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Debt, Theft, Permaculture

Justice and Ecological Scale

Gerry Canavan

If, as Fredric Jameson once wrote, it has become easier to imagine “the thoroughgoing deterioration of the Earth and of nature” than the end of capitalism, this is in part because we are increasingly aware that the two phrases describe in fact the same event.¹ But the imagined extinction of alternatives to capitalism associated with Francis Fukuyama’s “end of history” that so concerns Jameson carries with it a type of ideological shadow: if capitalism is, as K. William Kapp once put it, “an economy of unpaid costs,” then our increasing recognition that the bill is finally coming due must be recognized as a kind of nascent revolutionary consciousness.² Bruno Latour, who in his most well-known book famously declared, “We have never been modern,” recently wrote that “It has now almost become common sense that we were able to *think* we were modern only as long as the various ecological crises could be denied or delayed.”³

Though Latour and I part ways on many questions about ecology, on this he is surely correct: we cannot believe anymore that we are modern, that is, we cannot believe anymore that we have made some final break with the material realities of soil, air, and water that sustain us and on which everything depends. This essay seeks to make a preliminary accounting of the circuits of dependence that characterize capitalism’s relationship with the environment through the assertion of an *ecological debt* that has long been in arrears, though the bearers of this mortgage may be distant in both space and time.

The Second Contradiction of Capitalism

When approaching ecology as the “second contradiction” of capitalism, commenters often begin with a passage on soil ecology from *Capital*, volume. 1, chapter 15: “All progress in capitalistic agriculture is a progress in the art, not only of robbing the labourer, but of robbing the soil; all progress in increasing the fertility of the soil for a given time is a progress towards ruining the lasting sources of that fertility.”⁴ John Bellamy Foster has traced Marx’s interest in (and horror at) this “metabolic rift” to its origins in the work of Justus von Liebig, whose recognition of the breakdown in the cycle of soil replenishment led to the development of a process to replenish fields artificially through the use of chemical fertilizers—which led to a colonial project of importing guano and other materials from places as far off as Peru and the South Pacific, and which itself ultimately leads to an unbalancing of the nitrogen cycle and further ecological degradation of soil, water, and the climate.⁵ *Nature* magazine recently published an article identifying the nitrogen cycle as one of three ecological boundaries whose crisis thresholds we have already far overshot; with 35 million annual tons projected as the “safe” annual limit, we currently convert over 120 million tons of nitrogen per year.⁶ Scientific management of the soil has, in this way, only made the problem worse.

In the soil cycle we find a first mode for imagining ecological debt. Here we have ecological debt at a kind of zero-level: when you grow food and ship that food far away—when, that is, you strip necessary minerals from the soil and ship them out of the local ecosystem—you destroy the long-term sustainability of your own agricultural practices. In a sense here the “debt” is owed to oneself, or at least 3 to one’s local area and immediate descendants, and because of the local temporal and spatial scales involved it is a debt whose repayment manifests as a relatively urgent concern. The agricultural capitalist is motivated to embark on some sort of rational management of the soil if only to protect his own assets, even if his management is always fitful and incomplete, and in awkward balance with the pursuit of profit.

The more fraught cases are those in which the consequences of the ecological debt rebound, not on you, or even on your descendants, but on other people living in distant spaces and times. This is the power plant whose emissions blow across a mountain range into some another nation, or the factory whose toxic dumping floats downstream into someone else’s water basin, or the civilization that uses up the

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entire fossil fuel reserve of the planet in a single hundred-year spree. If, in the case of the soil, the agricultural capitalist cuts his own throat, we are now on more familiar ground, with the capitalist returning to his usual practice of cutting someone else's. It was this phenomenon that K. William Kapp abstracted in 1950 in *The Social Costs of Private Enterprise* as a general law of capitalism: "Capitalism must be regarded as an economy of unpaid costs, 'unpaid' in so far as a substantial portion of the actual costs of production remain unaccounted for in entrepreneurial outlays; instead they are shifted to, and ultimately borne by, third persons or by the community as a whole."⁷ We find therefore that both "contradictions" of capital—both labor and ecology—are in this way predicated on the existence of structural debts, "unpaid costs," that in the case of ecology at least are becoming unavoidably and often painfully visible to us. This suggests an oppositional strategy of actualizing these unacknowledged debts, making an accounting of them in the demand that they be recognized and paid back.

