

13. For a more elaborate discussion of dialectical naturalism, see Murray Bookchin, "Thinking Ecologically," in *The Philosophy of Social Ecology: Essays on Dialectical Naturalism* (New York: Black Rose Books, 1990).

14. The idea of direct democracy is directly tied to Bookchin's theory of libertarian municipalism which entails building a confederation of municipalities engaged in a process of direct-democracy. For an introduction to the theoretical ground for libertarian municipalism, see Janet Biehl, *The Politics of Social Ecology: Libertarian Municipalism* (Montreal: Black Rose Books, 1998).

15. See Murray Bookchin, "Market Economy or Moral Economy?" in *The Modern Crisis* (Philadelphia: New Society Publishers, 1986).

16. I thank Amy Harmon for this phrase that she coined during a class at the Institute for Social Ecology, summer 1997.

17. See Donna J. Haraway, "A Cyborg Manifesto," in *Simians, Cyborgs, and Women: the Reinvention of Nature* (New York: Routledge, 1991).

18. Murray Bookchin. Lecture at the Institute for Social Ecology. Summer 1996. For a wider discussion of confederalism, see Janet Biehl, *The Politics of Social Ecology*.

CHAPTER SIX



ILLUSTRATIVE OPPOSITION: DRAWING THE REVOLUTIONARY OUT OF THE ECOLOGICAL

The project of incorporating a broad revolutionary analysis into particular struggles for ecological justice can be daunting. Each night the news presents us with yet another immediate ecological crisis that demands our attention. Confronted with stories of greenhouse-related disasters, environmentally induced illnesses, or rising levels of pollution, we feel overwhelmed as we try to prioritize our ecological agendas, attempting in turn to link particular struggles for ecological justice to questions of deeper political change. We want to go beyond pragmatic environmentalists who focus on single-issue reforms, yet we are faced with a dilemma: While we know it is crucial to engage in particular ecological struggles, while we know that such struggles are necessary to slow down the pace of wider ecological collapse, we also know that addressing single issues alone is insufficient to bring about radical social and political transformation. We need, then, to explore ways to engage in particular, necessary ecological struggles while drawing out a sufficient revolutionary vision for a new desirable ecological society.

NECESSARY VS SUFFICIENT CONDITIONS FOR POLITICAL TRANSFORMATION

Movements for social or ecological change focus primarily on that which is *necessary* to remake society. Whereas many in the Old Left regarded the abolishment of material inequity to be the most necessary condition for a free society, in the 1970s, radical feminists asserted that social justice would necessarily be won with the transcendence of patriarchy. Similarly, many involved in the Civil Rights movement of the sixties believed the elimination of

racism to be a primary necessity around which wider social change would unfold. For many in these movements, the abolishment of one specific form of hierarchy was viewed as necessary for radical social transformation. In such movements, people often reasoned: "Once we dismantle this form of hierarchy, other forms will dissolve as well." In this way, what is necessary was conflated with what is sufficient. And still today, we often believe that if we succeed in the necessary task of abolishing one specific form of hierarchy, then this necessary act will be *sufficient* to create a free society.

What is necessary is not the same as what is sufficient. For instance, if we want to boil water, we need to fulfill a few necessary conditions: water and a heat factor which can raise the temperature of the water to 212 degrees. We recognize that if we have only one of the necessary conditions, a pot of water for example, it alone will represent an insufficient condition for boiling water. In the same way, if we have only a heating coil raised to 212 degrees with no water present, the heating coil will represent an insufficient condition as well. Or, if we have a pot of water at one end of a room and the heating coil raised to 212 degrees at the other end of the room, we will still lack the sufficient condition for boiling water—even though we have organized the necessary conditions for boiling water to occur at the same time. If we think only in terms of what is necessary, we may spend hours staring bewilderedly at a pot of unheated water, or at a heating coil, or we may move the heating coil and the pot of water around the room, wondering why we are unable to make the water boil.

Obviously, most people do not have to think critically about the necessary and sufficient conditions for such everyday activities as boiling water. We know intuitively and rationally through conventional logic that the sufficient condition for boiling water represents the accumulation of the necessary conditions for boiling water (water and a heat factor), arranged in a particular physical and temporal relationship to each other. In this way, we understand implicitly that the sufficient condition represents a holistic, accumulative, and integrative whole comprised of all necessary conditions for making water boil.

However, we run up against the limitations of the boiling water analogy when we begin to think about the necessary and sufficient conditions for social and ecological change. For while the conditions that allow one to possess a pot and a heating coil might be clearly social and arbitrary, the mechanics of boiling water dwell largely within a world of physical, inorganic processes that pertain to the movement of heated water molecules. Such an event can occur independently of human action, as in the case of a forest fire boiling ground moisture into wisps of steam. In contrast, the event of revolution is a distinctly *social* phenomenon existing within the realm of potential freedom

rather than natural law or necessity. And while this inorganic analogy is in itself insufficient for providing us with a plan to create a revolution, we may use this analogy to begin to think through the necessary and sufficient conditions for an ecological and social revolution. We may ask ourselves: What are the necessary and sufficient conditions to "heat up" society to produce a revolutionary situation?

As we think through the necessary and sufficient conditions for social and political change, the sufficient condition must be understood to be just that—*sufficient*—neither perfect, nor a determined end in itself, but an incomplete beginning. Hence, the sufficient condition is not a deterministic factor. Just because we may have the pot, the water, the heating coil, the right time, and the right place, a great rainbow could majestically appear outside the window and we could find ourselves wholly disenchanted with the idea of boiling water after all. Or the pot could turn out to have an undetectable leak. The sufficient condition means merely that we have fleshed out the idea of necessity *enough* to begin the work that is set out before us. It does not mean that we will be successful in our work, or that the work will turn out to be what we had in mind. It only means that we have a good enough chance, that we have done almost all that we can to increase the likelihood that we will actualize our goals. The sufficient condition, then, represents a glorious point of departure, open-ended as the utopian horizon whose band of brilliant color recedes incrementally as we make our approach so that we never arrive but forever enjoy the desirous and sensuous apprehension of arrival.

In embarking upon this question, we see, as already stated above, that most movements for social change conflate that which is necessary with that which is sufficient. People often select a single issue, source of oppression, or form of hierarchy as the sole focus for necessary social action, never thinking through the sufficient condition for a free and ecological society. However, when we begin to think holistically, we begin to see that the sufficient condition for an ecological society represents the accumulative integration of non-hierarchical institutions and an ecological technics, ethics, and sensibility.

