it is an institutional fact, independent

of who the chairperson of the board is, that they had better be trying to maximise profit and market share, and if they aren't doing that, they are not going to be chair of the board any more."

Bourgeois economists since the days of Adam Smith have conceded that capitalism is a system devoted to the pursuit of individual wealth, and only indirectly — by some "hidden hand" — meets society's broader needs. But as is becoming increasingly clear, the former goal supersedes and corrupts the latter.

For capitalists, profit is an end in itself. It does not matter to them whether the commodities they produce satisfy fundamental human needs — such as food, clothing, shelter — or are devoted to pointless or ostentatious consumption, or are even destructive to human beings and the planet. A buck is a buck whether it comes from mung beans, Lamborghinis or cigarettes.

People are not "consumers" by nature. A multi-billion-dollar capitalist industry called advertising constantly plays with our minds to convince us that happiness comes only through buying more and more "stuff", to keep up with endless wasteful fads, fashions, upgrades, new models and built-in obsolescence. The desire for destructive and/or pointless goods is manufactured along with them.[8]

In 2003 alone, US big business spent more than US$54.5 billion on advertising to convince people to consume more and more goods and services.[9] This compares to the US government's total education budget of US$76 billion in 2003. In 1995, the average adult in the United States watched 21,000 television commercials a year, about 75% of which are paid for by the 100 largest corporations. In Australia, annual ad spend passed the A$10 billion mark in 2004.[10] Worldwide more than US$298 billion is expected to be spent on advertising in 2007.[11]

But surely, it would be in the capitalists' own interests to shift to more energy-efficient production and replace dirty fossil fuels with cleaner, more efficient renewable sources.

Many in the environmental movement argue that with the right mix of taxes, incentives and regulations, everybody would be winners. Big business will have cheaper, more efficient production, and therefore be more profitable, and consumers will have more environment-friendly products and energy sources.

In a rational society, such innovations would lower the overall environmental impact in terms of materials and energy used per unit of output, when substituted for more harmful technology. Unfortunately, we don't live in a rational society.

Another feature of capitalism that flows from its growth at all costs nature has also been noted by John Bellamy Foster.[12] Known as the "Jevons Paradox", after the 19th Century British economist William Stanley Jevons, it refers to capitalist industry's tendency to use up even more of a

natural input as it finds more efficient ways to utilise it.

As Jevons noted in his 1865 book *The Coal Question*: "It is the very economy of its use which leads to its extensive consumption … If the quantity of coal used in a blast-furnace, for instance, be diminished in comparison with the yield, the profits of the trade will increase, new capital will be attracted, the price of pig-iron will fall, but the demand for it will increase; and eventually the greater number of furnaces will more than make up for the diminished consumption of each."

Of course, capitalism approaches technology — in the production process or in the final commodity — in the same way as it does everything else. What will generate the most profits? Whether it is efficient, clean, safe, environmentally benign or rational has little to do with it. The technologies that could tackle global warming have long existed. Even though research into them has been massively underfunded, renewable energy sources are even today competitive with coal and nuclear power (if the negative social and environmental costs are factored in). Public transport systems, such as trams and trains, have been around since the late 1800s (the first underground railway, London's Tube system, began operation in 1863).

Yet, huge private vested interests have ensured that, for example, the vastly more wasteful, inefficient and polluting private motor vehicle has come to dominate the industrialised capitalist countries. US Marxist economist Paul Sweezy has described how what he calls the "automobile-industrialisation complex" — the major car companies, the oil industry, the steel, glass and rubber corporations, the highway builders, the trucking combines and the real-estate and construction interests tied to suburban sprawl — have been the axis "around which [capital] accumulation in the 20th century largely turned". This "automobile-industrialisation complex" remains at the heart of the dependence of the major capitalist economies on oil today.[13] Transportation accounts for the largest proportion of CO2 emissions in the US and the third largest in Australia.

Today, following Henry Ford II's famous maxim, "minicars make mini-profits", car manufacturers make the bulk of their profits from making and selling big cars, 4X4s and minivans.

TOXIC VANDALISM

Fundamental to capitalism's development has been its power to shift the cost of its ecological and social vandalism onto society as whole, by using the biosphere as a giant dunny down which it can flush its toxic wastes. More profits can accrue if the big capitalists don't have to bother themselves with the elimination, neutralisation or recycling of industrial wastes. It's much cheaper to pour toxic waste into the air or the nearest river. Rather than pay for the real costs of production, society as a whole

subsidises corporate profit-making by cleaning up some of the mess or suffering the environmental and/or health costs.

Or the whole messy business can simply be exported to the Third World. In August, a Dutch company with revenues of US$28 billion last year dumped 500 tonnes of toxic waste in the Ivory Coast, West Africa, because it did not want to pay the $250,000 disposal fee in the Netherlands. At least 10 people died from the fumes, 69 were hospitalised, more than 100,000 needed medical attention.

At the same time, the impact of systematic polluting has been magnified by the profit-driven development of synthetic chemicals associated with the growth of the petrochemical and agribusinesses, and synthetic products (like plastics, pesticides and detergents) have been substituted for natural ones (like wood, leather and soap). The result is much more toxic wastes, such as those from chlorine-related (organochlorine) production — creating Frankenstein substances such as dioxin, PCBs and CFCs. The degree of toxicity associated with a given level of production has risen steadily since the middle of last century.

Renowned pioneer of radical environmentalism Barry Commoner, in his 1992 book *Making Peace with the Planet*, reported that the petrochemical industry alone up to that point had introduced 70,000 alien synthetic chemical compounds into the biosphere. He writes: "These … compounds … disrupt normal biochemistry, leading to mutations, cancer, and in many different ways, to death. In effect, the petrochemical industry produces substances that … cunningly enter the chemistry of life, and attack it."

In general, there is no natural feedback mechanism that works to trigger the great god "the market" to rein in this sort of environmental destruction by increasing costs for capital, no matter how severe the cost to nature and society. Attempts to manage the damage by "regulating" capitalism with "green taxes" have had limited successes, precisely because pro-capitalist governments are run by corporate-funded political parties and politicians, with bureaucracies headed by loyal establishment figures, who see their role as defenders of the status quo.

Tax rates, charges or fines are set well below the level that would impact seriously on profits; so more often than not it is cheaper for big business to go on polluting until the next scheduled refit than to immediately put a stop to it. Taxes tend to be set at rates that can be passed on to consumers, the goal being to influence demand for certain products, rather than at a level that forces a fundamental and rapid redirection of investment into non-polluting or renewable technology.

Capitalism, an economic and political system based on the never-ending expansion of production of commodities for sale, is incompatible with the basic ecological cycles of the planet.

As is becoming abundantly clear today, the Earth cannot sustain this

system's plundering and poisoning without humanity sooner or later experiencing a complete ecological catastrophe.

To have any chance of preventing this, within the 30-to 50-year window that we have in relation to global warming, humanity must take conscious, rational control of its interactions with the planet and its ecological processes, in ways that capitalism is inherently incapable of providing.

MARX AND ENGELS ON ECOLOGY

Contrary to the repeated assertions by some environmental movement theorists, Marx and Engels were personally well aware of and respectful of humanity's interconnectedness with the environment, and they recognised that it was essential for socialism to be ecologically sustainable. John Bellamy Foster and fellow Marxist Paul Burkett have discussed this in their articles and books on Marx and Engels' neglected writings on the subject.

But let's touch on their findings briefly. Marx in several places noted how capitalism had created a "metabolic rift" between human beings and the earth. The wrenching of the mass of people from the soil, forced to work in the factories of the cities, was one of the preconditions for the development of industrial capitalism. Before long the fields were being starved of nutrients, while city streets and rivers stunk of human effluent and associated filth.

Marx referred to capitalist farming as "an art, not only of robbing the labourer, but of robbing the soil" that sapped the everlasting sources of wealth — the soil and the worker. He argued in effect for the return to ecological sustainability, which had been destroyed by, and was not possible under, capitalism.