The metaphorical assertion of a debt where none is admitted is therefore first and foremost a political act of anticapitalist resistance; it is an assertion that historical relations of domination and exploitation have ongoing consequences in the present, a demand that reparation or remuneration is possible and that therefore it is necessary. Our *Common Agenda*, a report published by Latin American and Caribbean intellectuals in the run-up to the 1992 Earth Summit states the point directly: "The industrial revolution was based in large part on the exploitation of natural resources in ways which did not reflect their true costs. . . . The industrialized countries have incurred an ecological debt with the world."⁸

As Joan Martinez-Alier notes in her essay "Environmental Justice (Local and Global)," it is better to think of these sorts of "ecological debts" as incursive, or if you like imperial, rather than purely extractive: "In [the case of carbon emissions], Europeans act as if we owned a sizable chunk of the planet outside Europe; . . . the occupation of an environmental space larger than one's own territory gives rise to an ecological debt with spatial and temporal dimensions."⁹ Now, to be sure, there are myriad cases of extractive ecological debt; one thinks, for instance, of the tiny island nation of Nauru in the South Pacific, whose interior was almost completely strip-mined for phosphates for use as agricultural fertilizer over the course of the twentieth century and now looks more or less like the surface of the moon, and is just as dead. This once self-sustaining island paradise, a place formerly known

as "Pleasant Island," now subsists on the importation of necessities paid for through a rapidly depleting trust established during the years of the phosphorus boom, international money laundering, sales of passports to noncitizens with few questions asked, and sporadic foreign aid.¹⁰

So there is certainly extractive debt—but the more general form of ecological debt is not extractive but incursive. Ecological debt arises when the "unpaid costs" of capitalism in the developed nations are borne by inhabitants of the underdeveloped ones. In this sense the notion of an outsized global footprint is closely related to postcolonial studies of empire. The concept of ecological debt first arose out of Latin American political thought in the 1990s as a kind of special case of postcolonial reparations. Writing in 1994, José María Borrero Navia, one of the early popularizers of the concept, noted that ecological debt is not some abstract obligation to the biosphere as such but an obligation to "humanity, acquired by reason of often irreversible damages to the biophysical base of societies provoked by the islands of privilege, wasteful economics and industries of barbarity, the consequences of which have been the impoverishment and exclusion of hundreds of millions of people, ethnocide, and subjugation of cultures."¹¹ Ecological debt is owed not to the planet but to other persons: persons who were not volitional participants in this exchange in the first place, who never signed any sort of contract but whom we must conclude are owed a moral and legal debt for what has been done without their consent to the places where they live.

"Our Future Is Not for Sale": Climate Debt

Another arresting example of the imperial, extraspatial debt incurred by the negative consequences cascading out of agricultural production is found in the forty-thousand-square-kilometer "dead zone" in the Black Sea brought about by fertilizer overuse in the communist bloc over three decades, starting in the 1960s. The region has begun a long and slow recovery since the fall of the Soviet Union in 1991, but this recovery is now threatened by the entry of the Danube basin into the European Union, whose Western European industrial agriculturalists are looking to buy cheap farmland and begin the cycle of fertilizer overuse and soil/water degradation all over again.¹² We might think as well of the recent Deepwater Horizon crisis in the Gulf of Mexico, where a massive spill in an offshore oil rig owned by British Petroleum reached proportions that far exceed the Exxon

Valdez and will affect the ecology of the entire region negatively for years to come.

But the most strikingly exemplary case for this more abstract mode of "imperial" ecological debt might be the archipelago nation of Tuvalu, population twelve thousand, whose remoteness and lack of extractable natural resources have led to a largely bloodless colonial relationship with the imperial powers of Europe and North America. Tuvalu rose to prominence during the climate negotiations in Copenhagen in 2009 because it will be one of the first nations to face the devastating consequences of climate change. For a nation whose highest point is merely 4.5 meters above sea level, the effects of rising waters will be immediate and catastrophic. The existential threat to Tuvalu has lent it moral weight as the leader of the group of developing nations demanding immediate sweeping action, including a legally binding accord that would stabilize carbon at 350 ppm. These nations insist on measures that would limit the rise in global temperatures rise to 1.5 °C, demand wide-ranging financial payments from developed nations, and oppose carbon exceptions for fastergrowing developing nations like India, China, and Brazil.¹³ Ian Fry, Tuvalu's delegate at Copenhagen, told those gathered that for these nations, the "future rests on the outcome of this meeting." When the meeting ended with none of its demands having been met, Fry concluded, "It looks like we are being offered 30 pieces of silver to betray our people and our future. . . . Our future is not for sale. I regret to inform you that Tuvalu cannot accept this document."¹⁴

Unfortunately, Tuvalu may not have a future at all. According to James Lewis's paper "Sea-Level Rise: Some Implications for Tuvalu," published in 1989 by the Royal Swedish Academy of Sciences, a 20 to 40 cm rise in sea level by the end of the century will leave much of Tuvalu flooded, and much or all of the population will likely need to be evacuated.¹⁵ The early date of this paper should serve as a reminder that the climate change crisis has been widely recognized for over two decades, which have since passed without any significant action on the part of the industrialized states that produce most of the world's greenhouse gases. Moreover, if these estimates of sea level rise are found to be too conservative, naturally the situation will only be worse.

