Ecocritique in Context:
Technology, Democracy and Capitalism as Environment

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generation center upon a handful of discursive dualisms: Nature/Society, Ecology/Economy, Environment/Organism. Where one stops and the other starts, how the first limits the second, why each cannot exist without the other, what directives in the first guide the second, and when the latter endangers the former are propositions underlying innumerable on-going arguments. Because very little in such appositive terms is obvious as such, they must be invested with new significance by any individual or group that deploys them as meaningful constructs in environmentalistic analysis. The result of so many pushing and pulling on the values and practices implied by such discursive devices is a vast body of ecocriticism. Responding to the implications of these evergreen dualisms also produces many styles of "ecocritique," which articulate, in turn, their visions of right conduct for individuals, how communities might safeguard their environments or why progress never comes to pass.

In this context, many ecocritiques typically remain stuck in modernist ruts, assuming an operational terrain upon which humans intervene in their natural environments in ways that usually turn out to be disastrous. Thus, technology, democracy, and capitalism are cast as anthropogenic forces that impinge, typically with deleterious effects, on theogenic, or, at least, autogenic environments. Whether they are nature laments or anti-industrial polemics, ecocritiques rarely reposition their

Why not reverse some of these rhetorical relations? Perhaps technology, democracy, and capitalism are now coevolving into autogenic forces that can have many effects, some positive and some negative, including the fabrication of enduring anthropogenic environments. Instead of being seen as factors intruding upon the environment, their joint interaction effects can be seen as an environment in itself. If technology, democracy, and capitalism are recast as part and parcel of our environment, then their influence could be much greater and far different than what is attributed to them by other codes of ecocritique.

Recognizing how the ensemble of technology/democracy/capitalism now exerts effects on a global scale and at a local level almost everywhere forces one to concede how thoroughly these social formations have become environmental in dimension and duration. Industrial production and by-production, popular democratization and structural undemocratization, market success and market failure all coexist in dense networks of interaction and fixed grids of inaction. Their net effect acquires a naturalized momentum and scope, turning them into an environment. As Beck (1992) notes, modernization must become reflexive at this juncture: a reality that has been reaffirmed by many environmental movements of the past generation.

cultural change in the charge of this center and conference implicitly endorses Beck's vision of "the risk society." That is, "the social production of wealth is systematically accompanied by the social production of risks," and, as a result, "the problems and conflicts relating to distribution in a society of scarcity overlap with the problems and conflicts that arise from the production, definition, and distribution of techno-scientifically produced risks" (Beck, 1992: 19). Modernization is forced to become reflexive, because it is making, and it already has remade, technology/democracy/capitalism into its own environment. While the classical narratives of rationalization underpinning modernization presume greater command, control, communication, and intelligence come from applying more rationality to life, the experiences of living amidst past, on-going, and planned exercises of rationalization bring many consequences beyond anyone's command, control, communication or intelligence. In other words, the growing calculability of instrumental rationality also brings along with it new measures of incalculability -- unintended and unanticipated -- out of instrumental irrationality.

To develop a vision of technology, democracy, and capitalism as environment, this analysis will unfold in four parts. First, it develops a fresh appraisal of what "the environment" might be, and then positions this new understanding in the 1990s -- a time,

Second, it indicates how the uneven globalization of technoscience in subpolitics provides a better perspective on the environmental crisis than the incomplete globalization of civic activism endorsed by others. Third, it illustrates how the toxic waste problem can be seen as constructing a subpolis on a worldwide scale. And, finally, it indicates how the ensemble of technology/democracy/capitalism as environment promotes greater governmentality and ungovernmentality in the on-going modernization of the Earth.

I. Endings and the Environment

These questions assume considerable importance in the 1990s, after end of the Cold War and before the dawn of the next millennium, because so much of the context addressed by previous ecocritiques has changed very extensively and quite rapidly. Much has shifted in nature and society during the past fifty, seventy or hundred years; so much, in fact, that neither John Muir's preservationism nor Gifford Pinchot's conservationism do real justice to the pressing ecological problems of the present. To respond adequately today, technology, democracy, and capitalism must be recognized as integral parts of the environment. After the Industrial Revolution, nowhere in the world holds out against machines: technology is everywhere. After the two world wars, virtually nowhere in the world holds on to traditional formulas of authority: democracy is spreading

holds forth as a real alternative to the market: capitalism is everywhere. They cannot divorced conceptually from the purview of any new ecocritique responding to this new material context, because they are, strangely enough, key constituent components of the contemporary environment.

While the "environment," as a conceptual term, is used to refer to human relationships to their natural surroundings, it rarely captures the full quality or entire quantity of all human beings' interrelations with the terrains, waters, climates, soils, architectures, technologies, societies, economies, cultures, or states surrounding them. In its most expansive applications, the environment has become the name for a strong but sloppy force: it can be almost anything out there, everything around us, something affecting us, nothing within us, but also a thing upon which we act. What exactly, then, is "the environment" or "an environment?"

