Environmental justice refers to the conceptual connections and causal relationships between environmental issues and social justice.

A rough distinction can be drawn between domestic and global forms of environmental justice. Environmental policies, laws, and practices, along with political relations between different societal groups, may be specific to a particular nation-state or region. But many environmental impacts transcend national boundaries, such as air pollution, acid rain, toxic waste export, transnational corporation activities, and global warming. These impacts widen environmental justice to a global scope.

This overview of environmental justice provides a description of the vocabulary and history of environmental justice in terms of two dimensions of social justice — distributive justice and participatory justice — applied to both domestic and global environmental justice. Our discussion of domestic environmental justice will concentrate on the history and development of the United States environmental justice movement.

Two dimensions of environmental justice

Generally speaking, there are two different dimensions to environmental justice. The first is distributive justice: how are environmental benefits and burdens distributed? The second is participatory justice: how are these distributive decisions made? Who participates in their making?

Concerns for the distributive dimension of environmental justice begin with the observation that people of color, the poor, and under-represented groups such as indigenous tribes and nations are faced with a disproportionate amount of environmental burdens. The issue here is one of environmental equity. Examples of environmental burdens include exposure to hazardous materials and toxic wastes, pollution, health hazards, and workplace hazards, as well as the exploitation and loss of traditional environmental practices and depletion of local natural resources. Environmental benefits include a safe workplace, clean water and air, easy access to natural surroundings or parks, fair compensation for environmental burdens, and the preservation of traditional environmental practices connected to local natural resources. Not all inequities are unjust, but where inequitable distribution occurs according to some morally arbitrary characteristic or principle, we have an instance of environmental discrimination. Inequities based on racial characteristics are certainly morally suspect, as are most forms of socio-economic inequities in the distribution of environmental burdens. In the United States and many parts of the world, the most discussed and debated form of environmental discrimination is environmental racism, a concept that we will discuss in more depth below. However, environmental discrimination often concerns socio-economic discrimination. An individual or group consistently receiving significant environmental burdens, while others benefit as a result of circumventing these burdens, is being subjected to a social injustice or inequity; an individual or group targeted in virtue of moral arbitrary characteristics is experiencing discrimination.

The participatory dimension of environmental justice turns attention to the fact that people of color and the poor (domestically) and nations and people of the unindustrialized South (globally) have little representation in the environmental...
movement and in other arenas that bear on how environmental benefits and burdens are assigned. Lack of opportunity for democratic participation in the environmental movement can be referred to as "discriminatory environmentalism." In discriminatory environmentalism, representation and participation in mainstream environmental groups, participation in environmental policy-making, representation in local, national, and international environmental agencies, and decision-making power over the location of environmental burdens and benefits are either intentionally or unintentionally exclusionary.

Although discussions of both dimensions of environmental justice appear together in the literature, there has been a tendency to favor the distributive dimension of environmental justice. Peter S. Wenz, for example, defines "environmental justice" exclusively in distributive terms:

chief topics related to environmental justice concern...the distribution of benefits and burdens among all those affected by environmentally related decisions and actions [including] the division of the burdens of environmental protection between poor and affluent people in our society, as well as the division of natural resources between rich and poor nations. (1988, p. 4)

However, other analyses of environmental justice focus on participatory inequities. Iris M. Young (1983) explicitly argues that what is called for by a community situated for a toxic waste facility is not distributive but participatory justice. She claims that a purely distributive theory fails to address the nature of the risks and harms associated with this type of environmental burden, which is why the decision-making process is often biased, top-down, and neglectful of democratic rights. Crucial here is a principle of self-determination which grounds the rights of those most immediately affected to decide if such burdens and remedies are acceptable to them.

Indeed, the Principles of Environmental Justice, adopted by the First National People of Color Environmental Leadership Summit in 1991, include only 2 references to distributive justice in the 17 principles. The remaining principles emphasize participatory justice concerns of rights against discrimination, individual and group self-determination, and respect for diverse cultural perspectives (Hofrichter, 1993).