As social anarchism implies, unless we abolish *hierarchy in general* as the sufficient condition for a free society, specific forms of hierarchy may endure. The idea of abolishing only specific forms of hierarchy (such as the State, capitalism, racism, and patriarchy), while *necessary*, proves over and over again throughout history to be woefully insufficient. For instance, while Marxian socialism seeks to abolish hierarchies derived from material inequities, hierarchies such as the State and patriarchal institutions remain largely unchallenged. Similarly, while liberal feminists seek to abolish hierarchies that exclude women from male dominated social and political institutions, hierarchical structures such as capitalism remain unchallenged, leaving women

as well as men to be exploited by capitalist production. What is more, while it is necessary to eliminate specific forms of hierarchy such as capitalism and women's oppression, this elimination is not only insufficient for creating a new world, it is even *compatible* with the survival of many other forms of hierarchy.

The compatibility between non-hierarchy and hierarchy can be quite insidious. If we were to eliminate racism, if we were to create the social conditions in which people of all ethnicities were treated equally, capitalists and the State could still refine other criteria such as age, sex, or class, by which to justify social exploitation. In this way, hierarchical systems such as capitalism and the State are compatible with the non-hierarchical conditions of ethnic equality. Or in the event of a non-sexist society, there could conceivably coexist a capitalist and statist society that bases privilege primarily on class and race, rather than on sex. A society organized around egalitarian sexual relations is potentially compatible with a racist, classist, and statist society. What is more, we could conceivably eliminate the idea of dominating nature, establishing a social 'reverence' for the natural world such as expressed by ancient Egyptians, Mayans (or Nazis, for that matter), while still maintaining immiserating social hierarchies. Finally, we could even imagine dismantling the hierarchy of the State only to find that hierarchical corporations take over the management of social and political life completely.

Hierarchy is much like a cancer which, if not rooted out completely, is able to find ever new configurations of domination and submission in which to grow and thrive. Hence, if we eliminate specific forms of hierarchy without eliminating hierarchy in general, we may find that new hierarchies merely replace the ones abolished, while old hierarchies dig their heels in deeper. However, the general idea of non-hierarchy, while sufficient in its scope, remains insufficient in its differentiation and focus. The call to abolish 'hierarchy in general' must in turn be developed into a specific interpretation of social and ecological transformation. As it stands alone, the idea of non-hierarchy or cooperation remains too broad and ambiguous to have specific meaning. We are left wondering: What *forms* of non-hierarchy or cooperation are required? Unless we bring the idea of non-hierarchy into its specific fullness, we will be unable to translate it into a tangible social vision or practice. In the same way, without bringing the idea of boiling water into its specific fullness, we are left with an incoherent pile of necessary factors such as pots, water, and heating coils. We are left with little understanding of the relationship between the pot of water, the heating coil, and the synchronicity of time and place.

There exists a potentially complementary relationship, then, between that which is necessary and that which is sufficient *if and only if* all necessary factors are consciously coordinated and integrated. Often, when people are

overwhelmed by the complexity and urgency of social and ecological crises, they express frustration at the imperative to create a coordinated sufficient condition. They may reason, "Well, as long as we all do our own little necessary part, then eventually it will all form a sufficient whole." Such a response, while again understandable, fails to convey that if we each choose a necessary part, without consciously integrating those parts into a larger sufficient whole, we will keep the social project from realizing its full potentiality.

It is insufficient for one group to fight racism over here, while another group struggles against toxic dumping over there, while still another individual organizes a food coop some place else. This kind of 'piece work' is insufficient because it is non-holistic. When we see our activism as a series of single issues, we end up arranging the pot, the water, and the heating coil in different places at different times, failing to form a coherent vision of what we are striving for: a dazzling image of society boiled over, making room in the social stew for ever new revolutionary possibilities.

Once we have asserted the general idea of non-hierarchy as the integrated and coordinated sufficient condition for a free society, we may draw out the many necessary and specific forms of non-hierarchy needed to remake society. By differentiating the idea of non-hierarchy, we begin to educe a fully differentiated vision and plan for social and political reconstruction.

THE SPHERES OF OUR LIVES: WHERE HIERARCHY LIVES

In order to move toward a reconstructive vision, we need to comprehend the structure of the society we wish to transform. Just as the idea of non-hierarchy must be fully differentiated to understand the complex quality of institutional power, the idea of society must also be fully differentiated in order to convey the specific *locations* of institutional power.

When we think of society, we rarely think of the distinct spheres which give shape to our everyday lives. We usually refer to society as a monolithic structure as if we lived in a completely undifferentiated societal realm. Yet society is constituted of three distinct realms: the social, the political, and the State.

The social sphere is comprised of community and personal life. It is the sphere in which we create the everyday aspects of our existence as social beings. It is the realm of 'works and plays', the place in which we engage in production and distribution, fulfill community obligations, attend to practices of education, religion, as well as participate in a range of other social activities. While there is a public dimension to social activities such as work, school, and community life, there is also a private or personal component to social life as well. This is the space in which we reproduce the conditions of our most

immediate physical and psychological needs and desires for food, love, sexuality, and nurturing. The personal dimension of the social sphere represents a specific quality of privacy predicated on an intimate knowledge of ourselves and of our closest relations.

In contrast, the political sphere is the space in which we assert ourselves publicly as managers of our own community affairs. It is the space in which we discuss, decide upon, and carry out the public policies which give form to social and political practices of our communities. The political sphere constitutes a specific quality of action which is distinct from the social sphere. Marked by a quality of public responsibility, the political sphere is the place in which we, as citizens of a town, village, or city, participate in shaping the policies which in turn inform our everyday lives.

Clearly, this description of the social and political spheres represents a brief sketch of what these spheres *ought to be*, rather than *what is* within our current society. Today, these spheres are dominated and degraded by the sphere of the State. The modern Republican state represents a hierarchical and centralized institution that both invades and appropriates activities that should be managed directly by citizens within the political sphere. The State coopts the power of citizens to directly determine and administer public policies regarding community activities such as production, technological practice, health, and education. To secure its own power, the State wields an often undetectable, yet constant, everyday threat of violence manifested through an army and police force.

The State has so thoroughly appropriated our understanding of 'government' that we are scarcely aware of our estrangement from truly autonomous *political* activity. Taking the State for granted as inevitable, we retreat into the social sphere looking for a site of both survival and resistance.