Perhaps the early origins of "the environment" as a term, or its historical emergence as concept/word/idea, might prove suggestive here. This archeological move does not uncover a stable nominal essence; it simply reilluminates semiotic qualities carried in the expression today that, first, accompany the term from its earliest origins, and, second, throw light upon its discursive applications. In this original sense, which is brought into English from Old French, an environment is the

verb: "to environ." And, environing as a verb is, in fact, a type of military, policing or strategic action. To environ is to encircle, encompass, envelope or enclose. It is the physical activity of surrounding, circumscribing, or ringing around something. Its use even suggests stationing guards around, thronging with hostile intent, or standing watch over some person or place. To environ a site or a subject is to beset, beleaguer or besiege that place or person.

An environment, as either the means of such activity or the product of these actions, now might be read in a more suggestive manner, especially in light of how most environmental knowledge is produced and consumed. It can be the encirclement, a circumscription, or the beleaguerment of places and persons in a strategic disciplinary policing of space. An environmental policy, in turn, is already a disciplining move, aimed at (re)constructing some expanse of space--a locale, a biome, a planet as biospheric space or some city, any region, the global economy as technospheric territory--within a discursive envelope of policing intervention/regulation. Within these enclosures, many flavors of environmental expertise can arm environmental activists, policy-makers or regulators, who stand watch in these surroundings, surveying the bureaucratic battlements that include or exclude forces, agents, and ideas.

Even if we understand environment in these terms, there are

of all living creatures to all of their natural and artificial environments. From one perspective, very little that humanity has done up to this point affects the prospects of the Earth's ultimate survival. Earth, the solar system, this galaxy antedate humanity by billions of years, and nothing that we have done up to this point seems to likely to alter significantly many basic astrophysical, geological, or meteorological processes. Chaos theory, of course, says everything can be changed by anything, but right now we do not have the abilities to make any reliable chaosmotic forecasts. Nonetheless, we must heed the caution signs of chaotic linkages, and recognize how our industrial/social/cultural metabolisms as collectives of causation are beginning to leave more enduring traces upon the planet. This year, nearly a decade after The End of Nature explored how the human production of greenhouse gases was contributing to climate change, McKibben concurred with more recent scientific findings about the extent and longevity of human changes in the world's ecosystems. In many ways, small minor modifications seem to be adding up into large major shifts. Hence, McKibben leads us to ask "what if all of the sudden, we live on some other planet? On Earth 2?" (1998: 63)

First formulated in 1866, the term "ecology" comes from Ernst Haeckel, who imagined this discipline as pertaining to "the science of the relations of living organisms to the external

in Worster, 1979: 192). Allegedly, ecology can be operationalized as "a subversive science" (Shepard and McKinley, 1969: 9), but many others increasingly see it being misused as the subversion of science (Bramwell, 1994; Lewis, 1992; Ray, 1990; Rubin, 1994). In both forms, the science rarely examines the totality of all relations between living organisms and the external world: in part, this is because there is no consensus about where, why, and how the external world can be redacted from living organisms; and, in part, it is due to a biocentric understanding of organisms and a geocentric reading of the external world that reflects science away from many artificial aspects of the external world.

Accepting the implications of such a definition, however, cannot be biased toward one side of the spectrum. That is, too many analyses on ecology read their brief in the light cast by green bands of the color spectrum, concentrating biomorphically upon nonhuman plant and animal life. Few, if any, follow the totality of all relationships between living organisms and their environments down other wavelengths into the grey scale or infrared bands of illumination made possible by more machinomorphic rereadings of all human and nonhuman life. To become a truly subversive science, ecology must re-examine the full totality of all relations between living organisms -- human and nonhuman -- and their external world -- artificial and

customs, and energies. With these re-examinations, it soon becomes clear how fully the ensemble of technology/democracy/capitalism is an environing engine. The Earth as a site and all life forms as a subject are enveloped by technology, surrounded by democracy, and besieged by capitalism, consolidating these forces into environment.

In many ways, Virilio's vision of "omnipolitanization" on the planet Earth is a by-product of these three factors working closely together in the everyday life of human beings. Anticipating perhaps the dawning of the millennium in Y2K, some also see this moment in history as a series of endings: The end of Nature. The end of History. The end of Otherness. Plainly, there are bursts of hyperpole in some of this discussion; but, at the same time, this serial of endings also can be connected with the profusions of technology, democracy, and capitalism during the 1990s.

A. The End of Nature

Technology, as McKibben asserts, appears to be changing some basic geophysical and biochemical characteristics of the Earth's atmosphere and biomass. Ozone depletion, greenhouse gases, industrial pollution, and toxic wastes seem so pervasive and embedded within the planet's ecologies that, as McKibben asserts, "we are at the end of Nature" (1989: 8). The end of Nature does not mean the end of the world, but it will mean concrete changes

certain set of human ideas about the world and our place in it....until, finally, our sense of nature as eternal and separate is washed away" (McKibben, 1989: 8). As technoscience turns what was nonhuman Nature into something contingent and coincident with human society, where perhaps once "bloomed a sweet and wild garden," people with technology now have built "a greenhouse, a human creation" (McKibben, 1989: 91). The forms of life -- both human and nonhuman -- are becoming invested entirely within many vast, complicated technological systems, which directly or indirectly define the conditions of survival after the end of Nature.