Both dimensions of environmental justice are clearly important and will shape the discussion of domestic and global environmental justice that follows.

**Domestic environmental justice in the United States**

In the United States the civil rights movement and the environmental movement experienced separate agendas, until the relationship between social justice and environmental reforms became the focus of political controversy and citizen protest, and the environmental justice movement was born.

There were many precursors to the movement, however. During the 1960s Martin Luther King, Jr., and other civil rights leaders observed that people of color suffer higher pollution and denigrated environments (Ballard 1993). The 1960s and 1970s also saw the struggle of Cesar Chavez and the United Farm Workers to protect Chicano migrant farmworkers; studies of rural Appalachian living conditions revealing the connection between poverty and environmental burdens; the 1978 brochure "Our Common Concern," released by the federal government, indicating the disproportionate impact of pollution on people of color; and the 1979 City Care Conference in Detroit, jointly sponsored by the National Urban League and the Sierra Club. However, it is widely agreed that the movement took root at Warren County, North Carolina, in the community of Afton.

The Afton community had an 84 percent African-American population; Warren County had the highest percentage African-American population in North Carolina. At the time, Warren County suffered the second highest poverty level of North Carolina counties, with 13.3 percent unemployment. In 1982, Dr. Charles E. Cobb, a director of the United Church of Christ's Commission for Racial Justice (UCC-CRJ), spoke out against the Warren County PCB landfill for making African-Americans and the poor bear heavier environmental burdens than those borne by other communities. This inspired a campaign of non-violent civil disobedience culminating in a protest blocking the trucks hauling PCB-laced soil, which led to more than 500 arrests and drew national media attention.

The Warren County protest represents the first public mobilization for environmental justice against environmental racism. Although it was unsuccessful at halting the dumping of the PCB-contaminated soil, it incited the 1983 United States General Accounting Office (US-GAO) study of hazardous waste landfill siting, which found a strong correlation between sitings of hazardous waste landfills and race and socioeconomic status (US-GAO 1993). This study spawned later comprehensive studies, including the UCC-CRJ's frequently cited Toxic Wastes and Race in the United States, a national study which not only confirmed the disparate environmental burdens suffered by minorities and lower socioeconomic groups nationwide, but centrally located race in the disparity: "Race proved to be the most significant among variables tested in association with the location of commercial hazardous waste facilities" (UCC-CRJ 1987, p. xii). Together with the Warren County protest, these studies inspired conferences and meetings explicitly devoted to the relationship between environmental values and the social justice concerns of the poor and people of color. Often highlighted is the First National People of Color Environmental Leadership Summit at Washington, DC, in 1991, which produced the document Principles of Environmental Justice, outlining the agenda of the environmental justice movement.

There is wide agreement that the term "environmental racism" was originally coined by the Reverend Dr. Benjamin F. Chavis, Jr., in 1987, when the UCC-CRJ presented its findings at the National Press Club in Washington, DC. Chavis offers a definition of racism that includes the "intentional or unintentional use of power to isolate, separate and exploit others" (UCC-CRJ 1987, p. x). He described environmental racism as:

racial discrimination in environmental policy making, and the unequal enforcement of environmental laws and regulations...the deliberate targeting of people of color communities for toxic waste facilities...the official sanctioning of the life-threatening presence of poisons and pollutants in people-of-color communities for toxic waste
facilities...the history of excluding people of color from the leadership of the environmental movement. (US House of Representatives, 1993, p. 4)

Robert Ballard, the leading author on environmental racism, provides a definition of environmental racism that agrees with that of Chavis: “any policy, practice, or directive that differentially affects or disadvantages, whether intended or unintended, groups or communities based on race” (ibid, p. 47).