Writing in *Capital*, Volume 3, Marx commented: "From the standpoint of higher economic forms of society, private ownership of the globe by single individuals will appear quite as absurd as private ownership of one man by another. Even a whole society, a nation, or even all simultaneously existing societies taken together, are not owners of the globe. They are only its possessors … they must hand it down to succeeding generations in an improved condition."[14]

To simultaneously put an end to the capitalist plunder of the environment and the working people, to "systematically restore" the "metabolism", Marx urged a social revolution that would abolish private ownership. Marx wrote in Capitalthat only "the associated producers [can] govern the human metabolism with nature in a rational way, bring it under their collective control instead of being dominated by it as a blind power".[15] This symbiotic relationship between humanity and the environment must again become "a regulative law of social production". He declared that the "conscious and rational treatment of the land as eternal communal property" is "the inalienable condition for the existence and reproduction of the chain

of human generations", i.e., sustainable development.[16]

Engels in the *Dialectics of Nature* agreed. To "regulate" our relationship with nature "requires something more than mere knowledge. It requires a complete revolution in our hitherto existing mode of production, and simultaneously a revolution in our whole contemporary social order."[17]

In this talk I've attempted to illustrate how Marxism allows us to understand how the intrinsically anti-ecological capitalist "treadmill" of production and capital accumulation cannot be the basis for an ecologically sustainable society, or even address the immediately pressing global warming crisis.

Only a socialist society can build an ecologically sustainable world

A plethora of "blueprints" for an ecologically sustainable world have been produced by the dozens by Green groups here and around the world, containing logical and commonsense solutions to global warming and the general environmental crisis. They fail not because their proposals for a rapid conversion to renewable energy and the rational reorganisation of production and consumption are far-fetched. They fail because they do not accept that capitalism is incapable of bringing them into being. Only a society that places the "associated producers" at its head and at its heart can open the way for the building of a genuinely feasible sustainable society.

As the DSP's essential 1999 document *Environment, Capitalism and Socialism* succinctly puts it: "Any proposal to save the environment that doesn't adopt this approach … is doomed to be reduced to a set of 'interesting proposals' in speedy transit to irrelevance, or to providing the newest wave of bamboozling eco-chatter, or to supplying the next menu items for futile gradualism that falls further and further behind in its tasks."[18]

A society run by and for the "associated producers" — a socialist society — would allow the controlling levers of the "treadmill" to be seized, bringing it to a halt so we can all get off and begin to think about, discuss and rationally plan the best way forward for both the planet and all its inhabitants. Profit will no longer dictate what is produced and how or determine the relationships of rich-country governments with the Third World.

Almost immediately, huge material and human resources would be released to begin to rapidly reverse problems like global warming and the destruction of the oceans, as well as the wider global environment crisis, as well making a start on ending the poverty, hunger and disease that affect billions in the Third World.

Where from? For a start from capitalism's war spending. Global direct military spending is running at more than US$1 trillion a year, of which the USaccounts for almost 50%.[19] When related spending is factored in, US military spending is set to be above $900 billion in 2008. The Austra-

lian defence budget is $22 billion a year and since 9/11 another $20 billion has been spent on the bogus "war on terror".[20]

Just a fraction of these sums could eliminate starvation and malnutrition globally, provide education for every child on Earth, provide access to water and sanitation and reverse the spread of AIDS and malaria.

It would also enable the massive transfer of new and clean technologies to theThird World, to allow poor countries to skip the stage of dirty industrial development. With the end of capitalist domination, the plunder of Third Worldresources would end and genuine development could ensue. With the cancellation of the Third World debt, the now poor countries would retain vast sums to kick start their clean development.

On top of that, the "ecological debt" — described by the Ecuador-based Action Ecological as the debt owed to the Third World as a result of the "Northern" countries' plundering of their natural resources, environmental damage and the dumping of wastes, including greenhouse gases — would begin to be repaid. This was estimated in 2004 to be at least $1.6 trillion a year, three times the $523 billion "owed" by the poorest countries.[21]

The wealth of the former ruling class and the ending of its rule would also provide immense resources for the tasks at hand. According to a UN report released in late November, the richest 2% of adults in the world own more than half of all household wealth. The poorest 50% of the world's population own barely 1% of global wealth. Europe, the United States and Japan account for most of the extremely wealthy. More than a third live in the US. Japanaccounts for 27% of the total, and Britain and France 5-6% each.[22]

Genuine democratic socialist planning will allow priorities to be set on the production of certain items and limit or eliminate others. Just imagine the vast amounts of wasteful production of pointless commodities produced solely for sale that could be eliminated. Without the cynical manipulation of people's insecurities and vanities by the billion-dollar advertising and marketing industries, not to mention its outright dishonesty, needless and wasteful consumption would plummet.

The marketing-driven over-packaging of products could end, saving entire forests, and banishing billions of tonnes of "disposable" but environmentally indigestible plastic fast-food containers and beverage bottles from the rubbish dumps. The triumphant return of the humble but eminently sensible — and recyclable — glass bottle would be at hand!

Inbuilt obsolescence would end, and the corporate creation of fads and fashions would become a thing of the past. No more "this year's new model". Products would be built to last for a very long time, and when they were due for replacement they would be as totally recyclable as possible. Such basic reforms would save massive amounts of materials and energy, all along the production chain.

We could collectively redirect the investment of society's created wealth into research and development of existing and new technologies to meet society's needs while operating as cleanly as possible, and well within the environment's capacity to absorb any waste products. We could rapidly bring forward the expansion of renewable energy and speedily phase out coal and nuclear power stations.

With a huge boost to socially directed investment in research and development, reliable solar energy and wind power, other forms of alternative energy, could very soon become much cheaper than traditional sources, without many of the currently costly society-borne side-effects. We could begin to harness the sun's energy, which every day delivers to the Earth 17,000 times as much energy as the entire population uses.

Right now, the technology is available to theoretically generate all the clean electricity we need. Combined with energy-efficiency targets throughout the economy, from the industrial level to house designs and household appliances, and socially organised recycling, greenhouse gas emissions could be not only slashed but reversed.

If society so chose, entire branches industry could be subsidised as they were force-marched into environmentally friendliness, or closed down overnight and the workers' skills and talents utilised almost immediately in other industries, or retrained on full pay.

Capitalism's dependence on the private car and truck would begin be reversed with the rapid proliferation of mass, free public transport systems. High on the agenda will be the reintroduction of extensive passenger and freight rail networks in rural, regional and remote areas. The reintroduction and expansion of coastal freight shipping will also be important. In time, cities will be no longer be designed around the private car, but around residential, community and work hubs linked by fast, efficient public transport.

And as the "associated producers" build the new society, wants and needs will inevitable alter, and so too will consumption habits. Capitalism as a system thrives on the cultivation and celebration of the worst aspects of human behaviour; selfishness and self-interest; greed and hoarding; the dog-eat-dog mentality. Capitalism's warped view of normal human interaction is summed by the Orwellian-titled unreality show, Survivor. In this twisted vision of the workings of society, the last person standing is the victor! But all societies survive — even capitalist societies — not by bumping each other off to get the cash, but by cooperating.

In a society that is organised first and foremost to work together to produce enough to comfortably ensure people's physical and mental well-being and social security — abundant food, clothing, housing, furniture and appliances, cultural pursuits, and lifelong education and training, and healthcare — and in which technological advances benefit everybody

without costing the environment, a new social definition of wealth will evolve. It won't be measured by personal wealth, or by how much "stuff" you've got.

In the words of Marx and Engels,[23] social wealth will be defined by the degree to which it provides the means for "all members of society to develop, maintain and exert their capacities in all possible directions" so that "the old bourgeois society, with its classes and class antagonisms," is replaced "by an association [society] in which the free development of each is a condition of the free development of all".

Social wealth — human development — will be not be measured by an ever-increasing consumption of goods and services, or expanding indices of "economic growth", but in the shortening of the work day. In the words of Marx, "free time, [or] disposable time, is wealth itself … free time … for the free development , intellectual and social, of the individual".

As society's total disposable time — social wealth — expands, so too does the ability of all members of society to increasingly participate in running, planning and solving its problems, including finding solutions to the more intractable environmental or technological problems. Lifelong theoretical and practical education, made possible by this expanding disposable time, Marx states, will "convert science from an instrument of class rule into a popular force".

Only a socialist system, in which public ownership, popular democracy and planning, and a new definition of wealth based not on individual personal enrichment and consumption can possibly meet the challenge. It would not be too extreme to declare that humanity in the next 50 or so years faces a stark choice: capitalism — or socialism and human survival.

