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Environmental Justice and Environmental Racism: An Annotated Bibliography and General Overview, Focusing on U.S. Literature, 1996-2002

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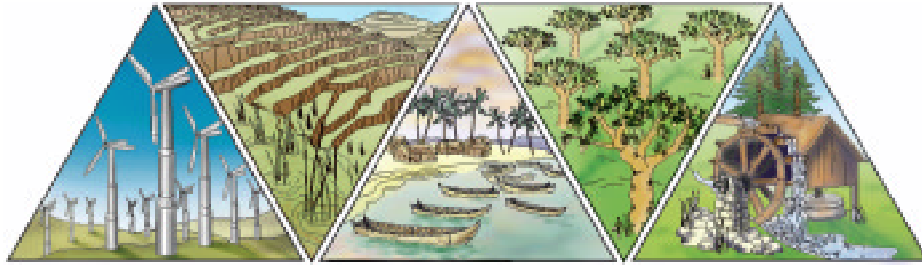
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AN ANNOTATED BIBLIOGRAPHY
AND GENERAL OVERVIEW,
FOCUSING ON U.S. LITERATURE, 1996-2002

Robin Lanette Turner and Diana Pei Wu

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August 2002

**ENVIRONMENTAL JUSTICE AND ENVIRONMENTAL RACISM:
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FOCUSING ON U.S. LITERATURE, 1996–2002**

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GENERAL OVERVIEW OF THE LITERATURE

Introduction

Environmental justice activists argue that all people, regardless of race, ethnicity, or income should enjoy access to a safe and healthy environment (Principles of Environmental Justice 1991). Environmental justice activists and scholars present a broad conception of the environment, or, “where we live, work, learn and play.” The environment, from this perspective, is not the people-free biophysical system idealized by deep ecologists, but rather a geographical system integrally linking to people and society through everyday, ordinary activities and relationships: residence, labor, and recreation. It encompasses the air people breathe walking down a city or country street, the water drawn from their taps or wells, the chemicals a worker is exposed to in an industrial plant or strawberry field, and the forests people visit to hike, extract mushrooms, and engage in spiritual practice. This conception of the environment links labor and public health, recreation to housing, culture and history; it breaks the boundaries between work environments and open space, urban and rural. The environmental justice movement is, by definition, an exciting example of multiethnic coalitions working for change in diverse, linked arenas of struggle, and this is evident in the EJ literature.

This publication provides an overview of recent work on minority and racial politics in the environment. It covers work published on “environmental justice,” “environmental racism,” and/or “environmental equity.” Most EJ scholarship focuses on the contemporary environmental justice movement, that is, efforts by people of color, poor people, and Third World peoples to address issues of access to and control over the environment, broadly defined. (These key terms and concepts are discussed later.) This scholarship is inherently multidisciplinary.

We use the term “contemporary” environmental justice movement to refer to recent activism, while fully recognizing that poor people and people of color have a long history of struggle for environmental justice. The 1980s struggle of Warren County, North Carolina residents against the construction of a PCB landfill in their rural, predominantly African-American community served as the catalyst for the contemporary environmental justice movement. Bullard and Johnson (2002) highlight the Black garbage workers’ strike in Memphis in 1968 and a garbage dump siting conflict in Houston in 1978-9 as predecessors. Anti-toxics gained national attention with Love Canal at the

beginning of the 1980s (CHEJ 2002). Zoltan Grossman contends “the most workable date for the founding of the [North American] Native EJ movement ... is 1492” (personal communication). One can find ample evidence of environmental justice struggles in the United States and elsewhere long before 1982 (e.g., Greenberg 2000).

We hope this publication can serve as an overview of critical issues, debates, and emerging areas in environmental justice scholarship. Much of the literature covered was produced by scholars located within colleges and universities. Thus, the knowledge to which these “experts” have access is highlighted and other areas of expertise are certainly underrepresented. For example, this document does not provide a comprehensive guide to the latest organizing tactics, an area in which activists are far ahead of academic scholars. That said, we hope this publication will be useful to activists, grassroots community organizations, policymakers as well as other researchers. The published literature is valuable as a source of critical engagements with the assumptions, methods, and breadth of environmental justice activism.

The document has three parts: an overview essay, a series of critical summaries of recent publications, and a list of related publications. In the overview essay, we first discuss theoretical issues in environmental justice (EJ)—conceptions of the environment, race and racism, and justice and inequality. We then discuss the social framing of EJ and present key themes and debates in the literature. Contested issues include the production of environmental injustice, EJ research methods, and the relationship between EJ, science, and expertise. We then discuss two extensions of EJ: (1) increasing analysis and activism directed at corporate actors and multinational corporations and (2) the growth and linkage of grassroots, community-based struggles between countries. The final section discusses interventions, that is, grassroots EJ activism and organizing.

Each section provides a list of related publications. We use parenthetical references throughout the essay to indicate ideas and/or quotations drawn from specific publications (using the formats (Author Year: page) or Author (Year)).¹ The annotated bibliography that follows the essay presents a selection of publications from the period from 1996 to 2002.² The bibliography draws widely from scholarly work published in peer-reviewed social science, environmental management, and planning journals, monographs, and dissertations.³ We also have included selected publications from activist organizations. We identified publications through searches of social science databases, tracing citations, and asking EJ scholars and activists for recommendations. This bibliography does not attempt to cover legal scholarship on EJ.⁴

1. For example, Turner and Wu (2002) for this publication.

2. We provide annotations for a few early publications as well.

3. Peer review is a process through which an article submitted for publication is subject to critical evaluation by other scholars with expertise in the area. If a submission survives this process, then it is assumed to meet scholarly standards. This process is designed to ensure that published articles meet academic standards. Critics argue that it may also produce a conservative bias as the established scholars who review pieces are less likely to say that work that challenges conventional views is of good quality. (See Robert’s discussion at http://www.firstmonday.dk/issues/issue4_4/proberts/#r3).

4. Much of the scholarship in this area focuses on law-specific issues such as interpreting specific statutes (e.g. the Civil Rights Act of 1964) so as to provide a legal basis for EJ claims. Neither author has sufficient expertise in the law to evaluate these issues.

The annotated bibliography is organized alphabetically by author. Each annotation summarizes the major points of each article, highlights the distinctive contribution made by each piece, and, on occasion, flags limitations or problems in the work. A list of additional readings follows the annotated bibliography. This list contains five sections: (1) conceptual work on race, ethnicity, and racism; (2) classic EJ publications; (3) recent EJ literature reviews; (4) special journal issues on EJ or related topics; and (5) recent publications not summarized in the essay.

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Center for Health, Environment and Justice. 2002. "Key Dates and Events at Love Canal." Accessed Aug 9, 2002. <<http://www.chej.org/lovecanal20.html>>

Greenberg, D. 2000. Reconstructing race and protest: Environmental justice in New York City. *Environmental History* 5 (2):223-250.

THEORIZING ENVIRONMENTAL JUSTICE

Conceptualizing the Environment: Where We Live, Work, Learn and Play

As we described in the Introduction, EJ activists define the environment as the set of linked places “where we live, work, learn and play.” This definition challenges mainstream environmentalist definitions of environment and nature. The mainstream environmental movement and deep ecology have tended to concentrate on so-called “natural” environments, such as national parks and reserves, endangered species, and endangered habitats. Underlying their claims and activism was a view of human activity as intrinsically harmful to nature, and that nature it(her)self is fragile. Following from this, nature was to be found only in areas remote from human activity. Deep ecologists, in particular, seem to believe that human contact with nature can only result in degradation from nature’s original pristine, virgin state. This view has been roundly criticized by feminists of color, EJ grassroots activists and others, who challenge the view of nature as something remote and separate from everyday life. These critics contend that this view of environment and nature reproduces white privilege. That is, it produces impacts that disproportionately benefit white and upper-class people, while placing negative burdens on urban people and people of color. If the “environment” only exists in remote protected areas, then only rural people, or those with money, will have access to it. Urban or suburban residents who cannot or do not go to the places marked off as parks and reserves can have no knowledge of or interest in nature, and are disempowered from being included in those debates or, in some cases, in those very spaces. For example, Romm (2002) discusses how the United States Forest Service (USFS) was portrayed as an agency to serve the interests of “good land managers.” Good land managers were stereotyped as white, partially through the portrayal of poor people and people of color’s activities as environmentally destructive. Today, these stereotypes still have important economic impacts on the livelihoods of all people who work for the USFS and on public lands in general.

The conception of nature as remote may harm rural people—most of whom are people of color—as well. If pristine nature must be enclosed and protected behind the borders of a national park, then rural people will be displaced for its protection. The people whose villages have been located inside those newly drawn lines will be moved out. This was the case with Yellowstone National Park (LaDuke 1999), and that model continues to be reproduced in national parks throughout the world today, as resident people are moved to the borders of parks and reserves, and then are seen by government and conservation organizations as poachers and squatters (Geisler and Letsoalo 2000; Cock and Fig 2002; Neumann 1998). Conventional conceptions of the environment frequently produce policies that reproduce hierarchies and structures of domination within and between places.

Pulido and Peña (1998) argue that positionality, “a person’s location within the larger [society],” is a critical determinant of how people understand the environment (33). Scholars have shown that Land-based Chicanos (Pulido and Peña 1998), Native American (LaDuke 1998) and indigenous peoples (Geisler and Letsoalo 2000), and people of color experience the environment, politics and everyday life *differently* from white, middle- and upper-class environmentalists (Kalof et al 2002; Taylor 1997). These experiences lead to particular engagements on land rights, toxics, and pesticide issues. Thus the broadest view of the environment as where all productive, creative, and reproductive human activity occurs (rather than where it doesn’t) connects “where we live, work and play” with who gets to play, work, or live, and under what conditions.

Related Publications

- Cock, Jacklyn and David Fig. 2002. From Colonial to Community-Based Conservation: Environmental Justice and the Transformation of National Parks (1994-1998). In McDonald, David A. ed. *Environmental Justice in South Africa*. Athens, Ohio University Press and Cape Town, University of Cape Town Press.
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- Kalof, Linda, Thomas Dietz, Gregory Guagnano, and Paul C. Stern. 2002. Race, Gender and Environmentalism: The Atypical Values and Beliefs of White Men. *Race, Gender & Class* 9 (2):1-19.
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Race and Racism

In the United States, most people conceive of and talk about race in two ways: (1) as biology, or essence, that is fixed, concrete and objective, or (2) as an ideological construct, having little or no basis in reality. EJ research tends to treat race as pre-given, fixed categories.⁵ The research has also focused on racism as an independent cause of environmental injustice (Pulido 1996a). Some scholars have defined racism narrowly, as specific, intentional acts of discrimination. Treating race as a pre-given category hides how meanings of race and racial categories have changed over time, and the interests at work in producing, fixing and shifting racial categories (Omi and Winant 1994). The narrow definition of racism limits the scope of what can be considered racist acts and excludes the workings of structural, historical, institutionalized racism. Other scholars have defined racism more broadly to encompass structural and institutionalized racism but continue to focus on racism as the most important cause of environmental injustice (Pulido 1996a). This approach can serve the projects of people who want to assert the primacy of race and racism in the lives of people of color, but it marginalizes other differences, such as class and gender, that constitute other axes of domination and subordination. These definitions of racism do not promote the goals of broadly democratic, antiracist movements such as environmental justice (Pulido 1996a).

What sorts of scholarship might contribute to a broadly democratic, antiracist EJ movement? Many examples that we found apply a racial formations approach (Omi and Winant 1994) to environmental justice. This approach goes beyond defining racism as specific intentional acts to interrogate the construction of categories such as race. Rather than viewing race as a fixed, pre-given category, race is viewed as a shifting web of social meanings, constantly being transformed by political struggle. Racial categorization “signifies and symbolizes social conflicts and interests by referring to different types of human bodies” (Omi and Winant 1994: 55); ethnic categorizations tend to emphasize culture (language, practices, religions, dress). A racial formations approach asks how racial categories arose historically, under what conditions, and whose interests those categories served.

What is the relevance of a “racial formations” approach for environmental justice? First, it requires us, as activists and scholars, to see that contemporary racializations are part of long historical processes, and are formative of future ones. It asks us to be critical of the categories and the ways we use them in analysis and activism.⁶ A racial formations approach asks us to examine how material conditions are influenced by both structural factors and representations over time. Such a historical materialist approach to race shows that race and racism are mutually constitutive (Pulido 2000; Gilmore 2002a). This has been demonstrated in research on how environmental injustices arose (see section, Producing Environmental Injustice), that is, research that asks the question of how certain

5. For example, many researchers use data from the U.S. Census Bureau regarding racial (White; Black; American Indian, Eskimo, or Aleut; Asian or Pacific Islander; Other) and ethnic categories (Hispanic origin). While fixing race into six categories, the Census also provides example of the ways in which racial/ethnic categories are unstable and subject to change; Census categories have changed repeatedly. To complicate matter further, the 2000 Census permitted respondents to select multiple racial labels for describing themselves for the first time, creating many “new” categories of mixed-race people.

6. Critical race theory, which is not discussed here, may also be helpful, particularly with regard to the law. See edited volume by Crenshaw et al (1995) and Harris (1993).

communities managed to avoid toxic burdens or gained access to the benefits of green space, while other communities and neighborhoods became overburdened with toxics or lacking in parks (see, for instance, Pulido 2000; Szasz and Meuser 2000; LaDuke 1999; Pastor et al 2001; Wolch et al 2001).

Racism can also be embedded in so-called neutral, scientific policies and results, such as anti-grazing laws in the U.S. Southwest. For example, Chicanos in the southwestern United States were stereotyped as landowners who were not economically productive, but environmentally destructive. Certain environmental and industrial interests asserted that sheep grazing increased erosion and destroyed the diversity of “native” rangelands, and that the lands managed by Hispano/a farmers were unregulated areas where selfish individual behaviors would lead to collective overgrazing or water usage. A partial approach to combating these stereotypes would involve establishing that Chicano/as are good environmental stewards and economically important. Pulido (1996) and Peña (1998) describe different struggles in which activists and activist-scholars sought to remake images of Chicano/as and Hispano/as into good environmental stewards, invoking images of Mother Earth in local folklore, as well as describing the complex social relations that govern the use and protection of collective environmental resources. The first narrative marks brown bodies as environmentally rapacious actors, who, if left to their own devices, will overuse natural resources. The second redraws those borders and bodies as farmers who have acquired, through long-term residence, a balanced relationship with the local environment, as well as detailed knowledge of it. Both lines of thought and representation echo particularly powerful and often racialized lines of mainstream environmental reasoning, one of which is commonly known as the “tragedy of the commons” (Hardin 1968), and the other, a romanticized image of a tribal people with a mystical relationship to nature.

The above example also illustrates another important facet of a complex, contextualized understanding of racial formations: racial projects are simultaneously structural and representational. In the cases described by Pulido (1996) and Peña (1998), representations and stereotypes of Chicano/as and Anglos were each dependent on the existence of the other. Stereotypes and representations, including “scientific” representations, became embedded in the political structure, such as in the form of anti-grazing laws, which would disproportionately affect land-based Chicano/as. A racial formations approach also interrogates the political and economic interests behind ecological research that showed Chicano/as as poor environmental stewards. Successful and less successful attempts by Chicano/as to counteract state-sanctioned violence relied on tactics that sought to change structural factors, such as laws, as well as representations, including the stereotypes of Chicano/as, as farmworkers, as water users, or as environmental stewards.

Who benefits from environmental injustice and racism, and who is harmed? As Romm (2002), Pulido (2000) and Gilmore (2002a) and others argue, because of specific historical precedents, elite white men disproportionately enjoy the benefits to be wielded by government and state. For instance, “the relatively early universal extension of suffrage to white Euro-American males to vote established government as their milieu and state power as their instrument (Katznelson 1985)” (Gilmore 2002a: 21). Thus,

the “dictatorship of white men” (Winant 1994) both depended on and fostered a connection between and among masculinity, state power and national belongingness, with everyone else thus characterized as to some degree alien. (Gilmore 2002a: 21)

Romm's history of the U.S. Forest Service shows how racism is embedded in many federal and state agencies' natural resource policies and management. Pulido shows how racism is embedded in the spatial distribution of poor people and people of color in Los Angeles, and how structural racism maintains white privilege. These authors help us to better understand the deep connection between racism, sexism, and power. Often, they show us what many people already know: producing and renewing racism was, and is, hard work, and it helps to shape the dynamics and distribution of environmental benefits and harms.

Who is harmed by environmental injustice, or the creation of marginalized landscapes? Greenberg and Schneider (1994) describe the proliferation of marginal urban landscapes in New Jersey. Since the 1980s, the concentration of locally unwanted land uses (LULUs) and Temporarily Obsolete Abandoned Derelict Sites (TOADS) has increased, especially in mid-sized urban areas such as Camden, Newark and Trenton. These landscapes, largely devoid of public services, become nuclei of violence. For Camden, Newark and Trenton, rates of violent death from 1985 to 1990 among young males are not significantly different for Blacks, Whites and Hispanics. Environmental injustice is related to premature death for all residents.

To summarize, the processes that have produced environmental injustice have also simultaneously produced uneven development, marginalized landscapes, increased criminalization of poor people and people of color, and the social movements that work to transform them. A racial formations approach to environmental injustice seeks to interrogate not only racial categories, but also to investigate the long roots of racism that are embedded and masked within natural resource and environmental policies. At the same time, racism's effects are harmful for society at large. In fact, the dynamics that produce racism are related to those that produce environmental harms. While not all EJ research and activism directly addresses the following goals, many people are already imagining and building broadly democratic, antiracist movements.

Related Publications

Checker, Melissa. 2001. "Like Nixon Coming to China": Finding Common Ground in a Multi-Ethnic Coalition for Environmental Justice. *Anthropological Quarterly* 74 (3):135-146.

Crenshaw, Kimberlé, Neil Gotanda, Gary Peller, and Kendall Thomas, eds. 1995. *Critical Race Theory: The Key Writings that Formed the Movement*. New York: New Press.

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Justice, Equality and Equity

Environmental justice activists and academics have drawn from three broad categories of **justice**: distributive justice, procedural justice and entitlements (e.g. Cutter 1995, Heiman 1996, Low & Gleeson 1998).⁷ **Distributive justice** refers to the distribution of harms (and benefits) over a population. For this standard to be met, then the distribution of harms should not be more prevalent for any identifiable subgroup than another. If egalitarian (*equality*-based) standards were used to assess distributive justice, then each group should have the same level of harms and benefits. Each 500-person neighborhood might have one recycling plant, two parks, and three plastics factories. If *equity*-based standards were applied, each group might not have exactly the same level. If children and the elderly are more vulnerable to pollution from plastics, then neighborhoods with a greater share of these populations might have more parks and fewer factories; neighborhoods of childless adults could justly host more factories. Similarly, if people of color are generally in poorer health, and therefore are more susceptible to environmental hazards, then equity standards would suggest these groups should bear a proportionately smaller share of environmental harms.

Distributive justice principles can be applied across groups within society and across time (intergenerational equity). Much early EJ scholarship focused on showing the disproportionate location of and exposure to toxic substances (via landfills, Superfund sites, incinerators) near minority and poor communities, or refuting these claims. Application of this distributive justice standard to policy would have the following policy implications. Most importantly, environmental hazards, including the waste itself, should be equitably (or equally) distributed across the population. It follows that the siting of new facilities should not be placed on already overburdened communities—hazard-free areas should be targeted—and remedial actions should be taken to clean up contaminated sites until contamination is evenly distributed. Since hazard-free communities are likely to resist efforts to make them host hazards, this is likely to create pressure for hazard reduction. As many activists argue, hazards do not belong in anybody's backyard (NIABY⁸).

Procedural justice focuses on the process through which environmental decisions are made. If decisions are made through a fair and open process, they may be considered just regardless of their distributive impact. Concern with procedural justice therefore centers on two issues: procedural fairness and the effective ability of groups to participate in ostensibly fair processes. Issues of community empowerment and “access to the resources necessary for an active role in decisions affecting people's lives” are crucial (Heiman 1996). This includes attention to the role of knowledge and expertise in a class-stratified society (Heiman 1996) and the right of communities to be involved in all stages of the planning process, especially when political representatives do not reflect the concerns, needs, knowledge and/or experience of their constituents (for example, see Clarke and Gerlak 1998). Some procedural justice struggles were as basic as getting translators so that public hearings could be held in multiple languages, or publishing environmental impact assessments in languages other than

7. Justice is an issue on which philosophers have dedicated books and entire lifetimes (c.f., Rawls 1971); our discussion addresses the ways in which EJ scholars and activists seem to be thinking about these issues.

8. Although anti-toxics and environmental justice activists have often been described as rallying under the slogan, “Not In My Back Yard” (NIMBY), many articulate a broader vision that broadens the goal: “Not In Anybody's Back Yard” (NIABY).

English. Foster (2002) contends that devolving decision-making and adopting collaborative approaches will not produce procedural justice without explicit attention to distributional equity issues, including the ability to participate.

Entitlements approaches seek to ensure that individuals (and communities) have effective access to and control over environmental goods and services necessary to their well-being (Leach 1999; Sen 1981). This conception of justice leads to minimum standards for just outcomes. For instance, one may say that there is a universal right to a clean and healthy environment (including Romm 2002, Porter 2001; Wolch et al 2002). Realizing these entitlements may require changes in procedures and distribution of benefits and hazards; it is also likely to require a reduction in the production of environmental hazards and significant clean-up of existing contamination.

The entitlements approach is compatible with the **precautionary principle**, that is, the idea that policymakers should prioritize preventing adverse impacts rather than redressing or remediating them after they have occurred (Montague 1998). “When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically” (Wingspread Consensus Statement on the Precautionary Principle 1998⁹). When this principle is applied, policymakers err on the side of caution in interpreting uncertain data (see Risk Assessment section). This approach is more likely to produce intergenerational distributive justice.

Critiques of EJ frequently draw upon **utilitarian principles** (e.g., Simon 2000). Utilitarianism defines the most just policy as that which produces the greatest good for the greatest number. Because it is focused on aggregate outcomes rather than individual or group outcomes, a just utilitarian policy could be inequitable. For instance, a leaked World Bank memo argued that a policy of exporting pollution to Third World countries was economically beneficial and rational, because the cost of human health and environmental problems in the Third World was less than that in industrially developed countries (Summers 1991). Utility-based calculations frequently rely on economic indicators to measure benefits, which are highly problematic. For example, a researcher might compare the price different individuals are willing to pay for clean air. As one might expect, willingness to pay is linked to ability to pay; poor people are willing to pay less for the same goods even if they place equal value upon them. Many utilitarians see capitalism as the most efficient means of producing utilitarian justice, but most radical scholars see capitalism (and market-based remedies) as a major source of injustice (e.g., Ruiters 2001; Bandy 1997; Gedicks 1997; LaDuke 1999; Martinez-Alier 2001).

Environmental justice scholars, activists, and policymakers have drawn from each sort of justice claim. The seventeen **Principles of Environmental Justice**, developed at the People of Color Environmental Leadership Summit in 1991, encompass distributive and procedural justice along with entitlements and the precautionary principles. The EJ Principles also highlight the right to self-determination—the right of people to shape their own destiny. Although self-determination has relevance to many groups, it has particular salience in the contexts of Native American struggles and

9. The Wingspread Consensus Statement on the Precautionary Principle was signed in 1998 by 32 activists, academics and doctors. They argue that “the release and use of toxic substances, resource exploitation, and physical alterations of the environment have had substantial unintended consequences on human health and the environment.” For the full statement see this website: <<http://www.gdrc.org/u-gov/precaution-3.html>>.

those of contemporary colonies such as Puerto Rico and the Marshall Islands. In these places, struggles over environment continue to center around expropriation, especially of land and other resources, and are intimately tied with identity and livelihood (e.g. LaDuke 1999; Berman Santana 1996; Ruiters 2001; Neumann 1998) (See section on International Environmental Justice). In trying to provide a relevant framework for international as well as US-based research and activism, Low and Gleeson (1998) define environmental justice as the social distribution of environmental well-being both within and among nations.

Scholars of environmental justice have articulated several different conceptions of environmental justice, but most draw from the 1991 Principles. For example, Cutter (1995) writes that the principle of EJ guarantees (1) protection from environmental degradation, (2) prevention of adverse health impacts from deteriorating environmental conditions before the harm occurs not after, (3) mechanisms for assigning culpability and shifting the burden of proof of contamination to polluters not residents and (4) redressing the impacts with targeted remedial action and resources. Cutter's goals highlight the precautionary principles and the polluter pays principle, both of which have been extremely influential in social justice struggles of the late 1990s.