Ballard and Chavis define environmental racism as involving both intentional and unintentional social injustices, comprising both the intent and effects of an act. This has sparked a major debate and a surge of scholarship on environmental racism. Defining environmental racism to include both intentional and unintentional racism may appear problematic at first because “racism” is a term of moral condemnation, and we generally do not criticize or condemn unintentional actions. But the 1960s civil rights movement in the United States raised consciousness about institutional as well as individual forms of racism that may be observable only through their effects. Intentional racism is more likely to be found in individual rather than institutional forms of racism, except where laws and policies explicitly discriminate on the basis of race (such as the Jim Crow laws that once mandated racial segregation of public facilities in the American South). These laws and policies have been officially repudiated, but unintentional institutional racism remains in the distribution of environmental burdens, as well as the exclusion of people of color from full participation in the institutions that are most responsible for this distribution.

US courts have shown themselves willing to address unintentional as well as intentional racism. In 1971, the US Supreme Court set a precedent in Griggs v. Duke Power Company for evaluating racism on the basis of disparate effects, as opposed to clear intent. The US Civil Rights Act of 1964 contains Title VI, which stipulates that racially disparate effects violate national laws against racism. However, several landmark civil cases charging environmental racism, such as Village of Arlington Heights v. Metropolitan Housing Development Corporation, East Bibb Twigg v. Macon-Bibb County Planning & Zoning Commission, and R.I.S.E. v. Ray, have been judged according to the Fourteenth Amendment of the US Constitution, which requires racial intent for identifying racist acts. Despite precedents for applying the effect-standard to judge racism under Title VI, the courts in these cases declined the importance of disparate impact by showing preference for the intent-standard of the Fourteenth Amendment’s Equal Protection Clause (Goldsby 1991). Perceiving the intent-standard to be nearly impossible to prove in present-day civil suits and the blatant resistance to utilize the more appropriate effect-standard, proponents of environmental justice have worked vigorously to increase the awareness and use of Title VI in the civil courts. For example, the United States Environmental Protection Agency (US-EPA) has recently established policy using Title VI for interim guidance in assessing the distributive impacts of emissions-producing facilities siting for minority communities.

A further dimension of the controversy over environmental racism comes in the objection that environmental benefits and burdens are distributed primarily according to socio-economic considerations rather than on the basis of racial characteristics. Critics claim that environmental burdens are not in fact assigned disproportionately according to race, or that, even if they do correlate with race, market forces best explain their assignment.

A University of Massachusetts study by Doug Anderton et al., sponsored by Chem Waste Management in 1994, claims that the UCC-CORP’s 1987 report fails to provide definitive evidence for the conclusions linking race to environmental burdens (Anderton et al. 1995). According to the Anderton study, Hispanic-Americans are the ethnic group most consistently located by hazardous waste facilities, not African-Americans, and the population most impacted are industrial workers, regardless of race or ethnicity. Anderton argues that in areas with higher populations of minorities, we should not be surprised to see more minorities living near hazardous waste facilities.

The Anderton study differs in crucial respects from the UCC-CORP study. The latter observed both commercially controlled facilities and uncontrolled facilities, while the former observed only commercially controlled facilities. Moreover, Anderton’s study does not measure communities with populations of fewer than 50,000 residents. Many communities making charges of environmental racism have populations of well below 50,000. Interestingly, by failing to include populations under 50,000, Anderton omits two of Chem Waste’s largest hazardous waste facilities, in Kettleman City, California, a Latino community, and in Emelle, Alabama, a predominately African-American community. Finally, the question remains why minorities are more often located by hazardous waste sites in areas of both high and low minority populations. Robert Ballard (1994) has written in rebuttal. He essentially argues that Anderton’s study reveals only that different measuring tools reveal different results.