Appendix

The Communist Manifesto and the Environment

John Bellamy Foster

The rise of environmental issues to the forefront of contemporary political life over the last few decades has sparked a searching re-examination of the entire history of social thought. In a context set by a widening ecological crisis that now seems to engulf the entire planet, all of the great traditions of modern thought — liberalism, socialism, anarchism, feminism — have sought to re-examine their intellectual forerunners, dropping some ideas and picking up others in an effort to "green" their understandings of society. As a result an impressive array of thinkers from Plato to Gandhi — have all had their work scrutinised in relation to ecological analysis.[1]

It is in connection with the work of Marx, however, that one finds by far the most voluminous and controversial body of literature in this regard. This of course is to be expected since Marx remains the preeminent critic of capitalist society. The extent to which his general critique (and that of the various traditions to which he gave rise) can be integrated with an ecological critique of machine capitalism is therefore of great importance. Indeed, much more is involved here than a mere question of "political correctness" (understood in green terms). The overriding question is rather whether Marx's critique of political economy plays an essential part in the reconstruction of social theory in an age of planetary crisis. Further, how far does he offer insights that are crucial to our understanding of the contemporary ecological malaise?

The participants in this debate have fallen into three camps: those who

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argue that Marx's thinking was anti-ecological to its core, and directly reflected in Soviet environmental depredations; those who contend that Marx provided "illuminating asides" on ecology in his work, even if he chose in the end to adopt a "Promethean" (pro-technological, anti-ecological) viewpoint; and those who insist that Marx had a deep awareness of ecological degradation (particularly with respect to questions of the earth or soil), and that he approached these issues systematically, to the point that they entered into his basic conceptions of both capitalism and communism, and led him toward a notion of sustainability as a key ingredient of any future society.[2]

Most of the debate about Marx's relation to environmental thought has focused on the early philosophical critique of capitalism in his *Economic and Philosophic Manuscripts of 1844* and on his later economic critique embodied in Capital in the 1860s — since in both of these works he had a great deal to say about human interactions with nature. Nevertheless, the Communist Manifesto has often been invoked as presenting a view that was anti-ecological — some would say the very definition of anti-ecological modernism.

Indeed, the Manifesto is customarily viewed as a work that is at best oblivious to environmental concerns, at worst "productivist" — even "Promethean" — in character, steeped in notions of progress and the subjection of nature that are deeply anti-nature. This is important because the *Manifesto* is generally viewed as lying at the heart of the Marxian system and whatever flaws are to be found in the overall analysis are seen as having their roots there. Yet the question of the relation of the Manifesto to the environment is one that has never been addressed systematically. In our time this is no longer adequate, and it is necessary to ask: To what extent is the *Manifesto* — arguably the most influential political pamphlet of all time — compatible with ecological values, as we understand them today? Moreover, how is the Manifesto to be situated within the rest of Marx and Engels' thought in this respect?

The search for a smoking gun

One might suppose that compelling textual evidence that Marx and Engels were anti-environmentalist in orientation would not be hard to find. They wrote at a time when most thinkers embraced a mechanistic world view in which nature and human beings were seen as diametrically opposed to one another. Indeed, much of the European view of science from the 16th and 17th centuries on was governed by the notion that science had allowed humanity to escape nature's dominance and to become dominant in turn; and Marx and Engels certainly referred frequently — as did nearly all 19th century (and most 20th century) thinkers — to the "mastery", "domination", "conquest" and "subjection" of nature.

But they did so almost invariably in contexts which refrained from making nature the enemy. Rather, the domination of nature was seen by them as a phase of historical development — part and parcel of the whole self-alienation of human society, which also meant its alienation from nature — which would necessarily have to be transcended under communism. There are innumerable passages strewn throughout their writings where Marx and Engels demonstrate enormous sensitivity to environmental issues. For example, the 23-year-old Engels, in his first work on political economy, published in 1844, wrote: "To make the earth an object of huckstering — the earth which is our one and all, the first condition of our existence — was the last step toward making oneself an object of huckstering."[3] For his part Marx observed in 1844, in his *Economic and Philosophical Manuscripts*, that "Man lives from nature, i.e., nature is his body, and he must maintain a continuing dialogue with it if he is not to die." In this same work Marx complained that under the alienated existence of capitalism, "Even the need for fresh air ceases to be a need for the worker. Man reverts once more to living in a cave, but the cave is now polluted by the mephitic and pestilential breath of civilisation."[4]

In his more mature works, from the 1860s on, Marx became increasingly concerned about signs of ecological crisis, particularly with respect to the degradation of the soil, which induced him to envision future communist society to a very large extent in terms of sustainability. Writing in Volume 1 of *Capital*, Marx argued that "the destruction" under capitalist agriculture "of the eternal natural condition of the lasting fertility of the soil" — of the basic elements of "the metabolic interaction between man and the earth" — through the disruption of the soil nutrient cycle, compelled "its systematic restoration as a regulative law of social production, and in a form adequate to the full development of the human race."[5] So dialectical (in the sense of manysided) was this kind of analysis that William Leiss concluded in his pioneering study, *The Domination of Nature*, that taken together, the writings of Marx and Engels, "represent the most profound insight into the complex issues surrounding the mastery of nature to be found anywhere in 19th century thought or *a fortiori* in the contributions of earlier periods."[6]

Still, none of this has kept critics from attempting to find a "smoking gun" to demonstrate beyond all doubt that Marx and Engels adopted a one-sided, exploitative view of nature. But in order to do so green critics have had to go to quite extraordinary lengths. In attempting to demonstrate (against all the evidence to the contrary) that the early Marx was insensitive to nature, the social ecologist John Clark lays stress on the fact that Marx, while frequently referring to nature as "man's body", also referred to it as an "inorganic" bodily link. He ends his critique by stating that "Marx's Promethean and Oedipal 'man' is a being who is not at home

in nature, who does not see the Earth as the 'household' of ecology. He is an indomitable spirit who must subjugate nature in his quest for self-realisation." But as evidence to back up this charge Clark is only able to offer some stanzas from Marx's youthful and not very remarkable poetry (written when he was 19 years old in "The Book of Love, Part II", dedicated to Jenny) in which he wrote,

> "I am caught in endless strife,
> Endless ferment, endless dream;
> I cannot conform to Life.
> Will not travel with the stream."[7]

For Clark this is definitive proof that, "For such a being [Marx], the forces of nature, whether in the form of his own unmastered internal nature or the menacing powers of external nature must be subdued."[8] One cannot but wonder how many youthful poets Clark might not condemn based on like evidence. Who has never wanted to go "against the stream"?

Other green critics have pointed, with more prima *facie justice*, to a passage by Engels in *Anti-Dühring* on the growing mastery of nature that will ensue once human beings have transcended social alienation:

> "The conditions of existence forming man's environment, which up to now have dominated man, at this point pass under the dominion and control of man, who now for the first time becomes the real conscious master of nature, because and insofar as he has become master of his own social organisation. The laws of his own social activity, which have hitherto confronted him as external, dominating laws of nature, will then be applied by man with complete understanding, and hence will be dominated by man … It is humanity's leap from the realm of necessity into the realm of freedom."[9]

Ted Benton criticises Engels on the grounds that such a view "presupposes control over nature" and hence "an underlying antagonism between human purposes and nature: either we control nature, or it controls us!"[10] In other words, Engels is said to have adopted an extreme anthropocentric rather than ecocentric perspective. But is Engels' argument here really vulnerable to such criticism? Despite the use of such terms as "master of Nature" the intent of this passage ought to be quite clear. It is that a revolution in social organisation is necessary to allow human beings to avoid being simply prey to natural forces (or forces that purport to be "natural", as capitalist economic forces are represented in bourgeois political economy). In fact, what is being celebrated here is not human mastery of nature so much as the human mastery of the making of history, which gives humanity the capacity to reorganise its relation to nature, under conditions of human freedom and the full development of human needs and potentials. There is nothing here to suggest an underlying antagonism toward nature in Engels' notion of the realm of freedom. Communism, Engels observed elsewhere, was a society in which people would "not only feel, but also know, their unity with nature."[11]