Over time, environmental justice activism has penetrated the state to varying degrees, and some forms of EJ have become institutionalized. Executive Order 12898 (1994) mandated the incorporation of EJ principles into federal agency activities. As of 1999, according to Lester et al (2001), North Carolina, Georgia, Alabama, Louisiana, Michigan, New York and Arkansas had passed legislation to achieve environmental justice. SB 115 in California mandates that the Office of Planning and Research develop an environmental justice program for the state (Pastor 2001). However, the principles articulated at the 1991 Summit have *not* been generally adopted; government agencies have emphasized some principles and omitted or revised others. For example, in 1992, US Environmental Protection Agency (EPA) Administrator William Reilly wrote, "At its core, environmental equity means fairness. It speaks to the impartiality that should guide the application of laws" This view emphasizes procedural justice but neglects distributive justice and entitlements. More recently, the EPA provided this definition on its website:

Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies. (USEPA [2002])

This definition of EJ incorporates the concepts of distributional and procedural justice.

Environmental justice connects many struggles against racism. Yet, to some extent, it relies on environmental laws for legislative traction. Environmental laws provide certain openings—to rights—that have been largely cut out of civil rights (e.g. Cole 2001; Cole and Foster 2001). At the same time, these laws are subject to change and interpretation, and so their promise too is unstable.

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The Just Environment

Jeff Romm (2002) argues that a “just environment” requires social and ecological relations in which all groups of people have equal opportunity for benefit and influence. Romm’s intervention highlights the distribution of access to environmental benefits, and the historical roots of present inequities in the U.S. West. He contends that environmental injustice is caused by the interaction of (1) environmental policies based on the territorial protection of resources and (2) race-based limitations on social opportunities. In a similar vein, Porter (2001) and Wolch, Wilson, and Fehrenbach (2002) consider the disproportionately lower access to parks and open space of urban communities of color in Georgia and Los Angeles as instances of environmental injustice. More available open space and parks are highly correlated with higher land values and less people of color, and are the results of long histories of racial exclusion (e.g. Pulido 2000 and Romm 2002). Likewise, the formation of conservation parks and reserves in the global South is often linked to state expropriation of indigenous and native lands (e.g. Low and Gleeson 1998; Geisler and Letsoalo 2000) and excludes those often dislocated and relocated peoples from the recreational and livelihood benefits of parks and reserves.

Finally, the use of and access to recreational and public spaces may be more restricted and less safe for young women, lesbian women, Latina/os, Chinese, Japanese, African Americans and a host of others (e.g. Filemyr 1997). This can occur through racialized and gendered stereotypes of who belongs where, and at what times, and is informed by state and other governmental structures—such as a local law enforcement officer’s questioning of a group of African-American students’ entitlement to be taking a walk on a country road (Filemyr 1997).

Related Publications

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Geisler, Charles, and Essy Letsoalo. 2000. Rethinking land reform in South Africa: an alternative approach to environmental justice. *Sociological Research Online* 5 (2).

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Wolch, Jennifer, John P. Wilson and Jed Fehrenbach. 2002. Parks And Park Funding In Los Angeles: An Equity Mapping Analysis. Los Angeles, University of Southern California Sustainable Cities Program and GIS Research Laboratory. <<http://www.usc.edu/dept/geography/ESPE/parkspress.htm>>

CONTEXT

The Social Framing of Environmental Justice

In their analyses of the environmental justice movement, Novotny (2000) and Taylor (2000) use social movement theory to contrast the EJ framing of the environment with the narrower focus of traditional American environmentalism. Traditional, or mainstream, environmentalism has focused on protection of valued ecological places, usually through minimizing human presence, sustainable use of natural resources and reduction of pollution. Environmental justice activists have emphasized human-environment interactions in residential, workplace, and recreational settings. From this perspective, just environmentalism requires equity among people and places as well as environmental protection. These authors tie the different conceptions of the environment to the different historical antecedents of the environmental justice and new environmental movements. Environmental histories tend to trace contemporary mainstream environmentalism to the nineteenth century conservationist and preservationist activism of Ralph Waldo Emerson, John Muir, Gifford Pinchot and other white male outdoorsmen. However, Taylor (1997) has shown that American environmental activism has a much more complex history.¹⁰

Most scholars locate the roots of the contemporary EJ activism in the civil rights, labor (especially farmworkers), and housing struggles of the 1960s and 1970s (see, for example, Bullard and Johnson 2000). These struggles have deep resonance in people of color communities throughout the U.S. and elsewhere. Past struggles also provide a cadre of individuals with experience mobilizing communities, a set of local organizations that can provide a base for organizing, and a language with which residents are familiar. In many cases, local environmental activism begins when an existing community organization expands its agenda or sponsors a new organization (Taylor 2000). Novotny (2000) observes that the Gulf Coast Tenants Association of Louisiana uses references to “chemical barons” and “environmental carpetbaggers” to link anti-petrochemical company protests to slavery, Reconstruction and Jim Crow. Platt’s (1997) analysis of the Mothers of East Los Angeles (MELA) highlights how MELA draws on religious and cultural symbols in using an image of a rebozo-wrapped Madonna holding a child in swaddling cloth as their primary logo. MELA activists draw on the resonance of family and motherhood while contesting stereotypical depictions of their communities. Devon Peña (1998), Laura Pulido (1998), and Joseph Gallegos (1998) all describe how Hispano/a activists contested dominant views of Mexicans as poor land stewards in a struggle over land and water rights in the Southwestern United States, using storytelling, academic writing and poetry as different ways to express Hispano/a farmers’ relationships to land and nature, embedded within centuries of local ecological knowledge.

The EJ conception of the environment as where we live, work, and play broadens environmentalism’s potential constituency and issue focus (Taylor 2000; Novotny 2000). It also has broadened the arenas to which existing environmental legislation has been applied, extending implementation of these laws to communities, places of work, and playgrounds. Multi-issue agendas typify

10. Taylor (1997, 2000) identifies four pathways to environmentalism: wilderness and recreation (the dominant sector), open spaces and urban environmentalism, worker’s health, and social justice (environmental justice). She links environmental activism to positionality; individuals’ race, class, and gender shape their interactions to the environment.

environmental justice organizations, for instance, MELA is active on issues of language, civil rights, and labor as well as the anti-toxics work most closely associated with EJ (Taylor 2000). On the one hand, broad-based struggles may make it easier for activists to determine intervention strategies (Taylor 2000). At the same time it may also make it difficult for policy makers to determine bureaucratic priorities (Foreman 1998).

Related Publications

Bullard, Robert D., and Glenn S. Johnson. 2000. Environmental justice: Grassroots activism and its impact on public policy decision making. *Journal of Social Issues* 56 (3):555-578.

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CONTESTED ISSUES

Producing Environmental Injustice

How do situations of environmental injustice and environmental racism arise? A growing body of work locates the sources of environmental injustice in a complex process through which structural factors—such as capitalism, policies and regulations, and social stratification based on race, ethnicity, class—interact with the contingent, strategic actions of multiple actors—managers, activists, communities and regulators. Environmental injustice is *produced* through complex sociohistorical processes that Pellow (2000) terms environmental inequality formation. The dynamics creating environmental inequality include uneven development and racism wedded with processes of capital accumulation, or “fatal couplings of power and difference” (quotation from Stuart Hall, cited in Gilmore 2002b; see also Pulido 1996; Bandy 1997). A few examples of this approach are discussed below.

In his case study of a Chicago recycling plant managed by Waste Management, Inc, Pellow (2000) observes that community leaders, environmentalists, and elected officials saw the plant as a means to reduce waste and create jobs in an area where few were available; the plant was in part a response to successful efforts to close existing incinerators. But the plant then exposed its predominantly Black workforce to environmental health hazards at low pay, creating an environmental injustice to which environmentalists were inattentive.

Pulido’s (2000) work on Southern California illustrates how racism sediments in particular spatial arrangements. Pulido details how explicitly racialized housing and zoning laws and practices in the early 1900s changed and intersected with other forces to produce situations where disproportionately more toxic facilities are located near communities of color (especially Black and Hispano/a) today. Pulido develops the concept of white privilege in terms of sociospatial relations: “landscapes are artifacts of past and present racisms, they embody generations of sociospatial relations.... White privilege is expressed, and indeed partially contingent on a particular set of spatial arrangements.” (Pulido 2000: 20).

Other work has explored the production of scale and space and how it contributes to the production of injustice as well as the effectiveness of activist, community, and policy interventions (Smith 1993; Gedicks 1997; Williams 1999; Simon D 2000; Pellow 2001; Towers 2000). Scholars have taken a similar approach to examining environmental injustice in the global south, highlighting the intimately coupled dynamics of racism, colonialism and post World War II development policies and international financial institutions (See discussion in *International Environmental Justice*). In the US Southwest, there are vast areas of land colonized by military and nuclear interests. Through state-sanctioned violence disguised as academic and political work, these peopled landscapes have been made to seem invisible and empty, becoming “sacrificial landscapes” as outdoors weapons laboratories (Kuletz 2001: 249).

The work described above departs from a larger body of research on the causes of environmental injustice that has tended to assume racism is a specific conscious act of discrimination singular cause or to rely solely on quantitative methods in seeking to explain the existence of environmental injustice. For example, Vicky Been suggested in 1993 that existing inequity in the distribution of environmental hazards might result from minority move-in after hazards were created. If so, these

inequities could not be attributed to racism, that is, intentional discrimination, but might be seen as a rational response to market forces that made these areas less expensive, and therefore more attractive to people of color who, in generally, have low incomes and less wealth than whites. Those who view the market (capitalism) as just might then say inequitable distributions of environmental hazards and benefits are *not* unjust¹¹; this conclusion rests on a conception of justice adopted by few EJ activists (see section on Justice, Equality and Equity). Subsequent studies by Been and others have found no evidence for this minority move-in hypothesis (Been and Gupta 1997; Pastor, Sadd, and Hipp 2001).

Laura Pulido (1996, 2000) takes issue with the conception of racism embedded in this approach (also see Ruiters 2002). Focusing on racism as “a specific, conscious act of discrimination” or seeking to determine whether it is race *or* class that produces injustice misses the point. Rather, she develops an analysis that historicizes environmental racism through an analysis of white privilege.

[M]any would argue that [the act of a polluter locating near a black community] is economically rational [and not a malicious, discriminatory act]. Yet it is racist in that it is made possible by the existence of a racial hierarchy, reproduces racial inequality and undermines the well-being of that community. Moreover, the value of black land cannot be understood outside of the relative value of white land. (16)

Racism and racial formation are complex processes; race and class are deeply intertwined and inseparable in the experiences of communities suffering from injustice. (See Pulido 1996 annotation for further discussion).

However, not all quantitative research projects adopt a narrow view of racism or the causes of environmental injustice. Quantitative analysis of data on the distribution of hazards, benefits, and groups of people over time can help to identify important patterns and possible explanatory factors that may be common across many, otherwise dissimilar contexts. For instance, Geographic Information Systems-based analyses were an important part of the Szasz and Meuser study (2000) that historicizes the production of environmental inequalities.

Related Publications

Bandy, Joe. 1997. Reterritorializing Borders: Transnational Environmental Justice Movements on the U.S./México Border. *Race, Gender & Class* 5(1): 80-

Been, V. 1993. What's Fairness Got to Do with It: Environmental Justice and the Siting of Locally Undesirable Land Uses. *Cornell Law Review* 78 (6):1001-1085.

Been, V., and F. Gupta. 1997. Coming to the nuisance or going to the barrios? A longitudinal analysis of environmental justice claims. *Ecology Law Quarterly* 24 (1):1-56.

11. This view of the market as inherently just, as presented in an extremely clear example by Larry Summers (1991), is still alive and well. As we put the final edits on this essay and bibliography, Ruthie found an editorial in the New York Times (June 25, 2002) that portrayed sweatshops as positive economic development for places with a surplus of unskilled labor.

- Gedicks, Al. 1997. Corporate Strategies for Overcoming Local Resistance to New Mining Projects. *Race, Gender & Class* 5(1): 109+
- Gilmore, Ruth Wilson. 2002a. Fatal Couplings of Power and Difference: Notes on Racism and Geography. *The Professional Geographer* 54(1), 15-24.
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- Szasz, Andrew, and Michael Meuser. 2000. Unintended, Inexorable: The Production of Environmental Inequalities in Santa Clara County, California. *American Behavioral Scientist* 43 (4):602-632.
- Towers, G. 2000. Applying the political geography of scale: Grassroots strategies and environmental justice. *Professional Geographer* 52 (1):23-36.
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Environmental justice activists assert that poor communities and people of color bear a disproportionate burden of environmental hazards while receiving less than their share of environmental benefits. This is an empirical claim, and much environmental justice research focuses on gathering and analyzing evidence supporting or refuting this claim. Early work on this issue helped to propel the EJ movement but frequently suffered from serious methodological problems (Bowen 2002). Over time, attention to methodological and analytical issues has increased and the quality of empirical research, both quantitative and qualitative, has improved. Many of the empirical studies described in this bibliography discuss their data sources, defend their analytical methods, and describe the limitations of their findings.

A large proportion of scholarly work on environmental justice focuses on two empirical questions: what is the distribution of environmental hazards and benefits and what factors explain these patterns? Researching the distribution of environmental hazards (or benefits) is a cross-sectional matter involving which places (with which sorts of people) have how much hazards at a particular point in time. The landmark EJ studies by the United Church of Christ (1987), Bullard (1983), and US General Accounting Office (1987) addressed precisely this question, and an enormous number of studies have followed in this vein. The findings from these studies conflict; some have found correlations between hazards and race, income, or other proxies for class; a few have not. Because these studies have differed in the hazards studied, unit of analysis (see below), geographic scale, temporal period, and conception of environmental inequality/injustice, they are not easily compared. As described in earlier sections, concentrating solely on contemporary distributions can erase the historical and contemporary, state-sanctioned and extralegal structures that created them. A consensus on the evidence supporting or refuting EJ distributional claims is unlikely to emerge in the near future.¹² The table in the Appendix presents a brief summary of recent studies.

Although cross-sectional research provides important information about the present state of environmental (in)justice, it cannot answer the question, “Why is there environmental injustice?” Most attempts to answer this question fall into two broad categories. The first body of research employs a quantitative, statistically oriented approach that essentially adds over time data and analysis to the cross-sectional studies described above. For example, Been and Gupta (1997) put together a huge data set to evaluate Been’s (1993) hypothesis that environmental injustice might result from market dynamics. Research in this vein has become increasingly sophisticated. Scholars routinely employ a variety of statistical techniques, and many have moved beyond dichotomous coding of crucial indicators.¹³ While this approach allows researchers to evaluate the importance of proposed factors or hypotheses that can be easily measured (e.g. minority move-in, Pastor, Sadd, and Hipp 2001), it may lead to a focus on overly simplistic explanations (Pulido 1996).

12. Several of the articles reviewed selectively cited primarily those studies supporting their viewpoint. There may be limited agreement on distribution of hazards in some places, however. The findings from recent work on hazard distribution in the southern California/Los Angeles region are fairly consistent.

13. For instance, rather than coding whether a hazardous facility is present or not in a census block, scholars might record how many facilities are present or the quantity of carcinogenic substances released in each census block each year.

A second body of research focuses on close analysis of the processes through which environmental injustice is produced (see previous section). Szasz and Meuser (2000) applied a processual approach to Santa Clara County, California, an area where levels and patterns of environmental inequality changed markedly over 30 years. The authors attribute these changes to rapid industrialization, racial discrimination, and housing market dynamics; it is this conjuncture of these factors, rather than one in isolation, that produced environmental injustice. Process-focused studies tend to depict the production of environmental injustice as a complex process shaped by the interaction of race, labor, capital and the state. Research in this area thus requires information about demographics, zoning, economics, and many other topics over time. Process-oriented approaches are clearly compatible with a historical approach, and a few historians have begun to publish work on the emergence of environmental injustice over time (e.g., Greenberg 2000; Gugliotta 2000; Egan 2002; Hurley 1995; Platt 2000). However, most studies in this vein seem to come from geography or political science. Recent work in this vein frequently uses GIS-produced maps to illustrate these processes.

The spread of geographic information systems (GIS) techniques and lower-cost, easier to use software has allowed researchers to investigate EJ at multiple spatial scales. As scholars have made different choices, debate has emerged over the unit (or units) of analysis at which EJ research should be conducted. The unit of analysis is the unit (geographic/temporal) about which researchers seek to describe relationships or explain phenomena. For example, a researcher interested in distribution of hazards might investigate the relationship between racial composition and presence of hazardous facilities at the census block level; the census block would be the unit of analysis. Some scholars assert that there is a single appropriate unit of analysis. For example, Taquino, Parisi, and Gill (2002) argue that “community” should be *the* appropriate unit of analysis and use the census block groups within 10 minutes travel time of a central place as their unit of analysis. Others defend a particular unit of analysis for their specific question, implicitly arguing that unit of analysis and research question should be linked (see, for example, Edwards and Ladd 2000). Others contend that there is no single right unit of analysis. Because spatial distribution of hazards/benefits may be complex, Mennis (2002) argues, scholars should employ raster-based GIS¹⁴ methods that allow nuanced analysis. Williams (1999) contends that the dynamics producing environmental (in)justice are multiscalar and analysis should be as well. In practice, researchers often are limited by the availability of large-n data, both in sampling frequency (for instance, the US Census is conducted only once every ten years) and in spatial scale.¹⁵ The contrasting approaches to scale and research methodology

14. Analyses in Geographical Information Systems software can take many forms. GIS generally works with objects that are points, lines or shapes. In vector-based analysis, lines are represented by the point in the middle, and shapes by their geometrical center. In raster-based analysis, analyses can take into account different places within a shape. An example would be with zip code or census tracts, or other areas like parks. In order to calculate the distance from a nearby paper plant or hog farm to a particular zip code, vector based analysis would calculate the distance to the center of the zip code. Raster based analysis could include details so that if more people lived on one side of the zip code, average distance could be calculated based on population concentrations.

15. For instance, Toxic Release Inventory (TRI) data and RCRA (see below) data are released by the polluting facility and analyses are often conducted by zip code, municipality, county and other units of analysis. However, census data are available at the census tract, block group state, and county levels. Thus, TRI and RCRA data are difficult to reconcile at the zip code and census tract scales.

Resource Conservation and Recovery Act (1976). “The Resource Conservation and Recovery Act (RCRA) establishes a

are closely tied to the different conceptions of environmental justice discussed previously.

Those new to this type of analysis have two books on environmental justice research methods to guide their research (Liu 2001, Bowen 2001). Unfortunately, neither book can offer much help in thinking through qualitative or process-focused EJ research. Several of the studies in the sections on the social framing of environmental justice and the production of environmental injustice provide good examples of the tools for qualitative research and analysis.

Other researchers take the existence of environmental injustice as given. This allows them to move beyond the distribution question to explanation (such as asking questions of how and why, discussed above) and then to “what can we do about it?” These scholars ask how activists and communities have responded to existing environmental injustice, and often seek to identify elements for success, ranging from how communities get organized to how they engage in struggle and social and political change. For the most part, these writers employ qualitative approaches, many of which are drawn from methods and approaches within British cultural studies. That is, they use archival research, interviews, ethnography, and participant observation to examine cases in which community residents, organizers, or organizations have articulated an awareness of environmental injustice and sought to do something about it. Research in this vein describes and analyzes the key actors and the surrounding socio-political-economic environment, tactics each actor employed, and the outcomes of struggles (e.g., Hines 2001; Roberts and Toffolon-Weiss 2001). These scholars frequently draw upon recent theories of political geography and political process in evaluating the outcomes and making suggestions for future engagements (Towers 2000; Williams 1999; Pellow 2001). The substantive content of the interventions of this research is discussed in “Communities working towards Environmental Justice.”

Related Publications

Been, V. 1993. What's Fairness Got to Do with It: Environmental Justice and the Siting of Locally Undesirable Land Uses. *Cornell Law Review* 78 (6):1001-1085.

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framework for national programs to achieve environmentally sound management of both hazardous and nonhazardous wastes. RCRA also promotes resource recovery techniques and methods to reduce the generation of hazardous waste.” For more information, see this website: http://tis.eh.doe.gov/oepa/law_sum/RCRA.HTM.

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- Egan, Michael. 2002. Subaltern environmentalism in the United States: A historiographic review. *Environment and History* 8:21-41.
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- Gugliotta, Angela. 2000. Class, Gender, and Coal Smoke: Gender Ideology and Environmental Injustice in Pittsburgh, 1868-1914. *Environmental History* 5 (2):165-193.
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The relationship between environmental justice, “science” and “expertise” has been subject to ongoing debate, particularly in the arena of environmental health and risk assessment. As the 2000 *Human and Ecological Risk Assessment* and 2002 *Environmental Health Perspectives* special issues illustrate, EJ scholars, activists, and policymakers have engaged with science and expertise on multiple levels. At one level, conventional environmental health methods, such as quantitative risk assessment, have been used to conduct analyses that evaluate the environmental injustice claims of community members. Conventional risk assessment usually seeks to identify the effect of environmental hazards on human physical health and/or ecosystems. A researcher might assess the risks particular forms of pollution pose to specific communities and/or seek to evaluate the general relationship between environmental pollution and environmental health. Liu (2000: Chapter Four) provides an overview of risk assessment methods; also see Arquette et al (2002) and Sexton (2000). Some scholars argue that researchers should incorporate formal risk assessment into all EJ analyses (such as Bowen 1999; 2002); documentation of the release of hazardous substances is not sufficient to prove that people have been harmed. Others argue that distributional inequities in perceived risk are sufficient evidence of environmental injustice (See, for example, Sadd et al. 1999a; Sadd et al. 1999b).

Critiques of this use of risk assessment raise two issues. One, some feel the need for “expert” analyses to validate and legitimate the experiences and beliefs of local community members is morally questionable. Two, others argue that the results of statistical analyses may be irrelevant to the residents of areas that are perceived to be unsafe. In light of their experiences and concrete negative effects, residents of contaminated areas experience increased stress simply from living in areas perceived to be contaminated. In the case of a landfill site in Louisiana, residents had bought homes in an area marketed towards working-class African-American families. In addition to the public health danger, many residents lost their life savings when the site was marked as a Superfund¹⁶ site (Roberts and Toffolon-Weiss 2001).

EJ work on risk assessment shows the limits of contemporary environmental health risk assessment methods. Current risk assessment techniques allow thorough investigation of health risks in cases in which healthy individuals are exposed to a single hazard whose health effects are well documented. But these conditions do not apply in many situations that EJ activists and scholars seek to research. A community might have four or five factories, each releasing a complex mixture of hazards through different routes. Moreover, some community members might work at these factories, therefore risking exposure at home and at work. Low-income children and elderly community members might have an inadequate diet and therefore increased susceptibility to harm. The phrases “multiple, cumulative and synergistic risk” refer to these types of risk. Risk assessment proponents argue that science can and should be pressed to address these issues, and that risk assessment, despite its limits, provides a basis for rational decision making (Sexton 2000). The EPA has conducted a pilot cumulative risk assessment study in New York City (Fox 2002).

16. Superfund sites are sites designated as highly contaminated through the Resource Conservation and Recovery Act (see previous footnote). People living on Superfund sites designated as heavily contaminated are eligible for funds to relocate, but people on less contaminated sites are only eligible for funds (from USEPA) for cleanup. As Roberts and Toffolon-Weiss (2001) describe, the option of cleaning up Agriculture Street did not prevent home values from plummeting, nor did it alleviate residents’ worries about continued contamination and health problems.

A second debate centers on the assumptions embedded within conventional risk assessment. Critics argue that this approach can do more harm than good because it devalues poor and minority communities (Goldman 2000). That is to say, to the extent that risk assessment incorporates cost/benefit analysis and neo-classical economic assumptions, conventional risk analyses may reinforce environmental injustice. It may be economically rational, if morally repugnant, to place wastes in poorer communities in which residents are expected to have shorter, less healthy lives (Summers 1991; Goldman 2000). Harris contends that conventional analyses wrongly exclude cultural, social, and systemic risks from analysis and discount longer-term effects (Harris 2000). From these perspectives, risk assessment cannot serve as an environmental justice tool without radical reconstruction. Arquette et al (2002) suggest a way forward in “holistic risk-based decision making,” while Simon (2000) provides a heated defense of conventional risk assessment based on utilitarian, free market principles.