Like "the West" in the public affairs of nation-states, technology in the material forms of modernized space also, as Latouche asserts, ends nature in the beginnings of "a sort of Megamachine that has now become anonymous, deterritorialized and uprooted from its historical and geographical origins, faceless--but which nevertheless springs from quite unique historical circumstances" (1996: xii). And, like Westernization, the workings of this nature-ending megamachinic force upon the global environment are producing something greater than the sum of its parts with another "worldwide standardization of lifestyles....with the attendant clashes of views, subjection, injustice and destruction....which is imposing a one-dimensional, conformist way of living and behaving on the ruins of abandoned

B. The End of History

Democracy, as Fukuyama claims, now stands triumphant at the close of the Cold War, underscoring how decisively the end of history has fallen into place. While other frameworks for the determination of who gets what, where, when, and how have been tried and tested throughout history, the indeterminate outcomes of their workings finally gained resolution in the twentieth century as democracies tussled with totalitarian regimes for control of the world. Political liberalism and democracy, as Fukuyama suggests, combines "a rule of law that recognizes certain individual rights or freedoms from government control" (1992: 42) with "the right held universally by all citizens to have a share of political power, that is, the right of all citizens to vote and participate in politics" (1992: 43).

Together, these principles, in alliance with an on-going industrial modernization made possible by the proliferating successes of technology and capitalism, have overseen the destruction of "rival ideologies like hereditary monarchy, fascism and most recently communism" (Fukuyama, 1992: xi). Consequently, democracy is now the institutional means for deciding how natural resources will be organized and used on a worldwide and national basis. Democracy, in turn, becomes a general background condition for determining the nature and uses of the environment after the end of history. It is so pervasive

different from the present one, and at the same time better" (Fukuyama, 1992: 46).

C. The End of Otherness

Capitalism, as Lyotard maintains, now surrounds the world with its resources in the embrace of marketplaces, bringing an end of otherness to global human society. No place in the world can truly stand apart and indifferent to the modern market. Real difference, authentic resistance, and genuine otherness melt away into thin air as the identity politics of commodification guarantee that everything "is and will be produced in order to be sold, it is and will be consumed in order to be valorized in a new production: in both cases, the goal is exchange" (Lyotard, 1984: 4). Pre-capitalist feudalism and anti-capitalist socialism as bastions of otherness, standing against the rationalization of commodification, have been imploded by the identarian performativity of capital. In today's fast capitalist economy and society, everything now "is made conditional on performativity. The redefinition of the norms of life consists in enhancing the system's competence for power" (Lyotard, 1984: 64). Recognizing the power of performativity is essential. Indeed, capitalism now constitutes the fixed structures of extracting, exchanging, and exploiting wealth from the Earth globally and locally after the end of otherness.

Most corporate decision-makers strive to reduce the world's

elements to fit the logics of techno-economic performativity. They struggle to manage,

> ...these clouds of sociality according to input/output matrices, following a logic which implies that their elements are commensurable and that the whole is determinable. They allocate our lives for the growth of power. In matters of social justice and of scientific truth alike, the legitimation of that power is based on its optimizing the system's performance efficiency. The application of this criterion to all of our games necessarily entails a certain level of terror, whether soft or hard: be operational (that is, commensurable) or disappear (Lyotard, 1984: xxiv).

These decision rules acquire paramount importance in the fast capitalist economies and societies of the current world system.

This more borderless world of capitalist exchange constitutes, however, a standing invitation for all to become even more orderless as such abstract technoeconomic flows displace once concretely emplaced civic formations and family homelands. As one of the key advocates of these changes asserts, the most rational form of global order will be one of completely disenstated (b)orderlessness. That is, every state apparatus, either global or local, should do nothing to retard global flows of capital, labor, information, and exchange. States must instead disembed themselves from particular places and exclusive ecologies, becoming willing agents of structural acceleration. To support capitalism, state should change its services from a grounded national to a fluid nodal focus "so as to: allow individuals access to the best and cheapest goods and services

rewarding jobs anywhere in the world regardless of the corporation's national identity; coordinate activities with other governments to minimize conflicts arising from narrow interest; avoid abrupt changes in economic and social fundamentals" (Ohmae, 1990: appx.). As Marx predicted, all that was solidly otherness is disappearing into the thin air of rational exchange.

D. After the End: Omnipolitanism?

The eclipse of otherness, history and nature by capitalism, democracy, and technology might be misread in triumphalist terms as the foundation of Fukuyama's "coherent and directional Universal History of mankind" (1992: xxiii). On the other hand, it could simply indicate how these forces now surround, besiege, and circumscribe all living and nonliving things on the planet as their environment. Accordingly, Fukuyama's vision of "accumulation without end" (1992: 89-97) now leads to the "omnipolitanization" of the planet during the past two or three decades of global economic and social development. Omnipolitanization flows, as Virilio asserts, from the hyperconcentration of urbanized values and practices in a "world-city, the city to end all cities," and "in these basically eccentric or, if you like, omnipolitan conditions, the various social and cultural realities that still constitute a nation's wealth will soon give way to a sort of 'political' stereo-reality in which the interaction of exchanges will no longer look any

markets today" (Virilio, 1997: 75). Omnipolitanization, in keeping with Jameson's claims about postmodernity, "is what you have when the modernization process is complete and nature is gone for good" (1991: ix). Economy and society, culture and politics, science and technology acquire significant quiddity as an artificial second or even third nature with their own operational times and spaces within/over/beyond the now lost autochthonous verities of first nature's geophysical time and space now dissipating into the dust raised by multiple modernizing projects in second nature.

