

The ecosystem of globalization¹

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Abstract

This paper uses concepts from environmental history to examine globalization as a new stage of capitalism. As society moves across modes of production and stages within those modes, "ecological revolutions" take place that result in new, corresponding ecosystems (which includes the human-nature relationship). An "ecosystem of globalization" is forming out of, and helping to form, the economic, political, social and cultural processes of globalization. Various aspects of globalization, including the extensification and intensification of production, speculative capital, and new technologies feed environmental transformation. The resulting ecosystem cannot be separated from globalization. Seeing the environment today as the "ecosystem of globalization" can salvage the world's ecological future from ahistoric narratives in which it gets trapped: The future of the environment is bound to the future of globalization; and the resolution of environmental crises can only be achieved with the resolution of the challenges of globalization.

Introduction

It is difficult to read the stream of reports from the United Nations and other organizations about the planet's non-human environment without recognizing that a profound transformation is taking place (e.g., United Nations Environment Programme (UNEP), 1999; IPCC, 2001; World Resources Institute, 2005; UNEP, 2006). Over in the economic, social and cultural realms equally profound changes, lumped into the general category of "globalization", are taking place. How, if at all, are these two powerful currents -- environmental change and globalization -- related? The strength of the connection has important implications -- not just to help us understand the twin (or single?) processes, but also help to chart solutions to the profound challenges posed by these processes.

This paper starts from two premises: that globalization represents a new stage of capitalism, and that as society moves across modes of production and stages within those modes, "ecological revolutions" take place that result in new, corresponding ecosystems. From these two premises, it follows that an ecosystem of globalization is forming out of, and helping to form, the economic, political, social and cultural processes of globalization. This paper explores this hypothesis, using different expressions of capitalism-as-globalization as the entry point. The resulting ecosystem cannot be separated from globalization. Seeing the environment today as the "ecosystem of globalization" is an attempt to salvage our ecological future from the narratives in which it gets trapped: the future of the environment is bound to the future of globalization; and the resolution of environmental crises can only be achieved with the resolution of the challenges of globalization.

¹ This paper is a condensation of a longer piece "Speculative capital and the ecosystem of globalization", presented at the 2006 Global Studies Association conference, DePaul University, Chicago. The paper is available online at <http://www.gocatgo.com/texts/spec.cap.env.3.pdf>.

Environmental history, ecological revolution and globalization

Environmental history seeks to understand how human interactions change the environment, and how non-human environments change humans throughout history (Hughes, 2001). Periodization has been a productive tool in environmental history for organizing those interactions. Typically, the periods span the entire *Homo sapiens* era, with broad modes of production (hunting/gathering; manual agricultural; industrial) having corresponding changes in the ecosystem (Simmons, 1993). At the boundaries of modes of production, Merchant (1989) argues that there are "ecological revolutions" that include changes in the human - nature relationship (understandings of nature, what it is, how it is represented, participation or alienation, etc.) as well as changes in the physical environment. "Ecosystem", as a functional unit of all organisms interacting with each other and the physical environment in a given area, provides a conceptual tool for exploring these changes (Simmons, 1996), but consciousness and social structures that facilitate the reproduction of social and natural structures should be included in the ecosystem concept as well (Merchant, 1987).

There has also been some discussion of periods or stages *within* modes of production, more implicit than explicit, in historical studies of the environment in the modern era (e.g., Cronon, 1983, 1991; Merchant, 1989; Foster, 1999). These latter works can be read in terms of stages of capitalism with corresponding ecosystems.² The more clearly distinguished the corresponding technological regimes (where technology mediates the human-nature relationship), the more marked is the ecosystem change, and the more visible the ecological revolution.