THE PUBLIC SPHERE: THE NECESSITY OF POLITICAL RECONSTRUCTION

Yet in order to transform society, we cannot retreat into our social lives; we must address political questions as well. However, most social activists fail to sufficiently include the problem of reconstructing the political sphere within their activist vision. Instead, they often focus exclusively on the public and private dimensions of the *social* sphere.

The reasons for this are two-fold. First, the political sphere has been replaced by what Murray Bookchin refers to as "Statecraft": a system in which political power is placed in the hands of elected representatives (professional politicians) who make decisions regarding public policy on behalf of a voter 'constituency'. Disempowered by statecraft, and unaware of a political alternative, activists often turn away from questions of politics, turning instead

to the social sphere where they feel they can at least exercise some control over their lives.¹

Second, activists often neglect the political sphere because, estranged from their political identities, they identify primarily as consumers. The emergence of post-war consumer society gave rise to a generation of Americans who identified themselves through their consumption patterns. For instance, within the ecology movement, activists often identify more as consumers and technology 'users' than they do as political *citizens*. As a result, they tend to express resistance in the form of consumer activism by attempting to select, produce, or boycott particular commodities to establish congruence between their personal and political values. In this way, political power is reduced to 'buying power' as activists focus on questions of production and consumption rather than on trying to regain the political agency to determine what and how their community should produce.

For these two reasons—a politics reduced to statecraft and a political identity reduced to a consumer identity—activists tend to frame their opposition within social, rather than explicitly political terms. Within the social sphere, they feel empowered to make qualitative personal and social changes by improving the quality of their relationships with friends and family, improving schools and churches, or by creating economic alternatives such as coops or systems of community currency or barter. What is more, activists often unknowingly conflate social action with political action. Working to create social change within the domains of sexuality, spirituality, education, economics, and health care, they refer to this work as 'political', rather than social, as a way to emphasize the importance of the particular issue at hand or the necessity of changing public policy related to the issue.

For instance, members of such social organizations as Earth First! or Greenpeace are often referred to as 'political' organizations. Yet all members, from financial supporters to grassroots activists who participate in local and global campaigns, exist within a distinctly social, rather than political, relationship to one another. Again, political activity is that which takes place within the public sphere as citizens come together to discuss, debate, and determine the public policy that shapes their lives as members of a town, village, or city. Greenpeace, then, does not engage in *politics* in the literal sense. Instead, they wield crucial *social* contestation to state and corporate policy.

Social change is, indeed, crucial but without an actual transformation of political practice, we will never be in the position to actually determine the very economic, social, and ecological policies for which we are fighting. Instead, we will always be treated as children incapable of making our own decisions, forever appealing to the authority of parental representatives to do

'the right thing'. Temporary triumphs might be won; like little children who throw a tantrum to bend the will of their parents, we may beg our representatives to provide us with affordable housing or better environmental policy. However, the power relationship remains the same. The fact is, until citizens are able to make their own public policy regarding social issues, there will be no justice. We will be forever little children, tugging and whining at the hems of our parents' coats, begging them to make good decisions on our behalf.

Hence, our oppositional work is drained of its full potential as we linger along the periphery of the political realm, focusing mainly on social issues. In this way, we are weavers dreaming of beautiful tapestries, spinning and dyeing wool, envisioning clothes to be collectively woven and distributed, unaware that, without actually getting our hands on the equipment, our dreams will go unrealized. Direct democracy is the very process by which we make our dreams for a free society come into being. Without walking into the place where the cloth is woven, we will never be able to take those threads into our own hands to weave more cooperatively and more ethically. Instead, we will be left to wander about sheering, spinning, dyeing, and merely dreaming of beautiful shimmering cloth. Without walking into the public sphere, taking the power to make decisions into our own hands, we will be left to merely dream of freedom.

ILLUSTRATIVE OPPOSITION: ILLUSTRATING THE POLITICAL IMPLICATIONS OF THE SOCIAL
Recognizing the necessity of political reconstruction leads us to look toward a process of political re-empowerment. Social ecology provides a thoughtful and comprehensive interpretation regarding how to engage in a political revolution by engaging in local municipal politics to initiate a broader move toward a confederation of directly democratic communities. Murray Bookchin's theory of *libertarian municipalism* proposes such a vision, offering a glimmer of hope for true democracy in a world where the political sphere has been hollowed out by the State.²

However, we confront a paradox when we consider the necessity of focusing on political reconstruction. While it is crucial to reconstruct an authentic political sphere, there will remain immediate social crises which also demand our attention. Clearly we cannot wait to address social issues such as homelessness, environmental racism, or violence against women until we have established a confederation of self-governing communities.

Illustrative opposition is way to focus upon a particular social issue *while* illustrating a broader political critique and reconstructive vision. In addition to demonstrating the *necessity* of a particular social issue, we may also illustrate the general *sufficient* condition required to fully address the particular issue at

hand. For instance, early ecofeminist activists practiced a nascent form of illustrative opposition in the Women's Pentagon Action of the early 1980s. Beginning with an initial focus on the crisis of nuclear power, ecofeminists illustrated a wider social and political picture, drawing out broader issues of racism, capitalism, nationalism, militarism, male violence, and state power.³

Illustrative opposition must be specific enough to be meaningful, yet broad enough in order to deepen political consciousness. Had the Women's Pentagon Action presented too wide a focus, both participants and media would have been bombarded by the interconnecting issues of social and ecological injustice. However, had they focused too narrowly, say, on the ecological devastation of the earth by nuclear technology, they would have missed the opportunity to illustrate the widest implications of the nuclear crisis. The Women's Pentagon Action was successful in broadening an understanding of the necessary conditions for creating a nuclear-free society. Through theatrical demonstrations and written media, these early ecofeminists helped others to explore a range of necessary conditions pertaining to the spheres of the social and the State by demanding an end to racist and masculinist state practices in regards to nuclear energy and militarism, and by confronting capitalist production of nuclear technologies.

However, while the Women's Pentagon Action presented an extensive critique of the spheres of the social and the State, like most movements of the New Left, they failed to extend their critique to the political sphere. By linking a critique of social and state institutions to a demand for direct democratic control over social *and* political life *in general*, the Women's Pentagon Action would have presented a sufficient condition for a nuclear free society.