Those who collaborate economically and politically in the collective construction of actual transnationality in these technoformations, in turn, also might not necessarily hold their nominal nationality as dear within traditional territorial space (Reich, 1991). They instead can slip increasingly into other organizational registers of an enterprise application in cybernetic orgware, where machinic time and network space let them work and live as co-accelerant, com-motive, or con-chronous agents of fast capitalist firms, digital design alliances or performative professional groups. By moving from the spatio-temporal perspectives of specific ecological sites into the acceleration effects of instant communication and rapid transportation, "all of Earth's inhabitants may well wind up thinking of themselves more as contemporaries than as citizens;

distributed by quota, of the old Nation-State (or City-State), which harbored the demos, and into the atopic community of a "Planet-State" that unfolds as "a sort of omnipolitan periphery whose centre will be nowhere and circumference everywhere" (Virilio, 1995: 36).

As it becomes enmeshed in codes of analysis and subcodes of interpretation, any environmental expression, like all textuality, cannot be easily parsed from its discursive interpretations. For example, omnipolitanism might be defined by living with toxic wastes -- another way of life where the center is nowhere and the circumference is everywhere. As Smith suggests, toxic wastes are "a by-product of energy development, agriculture, and most industrial activity," which now "are found throughout the environment, in our air, water, and soil" (1995: 170). Every modern industrial economy creates these outputs as intrinsic parts of ordinary everyday life. They are centered nowhere, but their circumference is everywhere. While, the U.S. Office of Technology Assessment believes that "there are major uncertainties on how much hazardous waste has been generated, the types and capacities of existing waste management facilities, the number of uncontrolled waste sites and their hazard levels, and on the health and environnmental effects of hazardous waste releases" (1983: 13), the ubiquity, opacity, and complexity of hazardous waste indicate how technology/democracy/capitalism work

anthropogenic qualities of humanity's omnipolitan condition.

Like the weather, water, and wildlife, waste is to be found everywhere in the planetary environment, making this omnipolitan by-product a new fundamental and long-lasting characteristic of the Earth's ecology as it is transformed by modern agricultural, industrial, and technological development (National Academy of Engineering, 1989). The mechanisms that place chemicals outside specific locales, boost their concentrations beyond permissible thresholds, fix exposures so intensively as to threaten health, and disperse effects indiscriminately across space and time are all human artifices -- technology/democracy/capitalism. Some are intended and understood, most are unintended and not at all comprehended, but they now surround all human and nonhuman life forms as their environment.

II. An Omnipolis or the Subpolis

In fact, omnipolitanization requires us to recognize how allegedly neutral technologies that many associate with "progress" are highly political: their materialized techne shapes the moral praxes of politics as well as carries the productive effects of power as discipline, discourse, and domination. Any sociotechnical system, when vested with the ensemble of technology/democracy/capitalism, is also, ironically and immediately, an ethico-political system. This reality resonates behind any critical reexamination of sociotechnical systems that

As Burns and Dietz suggest, when technology/democracy/capitalism become environment in omnipolitanized living, a new awareness of the "rules specifying the purposes of the technology, its appropriate applications, the appropriate or legitimate owners and operators, how the results of applying the technology will be distributed and so on" (1992: 209) must be developed. Each one of these concerns is being contested, at this juncture, in environmental politics, as individuals and groups struggle with the demands of living well on the Earth and the difficulties of Earth's survival with so many humans struggling to live well.

Virilio's omnipolitanism, however, may suggest too much about too little. An omnipolis seems to be a city that is everywhere, bringing into being universal citizens who share a common mind and soul. There is evidence of tendencies in this direction, but the highly variegated nature of urban forms, civic cultures, social values, and political practices all around the world does not support Virilio's assertions. Unless we choose to chase some elusive will-of-the-wisp, like global civil society, world public opinion or transnational epistemic community, like Fukuyama's Universal History, something else probably can account for many of the effects Virilio attributes to omnipolitanization without asserting we all now live in one universal city, share a single bond of citizenship, and contribute to some great unitary culture. The world remains far to unruly to accept the cliodicy

What is compelling about Virilio's omnipolitanism is the everchanging messiness of techno-economic infrastructures running just beneath, behind and beside the world's many great, but still quite different, urban places. These turbulent world wide webs move matter, energy, and information from everywhere to anywhere, while at the same time piling up much more of these goods and their services in a few places to the detriment of many other places. They work underneath, above, and apart from the polis, but they are also structures of power, systems of exchange, and signs of culture. These subpolitical realms, as Beck indicates, are often misrepresented as the black boxes of science and technology, but their power effects, social values, and cultural practices can be quite enlightening and very open. They are where "the art of the motor" (Virilio, 1995) actually runs. Instead of searching for Virilio's omnipolitan condition, the workings of technology/democracy/capitalism as environment ought to help us find a subpolis, which these forces are fabricating all over the planet.