There is considerable debate in all quarters today about the nature of the world economy, political structures, social forces, etc., collectively described as "globalization". For the purpose of this discussion, globalization is understood as a stage of capitalism that is significantly different (an "epochal shift") from the previous stage of capitalism, which can be called "imperialism" (Hardt and Negri, 2000; Robinson, 2004; Lioukakis, 2005). This new stage is still capitalism, and bound to and operating within the law system of capitalism. But per Robinson (2004), this new stage is characterized by the "transnationalization" of not just trade and finance, but production as well. Globalization features the completion of the geographic expansion of capitalism, where expansion takes place through the *intensification* of the market, including the commodification or marketization of every aspect of social life, and where every human being is pulled into capitalist relations in some way. Since this new stage emerges with (and is dependent on) new technologies that fall under the general category of "electronics"³, "global capitalism" can also be thought of as "capitalism in the age of electronics" (Davis, 1998). It is in this sense

² Merchant describes three ecosystems: indigenous, hunting-gathering with small scale agriculture; the colonial period from 1620 to about the late 1700s, followed by the capitalist period. In *Nature's Metropolis*, Cronon traces changes in the ecosystem of the Midwest through the mid-19th century. Foster's survey *The Vulnerable Planet* discusses environmental history in the capitalist era in several periods: pre-industrial revolution, industrial revolution, imperialism, and contemporary times. While it is fair to question if the pre-industrial production relations in the U.S can properly be called "capitalist" (see, e.g., Harvey, 2001; also Merchant does *not* describe colonial New England as capitalist, and Cronon (1981), in his examination of the same period in New England explores this question), the economy was tied to the world capitalist economy through trade. This connection exerted its own dynamic on frontier life, by binding it to a broader cash economy. If these frontier economies were not technically capitalist, they weren't independent of capitalism either, and were in the process of being absorbed into the growing capitalist world system.

³ The rationale for this rather antique word is that breakthroughs in computers, robotics, communications, material science, genetics, complexity, etc. were made possible by breakthroughs in electronics. (Davis and Stack, 1992).

that the term "globalization" will be used from here on.⁴ Since the new technologies (including electronics, computers, bioengineering, etc.) that comprise the foundation of globalization-as-a-stage represent qualitatively new forces of production (Davis, 1998; Davis 2000), an ecological revolution of globalization should be visible and identifiable.

Globalization and the environment

Robinson (2004) notes that "[m]ost social scientists agree that globalization is a multi-dimensional process involving complex changes at many different levels, including economic, political, and cultural levels." (p. 9 - 10) To this list one can also add the environment. Each stage or period alters most, if not all, dimensions of production. At each stage, the particular production process has many particular interactions with the environment; and the ecosystem is changed in particular ways *specific to that production regime*. Globalization is no exception.

There are different ways of analyzing the specificity of ecosystem change. In his *Environmental History*, Simmons (1993) describes the human impact on the environment throughout history in terms of two broad trends: spatial extension of human activity and intensification of human activity. This dovetails with two characteristics of globalization noted above: the completion of geographic extension of capitalism as a system, with the intensification of production becoming the sole means of expansion.

The geographic *extension* of capitalism means that every biome and ecosystem is pulled into capitalist relations as a use value in the production of exchange values. These uses might be as source of raw materials, for cultivation, real estate development, recreation, or simply held in reserve. Even if an area is not formally integrated into production, one cannot visit such an area and be outside of capitalism. Wild areas do not present a frontier of new possibilities, only reserves or "other" that emphasizes the totality of capitalist extension. There is no "wilderness" today that exists outside of capitalism.

The *intensification* of production takes place in many ways. The maximization of profit is achieved by totalizing the consumption of natural resources as quickly and thoroughly as possible using modern technology: clear-cutting; mountaintop removal; electronic-aided factory fishing. Production is also intensified as more areas are pulled into the commodity relationship. Various aspects of domestic life are transformed into value-generating services. Commodification also includes the transformation of public spaces and activity into private spaces and fee-based services. Commodification, however, does not just extend to every aspect of social life, but to every aspect of biological life as well through gene patents.