In this way, illustrative opposition is a practice of holistic picture-making in which one brush stroke serves as an invocation to bring an entire picture to fullness. The idea of holism, inherent within the idea of illustrative opposition, conveys that a whole is not just the sum of its parts. For instance, in the case of the pot of boiling water, the whole, or the boiling pot of water, is not reducible to the pot, to the water, or to the heating element. Accordingly, it is insufficient to simply throw the necessary parts together in a room, expecting to bring water to a boil. As we have seen, it is the specific and irreducible *relationship* between the parts that gives the whole its particular form and function. It is the specific and irreducible relationship between individual forms or parts of oppression, which gives the whole oppressive system its form and function as well. Hence, the goal of illustrative opposition is to focus on one part of a larger system of oppression to depict a whole which is appreciated in its interconnected complexity.

THREE MOMENTS OF ILLUSTRATIVE OPPOSITION

Illustrative opposition unfolds in three phases. In the first *critical moment*, we recognize a particular form of social or political injustice, responding in turn with critique. In this moment, we may sort through the separate strands which compose the central cord of a particular form of injustice. We may analyze how this form of injustice surfaces and is perpetuated within realms of the social, the political, and the State. In the critical moment, we ask ourselves what makes this particular form of injustice unique or particular, asking: How is this form of injustice different from other injustices; why has it become a crucial issue at this point in time; or what makes it historically unique?

In the critical moment, we look at the historical development of the particular issue, examining in turn, the lesser known radical history which surrounds the form of injustice. Hence we would ask: Were there attempts in the past to resist this form of injustice; what made these attempts successful or unsuccessful; what is to be learned from both the history of how this injustice came to be, and the history of what almost was, or would have been?

In the second *reconstructive moment*, we begin to draw out the wider reconstructive potential nascent within the struggle against a particular form of injustice. We begin by examining the implications of engendering wider conditions of justice surrounding the issue within the realms of the social, political and the State, examining in turn, the ecological implications of the particular injustice at hand for each sphere. Here, we explore how to transform each sphere of society sufficiently in order to thoroughly transcend the particular form of injustice. Ultimately, the reconstructive moment serves as an opportunity to draw out the social and political conditions that are necessary to sufficiently oppose and transcend the particular form of injustice.

Finally, the third moment constitutes the *illustrative moment*. Here, we begin to elaborate ways to articulate and demonstrate the many insights we glean as we move through the previous moments. There are many forms through which we may express these comprehensive insights: We may print pamphlets which are critical, historical, and reconstructive in nature; develop a performance piece that integrates our insights and conclusions; take direct action, creating banners with slogans that point to salient threads of our overall analysis or vision; articulate our analysis on alternative and mainstream media such as pirate radio or the Internet; or create teach-ins and ongoing lecture-discussion series within our communities.

Our 'illustrations' must be utopian and visibly socio-erotic. For our goal is not only to inform, but to inspire ourselves and others to take direct action. As previously discussed, we need to restore to the erotic a distinctly social meaning, articulating the different 'moments' or aspects of social desire, describing our yearnings for community and

association, creativity and meaning, self and community development, and social and political opposition. Such yearnings stand in sharp contrast to the vernacular understandings of desire that are framed in terms of individualized accumulation of status, power, or pleasure. To understand the socio-erotic is to locate moments of individual desire within a distinctly social and political context, appreciating the potential of our individual desires to be accountable to, and enhancing of, a greater social collectivity.

Our illustrations must speak to our socio-erotic desires. Within the bland culture of global capitalism, people crave authentic integral sensual stimulation. The appeal of theater groups such as Bread and Puppet attests to the sensual power of creative media. The display of towering and colorful puppets parading down barren city streets during demonstrations summons up the sensual awe and desire for our own creativity in a world of commodified alienation, allowing us in turn to remember our own creative potential. We need to appeal to as many media as possible to illustrate our analysis and vision, utilizing art, theater, dance, electronic media, print media, speak-outs, and street demonstrations, illustrating the sensual presence and resistance of our physical bodies as well. In this way, illustrative opposition must be sensual: it should constitute the ultimate body politic in which we literally throw our bodies into social contestation, taking illustrative and expressive direct action. However, such actions must not only 'show' but they must also 'tell' a narrative, moving from the particular to the general or from the personal to the social and political. People join social movements for a variety of reasons. In addition to wishing to transform the world, activists often yearn to transform themselves. They come to movements out of associative desire: out of the desire to find friendship, lovership, community, and meaning. Seeking a sense of connection and purpose, people are drawn to particular social movements because the people within the movements embody the intelligence, passion, and communality they wish to develop within themselves. Hence, our illustrations must convey both the values of the world we want to create as well as the values of the people we want to draw into our movements. While our work must be collective and non-hierarchical, our forms of contestation must put forth a display of communality as well. We must clearly articulate the ways in which others may join our struggle, continually illustrating points of entry into our social movements.

Further, we must address our creative or differentiative desire as we illustrate our opposition. In this age of incoherence, we each have an underlying desire to differentiate, or to 'make sense' of the chaos which surrounds us. As we are overwhelmed by social, political, and ecological crises, we yearn for illustrations that render our world more legible and intelligible. Our illustrations must draw what is coherent and clear out of what is confusing

and opaque. The goal of illustrative opposition, then, is to help others to literally 'sort out' the different spheres of social and political injustice, bringing others to a state of increased confidence and desire for ever greater levels of understanding. Hence, our illustrations must be educational as well as sensual and associative; they must represent ongoing teach-ins in which we assist ourselves and each other to recover lost radical history and a rational and coherent analysis of injustice.

In turn, we must consider our developmental desire as we create new expressions of social opposition. Developmental desire represents the yearning of the self to become more of itself, to uncover ever wider horizons of competence, joy, and community. Our illustrations must represent opportunities for self-development in general that offer more opportunities for participation than spectacle-gazing. Through social contestation, we may develop abilities for public speaking, writing, teaching, and art-making; we may become lecturers, poets, and painters, speaking at coffee houses, concerts, universities, street corners, community health centers, libraries, cable stations, and city halls, creating a counter-spectacle of coherent disruption.

Finally, our illustrations must inspire oppositional desire. Far from the individualistic and acquisitive desires that constitute our everyday lives under global capitalism, we need to publicly articulate and express a new vision of desire: a social desire, a desire informed. Engendering a new oppositional desire is a potent antidote to an age of authority-induced passivity. Corporate CEO's and state agents dismiss our rants about 'desire'—as long as we keep our desire bound within the social sphere. Once we draw out the political implications of desire, informing our desire with a rational demand for direct participation in determining the conditions of our everyday lives, *then* we will see real opposition and fertile conflict.