The subpolis is the collective assembly of rationalization programs in technoscience that "preprograms the permanent change of all realms of social life under the justifying cloak of techno-economic progress, in contradistinction to the simplest rules of democracy -- knowledge of the goals of social change, discussion, voting, and consent" (Beck, 1992: 184). It

powers layered under politics, occluded by technologies from ordinary political understandings, hidden from politicians by the mechanics of markets. Like the polis, the subpolis is a built environment, but its constructs all to often are depoliticized in the professional-technical rhetorics of civil engineering, public health, corporate management, scientific experiment, technical design, and property ownership. It involves the quasi-objectivity of subjects embedded practicably in technoformed activities, but it cannot be separated from the quasi-subjectivity of objects circulating en masse in globalized economies of scale. What is not known about the subpolis constitutes the binding riders of risk attached to social contracts of technological action.

Beneath, behind, and beside the workings of technology/democracy/capitalism as environment, these omnipolitan developments belie the presence of a new collective locale of human and nonhuman life: the subpolis. This notion can be derived from Beck's analysis of the subpolitical activity underlying contemporary reflexive modernization. In those contexts, the workings of modern technics and markets are "institutionalized as 'progress,' but remain subject to the dictates of "business, science, and technology, for whom democratic procedures are invalid" (Beck, 1992: 14). Of course, there are other layers in the subpolis related to other

of technoscience/technopolitics/technoeconomics. However, they will not be discussed here. Unlike the polis, which is a collective of people situated in a specific locality or particular nation-state, the subpolis more commonly is an evershifting assembly collective of people and technics interoperating with many other technical assemblies and people elsewhere along multi/trans/supernational lines as well as within inter/infra/intralocal spaces.

III. The Subpolis: Toxic Waste as Subcivics

The development of new technoscience disciplines, like environmental toxicology, risk assessment or public health, mark the shift in modernizing processes from a register of unreflexive industrial development to conquer material scarcities to a more reflexive one of risk management amidst the uncertainties of a modernized ecology (Buchholz, 1993; Carnor, 1993). As Beck suggests, the environmental public health strategy, first begun in the United States by Rachel Carson's Silent Spring (1982), marks the advent of reflexive modernization as technostructures become identified as toxic threats to their creators.

With all of its practical engagements in public health administration and natural resource management, environmental science tacitly indicates how the economic imperatives behind technological innovation are now "being eclipsed by questions of the political and economic 'management' of the risks of actually

acknowledging, avoiding or concealing such hazards with respect to specially defined horizons of relevance" (Beck, 1992: 19-20). With this recognition, the toxicity of many substances--industrial by-products, agricultural chemicals, construction materials, artificial foodstuffs, nuclear waste, automotive fuels, food packaging, synthetic pharmaceuticals to name only a few--becomes contested ground, brimming with actual and/or potential hazards awaiting further interpretation (Steingraber, 1997).

Implicitly recognizing how the ensemble of technology/democracy/capitalism is now environmental, Lappé observes, "we are in the midst of the chemical revolution. It is a given that the chemical industry and its allied field of pharmaceutical and pesticide manufacture represent donnant forces that are shaping our world....Whatever perspective you take, it is clear that chemicals insinuate themselves into our lives" (1991: 1). Without saying so directly, Lappé confirms how thoroughly revolutionary these ensembles of chemical science, chemical industrialists, and chemical manufactures are becoming to the extent they refashion human/ecology relations. Within chemically revolutionized built environments, industrial production and by-production now contribute to the construction of a transnational subpolis of technoscience acts and artifacts set beneath, within, and above each territorial polis still being

This technified mode of everyday revolution contributes to the construction of the subpolis. More specifically, narratives of chemical, industrial, nuclear, and ecological revolution, like the comments from Lappé indicate, simply underscore how thoroughly,

> now the potential for structuring society migrates from the political system into the sub-political system of scientific, technological and economic modernization. A precarious reversal occurs. The political becomes non-political and the non-political political....The promotion and protection of 'scientific progress' and of 'the freedom of science' become the greasy pole on which the primary responsibility for political arrangements slips from the democratic system into the context of economic and techno-scientific non-politics, which is not democratically legitimated. A revolution under the cloak of normality occurs, which escapes from possibilities of intervention, but must all the same be justified and enforced against a public that is becoming critical (1992: 186).

The chemical revolution is but one facet, albeit a highly toxic one, of a larger wave of technoscientific modernization that has broken over the environment during the last century. Secretive sources of chemical maltransformation tied to industrial by-production insinuate themselves into our lives, because we accept them with any purchase of every bug bomb, paint thinner, synthetic antibiotic or artificial sweetener brought to us as technological transformation by industrial production.