A third debate on risk assessment engages with the definition of expertise. Conventional risk assessment requires access to detailed data, technical expertise, and computers; people need time and/or financial resources to develop skill in risk assessment or hire someone who possesses it. Goldman (2000) argues that these requirements can reinforce environmental inequity. For most communities/activists, employing risk assessment requires relying on external “experts;” they cannot quickly do it for themselves. Some risk assessment advocates seek to increase community access to conventional expertise. But EJ activists also possess expertise in the form of detailed knowledge about local conditions, modes of interacting, and ways of life that is essential to accurately assessing environmental health and other risks (Arquette et al 2002; Clarke and Gerlak 1998; Corburn 2002) and critical to successful advocacy (Towers 2000). Fischer (2000), Goldman (2002) and Harris (2002) advocate a transformed risk assessment that draws from both local and technical expertise but makes communities, rather than scientists, the central actors. Foreman takes a different view of the relationship between the environmental justice movement and expertise. In his 2000 article and 1998 book, Foreman depicts the EJ movement as anti-scientific at base. He argues that critiques of risk assessment are “disingenuous because activists have no intention of using risk assessment ... to guide their advocacy priorities” (2000: 552). We find this critique misguided at best for it confuses normative and empirical matters. For example, Foreman treats disagreements about what constitutes acceptable risk as evidence of citizen misperceptions rather than normative disagreement over what is just. It is also misleading to suggest that because the EJ movement is not driven by risk assessment—particularly given the limitations discussed above—that it is anti-science. Rather, it is precisely because scientific methods, analysis and interpretation are so hotly contested, and rightly so, that environmental justice activists contest the findings and views of a vocal group of risk assessment advocates. (See annotation for extended discussion.)

Fischer (2000) provides a much more detailed and even-handed analysis of the role of experts and non-experts for complex environmental decision-making and a democratic society. He reviews the main lines of thinking about the use of “experts” in an increasingly technocratic, industrial society such as the United States. He argues that the relationship between community non-experts and “experts” is mutualistic, in that policy experts and scientists need the information that community members can provide as often as those people and groups need the information provided by “experts.” He argues for a reconceptualization of experts as specialized members of the community. He argues that participation of non-experts is fundamental to the ideal of a strong democracy. In

addition, non-expert participation in decision-making can reinforce the legitimacy of the policy apparatus. Implementing this version of a strong participatory democracy requires the fostering and nurturing of community groups, as well as a fundamental shift in the training and attitudes of professionals from an authority role to a collaborative role.

Related Publications

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EXTENSIONS

Focusing Directly on Corporations

EJ activists have focused on multiple arenas of struggle and negotiation, including direct focus on corporations, and scholars have moved in this direction as well. For instance, Simon (2000) argues that many of the hazardous waste corporations responsible for the most egregious instances of environmental degradation and human health and human rights violations are companies with direct links to international crime syndicates. He specifically links waste management companies in the United States with organized crime. Pellow (2001) argues that a “political economic process” approach to studying new social movements should include the targets of new social movements, which have moved beyond government apparatuses and decision-makers to include corporations. Gedicks (1997), in tracing the history of Native American and rural grassroots organizations’ activism to prevent the opening of new mines in Wisconsin, describes mining companies’ responses to activists, such as companies’ attempts to discredit coalitions of grassroots activists and circumvent local government structures, in effect undermining local democracy. Activists then jumped scales to pass a statewide moratorium on new mines. McDonald (2002) investigates the environmental justice implications of the privatization of public services in South Africa.

Finally, in cases where communities and grassroots organizations have been able to establish some agreed upon levels of pollution, such as in Good Neighbor Agreements (GNAs) or the case of Richmond, California’s Laotian communities who continue to monitor pollution or toxics levels, to serve as checks on industry self-reporting (Kong and Chiang 2002). Illsey (2002) and Pellow (2001) examine and compare cases of GNAs as a tool for communities organizing around environmental justice. Illsey (2002) finds that GNAs have been promoted as a means towards public participation in decision-making and improved environmental quality. While *legally binding* GNAs can have beneficial outcomes, they are established *after* siting decisions have been made, and therefore do not affect the distribution of environmental hazards. Pellow (2001) found, like Roberts and Toffolon-Weiss (2001), that communities engaged in struggle were more likely to be successful if they pitched their claims in several arenas, used multiple scales of argument, and used a diversity of tactics (instead of relying on, for instance, a purely legal strategy). The presence of strong communities and strong organizations with a history of monitoring and/or resistance can often be enough for companies to change behavior (Bandy 1997), relocate (Towers 2000; Roberts and Toffolon-Weiss 2001) or give up (Pardo 1998). Alternatively, complex Environmental Impact Assessments (or strategies or plans) provide multiple opportunities for communities and activist organizations to interrupt corporations’ activities. Community based monitoring techniques, such as bucket brigades or community-based mapping, can also be taking off points for building trans-local coalitions, or community-to-community organizing and strategizing (e.g. SAEPEJ’s Project Xchange tours in 2001 and 2002; GCM 2002).

Related Publications

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International Environmental Justice

International approaches to environmental justice have followed several different paths but seem to link most to antitoxics struggles, by articulating the problems of overburdened communities (as a problem of distributional injustice) and the health and environmental impacts of toxic pollution. As Pulido (1996 book) states in her introduction and Bandy (1997) develops for the U.S./Mexican border, underdevelopment and environmental inequity are produced by the same international economic and political structures, including intertwined histories of colonialism, displacement and racism. Much of the work deals specifically with the siting of toxic facilities (including low-tech e-waste “recycling” dumps and military bases), environmental contamination resulting from mining activities, and air pollution (Puckett et al 2002; Brainard et al 2002; Berman Santana 1996; Low and Gleeson 1998; Martinez-Alier 2001). Adeola (2000) links US environmental justice and international human and environmental rights struggles through common factors of minority status, lower socioeconomic status, powerlessness and other conditions of marginalization.

Berman Santana (1996) argues that academic research contributed to creating the image that Puerto Rico had no other option but the military (Operation Bootstrap) and other export-led development, and that this research is based in racist and colonial mentalities that nonwhite people are inherently less valuable, creative or productive than whites. That is, racism and academic research combined to produce environmental injustice for the people of Puerto Rico—a point that others echo for other situations (e.g. Martinez-Alier (1999) for several mining communities).

Some groups have linked the environmental justice struggles of communities within the United States to those of communities in the Third World. Bandy (1997) described some of the trans-local linkages between the US/Mexican border, including mobilizations and protests at company headquarters, often far from the site of pollution. Others have linked communities affected by the same multinational companies, for instance, through worker exchanges, in an attempt to create worker solidarity. Global Community Monitor and the South African Environmental Exchange Program on Environmental Justice (SAEPEJ) has worked to bring South African activists to meet with and learn about many other communities’ EJ struggles in the US, from Cancer Alley, Louisiana to Los Angeles and Richmond, California, and to exchange experiences and strategies for organizing (SAEPEJ 2002). Dawson (2001) describes the dynamics of hazardous waste facility siting in ethnically Latvian communities, and not in Russian communities, in Latvia, as a situation where economically marginal communities are competing for environmentally harmful facilities because of the economic benefits they bring. While she does a good job of describing the processes by which Russians are marginalized, politically and spatially, in Latvia, she does not address the structural forces that cause provinces within Latvia to be competing *for* the siting of a hazardous waste facility.

Additionally, many of the claims of environmental injustice made by Native Americans and framed as EJ issues are similar to those of Third World struggles for land and livelihood (for instance, Grossman 2002, Smith 2002). However, many of these struggles in the Third World may be articulated as indigenous issues, development studies or questions of livelihood, and largely sidestep the question of racialization and racism (This is not the case for work on South Africa; see Geisler and Letsoalo 2002; McDonald 2002). Some address marginality and positionality, which may be key frames for understanding the actors and communities in EJ struggles (e.g. Pulido and Peña 1998) as well as Third World struggles (Pulido 1996 book).

Related Publications

- Adeola, F. O. 2000. Cross-national environmental injustice and human rights issues: A review of evidence in the developing world. *American Behavioral Scientist* 43 (4): 686-706.
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- Cock, Jacklyn and David Fig. 2002. From Colonial to Community-Based Conservation: Environmental Justice and the Transformation of National Parks (1994-1998). In McDonald, David A. ed. *Environmental Justice in South Africa*. Athens, Ohio University Press and Cape Town, University of Cape Town Press.
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INTERVENTIONS

This section covers works that directly deal with activism and organizing. Much of it is based on ethnographic fieldwork, interviews and archival work by researchers who are either participants within activist organizations and communities, or who are otherwise involved, for instance, with technical assistance. We have divided the types of interventions into four rough categories: Defensive, Political Mobilization, Community Participation and Community-Based Monitoring. However, these categories are not meant to be exclusive—most organizing involves several or all of these types of tactics. These categories are not meant to be comprehensive—in our experience, there are many reasons why the published literature is only a partial reflection of the knowledge accumulated through organizing, activism and policy change. At the same time, this literature is rich in the details of the ways people organize within many kinds of constraints that are produced by and produce key elements of the scholarship we have surveyed above, including technocracy¹⁷, racism, risk assessment, the ways of framing arguments as people- and/or place-based struggles, and so on. These diverse tactics and situations may be useful as a sort of road map or directory for communities just beginning these processes. The People of Color Environmental Groups Directory (2000), published by Clark Atlanta University, is probably the most comprehensive directory of organizations working on environmental justice.¹⁸

Communities Working towards Environmental Justice: Defense, Political Mobilization, Monitoring, Participation

The 1991 Principles of Environmental Justice explicitly address procedural justice, stating that communities have the right to be included in all stages of the decision-making process. Recent scholarship describes four major arenas in which communities, activists and grassroots organizations have become more involved in working towards environmental justice. The first is defensive, when communities organize against the siting of a hazardous facility or other locally unwanted land use (LULU). Activists utilize a wide range of tactics, including media campaigns, lobbying, challenging permits and other processual requirements, demonstrations, direct action, civil disobedience and litigation. Researchers and activists have produced many ethnographies of particular struggles, including oral histories, environmental history projects, personal accounts, and political analyses (e.g. Roberts and Toffolon-Weiss 2001; Pulido 1996, Peña 1998, Kong and Chiang 2002; Costa et al. 2001; Gedicks 1993, 2000; LaDuke 1999; Smith 2002; Grossman 2002). The Laotian Organizing Project, for example, published a report on lessons learned from their first organizing project and (successful) campaign (Kong and Chiang 2001), in which Laotian immigrants and refugees from several Laotian ethnic groups worked to create a multilingual warning system for communities located near the oil refineries of Richmond, California. As they describe, commitment to multiracial and multiethnic organizing and radical, democratic processes and politics can be time-consuming and difficult!

17. Technocracy is a social system ruled primarily by experts. Fischer (2000), among others, describes many of the problems with narrow definitions of “experts” for direct democracy, and argues that a broadening of the meaning of “experts” and the relationships of non-experts to them is necessary for radical democratic projects.

18. The People of Color Environmental Groups Directory (2000) is available online at <http://www.ejrc.cau.edu/poc2000.htm> or can be ordered free from the Mott Foundation (www.mott.org), in the Publications section, under Environment.

Secondly, activists have used traditional political tactics and other strategies to respond to existing LULUs and seek to prevent future ones. For example, community members may vote against elected officials and seek to remove other public officials whose actions do not serve the communities they ostensibly represent. In Tucson, AZ, a white public health administrator dismissed Hispanic community members' claims of increased sickness due to toxic contamination of a river in their neighborhood and attributed those claims to racist stereotypes of Hispanics—higher rates of smoking, poor dietary habits and lack of physical exercise (Clarke and Gerlak 1998; compare with Foreman 1998). The subsequent outcry over her treatment of community members' concerns led to her ouster, and her replacement began a series of studies to investigate possible correlations between sickness and the contaminated riverwater and groundwater. In rural Wisconsin, a five member promoting board in a rural town in Wisconsin were voted out of office when community members protested the potential siting of a new mine near the community, thus preventing the multinational mining company from gaining local political support. Community-based struggles have been successful in passing a moratorium against the opening of new mines in Wisconsin (Gedicks 1993; 1997; 2001).

Grassroots activists also have met with some success in securing passage of laws that require community consultations in environmental impact assessments (EIAs), taking advantage of laws designed with other actors in mind. These interventions can be preventative; the more difficult an EIA is to conduct, the more likely it is to serve as a deterrent (Towers 2000; Gedicks 1997). Even if they are not deterrents, complex EIAs (or EISs or EIPs) can also provide more opportunities for activists and other organizations to challenge states and corporations. In some cases, such as the Shintech struggle in Louisiana, community struggles and mobilization have led to changes in corporate behavior (Roberts, 2001; Pellow, 2001). In the case of Shintech, the company changed its strategy from trying to locate a PVC plant near a poor, Black community to relocating closer to an already-existing Dow chemical plant (Roberts, 2001; Hines, 2001). Shintech learned to do aggressive public relations work to avoid the hassle of fighting community opposition before attempting to go through the permitting process, and, if only superficially, have gone through the motions of public hearings, community feedback and creating a community relations board upon which community members sit.

Thirdly, communities have also become involved in scientific monitoring and data analysis. For instance, the Bucket Brigades in Louisiana and South Africa (www.gcmonitor.org; www.labucketbrigade.org) involve community members in air quality monitoring. Community members decide, with help from local organizers and researchers, local sampling plans and take air samples using modified plastic buckets: a low-tech, low cost way of increasing sample size and coverage. The air samples are sent to laboratories for analysis. Community monitoring of air quality both provides a check on company self-reports of environmental violations and serves as a tool for community organizing and consciousness raising. Global Community Monitor has also been involved, with the South African Exchange Program for Environmental Justice, in community-to-community exchanges (SAEPEJ 2002).

In a struggle to prevent a power line being sited in Monroe County, West Virginia, local community organizations were able to show that the Environmental Impact Assessment, as conducted by university researchers commissioned by the utility company, lacked vital details that constituted

social, cultural and environmental features that would affect the assessment. By challenging the scientific accuracy of the assessment, the activists forced the utility company to revise their EIA. When the utility company finally resubmitted a plan, it avoided not just Monroe County but also several other counties in West Virginia (Towers 2000).

Fourthly, activists and policy makers have taken steps toward direct community participation in decision-making. Community groups have demanded more direct participation in environmental policy making processes. This includes limited measures such as public hearings but also comprises direct community consultation regarding hazard siting and other issues. Executive Order 12898 (1994) mandates that all federal agencies implement the principles of environmental justice, creating a regulatory opening that makes it easier for interested federal policymakers to interface with community members and organizations, and for interested communities to demand more direct inclusion in decision-making processes. Good Neighborhood Agreements (discussed in the previous section) provide a means for communities to directly engage with corporations or small businesses that could pose a threat to communities.

One area where government and research institutions have incorporated more community participation is in research, particularly through partnerships on environmental health issues. As mentioned in a previous section, EJ activists have criticized traditional risk assessment's focus on individual contaminants from single sources and disregard for the multiple hazards facing many low-income people and communities of color (e.g., Corburn 2002). Activists have also criticized the systematic silencing of local knowledge and expertise by the language and assumptions inherent in formal risk assessment. In some cases, community members have become directly involved in research design and implementation on EJ issues. Involvement has included designing research questions (Costa et al 2002); modifying research methodology (e.g. Corburn 2002), collecting data; and analysis. For example, in the US EPA's pilot neighborhood-based Community Exposure Program in New York's Greenberg/Williamspoint neighborhood, local interviewers were trained to gather data on exposure and community health from community members, and worked closely with EPA scientists to develop local models of community cumulative risk exposure.

The West Oakland Environmental Indicators Project was a collaboration between the Pacific Institute and the 7th Street/McClymonds Initiative (a community organization) to answer the questions that residents had about the places where they live. Indicators that residents were interested in included air pollution, asthma rates, voting power, vulnerability to displacement and housing affordability, community stability, illegal dumping, land use conflict, resident toxic exposures, lead poisoning, transit mobility and bikeable streets (Costa et al 2002). In working with farmworkers to monitor the health impacts of pesticide exposure, Arcury et al (2001; 2002) and Quandt et al (2002) describe the importance of working with farmworkers of different ages to develop models that accurately reflect people's multiple exposures to pesticides.

Roberts and Toffolon-Weiss (2001), through extended fieldwork and interviews with key activists, present histories of four major EJ struggles in the state of Louisiana and try to evaluate the factors that helped them to succeed, or that led to their failure.¹⁹ They use the cases of a uranium

19. Roberts and Toffolon-Weiss (2001) describe success or failure according to the self-stated goals of the communities and organizations.

plant that was to be sited in northern Louisiana, near historic Black communities of Forest Grove and Center Springs; the case of Shintech and St. James Parish; the community of Grand Bois against an Exxon oilfields waste facility and the struggle of Agriculture Street to be paid adequate compensation for relocation after being classified a Superfund site. Through their analysis, they find that communities are more often than not divided, and that unity is not a prerequisite for success. However, access to national media coverage and to national or international organizations often helps, although these organizations often have their own agendas, and their commitment to communities' struggles sometimes needs to be nurtured. In all of the cases, communities resorted to some sort of litigation. Litigation as public interest cases was more successful than private cases pursued as class-action lawsuits. They show that activists have all sorts of histories, with different commitments to broader struggle. That is, some activists have long histories of involvement with environmental or civil rights struggles; others are people who have become politicized through experience and/or struggle—storeowners and housewives, who otherwise would not have thought about engaging in activism. Once mobilized, some people are most concerned about the local struggle and want to go on living their own lives when and if their immediate goals are met. Others see themselves as part of a broader movement and want to continue helping any community that may face similar situations.

In summary, environmental justice activism at the end of the 20th century and beginning of the 21st has brought together grassroots activists, scholars and policymakers. Communities and community based organizations have challenged racist notions about poor people and people of color, whether in public health, or in attitudes towards the environment. They have worked to challenge permitting processes, and sometimes, with the help of sympathetic political allies, to change legislation. In some cases people have mobilized to change their political representatives or public officials when those individuals failed to represent the views of their constituency. Communities have also demanded more direct inclusion in political processes, through public hearings, town meetings, community consultation and so on. Communities and activist organizations have also utilized technical tactics, such as enlisting experts, often crossing racial and class lines and broadening coalitions to do so. In some cases this has also led to demystifying technical activities, such as monitoring, so that monitoring activities are made cheaper, easy to duplicate and more accessible to poor communities and communities of color. Finally, communities have also broadened their efforts to become involved at all levels of so-called professional fields, including research design, thus challenging the very notion of expertise. Clearly, the tactics that we engage in are always partial—partial successes, and when failures occur, they are only partial as well. Social change is a long, slow and uneven process. However, commitment to the larger goals of radical democracy often guides the everyday activities of people, and serves as the guideposts that help us to avoid cooptation.

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CONCLUSION

The Environmental Justice scholarship is strongest in theorizing race and racism, and developing historical and political-economic geographical analyses of the processes that produce unjust places. These processes produce both the distribution of environmental risks and hazards, as well as the distribution of environmental benefits.

Some research and policy institutions have followed a bureaucratic and technical response to environmental justice claims and directives. This offers some opportunities for the goals of environmental justice to be met, but is rarely sufficient because these approaches often treat dynamic and fluid processes as static ones. More importantly, “scientific” and “technical” fixes can perpetuate the power imbalances that excluded communities from involvement in the processes that sparked conflicts in the first place. Risk assessment, for instance, in seeking to confirm or reject communities’ lived experiences, inherently gives power to so-called “experts” to evaluate the claims of “non-experts.” Some communities have shown that local knowledge is in fact more detailed and useful than expert knowledge. They have used their knowledge to develop research and other programs that involve communities in all stages of planning, implementation and interpretation of a research project. Others have worked with “experts”—policymakers, scientists, academics—to bring multiple sorts of analyses to bear on their situations. Regardless of the outcome of a risk assessment, the psychological, social and economic effects of living in an environment that is perceived as contaminated are real. The negative effects of living in a contaminated environment are compounded when poor communities and communities of color also face housing discrimination, transportation issues, police brutality, low wages and other social and economic pressures.

Emerging areas in environmental justice scholarship include the tactics of communities against corporations, as well as corporate responses to activism. Both corporations and activists seem to meet with more success when they can pitch their claims and actions at multiple scales. Communities and activists are extremely creative and diverse, yet are simultaneously constrained by material and structural forces. The deep historical roots of environmental inequalities, and their particular forms in particular places, is one area where scholarship is just beginning to develop detailed analyses. Another area explores the racialized, gendered and cultural meanings of environment and environmentalism. Research and scholarship is also part of the constant process of struggle and negotiation of poor people and people of color, with and against state and corporate interests and desires. Asking the questions, how did some places become more heavily burdened, or denied certain benefits, also begs the complementary questions of how certain places avoided hazards or secured access to benefits. Analyses of environmental justice that take into consideration the workings of racism can also be productively thought of as simultaneously describing (partially) the workings of privilege.

The environmental justice movement is broad-based and diverse. It is made up coalitions of actors who come together, over and over, to work on particular struggles, and then re-form as conditions change. Because of the complexity of environmental and historical processes, this work has been multidisciplinary from its beginning. Likewise, the goals of the movement are diverse, ranging from broad progressive social change to the particular goals of a community in a given moment and place.

THE ANNOTATIONS

Adeola, F. O. 2000. Cross-National Environmental Injustice and Human Rights Issues. *American Behavioral Scientist* 43(4): 686-706.

Adeola defines environmental injustice, environmental inequity and environmental racism in local, national and cross-national contexts. Based on work in the US environmental justice movement and in international human environmental rights struggles, minority status, lower socioeconomic status, powerlessness and other conditions of marginalization have been identified as the major factors influencing the extent of environmental injustice and human rights repression. Environmental injustice and environmental racism are promoted through the systematic exclusion of minority groups in vital environmental policies and decisions.

Adeola reviews dependency/world systems theory for explaining the dynamics of hazardous waste trade, which emphasizes historical relationships between core and periphery economies that extend to the contemporary moment and result in inequitable distributions of risks and benefits. He then extends Blauner's internal colonization perspective to the case of the Ogoni in Nigeria. Human and environmental rights violations occur as a result of efforts to gain control of land, labour and natural resources of the disenfranchised periphery by the more powerful core. This paper may be useful as a starting point for reviewing some of the various possible perspectives on environmental justice, and as a way to link US-specific articulations of environmental justice with international (usually indigenous) struggles over human environmental rights, but doesn't necessarily advance either theoretical analysis or points for activist engagement.

Bandy, Joe. 1997. Reterritorializing Borders: Transnational Environmental Justice Movements on the U.S./México Border. *Race, Gender & Class* 5(1): 80-

The neoliberal economic regime that emerged in North America in the 1990s combined the ideologies of free markets with transnational production. This produced and exacerbated uneven development and the exploitation of natural and human resources. In this context, the U.S./México border, especially the San Diego/Tijuana area, has been a site of intensive political contradictions: rapid growth and industrialization, extensive immiseration and environmental destruction, and increased militarization. The border has also been a site of intense creativity—of a group of community-based environmental justice movements which have worked to build trans-issue and trans-national coalitions in the region. This study interviews organizers and explores the possibilities and difficulties of coalitional endeavors.

For instance, the Stepan Chemical Company produced similar environmental health problems for the communities in Matamoros, México and Brownsville, Texas. In order to avoid increased regulatory and public scrutiny, Stepan Chemical, along with two other chemical polluters in Matamoros/Brownsville area (Retzloff Chemical and Metales Federados Asarco), adopted much of the Coalition for Justice in the Maquiladoras' proposals. Bandy describes the effects of neoliberal policies in the U.S./México border region, specifically the rise of the maquiladoras and, citing the work of Fernandez-Kelly (1983) and others, the workings of the gendered international division of

labor. A majority (65-70%) of the workforce employed in maquilas is women, and are controlled through paternalistic and often violent management. Another long-term effect of neoliberal development is the destruction of environmental conditions and worker health and safety, which many have called “toxic colonialism.” In México, these policies have destroyed communal land and sustainable agriculture, while creating urban decay and worker health and safety problems simultaneously.