Illustratively Opposing Biological Patenting

We may begin to think through a potential illustrative opposition by addressing a particular form of social injustice: the patenting of human and biological life. Beginning with an ecological problem that touches upon realms of the social and the State, we may transform this problem into a point of departure, a seed out of which we may draw a wider analytics of revolutionary political reconstruction. We may begin by taking a brief look at the issue at hand, then explore a series of questions that may lay the ground for a deeper understanding of the sufficient condition for a 'patent free' society.

Problem Background: What Are Biological Patents?

Within the world of biotechnology, a new vocabulary emerges that equates the genetic modification of cells to an act of 'creation'.⁴ Just as Columbus

'discovered' and thus 'claimed' the New World of North America, a continent that had been home to civilizations of native people for thousands of years, biotechnologists are 'discovering', recombining, and laying claim to the cell-lines of plants, animals, and even human beings whose DNA might prove useful to such industries as agriculture, pharmaceuticals, or reproductive medicine.

The question of legal patents of cellular materials is one of the most controversial issues surrounding biotechnology. Historically, a patent gave exclusive rights to an inventor to exploit a product, process, or a particular use of a product for a limited time, usually ranging between 17-24 years. In order to obtain a patent, the product or process had to be *invented*. The precedent for patenting was established at the International Convention for the Protection of Industrial Property held in Paris in 1883, the first international agreement on intellectual property rights. By 1930, the Plant Patent Act permitted the granting of patents for plants reproduced by cutting or grafting to produce plant hybrids in the United States. Toward the end of the 1970s, as practices of genetic engineering through recombinant DNA became increasingly successful (and thus potentially commercially viable), a quiet war began to emerge between private corporations, patenting courts, and the Supreme Court regarding the right of individuals to patent a wider variety of life forms.

Beginning in 1971, the General Electric (GE) company embarked on the crusade to obtain the first patent for a non-plant life form. In 1970, GE engineer Ananda Mohan Chakrabarty developed a specialized bacterium that promised to break down or 'eat' oil from tankers spills. Over a period of ten years, GE and the Court of Customs and Patents Appealed (CCPA) waged a relentless campaign of litigation against the U.S. Patent and Trademark Office (PTO) and the Supreme Court to patent this oil-eating bacteria. Once patented, GE knew, the bacteria could set a precedent for future patenting of other life forms to be appropriated by biotechnology corporations.⁵ In 1980, GE's oil-eating bacteria won its case as the Supreme Court granted Chakrabarty his patent. In this gesture, the Supreme Court determined life itself patentable, stating that "the relevant distinction was not between living and inanimate things" but whether living products could be seen as "human made inventions."⁶

As predicted, GE's Chakrabarty case opened the floodgates for the budding biotechnology industry. That same year, emerging biotechnology industries such as Genetech and Cetus took Wall Street by storm, setting records for the fastest price per share increase ever. The burgeoning biotechnology industry inspired other corporations and scientists to patent not only microorganisms, but plant, animal, and even human life forms as well.⁷

Presented as a solution to urgent problems of disease or world hunger, biotechnological inventions also 'solve' capitalists' 'need' for profit and growth.

The development of the new biotechnology is controlled primarily within capitalist structures such as transnational enterprises, universities funded by corporations, and small 'start-up' corporate firms. Already, biotechnology has been applied in primary industries of agriculture, forestry, and mining; in secondary industries of chemicals, drugs, and food; and finally in tertiary industries of health care, education, research and advisory services.⁸

ADDRESSING THE QUESTION OF BIOLOGICAL PATENTS

When a group sets out to address a problem such as intellectual property rights, or biological patenting, the group faces a crisis so complex and overwhelming that to merely address the particular problem at hand seems insurmountable. For instance, indigenous communities in the Amazon engaged in fighting the patenting of local medicinal plants by transnational biotechnology corporations, are already often so involved in other struggles for survival that contestation often focuses on protecting indigenous communities from the specific harm of biological enclosure.⁹

Accordingly, questions of biotechnology are often cast within the terms of the offending party itself, framed in *social* terms of economics and production (as groups resist particular corporate practices), in terms of state power (as groups address national and international patenting policies); and in the social-statist terms of international trade (as groups deal with international trade agreements facilitated by the World Trade Organization (WTO)). Yet for contestation to such practices as biological patenting to be rendered sufficient, they must be understood not solely in the terms of *freedom from* specific injustices within the realms of the social and the State, but in terms of *freedom to* create a socially and politically free society in general.

How can we reason from a particular crisis such as the patenting of living organisms to reach a general analysis of social and political transformation? How can we reason from the dystopic crisis of life patenting to a vision of a world that is not only patent free, but is free of all forms of hierarchy in general? What follows offers a brief outline, a set of illustrative and oppositional questions that allow us to begin to reason from the particular to the general, from the social to the political, and ultimately, from the ecological to the revolutionary.

1. THE CRITICAL MOMENT

In the critical moment, we begin explore the social and statist dimensions of life patenting. We initially ask: How does the patenting of biological life inform the social sphere, both public and private? Beginning by looking at the *private* dimension of the *social sphere*, we might ask: If the most basic and organic unit of private life lies within the body itself, then we may explore how the body's autonomy and privacy are degraded by patents that impose new capitalist relations within the very germ plasm of life. As we attempt to critique

the private dimensions of this crisis, we need to look for historical novelties, asking: What makes this form of injustice distinctive and new? By addressing such questions, we examine the particular implications of patenting for private life in general, exploring novel ways in which patenting disrupts bodily integrity, reducing cell-lines to marketable materials to be owned and hoarded by corporations.

Next, we would critique life-patenting in relation to the *public* dimension of the *social sphere*. Here, we would explore such issues as capitalist production, consumption, and public education as they relate to biotechnology. We may point to moments of commodification and ownership of life forms as well as corporations' search for ever new colonies (biological as well as social) for never-ending expansion. As we recognize the particular urgency of this crisis, we may point to what makes this particular crisis distinctive, asking: What makes biotechnology different from, and potentially more harmful than, other forms of commodified scientific practice? Or, what makes life patenting different from other forms of colonialism? Or, how does the imperialistic devaluation of local indigenous knowledge and life itself 'legitimize' the patenting of species used in indigenous agricultural and medicinal practices?