Other critics acknowledge that minorities are disproportionately assigned environmental burdens, but contend that the distribution of environmental burdens and benefits is nonetheless best explained by market forces, rather than by any kind of racism. Corporations determining where to place a hazardous facility may cite evidence that they based their decisions only on socio-economic factors, which form a legitimate basis for decision. An example of this is the 1984 report, Political Difficulties Facing Waste-to-Energy Conversion Plant Siting, written by Cerrell Associates, a private consulting firm for government planners in California. According to this report, opposition to hazardous waste facilities is most likely to come from liberal, college-educated, young residents, within high income brackets, living in urban areas. Opposition would likely be characteristic of lower socio-economic communities with high unemployment and lower levels of education (Ballard 1993; Russell 1989). For this reason, “communities that conform to some kind of economic need criteria should be given high priority” (Russell 1989, p. 26) and “middle and higher socio-economic strata neighborhoods should not fall within the one-mile and five-mile radius of the proposed site” (Ballard 1993, p. 18). Because the Cerrell Associates report provides evidence of discriminatory targeting of the poor, the corporation may claim that race was irrelevant.

Moreover, corporations focusing on socio-economic factors may claim that on balance they benefit the communities targeted for environmental burdens by providing adequate compensation, including community improvement plans and employment opportunities for local residents. According to law professor Vicki Been (Been 1995), there is a crucial difference between siting decisions that bring the nuisance of hazardous waste facilities to the communities and siting decisions in which the
community chooses to come to the nuisance. Where communities come to the nuisance, Been argues that economic decisions made by minority populations in a competitive market better explain the results than racist practices.

We contend, however, that these lines of defense against environmental racism charges are often inadequate. First, even if it is true that corporations base their siting decisions explicitly on socio-economic rather than racial factors (and there is certainly ample opportunity for disingenuousness here, not to mention outright deception), we may nonetheless be deeply troubled about the disparate effects of the use of such factors on communities of color. The premise that minority communities are often economically disadvantaged and unable to organize resistance to the imposition of environmental burdens does not entail the conclusion that minority communities should suffer the disproportionate siting of hazardous waste facilities.

Second, the compensation argument faces the problem that economically desperate communities may be under considerable pressure to accept the package offered, however ultimately disadvantageous. This charge is one of environmental blackmail. The compensation argument can escape this charge only if those involved are aware of the nature of the risks and benefits to be traded off and participate in a genuine process of negotiation. But this seldom occurs. For instance, in compensation for the siting of the "Cadillac of toxic waste dumps" in Emmett, Alabama, Chemical Waste Management promised to provide more than 400 jobs and to pour millions of dollars into the community through paychecks and community support. However, the community was not involved in any of the negotiations leading to this compensation package. In fact, members of the community had no idea the dump existed, and rumors suggested it was a brick factory.

Finally, market forces can hardly be understood apart from the underlying racism of most contemporary societies. Been herself recognizes that race and socio-economic issues are interrelated. She points out that racist practices in loan agencies, housing, education, employment, and health care generate the socio-economic conditions that bring poor minorities to industrial centers where unemployment is greater and property values are less. Been accepts that racism exists, but secondarily to market forces: "as long as the market discriminates on the basis of race, it would be remarkable if LULUs (locally unwanted land uses) did not eventually impose a disproportionate burden on people of color" (Been 1995, p. 41). Part of the confusion here is where Been separates market forces from racism. Her argument can succeed only if we accept racism in nearly all institutions that are relevant to people's migration toward and away from environmental hazards. In effect, a socio-economic defense against the environmental racism charge only accentuates the complex relationship between race and class in the United States and other contemporary societies.

Beyond this particular environmental racism debate, which is most prominent in the literature, the US environmental justice movement addresses a myriad of controversies overlapping distributive and participatory dimensions of justice, such as women's leadership roles in the grassroots organizations, the plight of Native Americans in attempting to preserve environmental values in the face of economic challenges, the impact of lead poisoning on children of color, and the working conditions of many immigrants and poor people.

Concerns for environmental justice generally and environmental racism in particular have culminated in numerous conferences, academic publications, protests, and grassroots mobilizations. Federal responses have also indicated the centrality of environmental justice to environmental concerns: the US-EPA now maintains an Environmental Justice Commission. These efforts at addressing environmental justice culminated with President Clinton's Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed February 11, 1994. This Executive Order calls for federal commissions, interagency cooperation, policy overhaul, research development, enforcement of right-to-know laws, and judicial review. While its impact is yet to be assessed, it does represent a clear legitimation of the charges from the environmental justice movement in the United States.