Democratic institutions in the territorial polis ordinarily accept these forces without much contestation, because such technoscientific revolutions are believed to bring the good life,

allegedly quite controllable, noxious by-products of chemical applications. In fact, however, the subpolis of technoscientific artifacts undercuts the workings of conventional political life (Luke, 1997). Beck worries about the unintended effects in the radical subpolitics implied by the revolutionization of advanced industrial technics. That is, the political system, on the one hand,

> is being threatened with disempowerment while its democratic constitution remains alive. The political institutions become the administrators of a development they neither have planned for nor are able to structure, but must nonetheless justify. On the other hand, decisions in science and business are charged with an effectively political content for which the agents possess no legitimation. Lacking any place to appear, the decisions that change society become tongue-tied and anonymous....What we do not see and do not want is changing the world more and more obviously and threateningly (Beck, 1992: 187).

Environmental toxicology makes the same point about the chemical revolution taking place under the cover of normality within industrial production: what we do not see and do not want from industrial by-production is obviously changing the world quite thoroughly.

Chemicals appear before us as need-satisfying commodities, created by capitalism. Vetted and licensed by duly constituted authorities, the chemicals are approved, directly or indirectly, by popularly elected representatives through systems of democracy. Invented to serve some technical purpose, technology is found throughout the production/consumption/application

in the environment, once again, becomes an environment force in the work of the ensemble. The toxicological studies conducted by environmental public health authorities try to overcome the negative effects of those tongue-tied and anonymous decisions that already are always changing society by quantifying the incidence, level, and severity of the risks produced by technical modernization in the new narratives of "public advisory" reports.

In this subpolis, however, many ordinary processes of democratic legitimation fail. Modern chemical revolutions with all of their toxic by-products are highly technified economic actions. Each always "remains shielded from the demands of democratic legitimation by its own character" inasmuch as "it is neither politics nor non-politics, but a third entity: economically guided action in pursuit of interests" (Beck, 1992: 222). Still, the inhabitants of this planetary subpolis have yet to admit how "the structuring of the future takes place indirectly and unrecognizably in research laboratories and executive suites, not in parliament or in political parties. Everyone else--even the most responsible and best informed people in politics and science--more or less lives off the crumbs of information that fall from the tables of technological sub-politics" (Beck, 1992: 223). Such informational crumbs become part of the textuality of toxicity, which toxicological analysis uses to confirm the human costs of chemical revolution,

1995). The subpolis survives in the machinations of many industrial ecologies, whose machinic metabolism, in turn, entails the planned and unintended destruction of many nonhuman and human lives. Only a few perils in technical modernization are imagined; many more, which are grounded upon how we construct the subpolis, are quite real.

When put into practice, most environmental risk analysis unfortunately serves more dark purposes as an applied science of mortality management in the polis. To coexist with the technics of wealth production, all implicitly consent to coevolve with the tools and techniques that generate hazardous by-products as part and parcel of their useful products. So many might live more fully with those manufactured goods and services that insinuate their way into our lives, a few must die and/or live less fully as a function of the many inherent bads and disservices intrinsic to the ordinary routine output of the subpolis. This operational necessity is called risk. Just as the polis often must conscript its members to wage war and die for its survival, the subpolis requires a random arrangement for an anonymous decimation of its members in order for it to continue developing. To enjoy the production of wealth by advanced technologies, everyone must endure the systemic by-production of richer risks, recognizing that for every A, B or C benefit of this chemical or that material X people per 10,000, Y people per 100,000, or Z people

death.

Accepting these measures of normalization from advanced technologies does not seem to move modern society very far past the bargains of human empowerment struck by crude rituals of human sacrifice. Epidemologists, specializing in events as varied as human breast cancer and amphibian limblessness, now suggest that everyone tacitly consents to the cruel crippling of many nonhuman beings and extended execution of many fellow human beings every time they spray herbicide on lawns, fill their gas tanks with high-test, buy pressure-treated lumber, and purchase plastic house wares. Statistics can forecast in general how many people, plants, and animals will be struck by this anonymous violence, but no estimation technique or modelling trick can name which particular individuals will be taken by this brutal regimen of inexorable random decimation. As Beck ironically observes, this is "progress," or "a substitute for questions, a type of consent in advance for goals and consequences that go unnamed and unknown" (1992: 184).

Dealing with socially produced risks in this fashion essentially naturalizes the creation of such general effects within any particular economy and society. Because the machinic metabolisms underpinning the ensemble of technology/democracy/capitalism as environment that creates and contains such by-products will not change, everyone must, on the

products are a fixed environmental feature in the mix of useful products delivered to them in the marketplace by industrial development. On the other hand, when coping with harmful risks, recognizing that science can deliver fairly reliable probabilistic statements about the rates of their incidence or the levels of their relative severity provides an official guide to individual and group behavior. Risk is simultaneously naturalized (turned into an ineluctable background condition), socialized (reduced to a collective cost born by all), and personalized (transformed into a multidimensional game of various lifestyle choices). To live is to play the odds in large numbers as the overall environment now encircling and beleaguering us is approached through data structures, housing many different statistical statements about multiple arrays of risk.