The same response may be given to criticism of Marx's closely related discussion of the "realm of necessity" and "the realm of freedom" in Volume 3 of *Capi-*

tal. "The true realm of freedom, the development of human powers as an end in itself", commences where the realm of necessity ends, "though it can only flourish with this realm of necessity as its basis. The reduction of the working day is the basic prerequisite."[12] The full development of human freedom and the human relation to nature, for Marx, therefore requires the transcendence of a bourgeois order which makes labour — the means by which the metabolic relationship between human beings and nature is expressed — simply a matter of bare, material necessity for the workers, even as the accumulated wealth and the combined powers of society grow. As Paul Burkett writes: "The expansion of free time and collective-democratic control over the social use of the conditions of production in Marx's communism" establishes the fundamental basis for sustainability in social and ecological relationships because it creates "conditions conducive to noninstrumental valuation of nature (i.e., to the further development of ecological needs and capabilities among the society of producers)."[13]

In the most revolutionary phase of human development, Engels along with Marx always insisted, the object would be to transform the human relationship to nature in ways that went beyond the childish notion of having "conquered" nature. "At every step", Engels wrote near the end of his life, "we are reminded that we by no means rule over nature like a conqueror over a foreign people, like someone standing outside nature — but that we, with flesh, blood, and brain, belong to nature, and exist in its midst, and that all our mastery of it consists in the fact that we have the advantage over all other beings of being able to know and correctly apply its laws." One of the basic principles in relating to nature was in fact reciprocity, leading Engels to argue that one could view as a natural necessity the "demand … that man shall give back to the land what he receives from it."[14]

It is true that Marx and Engels focused on human needs rather than on those of nature and thus can be accused of being "anthropocentric" rather than "ecocentric". But this is, from Marx and Engels' own standpoint, a false dualism. Nature and society, in their perspective, cannot be viewed as diametrically opposed categories, but evolve in relation to each other as part of a dynamic process of "metabolic" interaction. This was similar in its broad outlines to what is now called the "coevolutionary" perspective, in which it is argued that nature and human society each coevolve in a complex process of mutual dependence. The complexity of the interaction between nature and society envisioned by coevolutionary theory leaves little room for such ideas as "anthropocentric" and "ecocentric" since even in defending nature we are often defending something that was reshaped by human beings.[15]

Rural society and agriculture

The difficulty of finding anything that would even today be considered

a strongly anti-ecological statement in the work of Marx and Engels has meant that critics have often been compelled to quote the reference to "the idiocy of rural life" in Part I of the *Manifesto* as their main textual "evidence" (frequently their only such evidence) of the alleged anti-environmental orientation of the founders of historical materialism. For example, Victor Ferkiss states: "Marx's attitude toward nature can in large measure be inferred from his numerous remarks about such things as 'the idiocy of rural life'. He was a notorious critic and indeed an enemy of the peasantry … Such an attitude is hardly compatible with idealisation of unspoiled nature."[16] The deep ecologist Gary Snyder adopts a similar view, claiming that within the US today we are seeing "an alliance of capitalist materialists and Marxist idealists in an attack on the rural world that Marx reputedly found idiotic and boring."[17]

There is a host of questions raised by these statements. What did Marx and Engels mean by "the idiocy of rural life"? Is this to be regarded as an anti-ecological statement? Was Marx really "an enemy of the peasantry"? In order to be an environmentalist is it necessary to idealise unspoiled nature? Was Marx a one-sided advocate of urbanism in opposition to rural existence, as some critics like Ferkiss and Snyder have suggested? Such questions are best addressed not in the abstract but through an examination of the *Manifesto* itself, along with Marx's other writings. The reference to "the idiocy of rural life" comes in the midst of the paean in Part I of the *Manifesto* to the bourgeoisie's revolutionary historical role.

"The bourgeoisie has subjected the country to the rule of the towns. It has created enormous cities, has greatly increased the urban population as compared with the rural, and has thus rescued a considerable part of the population from the idiocy of rural life. Just as it has made the country dependent on the towns, so it has made barbarian and semi-barbarian countries dependent on the civilised ones, nations of peasants on nations of bourgeois, the East on the West."[18]

This is a very compressed statement which needs sorting out. In the first place, Marx had a classical education and we may presume knew that the meaning of "idiot" in classical Athens derived from "Idiotes", a citizen who, unlike those who took the trouble to participate in the assembly, was cut off from public life and who viewed it from the parochial, privatised standpoint. Pre-capitalist Europe — tribal, feudal — made peasants necessarily "idiotic" in this sense. And while primitive accumulation only made things worse in this respect, there seems no reason to doubt that Marx thought the long-run effect of capitalism was to "rescue" people from this by driving them into cities and new forms of association with each other. Like nearly all 19th century European intellectuals Marx and Engels saw the forces of enlightenment and civilisation in their time as emanating principally from the towns. But their recognition of the way in which the

bourgeoisie had made the "country dependent on the towns" should not be seen as uncritical support for this social arrangement, since the best that could be said for it from their point of view (at least at this stage in their thought) was that it was a necessary part of the whole bourgeois revolution, inseparable from the general achievements of the latter.

Marx and Engels saw the dependence of the country on the towns as a product in part of the enormous "agglomerations of population" that emerged within cities during the bourgeois era — an issue that they discussed in the paragraph immediately following the above quotation. Hence included in their vision of revolutionary change, as depicted in Part II of the *Communist Manifesto* (which was devoted to the historically specific demands of proletarians and communists) was an insistence on the need to carry out "a gradual abolition of the distinction between town and country, by a more equable distribution of population over the country". Indeed, throughout their writings — and with increasing emphasis in the later works such as Engels' *The Housing Question* (1872) — Marx and Engels insisted on the need for the abolition of the antagonism between town and country, whereby the latter became dependent on the former. They saw this antagonism as one of the chief contradictions of capitalism and a principal means through which a double exploitation of the urban proletariat and the rural worker (in England no longer a peasant) was carried out. "The abolition of the antithesis between town and country", Engels wrote in *The Housing Question*, "is no more and no less utopian than the abolition of the antithesis between capitalists and wage-workers."[19] This sense of the contradiction between town and country was not a mere slogan inherited from the utopian socialists but was seen as taking the form of a rupture in the necessary "metabolic" relation between human beings and nature. Thus in *Capital* Marx was to contend that by agglomerating the population in large urban centres capitalism: (1) "prevents the return to the soil of its constituent elements consumed by man in the form of food and clothing; hence it hinders the operation of the eternal natural condition for the lasting fertility of the soil"; and (2) "destroys at the same time the physical health of the urban worker, and the intellectual life of the rural worker."[20]

It was the combined action of the emigration of all culture to the city, the dispersal of a shrinking rural labour force over a wider countryside, and the annihilation of traditional connections both to the soil and to human community, that Marx saw as the source of "the idiocy of rural life" within bourgeois civilisation. Thus he took seriously (though not without offering some criticism) David Urquhart's observation that society was increasingly divided into "clownish boors" and "emasculated dwarfs" as a result of the extreme division between rural and urban existence, which deprived one part of the working population of material sustenance, the other of intellectual sustenance. The point was not that nature was to be

despised but rather that the antagonism between town and country was one of the chief manifestations of the alienated nature of bourgeois civilisation.[21] In their reference to the "idiocy of rural life" Marx and Engels, who already saw capitalism as evolving largely along the lines of England, were not referring only to the peasantry, since one of the things that most distinguished the English political economy was the thoroughness with which the expropriation of peasant lands had taken place, leaving behind a landless rural proletariat (as well as landed proprietors and tenant farmers). Nevertheless, it is worth noting — in the face of Ferkiss' criticisms — that Marx's view of the peasantry was always complex — because historically nuanced. It is true that he saw the French peasantry as a class playing a reactionary role by the time of Napoleon III's Second Empire, yet he also distinguished the revolutionary from the conservative peasantry. The former he described in heroic terms as "the peasant that strikes out beyond the condition of his social existence, the smallholding". The revolutionary peasant, for Marx, was characterised by "enlightenment" and represented the future, the "modern Cévennes".[22]