Another way of analyzing ecosystem change is according to Simmons' (1993) six categories of human impact on the environment: deflection (natural processes are deflected); simplification (complex species mixes are replaced by simpler ones); obliteration (species are driven to

⁴ This usage is consistent with the usage in Robinson (2004) and Liodakis (2005). The use of the term "globalization" to refer to this new and current stage of capitalism is not meant to imply that only in this stage has capitalism discovered the world market -- capitalism has always been as global as technology allowed it. Nor is this usage meant to surrender the hope of world solidarity or world justice, or to signal a retreat to purely national struggles (if such a thing is even possible today). The term "globalization" can be appropriated to describe this period in the same way that Lenin appropriated "imperialism" to describe his period.

extinction); domestication (genome modification); diversification (new species or varieties); and conservation. Production processes of globalization generally exaggerate the activities already underway during the industrial-imperialist period. However, genetic engineering provides a radically new means of both species domestication and diversification.⁵

A third way of analyzing ecosystem change is in terms of capital structures and their environmental implications. Capital, as Marx explained, is a social relationship. While capital is ultimately a social relationship, this relationship is expressed in the various forms that capital takes in the overall economy. As signifiers of capital-as-social-relationship, the forms of capital also signify aspects of the human-nature relationship (where "the economy" describes the overall interaction of human and nature in the production and reproduction processes). Capital structures imply a relationship to the world.

Speculative capital emerges as the dominant form of capital in globalization (Davis, 2002).⁶ Globalization influences the environment through speculative capital at a variety of levels. A 1999 World Resources Institute roundtable on the global financial system and the environment, held in the wake of the Asian, Russian and Brazilian financial shocks in the final years of the last century, identified several general areas of concern. As speculative capital comes to play a controlling role in the economy, countries tend to tailor economic policies (e.g., "structural adjustment programs" mandated by the International Monetary Fund as a condition for development aid). The general neoliberal agenda of minimal state intervention precludes environmental oversight. Once structural adjustment programs open a national financial system, the ongoing supervision of the economy becomes diffused through the financial markets, where speculative capital responds to local policy via bond and money markets -- what Walter Wriston described as an "instant plebiscite" (Bass, 1996). The flow of speculative capital in and out of national economies ("hot money") can have a destabilizing effect on economies. The WRI report identified four main environmental impacts: (1) rapid depletion of natural resources as a way of coping with financial crises; (2) short investment horizons that mitigate against long-term environmental stewardship; (3) lax environmental regulation to lure foreign capital; and (4) economic instability that may undermine local environmental programs and institutions.

Besides these general environmental effects expressed through the speculative financial system, speculative capital also influences the environment in particular ways through specific financial devices. For example, the emissions markets set up as part of the Kyoto protocol, promote the use of monoculture tree plantations in the developing world (Lohmann, 2005), and also facilitate through the financial system the transfer of pollution from one continent to another (Chicago Climate Exchange, 2006). Timber real estate investment trusts speed the turnover of forest ownership, which contributes to ecosystem disruption (Hagan, Irland and Whitman, 2005).

One implication of the completion of geographic extension and total commodification is the disappearance of the commons, which historically has provided a site for externalizing

⁵ See e.g., Joshua Davis's "Doctor Frankentree" in *Wired* 13.10 (October, 2005), <http://wired-vig.wired.com/wired/archive/13.10/posts.html?pg=5>. "Strauss talks about the potential for genetically modified wood products. His mutated trees could transform the industry, he says. Dwarf trees would avoid wind stress, reducing the amount of reaction wood - unusable wind-warped timber. His branchless tree would have no disfiguring knots. A hybrid supertree would produce higher-quality lumber from fewer individual trees, reducing the amount of land needed to satisfy lumber demand. In addition, his low-lignin tree would require far fewer chemicals to break down into pulp for paper, saving money and lessening the paper industry's toxic output."