Bandy then goes on to look at the environmental justice organizations which have been directly rooted in local communities on the U.S./México border. These include Casa de la Mujer/Grupo Factor X (CDM-GFX), Coalition for Justice in the Maquiladora (CJM), Comité de Apoyo Fronterizo Obrero Regional (CAFOR), and the Support Committee for Maquiladora Workers (SCMW). Also, these include regional organizations with a more environmental focus—Southwest Network for Environmental and Economic Justice (SNEEJ), EcoSol, the Border Ecology Project (BEP) and the Environmental Health Coalition (EHC) of SanDiego/Tijuana. Binational environmental justice endeavors have been interested in reducing maquiladora pollution, making workplaces and communities safe, developing needed infrastructure, regulating toxics and raising awareness about sustainable alternatives. However, the organizations often differ on appropriate strategies and tactics. Bandy argues that while their different focuses of organizing and activity are ultimately complementary, they also belie fundamental differences in how different organizations frame the causal mechanisms of environmental justice problems in the area and inequities between the positions of Mexican workers and activists and their counterparts from the United States.

Transnational coalition building can be powerfully politicizing and offer a more critical understanding of difference, in which differences are not seen as natural essences or in binary social constructs, but instead politicized and contextualized to form the basis of strategic coalitions. Bandy argues that these movements also offer alternative visions of a radically democratic globalization.

Been, V., and F. Gupta. 1997. Coming to the nuisance or going to the barrios? A longitudinal analysis of environmental justice claims. *Ecology Law Quarterly* 24 (1):1-56.

This article reports on an intensive statistical investigation into the chicken-or-egg “which came first?” question (See Pulido 1996). With funding from EPA, Been, Gupta, and a research team analyzed the demographics of communities hosting commercial hazardous waste storage and treatment facilities from the period immediately prior to siting onwards. This research is an outgrowth of Been’s 1994 research, in which she observed that the correlations between poor minority neighborhoods and hazardous facilities did not prove intentional discrimination and suggested that these patterns might be the outgrowth of market dynamics. Been and Gupta studied the 544 facilities active in 1994 and compared demographics in host sites to a sample of non-host sites. The siting and demographic data covers the period from 1970 to 1990.

Been and Gupta’s findings did not support the proposition that market dynamics produce environmental inequality, nor did they find that facilities were generally sited in very poor or people of color areas during the period from 1970 to 1990. Instead, the authors found evidence that facilities were sited in disproportionately Hispanic areas, but little evidence that facilities were sited in African-American areas. With regard to class, facilities were generally sited in working-class or lower-

middle class neighborhoods. Additionally, the authors found little evidence of substantial demographic change after facility siting; there may have been declines in the socioeconomic status of host neighborhoods.

Despite the lack of evidence for siting in African-American neighborhoods, however, the authors found that the areas surrounding active facilities *are* disproportionately Black and Hispanic. They explain the inconsistency by noting that their siting data covers 1970 to 1994 while the distribution study includes all active facilities. Prior to 1970, their data suggests, there was a strong correlation between percentage of African-Americans and facility location; their study provides no information on siting dynamics during this period.

Been and Gupta provide a thorough discussion of the data sources and methods. They focused on hazardous waste facilities because prominent studies (e.g. United Church of Christ) have focused on them, these facilities are well established as locally undesirable, and national data was available. The authors used census tract as their unit of analysis and took several steps to ensure that the units remained constant over time. The sample is somewhat biased towards urban areas, which may understate the relationship between race, ethnicity, and siting. The researchers employed four types of statistical analyses: comparison of means and distributional analyses, logit estimations, longitudinal analysis, and comparative statics. Results for each analysis are reported by decade and by race (African-American) and ethnicity (Hispanic); income results are reported.

Berman Santana, Déborah. 1996. Geographers, colonialism, and development strategies: the case of Puerto Rico. *Urban Geography* 17 (5):456-474.

Berman Santana extends environmental justice analysis to include academic research that contributes to environmental injustice. Berman Santana argues that Puerto Rico's development strategies, particularly Operation Bootstrap, have relied upon a flawed "doctrine of non-viability," that is, Puerto Rico had no viable alternative to economic and political dependence on the United States. This doctrine was supported by a body of scholarship asserting that Puerto Rico was "too small, geographically too strategic, too poor in natural and human resources, and too overpopulated." Berman Santana shows there is little evidence to support these claims—for example, Puerto Rico has significant mineral resources—and little reason to think that these characteristics are related to political or economic viability. She contends that this scholarship was based in a cultural racism that saw non-White people and places as inherently less valuable, producing inconsistent and contradictory research. Population growth and high population density, for example, were considered good in Europe but bad in Puerto Rico. This scholarship had real policy consequences. The doctrine of non-viability supported export-led development strategies in Puerto Rico that have had severe adverse environmental and health consequences. Berman Santana's article highlights the role that intellectual and academic work can play in producing environmental injustice.

Bowen, William. 2002. An analytical review of environmental justice research: What do we really know? *Environmental Management* 29 (1):3-15.

Bowen presents a critical overview of recent empirical research on environmental justice. He

argues that the scientific quality of this body of scholarship is so poor that it cannot provide a basis for public policy. “The evidence regarding disproportionate distributions is mixed and inconclusive.” (10) “Very little can be said ... about location-specific spatial distributions of demographic and environmental variables associated with even relatively few environmental hazards” (p. 12). Bowen reviewed 42 studies published between 1972 and 1999; 12 publications are discussed in this article. Bowen evaluated these studies according to several methodological criteria: data reliability, operationalization of key concepts, research design, analytic methods, and generalizability. These factors determine whether one can make valid causal inferences from a study, that is, whether we should take the findings seriously as an explanation of the events described. For example, a researcher may seek to investigate the relationship between exposure to pollutants and public health. To do so, she would need data regarding individuals’ exposure to the pollutants of concern, and their health status before and after exposure. She would also need to develop logically consistent hypotheses about the relationship between exposure and disease, to analyze her data in an appropriate way, and then to indicate the limits of her findings. Using these standards, Bowen describes several influential EJ studies as low or medium quality, such as (Bullard 1983; Been and Gupta 1997; United States General Accounting Office, 1983); he describes Sadd et al (1999a) as an example of high-quality research (see annotation).

While Bowen’s conclusions are discouraging, the standards he sets should be placed in appropriate context. First, Bowen implies that scientific certainty is a pre-requisite to political action: this is a claim with which many would take issue. Second, EJ researchers face a number of hurdles to meeting these standards.²⁰ Data problems are most difficult to surmount. There are only a few readily available sources of data regarding hazardous facilities, these sources are known to contain errors, and they cover only a limited time period. The researcher above, for example, could use the Toxic Release Inventory to obtain data regarding the carcinogens released by facilities. Without additional data, however, she has indication of potential exposure but not actual exposure. Despite these limitations, her study could make policy-relevant conclusions. The distribution of carcinogenic releases is an important EJ indicator; one only has the opportunity to be exposed to hazardous chemicals if they are released in one’s proximity (Sadd et al 1999a). Secondly, Bowen treats some contested issues as settled, leading him to downgrade some research others might view as higher quality. For example, he declares that zip codes and counties are inappropriate units of analysis; this is not always the case (see, for example, Edwards and Ladd 2000). Thirdly, much EJ research seeks to describe distributive patterns and identify possible causal mechanisms; because it does not claim to “prove” cause, failure to do so should not be seen as a failing. Bowen’s assessment does provide useful pointers to some errors to avoid. Study design is amenable to researchers’ control and appears to be improving over time.

Brainard, J. S., A. P. Jones, I. J. Bateman, A. Lovett and P. J. Fallon. 2002. Modelling environmental equity: access to air quality in Birmingham, England. *Environment and Planning A* 34, 695-716.

Brainard et al assert that relatively little research has been undertaken to examine the relation-

20. More generally, all non-experimental research faces barriers to causal inference because researchers cannot manipulate conditions to test their hypotheses.

ship between air quality, ethnicity and poverty outside the United States (p. 696), and extend the analysis to examine the area around Birmingham, England. They study the exposure of two key air quality pollutants: CO and NO₂ (carbon monoxide and nitrous dioxide) and develop a model to map concentrations of the two pollutants across the city. Using statistical methodologies, they compare concentrations with deprivation (poverty) related characteristics, including ethnicity, age, homeownership, car ownership, and male unemployment.

Brainard et al model exposure to pollutants on an hourly and annual basis. Their model includes exposure based on traffic flow information. Using spatially specific modeling techniques (including raster-based GIS analysis), they find that exposure to CO and NO₂ is disproportionately experienced by ethnic (nonwhite) groups. Blacks' exposures were all over the exposure scale. According to their model, more Blacks, Pakistanis and Bangladeshis were being exposed to the worst air pollution conditions, although exposure within groups was differentiated by social (economic) class. Of all the colored groups, Blacks and Indians are the best off in terms of having a significant elite class. That is, their research supports the claim that economic class alone cannot account for the disparity observed in disproportionate exposure to air pollutants, and that ethnicity remains a significant factor in accounting for higher exposures. They include a good discussion of the limitations and caveats in their modeling approach—for instance, the problems with spatial interpolation based on emissions, and the fact that individual behavior and circumstances greatly affects exposure. They also include a discussion of how to reduce housing segregation in Birmingham, and other possible policy recommendations.

Bullard, Robert D. 2000. *People of Color Environmental Groups Directory*. Atlanta GA, Environmental Justice Resource Center, Clark Atlanta University.

This tome is probably one of the best all-around resources for environmental justice in North America. It includes essays by Robert Bullard, a long section on voices from the grassroots—the voices of activists and community members speaking about their engagements with the movement. There is a directory of People of Color groups in the United States, Puerto Rico, Canada and México, and a section on legal resource groups. Finally, they include an annotated bibliography of papers and publications from 1980 to 1999, and blank data forms for groups to send in their information.

The book is remarkable in including the many articulate, intelligent voices of grassroots activists, as well as academics, and in highlighting the multiple directions of the movement. The directory is extensive. Their annotated bibliography has extensive coverage of resources located in law journals and other legal resources.

Bullard, R. D. and G. S. Johnson. 2000. Environmental Justice: Grassroots Activism and its Impact on Public Policy Decision Making. *Journal of Social Issues* 56(3): 555-578.

Bullard and Johnson trace the genealogy of the environmental justice movement to the civil rights movement, specifically to the Black garbage workers' strike in Memphis in 1968 and a garbage dump siting conflict in Houston in 1978/9. He marks the Warren County, North Carolina case as the catalyst for the launching of the environmental justice (EJ) movement, tracing both the national

media and governmental attention that resulted in a US General Accounting Office (GAO) study in 1983 and the 1987 study by the Commission for Racial Justice, as well as the 1991 First National People of Color Environmental Leadership Summit in Washington, D.C. At the summit, the EJ movement was broadened from “its antitoxics focus to include issues of public health, worker safety, land use, transportation, housing, resource allocation and community empowerment” (556-7). Environmental justice is tied to the environments in which people live and work, and to grassroots community resistance against “policies, practices and conditions that residents have judged to be unjust, unfair and illegal” (557). They define EJ as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies” (558).

Environmental racism is defined as “any environmental policy, practice or directive that differentially affects or disadvantages (whether intended or unintended) individuals, groups or communities based on race or color...Environmental racism combines with public policies and industry practices to provide benefits for whites while shifting costs to people of color (559-560).” They argue that EJ struggles did not magically appear, but have roots in antitoxics struggles dating back at least into the 1980s. Some of the key issues have been subsistence fishing in polluted waters, lead poisoning in children, residential segregation and differential exposure to health hazards, sacrifice zones for toxic waste discharge. Targets are often the US Environmental Protection Agency as well as corporations, especially the heavy toxic producers—petrochemical industries, for instance. Executive Order 12898 under the Clinton Administration (1994) gave some legal purchase for EJ activists to bring claims against companies and federal agencies. They describe several EJ cases, including relocation from a Superfund site in Cancer Alley; CANT v. LES (nuclear waste in NW Louisiana, clear racial pattern in nationwide site selection process); Shintech’s siting of a PVC plant in Louisiana; radioactive waste dumps of native American reservations; transboundary waste trade (and the infamous leaked Summers memo).

The authors attribute these unequal siting and enforcement to attributes of the economic system, unequal power arrangements, and state-sponsored financial incentives for polluting firms. They argue that many of the inequities would be eliminated if existing legislation was enforced vigorously in a nondiscriminatory way, and the EJ movement is also “pressing governments to live up to their mandate of protecting public health and the environment” (574).

Camacho, David E. 1998. *Environmental injustices, political struggles: race, class, and the environment*. Durham: Duke University Press.

This edited volume seeks to highlight the political and social aspects of environmental problems generally, and environmental justice issues in particular. David E. Camacho advocates a political process approach to analyzing environmental justice (Chapter One; contrast to political-economic process model in Pellow 2001). This model, drawn from the work of David Easton and others, focuses on power relationships and the place of groups inside or outside the political system. Political insiders share the values of a particular system; outsiders disagree with at least some systemic values and therefore may challenge the system as well as specific policies. Race and social class influence whether one is likely to become an outsider. The success of insurgency depends upon the political

opportunities outsiders have, their level of organization, and the group's expectation of success. The second chapter, by Stephen Sandweiss, provides an overview of the environmental justice movement from a political process and social constructionist perspective.

The second part of the book examines the causes and consequences of environmental injustice from a political process perspective. Harvey L. White reviews the empirical evidence regarding EJ, concluding that low-income people and people of color bear a disproportionate burden of environmental hazards. Jeanne Nienaber Clarke and Andrea K. Gerlak analyze EJ in Tucson, Arizona (see Clarke and Gerlak 1998). Kate Berry highlights how Eurocentrism in western water policies has affected Native Americans. C. Richard Bath, Janet M. Tanski, and Roberto E. Villarreal examine basic services in the El Paso County *colonias* along the U.S.-Mexico border.

Part three focuses on environmental justice activism. John G. Bretting and Diane-Michele Prindeville highlight indigenous women's activism, and Peter J. Longo discusses prospects for coalition building with traditional environmental organizations.

The fourth section addresses policy approaches to EJ. The authors argue against a focus on proving intentional racism or classism, advocating instead a focus on finding solutions. Mary M. Timney reports on data from a study of air emissions in Ohio cities. She recommends policies that give polluters incentives for pollution prevention such as low reporting thresholds and right-to-know laws. Lynda Robyn and David E. Camacho discuss a new framework for policy development that moves beyond the limits of positivism, highlighting Native American philosophies that incorporate a broader range of values. In the final chapter, Camacho argues that the environmental justice movement shows the need for an environmental ethic that challenges the assumptions and structures through which policies are made. Camacho issues a strong call for environmentally ethically action by individuals and groups, stating "We are all in this together" (222).

Checker, Melissa. 2001. "Like Nixon Coming to China": Finding Common Ground in a Multi-Ethnic Coalition for Environmental Justice. *Anthropological Quarterly* 74 (3):135-146.

In working together to fight an incinerator siting in the Navy Yard in Brooklyn, New York's Williamsburg/Greenpoint neighborhood, members of the Community Alliance for the Environment (CAFE) developed a collective environmental narrative that motivated collective action and bridged formerly contentious ethnic differences. Checker argues that a larger political climate that valued diversity in New York was an incentive for separate ethnic groups to organize collectively, and that visibility in the media and by politicians were major, but short-lived, benefits. She finds that there were continued material and ideological differences between ethnic groups, including especially Latinos and Hasidim, but also Asian-Pacific Americans and African-Americans. In the production of narratives of shared injustice and the day-to-day practices of working together, Checker argues that this is an example of building connective diversity in a coalition that has subsequently been used to fight for other social justice issues. However, her evidence and analysis may not get us all the way there.

Checker brings the anthropological view of ethnicity (and subjects) as produced, and makes the

claim that in this study she will show how everyday practices in this coalition building redefined, or showed the shifting terrain of what it meant to be Latino, or Jewish in the coalition. While the aim is appropriate, her evidence does not show us what she says it does. The coalition seems an unsteady assemblage, which as she says, without enough resources could easily destabilize back into fragmented and competing ethnic groups. At the same time, Checker argues that the experience of coalition building led to future cooperation among the ethnic groups, and so that prior experience can lead to semi-persistent change. The good thing is that here she complicates the fixed view of race and ethnicity that most scholars in the US context take for granted, in that although perhaps her actors did not change their identification within an ethnic group, what it means to be in that ethnic group, vis a vis relations with people of other ethnicities, did change.

Clarke, J. N. and A. K. Gerlak. 1998. Environmental Racism in the Sunbelt: A Cross-Cultural Analysis. *Environmental Management* 22 (6), 857-867.

Clarke and Gerlak examine the debates in Tucson, Arizona, around the siting of a dump, specifically, the public discourse and the widely divergent attitudes of public officials on environmental racism—five members of the city’s board of Supervisors, in public statements, and by overlaying several maps—spatial patterns—of wealth, ethnicity, political districts and pollution in Metropolitan Tucson. They find that the two Latino members of the Board were much more responsive to the possibility of environmental racism than the Caucasian members, and that this probably represented the experiences of the members. Party affiliation may also have played a part.

One of the major issues was the existence of a toxic plume that sweeps across metro Tucson from northwest to southeast corners. The City’s Anglo top-ranking city public health official did not believe in the existence of the plume and its health effects, attributing the residents’ claims of higher cancer and illness rates to racially attributed bad health habits, such as smoking, drinking and not exercising enough. More recent health data confirm higher rates of TCE²¹-related illness for residents.

The researchers describe the perception of different communities fighting over the garbage dump siting. Communities of color caricatured the “saguaro savers” who wouldn’t lift a finger to help about the siting of a garbage dump (but who would go to extremes to save stands of saguaros).

This study examines two major features of environmental politics. First, ethnic minorities and majorities often have very different understandings of what is important, critical and worth acting upon (865). While EJ has been useful in bridging this divide in some areas, Clarke and Gerlak argue that this has not been the case for this part of Arizona. This is confirmed by many others in their studies on attitudes towards environment (see essay for related references). Finally, Clarke and Gerlak conclude that race and class is still a salient issue in U.S. politics and that representation of minority groups must be a priority, otherwise their voices and concerns will be silenced.

21. Tri-chloro ethylene

Cole, Luke W. and Sheila R. Foster. 2001. *From the Ground Up: Environmental Racism and the Rise of the Environmental Justice Movement*. New York: New York University Press.

Cole and Foster present a compelling analysis of environmental racism²² (the production of environmental injustice) the environmental justice movement, and the uses and limitations of particular tactics in EJ activism. The authors argue “grassroots experiences are critical to our understanding of environmental racism and justice;” one needs the perspective “from the ground up” (p. 12). The book alternates between chapters devoted to discussion of specific cases and more general discussion of environmental justice issues. For example, Chapter One provides a history of the EJ movement, and Chapter Two discusses Chester (PA) Residents Concerned for Quality of Life. Chapters Six and Seven examine grassroots networks (the Indigenous Environmental Network) and the ways in which environmental justice activism has produced a transformative politics.

Each case study is effectively linked to a particular aspect of environmental (in)justice; the Chester experience provides a lens into the political economy of environmental racism that is followed, in Chapter Three, with “Beyond the distributive paradigm.” The authors reject explanations of environmental injustice that focus on lifestyle or free markets, arguing that economic and social structures and environmental decision-making processes together produce injustice (they also criticize narrow, judicial conceptions of racism). They emphasize the social structural role of race and space in shaping siting dynamics (also see Pulido 2000; Gilmore 2002), along with permitting processes that legitimate inequitable siting.

Cole and Foster are both lawyers by training. Luke Cole has spent several years working with grassroots groups on environmental justice, and Sheila Foster has researched EJ issues as a legal scholar. In Chapter Five—“Processes of Struggle”—the authors draw from these experiences to analyze public participation structures in environmental decision making and litigation as a means toward environmental justice. Because most public participation processes are built on a pluralist model, they favor business interests rather than community participation; deliberative processes may also embed inequality (See Foster 2002). Litigation may allow an entry point if one can demonstrate failure to meet procedural requirements (environmental law), or discriminatory impact (Titles VI and VIII of the Civil Rights Act of 1964).²³ Litigation may also be a tool for raising awareness and building morale. However, Cole and Foster contend, litigation *cannot* transform decision making processes, are costly, and may be inappropriate. “Environmental justice struggles are at heart political and economic...bringing a lawsuit may ensure certain loss of the struggle at hand or cause significant disempowerment of community residents” (p. 129). The principal strength of grassroots organizations stem from people power; success stems from strong local and regional organizations.

In the Appendix, Cole and Foster also provide annotated bibliography of publications discussing disproportionate impact of environmental hazards. Most annotations are one sentence; the most recent publication year is 1997.

22. The authors use environmental injustice and environmental racism interchangeably.

23. The authors observe, “no plaintiff has yet succeeded in alleging a federal constitutional violation in an environmental justice lawsuit” due to judicial requirements to show discriminatory intent in decisionmaking (p. 126).

Corburn, Jason. 2002. Environmental Justice, Local Knowledge and Risk: The Discourse of a Community-Based Cumulative Exposure Assessment. *Environmental Management* 29 (4): 451-466.

EJ activists have criticized traditional risk assessment based on its focus on individual contaminants from single sources, while ignoring the multiple hazards that uniquely face low-income populations and communities of color. Second, EJ activists state that the institutionalized risk discourse has systematically excluded local, non-expert knowledge by creating hard boundaries between scientific analysis and political values and between expert and lay judgments. In response to these criticisms, both regulators and activists call for cumulative exposure assessment to replace traditional risk models.

Community cumulative exposure assessment relies on local, contextual information for key data inputs, such that risk analysis may be shifted away from expert-based modeling to a more democratic model, where local knowledge can improve the technical assessment and procedural fairness in policymaking. Corburn examines whether community cumulative exposure assessment can live up to these claims by EPA's pilot neighborhood-based Community Exposure Program (CEP) at Greenberg/Williamsberg (G/W), NY, which combined local knowledge regarding exposures with air toxin modeling techniques to generate a cumulative hazard exposure for residents.

The first part of the paper reviews traditional risk assessment process, focusing on EPA's carcinogenic risk assessment procedures. The second section raises some of the weaknesses of this process, especially the challenges raised by EJ advocates. The third section reviews a policy shift by EPA and the fourth section recounts the CEP in G/W, highlighting how local knowledge of hazards was treated in the assessment process.

Quantitative risk assessment is still the language by which health hazards are assessed. It is the characterization of the potential adverse health effects of human exposures to environmental hazards, and is defined as the probability that an outcome will occur multiplied by the impact should that outcome occur. Corburn reviews the processes and the weaknesses of (1) hazard identification, based on toxicological data and animal bioassays, (2) dose-response function, and the process of extrapolating from animal data, (3) exposure assessment, based on epidemiological methods, and (4) risk assessment. This is combined with risk management and communication.

EJ critiques of this process include white male bias in health and exposure data, which disregards significant differences in exposure based on socioeconomic class and race. Additionally, Corburn cites many studies that show an increasing consensus that poverty and race drive excess mortality rates and disease susceptibility. The single exposure model ignores the possibility that toxins have synergistic, interactive effects. Finally, EJ advocates criticize risk assessment because it tends to rely on probabilities without considering public perceptions, distributions and whether the risk characterization process was at all democratic.

Greenpoint/Williamsberg, NY, is a community that is predominantly Latino (40%), White (42%) and African-Americans (14%), with many Puerto Rican and Dominican Latinos and Hasidic Jewish and Polish immigrants. The median household income is \$16,409, compared to \$25,684 for Brooklyn and \$29,805 for New York City at large and education levels are also low. Neighborhood

pollutants include the city's sewage treatment plant, several waste transfer facilities, the only radioactive waste storage facility in New York City, 30 hazardous waste stations, 17 petroleum and natural gas storage facilities, and 96 above-ground oil storage tanks. There is a 15-million gallon oil plume that sits underneath one-quarter of the neighborhood. A 1987 study by Hunter's point Community Environmental Health Center reported that the community had the highest concentration of Toxic Release Inventory reporting industries in New York City, most of which were not in compliance. Ten years later, not much had changed, according to a New York City Department of Environmental Protection Right-to-Know Report. Other exposures come from the overhead Brooklyn-Queens Expressway which bisects the community. The public health of the community is not as well documented, but there have been shown to be higher rates of asthma, childhood leukemia and stomach cancer.