Tuvalu's relationship to global ecological crisis exemplifies "ecological debt" in its most immediate and urgent form: the relationship of a southern people facing deprivation, displacement, or outright elimination of their way of life as a consequence of the actions of the industrialized North. In what Naomi Klein has memorably called a

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"cruel geographical irony," the chief economist at the World Bank has estimated that "about 75 to 80 percent" of the damage caused by climate change "will be suffered by developing countries, although they only contribute about one-third of greenhouse gases"—and even that "one-third" suggests a presentist perspective that obliterates all but the most recent history of emissions.¹⁶ The true number is closer to 20 percent of the population of the planet having emitted 75 percent of the total historical greenhouse gas emission, with the United States (5 percent global population) emitting approximately 25 percent just on its own.¹⁷ Haiti, in contrast, emits just 1 percent of total global carbon emissions, but according to the Maplecroft Climate Change Vulnerability Index it is the world's second-most endangered nation because of climate change, behind only Somalia.¹⁸

In contrast to the usual political assertions of climate emergency—that we are "one planet" on a "pale blue dot," all in this together, facing a shared crisis that threatens us all universally—climate debt stakes its claim by insisting on particularity and difference.¹⁹ Climate change, the argument goes, is not at all some "natural disaster"; it is not something that "just happened" like an asteroid from space; it is something the Global North has inflicted on everybody else, with the worst consequences having ramifications on those nations in the Global South that did not contribute to the crisis and that are worst positioned to adapt. Klein highlights the work of Bolivia's chief climate negotiator, Angelica Navarro, who has said, "Millions of people—in small islands, least-developed countries, landlocked countries as well as vulnerable communities in Brazil, India and China, and all around the world—are suffering from the effects of a problem to which they did not contribute." In Bolivia itself, the two largest cities face severe water shortages as a result of nearby glaciers melting from rising temperatures.²⁰

As a policy measure, Klein writes, ecological debt (her version focuses specifically on climate debt because it can be so easily quantified) demands three basic categories of behavior:

1.) Developed nations must recognize that they have a legal obligation to pay the costs for nations in the Global South to ameliorate the effects of climate change. In US legal parlance, this is the simple principle that the "polluter pays." That these are reparations, and not charity, additional loans, or neoliberal strategies for so-called "development" that will only worsen the problem, is key.²¹ Klein quotes two activists who speak to the pressing need for a

recognition of climate debt. "Climate debt is not a matter of charity," says Lidy Nacpil, a coordinator for Jubilee South. "What we need is not something we should be begging for but something that is owed to us, because we are dealing with a crisis not of our making." An advocate for Maasai tribespeople in Kenya, Sharon Looremata, gives a more stark appraisal: "The Maasai community does not drive 4x4s or fly off on holidays in airplanes. . . . We have not caused climate change, yet we are the ones suffering. This is an injustice and should be stopped right now."²²

2). Developed nations must pay the cost to "leapfrog" developing nations past the dirty carbon stage of modernization towards cleaner, more sustainable technologies. The developing world cannot be expected to sacrifice its chances at industrial development because the United States and Europe have already used up the planet's entire carbon capacity for themselves. "We cannot and will not give up our rightful claim to a fair share of atmospheric space on the promise that, at some future stage, technology will be provided to us," Navarro has said.²³

3) To the extent that carbon emissions remain necessary for development, developed nations must bear the vast majority of carbon emissions cuts, bringing their carbon emissions below even the percentage of the planetary population they represent in order to "make atmospheric space available" for the undeveloped and developing nations that have not yet used their allotment, and for whom emissions mean things like rural electrification rather than surplus bourgeois comforts.²⁴

The United States' head climate negotiator, Todd Stern, has rejected any call for reparations as "wildly unrealistic" and "untethered to reality,"²⁵ he dismissively told a news conference: "I actually completely reject the notion of a debt or reparations or anything of the like. . . . For most of the 200 years since the Industrial Revolution, people were blissfully ignorant of the fact that emissions caused a greenhouse effect. It's a relatively recent phenomenon."²⁶ But when Stern was senior US negotiator at the Kyoto Protocol negotiations in 1997, nearly ten years had already passed after NASA's James Hansen testified to Congress in 1988 about the imminent dangers posed by global climate change. Hansen's findings were the result of wide scientific consensus about global warming in the mid-1970s, which were based on climate models about global warming developed in the 1950s, over half a century after the concept was first proposed by

Svante Arrhenius in 1896. However one chooses to narrate that history, to suggest that the North has somehow been blindsided by all this sudden interest in carbon and the climate is baldly disingenuous.

Suing the Present: Climate Trials

The question of precisely who the debtors and who the creditors are when it comes to climate debt is a fraught one. José María Borrero Navia points to four categories of debtors:

1. Transnational corporations, whose power lies in creating a system of subjugation.
2. Transnational banks that play an unquestionable role in the promotion of ecological disasters in the name of development.
3. Northern governmental bureaucracies, self-affirmed as the hegemonic power, especially since the collapse of Eastern socialist bureaucracies.
4. Southern bureaucrats and elites who have engineered, directly or indirectly, ecological destruction processes in their countries.²⁷

Left off the hook? Those everyday consumers in the industrialized countries fingered by Kenya's Sharon Looremata, who "drive 4x4s or fly off on holidays in airplanes." But perhaps this is not so obscene as it might first appear. John Bellamy Foster and Brett Clark have argued that the ecologically destructive patterns of consumption on the part of everyday westerners should be thought of as a kind of cognitive "consumer trap." These consumers, they maintains, are constrained by choices that have already been made at the level of production by the transnational corporate elite. Thus, any personal consumer "choice" is already determined by a system marked by deterioration and waste, a framework on which the individual consumer has essentially no leverage. He or she moreover will often lack the knowledge necessary to make a truly informed choice in the first place.²⁸ It was Marx himself, after all, who argued in the first chapter of the first volume of *Capital* that we can know the true workings of the system only by working at the level of production, not consumption.