As we critique the implications of patenting for the social sphere, we may explore the novel impacts of such practice on institutions of public education. Here we may explore how patenting practices inform research agendas and funding priorities within microbiology departments in universities throughout the United States and much of Europe. In particular, we may begin to examine the increasingly intimate relationship between publicly funded research and private industry.¹⁰ This relationship is changing dramatically as public universities grow increasingly dependent on private industry for funding, and as biotechnology industries become attractive and socially accepted research arenas for scientists. We must explore the implication of scientific practice within a context in which increasingly, scientists conduct research out of personal economic interest, rather than out of the 'love' of 'pure' science.

When we engage in the critical moment, we may also show moments of resistance which show the limits of hegemony itself. For instance, we would explore how in India, farmers have engaged for years in an ongoing struggle against World Trade Organization (WTO) proposals on agriculture and intellectual property rights which would allow transnational companies monopolize the production and distribution of seeds and other aspects of Third World agriculture. We might explore an earlier struggle, in October of 1995, in which a half-million Indian farmers from Karnataka took part in a day-long procession and rally in the South Indian city of Bangalore, constituting the largest display of public opinion anywhere in the world either

for or against the round of Geneva trade talks surrounding the WTO. At this event, Karnataka farmers established an international research center in order to help develop community seed banks and to protect the intellectual rights of their communities.¹¹ It is vital to uncover the rich moments of resistance such as these that are scattered across the globe. We need to continually shed light on movements of social contestation that bubble up amidst even the most oppressive conditions. In this way, our critique is informed not only by urgency, but by vital inspiration.

Further, we may critique the *sphere of the State* surrounding patenting. Here, we examine novel articulations between the State and the social sphere, exploring how state institutions including the National Institute of Health and the Department of Energy fund social institutions such as corporations and universities to collect, taxonomize, and warehouse genetic information through such projects as the Human Genome Project (a three billion dollar program that is currently 'mapping' the entire human genome).¹²

Finally, we may pose a series of critical questions relating to the *political sphere* concerning the lack of popular awareness and participation in determining public policy surrounding life patenting. Here, we critique the lack of scientific literacy among citizens, the lack of public forums for popular education, discussion, and debate about current scientific practices. Here, it is crucial to draw out the general crisis surrounding non-democracy from the particular crisis of biological patenting.

In the critical moment, we may explore the historical context of life-patenting by examining the radical history of resistance movements related to the topic more generally. We might begin by looking at the historical relationship between public and private institutions of science, medicine, education, and capital, examining the theme of colonization and privatization. Particularly, we would examine the historical context surrounding intellectual property rights, looking at the roles institutions have played in developing such practices over the century. We would also analyze the broader history of colonialism, capitalism, and patriarchy that frames such issues as seed cultivation and ownership in Third World situations. We would look at the legacy of the nation-state in the colonial and neo-colonial eras, examining the breakdown of local indigenous self determination of social and ecological policy.

In turn, we would explore the history of resistance to life-patenting. We would explore movements throughout the Third World that have continued to resist capitalist enclosure since the first phase of colonialism. In order to reveal this radical history, we would need to uncover the historical continuities between resistance to current life patenting practices and to previous expressions of colonial enclosure. In this spirit, we would generalize upon the

particular meaning of life-patenting, tracing the emergence of anti-imperial movements which contested injustices such as slavery and land enclosure.

II. THE RECONSTRUCTIVE MOMENT

In the reconstructive moment, we begin to consider the liberatory possibilities presented by addressing the particular form of injustice at hand. In the reconstructive moment we treat the three spheres of society differently: while we look to *transform* the social and political spheres, we examine avenues for *transcending* the sphere of the State.

Beginning again by looking at the implications of biological patenting for the *social sphere*, we may explore the reconstructive possibilities of revaluing the private dimension of the body. In the reconstructive moment, we begin to highlight the continuities between particular and general forms of injustice. For example, while life-patenting introduces particular novel legal, cultural, and corporate practices related to private 'embodied' dimensions of life, it also builds upon a more general history of privatizing human and other life forms. It is consistent with a capitalist 'tradition' which enslaved African Americans in the American South, bound women legally to their husbands, and continues this tradition by trafficking women and babies in sex industries and black-market adoptions, in addition to commodifying land, plants, animals, and other organisms.

Here we understand that the sufficient condition for reclaiming the body and 'life' itself, is to abolish the practice of patenting in *all* spheres of society. A truly free society entails that no body, person, or organism can be reduced to private property, no human can be rendered subject, either in part or in entirety, to another person or institution.

As we continue to think through the social sphere, we may consider what it would take to create social and political conditions which render all forms of private property (bodily or otherwise) unacceptable. Exploring the role that medical, pharmaceutical, agribusiness, and chemical companies play in determining research and regulation of genetically modified organisms, we would look to remake the social sphere along post-capitalist lines.

What is most crucial in the reconstructive moment, then, is to draw out the most utopian and sufficient conditions of freedom which surround a particular issue. For instance, while it is necessary to eliminate patents of biological life, we must illustrate how merely abolishing such patents represents an insufficient condition to engender a truly free society in general. We would point to the widest conditions of freedom that can be drawn out from the idea of a patent-free social sphere. We would begin to articulate the need for a sphere of education, technology, and economics that is based not on commodification, but upon social cooperation.

As we consider transcending the *State* we may begin to draw connections between the particular form of injustice in question and the lack of direct democracy throughout society as a whole. It is vital to articulate specific ways in which current state governments inhibit citizens from participating directly in determining the policies that affect their lives. In turn, we must also show how the lack of confederal forums deprives us of informing the unfolding of events outside our own municipalities and throughout the world.

In thinking through the issue of life-patenting, we recognize that disruptions caused by such practices are not exclusively local in nature. Within the age of global capital, we see that there exist few uniquely local problems as currents of capital and state power flow throughout towns, cities, states, and countries the world over. Although corporate, governmental, and regulatory institutions that control the collection and storage of genetic materials operate within specific localities, these institutions function within an international system of trade, production, regulation, and policy making which is *transnational* in character.¹³

In the reconstructive moment, we would begin to explore how to transcend the State by creating a new politics in which citizens have direct control over technological practices such as biotechnology. We may illustrate how, by replacing the State with a confederation of directly democratic municipalities, citizens would empower themselves to discuss and decide scientific matters that affect not only organisms and people locally, but globally as well. In the reconstructive moment, then, the criticism and analysis of a particular form of hierarchy opens the way to elaborate the broadest understanding of non-hierarchy possible.