Working with the local community and community-based organizations, EPA was forced to consider small, local sources of pollution, including indoor exposures from families living updoors from dry cleaners, lead exposure, not originally included in EPA's workplan, and learned from the community that a large number of local families supplemented their diets with fish caught in the East River, and thus incorporated local community groups in the monitoring and risk assessment process to help estimate fish intake and toxics exposure through fish by household.

Corburn concludes that traditional risk assessment, because of its shortcomings when applied to people of color and low-income populations, may be less than useful in advancing the goals of environmental justice. In light of regulatory reforms, its use may increase. Risk assessment may provide a systematic, accountable method for evaluating risks, highlighting areas of uncertainty and data gaps, and yielding some evidence of the probability of harm. The paper shows that a shift from traditional expert-driven risk assessment towards community cumulative exposure assessment might move the process more towards the goals of environmental justice. The question of process, or how questions about risk are decided may be as important as what is decided. By acknowledging that local non-expert knowledge may improve the hazard assessment process, EPA's CEP may offer an alternative approach for environmental managers.

Costa, Steve, Meena Palanappian, and Arlene K. Wong, with Jeremy Hays, Clara Landeiro and Jane Rongerude. 2002. *Neighborhood Knowledge for Change: The West Oakland Environmental Indicators Project*. Oakland, CA, Pacific Institute for Studies in Development, Environment and Security.

The Pacific Institute, in cooperation with the 7th Street/McClymonds Initiative, initiated a research project where community members in West Oakland developed research questions along with members of the Institute. Indicators that residents were interested in included air pollution, asthma rates, voting power, vulnerability to displacement and housing affordability, community stability, illegal dumping, land use conflict, resident toxic exposures, lead poisoning, transit mobility and bikeable streets. This innovative approach put community needs and desires at the forefront of determining research questions. It relied on numerical techniques for answering many of its questions, as well as Geographic Information Systems for conducting many of the spatial analyses. Yet, the data are a mix of local knowledge and state-based knowledge—for instance, the data on asthma rates are based on neighborhood surveys. This is an innovative example of a community research collaboration.

Cutter, S. L. 1995. Race, class and environmental justice. *Progress in Human Geography* 19, 1: 111-122.

Cutter distinguishes between environmental equity (as implying an equal sharing of risk burdens) and environmental justice, a more politically charged term that connotes some remedial action to correct an injustice imposed on a specific group of people, mostly people of color in the USA. The principle of EJ guarantees (1) the protection from environmental degradation, (2) prevention of adverse health impacts from deteriorating environmental conditions before the harm occurs not after, (3) mechanisms for assigning culpability and shifting the burden of proof of contamination to polluters not residents and (4) redressing the impacts with targeted remedial action and resources. She includes a short genealogy of EJ, and looks at several national studies. She reviews the empirical data around inequitable siting, addressing issues such as data sources, scale of analysis and type of facility. She examines state and local level studies, and reviews studies that have looked at the relationship between race and enforcement of laws by the EPA. She ends by saying that the empirical claims for environmental racism are not definitive, and uses this as a call for more and better data and research—on what thresholds constitute an equity problem, what spatial units are most appropriate for exploring equity issues and over what time frame. She argues for the need for more involvement by the research community to insure that public policies are based on sound social science, not hyperbole.

Dawson, J. I. 2001. Latvia's Russian minority: balancing the imperatives of regional development and environmental justice. *Political Geography* 20, 787-815.

Dawson understands environmental justice as the struggle of marginalized communities in advanced capitalist democracies to resist unpopular facilities (locally unwanted land uses, or LULUs), as well as the fact that these marginalized communities too often find themselves shouldering more than their share of environmentally hazardous facilities. She extends the analysis to the situation of marginalized communities in transitional post-communist societies, where both marginalized minorities and dominant majorities find themselves in greatly worsened economic situations following the collapse of the socialist economy and economic turmoil of the 1990s. She argues that this economic situation may cause a different pattern of distribution of LULUs, and that dominant and marginalized communities in post-communist Latvia are vying for such facilities. She interprets this to mean that in this case, the goals of regional development and environmental equality are working in opposition to one another.

She argues that in Latvia, marginalization of ethnic Russians occurs through the lack of political access and influence (especially through the lack of citizenship rights and, later, the lack of the timely implementation of a naturalization law under which non-Latvians should have received passports, but also through language), socioeconomic status, (again, marginalization happens through state denial of citizenship, and through lack of adequate language training in Latvian for ethnic Russians). She traces the historical social and economic marginalization of Russians in Latvia by exploring demographic and development indicators (industrial output per capita, investments per capita, retail trade per capita, operating companies, unemployment, higher education, gross monthly wages, income tax per capita, demographic load), showing that the regions with the highest concentration

of ethnic Russians (25 to 40%) are the areas that lag behind in economic development, especially since 1991. Historical hazardous waste is differentiated from contemporary hazardous waste and she notes that the Latgale region, with its large ethnic Russian population, is not being targeted for hazardous waste (pesticide disposal) facilities. This is because at the regional level, environmental and development planning are not integrated, because certain areas have been targeted for investment while Latgale has most certainly been ignored, and a lack of environmental organizations in Latvia. That, when combined with the economic situation, means that districts have considered themselves lucky and successful to “win” projects to build these hazardous materials facilities, and protests against them have been squelched from high levels.

Edwards, Bob, and Anthony E Ladd. 2000. Environmental justice, swine production, and farm loss in North Carolina. *Sociological Spectrum* 20:263-290.

Edwards and Ladd highlight a neglected area of environmental justice research, the impact of the rise of corporate agriculture (“agri-industrialization”) on poor and minority small farmers. The authors focus on the relationship between changes in North Carolina’s swine/hog production industry and farm loss among low-income and minority communities, conducting a multivariate analysis of the relationships between sociodemographic characteristics, farm loss, and hog industry characteristics at the county level between 1980 and 1997. The county is the lowest level at which swine data is available and is the lowest level at which governments have the ability to regulate swine production.

Their findings provide strong support for the claims made by NC EJ and Black farmer activists. Poorer and minority counties suffered more extensive farm loss, and poorer black communities experienced greater farm loss. Farm loss was associated with a rise in black poverty. The eastern NC region (the Black belt) was the only region in which swine industry growth was associated with farm loss; this “most disadvantaged region” comprises 95 percent of swine production and bears the brunt of the well-documented negative environmental and health impacts of hog farming. (The authors note that the decline of tobacco farming may play a role but it cannot explain within-county effects). The authors found a negative relationship between voter registration rates and farm loss. They suggest two explanations for this unexpected result: 1) those hurt by farm loss may be a political minority within the country, and 2) farm loss patterns are driven by macro-level political economic processes not amenable to county-level control. Race and poverty had distinct effects; within counties, farm loss was associated with declining poverty among whites and rising poverty among blacks. Ladd and Edwards argue that EJ research should focus greater attention on “institutional and structural processes that unevenly distribute the economic benefits and environmental adversities.”

Egan, Michael. 2002. Subaltern environmentalism in the United States: A historiographic review. *Environment and History* 8:21-41.

Egan provides a critical overview of the literature of “subaltern environmentalism,” that is, environmental justice. Egan argues that environmental historians should devote increased attention to subaltern environmentalism, for research in this area is “independently important” and critical to an accurate understanding of the history of American environmentalism. Egan uses the term subaltern—which is more frequently used in scholarship on areas outside North America and Western

Europe—to highlight grassroots environmental activism by “marginalized or subordinated groups.” (As Egan notes, Pulido 1996 provides more extensive discussion of this term.) Unlike some other strands of environmentalism, subaltern activism is counter-hegemonic, that is, it seeks to alter power relations within society, to increase the power of subaltern groups. “The social positionality of subaltern activists effectively alters the context of the environmental struggle and our histories must adapt to recognize this” (23).

Egan situates the contemporary environmental justice movement in a broader context of previous social struggles against environmental injustices; the essay opens with a brief discussion of Upton Sinclair’s lament that *The Jungle* incited concern with the meat supply but failed to inspire action on labor conditions, his original purpose. Egan provides an overview of the environmental justice literature, discussing the both the content and reception of several important classic and recent publications. He also discusses historical work addressing subaltern environmentalism, including publications by Gottlieb, Hurley, and Pulido (1996), among others. Egan suggests three ways in which environmental justice could be strengthened. One, a greater number of monographs would permit more rigorous theorization and practical analysis. Second, scholars should extend their focus backward—to encompass 19th century urban environmental problems, for example—and forward to investigate the impact of bio-piracy, the human genome project, and other technical innovations on subaltern groups. Third, scholars should reconnect with the movement. “*The historiography of subaltern environmentalism is in dire need of more stories that reconnect academics with the movement they seek to analyze. Histories belong to people and should tell stories that have an impact on their lives, socially, culturally, politically, and environmentally*” (34).

Faber, Daniel (ed.). 1998. *The Struggle for Ecological Democracy: Environmental Justice Movements in the United States*. New York: The Guilford Press.

This collection of essays, taken from the journal *Capitalism, Nature, Socialism*, includes writings from activists, scholars, researchers and professionals. Faber argues that environmental justice, to date, has not articulated with the goals of radical social democracy. He argues that ecological democracy is ambiguous, but generally emanates from an ecosocialist perspective. A socialist ecology emphasizes the “concrete material and class interests of those who benefit and suffer from social and environmental inequities” (2). He argues that EJ activism unearths the workings of U.S. capitalism and the exploitation and workers and people of color under it. He hopes that this collection of essays will help to bring together diverse kinds of social and environmental movements within the United States.

The book contains an introduction by James O’Connor, and chapters on ecological democracy and environmental justice and the political ecology of US capitalism by Daniel Faber. Charles Levenstein and John Wooding write about workers movements, while Giovanna Di Chiro has an interesting piece on women activists in international EJ movements. Rodger C. Field takes on the question of risk in a capitalist society. Patrick Novotny concentrates on the rise of community participation within epidemiological studies linked with EJ. There is an interview with Richard Moore, of the Southwest Network for Environmental and Ecological Justice (SNEEJ), conducted by Paul Almeida. John Bellamy Foster reasserts the importance of class-based analysis for struggles in the

Pacific Northwest. Michael Dreiling describes differences within the alliance fighting NAFTA. Al Gedicks develops the interaction of racism and resource colonization as major motivating forces that cause environmental injustice in northern Wisconsin; Laura Pulido adds the importance of legitimacy and describes how Hispanic communities have countered stereotypes of Hispanic landowners through a sort of cultural essentialism. Finally, Devon Peña and Maria Mondragon-Valdez describe the interaction of racism and environmental discourses in the Upper Rio Grande.

Filemyr, Ann. 1997. Going outdoors and other dangerous expeditions. *Frontiers* 18 (2): 160-177.

Filemyr provides a personal reflection on access to environmental benefits. Her narrative illuminates “the peculiar and systematic ways in which safe access to the outdoors, ... any space outside of locked doors in domestic shelters, is curtailed in our white supremacist, male-dominated, heterosexist society” (160). Through a series of vignettes, Filemyr shows how “the interplay of oppressions” shapes access to the outdoors and the variety of means through which policing occurs at many levels. A few examples. Filemyr plays outside after dark as a young girl, and her mother exhibits anger and fear not present when her brother does the same. The murder of two young lesbians on the Appalachian Trail, and the government’s refusal to explore this as a hate crime, signals that these public areas are not safe to young women or queer women. Filemyr takes a group of young African American women to her parents’ farm, and the county sheriff interrupts their walk along a local road “to ask who we were and how long we would be staying” (172). The outdoors are not safe for Filemyr, a white lesbian, nor Latina/os, Chinese, Japanese, African Americans and a host of others. As she argues, this is an environmental justice issue.

Fischer, Frank. 2000. *Citizens, Experts and the Environment: The Politics of Local Knowledge*. Durham: Duke University Press.

Fischer examines the politics of non-expert, community participation in an increasingly technocratic industrial society, and explores the meanings of participation for alternative visions of democracy. He counters the claim that non-experts are simply unable to participate in complex environmental decision-making processes by citing several examples where they do: popular epistemology, participatory resource mapping and the consensus conference. Many ordinary people “are quite capable of grappling successfully with both the technical and the normative issues that bear on environmental decision-making” (242). He argues that scientific expertise will continue to be important, but that a democratic society needs to rethink the role of policy expertise, and the professional–client relationship. He suggests that policymakers are as often in need of non-experts’ knowledge as they are of “experts,” and that expert’s role can be rethought of as “specialized citizen”²⁴ (243). Community participation in policy inquiry is important for three reasons. First, it is intrinsic to the meaningful practice of what Benjamin Barber calls a strong democracy. Second, community partici-

24. While Fischer uses the word “citizen” throughout his text, I have tried to use “community,” “people,” or “non-expert” because, following Fischer’s examples in the book text, his vision of a strong, participatory democracy would not be limited to a narrow, legalistic conception of “citizenship.”

pation can contribute to the legitimacy of policy development and implementation, for instance, “collaborative deliberation has the possibility of building new political cultures” (244). Third, community or non-expert participation can contribute to the science itself, by integrating the general and the specific. He argues that the contributions of non-experts in the decision-making process are integral to environmental sustainability.

Changing the culture of experts requires the development of an analytic-deliberative method “capable of bringing together citizens and experts” (247). Participation is especially important in the early stages of the process, when problems and questions themselves are being developed. While deliberation cannot end all conflict, it can include normative judgments more easily than reductionist approaches, such as formal risk analysis, promoted by the Council of the U.S. National Academy of Sciences. On the other hand, people within the environmental justice movement have been particularly successful at developing professional–community collaborative projects.

None of the changes Fischer articulates will come about easily. As he says, “collective participation is not something that just happens. It has to be organized, facilitated and even nurtured” (260). Professionals, on the other hand, need to shift their discourse “from that of authoritative advisor to facilitator of [community] discourse” (261). He argues that these are key to creating a vigorous democratic society.

Foreman, C. H. 2000. Environmental Justice and Risk Assessment: The Uneasy Relationship. *Human and Ecological Risk Assessment* 6 (4): 549–554.

According to Foreman, the environmental justice movement—the activists and their sympathizers—make claims that disproportionate health risks are borne by communities of color, which he elides with low-income and minority communities. He goes on to assert that the USEPA study of environmental justice activists’ claims (1992) found only lead exposure in low-income black children to be significant. Other EJ issues, such as toxic residues in fish, are not phenomena that have been shown by science to have adverse health effects. Additionally, Foreman asserts that the possible negative health effects of *not* eating fish may be more severe than those from eating potentially contaminated fish. He uses this to dismiss claims for state action on behalf of poor and minority communities who make claims of environmental injustice.

Foreman accuses EJ of being blind to the big picture—that environmental risks are widely distributed. He cites air pollution as one example where disproportionate risk or harm is complicated by urban living. This argument is fundamentally flawed in that he ignores the correlation between areas of high air pollution, urban living and racial minorities in the United States. This also ignores the struggles of many suburban and rural communities that live in highly polluted areas, for instance, along Louisiana’s Cancer Alley. The other implication of this argument is that simply because an explicit statistical link cannot be drawn between a single cause and observed, inequitable patterns of environmental pollution, there is no need for action on the part of policymakers or law enforcement.

Foreman argues that the EJ mantra of multiple, cumulative, synergistic risk is not quantifiable by formal risk assessment. He implies that because this risk is not quantifiable (and his definition of quantifiable means able to be reduced to numerical data), this concept of risk is not a real phenom-

enon. In contrast, studies in the environmental health literature demonstrate the interaction of chemicals in the environment and in the human body.

Foreman's piece is more rhetorically than substantively interesting. His is the classic technocratic response to public outcry, which distances the public from the scientist-technocrat. Foreman's technocrat believes that science is neutral and objective, and the public is intuitive and emotional. Only technocrats hold knowledge, and the public is too ignorant to understand or be involved in technical debates. Finally, if scientific evidence is the only proper basis for making decisions, and scientific is narrowly defined as numerical data, then risks that are difficult to quantify—such as multiple, synergistic and cumulative ones—do not exist. The effect of the piece is thus to invoke the broadly sympathetic academician/technocrat, while discrediting the so-called bases of activist claims precisely on the basis that they are activists (with an implication of bias), and the science they marshal has been inadequate.

Foreman does not take the claims of EJ seriously. In fact, compared to the body of work cited in this bibliography, his understanding of both the claims that EJ makes and of the scope of EJ evidence are actually very limited. By misunderstanding EJ, he does not engage specific evidence, claims, or policy solutions usefully. Instead, he relies on scattered anecdotes to make a point (or several) that is (are) nowhere explicitly stated in his piece. He also ignores and dismisses the multitude of studies that use numerical and statistical techniques to demonstrate environmental injustice, when he argues that EJ is inherently anti-science.

Public perception of risk and uncertainty is not uninformed, as Foreman implies. Often it is based on a very clear understanding of what the effects of risk might mean over time—cumulatively—that make communities unwilling to accept any risk at all. This is not a technical issue. It points to a fundamentally different willingness to accept risk by target communities and activists. Communities need no technical (numerical) analysis to understand, in fairly detailed and technical ways, the dynamics of premature death.

Forkenbrock, D. J., and L. A. Schweitzer. 1999. Environmental justice in transportation planning. *Journal of the American Planning Association* 65 (1): 96-111.

In this article, Forkenbrock and Schweitzer propose environmental justice assessment tools that will help transportation planners comply with the U.S. Department of Transportation's (DOT) interpretation of the Environmental Justice Executive Order (12898). The U.S. DOT requires all federally-funded transportation programs, policies, and activities to assess effects on minority and low-income populations, to avoid or mitigate disproportionate impacts, and elicit public involvement. The agency interprets EJ broadly, requiring that planners consider social and economic effects as well as environmental and public health issues.

The authors focus on air pollution and noise pollution, developing two models and assessing their feasibility with data from Waterloo, Iowa. They argue that the census block, rather than the large traffic analysis zone, is the appropriate unit of analysis. (Some effects vary dramatically with distance from the road, and census blocks are more demographically homogenous.) They developed a model for imputing census block income based on census block group data. The authors discuss

four vehicle-generated air pollutants—particulate matter, carbon monoxide, nitrogen oxides and ozone, and sulfur dioxide—and propose a three-step process for measuring effects. The authors defend their choice of model at each stage, discussing other models and noting limitations and biases. First, vehicle emissions are modeled using the federal MOBILES model; second, pollution dispersion is modeled using CAL3QHCR; and third, concentrations of pollutants are mapped relative to protected populations using GIS. They propose a similar model for noise pollutions: MINNOISE allows planners to estimate severity of traffic noise, and GIS allows population mapping. Although air and noise pollution models require technical expertise to implement, they produce maps that should be accessible to people without technical expertise, allowing a broader array of people to participate in transportation policy discussions.

Foster, Sheila. 2002. Environmental Justice in an Era of Devolved Collaboration. In *Justice and Natural Resources*, edited by K. M. Mutz, G. C. Bryner and D. S. Kenney. Washington, DC: Island Press.

Foster provides a critical analysis of the potential environmental justice effects of the shift towards community-based decision making, suggesting that these approaches will not necessarily be more environmental just. This shift, evident in several federal government and NGO initiatives, is a response to two perceived failures of top-down, high-scale (national) policies—“regulatory ineffectiveness and inequity” (140). The utilitarian and technocratic bases²⁵ of traditional environmental decision making can produce environmentally unjust outcomes. Additionally, pluralist approaches to participating in technocratic decisions are frequently inequitable. Although all interest groups are ostensibly equal, in practice some participants are more influential than others. “Certain pre-existing social disadvantages can interact with pluralistic decision-making processes to produce even more severe material inequalities” (143).

Deliberative community-based processes seek to address these failings, allowing all stakeholders within a geographic area meaningful participation in decision-making. These approaches emphasize consensus and collaboration, seeking exploration, creativity and focused consideration of the issues. However, Foster observes, devolved decision making does not necessarily produce more equitable processes or outcomes. She highlights two processual problems. First, there is tension between representativeness, consensus processes and geographic scale; it is easier to reach consensus if one can label likely dissenters as “outsiders” and exclude them from the process. Second, devolution may simply shrink the geographic scale of unequal influence; moving to the local level does not mean that mushroom pickers and timber company executives will have equal influence. Foster argues that we should focus on ensuring real participation by the most affected, accountability of decision makers, and equity rather than prescribing a single scale or structure for all environmental decisions.

25. See the overview essay for further discussion of utilitarianism and technicism (Justice and Risk sections).

Fricker, R. D. and N. W. Hengartner. 2001. Environmental equity and the distribution of toxic release inventory and other environmentally undesirable sites in metropolitan New York City. *Environmental and Ecological Statistics* 8, 33-52.

Fricker and Hengartner create and evaluate log-linear and logistic generalized linear models for both tract-level and SON (smoothed-over neighbor) data for the metropolitan New York City region. These techniques employ well-known statistical modeling methodology to judge whether variables, in this case, racial/ethnic composition of a tract, are significant after socioeconomic covariates are incorporated to account for as much variation in spatial intensity function as possible. Racial/ethnic composition of a tract is an important variable with respect to environmentally desirable land uses in metropolitan New York.

Gedicks, Al. 1997. Corporate Strategies for Overcoming Local Resistance to New Mining Projects. *Race, Gender & Class* 5(1): 109-

Grassroots environmental organizing in Wisconsin by rural residents and Native American communities has been successful in preventing the permitting of new (metallic sulfide) mines. In response, multinational mining companies, in cooperation with the state, have attempted a variety of strategies, including (1) legislative initiatives to thwart local democratic control, (2) legal challenges to local zoning authority, (3) mass media campaigns, and (4) attacks on tribal sovereignty. A coalition of grassroots citizen, tribal, environmental and sport fishing groups have blocked projects by Kennecott Copper Corporation and Exxon Minerals in Ladysmith, Crandon and Lynne, WI. Legislative and legal initiatives to thwart local control were met by activists by a statewide mining moratorium. Mass media campaigns misrepresented the position of organized labor and the relation of United Steelworkers of America to Rio Algom and Exxon, which was suing Rio Algom over environmental health and safety at the Elliot Lake uranium mines in Canada. Exxon also misrepresented the struggle over mining permits as an issue of state versus tribal sovereignty. Native American tribes (Sokaogon Chippewa, Oneida and Lac de Flambeau) in the area see the issues as those of clean air and water, and livelihood. For example, the Chippewa's wild rice paddies are located directly downstream from the proposed mining site, which brought up issues of acid mine tailings and potential heavy metal and other toxic chemical contamination in fish, water, and crops, and their subsequent bioaccumulation in human beings. Gedicks compares the mining industry's responses to increased grassroots organizing as similar to the response of the toxic waste industry in the 1980s. While Gedicks does not explicitly mention it, successful and continued organizing is needed to be able to jump scales—for example, from local to statewide efforts at organizing and legislation. He also cites the diversity of the coalition—rural-based, grassroots, multiracial, with significant links to urban, labor and student constituencies—as being part of the reason for its relative success in confounding the mining industry and thwarting attempts to isolate the mining opposition from the political mainstream. He argues that companies, through the Multilateral Agreement on Investment (MAI) are shifting the scales again, to the international, and argues that there is also a nascent transnational grassroots antimining coalition.

Geisler, Charles, and Essy Letsoalo. 2000. Rethinking land reform in South Africa: an alternative approach to environmental justice. *Sociological Research Online* 5 (2).

Geisler and Letsoalo apply an environmental justice lens to protected areas—parks, preserves, and forests set aside for conservation purposes. The authors argue that the expansion of protected areas has frequently had a negative impact on rural communities in Africa and elsewhere in the world; conservation may produce environmental injustice (also see Neumann 1998²⁶). The proportion of area with protected status has rising dramatically since 1985, producing large-scale “ecological expropriation” and environmental refugeism. They define ecological expropriation as “the coercive transfer of nonpublic land to public owners in the name of conservation” (6.1). In South Africa, the focus of this analysis, there was widespread displacement of black and indigenous communities to create national parks *and* reservation of land within the Bantustans.