And even those self-same corporate overloads are in some sense “blameless” in the sense that it is the system itself—the production treadmill of capitalism—that inevitably accelerates environmental damage and degeneration. We should not be surprised that so little has been done. What drives the “thoroughgoing deterioration of the Earth and of the nature” is the logic of capitalism itself, a mode of production that both insists (culturally) and depends (structurally) on limitless expansion and permanent growth: into new markets, into the former colonial periphery, into the peasant countryside, through oil derricks into the deepest crevices of the earth, through carbon emissions and ozone degradation into the upper atmosphere, and finally via rocket to Earth orbit—and, then, in its most cherished futurological imaginings, to orbital space stations, lunar cities, Martian settlements, asteroid belt mining colonies, sleeper ships to Alpha Centauri, and on and on. It is capitalism itself that is subject to the two-century-old Jevons paradox, the sociological law which demonstrates that improvements in energy efficiency do not correspond with reductions in consumption; innovations that consume half the fuel will simply be used twice as much.²⁹ “Capitalism,” Foster writes in his ecological history of capitalism, *The Vulnerable Planet*, “cannot exist without constantly expanding the realm of production: Any interruption in this process will take the form of economic crisis.”³⁰

This is why the market solutions proposed by Lord Nicholas Stern in the Stern Report are rightly rejected by Vandana Shiva in *Soil, Not Oil* as mere eco-imperialism that “allows corporations to gain increasing control of the earth’s resources—energy, water, air, land, and biodiversity—to continue to run the industrialized globalized economy.”³¹ She highlights the absurdity of a pollution reduction strategy in which “carbon credits” are given to historical polluters to financialize as profit: “Nonpolluting, nonindustrial activity does not even figure in Kyoto’s CDM [Clean Development Mechanisms]. To be counted as clean, you must first be dirty.”³²

Neoliberal market solutions are especially perverse as they arise in the precise moment that multiple ecological crises inescapably demonstrate the impossibility of market stewardship of the environment. Market logics such as cap and trade will always reduce to the logic of Larry Summers’s infamous memo to senior World Bank staff arguing that “the World Bank should be encouraging more migration of the dirty industries to the LDC [Less Developed Countries]” on the grounds that the lowest-wage earning nations will necessarily have the lowest costs associated with the illness and death

of pollution their mortality rate is already high anyway such countries are "vastly under-polluted" compared to, say, Mexico City and Los Angeles, with their elevated smog levels.³³

Summers has since claimed the memo was satire, but whatever the intended tone, the memo reflects a certain truth about the slippery operation of "efficiency" as it operates with regard to environmental economics. As Brazil's former secretary of the environment José Lutzenburger fired back: "Your reasoning is perfectly logical but totally insane. . . . Your thoughts [provide] a concrete example of the unbelievable alienation, reductionist thinking, social ruthlessness and the arrogant ignorance of many conventional 'economists' concerning the nature of the world we live in."³⁴

Blissful inaction and deliberate malfeasance on the part of elites in the developed world has been so stark, in fact, that for some, including James Hansen, the operative term is not climate debt so much as climate trials. Hansen, who was arrested at a mountaintop removal coal protest against the now- infamous Massey Energy Corporation in 2009, the same firm whose Upper Big Branch coal mine collapsed in West Virginia in early 2010 after receiving thousands of dollars in fines from mine safety citations, has called for CEOs of major energy corporations to be tried for "crimes against humanity."³⁵ Others, like Jamais Cascio, founder of worldchanging.org, have speculated on the near-future "tobaccoification" of carbon, in reference to industry-funded denialism in the face of established scientific consensus.³⁶ Still others would name the Bush, Blair, and Harper administrations, for starters, as codefendants.

Science fiction writer Bruce Sterling, while generally skeptical of the potential for climate trials to put us on the road to a more rational climate policy, does not doubt their symbolic value. He memorably wrote in one of his annual "State of the World" reports that "polluting the entire sky is the biggest market failure in the history of the human race, when the Hamptons and Malibu start going under water, really rich and powerful people are gonna get mad and vengeful."³⁷ The recognition of the moral demand made by ecological debt provides a framework to harness the righteous anger of the rich and the poor alike, providing strategies for resistance to business as usual: forging political alliances, mass protest movements, divestment campaigns, civil disobedience, and other strategies for social mobilization. Naomi Klein highlights the way indigenous groups in Canada have attempted to leverage the nation's unpaid obligations to First Nation peoples

against its WTO status and its Standard & Poor bond rating, essentially arguing that Canada keeps vast “unfunded liabilities” off its books. The same judolike reversal of market logic might be made against transnational corporations and industrialized nations of the Global North alike. In 2008, in an astonishing act of jury nullification in the United Kingdom, six antioil activists were cleared of criminal liability of thirty-five thousand euros of damage on the grounds that they had a “lawful excuse” to prevent the oil plant’s functioning in order to prevent damage to the environment.³⁸ That same year, a stunt classaction lawsuit was filed by an activist in the International Criminal Court asking for “\$1 billion dollars in damages on behalf of future generations of human beings on Earth—if there are any.”³⁹