Regulating toxic substances, then, is another iteration of the technological normalization many mistake for progress in the development of advanced capitalist society. Acceptable levels of risk are normative markers that identify the range of normality and abnormality beneath, beside or behind them. Toxic wastes, industrial pollutants, biological hazards are normalized by defining their abnormalities. At the same time, toxicity acquires its own clusters of technological normalization "in the choice and determination of material, the form and dimensions of an object whose characteristics from then on become necessary for

centering of risk in capitalist society's celebration of individual responsibility and personal initiative simultaneously consigns toxic substances to domains of risk management where they become simply one more surmountable obstacle for autonomous rational agents to overcome. "So we see," as Canguilhem suggests, "how a technological norm gradually reflects and idea of society and its hierarchy of values, how a decision to normalize assumes the representation of a possible whole of correlative, complementary or compensatory decisions" (1991: 247). Risk analysis creates the advisories, and citizens thereby become the advisoried masses, struggling to determine the path of maximum likely survival from a stream of health news, food scares, toxic alerts, and hazard warnings about a noxious encirclement by technology/democracy/capitalism.

IV. The Subpolis: Governmentality/Ungovernmentality

While omnipolitan toxic wastes can be found everywhere, subpolitics guarantees that they are most easily discovered in a few places, particularly those inhabited by the poor, racial minorities or powerless ethnic groups who are all neglected by the larger majority in society. As Bullard asserts, these peoples often are considered "throw-away communities," and their lands are used for "garbage dumps, transfer stations, incinerators, and other waste disposal facilities" (1994: xv). The environmental justice community opposes this sort of

for "social equity" and "distributive impacts" (Bullard, 1994: 3) in the negative effects of industrial by-products. Yet, it cannot succeed solely by shifting the focus of mainstream environmentalism, or "protecting the environment from humans," to a simple form of environmental justice, or "protecting humans from the environment" (Bullard, 1994: 139). Because we have not protected Nature from humans, it is now different in many respects--it has become "denatured." To attain environmental justice, just environmentalism, as we have defined it thus far, is no longer enough. Instead, the regimes of governance that permit these inequities to develop must be reassessed and then reconstructed to cope with the emergent qualities of what is "ungovernable" in our modernized environment of technology/democracy/capitalism.

The discourses of danger in environmentalized public health display the calculable logics of "governmentality," as Foucault (1991) defines it, at work in a remarkably pure form, but they ignore the incalculable irrationalities of "ungovernmentality." Environmental technoscience operates as a strategic technology that invests human beings--their material modes of subsistence, basic physical health, and sites of habitation--with bio-historical significance. Partly natural fact, partly historical artifact, public health disciplines, for example, mark those domains of action where technoscience first conquered "a relative

(Foucault, 1980: 142). By claiming command over such bio-power, the ruling elites concerned with a healthy public perfected the disciplines of public health, "and broadening and organizing that space, methods of power and knowledge assumed responsibility for the life processes and undertook to control and modify them" (Foucault, 1980: 142). In specifying the characteristics of environmental normality and abnormality suggests, as Canguilhem argues, "a normative class had won the power to identify--a beautiful example of ideological illusion--the function of social norms, whose content it determined, with the use that that class made of them" (1991: 246). Environmental regulations, toxic waste controls, biohazard guidelines only push catastrophic ecological abnormalities into the ambit of other more stable juridical norms, like economy, efficiency or equality.

As early as the sixteenth century, princes and their retainers introduced notions of economy into political affairs as an essential aspect of statesmanship with the practices of government. Government, as Foucault argues, became understood as "the right disposition of things, arranged so as to lead to a convenient end" (Foucault, 1991: 93). By the age of enlightened despotism, codes of governmentality effuse collective life in "the proliferation of political technologies that ensued, investing the body, health, modes of subsistence and habitation, living conditions, the whole space of existence" (Foucault, 1980:

national economies in the twentieth century render the boundaries between political and economic, technological and social, public and private much more problematic, because technology/democracy/capitalism are environment. Even so, mostly the state and its agents are expected to manage the key forms of normality and abnormality within these convoluted passages.

States survive through governmentalization, but this can occur only because of the flexibility and universality of governmentality,

> which is at once internal and external to the state, since it is the tactics of government which make possible the continual definition and redefinition of what is within the competence of the state and what is not, the public versus the private....the state can only be understood in its survival and its limits on the basis of the general tactics of governmentality (Foucault, 1991: 103).

Actually, a great deal of governmentality always has been external to the state; and, in its original forms, it is essentially sub/extra/supra/nonterritorial in its logic because it pertains to the subpolis. Indeed, as La Perriére's anti-Machiavellian and contra-sovereign tract, Mirror Politique, indicates, real control devolves to people whenever "one governs things" (Foucault, 1991: 93). Consequently, the governmentality exercised by some in the polis also must rest upon many others managing--efficiently and effectively--most aspects of the subpolis.