Global environmental justice

Global environmental justice refers to the examination of distributive and participatory inequities among nations, in addition to emphasizing a variety of global political issues which grow out of environmental concerns that transcend national boundaries and defy the control of individual nation-states. There will, of course, be crossover between domestic environmental justice and global environmental justice, as in the case of environmental justice issues between the US and Native-American nations.

During the 1980s, environmental concerns began to appear as primary concerns on the global political agenda. By the 1990s, "the global environment had emerged as the third major issue area in world politics, along with international security and global economics" (Porter and Brown 1996, p. 1). The concept of the global "commons," those parts of the earth's environment that all humans share and in principle cannot be owned (e.g., the ozone layer, oceans, and climatic systems), emerged during the 1980s. The first global summit on the environment in 1992, the United Nations Conference on Environment and Development (UNCED or "Earth Summit"), is a testimony to this level of interest in the global environment. Many commend this shift in perception to a view of the earth as a system of environmental interactions belonging to and affecting all the earth's creatures. However, defenders of global environmental justice have grown increasingly suspicious of the social and political implications of this global ecological outlook.

A first criticism is that global environmental problems are increasingly managed by the few political powers that have what Vandana Shiva (1993) has called the "global reach." Global players include national entities, multinational entities such as UN agencies, transnational corporations, major non-governmental organizations, and global institutions such as the World Bank. In addition, research in global ecology is conducted by a group of relatively few scientists who assist global political entities in making policy decisions. Thus, the politics of global ecology become another instance of the very few ruling and making decisions for the very many.

Shiva argues that the "global" in "global environmentalism" does not refer only to concern for the health of the entire planet, but instead to "the political space in which a particular dominant local seeks global control and frees itself of local, national, and international restraints" (Shiva 1993, pp. 149-50). She argues that a focus on global
ecological issues such as desertification, climate change, acid rain, and ozone depletion ends up turning over the world’s environmental management strategies, trade control, and political power to elite institutions and governmental entities which determine the fate of the rest of the world. Unless participatory justice becomes a primary concern, the shift to global ecology may lead only to further de-democratizing of global politics.

Following World War II, the leading nations of the world initiated a policy of “development” that shaped the political purposes and identities of nations around the world. The first step was to label nations as “developed” versus “underdeveloped,” labels which later grew into the divisions of “first world,” “second world,” and “third world” nations. Today, “underdeveloped nations” are standardly referred to as “developing nations” to suggest that all nations are moving and should move toward the same goal of first-world-style “development.”

Wolfgang Sachs points out that the implied meaning behind such labeling is that “development” becomes identified with “civilization,” and “society” becomes synonymous with “economy” (Sachs 1993). Thus, the maturity level of a society’s civilization is measured according to its stage of industrial development and the strength of its political economy.

Once the development paradigm became widely accepted throughout the world, developing nations shifted their domestic political emphasis to try to achieve the benefits that wealthy industrial nations seemed to enjoy, such as rich economies, advanced technologies, high levels of consumption, and greater international political and military power. But in this paradigm shift, long-standing cultural traditions of indigenous groups, localized trade and agriculture, and many environmental values are sacrificed. Moreover, it is exceedingly unlikely that developing nations will ever achieve the lifestyle of the wealthy industrial nations. The South entered the development race when the North had already secured dominance in the global political economy. The figures illustrating the futility of the South’s attempt to achieve equality with the North are devastating: “During the 1980s, the contribution of developing countries (where two-thirds of humanity live) to the world’s GNP shrank to 15%, while the share of the industrial countries, with 20% of the world population, rose to 80%” (Sachs 1993, p. 5). As a result, the South is in real danger of being left behind in the global political economy and continuing to suffer the consequent vulnerability to exploitation.