The Future in the Present: Permaculture

Of course some number of human beings will likely survive even the worst projections of ecological catastrophe—but if we continue to let capitalism blithely take its course, those who do survive will live lives dramatically worse than the ones they might otherwise have, had we acted. Alongside the obligation to already existing humans is the obligation to the ones who will exist, whose inheritance we are squandering—which is an obligation to humanity as such. Without disputing the urgency of climate debt’s call to defend both bio- and cultural diversity in the here and now, at the same time we must recognize, dialectically, the urgency of its call to a shared futurity; the recognition of ecological debt compels us to recognize a planetary commons extending in both space and time, from which global capitalism has ceaselessly appropriated more than its fair share. In his contribution to *Red Planets: Marxism and Science Fiction*, cultural critic Carl Freedman identifies a central disjuncture in Marxist thought between the *deflationary* and *inflationary* modes of critique. “The deflationary dimension,” he writes, “is represented by the attempt to destroy all illusions necessary or useful to the preservation of class society in general and of capitalism in particular” —this can be seen fairly clearly in ideology critique but also in the more specifically structural discussion of the “secret” of surplus-value in *Capital*.⁴⁰ This, Freedman suggests, has a certain figurative relationship with *noir* in prose and film.⁴¹ While *noir* does not produce usable knowledge about the workings of capital, the genre’s preoccupation with individual greed “allegorically gestures towards . . . the kind of knowledge discoverable through application of Marx’s principle of the ultimately determining role of the economy.”⁴² It produces a kind of affective intuition that points us in the right direction, so to speak, if not getting

us much of the way there Deflation is an economic mode, a scientific mode, and something of a cold mode—it is the mode that drives Marx's many formulae. Inflation, in contrast, is much more fragmentary and affective than deflation. It is effusive and intangible, a mode of prophecy and dreams. Marx, after all, had famously little to say about what the world would be like under communism, but the utopian impulse towards a liberatory fulfillment of history—Marx calls it history's true beginning, Engels called it "humanity's leap from the kingdom of necessity to the kingdom of freedom"—is nonetheless always the beating heart at the center of the Marxist project.⁴³ For Freedman, the genre most closely associated with this utopian impulse is science fiction, and he goes on to argue that, unlike noir, science fiction narratives can provide better pictures of the inflationary future than straight expository prose; because it is impossible to produce concrete knowledge of the future in the same way we can produce it of the present and the past, it is science fiction—itself a dialectic between deflationary scientific cognition and unbound inflationary estrangement—that produces our best cognitive maps of potential futures.⁴⁴

Of course inflation and deflation function as a dialectic—we find echoes of each in the other. The cold calculus of deflation is predicated on a baseline moral recognition that the injustices that are being described should not exist; and the soaring heights of inflation can only surpass mere wishful thinking when they arise out of a scientific understanding of capitalist reality as it now does.

Ecocritique, like science fiction, and like the Marxist project as a whole, necessarily operates requires both deflation and inflation to stay vital, which is why the impulse towards the deflationary naming of various ecological catastrophes, in which terrifying scenarios draw attention to the consequences of inaction, must be matched by an inflationary, futurological impulse towards a better world for all of us—a transformative futurology that will always be, in some way or another, a science fiction. In that vein I want to conclude with the concept science fiction writer Kim Stanley Robinson has borrowed from Australian agriculturists Bill Mollison and David Holmgren and put to work in his novels: permaculture, which describes self-renewing agricultural practices that (unlike the ones Justus von Liebig both studied and developed) can be sustained indefinitely.

In an interview with the website BLDBLOG, Robinson points out that permaculture "suggests a certain kind of obvious human goal, which is

that future generations will have at least as good a place to live as what we have now."⁴⁵ In that same interview he suggests permaculture as an alternative twenty first century name for utopia. But this principle does not mean that permaculture must be defined by the penury of too-limited resources. Permaculture rejects the neoMalthusian logic of resource scarcity and the oxymoronic paradigm of "sustainable growth" in favor of what it is essentially raw futurity, a politico-ethical imperative not only that there should be a future but that the people in it deserve a decent world in which to live.