Geisler and Letsoalo advocate environmentally oriented land reform as a socially and ecologically just response to greenlining. They make several recommendations:

1. Rightful owners should be compensated for their loss through land swaps, explicit purchase, or rental fees. In some cases, protected areas may provide sufficient benefit to local populations through jobs, revenues, etc.
2. Land not essential to conservation should be considered for farming or multiple use purposes.
3. Farmland, which is extremely concentrated in South Africa, should be redistributed, lessening pressure on protected areas.
4. Measures to provide tenure security and agrarian reform should provide incentives for sustainable use and may provide an opportunity for community-based natural resource management. These measures could include recognition of existing community-based African tenure systems.
5. Creation of community land trusts in urban areas could provide justice and lessen land pressure on rural areas. Land reform may be a tool for environmental justice.

Gilmore, Ruth Wilson. 2002. Fatal Couplings of Power and Difference: notes on Racism and Geography. *The Professional Geographer* 54(1), 15-24.

Gilmore develops the concept of racism as a signifier of the fatal coupling of power and difference, taking off from Stuart Hall’s 1992 piece in *Redefining Marxism*. She describes three projects that have developed from her engagement with political activism. The first is a study of California’s remarkable prison growth and the opposition to it in the last two decades of the twentieth century. She describes the prison as one of multiple mechanisms by which a “state-in-crisis” disciplines surplus workers, and how workers organize against their disenfranchisement, “within and across

26. Neumann, Roderick P. 1998. *Imposing Wilderness: Struggles over Livelihood and Nature Preservation in Africa*. Berkeley: University of California.

oppositional spaces delimited by race, gender, class, region and violence” (15). Her second project examines how underdevelopment and environmental racism constitute two sides of a single coin within the environmental justice struggle, again, led by women activists. The third project is one of “tracing the development and movement of several mature women activists across territories shaped by state and state-sanctioned racist terror” (16). She develops racism as a practice of abstraction, “a death-dealing displacement of difference into hierarchies that organize relations within and between the planet’s sovereign political territories.” Gilmore then develops a history of the US racist state since the New Deal, into which activist women (from El Salvador, from Nazi Germany, from Mississippi) moved in, and continue to organize. She develops a view of the contemporary US state as a domestic military state, conceived in violence and racism. “The warfare state is also the gendered racial state” (21). Finally, she argues that “geographers should develop a research agenda that centers on race as a condition of existence and as a category of analysis, because the territoriality of power is a key to understanding racism” (22).

Goldman, B. A. 2000. An Environmental Justice Paradigm for Risk Assessment. *Human and Ecological Risk Assessment* 6 (4):541-548.

Goldman argues that the environmental justice movement poses a major challenge to risk assessment. First, EJ poses a technical challenge to risk assessment. Traditional approaches rely on clear identification of hazard and assessment of dose-response relationships, exposure, and risk characterizations. Yet many EJ cases involve multiple hazards, possible synergetic relationships, multiple and differential exposures, and increased susceptibility. Risk assessment is difficult in these circumstances, and assessors are frequently required to make hard decisions that are open to challenge.

Second, risk assessment techniques may reinforce environmental injustice. Technical reasons include the ease of measuring costs (of pollution prevention or cleanup) relative to benefits, uncertainties that benefit polluters over victims, and failure to distinguish between risks that are easy to reduce from those that are not. Even if it is technically neutral, however, risk communication-based regulatory strategies are likely to reinforce inequities. Powerful, wealthy, and white communities are better situated to use risk information to prevent the siting of hazards in their neighborhoods.

To the extent that risk analysis relies on neo-classical economics, it will systematically favor white males for to place wastes in poor communities. Drawing from the infamous Summers memo (1991²⁷), Goldman suggests that it is economically rational, if morally repugnant, to place hazardous wastes in poor communities.

Despite these problems, Goldman does not advocate the rejection of risk assessment. Instead, he argues for community-led risk assessment. Community-led risk assessment will focus on community priorities, empower participants, and selectively draw from traditional risk assessment techniques. Technocratic, expertise-reliant strategies cannot produce environmental justice. Community-led risk assessment is the only approach “that will lead to lasting solutions that will improve the quality of life for real people in communities suffering real hardships in ways that they find meaningful.”

27. Summers, Lawrence. 1991. <http://www.whirledbank.org/ourwords/summers.html> (accessed July 8, 2002)

Greenberg, Mark and Dona Schneider. 1994. Violence in American Cities: Young Black Males is the Answer, but what was the Question? *Social Science and Medicine* 39 (2), 179-187.

Violent death in urban America is a serious public health problem. While the US federal government seems to address the problem of urban violence by targeting (often violent) interventions at particularly aged, gendered and racialized bodies (young black males), Greenberg and Schneider argue that urban violence is a characteristic of structural consequences. Since the 1980s, those structural consequences include the increased concentration of locally unwanted land uses (LULUs) and Temporarily Obsolete Abandoned Derelict Sites (TOADS) in certain urban areas, creating marginalised landscapes. These landscapes, devoid of public services (education, public health, law enforcement), then become nuclei of violence in urban centers, that affects all residents. They analyse statistical data for three medium-sized cities in New Jersey (Camden, Newark and Trenton) that epitomize marginalized landscapes: they have large ethnic and minority populations, suffer from serious economic problems and are located in the state with the second highest per capita income in the US. Their analysis shows that for these three cities, rates of violent death for 1985 to 1990 among young males are not significantly different for Blacks, Whites and Hispanics. This paper goes beyond the chicken and egg question of siting of LULUs to show that the societal outcome of the creation of marginalised landscapes affects all residents.

Harris, Stuart G. 2000. Risk Analysis: Changes Needed from a Native American Perspective. *Human and Ecological Risk Assessment* 6 (4):529-535.

Harris argues that risk assessors must take a broader view if they are to accurately fulfill the purpose of risk assessment, that is, to “improve everyone’s long-term well being and survival.” Rather than focusing narrowly on fine details, risk assessment should evaluate risks to human-eco-cultural systems—risks to eco-systems and communities, as well as individuals should be assessed. Pollution requires a change in lifestyle practices affecting all aspects of community life.

This approach differs from conventional risk assessment in the types of risks, costs and benefits included, the time period covered, and the role of affected parties. Conventional risk assessment focuses on human health and ecological impacts. Harris’s approach would encompass social, cultural, and economic health as well. One cost of pollution might include loss of access to a place and the resultant diminution in social, education, or cultural wellbeing. Conventional approaches prioritize near-term risks and discount the future. Harris recommends that assessments define the temporal aspects of risk and evaluate likely impacts over the full period during which a hazard exists. In conventional risk assessment, external “experts” drive the process, determining which effects to assess over what time period. Harris argues that accurate risk assessment requires substantial involvement and participation of the people/communities at risk. Affected community members have the expertise to determine what information must be gathered, to predict and evaluate likely impacts on the system, and to develop metrics for considering alternatives; real participation requires participation at all stages of risk assessment. Harris uses the practices and beliefs of the Confederated Tribes of the Umatilla Indian Reservation as a model for the sort of holistic, systemic assessment he advocates.

Heikkila, Eric J. 2001. Identity and Inequality: Race and Space in Planning. *Planning Theory & Practice* 2(3), 261-275.

Heikkila argues that “issues of spatial inequality are intertwined with clearly identifiable issues of race.” It is important to understand the extent to which there is overlap linking spatial and racial inequalities, such that similarity between the two dimensions may offer potential for insights gleaned from one to be transferred across to the other, and that attempts to draw lessons inappropriately may result in faulty policy analysis and prescriptions. He has two central conclusions: (1) the role of identity and identity formation is a central to our “conceptions of racial inequality and spatial inequality,” and (2) “leaving assumptions about identity construction leads...easily to ambiguous or contradictory policies regarding social justice” (262). He specifically applies this to five case studies in planning practice: the repeal of affirmative action by California’s then-Governor Pete Wilson in 1995; *de facto* ghettoization; radical civil disobedience (the anti-WTO Seattle protests in 1999); the Appalachia Act of 1965; and enterprise zones. Second, he argues that there is a misapplication of principles of social justice where the implicit dimensions of one problem are applied to another. This is illustrated by the Larry Summers World Bank memo and University Admissions Reform in the University of California system (Prop 209, 1996). Heikkila often relies on some sort of economic calculus (the Tiebout model, Pareto optimality, neoclassical models) in an effort to contrast alternative political and social scenarios. In the case of UC admissions, he argues that Governor Gray Davis’ shift from race-based affirmative action to spatially (geographically)-based affirmative action might involve a spatial redistribution of households by race, thereby failing to achieve racial equality.

Heiman, Michael. 1996. Race, Waste and Class: New Perspectives on Environmental Justice. *Antipode* 28:2, 111-121.

This is the introduction to an issue of *Antipode* (“A Radical Journal of Geography”) that explores “the evidence supporting the conclusion that race is the central determining factor with toxic exposure and...the political implications of such for community organizing and empowerment” (111). The report released by the General Accounting Office (USGAO 1995) reviewed the results of ten studies examining the relationships between demographics and the locations of hazardous waste facilities, finding that the results of the studies depended greatly on the type of facility, questions asked, the sample size used, the geographic definition of impacted community and the research methods employed. Geography also matters. The writers in this issue of *Antipode* (Ben Goldman, Laura Pulido, Robert Lake, Florence Gardner and Simon Greer, Robert Gottlieb and Andrew Fisher) “eclipse the determination of overt intent as the principal measure for environmental discrimination and racism.” They center on the lived experience of individual participants. Goldman situates the EJ movement as arising out of the anti-racist struggles of the civil rights era. However, the EJ movement is somewhat broader, to embrace a more general anti-toxics effort combined with the cleanup of abandoned waste sites and with the actual production of hazardous waste chemicals. There is a caution that well-intended efforts to make information more available through online access, GIS mapping and overlay procedures may actually further disadvantage communities of color and low-income areas in the absence of meaningful technical assistance. Laura Pulido’s piece looks at the legacy of the environmental justice movement, and reviews race and racism as conceptualized by those involved with the dominant discourse on EJ. She also discusses in detail the political motiva-

tions behind research, including the University of Massachusetts study that was funded by Waste Management, Inc. Lake reviews the literature on environmental equity and broadens the arena within which public policy must act. Florence Gardner and Simon Greer describe a multi-issue working class, multi-racial alliance in South Carolina, Carolina Alliance for Fair Employment (CAFÉ). They show that in CAFÉ, social and ethnic barriers can be overcome through reference to workplace experience, even as the agenda reaches into consumption issues such as housing access and recreational opportunities. Finally, Robert Gottlieb and Andrew Fisher provide another model for community empowerment: the production of a safe and sustainable food supply in the Los Angeles area. Heiman ends by discussing the central issues for environmental justice—community empowerment and access to the resources necessary for an active role in decisions affecting people’s lives—and the role of knowledge in a class-stratified society. He offers researchers a goal, to document and support an alternative knowledge base drawn from the lived experience of oppressed people residing and working among the toxic contamination of industrial society.

Hines, Revathi I. 2001. African Americans’ struggle for environmental justice and the case of the Shintech plant: lessons learned from a war waged. *Journal of Black Studies* 31 (6): 777-789.

Hines examines the strategies and tactics that St. James community activists used to oppose a Shintech Corporation proposal to build three chemical factories and an incinerator in the predominantly African-American and low-income town of Convent, Louisiana. Activists succeeded in preventing the construction of these facilities; Shintech eventually withdrew its proposal. Hines highlights three factors leading to success: local education and mobilization, expansion of the opposition coalition, and timing—because these activists were first to oppose a plant permit based on Clinton’s EJ Executive Order, the EPA dealt very carefully with their claim. Although scale is not explicitly addressed in the analysis, Hines observes that the ability of plant opponents to garner local, regional, and national support and publicity. For example, the opponents’ complaint filed with the national Environmental Protection Agency led EPA to pressure Louisiana state government and to block the permit. This article supports arguments by Williams (1999), Smith (1993), Pellow (2001) and others that EJ is a multiscale phenomenon requiring multiscale activism.

Hockman, Elaine M., and Charles M. Morris. 1998. Progress towards environmental justice: a five-year perspective of toxicity, race and poverty in Michigan, 1990-1995. *Journal of Environmental Planning and Management* 41 (2):157-176.

Hockman and Morris present the results from a multivariate analysis of the relationship between race, income, and other measures on the distribution of environmental hazards, environmental remediation (clean-up) efforts, and public health in Michigan. The most important finding in this study was the limited extent of environmental cleanup and remediation in Michigan. During the five-year period under review, 14 percent of 1961 sites improved in status and 6 percent worsened in status (e.g. a site scheduled for clean-up returned to no action). The classification system was fairly generous; an improvement in status could mean simply that a remediation plan was approved, it does not indicate that conditions at the site actually changed. If this date reflects national patterns,

defensive struggles against siting of new potential hazards may be extremely important; there is little reason to expect that actual hazards will be reduced. The authors hoped to make a significant contribution to the literature by investigating the rate of actual cleanup in places with different racial compositions—a 1993 National Law Journal piece investigated penalties and placement on national priority action (Superfund) lists (Lavalle and Coyle 1992²⁸). They found little relationship between classification or change in status and demographic indicators among the limited action taking place. The authors argue this important concern cannot be addressed until “clean-up effort become more than negligible” (171). Other aspects of this study are discussed below.

The authors use zip code as their unit of analysis, arguing that this unit provides a compromise between variability between units and similarity within units. Ten demographic indicators drawn from the Census were used to assess race, income, and socioeconomic composition of the zip code. Six types of pollution sources were assessed using data from the Toxic Release Inventory (TRI) and two Michigan state agencies: TRI citations, 1990 Act 307 sites (state identified pollution sources), leaking underground storage tanks, hazardous waste management facilities, incinerators, and landfills. Rates of risk-related cancer rates and low birth weight were the indicators of public health.

The authors found race was a significant predictor of environmental hazards. However, a cluster of factors were better predictors of “areas more prone to pollution;” these areas were characterized by higher population density, short work-home communities, more minorities, fewer vacant dwellings, fewer homeowners, higher proportions on public assistance, and smaller households. The relationship between sociodemography and environmental hazards varied: race was most strongly linked with incinerators, leaking underground storage tanks, and hazardous waste treatment facilities. The authors also found significant relationships between pollution and cancer rates, and low birth rate; these relationships held when age, income, and lifestyle factors were taken into account. Because this study employed aggregate data, it does not allow the authors to draw conclusions about individual-level relationships between pollution and health. However, the authors contend, these zip-code-level relationships should give planners reason for concern.

Hoffman, Steven M. 2001. Negotiating eternity: energy policy, environmental justice, and the politics of nuclear waste. *Bulletin of Science, Technology & Society* 21 (6): 456-472.

Hoffman highlights the negative impact of proposed (G.W.) Bush administration energy policies on communities proximate to energy sources in the United States and abroad. The administration proposes an energy policy focused on oil-extraction (in Alaska and offshore), coal mining, and nuclear power; environmental standards for energy suppliers would be lessened. Hoffman shows that these sorts of “routine operations” have placed a heavy burden on communities, leading to “social collapse” among indigenous North American communities, Appalachia, Nigeria, and Brazil. Energy policy is therefore a major environmental justice issue.

Hoffman elaborates on the EJ impacts of nuclear energy production in the US. In this case, the environmental and health burdens of uranium extraction have been concentrated in American

28. Lavalle, M, and M Coyle. 1992. Unequal protection: the racial divide in environmental law. *National Law Journal* 15 (3):1-43.

Indian communities on the Colorado Plateau while the benefits have flowed to energy consumers in the east. The nuclear energy industry has sought to reach agreements with tribal communities to “temporarily” host nuclear waste until there is a permanent host site. Hoffman shows that nuclear energy policies are subject to the debates surrounding the conception of EJ. Uranium extraction took place in Indian Country because deposits are concentrated there; those who require a deliberate, racist decision might say this does not constitute environmental injustice. Waste siting controversies are complicated by technical disputes over the risks posed by waste casks and conflicting agency interpretations of the requirements posed by the EJ Executive Order. Without greater reconciliation of the many meanings of EJ, Hoffman contends, “the dominant forces in society will be able to shape it [EJ] in such a way that it satisfies narrow and ultimately oppressive agendas” (470).

Illsey, Barbara M. 2002. Good Neighbour Agreements: the first step to environmental justice? *Local environment* 7 (1):69-79.

Illsey assesses the utility of good neighbor agreements as a means towards environmental justice in Scotland. Good neighbor agreements (GNAs) are formal agreements between communities and corporations about the behavior of each actor that supplement existing regulatory structures. Most GNAs include some or all of the following elements: local access to information about facility operations, regular independent community inspections of the facility, emergency procedures to be followed in case of accidents, commitments to reduce pollution levels, local employment guarantees, community funds, and community agreements to cease protest. GNAs have been promoted as a means towards public participation in decision-making and improved environmental quality. Although *legally binding* GNAs can have these beneficial outcomes, they cannot affect the distribution of environmental hazards as they are established after siting decisions have been made. In her view, they should not be seen as a component of a broader EJ strategy.

Illsey observes that GNAs do not guarantee corporate accountability. The Dundee Energy Recycling Limited (DERL) corporation has not fully implemented the GNA signed with the Douglas community and the incinerator had three fires in its first year of operation. Additionally, GNAs may raise difficult issues of representation. This GNA, which was the first signed in the UK, has included members from Douglas estate but not other nearby communities.

Jerrett, Michael, Richard T Burnett, Pavlos Kanaroglou, John Eyles, Norm Finkelstein, Chris Giovis and Jeffrey R Brook. 2001. A GIS–environmental justice analysis of particulate air pollution in Hamilton, Canada. *Environment and Planning A* 33, 955–973.

Jerrett et al investigated the correlation between socioeconomic class and possible exposure to particulate air pollution in the city of Hamilton, Canada. Environmental justice is a conceptual framework for understanding environmental problems that includes key concepts of equality, equity and racism. EJ had not been of much interest in Canada before the U.S. Presidential Executive Order in 1994. Jerrett et al used data from fixed air pollution monitoring stations (1985–1994), GIS and other geostatistical techniques to model particulate matter exposure, and 1991 census data to examine correlations with socioeconomic status and demographic variables, such as median house-

hold income, educational levels, unemployment and low-income levels. They included a manufacturing employment variable to control for any potential correlation between a person working in the industrial core and living near industrial plants. Other variables were dwelling value and immigrants. They used several statistical techniques, including zero-order correlation and regression analysis (ordinary least squares and simultaneous autoregression). Results were generally consistent, with dwelling value, low-income and unemployment being the variables significantly correlated with high concentrations of ambient particulate matter (up to 25% noncompliance rate with air quality standards). They modeled both chronic and extreme exposures. They argued that their methodology incorporated spatial interpolation techniques.

Data for recent immigrants was used as a proxy for race, which was not correlated with high exposures. The 1996 Canadian Census included race, and so future studies can incorporate race directly into analyses. They argue that governments may want to change their monitoring programs to be able to take into account the improved accuracy of geostatistical modeling techniques, especially as environmental justice assessment becomes more important in air pollution monitoring. Because exposure rates can differ so much, they argue that monitoring will have to be temporally and spatially disaggregated. The “triple jeopardy” hypothesis of increased risk from (1) social and behavioral determinants of health, (2) higher risks from ambient exposure to pollutants and (3) an interaction that makes exposure have increased negative health effects on low-income, low-education populations suggests that government health policy must extend to incorporate arenas beyond individual targets, including reducing pollution “where it is worst and where social deprivation is largest” (971).

Kalof, Linda, Thomas Dietz, Gregory Guagnano and Paul C. Stern. 2002. Race, Gender and Environmentalism: The Atypical Values and Beliefs of White Men. *Race, Gender & Class* 9(2), 1-19.

Kalof et al combine two national telephone surveys to examine race and gender differences in attitudes towards environmentalism, as part of a larger national survey on attitudes towards environmentalism, through George Mason University’s Northern Virginia Survey Research Laboratory. They measure four major *values* on environmentalism: altruism, self-interest, traditionalism and openness to change, and scored respondents’ belief in a New Ecological Paradigm. For minority groups (Blacks and Hispanics), they do not find significant differences between men and women’s attitudes; they find very significant ($p < .001$) differences between White women and White men. In paired and group comparisons, White men as a group emerged as significantly different from other groups’ responses (e.g. Black women, Hispanic men, Black men, etc.). They then use this data to try and develop a social psychological theory to explain these differences, based on hypothesized group differences in risk and risk perception, socialization, shared experience of repression, dependence in common pool resources and, citing Donna Haraway, desires of “uplifting the race.” Respondents were not asked to explain the reasoning for their responses. Problematically, the researchers’ questions reflected a bias about what is considered environmentalism, which environmental justice defines rather differently from a preservationist view. Finally, their survey does not deal with intragroup class differences in responses.

Kirk, Gwyn. 1997. Ecofeminism and environmental justice: bridges across gender, race, and class. *Frontiers* 18 (2):2-20.

Kirk thoughtfully explores the potential for bringing ecofeminism and the environmental justice movement closer together, interweaving a narrative of her experiences as an activist and scholar with descriptions of the two movements, their composition, focus, and theory. She also (see final paragraph) articulates several general principles for alliance building. Kirk started out as an activist in the British women's antinuclear movement in the early 1980s; she then became aware of and engaged in ecofeminism and antiracist work in Britain and the United States. Initially, Kirk and other women involved in Greenham antinuclear activism lacked a race analysis. She highlights the role of women of color in enlarging her perspective and that of other Greenham activists by highlighting the critical linkages between imperialism, racism, and militarism. These insights shaped Kirk's subsequent activism, and later interactions with Devon Peña increased Kirk's knowledge of EJ (see Peña annotations).

Ecofeminism draws from feminist theory and spirituality, social ecology, antimilitarism and animal rights, creating a broad and sometimes incoherent movement. Most ecofeminists are white and middle-class women. Kirk contends that British and American ecofeminists have continued to focus on "the oppression of women and the oppression of nature at the expense of race or class," creating a gap between ecofeminism, EJ activism, and women's activism in the Global South (p.6). In contrast, the EJ movement, although composed largely of poor women and women of color, has emphasized race and class. Kirk describes Detroit Summer, a project with which she has volunteered, as an example of the multidimensional work of EJ activism.

Kirk sees enormous potential in collaboration between the EJ and ecofeminist movements, identifying environmental health, food production, and liveable cities as potential common issues. Kirk's experiences with multiracial and antiracist activism have made her aware of the barriers to collaboration. She outlines 11 principles for building lasting, equitable alliances (paraphrased in most cases): (1) know yourself, your goals, strengths, and non-negotiables; (2) know why you want to build an alliance with a particular group, their values, and what might be gained by collaboration; (3) commit to communication; (4) share history; (5) be authentic (honest) with one another; (6) while building the alliance, evaluate partners by their actions rather than your expectations or their language alone; (7) discuss difficult issues openly as they arise; (8) "be open to being called on your own stuff;" (9) be sensitive to power dynamics in group interactions and possible linkage to gender, class, race, and age; (10) think about group (alliance) culture; and (11) look for common ground.

Kong, Maria with Pamela Chiang. 2001. *Fighting Fire with Fire: Lessons from the Laotian Organizing Project's First Campaign*. Oakland and Richmond, CA, Laotian Organizing Project and Asian Pacific Environmental Network.

Kong and Chiang (2001) tell the history of the Laotian Organizing Project (LOP). LOP was founded in 1995, as the first direct organizing project of the Asian Pacific Environmental Network (APEN). They define direct organizing as "a process of organizing individuals most impacted by the problems and conditions and who are identified as necessary leaders in the fight for systemic social

change” (3). LOP’s first significant grassroots campaign revolved around a major chemical explosion at the Chevron oil refinery in Richmond, California in March 1999, followed by two more leaks in June and July. The LOP launched a campaign to create a multilingual emergency phone alert system, targeting Contra Costa County’s Health Services and the Internal Operations Committee of Contra Costa County’s Board of Supervisors, and won. The LOP continues to work with community members to monitor the warning system.

The authors present the challenges to community organizing in immigrant and refugee communities. LOP and APEN are committed to participatory techniques, democratic decision-making, and ethnic and gender diversity within their programs and organizations. They had to develop multiple and effective methods for participatory learning and culturally appropriate organizing. For instance, they describe the challenge of finding interpreter-organizers who worked in more than one of the six Laotian languages (eventually, they were able to work in three languages), and the difficulties of maintaining collective discussion, participation and democratic decision-making processes in long meetings with multiple translation. They also held house meetings in single languages to facilitate in-depth discussions. They faced difficulties in maintaining women’s participation as grassroots organizers, and in breaking down historical barriers between multiethnic Laotian communities. Finally, LOP found that the campaign was an effective way to mobilize refugee and immigrant communities, as for many community members it was their first experience in civic participation. The success of the campaign relied on the groundwork laid by four years of prior grassroots organizing, education and capacity building within the communities.