⁶ For more on this, see this blog item: <http://networksdialectics.blogspot.com/2006/06/speculative-capital-as-dominant-sector.html>

production costs. What went 'round in the environment now comes 'round. The financial system, via the modern insurance industry provides a way for the externalities of capitalist production -- e.g., pollution and climate change -- to acquire a price, and be factored back into production (and to workers and consumers) as an internality in the form of higher risk premiums. As Evan Mills (2005) notes, "the insurance sector is a lightning rod, serving as global integrator of impacts across all sectors of the economy, and messenger of these impacts through the terms and price signals it projects to customers."

It should be noted that new technologies also tend to be more efficient in terms of resource usage and energy consumption. This is a two-edged sword: while using fewer resources, they facilitate the intensification of production.⁷ In any case, new technologies change the technology component of carrying capacity, adjusting capacity upward.

Simmons (1993) notes that of the many possibilities opened by new technologies, "[o]ne of these is to try to replace nature almost entirely by artificial systems completely under human control." (p. 47) O'Connor (1998) identifies the "environment problem" for Capital as "how to remake nature in ways that are consistent with sustainable profitability and capital accumulation." (p. 238). The way for Capital to negotiate environmental constraints, in order to preserve and extend itself, is by more comprehensive control of the processes of nature using new technologies. New technologies are effective tools for the command and control of nature, providing relatively cheap, powerful and ubiquitous sensors, analyzers, decision-makers and implementers.⁸

The ecosystem of globalization

What exactly is the ecosystem of globalization? At the risk of being anti-climactic, the ecosystem is simply the environment we have today and our interactions with it. Globalization is a new stage, and the economy always interacts and shapes the broader environment, creating specific ecosystems to enhance and further production relations. The transition to this new ecosystem is as abrupt, or emergent (depending on one's time scale) as the transition to

⁷ On the one hand, electronics requires more electricity, most of which is generated by CO₂-producing power plants. On the other hand, new technologies hold out the promise of greater energy efficiency. Industrial production under globalization tends to be more efficient in the use of energy. However, there is still a rise in emissions due to the retarded use of new technologies and the overall increase in economic activity using old energy technology.

Worldwide, as well as in the U.S., energy consumption per dollar of GDP has dropped over the past few decades, and CO₂ emissions per GDP dollar have also fallen over the past 20 years. These statistics reflect changes in technology and the kinds of economic activity being done. In the U.S., from 19.57 British Thermal Units (BTUs) in 1949 to 9.20 BTUs in 2003 (U.S. Department of Energy, 2005). Worldwide, from 284.8 metric tons oil equivalent per million \$international to 239.4 in 2001 (World Resource Institute, EarthTrends environmental information, downloaded May 9, 2006 from http://earthtrends.wri.org/searchable_db/index.php?step=countries&ccID%5B%5D=0&theme=6&variable_ID=668&action=select_years)

The increase in industrial and other activity that release greenhouse gases (GHGs) is another aspect of intensification. In this way, climate change is a dimension of globalization. Although climate change is tied to fossil fuel consumption to power the industrial economy, the general process of pulling all regions of the globe into capitalist relations, including the dispersion and expansion of production, the intensification of consumption, the extension of credit, etc. have driven a sharp upswing in the volume of carbon dioxide being dumped in the atmosphere. While greenhouse gases are not unique to the stage of globalization, the concentration and rate of dumping is. What is different with industrial production under globalization is (a) how it is integrated into the global economy (b) the broader range of labor versus technology options (c) coordinating technology (d) changes in other aspects of the economy that it depends on (e.g., transportation and finance).

⁸ A higher order aspect of environmental control is through risk markets, the historical roots of speculation. Speculation functions as a way of transferring production risk, of which the environment is a major source. Although insurance is a classic example, more exotic forms of environment risk management include weather derivatives (Dampier, 2005) and catastrophe bonds and options (which have met with limited success. According to an energy options broker, "I expect to see the market open up when it is no longer acceptable for a company to blame a decrease in earnings on the weather." (Saunderson, 2000)

globalization. The new ecosystem emerges in stages, over time and space. But eventually, the changes are well-established enough that the new ecosystem can be named and identified.