In *Anti-Dühring* Engels argued that large landholders have almost invariably been more destructive in their relation to the land than peasants and free agricultural labourers. The Roman Republic in Pliny's day replaced tillage with stock raising and thereby brought "Italy to ruin (*latifundia Italiam perdidere*)"; in North America "the big landlords of the South with their slaves and their improvident robbery of the land, exhausted the soil until it could only grow firs" — thereby representing a much more destructive relation to the earth (as well as to society) than the labour of free farmers.[23]

Moreover, the whole question of peasant societies (and peasants within capitalist societies) should not be confused with the issue of pristine nature — as Ferkiss seems to do. Peasant agriculture is non-industrial in character and "closer to the earth", but it is already well down the road of the human transformation of nature, including "man". If one looks back far enough there were subsistence economies — i.e. not defined by market relations — but one should be careful not to idealise them. Long before primitive accumulation generated capitalist social forms genuine communal agriculture had been largely eliminated under noncapitalist modes of production in most of Europe. In some of these societies the majority of human beings were, as Raymond Williams observes, "working animals, tied by forced tribute, forced labour, or 'bought and sold like beasts'; 'protected' by law and custom only as animals and streams are protected, to yield more labour, more food, more blood."[24]

For Marx and Engels nature was intertwined with human history and on these grounds they sharply attacked those conservative romantics of their day who sought to root themselves and society in a conception of

unspoiled nature — as an adequate basis for a revolt against capitalism. Hence, in criticising idealisations of a rural order emanating from feudal times, they were not thereby rejecting "unspoiled nature"' — though they carefully avoided any idealisation of pristine nature. Indeed Marx thought it important to remark in Volume 1 of *Capital* that, "Everyone knows there are no true forests inEngland. The deer in the parks of the great are demure domestic cattle, as fat as London aldermen." While in Scotland the so-called "deer-forests" that were being established for the benefit of the huntsmen (at the expense of rural labourers), contained deer but no trees. "The development of civilisation and industry in general", Marx wrote in Volume 2 of Capital, "has always shown itself so active in the destruction of forests that everything that has been done for their conservation and production is completely insignificant in comparison."[25]

Sustainability and the earth

In the Communist Manifesto Marx and Engels included in their 10-point program for revolutionary change not only "1. Abolition of property in land and application of all rents of land to public purposes", and (as previously mentioned) "9 … gradual abolition of the distinction between town and country, by a more equable distribution of population over the country", but also "7 … the bringing into cultivation of waste lands, and the improvement of soil generally in accordance with a common plan."[26] At this point in the development of their thought they adopted what might be thought of as an early conservationist approach in relation to such issues as the "improvement of soil". They had been influenced early on (as early as 1843 in the case of Engels) by the pioneering research of the great German soil chemist Justus von Liebig. From Liebig, whom they considered to be the greatest representative of bourgeois science in the area of agriculture, as well as from other figures like the Scottish political economist James Anderson, Marx and Engels learned of the necessity of returning to the soil the nutrients that had been taken from it. Their insistence on the "improvement of [the] soil generally in accordance with a common plan" is then to be understood in this sense.[27]

Marx saw the bourgeoisie engaging in the utmost exploitation of the earth or soil on the same basis as every other element of commerce. For the bourgeoisie, he wrote in 1852, "the soil is to be a marketable commodity, and the exploitation of the soil is to be carried on according to the common commercial laws. There are to be manufacturers of food as well as manufacturers of twist and cottons, but no longer any lords of the land."[28]

Beginning in the 1860s, when he was completing *Capital*, Marx was influenced by the widespread concern that emerged in Europe and North America over the crisis of the earth or soil, resulting from the forms of exploitation applied by capitalist agriculture — a crisis that was given de-

finitive expression in the work of such thinkers as Liebig, the Scottish agricultural chemist James F.W. Johnston, and the US economist Henry Carey. By 1859 Liebig was arguing that the "empirical agriculture" of the trader had given rise to a "spoliation system" in which the "conditions of reproduction" of the soil were violated. Soil nutrients (such as nitrogen, phosphorous and potassium) were "carried away in produce year after year, rotation after rotation". Both the open system of exploitation of American farming and the so-called high farming of European agriculture were forms of "robbery". "Rational agriculture", in contrast, would give "back to the fields the conditions of their fertility."[29]

Marx's concern over the condition of agriculture and the crisis of the soil led him toward a much more sophisticated understanding of environmental problems from the 1860s on, focusing on the issues of ecological degradation (disruption of the soil nutrient cycle), restoration, and sustainability — all of which were linked in his analysis to changing social relations. "Large landed property", he wrote at the end of his critique of capitalist ground rent in Volume 3 of *Capital*,

> "reduces the agricultural population to an ever decreasing minimum and confronts it with an ever growing industrial population crammed together in large towns; in this way it produces conditions that provoke an irreparable rift in the interdependent process of the social metabolism, a metabolism prescribed by the natural laws of life itself. The result of this is a squandering of the vitality of the soil, which is carried by trade far beyond the bounds of a single country."[30]

Sustainable development has been defined in our time by the Brundtland Commission as "development which meets the needs of the present without compromising the ability of future generations to meet their needs".[31] It was the need for sustainability in precisely this sense that Marx came to emphasise as a result of his research into the crisis of the earth or soil under capitalism, and which became an integral part of his conception of a future communist society. As he himself put it,

> "The way that the cultivation of particular crops depends on fluctuations in market prices and the constant changes in cultivation with these price fluctuations — the entire spirit of capitalist production, which is oriented towards the most immediate monetary profits — stands in contradiction to agriculture, which has to concern itself with the whole gamut of permanent conditions of life required by the chain of successive generations."[32]

Indeed, for Marx, who understood that transcending the ecological contradictions of capitalist agriculture was an absolute necessity for commu-

nist society, the question of sustainability was central to the future development of humanity. "A conscious and rational treatment of the land as permanent communal property", he wrote, was "the inalienable condition for the existence and reproduction of the chain of human generations …"[33] In this sense, ecological sustainability could be viewed as a nature-imposed necessity for human production. The implications of this as understood by Marx were truly global in scope:

> "From the standpoint of a higher socioeconomic formation, the private property of particular individuals in the earth will appear just as absurd as the private property of one man in other men. Even an entire society, a nation, or all simultaneously existing societies taken together, are not owners of the earth. They are simply its possessors, its beneficiaries, and have to bequeath it in an improved state to succeeding generations, as *boni patres familias*[good heads of the household]."[34]

Devising a sustainable alternative to the destructive ecological tendencies of capitalist society was thus not merely a technical problem for Marx, but one that required a far-reaching transformation of society. The basic change needed was a shift to a society controlled by the associated producers, characterised by the expansion of free time and collective-democratic organisation, and hence by a non-instrumentalist approach to nature and human society. Among the revolutionary changes necessary to bring this about was an end to "the monopolised earth" of private property. "Private property", Marx contended, referring to James Johnston's analysis of the impoverishment of the soil in the mid-19th century, "places insuperable barriers on all sides to a genuinely rational agriculture."[35]

Was Marx 'Promethean'?

In his *Contemporary Critique of Historical Materialism* Anthony Giddens contends that those passages in Marx's writings which suggest that "nature is more than a medium through which human history unfolds" are mostly confined to his "early writings" and that overall a "Promethean attitude", in which the technology of production is praised while nature is treated simply in instrumental terms, "is pre-eminent" in Marx's work. Indeed, for Giddens, Marx is to be sharply criticised because "his concern with transforming the exploitative human social relations expressed in class systems does not extend to the exploitation of nature".[36] The foregoing discussion, however, has shown that Giddens' condemnation of Marx on the first and third counts (abandoning his ecological insights after his "early writings", and failing to acknowledge the exploitation of the earth) are both contradicted by a mass of evidence. Marx referred again and again to the exploitation of the earth or soil and he did so in his later writings

even more than his earlier works. Indeed, as Massimo Quaini noted, Marx "denounced the spoliation of nature before a modern bourgeois ecological conscience was born".[37]

But what of the other charge that Giddens levels at Marx; that of advocating a "Promethean" (in the sense of productivist or instrumentalist) attitude to nature? This same broad criticism — so broad and all-encompassing that it is usually thought unnecessary to provide any evidence to support it — has been voiced not only by Giddens but by numerous others, including such varied thinkers as Ted Benton, Kate Soper, Robyn Eckersley, John Clark and Victor Ferkis.[38]