LaDuke, Winona. 1999. *All Our Relations: Native Struggles for Land and Life*. Boston, MA: South End Press.

In ten chapters, LaDuke sweeps from tundra, grasslands and rivers to oceans and deserts while reaching back nearly two hundred years to draw together threads of history, political economy, culture and memory in order to describe the environmental struggles of very poor native peoples throughout Canada and North America today. She combines the voices of grassroots Native activists, many of them women, with her own, and with detailed, carefully-researched historical narratives.

The women and men LaDuke interviews are mothers, lawyers, solar electricians, grandmothers, midwives, tribal spokesmen, fishermen. They and their tribes are fighting PCB contamination in the water and their bodies, nuclear dumping on tribal lands, dam construction which will inundate reservation lands, coal strip mining—often against an array of powerful national governments and multinational corporations. Some link their own struggles with those of key species, like the Seminole with the Florida panther, or the buffalo nations (including the Lakota and Yankton Sioux and the Northern Cheyenne) with the American Bison.

Throughout, LaDuke articulates the concerns of activists, their voices and commitment informed by the memory of hundreds of years of violence against their people and their cultures, of forced removal. The voices of these women and men link their struggles against environmental degradation with their struggles for land rights, rights to self-determination, and to community health.

Lester, James P., David W. Allen, and Kelly M. Hill. 2001. *Environmental Injustice in the United States: Myths and Realities*. Boulder, CO: Westview Press.

Lester, Allen, and Hill's book has four major parts: a review and critique of the literature on environmental justice (Chapter 2); an analysis of how environmental justice became an important policy issue (Chapter 3); a systematic empirical analysis of environmental injustice (Chapters 4-7); and policy recommendations. The authors highlight major conceptual and methodological problems in the work to date (elaborated further in Bowen 2002), highlighting the use of simplistic models that fail to incorporate political mobilization as an important causal agent of environmental injustice. Given this weakness, the authors use agenda-setting to explain the emergence of EJ as a policy issue.

From their literature review, the authors abstract the "environmental injustice hypothesis," that is, the distribution of environmental hazards is associated with race, class, and political mobilization. Rival explanations would include pollution potential (large, concentrated populations with manufacturing capacity) government capacity (to address pollution), business climate, legislative professionalism, public opinion and political culture, and organized environmental interests. The environmental hazards of interest are air pollution, hazardous waste, solid waste, toxic waste, and water pollution. The authors used statistical analysis to test these hypotheses at three levels—state, county, and city. Although the authors concede that their data may contain aggregation errors that mask lower-level patterns, they argue that analysis should focus on the levels at which governments possess that capacity to set policy. The general model and analytic methods are presented in Chapter 4; each of the subsequent chapters describes the indicators and results at each level.

The authors found no support for the political mobilization as a causal factor, mixed support for social class, strong support for percent Black population, and weaker support for percent Hispanic. The authors found the pollution potential was also an important factor. (The findings varied somewhat by level of analysis.) Lester, Allen, and Hill argue that the best policy approach to environmental injustice is a risk-based approach, in which hazard siting and abatement (clean up) is driven by severity of the pollution problem. This approach, in their view, would be equitable (the state's response would not be affected by race or poverty), efficient and rational in their view.

Low, N. and B. Gleeson. 1998. Situating justice in the environment: the case of BHP at the Ok Tedi copper mine. *Antipode* 30(3): 201-226.

The Rio Declaration and Agenda 21 provided a broad set of political principles that are intended to guide the global community in its task of ensuring ecological and social sustainability. However, when conflicting economic and social interests are at stake, deciding such matters raise the prospect of changing the use and allocation of social and ecological resources. Any fundamental change to resource allocation will have social distributional consequences and the issue of justice therefore becomes a critical element of any sustainability formulation. Low and Gleeson have two broad projects here. First, they bring the concepts of environmental justice and ecological justice to bear on the specific case of the Ok Tedi copper mine in Papua New Guinea. Second, they articulate these within debates in environmental ethics about the possibility of a "universal ethical basis for a just decision, and if so, what sort of institutions might be needed." They define *environmental justice*

as the social distribution of environmental well-being both within and among nations. It refers to the distribution of environments to humans. *Ecological justice* refers to the connection between justice and the environment when one takes into account the deep ecological perspective of human-environment relations.

The dialectics of justice include the principle of justice according to rights, and the principle of justice according to needs, as developed by Kant and Marx. Under transnational capitalism, this leads to a global auction of the right to pollute, which can only lead to a “gross injustice among and within nations unless governments act to regulate not only corporations but also their own competition with one another.” The authors argue for a transnational justice, following Rawls, and propose a reform of the United Nations system and an international court for environmental justice, building on the work of Held. They argue that in the case of the Ok Tedi mine, such a system would have taken into account the needs of local people (a Min ecological worldview), local governments, the rights and wrongs of exploiting the weaker position of developing countries. They argue that it is not plural conceptions of justice but rather the dearth of political structures that prevent the dialectics of justice in and to the environment from being fully realized. Finally, the globality is similar to the universality of certain notions of justice, but spatial universality need not be matched by temporal universality. Conceptions of justice need not and should not be predetermined.

Maantay, Juliana. 2002. Mapping environmental injustices: pitfalls and potential of geographic information systems in assessing environmental health and equity. *Environmental Health Perspectives* 110 Suppl 2:161-71.

Maantay presents a critical evaluation of geographic information systems (GIS) approaches to researching environmental injustice. She provides a general discussion of the uses and limitation of GIS, a brief review of 13 GIS-based studies, and a case study of the Bronx, New York. Policymakers can use GIS to identify affected populations; GIS analyses can aid in designing effective interventions. The weaknesses of GIS analysis (discussed below) can therefore be seen as a barrier to intervention. Maantay highlights three ways to address barriers to effective GIS analysis: 1) focusing on neighborhood-scale analyses and developing comprehensive databases at this scale; 2) developing a cumulative exposure index; and 3) integrating sophisticated methods of assessing exposure (advanced proximity analysis, dispersion modeling, fate and transport simulation) with GIS analysis.

Maantay suggests that GIS maps are used in part because they are effective—a map can provide a dramatic illustration of existing environmental inequities (e.g., United Church of Christ 1987). Yet maps are social constructions rather than “objective” representations of the world. The people creating maps must simplify and abstract. In doing so, they make choices about what to include and exclude, what to represent, and how. These choices, along with the assumptions built into each model may be criticized.

Five central EJ issues that GIS-based research explicitly or implicitly addresses are:

1. “Is injustice predicted by race or class?” Maantay views this question as misguided because “race and low income are inextricably linked.” She suggests that “the context of race” is a risk factor (163; also see Pulido 1996).

2. “What is counted as a hazard?” Studies have focused on the few facilities for which national data is available, potentially producing misleading results that probably underestimate actual environmental burdens. GIS research is ill equipped to address this problem because there is little data on small polluters from which to create maps. GIS studies may also underestimate burdens by treating all facilities as equal; this weakness is one which GIS researchers could address.
3. “How do we determine exposure potential?”
4. “How do we measure exposure?” Many GIS researchers have employed simplistic methods (e.g. same census tract) that are likely to misrepresent reality. Proximity (buffer zone) approaches are somewhat better, but seeking to accurately measure risk is prone to data limitations and modeling difficulties (See Liu 2002²⁹).
5. Finally, geographic unit of analysis has been a contested issue. The choice of unit of analysis can determine the results (this is called the modifiable area unit problem). Maantay asserts that analysis at lower levels is usually more accurate.

Macey, Gregg P., Xee Her, Ellen Thomas Reibling and Jonathon Ericson. 2001. An Investigation of Environmental Racism Claims: Testing Environmental Management Approaches with a Geographic Information System. *Environmental Management* 27 (6), 893–907

Macey, Her, Reibling and Ericson use Toxic Release Inventory data, USEPA Cumulative Exposure for Lead data, and California Hot Spots data to examine the environmental justice claim that people of color are more likely to bear disproportionate impacts of toxic pollution. They found that blood lead levels (BLL) in children were higher for Blacks and Latinos in South Central Los Angeles (SCLA) than for Caucasians, even after accounting for income. Using GIS spatial analysis, they found that BLL are not correlated with point sources. Instead, elevated BLL are correlated with transportation corridors. Macey et al do not address whether SCLA itself is a toxic environment.

Martinez-Alier, Joan. 2001. Mining conflicts, environmental justice and valuation. *Journal of Hazardous Materials* 86, 153-170.

Martinez-Alier frames environmental justice conflicts as conflicts over claims to environmental resources and services of others who are differentially empowered and endowed, and are contested by arguing inside a single (often monetary) standard of value or across plural values. He describes various cases of conflict around copper mining, beginning with a workers strike in Ashio, Japan (1907) and the case of peasant confrontations against Rio Tinto in Andalusia (1888). By using historical conflicts before they were articulated as environmental conflicts, Martinez-Alier argues for a relatively long history of conflict around environmentally extractive and destructive activities, and

29. Liu, Feng. 2001. *Environmental justice analysis: theories, methods, and practice*. Boca Raton: Lewis Publishers.

that the environmental justice movement need not tie itself to singular starting places (“one could argue that the world environmental justice movement started long ago at a hundred dates and places all over the world”) (162). He describes the conflict resolution process for environmental conflicts, noting that in many environmental cases, solving the conflict is not equivalent to solving the problem.

Martinez-Alier argues that EJ’s deployment of environmental racism emphasizes the incommensurableness of values—“Money and human dignity are not commensurate” (163). Environmental racism is often a useful language for conflicts which have been fought up to now under the banner of indigenous territorial rights (for example, the case against Texaco’s action in Ecuador, in the US, makes reference to skin color, while in the case against Petroecuador, perhaps the case to be made is in terms of internal colonialism). Finally Martinez-Alier touches on some EJ cases in South Africa, and the question of environmental liability (*deuda ambiental*), especially in the case of cleanups. He argues that valuation, *a priori*, need not be discarded, if it can be used to show the incommensurate nature of certain valuation schemes. He predicts that “movements will legitimately employ a variety of vocabularies and strategies of resistance, and they cannot be gagged by cost-benefit analysis” (167).

Mennis, Jeremy. 2002. Using Geographic Information Systems to Create and Analyze Statistical Surfaces of Population and Risk for Environmental Justice Analysis. *Social Science Quarterly* 83 (1):281-297.

Mennis highlights methodological issues and challenges in using GIS to conduct environmental justice research, advocates the use of statistical surface analysis to mitigate these problems, and applies this method to the southeastern Pennsylvania region. Mennis argues that GIS environmental analysis should focus on the spatial relationships between socioeconomic characteristics and hazardous facilities across scales; there is no single correct unit of analysis. The author contends that raster models of statistical surfaces are superior to the vector models of areal units that most EJ researchers use at present because they are better suited to multiscalar analysis and allow for greater accuracy.³⁰ Many EJ researchers rely on census units; Mennis observes that census units vary in the amount of area covered. Common vector approaches to measuring proximity to hazardous facilities also are prone to mischaracterization of the surrounding population.

In his case study of southeast Pennsylvania, Mennis demonstrates how raster analysis permits conversion of census data to spatially uniform units, can incorporate population density data, and allows for analysis based on the actual location of facilities within a census unit. Mennis found a curvilinear relationship between distance from hazardous facilities, minority population density, and low-income population density. Poor and minority populations were clustered in the 500-meter area surrounding facilities. Mennis also found a relationship between facility density and minority or low-income populations.

30. GIS generally works with objects that are points, lines or shapes. In vector-based analysis, lines are represented by the point in the middle, and shapes by their geometrical center. In raster-based analysis, analyses can take into account differences within a shape, and therefore can provide greater nuance.

Moberg, Mark. 2001. Co-Opting Justice: Transformation of a Multiracial Environmental Coalition in Southern Alabama. *Human Organization* 60(2), 166-177.

Moberg takes a social movements approach to analyze the rhetorical and tactical changes in the discourse of Mobile Bay Watch, a grassroots environmental coalition based in Mobile, Alabama. Mobile Bay Watch was a largely white mainstream environmental organization that picked up the discourse of environmental racism in order to stop the permitting of a phenol plant near residents' homes. To do so, Mobile Bay Watch had to enlist the participation of African-American leaders. He cites several cases and problems with interracial organizing and action within the South, in part based on legacy of racial and administrative authoritarianism. Moberg argues that the organization's discourse and tactics changed, including much more community participation in organizational meetings, but that the change was relatively short-lived. When the group lost the particular fight against the phenol plant, the organization went back to being a small, elite group, and the organization's goals and discourse shifted from grassroots environmental justice to lobbying.

Morello-Frosch, Rachel, Manuel Pastor and James Sadd. 2001. Environmental Justice and Southern California's "Riskscape": The Distribution of Air Toxics Exposures and Health Risks Among Diverse Communities. *Urban Affairs Review* 36 (4), 551-578.

Morello-Frosch, Pastor and Sadd employ recent advances in air emissions inventories and modeling techniques to consider a broad range of outdoor air toxics in Southern California and to calculate the potential lifetime cancer risks associated with these pollutants, over 200 in all. They use criteria air pollutants and air toxics (most previous studies use one or the other category of air pollutants). Air pollution data were used from USEPA's Cumulative Exposure Project, and USEPA's Toxic Release Inventory for area sources (for large manufacturing sources). Small source data were calculated from volatile organic compounds and particulate matter data from USEPA national inventories. Demographic data were taken from census data, and land use data from the Southern California Area Governments database. All the general problems of using census data apply (for instance, urban census tracts are smaller than rural ones, modeling at the tract level is not statistically meaningful for individuals). They find that such risks are attributable mostly to transportation and small-area sources (mobile sources) and not the usually targeted large-facility pollution emissions (area sources). Multivariate regression suggests that race plays an explanatory role in risk distribution even after controlling for other economic, land-use, and population factors. When the category "people of color" are disaggregated, all groups share a disproportionately higher Pollution Risk Index (PRI) than Anglo inhabitants, even when controlling for income. High PRI's are spatially concentrated in the urban core and the San Bernardino area. This pattern suggests the need for innovative emissions reduction efforts as well as specific strategies to alter the spatial and racial character of the environmental "riskscape" in urban centers.

Mutz, Kathryn M., Gary C. Bryner, and Douglas S. Kenney. 2001. *Justice and natural resources: concepts, strategies, and applications*. Washington: Island Press.

This 2001 edited volume contains chapters that build on the concept of environmental justice in the arena of natural resource management—for instance, on U.S. Forest Service and other public

lands (Jeff Romm) and in the management of water resources in the U.S. Southwest. Luke Cole has a good chapter on the use of Title VI in environmental cases, and Sheila Foster problematizes the current trend in the idealization of the “local” or “community” as the unit for resolving environmental management problems.

Novotny, Patrick. 2000. *Where We Live, Work and Play: The Environmental Justice Movement and the Struggle for a New Environmentalism*. Westport, CT: Praeger.

In this work, Novotny places the environmental justice movement’s reconceptualization of the environment as “where we live, work, and play” at the center of his analysis. Novotny argues that framing is central to EJ’s politicization of the environment and the movement’s success in mobilizing working class and people of color communities. “Framing,” as Novotny describes it, “is the way that the leaders in a movement assign meaning to and interpret problems in such a way as to mobilize participants.” Framing can transform understandings and plays a critical role in creating a collective identity among activists.

Novotny’s case studies focus on four leading environmental justice organizations—the Labor/Community Strategy Center (Los Angeles, CA), Local 4-620 of the Oil, Chemical and Atomic Workers Union (Geismar, LA), the Gulf Coast Tenants Association (New Orleans, LA), and the SouthWest Organizing Project (Albuquerque, NM). Each had a history of organizing people of color communities or working class laborers before they became active on EJ issues. Novotny contends that these organizations are representative; the EJ movement is comprised largely of tenants’ groups, labor unions, and civil rights groups. The movement is historically embedded in past struggles (housing, labor, civil rights) and frames the environment and the EJ movement with language that recognizes and reinforces connections between EJ and these struggles. For example, Gulf Coast Tenants Association references to “chemical barons,” “environmental carpetbaggers,” and analogies between petrochemical companies and the Ku Klux Klan situate struggles against that industry in the context of slavery, Reconstruction and Jim Crow. Novotny’s case studies identify the particular movements and histories to which each organization links EJ and detail the specific history, organizing strategy, and outlook of each group.

Padgett, D. A. & N. O. Imani. 1999. Qualitative and Quantitative Assessment of Land-Use Managers’ Attitudes toward Environmental Justice. *Environmental Management* 24 (4): 509-515.

Under Executive Order 12898 (1994) during the Clinton Administration, federal agencies were directed to incorporate environmental justice concerns into their operations. The authors evaluate the use of the Nominal Group Technique (NGT) in changing the attitudes of land-use managers’ in a federal agency about environmental justice. The sample was a group of 21 federal land-use managers from the western and southwestern United States and Alaska. Participants were asked to fill out a survey before and after participating in the workshop by reading several papers, watching a film (“Toxic Racism”) and running through a land-use siting simulation. The survey asked participants to rank environmental justice concerns against other environmental concerns. The authors found that

this workshop was not effective in changing managers' attitudes about the importance of environmental justice for their agency. In fact, many did not see the relevance of environmental justice for the work of their agency, and most of the scores actually decreased marginally.

Pastor, Manuel, Jr. 2001a. Racial/Ethnic Inequality in Environmental-Hazard Exposure in Metropolitan Los Angeles. *CPRC Brief* 13(2), 4 pps. Berkeley, CA: California Policy Research Center, University of California. <<http://www.ucop.edu/cprc/publist.html>>

California has only recently passed legislation (SB 115) mandating the Office of Planning and Research to develop a new environmental justice program for the state. Pastor states that research has shown that in California, especially Southern California, the evidence for disproportionate siting and toxics burden is borne by minority communities. He discusses the policy implications of the minority move-in hypothesis. "If the problem is one of siting, then policy might be usefully directed to altering the permitting process and encouraging clean-up. If the problem is minority move-in, then policy efforts, if any are taken, might be directed to providing full information to house-seekers, ameliorating housing discrimination, or both" (1). He goes on to summarize the results of Pastor et al. (2001), where the researchers found that neighborhoods within a quarter-mile of a TSDF that was sited between 1970 and 1990 were significantly different from sites that were not, in terms of ethnic and economic variables, in 1970. There was also a significantly lower percentage of college-educated residents. One set of areas most likely to receive hazards were mixed Latino/African-American communities and other areas undergoing ethnic transition. Based on these results Pastor makes four policy recommendations:

1. Further outreach, capacity building and information provision to bring more community members into the environmental planning process,
2. The creation of rules and review triggers, to protect those communities that are likely to be too weak to launch effective participation processes,
3. The development of satisfactory compensation, clean-up and economic-development strategies, with special priorities for the poorest and most overburdened communities, and,
4. The adoption and implementation by California of a broad environmental justice mandate, as required by SB 115, and the encouragement of new research.

Pastor, Manuel, Jr. 2001b. Common ground at Ground Zero? The New Economy and the New Organizing in Los Angeles. *Antipode*: 261-289.

In 1992, riots in Los Angeles seemed to clearly mark the lines of race and class in Southern California. However, Manuel Pastor argues that the riots need to be placed in a political economic context, including the increasingly stratified economic base and lack of access to employment. He argues that in the wake of the 1992 riots, grassroots organizations have been able to transcend color lines, at the same time that economic disparity and hardship have increased for a large part of the population. He traces the stories of two innovative multiracial organizations whose success in

organizing includes the ability to link the territorial struggles of neighborhoods to those of other neighborhoods—for instance, through the formation of a bus riders’ union. Pastor also examines how shifts in labor markets have affected grassroots organizing tactics.

Pastor, Manuel; J. Sadd and J. Hipp. 2001. Which came first? Toxic facilities, minority move-in and environmental justice. *Journal of Urban Affairs* 23(1), 1-21.

Pastor et al. challenge the minority move-in hypothesis (also known as the market mechanisms hypothesis) by examining the siting of toxic storage and disposal facilities (TSDFs) in Los Angeles County from 1970 to 1990. Using census tract data, they found that “areas soon to receive TSDFs were low-income, minority and disproportionately renters; after they received these hazards, their gain in minority residents did not generally outpace that of the rest of the sample” (LA County) (Pastor et al 1994; 17-18). In other words, “controlling for other factors, minorities attract TSDFs, but TSDFs do not generally attract minorities” (18). They propose that while community organizing, especially across ethnic and racial lines, is extremely important for communities to participate, “hazard-by-hazard organizing is time-consuming and can put communities in a reactive rather than proactive mode. This suggests the need to develop some baseline standards that can protect those least able to defend their own interests.” (19)

Pastor, Manuel, James L Sadd, and Rachel Morello-Frosch. 2002. Who’s minding the kids? Pollution, public schools, and environmental justice in Los Angeles. *Social Science Quarterly* 83 (1):263-278.

Pastor, Sadd and Morello-Frosch extend environmental justice concerns to the schoolyard, arguing that school exposure may be an important issue. Evidence suggests that children are more vulnerable to pollution than adults and children spend significant portions of time at school. The authors use GIS analysis and multivariate analyses to conduct an equity analysis of the Los Angeles Unified School District (LAUSD), the second biggest school district in the US. They examine the relationship between public school sites, school demographics, hazardous facilities, and environmental health risks. The unit of analysis was the census tract. The pollution sources assessed were 1997 TRI facilities and hazardous waste TSDFs processing more than 50 tons of waste a year. Environmental health risk indicators were tract-level estimates of lifetime individual cancer risk and a respiratory hazard index associated with exposure to ambient air toxics; exposure data came from the EPA’s Cumulative Exposure Project. The authors found that schools tended to be located in tracts with hazardous facilities but were not consistently in tracts with higher health risks from air pollution. Latinos were more likely to be the dominant group in schools near hazards; other groups were less likely to be in these schools. Similarly, Latino schoolchildren had the highest environmental health risks; African-American and Asian-American children also faced higher risks. The authors conducted several multivariate analyses to explore these relationships and potential explanations. They found “the proportions of students of color at a school site is a significant explanatory factor even controlling for the other socioeconomic and land use variables” (274). Pastor, Sadd and Morello-Frosch emphasize that this is a preliminary, exploratory study that cannot be generalized beyond the study area. However, they argue, these results suggests further attention to environmental injustice at

schools is warranted. School planners should seek to minimize disparities in exposure to environmental hazards among schoolchildren; minority schoolchildren are of particular concern as the poorer health status of people of color may increase these students' susceptibility.

Pellow, David N. 2001. Environmental justice and the political process: movements, corporations, and the state. *Sociological Quarterly* 42 (1):47-67.

In this article, Pellow proposes an extension of the political process model approach to explanation social movement, arguing that a "political economic process" perspective better illuminates contemporary movements. Pellow illustrates this perspective through analysis of two attempts by environmentalists and communities to have transnational corporations adopt good neighbor agreements (see Illsey 2002 for a description of GNAs). In each case, a group of activists sought to force a transnational oil and gas company to make a binding commitment to improve its environmental and labor practices. Both companies—Unocal 76 and Clark Oil—had histories of industrial accidents and violations of environmental laws that state authorities had shown little inclination or capacity to alter. The first set of activists met with success—a detailed GNA was signed—while the second set failed to accomplish their goal. Pellow traces the different outcomes to three tactical differences. (1) The first group negotiated directly with Unocal, its primary target, while the second relied chiefly on the state. (2) The first group conducted a multiscale campaign for environmental justice, targeting actors at different levels and garnering supralocal support, while the second kept the conflict local and refrained from EJ framings as Clark conducted a multiscale counter-effort. (3) The first group used the threat of litigation and permit challenges to strategically leverage the state's regulatory capacity on their behalf rather than relying solely on this mechanism. Successful organizing around political economic issues—which may encompass most EJ concerns—requires new strategies that engage political economic processes.

With regard to social movement research, Pellow contends that the political process approach assumes that the state (government institutions, decision makers) is the primary target or means through which social movement activists seek to realize their goals. This may be the case for the women's movement, anti-nuclear movement, and democratizations movements. But Pellow argues that many contemporary movements—around labor, globalization, and the environment, for example—have de-centered the state. As the actual and perceived strength of the state has diminished, these movements have targeted non-state actors (corporations) as well as or instead of the state and engaged in both local and transnational advocacy. Researchers should therefore broaden their analytic focus to include political and economic processes, and the countermovement activities in which corporations engage.