Features of this ecosystem include an atmosphere with significantly higher levels of CO₂, probably leading to overall warmer air and sea temperatures, smaller icecaps, higher sea levels, more violent storms, and regional climate changes (IPCC, 2001). The ecosystem has significantly fewer unique habitats, with a corresponding loss of species on the scale only matched two or three times in earth's history. Through the mobility of commodities and people, a handful of species, including bacteria and viruses extend their range, overwhelming local competing species -- a kind of extension paralleling capitalism⁹. This process is exacerbated by climate change, as finely-tuned ecosystem interactions are upset by earlier springs and later autumns. More environments are directly managed to maximize the accumulation process. This management is facilitated by new engineered species tailored to specific conditions. The concept of "wild nature" persists in private parks, reserves and public fee-based areas, and consumable by whoever can afford the membership or entrance fee (Robbins and Luginbuhl, 2005). The majority of human beings live (or will shortly) in the "planet of slums" (Davis, 2004). There are some bright spots. Global cities, eager to attract global corporations, adopt urban forestry and park programs (Longworth, 2004; Heynen and Perkins, 2005). "Green" grows as a commodity, and consumers gain more green choice. Mass media provides an important way that those with access to media interact with nature. Those who live in the suburban sprawl of the north are baffled by wild animals in their backyards that don't behave like those on TV.¹⁰

Modern speculative capital, dependent on the technological infrastructure of globalization, indicate some of the mechanisms of how this new ecosystem is created. Capitalism has always transformed natural processes into values. Speculative capital takes them an extra step, transforming nature into abstract money forms as financial contracts, permits, and shares -- what Marx (1981) called "fictitious capital". Today these structures have evolved beyond crop and mineral production futures to weather, pollution, land, and carbon-fixing capacity. They facilitate the perception of nature as abstract, symbolic, alien, manageable and artificial. Once transformed into contracts, and the contracts into digital representations that can then be traded electronically, speculative instruments begin to facilitate the formation of a generalized ecosystem along with a general rate of profit.

⁹ The history of exotic species is the history of humankind. They have been as mobile as the productive forces have allowed them, and generally mirroring the power flows of civilization. See e.g., McNeill, 2000; Crosby, 2004. For a recent example of an exotic replacing native species, and the local economy adapting to the new ecosystem, see James Janega, "Carpe diem on the Illinois River", *Chicago Tribune*, May 7, 2006. Brought to the U.S. in the 1960s to eat algae out of catfish ponds (another globalization ecostory), the voracious and prolific fish found its way to the Mississippi and has been making its way north since. "There is no beating the Asian carp, the river men say. So they're trying to make a living off of it, and an Illinois carp fishing industry is beginning to grow up around them" with major customers in ethnic neighborhoods of New York, Los Angeles and "elsewhere" (another globalization story). More recently, there are other news reports of a major carp die-off. "Since Tuesday evening, thousands of dead carp have been seen floating down the river... Biologists say the die-off seems to have been widespread... So far the fish kill appears to have affected only Asian carp and a few carpsuckers." A la War of the Worlds, a virus is suspected as the cause. (Associated Press, "Asian carp die off in Illinois River", Belleville News-Democrat, downloaded June 5, 2006 from <http://www.belleville.com/mld/belleville/news/politics/14740199.htm>.)

¹⁰ See, e.g., James Sterba, "Wild Kingdom: In Orlando, faux nature clashes with the real thing -- as developers and Disney keep blurring the line", *Wall Street Journal*, June 3, 2006, p. A1. "[M]uch modern sprawl is built, unconsciously, to be wildlife-friendly -- what wildlife biologists call 'enhanced habitat,' with more food, shelter, water, hiding places and protection from predators than exist in the wild. People, meanwhile, make sprawl even more inviting, wittingly and unwittingly. They're increasingly ignorant of how wild nature works -- what author Richard Louv calls 'nature-deficit disorder.' Just as they treat pets as children, so to do many treat wild animals as pets, leaving out birdseed and pet food, tossing a cookie to a backyard bear."