If what is meant by this charge of "Prometheanism" is that Marx, in line with the Enlightenment tradition, placed considerable faith in rationality, science, technology, and human progress, and that he often celebrated the growing human mastery over natural forces, there is no denying this to be the case. Here we only have to turn to the *Communist Manifesto* itself where Marx wrote his panegyric to the bourgeoisie:

> "The bourgeoisie, during its rule of scarce 100 years, has created more massive and more colossal productive forces than have all preceding generations together. Subjection of nature's forces to man, machinery, application of chemistry to industry and agriculture, steam-navigation, railways, electric telegraphs, clearing of whole continents for cultivation, canalisation of rivers, whole populations conjured out of the ground. What earlier century had even a presentiment that such productive forces slumbered in the lap of social labour?"[39]

It would be a mistake, however, to conclude from this that Marx and Engels suspended all critical judgment where science, technology and the idea of progress were concerned. Marx and Engels were well aware of the fact that science and technology could be misused and distorted by bourgeois civilisation, a form of society which, they note in the *Communist Manifesto*, "is like the sorcerer, who is no longer able to control the powers of the nether world whom he has called up by his spells". The whole giant apparatus of modern relations of production, exchange, and property, backed up by science and technology, that constituted the creative power of capitalist society, was, Marx and Engels argued, vulnerable to its own achievements, leading to economic crises and the rise of the modern working class or proletariat as the gravedigger of the system. Moreover, as Marx and Engels were to emphasise again and again, the same productive forces resulting from the coupling of capitalist market society with modern science and technology resulted in the exploitation not only of human beings but of the earth itself, in the sense of violating the conditions of its sustainability.

Robyn Eckersley in her influential book *Environmentalism and Political Theory* has written that, "Marx fully endorsed the … technical accomplishments of the capitalist forces of production and … thoroughly absorbed the Victorian faith in scientific and technological progress as the means by which humans could outsmart and conquer nature."[40] Yet in his "Speech at the Anniversary of *The People's Paper*", delivered in April 1856, Marx observed that:

> "In our days, everything seems pregnant with its contrary. Machinery, gifted with the wonderful power of shortening and fructifying human labour, we behold starving and overworking it. The newfangled sources of wealth, by some strange weird spell, are turned into sources of want. The victories of art seem bought by the loss of character. At the same pace that mankind masters nature, man seems to become enslaved to other men or to his own infamy. Even the pure light of science seems unable to shine but on the dark background of ignorance. All our invention and progress seem to result in endowing material forces with intellectual life, and in stultifying human life into a material force. This antagonism between modern industry and science on the one hand, modern misery and dissolution on the other hand; this antagonism between the productive powers and the social relations of our epoch is a fact, palpable, overwhelming, and not to be controverted."[41]

Despite the faith that they generally placed in "the pure light of science", Marx and Engels exhibited a complex view of science, technology and human progress, as can be seen in their analysis of the exploitation of the soil. With the introduction of machinery and large-scale industry into agriculture under capitalist conditions, Marx argued, "a conscious, technological application of science replaces the previous highly irrational and slothfully traditional way of working"; but it is precisely this science and technology in capitalist hands, Marx goes on to observe, that "disturbs the metabolic interaction between man and the earth" by being turned into a force for the exploitation of both the worker and the soil.[42]

Marx has often been accused of devaluing nature and justifying the extreme human exploitation of nature through his economic value analysis, which, since it attributed all value to labour, thereby denied — so the critics have charged — any "intrinsic value" to nature, which was treated as a "free gift" to capital.[43] It is here, some have contended, that his "Prometheanism" is most evident. Such criticisms, however, are misplaced. Marx didn't invent the notion that nature was a "free gift" to capital. This conception was developed by the classical liberal political economists themselves and was emphasised in particular by Malthus and Ricardo in their economic works. Even today neoclassical economic textbooks pres-

ent the same notion. For example in the 10th edition of the widely used introductory economics text by Campbell R. McConnell we find the following: "Land refers to all natural resources — all 'free gifts of nature' — which are usable in the production process." And later in the same text we read: "Land has no production cost; it is a 'free and nonreproducible gift of nature'."[44]

Marx agreed that under the law of value as developed by capitalism nature was accorded no value. As he put it, "The earth … is active as agent of production in the production of a use-value, a material product, say wheat. But it has nothing to do with producing the *value of the wheat*."[45] The value of the wheat or any commodity under capitalism was derived from labour. This, however, expressed the narrow, limited character of capitalism and of its conception of wealth, which was restricted simply to exchange values. For Marx, genuine wealth consisted of use-values — the characteristic of production in general. Hence, nature, which contributed to the production of use-values, was just as much a source of wealth as human labour — indeed, judged in physical terms, labour, as Marx was wont to observe, could only alter the form of what nature had initially provided. "Labour", he wrote at the beginning of *Capital*, "is not the only source of material wealth, i.e. of the use-values it produces. As William Petty says, labour is the father of material wealth, and the earth is its mother."[46] Marx actually railed against socialists of his time who attributed "*supernatural creative power* to labour" by conceiving it as the sole source of wealth and disregarding the role of nature. Wealth under communism, he argued, would need to be conceived in more universal terms, allowing for the full development of human creative powers, expanding the wealth of connections allowed for by nature, and in accord with natural conditions.[47]

Revolutionary imperatives

As Joseph Schumpeter emphasised,[48] one of the most original and profound insights of the *Communist Manifesto* was Marx and Engels' perception of the technological dynamism of capitalism which, to an extent never before seen in world history, demanded the "constant revolutionising of production" in order to survive. It was this understanding of the inner dynamism of production under capitalism which led Marx, in fact, to his most comprehensive assessment of the impact of capitalism on nature, and on everything that appeared external to itself. Thus in the *Grundrisse* Marx wrote:

> "[J]ust as production founded on capital creates universal industriousness on one side … so does it create on the other side a system of general exploitation of the natural and human qualities, a system of general utility, utilising science itself just as much as all the physical and mental

> qualities, while there appears nothing *higher in itself*: nothing legitimate for itself, outside this circle of social production and exchange. Thus capital creates the bourgeois society, and the universal appropriation of nature as well as of the social bond itself by the members of society. Hence the great civilising influence of capital; its production of a stage of society in comparison to which all earlier ones appear as mere *local developments* of humanity and as *nature-idolatry*. For the first time, nature becomes purely an object for humankind, purely a matter of utility; ceases to be recognised as a power for itself; and the theoretical discovery of its autonomous laws appears merely as a ruse so as to subjugate it under human needs, whether as an object of consumption or as a means of production. In accord with this tendency, capital drives beyond national barriers and prejudices as much as beyond nature worship, as well as all traditional, confined, complacent, encrusted satisfactions of present needs, and reproductions of old ways of life. It is destructive towards all of this, and constantly revolutionises it, tearing down all the barriers which hem in the development of the forces of production, the expansion of needs, the all-sided development of production, and the exploitation and exchange of natural and mental forces. But from the fact that capital posits every such limit as a barrier and hence gets ideally beyond it, it does not by any means follow that it hasreally overcome it, and since every such barrier contradicts its character its production moves in contradictions which are constantly overcome but just as constantly posited."[49]

The drive to unlimited accumulation, the incessant revolutionising of the means of production, the subjugation of all that was external to itself to its own commodity logic — all of this, Marx argued, was part of the juggernaut of capital. Capital sees nature purely as an object, as an external barrier to be overcome.[50] Commenting on Bacon's great maxim that "nature is only overcome by obeying her" — on the basis of which also Bacon proposed to "subjugate" nature — Marx, as we have seen, replies that for capitalism the discovery of nature's autonomous laws "appears merely as a ruse so as to subjugate it under human needs".[51] He thus decried the one-sided, instrumental, exploitative relation to nature associated with contemporary social relations. Despite its clever "ruse", capital is never able to transcend the barrier of natural conditions, which continually reassert themselves with the result that "production moves in contradictions which are constantly overcome but just as constantly posited". No other thinker in Marx's time, and perhaps no other thinker up to our own day, has so brilliantly captured the full complexity of the relationship between nature and modern society.