And the same, of course, must be said for the people of the present: they, too, deserve a decent world in which to live. In some sense it may seem perverse to worry about the future for hypothetical persons when there are billions for whom this promise has already been broken. But we need to do both; deflation without inflation is just dead numbers, rage without hope. Only a sense that human civilization has a future can motivate us to make that future real. The science-fictional narratives of writers like Robinson are, in my view, vital in helping us to imagine an ecologically engaged politics, even a science-fictional politics. In his first novel, *The Wild Shore* (1984), he imagines an America that has been bombed back to the Stone Age, watched from the coastline by a coalition of nations eager to prevent American reunification; decades later, a character who lived through the event explains the contradictions in his own memory of America, which is incidentally our present: "America was huge, it was a giant. It swam through the seas eating up all the littler countries—drinking them up as it went along. We were eating up the world, boy, and that's why the world rose up and put an end to us. So I'm not contradicting myself. America was great like a whale—it was giant and majestic, but it stank and was a killer. Lots of fish died to make it so big. Now haven't I always taught you that?"⁴⁶ In another early book, *Pacific Edge*, Robinson advances what could be the sad maxim of human history: "Every culture is as wasteful as it can afford to be."⁴⁷ The vision of history that informs his novels foregrounds the destructive contradictions at the heart of industrial society, as he notes in an interview in *Polygraph*:

I've been trying to use standard economic terms to describe the situation in ways capitalists might have to come to terms with and that might serve as entry-points to a larger discussion: that the implicit promise of capitalism was that a generation would work so hard in the working class that its children would be in the middle class, and that if extended this program would eventually lift everyone on Earth. But

now resource analysis makes it clear that for the three billion living on less than two dollars a day this promise can never be fulfilled, so that capitalism is really nothing but a big Ponzi scheme, and would be illegal if run in a single state or community.

Then also, the pricing we put on things, carbon especially, does not include the environmental costs of making the thing, so that we are practicing systemic predatory dumping, and the competitors we are predating on are our own children and the generations to come. So we are predatory dumpers, out-competing non-existent people, which is easy enough, but they will suffer when they come into existence, and we are cheaters.⁴⁸

But Robinson is never as cynical as these quotes might imply: he has spent his career in pursuit of utopia, even residing in a utopian planned community in California. In his seminal Mars trilogy (1990s), his characters move through all the usual utopian forms. The Martian colonists reenact King utopias' iconic act of closure—the digging of the trench that separates Utopia from the mainland—in their destruction of the Martian space elevator. They openly revolt against terrestrial control; when open resistance fails, they engage in hit-and-fade guerrilla tactics. They infiltrate. Some become terrorists. There is even, as it were, a traditional sudden apocalypse—not one but two Great Floods—acts of God from above and from without, which leave both Earth and Mars in position to be politically transformed. These, too, fail.

In the end there are only two sorts of revolutions that actually work in the Mars trilogy. The first is the aeroforming of the settlers, Robinson's analogy to terraforming, which sees settlers transformed by Mars in much the same way that they sought to transform it. It is the displacement in space that returns, at the end of a century obsessed with time, to provide the possibility for real human change—and it occurs because the remove to Mars forces us, but also allows us, to reconnect and re-embed ourselves in an ecology, to once again be part of an ecologically rational cycle. (Robinson has elsewhere called for us to imagine ourselves as terraforming Earth—noting that in fact we already are, by wrecking

it.)⁴⁹)

The second utopian move is that other impossibility, that other thing besides the future that we no longer quite believe in: collective action in the present on behalf of the future, which is to say political agency.

Robinson is a believer in coalition—in the building and nurturing of activist networks. In the end it is the tough, almost parliamentary work of reaching compromises, brokering deals, and changing minds that allows the disastrous cycle of war and revolution to be finally averted, the search for (and improbable discovery of) the missing color that might unite Red and Green. At the end of *Blue Mars* the revolutionary break is a televised speech from a group of astronaut/scientists, which underscores how utopian a thinker Kim Stanley Robinson really is. Robinson's politics is an ongoing praxis that achieves victories but is never victorious—in *Pacific Edge* (1988), Robinson defines utopia not as final, fixed fulfillment but as a process: "Struggle forever."⁵⁰ No one said it would be easy.

In *Polygraph* 22 Michael Hardt writes that during his trip to the protests in Copenhagen he noticed that there's been a significant shift on the left since the seminal Seattle protests ten years ago. Then, the slogan was "We want everything for everybody"—and you still see some versions of that sign. But at Copenhagen the much more common poster was a different slogan: "There is no Planet B." The first, Hardt writes, "sounds like an absurd, reckless notion that will propel us further down the route of mutual destruction"; the other, he says, sounds like Margaret Thatcher's infamous proclamation that "there is no alternative" to neoliberal capitalism.⁵¹ The slogan of Seattle is ambitious, inflationary, and fundamentally impossible; the slogan of the ecological activists is deflationary, anti-ambitious, and starkly realistic. I suggest that permaculture is the way to retain the inflationary spirit of the first while embracing the deflationary acknowledgment of our finitude in the second. Unlike capitalist futurity, which is self-defeatingly dependent on infinite growth on a finite planet, permaculture does not promise an impossible supersession of inevitable limits; it instead locates the promise of a better future within those limits. Permaculture is a mode that looks to ecological limit not as a state of emergency or as an impending disaster but as a necessary constraint, as the rules of the game we have all been playing all this time.