The development paradigm has several critical implications for global environmental justice. First, it helps to explain the creation and maintenance of power differences between the global North and South. The South must struggle with the terms set by the North and must speak the vocabulary of economic and industrial “progress” rather than of other cultural and environmental values. Second, as economic and industrial development became central to nations, other interests such as indigenous environmental values and traditional resource management suffer. This has diminished the rights of indigenous peoples around the world and encouraged the exploitation of many resources they rely upon. Third, in order to keep up with the global political economy, the South has adopted many harmful environmental practices, such as reliance on mono-agriculture and excessive resource extraction. And as export markets wane, like cotton during the 1970s, developing nations attempt to recover by increasing export production at lower rates of return. Fourth, the South has become increasingly suspicious of the North, as shown by its insistence on its right to development and its resistance to environmental protection enforced by the North. Documents such as the “Declaration of Principles,” adopted at the United Nations Conference on the Environment at Stockholm in 1972, Our Common Future, the report of the Brundtland World Commission on Environment and Development published in 1987, and the “Rio Declaration on Environment and Development” of 1992 express the sovereign right of nations to manage development practices, a right which developing nations charge has been curtailed, although the same right has been exercised for decades by the North. Clearly, these implications indicate that the development paradigm works against environmental preservation and management.

The main tension between the North and South arises from their different perspectives on how best to address pressing global environmental concerns. The North expects the South to recognize the global environmental issues that threaten the world’s population such as ozone depletion, climate change, acid rain, and species depletion. It looks with alarm at the environmental implications of the South’s growing industrialization, for example, the massive destruction of the tropical rain forests. The South, while recognizing these issues as a global responsibility, believes the North should respond by reducing its excessive level of consumption (which ranges from 28 times more in cars, 13 times more in paper, and 45 times more in oil) and providing the South with compensation in the form of economic support and environmental technologies for its destruction of the global commons (Porter and Brown 1996). Moreover, the South has been reluctant to join in global environmental agreements to reduce the use of CFCs and carbon emissions, because it tends to perceive them as another way for the North to secure power over the world’s natural resources, the majority of which lie in the South, and thus to retain northern hegemony.

Thus the dilemma of development. If the desire for development is a primary cause of both massive environmental degradation and massive inequities between North and South, it seems self-defeating of both North and South to look to standard forms of development to remedy the problem of global environmental degradation. Attempts to solve the dilemma usually come in the name of “sustainable development”; however, not only is this term unclear and vague, but the strategies to achieve sustainable development are not always successful (see sustainability). In order to achieve global environmental justice, an alternative to the development paradigm must be sought. Identifying and implementing such an alternative is an overarching goal of global environmental justice.

As with domestic environmental justice, one way of dealing with an inequitable distribution of environmental burdens is through compensation, in the form of needed economic and technological resources, provided by first world to third world nations. But such compensatory strategies face problems of their own, as when wealthy nations impose conditions on the transfer of resources to poor nations (Jamieson 1994). For instance, the South already suffers excessive economic debt to nations of the North and global lending institutions. Lenders often put environmental conditions on loans in order to persuade the recipient to adopt more environmentally safe
technologies, practices, and policies. The recipient’s interests, however, may not
match those of the lender. Recipients may wish to exercise rights to choose development
strategies that overcome poverty, while lenders prefer loans to be spent on other
environmental advances. Jamieson argues, however, that unconditional transfers
may be both dangerous to the environment and ineffective in helping those who
need the economic resources the most. This practice pits distributive justice against
participatory justice, as the transfer of monies for loans or compensation constrains
the power of self-determination.

Domestic and global environmental justice come together in the environmental
justice struggles of indigenous peoples. For centuries, indigenous groups which have
maintained traditional, non-industrialized, self-subsisting, environmentally friendly,
and spiritual lifestyles in their natural environments have experienced waves of
colonial and industrial conquest, carried out for the explicit purpose of wresting
away control over their natural resources.