Much of the criticism that has been levelled at Marx and Engels in the

area of ecology stems, in fact, from a post-materialist or postmodernist ecology which is no longer so influential today, displaced by the growth of materialist ecology. The social ecology of the 1960s, '70s and early '80s was often built around the "post-materialist thesis" that environmental issues arose only in conditions of affluence. Emphasis on the limits of growth, which were viewed as positing an absolute conflict between economic growth and the environment, often contributed to a neglect of the political economy of environmental degradation. Instead the principal focus was on cultural factors, frequently abstracted from material conditions — such as the question of anthropocentric vs. ecocentric culture. Over the past decade, however, we have witnessed growing concern about the future of the biosphere, with the rise of such problems as global warming, the destruction of the ozone layer and the worldwide extinction of species to the forefront of the ecological discussion. Among analysts of social ecology attention has shifted to issues of sustainable development, environmental injustice (or the intersection of environmental degradation with class, race, gender and nation-state divisions), and coevolution.[52]

In this changing context it is not surprising that Marx's approach to the question of the natural conditions underlying human society — emphasising as it did sustainability, the connection between the exploitation of the earth and other forms of exploitation, and the interdependent, "metabolic" character of the evolving human-nature interaction — should now be exciting new interest. In all of these respects Marx was well ahead of most contemporary environmental thought.

Nevertheless, Marx's approach to environmental issues was inadequate in one very important respect, most evident in the *Communist Manifesto*. The *Manifesto* was first and foremost a revolutionary document, but ecological contradictions, though perceived by Marx and Engels even at this early stage in their analysis, play little or no role in the anticipated revolution against capitalism. Marx and Engels clearly thought that the duration of capitalism would be much shorter than earlier modes of production, brought to a relatively rapid end by the intensity of its contradictions and by the actions of the proletariat — the gravedigger of the system. As a result, they tended to view the ecological problems that they perceived as having more bearing on the future of communist than capitalist society.[53] This is why ecological considerations enter much more explicitly into their program for communism in the *Manifesto* than into their assessment of the conditions leading to the demise of capitalism.

Today it is obvious that this approach is inadequate, in that the ecological contradictions of capitalism have developed to the point that they will inevitably play a large role in the demise of the system — with ecology now constituting a major source of antisystemic resistance to capitalism. Our whole notion of the revolt against capitalism has to be reshaped ac-

cordingly. Marx's conception of a sustainable society, in which the earth would be bequeathed "in an improved state to succeeding generations", in the context of a reconstituted social order organised around the collective realisation of human needs, is perhaps the most complete vision of a feasible utopia — judged in social and ecological terms — that has yet been developed. It therefore constitutes the essential starting point for the articulation of a truly revolutionary social ecology. Today we must give a much fuller meaning than originally intended to the famous lines of *The International*:[54]

> "The earth shall rise on new foundations,
> We have been naught, we shall be all."

NOTES

CLIMATE CHANGE: A MARXIST ANALYSIS

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2 Quoted in *Monthly Review*, February 1995, http://clogic.eserver.org/3-1&2/foster.html.

3 *Scientific American*, September 2005.

4 "By 2048 all Seafood Projected to Collapse", *Science*, November 2, 2006,http://www.eurekalert.org.

5 http://www.newscientist.com/hottopics/climate/.

6 http://clogic.eserver.org/3-1&2/foster.html.

7 Marx, *Capital*, Vol. 1 (Penguin Books: Harmondsworth, 1976), Chapter 24, section 3, p. 742.

8 See Paul M. Sweezy, "Capitalism and the Environment", *Monthly Review*, June 1989.

9 "Ad recovery gains momentum in US and Asia, lags in Europe", http://zenuthoptimedia.com.

10 Christian Catalano, "Ad Spend Tipped to Top $10 Billion This Year", *Melbourne Age*, April 15, 2005.

11 World Advertising Research Center, November 29, 2006,http://www.warc.com.

12 *Monthly Review*, December 2000.

13 John Bellamy Foster, *Monthly Review*, December 2000.

14 Marx, *Capital*, Vol. 3 (Penguin Books: Harmondsworth, 1981), p. 911)

15 Ibid., p. 959.

16 Ibid., pp. 948-949; see also John Bellamy Foster, "The Communist Manifesto and the Environment", *Socialist Register* 1998, pp. 169-189.

17 Engels, *Dialectics of Nature* (Progress Publishers: Moscow, 1976), p. 182.

18 DSP, *Environment, Capitalism and Socialism* (Resistance Books: Chippendale, 1999), p. 19.

19 Aaron Gleans, "Democrats Expected to Increase US Military Spending", *One World*, December 13, 2006, http://us.oneworld.net/article/view/143817/1/.

20 *Melbourne Age*, Saturday, November 25, 2006.

21 See John Bellamy Foster and Brett Clark, "Ecological Imperialism: The Curse of Capitalism", *Socialist Register 2004*, pp. 193-196.

22 "Richest 2% own half the wealth", BBC, December 5, 2006,http://news.bbc.co.uk/go/pr/fr/-/2/hi/business/6211250.stm.

23 See Paul Burkett, "Ecology and Marx's Vision of Communism", S*ocialism and Democracy Online*, http://www.sdonline.org/34/paul_burkett.htm.

The Communist Manifesto and the Environment

1 For references to this large and rapidly expanding body of literature see John Bellamy Foster, "The Crisis of the Earth: Marx's Theory of Ecological Sustainability as a Nature-Imposed Necessity for Human Production", *Organisation & Environment*, Vol. 10, no. 3 (September 1997), p. 278.

2 The first of these three positions can be seen in the interpretations of such thinkers as Victor Ferkiss and John Clark; the second in the work of Anthony Giddens, Ted Benton, Kate Soper, Robyn Eckersley, Murray Bookchin, and David Goldblatt (the reference to "illuminating asides" can be found in Goldblatt's book *Social Theory and the Environment* [Boulder, CO: Westview, 19961, p. 5]; the third in the writings of Elmar Altvater, Paul Burkett, Michael Perelman, Michael Lebowitz, David Harvey, and the present author. For more specific references see the discussion below.

3 Frederick Engels, "Outlines of a Critique of Political Economy", in Karl Marx, *Economic and Philosophical Manuscripts of 1844* (New York: International Publishers, 1964), p. 210.

4 Marx, *Early Writings* (New York: Vintage, 1974), pp. 328, 359-360.

5 Marx, *Capital,* Vol. 1 (New York: Vintage: 1976), p. 638.

6 William Leiss, *The Domination of Nature* (Boston: Beacon Press, 1975), pp. 85,198. Ecologists have often claimed John Stuart Mill as a forerunner of modern ecological thought, but it is much easier to nail him as anti-nature: "[T]he ways of nature are to be conquered not obeyed … her powers are often towards man in the position of enemies, from whom he must wrest, by force and ingenuity, what little he can for his own use." John Stuart Mill, *Nature, the Utility of Religion, and Theism* (London: Longman's, Green, Reader, and Dyer, 1924), pp. 20-21.

7 Karl Marx, "Feelings", in Karl Marx and Friedrich Engels, *Collected Works*, Vol. 1 (New York: International Publishers, 1975), p. 525.

8 John Clark, "Marx's Inorganic Body", *Environmental Ethics*, Vol. 11, no. 3 (Fall 1989), p. 258.

9 Frederick Engels, *Anti-Dühring* (New York: International Publishers, 1939), pp. 309-310.

10 Ted Benton, "Marxism and Natural Limits", *New Left Review*, No. 178 (November-December 1989), p. 75. For other green criticisms of Marx and Engels in this respect see Robyn Eckersley, *Environmentalism and Political Theory* (Albany: State University of New York Press, 1992), pp. 80-81; and Murray Bookchin, *Toward an Ecological Society* (Montreal: Black Rose Books, 1980), pp.204-206.

11 Friedrich Engels, *The Dialectics of Nature* (New York: International Publishers,1940), p. 293 (emphasis added).

12 Marx, *Capital*, Vol. 3, p. 959.

13 Paul Burkett, "Nature in Marx Reconsidered", *Organisation & Environment*,Vol.10, No.

2 (June 1997), p. 172.