The story of the environment

Describing the environment today as the "ecosystem of globalization" is a conscious attempt to make explicit the environmental narrative used to understand what is happening around us. Carolyn Merchant (1995) describes variations of the "Edenic narrative", the story of a lost paradise that people in one way or another are trying to recover. In the "progressive" (as in "human progress") variant, science and capitalism are taming the wilderness and constructing the new paradise; globalization can be read as the latest chapter. In the environmentalist counter-narrative, humans once lived in harmony with nature, and much of written history has been the long process of losing Eden. The story that we have been chopping down and paving over paradise for the past 200 years of industrialization-driven ecosystem degradation or 500 years of European domination of nature (Reinsborough, 2004) or 2,000 years of Christianity (White, 1996), resulting in the death of nature, might be compelling for tactical reasons.¹¹ Simmons (1993), however, makes the compelling argument that humans have *always* changed the environment. And nature (that is, objective, ongoing physical and biological processes) doesn't "end" or "die", it changes.

In the "ecosystem of globalization", capitalism, in the form of globalization, is constructing an ecosystem along the lines that O'Connor described. In this construction, capitalism won't dissolve in acid rain or choke to death on carbon dioxide or die of thirst, as the environmentalist narrative suggests. Capitalism is a remarkably flexible and adaptable system that finds many ways to further accumulation. Some corporations are realizing that they must address things like climate change, because they also are on lifeboat Earth, and climate change is an objective, happening thing. They must confront environmental catastrophe if they are to continue as enterprises. Their solution is to make "green" an investment opportunity, to turn it into a site of accumulation, a place to make profits. British Petroleum looks for alternative energy sources because "peak oil" may be a real possibility, and ultimately, it doesn't matter what the source of the energy they package and sell is, as long as they package and sell it. If General Motors can "go yellow" with cars that run on ethanol, why not? General Electric may profit from "ecomagination"¹², as will some of the alternative energy companies into which venture capital firms are now pumping money.¹³ The Wilderhill Clean Energy Index, which tracks the stock prices of 40 companies involved in the alternative energy business, has almost doubled in price in the past year. Speculative capital finds opportunities in carbon emissions trading and environmental derivatives. There is no fundamental contradiction between capitalism and the environment.¹⁴ Framing the current environment as the "ecosystem of globalization" attempts to pull the question of ecosystem change out of the end-game narrative, and see the ecosystem that

¹¹ See, e.g. "Greenpeace's fill-in-the-blank public relations meltdown" where they inadvertently released a draft press release on the dangers of resurgent interest in nuclear power which included the text: "In the twenty years since the Chernobyl tragedy, the world's worst nuclear accident, there have been nearly [FILL IN ALARMIST AND ARMAGEDDONIST FACTOID HERE]." Greenpeace tried to put a best face on the boo-boo, saying it was a joke and not meant for distribution. See http://www.philly.com/mlt/inquirer/news/local/states/pennsylvania/counties/philadelphia_county/philadelphia/14691089.htm

¹² See <http://www.ge.com/ecomagination>

¹³ See e.g., Jim Carlton and Rebecca Buckman, "Alternative Fuels Attracting Venture Capital", *Wall Street Journal*, B1. "From 1999 through 2004, venture capitalists invested an estimated \$4.4 billion in the energy-technology sector, including renewable energy and more-traditional energy projects. That compares with just \$380 million in venture-capital money invested in the sector from 1993 through 1998. Energy tech got a further \$500 million in venture capital during the first half of 2005, according to Nth Power, a San Francisco venture fund, and Clean Edge, a San Francisco market-research firm."