In 1975, 100 percent of uranium mining in the United States was carried out on
indigenous land. Winona LaDuke reports that worldwide, “Over one hundred million
indigenous people will be relocated to allow for the development of hydroelectric dam
projects in the next decade; and over fifty million indigenous people inhabit the
world’s resources” (1993, p. 99). Oil and mining companies are constantly discovering
new deposits on indigenous lands, and pharmaceutical corporations expand upon the
environmental conquest of indigenous peoples through the usurpation of traditional
environmental knowledge and other indigenous resources. Many global trade agree-
ments provide patent protection for corporations which succeed in acquiring traditional
environmental knowledge. Patenting imposes restrictions on indigenous
groups that discovered the patented knowledge in the first place. Vandana Shiva
(1997) refers to this as “biopiracy.”

Since indigenous peoples are nations within nations, although they are often
referred to as ‘sovereign, they are actually only quasi-sovereign or dependent
peoples. The sovereignty of indigenous peoples is recognized when treaties are
made, since in principle treaties can be made only between two self-determining,
sovereign powers. However, the quasi-sovereign status of indigenous peoples
emerges when such treaties presume that indigenous nations have transferable title
to their resources. Thus, in a patronizing double-speak on sovereignty, indigenous
peoples frequently end up transferring their resources by treaties assuming equal
sovereignty or their resources are taken away by allegedly legitimate governmental
statutes which fail to recognize their sovereignty (Goldtooth 1995; see INDIGENOUS
PERSPECTIVES).

Conclusions

The inequities in the distribution of environmental burdens, both domestically and
globally, are often the result of a failure to respect participatory justice. Policies for
global environmental justice are lagging behind domestic efforts in the United
States, largely because the non-governmental organizations defending the natural
environment and environmental rights lack the power of national governments and transna-
tional corporations. However, there is increasing effort to create and implement

global policies that address the overlapping problems of development, indigenous
rights, human rights, environmental practices, transboundary environmental bur-
dens, and the transportation of toxic hazards. But significant progress is unlikely to
be achieved without explicit recognition of the importance of both domestic and global
distributive and participatory justice.

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Technology

Lori Gruen

Environmentalists tend to view technology with suspicion. In the wake of the Exxon Valdez oil spill in 1989 and the catastrophes at Bhopal (1984) and Chernobyl (1986), such suspicion appears warranted. And opponents of technology are not only concerned about such massive environmental disasters, even though this is often the time that environmentalists criticize of technology reach the general public. Critics of technology see such disasters as an inevitable result of measuring progress in terms of our ability to manipulate the environment through technology. And thus, while critical of the environmental damage caused by the use of various technologies, critics have also raised concerns about the social and political consequences of technological use and development. In the first part of this chapter, I will discuss these criticisms. Even when the consequences of technology are not particularly problematic, some critics nonetheless believe that technology is bad. In the second part of this chapter, I will assess the normative arguments mounted by critics against technology, and explore the value assumptions upon which the criticisms of technology depend.

The consequences of technology

Many of the objectionable environmental consequences of technology are obvious. In addition to the disasters just mentioned, one need only pick up a daily newspaper to see that human reliance on technology is a large contributing factor in the deterioration of the environment. To take a recent example, consider global warming, which is a predicted outcome of increased emissions of greenhouse gases that trap heat in the atmosphere. Emissions of one of the main greenhouse gases, carbon dioxide, has increased exponentially since the beginning of the Industrial Revolution. Ever-increasing human reliance on technologies that require fossil fuels is directly connected to the impending threat of global warming. And if some of the gloomier scientific predictions are right, such technologies will be implicated in significant damage to human and non-human health and life as well as the destruction of entire ecosystems (see CLIMATE).

Less obvious, but equally environmentally damaging, is the production of so-called "clean technologies"—computers and other high-tech equipment. The manufacturing process for microchips involves the use of many highly toxic chemicals, such as arsenic, acetone, ethylene glycol, and xylenes. These and other chemicals used by the high-tech industry have caused massive ground water contamination in the last thirty years. When a spill or leak of toxic chemicals occurs at the site of a high-tech