III. THE ILLUSTRATIVE MOMENT

The illustrative moment represents an opportunity to inspire others to demand the sufficient social and political conditions for a free and ecological society. It is the forum in which we inspire others to move beyond the scope of a particular crisis, to demand self-determination within a broader political context. It is the moment to create oppositional forums in which we may ask: What does life patenting have to do with democracy? Or, what does abolishing patenting have to do with creating a utopian society?

Illustrative opposition should compel ecological activists to reach for new connections between social and ecological issues and their authentically *political* implications. Each moment of illustrative opposition to state practices for instance, should point to the wider demand for authentic direct democracy. Illustrative opposition allows us to highlight a particular moment in which we have no direct political control, raising awareness of our lack of policy-making

Through our actions and our propaganda, we ask: how did it come to be that we control so little regarding this particular issue and regarding our lives in the broadest sense?

There are many ways to illustrate the need for direct democracy. As discussed earlier, we can popularize the demand for political power using a variety of media ranging from radio, pamphlets, and teach-ins to guerrilla theater, bill board alteration, and murals. There is no 'recipe' for making the connection between ecological and revolutionary *political* issues, as each activist group brings their own talents and sensibility to the project of opposition.

I am a member of a small media collective in Western Massachussetts that engaged in illustrative opposition regarding issues of biological patenting and agricultural biotechnology. Last year, the group saw the need to raise public awareness regarding the introduction of genetically engineered organisms into the food supply that has begun in recent years. In addition to being concerned by insufficient research on the potentially allergenic and toxic effects of ingesting genetically engineered foods, we were troubled by the lack of research regarding environmental risks that surface as plants spread their genetically engineered traits to other neighboring organisms (through cross-pollination or ingestion).

But we were not solely concerned with environmental and health risks associated with genetically engineered crops. The group also wanted to address issues of economic and cultural self-determination surrounding the issue. We wanted to educate ourselves and the public regarding how local farmers throughout the world are economically and culturally threatened as multi-national agro-chemical companies gradually monopolize the seed industry worldwide.

We also had another primary concern. Our group wanted to illustrate the link between the social and ecological problems presented by genetically engineered crops and the need for political transformation. We wished to demonstrate how both corporations and the State, rather than citizens, determine economic, ecological, and political policy related to agricultural biotechnology. As a media collective composed of writers, actors, and artists, we decided to create a series of theatrical events as a way to illustrate our opposition to biotechnology.

At a demonstration that protested Monsanto (a U.S. based multi-national agro-chemical company heavily invested in biotechnology) corporate offenses, our group performed a theater piece in which a two-headed monster (wearing name-tags that read "the State" and "Capitalism") delivered an oratory regarding its autocratic decision to find new avenues for capitalist expansion through biological patenting and genetic engineering. Surrounding the monster, floated

a sea of zombie-like people (wearing signs that read "consumer") who stared blankly and passively at the monster as he announced his plan. Over the course of our skit, the consumers first strolled about passively, then attempted to fight the monster, and finally ended up gathering together to discuss what to do next. Through this process, the consumers realized that by gathering, discussing, and making decisions, they had actually formed a town meeting of sorts, and they realized that what they really wanted was to reclaim their political power. One by one, the consumers flipped over their signs to reveal the word "citizen" written on the other side.¹⁴

At the end of the piece, the actors sat in a circle and invited the audience to join them in an impromptu town meeting to discuss plans for continuing the struggle for direct democratic control over technology and over life in general. What actually ended up occurring, though, was a more concrete, yet highly democratic discussion of plans for the anti-GMO movement itself.

We then did a series of "supermarket inspections" in which we dressed in white bio-hazard suits to go 'shopping' at our local supermarkets. We strolled down the supermarket aisles, 'inspecting' the produce with a variety of bogus scientific instruments, dropping flyers into people's shopping carts and into produce and dairy displays. In addition, each 'inspector' (unable to speak through a gas-mask) had a plain-clothed 'assistant' who would strike up conversations about biotechnology and democracy with other shoppers whose responses ranged from amusement and interest, to suspicion and annoyance. During each action, we had between five to fifteen minutes before we were asked (or aggressively forced by security guards) to leave the store.

In our flyers, we explained that we were a renegade group that had defected from the Food and Drug Administration after deciding that we desired direct political power—in addition to 'safe food'. Discussing the economic and cultural issues associated with genetically engineered foods, the flyer also talked about the connection between direct democracy and technology, attempting to raise the level of public discussion from questions of environmental and health risk to issues of political power.

For our next action, we plan to set up a "patent office" on a busy street in our town where we will hand out patent applications to passersby, offering them the chance to patent their own cell-lines. Through satire, we plan to educate members of our community about biological patenting, both human and non-human, explaining the relationship between issues of bodily integrity, social issues such as capital-driven biotechnology, issues of state monopoly over policy making, and political issues such as the need for direct democratic control over technology and over our lives in general.

Through these small actions, we are trying to widen the discussion surrounding biotechnology by talking about questions of political power in

addition to issues of environmental and health risk related to genetically modified foods. It is our hope that people may begin to see themselves as more than *consumers* seeking the power to buy safe food. We want to encourage people to see themselves as *citizens* who desire the *political* power to create a humane and ecological society.

In turn, we are hoping to move discussions surrounding biotechnology beyond romantic yearnings for a golden age untainted by 'technology'. In our actions, the idea of 'nature' is taken from the realm of abstraction and is brought down to the realm of the everyday. The 'nature' we invoke is our bodies walking down a city street and it is the food we buy in the supermarket. In turn, we show that the cause of ecological injustice is not abstractions such as 'civilization' or 'industrial society'—but rather, a set of social relationships called the State and capitalism that appropriate our power to create cooperative relationships within society and with the rest of the natural world.

Our group has just begun to think through the process of illustrative opposition. As a collective of actors and writers, we have chosen to express our opposition in the form of theater and written text. But as I mentioned earlier, dissent has a variety of forms. By giving a brief sketch of some of our first actions, I have tried to depict a 'work in process' that aims only to stimulate conversation, critique, and perhaps action as well. As our group continues to explore the relationship between direct democracy and technology, our actions will hopefully embody an increasingly elaborate understanding of the necessary and sufficient conditions for creating a free and ecological society.

As our group knows, revolution cannot be generated from a series of individual protests against social and ecological injustices. It requires that we articulate not only what we do not want, but what we desire as well. The demand for *substantive freedom*, or the demand for the very substance of what freedom means, stands in contrast to the demand for *negative freedom*, which while necessary, represents an incomplete demand to negate injustice. We must be able to articulate a substantive vision of the society we desire, illustrating through our activism, the social and political freedoms for which we yearn. We must illustrate a substantive demand for the *freedom* to create a society based on a confederated direct democracy, a municipalized economy, and on a new social and ecological sensibility based on values of cooperation and mutual-aid.