The acts and artifacts concocted by "accumulation without

things one must rightly dispose of, and arrange so as the serve convenient ends, in the developing civil society of capitalist economies:

> ....what government has to do with is not territory but rather a sort of complex composed of men and things. The things with which in this sense government is to be concerned are in fact men, but men in their relations, their links, their imbrication with those other things which are wealth, resources, means of substance, the territory with its specific qualities, climate, irrigation, fertility, etc.; men in their relation to that other kind of things, customs, habits, ways of acting and thinking, etc.; lastly, men in their relation to that other kind of things, accidents and misfortunes such as famine, epidemics, death, etc. The fact that government concerns things understood this way, this imbrication of men and things....what counts essentially is this complex of men and things; property and territory are merely one of its variables (Foucault, 1991: 93-94).

The subpolis emerges in this imbrication of men and things as "the possibilities for social change from the collaboration of research, technology, and science accumulate," particularly when unchanging territorial jurisdictions and stable political institutions see that the organizational powers activated by governmentality "migrates from the domain of politics to that of subpolitics" (Beck, 1992: 223).

Nonetheless, governmentality discourses, like environmental policy, ecological toxicology, and public health, also must mobilize risk assessment and management techniques to cope with other sorts of social (dis)arrays (un)organized by men and things in relation to instrumental irrationalities in accidents,

disciplines can establish a normal measure of governmentality in the right disposition of things and men, rearranged constantly so as to lead to more convenient ends by technical rationality; but, on another level, these discourses also help create new measures of abnormality whose "ungovernmentality" discloses concomitantly the wrong outcomes of technical irrationality in the (mal)dispositions of things and men.

Ungovernmentality, like risk, is "the reflection of human actions and omissions, the expression of highly developed productive forces," which underscores how "the sources of danger are no longer ignorance but knowledge; not a deficient but a perfected mastery over nature; not that which eludes the human grasp but the system of norms and objective constraints established with the industrial epoch" (1992: 183). These social disarrays then promote many more inconvenient ends. Much of this ungovernmentality, in fact, follows from chaosmotic clusters of seemingly opaque relationships between things and people. Often the right disposition of people and things in one set of assemblies creates a wrong indisposition between people and other people or things and other things in many different collectives. These wrong relations of indisposed people-and-things with other people or other things is the source of many polluting, toxic, biohazardous sets of relations.

A fundamental thread in the text of governmentality must be

simultaneously alongside the institutions of governmentality. Realizing a proper relation of productive contact between people and things in the purposive management of territory, population, and sovereign power will, at the same time, cause many improper relations of destructive contamination between (those) things and (other) people. Because these improper relations escape, or are ignored by, the rational means-ends calculations of governmentality, the irrational events of mismeant and/or bad ending ungovernmental outcomes also will inevitably occur. These events are systemic, not sporadic, widespread, not isolated, chronic, not episodic. Nonetheless, ungovernmental happenings are rarely recognized as endemic products. Instead they are mislabelled as accidental by-products, and called inaccurate names like pollution, toxins, contamination, hazards. Because they are permanent and predictable features in the subpolis, such by-products need to be rounded up more systematically by new reflexive disciplines devoted to defining, disciplining, or delaying ungovernmental effects.

What is ungovernmental often is confused with being free, and liberal philosophies of agency and society often have purposely intertwined themselves with ungovernmentality in a most unproductive fashion in the name of more choice and less regulation. Foucault's insights about the workings of governmentality pertain mostly to the domain of the polis, or the

in the nationalized space and time of definite polities and economies known as countries. The second order consequences of effective governmentality in the subpolis, like industrial development, economic growth, concentrated urbanization, and technological modernization, are to be found in the costly frictions of ungovernmentality. They usually are embedded within the scope and methods of the subpolis, which embrace transnational space and time in the indefinite polities and economies of eco-systems. This wrong indisposition of all other things and people, which often attends the right disposition of a few things and people, is an intrinsic by-product of every product as technology/democracy/capitalism become environment. Much of this by-production appears as the toxic wastes, industrial pollutions, artificial biohazards, and chemical contaminants that cause environmental destruction; yet, much of this comes from planning, knowledge, and affluence, not carelessness, ignorance, and scarcity.

To conclude, the subpolis is a built environment, the ecology of industrial metabolisms, an anthropogenic site for really interrelating all living things to all of their surroundings. It works beneath/behind/beside the polis, and it quite often is explicitly politicized. Nonetheless, the systems of productive power that it rests within are rarely seen as realms of citizenship or statesmanship, because of an age-old

slaves, and women where work is done. If ungovernmentality is to be managed, this neglect must be amended. The Aristotlean preemption of the subpolitical by the political exalts the realm of leisured, educated, free men over other subaltern actors without paying serious attention to its material sustenance or machinic infrastructure. If we stand at the end of Nature, History, Otherness, we cannot continue on this track: infrastructures and superstructures must be reattached in the constructures of ecology, because the citizen must be a mechanic and/or the mechanic should become a citizen if the Earth's ecologies are ever to be mended.

* This paper develops key points in my Capitalism, Democracy, Ecology: Departing from Marx (Urbana: University of Illinois Press, forthcoming).

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