¹⁴ There has been a lively ongoing debate on the left on this question. See e.g. O'Connor (1998) for his argument of a second contradiction of capitalism where resource exhaustion and ecosystem destruction is a source of capitalist crisis; Burkett (1999) argues that such problems are part of a broader understanding of the basic contradiction of private ownership of social production. I agree with Burkett in his observation that "We may not like it, but the fact is that capitalism can survive any ecological catastrophe short of the extinction of human life." (p. 192)

is managed and programmed and engineered by globalization solely in its own terms. The "destruction of the environment" is really the transition from one ecosystem to another, an ecological revolution.¹⁵

The environmental problem for capitalism is similar to the labor-replacing technology problem that electronics poses. For now at least, it looks like capitalism can accommodate these challenges. The "end of value" is not a problem of physics, but a problem of history -- it doesn't end because of labor-replacing technology, it ends because human beings organize and replace the value system with something else (Davis, 2000). Likewise, "sustainability" of a sort is achievable within the context of globalization. An environmental movement that accepts such sustainability and accommodates itself with globalization may succeed in some narrow way, along some narrow issues to achieve narrow successes. But such a movement will ultimately fail to achieve a world that sustains people in any meaningful way. The environment also will be the poorer, in the same way that the "Rainforest Cafe" is not a rainforest (or Lincoln Park zoo an African savannah, or a tropical tree plantation a jungle, etc. etc.) So the reader instead is asked to step back, recognize the world-in-formation as intimately bound up first and foremost with capitalism in the form of globalization, and to decide if that is the world he or she wants. It is not an out-of-control narrative.

Instead, the dismal inventory of the emerging ecosystem is another starting point for the rejection of globalization, just as other properties of globalization, like the polarization of wealth, or total commodification of social life are starting points. In this sense, the ecosystem of globalization is *political*. Globalization is not a choice within the law system of capitalism (capitalism is compelled to become globalization by objective forces and its internal dynamics). But globalization is a historic choice in the broader sense of how humans organize production and relate to nature. The ecosystem of globalization is part and parcel of overall capitalism in the age of electronics. Transforming the ecosystem of globalization means transforming production relations -- relations to nature, community, employer, government, property -- the overthrow of the social relationship of Capital.

Merchant (1989) emphasizes that changes in consciousness are an integral part of ecological revolution. While she optimistically suggests that deep ecology and holistic thinking are examples of the new consciousness accompanying globalization, it probably is more accurate to see these as coincident with globalization; perhaps even autonomous upwellings, part of the objective conditions to which globalization is a response. Globalization frames the environment as abstraction, commodity, spectacle: The Nature Company; Animal Planet; eco-tourism; privatized parks; body modifications and zygote banks; the environment as software problem; carbon financial instruments, timber REITs and weather derivatives. The impulse of the environmental movement can be seen as the initiative of the multitude for something else, something better.

Until this relationship to nature is understood in its proper, historical context, the Franken-world

¹⁵ This is not to minimize the risks. In the worst-case scenario, as biologist Tim Flannery (2006) notes, "[N]otwithstanding the destruction of human civilization through the agency of climate change, it's difficult to imagine just how Gaia would 'sort it out.' And even if she does manage to rid herself of us, we would take so many other species with us that the repair job to Earth's biodiversity would take tens of millions of years." (pp 17 - 18)

is our future. The end of globalization, and the ecosystem that it is creating, is not a process that "nature" will force, or that the internal contradictions of capitalism will force either. The end of globalization is ultimately a political act, of political actors struggling and forcing a transformation in productive relations, and with it the relation of humans to nature.

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Change history:

05/30/10 - changed email address, spelling corrections

10/22/06 - substantive changes to final section

10/18/06 - minor grammatical correction

08/09/06 - revisions to introduction, added abstract for GSA submission, added missing references

06/12/06 - minor corrections, added missing citations

06/11/06 - initial version