Hardt goes on: "Indeed the struggles against neoliberalism of the past decades have been defined by their belief in the possibility of radical, seemingly limitless alternatives. In short, the World Social Forum motto, 'Another world is possible,' might translate in the context of the climate changes movements into something like, 'This world is still possible, maybe.'"⁵² Invoking the concept of ecological debt—accepting its relentless ethical demand that debts must be paid, that thefts must

be made right, accepting debt and indebtedness as part of the circuits of social interconnectedness and mutual dependence that make a permaculture—helps us strike that “maybe.” As the philosopher of liberation Enrique Dussel put it when he unknowingly echoed both Hardt and Robinson in his *Twenty Theses on Politics*: “The critical ecological principle of politics could be expressed as follows: We must behave in all ways such that life on planet Earth might be a perpetual life!”⁵³ In this way the rational accounting of our environmental limits and the long-delayed accounting of our ecological debts need not speak to withdrawal, renunciation, or defeat; it does not speak to an end to progress, of either the technological or the social sort, or of cascading disasters too far gone to remedy. In fact, in an era of climate change, ocean acidification, and Peak Everything, just to begin to name the crises, the rational consideration of ecological limits is the necessary prerequisite for any progress in our time—not in despair at what is not possible, but in hope for what still is. In this sense when we begin at last to talk about ecological debt we are speaking, in the tradition of the best of Marxism, and the most utopian of our science fictions, not of history’s end but of its true beginning.

14. Debt, Theft, Permaculture

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1. Fredric Jameson, *The Seeds of Time* (New York: Columbia University Press, 1994), xii.
2. K. William Kapp, *The Social Costs of Private Enterprise* (New York: Schocken Books, 1971), 231.
3. Bruno Latour, “Will Non-Humans Be Saved? An Argument in Ecotheology,” *Journal of the Royal Anthropological Institute* 15, no. 3 (2009): 462.
4. Karl Marx, *Capital*, Vol. 1 (New York: Penguin Classics, 1992), 638.
5. See, for instance, John Bellamy Foster *Marx’s Ecology* (New York: Monthly Review, 2000).

6. See Johan Rockström et al., "A Safe Operating Space for Humanity," *Nature* 461 (September 2009): 472–75., www.nature.com/nature/journal/v461/n7263/pdf/461472a.pdf. The other two crisis thresholds are the species extinction rate and climate change. In five of the remaining seven boundaries we are either approaching or only slightly over the proposed boundary, and in the last two, total atmospheric aerosol load and chemical pollution, the relevant boundary condition has not yet been quantified.
7. Kapp, *Social Costs*, 231.
8. Quoted in Andrew Simms, *Ecological Debt: Global Warming and the Wealth of Nations* (New York: Pluto Press, 2005), 90. See Emma Torres and James C. McGowan (eds.), *Our Common Agenda for the Americas* (New York: Latin American and Caribbean Commission on Environment, 1994).
9. Joan Martinez-Alier, "Environmental Justice (Local and Global)," in *The Cultures of Globalization*, ed. Fredric Jameson and Masao Miyoshi (Durham: Duke University Press, 1998), 313.
10. There's a nearly great episode of *This American Life* concerning Narau; I say "nearly" only because there's more than a hint of neoliberal victim blaming, as if the Narauans foolishly stripmined their own country without anyone in the North having had anything to do with it. Jack Hitt, "The Middle of Nowhere," *This American Life* 253, hosted by Ira Glass, (Chicago Public Radio, original airdate December 5, 2003.,
11. José María Borrero Navia, *The Ecological Debt: Testimony of a Reflection*, trans. Blanca Elena O'Byrne and Janeth Frances Cracraft (Cali, Columbia: Fundación para la Investigación y Protección del Medio Ambiente, 1994), 13.
12. See Laurence Mee, "Reviving Dead Zones," *Scientific American* 295 (2006): 78–85.
13. This aspect of the negotiation is highlighted in Richard Black's report for BBC News, "Developing Countries Split over Climate Measures," BBC.co.uk, December 9, 2009, <http://news.bbc.co.uk/2/hi/science/nature/8403745.stm>.
14. Quoted in "Future Not for Sale: Climate Deal Rejected," ABC.net.au, December 19, 2009, www.abc.net.au/news/stories/2009/12/19/2776604.htm.

15. James Lewis, "Sea-Level Rise: Some Implications for Tuvalu," *Ambio* 18, no. 8 (1989): 458–59.
16. Naomi Klein, "Climate Rage," *Rolling Stone*, November 11, 2009,
17. *Ibid.*
18. Naomi Klein, "Haiti: A Creditor, Not a Debtor," *Nation*, February 11, 2010,; Maplecroft, "Maplecroft's Climate Change Risk Atlas 2010 Highlights Vulnerable Nations and Safe Havens," March 9, 2009, http://maplecroft.com/about/news/climate_change_risk_list_highlights_vulnerable_nations_and_safe_havens_05.html.
19. The quoted language is meant to evoke, among other references, the final scene of Al Gore's climate documentary *An Inconvenient Truth*, which makes precisely this appeal.
20. Klein, "Climate Rage."
21. Of course the word *reparations* conjures in the US audience the intractable political nightmare of the debate over reparations for slavery, that is, a racialized, hot-button issue for the right wing to exploit without any chance of anything substantive ever being passed through Congress. Klein addressed this point in a talk at the Canadian Centre for Policy Alternatives and posted on the video-sharing site YouTube, arguing not only that this is the proper word to express the concept but, more importantly, that it is the word Global South activists have chosen and that we should respect their choice. Naomi Klein, "Climate Debt," YouTube, February 25, 2010, www.youtube.com/watch?v=2FtrSql3vss.
22. Quoted in Klein, "Climate Rage."
23. *Ibid.*
24. Indian environmentalists Anil Agarwal and Sunita Narain have called this the difference between luxury emissions and survival emissions. See Anil Agarwal and Sunita Narain, *Global Warming in an Unequal World* (New Delhi: Centre for Science and Environment, 1991).
25. Quoted in Klein, "Climate Rage."