14 Friedrich Engels, *The Dialectics of Nature* (New York: International Publishers,1940), pp. 291-92, and *The Housing Question* (Moscow: Progress Publishers,1975), p. 92.

15 See René DuBos, *The Wooing of the Earth* (New York: Charles Scribner's Sons, 1980); David Harvey, "The Nature of Environment", in Ralph Miliband and Leo Panitch, ed. *The Socialist Register, 1993* (New York: Monthly Review Press, 1993), p. 26; Richard B. Norgaard, Development Betrayed (New York: Routledge, 1994). For an example of the dualistic approach to environmental problems focusing on the "anthropocentric" vs. "ecocentric" distinction and criticising Marx and Engels for belonging allegedly to the former rather than the latter camp see Robyn Eckersley, Environmentalism and Political Theory(Albany: State University of New York Press, 1992).

16 Victor Ferkiss, *Nature, Technology, and Society* (New York: New York University Press, 1993).

17 Gary Snyder, "Nature as Seen from Kitkitdizze is No 'Social Construction'", *Wild Earth*, Vol. 6, No. 4 (Winter 1996/97), p. 8.

18 Marx and Engels, *The Communist Manifesto* (New York: Monthly Review Press), p. 40.

19 Engels, *The Housing Question*, p. 92.

20 Marx, *Capital*, Vol. 1, pp. 636-639.

21 Ibid., pp. 637-638.

22 Karl Marx, T*he Eighteenth Brumaire of Louis Bonaparte* (New York: International Publishers, 1963), p. 125; Cévennes, a mountainous region in France, was the site of a large uprising of Protestant peasants at the beginning of the 18th century. Teodor Shanin, ed. *Peasants and Peasant Societies* (New York: Blackwell,19871, pp. 336-337.

23 Engels, *Anti-Dühring*, pp. 195-196.

24 Williams, *The Country and the City* (London: Hogarth Press, 1973), p. 37.

25 Karl Marx, Capital, Vol. 1 (New York: Vintage, 1976), pp. 892-893; Karl Marx, *Capital*, Vol. 2 (New York: Vintage, 1978), p. 322. In *Anti-Dühring* Engels too complained of how large landowners in Scotland "robbed" the peasants of their common land and turned "arable land into sheep-runs and eventually even into mere tracts for deer hunting". Engels, *Anti-Dühring*, p. 196. Marx's approach to nature tended to emphasise the fact that much of what we call nature has been socially constructed. As he and Engels wrote in *The German Ideology* in response to the abstract, ahistorical notion of nature propounded by Feurbach: "[N]ature, the nature that preceded human history, is not by any means the nature in which Feurbach lives, it is nature which today no longer exists anywhere (except perhaps on a few Australian coral islands of recent origin), and which, therefore, does not exist for Feurbach either." Marx and Engels, *Collected Works*, Vol. 5, pp. 39-40.

26 Marx and Engels, The Communist Manifesto, p. 40.

27 The meaning given in Marx and Engels' day to the notion of the "improvement" of the soil was well expressed in their time by the US agriculturist (and later sanitary engineer) George Waring in his Elements of Agriculture in which he states "From what has now been said of the character of the soil, it must be evident that, as we know the causes of fertility and barrenness, we may by the proper means improve the character of all soils which are not now in the highest state of fertility." Waring,

Elements of Agriculture (New York: D. Appleton and Co., 1854), p. 88.

28 Karl Marx, "The Chartists", in Marx and Engels, *Collected Works*, Vol. 11 (New York: International Publishers, 1979), p. 333.

29 Justus von Liebig, *Lectures on Modern Industry* (London: Walton and Mabery,1859), pp. 171-183, 220.

30 Marx, *Capital*, Vol. 3, p. 950.

31 World Commission on Environment and Development, *Our Common Future* (New York: Oxford University Press, 1987), p. 43.

32 Marx, *Capital*, Vol. 3, p. 754.

33 Marx, *Capital*, Vol. 3, p. 948-949. The continuing relevance of the ecological analysis of the soil nutrient cycle and its relation to the development of capitalist industry can be seen today in the work of the following: Kozo Mayumi, "Temporary Emancipation from Land", *Ecological Economics*, Vol. 4,No. 1 (October 1991), pp. 35-56; Fred Magdoff, Les Lanyon and Bill Liebhardt, "Nutrient Cycling, Transformations and Flows: Implications for a More Sustainable Agriculture", *Advances in Agronomy*, Vol. 60 (1997), pp. 1-73.

34 Marx, *Capital*, Vol. 3, p. 911.

35 Ibid., pp. 754, 963.

36 Anthony Giddens, *A Contemporary Critique of Historical Materialism* (Berkeley: University of California Press, 1981), p. 59-60.

37 Massimo Quaini, *Marxism and Geography* (Totowa, New Jersey: Barnes and Noble Books, 1982), p. 136.

38 See, for example, Kate Soper, "Greening Prometheus", in Ted Benton, ed., *Greening Marxism* (New York: Guilford, 1996), pp. 81-99.

39 Marx and Engels, *The Communist Manifesto*, p. 10.

40 Eckersley, *Environmentalism and Political Theory*, p. 80.

41 Karl Marx, "Speech at the Anniversary of The People's Paper", in Karl Marx and Frederick Engels, *Collected Works*, Vol. 14 (New York: International Publishers,1980), pp. 655-656.

42 Marx, *Capital*, Vol. 1, p. 637.

43 For examples of this common but mistaken criticism of Marx see Ward Churchill, *From a Native Son* (Boston: South End Press, 1996), pp. 467-468; J. Deleage, "Eco-Marxist Critique of Political Economy", in Martin O'Connor, ed. *Is Capitalism Sustainable?* (New York: Guilford, 1994), p. 48; Michael Barratt Brown, *Models in Political Economy* (Harmondsworth, Middlesex, UK: Penguin, 1995), pp. 171-173; and Nicholas Georgescu-Roegen, *The Entropy Law in the Economic Process* (Cambridge, Mass.: Harvard University Press, 1971), p. 2. For a useful discussion see Paul Burkett, "On some Misconceptions about Nature and Marx's Critique of Political Economy", *Capitalism, Nature, Socialism*, Vol. 7 (September 1996), pp. 64-66.

44 Campbell R. McConnell, *Economics: Principles, Problems and Policies*, 10th edition (New York: McGraw Hill, 1987), pp 20, 672.

45 Marx, *Capital*, Vol. 3, p. 955.

46 Marx, *Capital*, Vol. 1, p. 134.

47 Karl Marx, *Critique of the Gotha Program* (Moscow: Progress Publishers, 1971), p. 11.

48 Joseph A. Schumpter, *Essays* (Cambridge, Massachusetts: Addison-Wesley Press,1951), pp. 293-294.

49 Karl Marx, *Grundrisse* (New York: Vintage, 1973), pp. 409-410.

50 The reference to "general barriers" to capital is taken from Michael Lebowitz, who has demonstrated that Marx pointed to two kinds of barriers to capital, leading to contradictions in capital, accumulation and crises: general barriers common to production in general, and thus having to do with natural conditions, and more specific historical barriers immanent to capital itself. See Lebowitz, "The General and Specific in Marx's Theory of Crisis", *Studies in Political Economy*, No. 7(Winter 1982), pp. 5-25.

51 Francis Bacon, *Novum Organum* (Chicago: Open Court, 1994), pp. 43, 29.

52 On the shift from post-materialist to materialist ecology see Juan Martinez-Alier, "Political Ecology, Distributional Conflicts and Incommensurability", *New Left Review*, No. 211 (May-June 1995), pp. 70-88.

53 The relation of sustainability to communism, as conceived in the work of Marx and Engels, can be seen in the young Engels' response to the Malthusian issue of overpopulation. "For even if Malthus were completely right, this transformation [i.e. social revolution] would have to be undertaken on the spot, for only this transformation and the education of the masses which it alone provides makes possible the moral restraint of the propagative instinct which Malthus himself presents as the most effective and easiest remedy for overpopulation." Engels, "Outlines of a Critique of Political Economy", in Marx, *Economic and Philosophic Manuscripts*, p. 221.

54 Eugene Pottier, "The International,", in John Bowditch and Clement Ramsland, ed. *Voices of the Industrial Revolution* (Ann Arbor: University of Michigan Press,1961), p. 187.