Through illustrative opposition, we are neither locked into single-issue activism, nor locked into the stagnation of 'waiting' for a local or national political movement sufficiently comprehensive to address the widest range of revolutionary desires. To be sure, we cannot sit back and watch urgent crises

pass before our eyes. Instead, we may address the *necessity* of a single issue, presenting a wider *sufficient* condition for a free society in the process. Thinking through each particular moment of unfreedom opens the way to consider the widest vista of freedom imaginable.

It is vital that we begin to think along coherent revolutionary lines. In this age of incoherence, our thinking about social and political change often tends to be scattered and fragmented. The spectacle of the nightly news does not assist us in understanding the crucial link between real political power and the struggle for social and ecological justice. Instead, we are expected to sit back and watch the parade of incoherent events presented to us as disparate and unrelated as the commercials that flicker by every four to seven minutes.

To create coherence in the age of incoherence is a highly oppositional act. By clearly conveying the 'logic' that underlies this irrational world, we actually lessen the overwhelming burden of social disorientation. To see how one crisis emerges from the other—to think rationally—opens the way to understand how one phase of reconstruction may emerge from the other allowing us to gradually transform society as a whole.

A crucial component of any illustrative opposition is a process of education in which we recover a sense of theoretical and historical integrity. In this spirit, we may create study-groups and centers for radical education, forums in which we may think through the moments of illustrative opposition, educating ourselves in revolutionary history, awakening ourselves to the possibilities for social and political reconstruction.

Illustrative opposition, then, is not merely an instrumental means-ends approach to social or political activism. Rather, it represents a comprehensive and utopian analytics made visible. The illustrations that we paint represent valuable ends in themselves; they represent an ongoing challenge to the institutions that oppress us, a challenge that shows the world that opposition is alive, well, and will not go away. Our illustrative actions must curb the steady tide of social and political injustice that gathers strength daily. As we begin to popularize the demand for direct political power over our everyday lives, the horizon of social and ecological justice no longer recedes into the distance, but rather, calls out to us, yearning passionately for its own actualization.

Notes

1. For a wider discussion of the distinction between statecraft and authentic political practice, see *Urbanization Without Cities: The Rise and Decline of Citizenship*, (Montreal: Black Rose Books, 1992), pp. 123-175.
2. Libertarian municipalism represents the political vision of social ecology, a body of philosophical and political theory developed by Murray Bookchin. Beginning in the 1950s, Bookchin, a libertarian socialist himself, began to create a synthesis of Marxist and left libertarian thought, addressing problems raised by gender oppression, ecology, and community as well as addressing the new developments of capitalism. He then went on to formalize a coherent theory of the social origins and solutions to ecological problems, establishing himself as perhaps the most prominent 'leftist voice' in the ecology movement, a role to which he is still fiercely committed today. His theory of libertarian municipalism represents an interpretation of how to gradually transform the current nation-state into a confederation of direct democratic municipalities, drawing upon the libertarian dimensions within the French and American revolutionary traditions. For a cogent and compelling introduction to the idea of libertarian municipalism, read Janet Biehl, *The Politics of Social Ecology* (Montreal: Black Rose Books, 1998).
3. Ynestra King, a primary organizer of the Women's Pentagon Action, gives an excellent description of the kind of illustrative and ecological thinking which surrounded the event. See "If I Can't Dance in Your Revolution, I'm Not Coming," Adrienne Harris and Ynestra King, eds., *Rocking the Ship of State* (Boulder: Westview Press, 1989), pp. 281-298.
4. According to Vandana Shiva, "Biotechnology, as the handmaiden of capital in the post-industrial era, makes it possible to colonize and control that which is autonomous, free and self-generative. Through reductionism science, capital goes where it has never been before." For an excellent discussion of biological and cultural generativity, see Vandana Shiva, "The Seed and the Earth: Biotechnology and the Colonisation of Regeneration," in Vandana Shiva, ed., *Close to Home: Women Reconnect Ecology, Health, and Development Worldwide* (Philadelphia: New Society Publishers, 1994).
5. Pat Spallone, "The Gene Revolution," *Generation Games* (Philadelphia: Temple University Press, 1992), p. 120.
6. Andrew Kimbrell, "The Patenting of Life," *The Human Body Shop* (San Francisco: Harper, 1993), p. 195.
7. Indeed, the patenting of human cell-lines has led to some dramatic legal crises. In 1984, scientists at the University of California licensed a cell line taken from the spleen of leukemia patient John Moore to the Genetics Institute who, in turn sold the rights to a Swiss pharmaceutical company, Sandoz. One estimate places the long-term commercial use of Moore's genetic material, known as the "Mo Cell line" (patent #4,438,032) at about one billion dollars. In addition, Moore, whose permission had not been sought for the taking of his cells, demanded the return of his spleen cells before the California Supreme Court. In response, the court determined that Moore had no direct claim on his spleen cells but that he did have the right to sue doctors for not advising him of his rights. See Beth Burrows, "Message in the Junk: Commodification and Response." Paper presented at *New Currents in Ecological Activism Colloquium*. Institute for Social Ecology. Plainfield, VT. 1 July 1995.
8. Vandana Shiva, *Biotechnology and the Environment* (Pulau Pinang, Malaysia: Third World Network, 1993), p. 2.
9. For a wonderful discussion of the relationship between indigenous knowledge and intellectual property, see Vandana Shiva, *Biopiracy: The Plunder of Nature and Knowledge* (Boston: South End Press, 1997).
10. Paul Rabinow provides an ethnographic account of the relationship between private industry and genetic research in *Making PCR: A Story of Biotechnology* (Chicago: University of Chicago Press, 1996).
11. Martin Khor, "500,000 Indian Farmers Rally against GATT and Patenting of Seeds," *Resurgence*, Jan. 1993., p. 20.
12. For a particularly insightful discussion of the Human Genome Project, see R.C. Lewontin, "The Dream of the Human Genome," in *Cultures on the Brink: Ideologies of Technology*, Gretchen Bender and Timothy Druckrey, eds. (Seattle: Bay Press, 1995), pp. 107-129.
13. See Vandana Shiva, *Biopiracy*.
14. My thanks to Bob Spivey for developing what was truly, a wonderful script.