26. Andrew C. Revkin and Tom Zeller, Jr., "U.S. Negotiator Dismisses Reparations for Climate," *New York Times*, December 9, 2009
27. Borrero Navia, *Ecological Debt*, 23.
28. See John Bellamy Foster and Brett Clark, "The Ecology of Consumption: A Critique of Economic Malthusianism," *Polygraph* 22 (2010): 113–32.
29. See, for instance, John Bellamy Foster, *The Ecological Revolution* (New York: Monthly Review Press, 2009), 121–29.
30. John Bellamy Foster, *The Vulnerable Planet* (New York: Monthly Review Press, 1999), 124.
31. Vandana Shiva, *Soil, Not Oil* (Cambridge, MA: South End Press, 2008), 15.
32. Shiva, *Soil, Not Oil*, 24.
33. This memo has been widely posted on the Internet; see, for instance, a version at WhirledBank.com.: Lawrence Summers, "Subject: GEP," WhirledBank.com, December 12, 1991, www.whirledbank.org/ourwords/summers.html. Vandana Shiva also discusses the memo at length in ch. 1 of *Soil, Not Oil*.
34. Summers, "Subject: GEP."
35. James Hansen, "Twenty Years Later: Tipping Points Near on Global Warming," *Guardian*, June 23, 2008.
36. Jamais Cascio, "Crimes against the Future," *OpentheFuture.com*, August 6, 2007, www.openthefuture.com/2007/08/crimes_against_the_future.html. See also Jamais Cascio, "Climate, Cancer, and Changing Minds," *OpentheFuture.com*, May 2, 2006, www.openthefuture.com/2006/05/climate_cancer_and_changing_minds.html.
37. Bruce Sterling, "State of the World 2007," January 8, 2007, The Well website, www.well.com/conf/inkwell.vue/topics/289/BruceSterling-State-of-the-World-page03.html#post65. States.
38. *Lawful excuse* is a British legal term, roughly analogous to *selfdefense* in the United States. Michael McCarthy, "Cleared: Jury Decides That Threat of Global Warming Justifies Breaking the Law," *TheIndependent.com*, September 11, 2008, www.independent.co.uk/environment/climate-

- [change/clearedjury-decides-that-threat-of-global-warming-justifies-breakingthe-law-925561.html](#).
39. Mitchell Anderson, "Putting Global Warming Laggards on Trial," DeSmogBlog.com, November 22, 2008, www.desmogblog.com/putting-global-warming-laggards-trial.
 40. Carl Freedman, "Marxism, Cinema and Some Dialectics of Science Fiction and Film Noir," in *RedPlanets: Marxism and Science Fiction*, ed. Mark Bould and China Miéville, (Middletown, CT: Wesleyan University Press, 2009), 72.
 41. Ibid., 73–74.
 42. Ibid., 74.
 43. Friedrich Engels, *Anti-Dühring* (Moscow: Progress Publishers, 1947), www.marxists.org/archive/marx/works/1877/antiduhring/ch24.htm.
 44. Freedman, "Marxism," 74.
 45. Geoff Manaugh, "Comparative Planetology: An Interview with Kim Stanley Robinson," BLDGBLOG, December 19, 2007, <http://bldgblog.blogspot.com/2007/12/comparativeplanetology-interview-with.html>.
 46. Kim Stanley Robinson, *The Wild Shore* (1984; repr., New York: Orb Books, 1995), 198.
 47. Kim Stanley Robinson, *Pacific Edge* (1990; repr., New York: Orb Books, 1995), 3.
 48. Gerry Canavan, Lisa Klarr, and Ryan Vu, "Science, Justice, Science Fiction: A Conversation with Kim Stanley Robinson," *Polygraph* 22 (2010): 207.
 49. Manaugh, "Comparative Planetology."
 50. Robinson, *Pacific Edge*, 95.
 51. Michael Hardt, "Two Faces of Apocalypse: A Letter from Copenhagen," *Polygraph* 22 (2010): 271.
 52. Ibid.
 53. Enrique Dussel, *Twenty Theses on Politics* (Durham: Duke University Press, 2008), 86–87; see also 114–15. Of course,

Dussel quickly admits, the relentless march of entropy means life on earth can never really be perpetual—but, he quickly adds, that doesn't mean we shouldn't do our best.