Pellow, David N. 2000. Environmental Inequality Formation: Toward a Theory of Environmental Justice. *American Behavioral Scientist* 43 (4):581-601.

Pellow argues that environmental justice research should move from "environmental racism" towards "environmental inequality," which he views as a broader and deeper conception of the issues raised by environmental justice advocates. Contrasting Bryant's definitions of environmental rac-

ism—which is focused on people of color—and environmental justice—in which all communities have safe environments and decent quality of life, Pellow contends that an environmental inequality formation (EIF) approach would draw attention to the structural questions that must be addressed to attain environmental justice. This EIF approach entails attention to (1) the sociohistorical process through which environmental inequality is produced, (2) the multiple stakeholders shaping decisions through negotiation and struggle as interests shift [agency], and (3) the ecology of production and consumption, that is, the life cycle of environmental inequality.

Pellow uses a case study to illustrate the weaknesses of current EJ approaches that employ simplistic “perpetrator-victim scenarios” to explain environmental injustice. Environmental inequality is produced through complex interactions of many agents with differential power and shifting positions. Pellow starts with what might seem a clear case of environmental injustice, a Chicago Waste Management Inc. [WMI] recycling plant in which poorly paid Black workers are routinely exposed to hazardous substances. He then traces the construction of this plant through a complex chain of events in which environmental activists successfully obtained a moratorium on new landfills, environmental justice organizations challenged existing WMI incinerators in minority neighborhoods, and then these actors and city government settled on recycling as a way to reduce waste and create jobs. Through close connections with local politicians, WMI secured the contract to retrofit their closed incinerator into the city’s recycling center and then created the oppressive environment described above. Worker resistance gradually brought attention to their conditions, perceptions and positions shifted, and state agencies intervened. Even if working conditions improve, however, one cannot assume environmental justice has been created. Life cycle analysis shows that “the origin of the products processed in the plant renders any claims that recycling processes are ‘green’ or ‘clean’ much more problematic.” In Pellow’s view, activists and policy makers need the information rigorous EIF scholarship provides to design remedies for environmental injustice.

Peña, D.G., ed. 1998. *Chicano Culture, Ecology, Politics: Subversive Kin*. Tucson: University of Arizona Press.

“Subversive kin” is an expression of an emergent politics of diversity that subverts the structures of dominant power and paradigms. Subversive kin is based on the idea of the indispensability of diverse peoples, diverse ecosystems, and diverse species. The goal of this book is “to initiate a research program to restore well-deserved ecological legitimacy to our land-based communities” (7). Specifically, Peña and the other authors in this volume explore the questions of identity, space and place in struggles over land and water the Upper Rio Grande bioregion of northern New Mexico. They also, in the production of this book, have produced a creative intervention and example of what a “new avenue for the expression of the social and cultural practices of local, or situated, knowledge” (11) might read like: for instance, a dialogue between Chicano Studies and ecology. In order to understand “the contested spatial dimensions of places, we must turn to eclectic mixtures of ecology, conservation biology, cultural ecology, cultural geography, environmental history and political economy” (12). The book is subversive in that it challenges “the dominant ideologies and perspectives of conventional social science and humanities inquiry [in] that they were crafted by intellectuals who are committed environmental justice activists.” In Chapter 1, Devon Peña describes narrative—storytelling—as a source of ecological knowledge, and develops a theoretical framework for investi-

gating and linking analyses of place with bioregionalism, with culture, as a product of struggle and resistance, being one of several key arenas of production and intervention. Chapter 2 (Ruben Martinez) develops a specifically bioregional frame of inquiry further, with examples of evidence and their interpretation, while Chapter 3 (Reyes Garcia) is a philosophical articulation of ethics in Indo-hispanic environmentalism.

Laura Pulido, in Chapter 4, examines the use of cultural essentialism in creating ecological legitimacy as a product of resistance and struggle by Ganados del Valle over water rights and cultural meanings. Environmental history in the context of ecological politics is another approach that Ruben Martinez and Devon Peña use to contest hegemonic, common sense stereotypes of hispano effects on and relationships with nature (Chapter 5). Gwyn Kirk in Chapter 6 examines the links between ecofeminist critiques of mainstream environmentalism, capitalist development and reductionist science and those of Chicano environmentalism. Malia Davis, in Chapter 7, presents three oral histories of women activists from the Colorado Rocky Mountain region and shows how these women recognize that male dominance presumes a white agenda that is based on class privilege.

Finally, Part III of the book presents two poems and two chapters (Chapters 8 and 9) that are autobiographical essays (by Joe Gallegos and Devon Peña, respectively) about the process of struggle and resistance in which they are involved, and their analyses of both the array of forces and interests and power they contest, and the meanings and effects of the process of struggle and resistance itself.

Pezzulo, Phaedra C. 2001. Performing Critical Interruptions: Stories, Rhetorical Invention and the Environmental Justice Movement. *Western Journal of Communication* 65(1), 1-25.

Pezzulo examines environmental justice activists and community members' actions as narratives and stories that "interrupt and/or reframe discursive practices that sustain oppressive environmental conditions." She extends the literature in the field of environmental communication that focuses upon citizen involvement in environmental decision-making. She began by reviewing archival material on activists in Warren County and their struggle for state cleanup of a toxic landfill, by joining their meetings in 1996, and finally, by lobbying the North Carolina legislature, creating educational outreach materials and initiating in-depth interviews with three active residents. Pezzulo understands interruptions as strategic acts of invention "that offer insights into the ways in which we are capable of resisting oppressive hierarchies" (6), and invention as a "relationship or movement between a person and his/her audience...[and] a means of theorizing the transformative democratic possibilities of civic rhetoric" (7). Stories are representations, narratives, that have places, and do something. Pezzulo's analysis concludes that Warren County activists tell two main stories: a story of origin, and a story of latent exigence (state inaction), that community activists use to frame state inaction as both temporal and moral, and which imply that things should change.

Pinderhughes, Raquel. 1997. Who decides what constitutes a pollution problem? *Race, Gender & Class* 5 (1):130-.

Pinderhughes highlights the importance of problem definition in shaping responses to environmental issues, particularly small source polluters. As she illustrates through close analysis of one case,

present regulatory approaches, such as comparative risk analysis, may lead regulators to focus their limited resources on large source polluters and devote little attention to small source polluters, such as gas stations, auto-repair shops, and dry cleaners. These smaller sources are expected to have little capacity to engage in pollution reduction or remediation; additionally, these small businesses are frequently seen as desired employers in lower income areas. However, communities may see these “small” sources as a major pollution problem. These sources can have significant adverse affects on the health and quality of life of the people residing near each source. The process of auto-refinishing, for example, releases toxins at each stage. Cumulatively, these sources may release significant pollution.

Pinderhughes shows that small source polluters are widespread in mixed-use³¹ zoned low-income and minorities areas. These sources may be concentrated in these areas because they lack political power. Although some scholars might treat zoning as exogenous, Pinderhughes shows that policymakers in her case actively continued to restrict these facilities to one, mixed-use area after they were fully aware that these residents bore a disproportionate burden. Additionally, many residents of mixed-use areas are not aware that their neighborhoods are mixed use; one cannot assume that residents have freely and consciously chosen to live with pollution. After community residents linked these small businesses to widespread health problems in her case, they met with frustration in seeking action from government officials, who defined their problems as relatively unimportant. Community members subsequently met with some success by targeting problem businesses and developing good neighbor agreements (see Pellow 2001; Illsey 2002). Pinderhughes argues that the government should shift to a community-based approach and effects-based analysis. If officials base their action on actual conditions in communities and the cumulative level of pollution rather than the distribution of sources, contrasting definition of pollution problems might coincide. Without changes, however, empowering communities with information, resources, and organizing assistance may be the best route to addressing “small” pollution problems.

Puckett, Jim, Leslie Byster, Sarah Westervelt, Richard Gutierrez, Sheila Davis, Asma Hussein and Madhumitta Dutta. 2002. *Exporting Harm: The High-Tech Trashing of Asia*. Seattle, WA and San Jose, CA: Basel Action Network (BAN) and Silicon Valley Toxics Coalition (SVTC), with Toxics Link India, Greenpeace China and SCOPE (Pakistan).

This international coalition of environmental organizations reveals that huge quantities of hazardous electronic wastes (E-wastes) are being exported to China, Pakistan and India where they are processed in operations that are extremely harmful to human health and the environment. The investigation uncovered an entire area known as Guiyu in Guangdong Province, surrounding the Lianjiang River just 4 hours drive northeast of Hong Kong where about 100,000 poor migrant workers are employed breaking apart and processing obsolete computers imported primarily from North America.

The operations involve men, women and children toiling under primitive conditions, often unaware of the health and environmental hazards involved in operations which include open burning of plastics and wires, riverbank acid works to extract gold, melting and burning of toxic soldered

31. This means that both commercial and residential land uses are allowed in the area.

circuit boards and the cracking and dumping of toxic lead laden cathode ray tubes. The investigative team witnessed many tons of the E-waste simply being dumped along rivers, in open fields and irrigation canals in the rice growing area. Already the pollution in Guiyu has become so devastating that well water is no longer drinkable and thus water has to be trucked in from 30 kilometers away for the entire population.

BAN referred to the fact that the United States is the only developed country in the world that has failed to ratify the Basel Convention, a United Nations environmental treaty which has adopted a global ban on the export of hazardous wastes from the worlds most developed countries to developing countries. Further, the U.S. has actually exempted toxic E-waste from its own laws governing exports, simply because the material was claimed to be destined for recycling.

The environmental organizations are calling on the United States to follow Europe's example and immediately implement the global ban on the export of hazardous wastes from the United States to developing countries and likewise to solve the E-waste problem "upstream" by mandating that the electronics industry institute "take-back" recycling programs, toxic input phase-outs and green design for long-life, upgradeability and ease of recycling.

Pulido, Laura. 2000. Rethinking Environmental Racism: White Privilege and Urban Development in Southern California. *Annals of the Association of American Geographers*. 90(1), 12-40.

Pulido uses white privilege as an analytic to understand the formation of environmental injustice. White privilege "refers to the hegemonic strictures, practices and ideologies that reproduce whites' privileged status." It "thrives in highly racialized societies that espouse racial equality, but in which whites will tolerate either being inconvenienced in order to achieve racial equality or denied the full benefits of their whiteness." White privilege "is a form of racism that both underlies and is distinct from institutional and overt racism" (15). She shows how different forms of racism interacted to create racialized, toxic and industrialized spaces in the particular place of Los Angeles, first through direct policy prescriptions and overt racism in the late 1800s and early 1900s explicitly aimed at creating white suburbs. Later, from the 1950s onwards, zoning laws and transportation infrastructure siting, and finally, increasing population of LA County in the last decades of the 20th century created the patterns of residential segregation and differential siting of toxic facilities. Thus, white privilege moves racism in the United States away from simple, direct, individual acts, to at once perceiving segregation in residential areas and in employment as problems in the present, but also rooted in particular, overtly racist practices in the past.

As she writes, Pulido refocuses questions of how colored people ended up near and in the most toxic places, to asking, how is it that white people managed to distance themselves from all those contaminants? Finally, she defines race as a dynamic process, embedded in everyday social practices, such as words, ideas, psyche and social institutions. By explicitly connecting the past into the present in practices that scale up and down, she offers us an analytic through which to explore the creation as well as the hegemony of privilege far beyond LA County, and to understand the reproduction of domination and subordination that goes well beyond the common hypothesis of individualized intent.

Pulido, Laura. 1996a. A Critical Review of the Methodology of Environmental Racism Research. *Antipode* 28 (2):142-159.

Pulido offers a cogent critique of the methods employed by environmental racism researchers, the assumptions embedded in this research, and the racial projects (ends) this research serves. For the most part, she argues, environmental racism researchers have conceptualized and operationalized racism as “a specific, conscious act of discrimination,” “a specific thing whose effects can be neatly isolated.” Instead, Pulido argues, racism is complex, multifaceted, changing, and deeply embedded in society. While it includes specific acts, “racism infuses society, including culture, politics, and economic structures, and helps, in turn, to shape these forces.” Racism is not limited to overt, intentionally discriminatory acts. From this perspective, the emphasis on quantitative studies seeking to isolate and determine the relative significance of race and class in siting decisions, and historical studies focused on the temporal order of land-use and racial settlement are at best narrow and at worst deeply misguided. If race and class are deeply interconnected, as Pulido argues, then one cannot conclude that racism does not exist if a study finds class, but not race, statistically significant or vice versa. Similarly, since racial residence decisions and hazard siting decisions are both shaped by a long history of racially segregatory housing policies and practices, seeking to determine which came first, people of color or environmental hazard, is of little utility. Seeking to use correlations between low land prices and people of color communities as a “nonracist” explanatory factor is deeply disingenuous. Properly conceived, the environmental racism research agenda would encompass qualitative, historical, and critical explorations of racism, broadly conceived, as well as quantitative studies.

Pulido argues that these narrow conceptualizations of racism have served two competing racial projects. The dominant operationalizations of racism are consistent with those who view racism narrowly as specific acts, not something embedded in social structures and institutions, and therefore as exceptional rather than the norm. As she states, this research strategy “limits the definition of racist activity.” Secondly, this conceptualization assists those researchers committed to the primary of race, and racism, in the lives of people of color. Because this strategy treats race in isolation, it can support those advocating a racial project that emphasizes racial or ethnic nationalism, while marginalizing class, gender, and other experiences of domination and subordination. For those seeking to build a more broadly democratic, antiracist movement for social justice, this type of research has little to offer.

Pulido, Laura. 1996b. *Environmentalism and Economic Justice: Two Chicano Struggles in the Southwest*. University of Arizona Press, Tucson, Arizona.

Laura Pulido links the environmental justice movement in the United States and Third World movements for livelihood through subaltern studies, and situates them all as subaltern environmental struggles. Through two case studies of Chicano rural movements, one, the 1965-1971 United Farm Workers (UFWOC) campaign against pesticides, and two, a grazing conflict involving a Hispano cooperative and mainstream environmentalists in northern new Mexico, she argues that poor people’s environmental movements are material as well as symbolic, and that subaltern struggles are explicitly oppositional. She explores why and how race becomes an organizing concept in the envi-

ronmental justice movement, whereas livelihood is often the central concept in other parts of the world. In tracing the shaky coalitions that were forged between mainstream environmentalists through subaltern environmental struggles, she shows how positionality was key in understanding the dynamics of these particular struggles, especially the tactical and strategic deployments of identity and culture by Chicano/a activists. She calls into question the asserted distinction between old and new social movements, and also points to existing differences within groups that claim a shared identity. By doing so, she gives us a reading of history and history-in-the-making through the eyes and mouths of the people on-the-ground, and shows us how strange top-down policy solutions can look.

Pulido, Laura and Devon Peña. 1998, Environmentalism and Positionality: The Early Pesticide Campaign of the United Farm Workers' Organizing Committee, 1965-1971. *Race, Gender & Class* 6(1) 33+

Pulido and Peña (1998) argue that the discourse around environmental justice has centered on the importance of issue identification and race in defining EJ struggles. The concept of positionality “requires that our analysis draw on more than race, because race is produced and experienced in mediation with other identities and processes.” Positionality “refers to a person’s location within the larger [society], including one’s class position, gender and sexuality, and racial identity within a particular racial formation” (33). Thus, while activists have argued that mainstream environmentalists are concerned about rural, wildlife and wilderness issues and EJ activists are concerned about urban, toxics and workplace environmental issues, this cannot explain the EJ activism and concerns of land-based Chicanos in southwest Colorado and northwestern New México. Pulido and Peña argue that it is precisely because land-based Chicanos, Native American and indigenous peoples and people of color experience the environment, politics and everyday life *differently* from mainstream environmentalists that they articulate oppositional politics. “Thus, the issue is not wilderness per se, but one’s location and relation to land.”

They go on to describe the struggle of United Farmworkers of California (UFWOC) against pesticides from 1965-1971, describing how pesticides became an issue within the union, the difficulties of farmworkers in even getting access to information about which fields had been sprayed, and the absence of being afforded even basic protective clothing and other gear—which was guaranteed to other “skilled,” white, workers. Pulido and Peña write about the process of enrolling mainstream environmental organizations, and the difficulties of negotiating involvement and commitment to basic social justice issues while engaged with organizations whose members’ goals, experience and positionality were so radically different. In many cases, mainstream environmental organizations’ membership included major growers and others whose economic interests might be threatened by UFWOC goals. UFWOC tactics included legal means, consumer boycotts, strikes and information campaigns. Finally, in 1970, twenty-six major growers signed a contract with UFWOC that included a significantly improved Health and Safety clause. As Pulido and Peña write, “when you are facing daily threats to your health and safety, it is difficult to embrace the ‘wait and see what the experts say’ attitude. The more radical perspective of farmworkers . . . was not solely the result of workers’ racial-ethnic identity, but rather resulted from a racialized division of labor, and from their direct lived experience at the point of production. . . . [T]he positionality of the farmworkers, growers and environmentalists played a major role in defining their distinct approaches to a single environmental issue.”

Roberts, Stephen M. 2000. Environmental justice: Examining the role of risk assessment. *Human and Ecological Risk Assessment* 6 (4): 537-540.

Roberts introduces a special issue of *Human and Ecological Risk Assessment* where Goldman, Simon, Foreman and Sexton debate the role of risk assessment with respect to environmental justice. He asks if risk assessment is part of the solution, or contributes to the problem of environmental justice. Benjamin Goldman is one of the contributors to the United Church of Christ study (1993), and Dr. Ken Sexton co-edited a 1993 special issue of *Toxicology and Industrial Health* on "Equity in Environmental Health: Research Issues and Needs." Both have worked within the United States Environmental Protection Agency (USEPA) to address environmental justice issues. Christopher Foreman is a political scientist with a special interest in health and safety politics. Dr. Ted Simon is a toxicologist with USEPA Region 4. Roberts concludes that the discussion is "lively" and encourages readers with "alternative viewpoints" to write letters to the Editor.

Roberts, J. Timmons and Melissa M. Toffolon-Weiss. 2001. *Chronicles from the Environmental Justice Frontline*. Cambridge, Cambridge University Press.

Roberts and Toffolon-Weiss, through extended fieldwork and interviews with key activists, present histories of four major EJ struggles in the state of Louisiana and try to evaluate the factors that helped them to succeed, or that led to their (partial) failure. They also cite extensive archival material of activist publications. They use the cases of a uranium plant that was to be sited in northern Louisiana, near the historic Black communities of Forest Grove and Center Springs; the case of Shintech and St. James Parish; the community of Grand Bois against an Exxon oilfields waste facility; and the struggle of Agriculture Street to be paid adequate compensation for relocation after being classified a Superfund site. Through their analysis, they find that communities are more often than not divided, and that unity is not a prerequisite for success. However, access to national media coverage and to national or international organizations often helps. All of the cases were "new" sitings or facilities, and the authors believe that this is key in creating a shared awareness in communities. After a certain amount of time, they argue, residents can become accustomed to the pollution, smells and health effects of toxic facilities. Community awareness-raising was crucial, although often key activists were only a few in number.

In all of the cases, communities resorted to some sort of litigation, and litigation as public interest cases were more successful than private cases pursued as class-action lawsuits. They show that activists have all sorts of histories, with different commitments to broader struggle. That is, some activists have long histories of involvement with environmental or civil rights struggles, others are local people—storeowners and housewives, with very little history of past "political" activity. Once mobilized, some people are most concerned about the local struggle, and want to go on living their own lives when and if they win. Others see themselves as part of a broader movement and want to continue helping any community that may face similar situations. In all of the cases, both communities and corporations have been changed through struggle, often with broader ramifications. The nuclear industry has lost what little public confidence it may have had in most of northern Louisiana, and probably for most of the United States. Shintech Corporation changed its site and the kind of plant they wanted to build after extended struggle in St. James Parish. They also learned the

importance of strong public relations, and the importance of doing community outreach before the permitting process. In the case of Grand Bois and Agriculture Street, the communities continue to live in situations similar to what Winona LaDuke cites as “ethnostress.” Shared senses of injustice have long term consequences on community health, as well as economic ramifications, especially for the people on Agriculture Street, where people’s life savings were invested in now-worthless homes, even on remediated land.

Romm, Jeff. 2002. The Coincidental Order of Environmental Justice. In *Justice and Natural Resources*, edited by K. M. Mutz, G. C. Bryner and D. S. Kenney. Washington, DC: Island Press.

Romm argues that a “just environment” requires social and ecological relations in which all groups of people have equal opportunity for benefit and influence. Romm’s intervention highlights the distribution of access to environmental benefits, and the historical roots of present inequity. He contends that environmental injustice is caused by the interaction of (1) environmental policies based on the territorial protection of resources and (2) race-based limitations on social opportunities.

Romm contends that American restraint-based environmental policies that restrict access to and use of natural resources have and have had racially discriminatory consequences because they benefit those who face no other constraints to action. Racial discrimination has served to restrict the social mobility of people of color, thus rendering them (us) less able to access environmental opportunities. Thus, “public processes and controls that are believed to be fair, beneficent, legitimate, virtuous” produce pernicious discrimination.

Romm draws evidence from American governmental policy during the late nineteenth century post–Civil War Reconstruction period to show the inseparability of racial and resource policies. As he discusses, the U.S. government granted about 300 million acres of western land to white homesteaders. Yet the Freedman’s Bureau returned land to plantation owners, leaving freed slaves to purchase about 5.5 million acres, and state and national government denied Chinese workers in California the right to purchase land. The national forest system, including 30 percent of California’s territory, was developed in this context as a “hinterland” best controlled by white elites. Romm concludes that we need a new, just, vision of California forests, and America’s resources more generally—in which all can participate in governance.

Ruiters, Greg. 2001. Environmental Racism and Justice in South Africa’s Transition. *Politikon* 28 (1):95-103.

Ruiters takes issue with narrowly defined, legalistic definitions of and responses to environmental racism, contending that approaches focused on intentional racial discrimination elide the processes through which environmental injustice is produced. Capitalism, in particular, places an important role in shaping the spatial landscape. Ruiters contends that racism comprises a “material-symbolic landscape,” in addition to the attitudes and actions highlighted by narrow approaches. Because racial discourses are embedded in conceptions of environment and place—for example, nineteenth century environmental determinism linked civilization with temperate climates—

environmentalism can become a proxy for racism and economic interests” (96). Contemporary discourses focused on order and control may naturalize the current, radically unjust distribution of space and resources in South Africa. Ruiters elaborates on the contours of South African environmental racism, highlighting the distribution of desirable residential space, environmental hazards, employment, water, and electricity. He observes that the distribution of water is more unequal than that of income (South Africa has one of the world’s most unequal income distributions). The protection of property rights and neoliberal economic policies worsen environmental injustice. Given this context, class-neutral, spatially-bound rights discourses and litigation cannot hope to produce justice; new institutions are required. “Racial justice requires a major re-mapping of South Africa’s socio-geography” (102).

Sadd, James L, Manuel Pastor, J Thomas Boer, and Lori D Snyder. 1999a. “Every Breath You Take ...”: The Demographics of Toxic Air Releases in Southern California. *Economic Development Quarterly* 13 (2):107-123.

Bowen, William M. 1999. Comments on “Every Breath You Take...’: The Demographics of Toxic Air Releases in Southern California”. *Economic Development Quarterly* 13 (2):124-134.

Sadd, James L, Manuel Pastor, J Thomas Boer, and Lori D Snyder. 1999b. Response to Comments by William M. Bowen. *Economic Development Quarterly* 13 (2):135-140.

Sadd et al (1999a) investigated patterns of proximity to environmental hazards by race, ethnicity, and other factors in Los Angeles. Using TRI data on airborne releases of hazardous and toxic chemicals, they focused their analysis on facilities that are known to pose a real (rather than potential) hazard. The authors investigated the geographic distribution of risk, spatial correlations with EJ factors (race/ethnicity, income, land use), the significance of those correlations, and the relationship between these factors and toxic releases.

The authors’ findings generally supported the claims of EJ activists. Latino and Black areas were more subject to hazardous releases than white/Anglo areas; the percentage Latino was more important than percent African-American throughout the analysis. These patterns are strongest within a one-mile “buffer zone” of hazardous facilities; economic determinants were most important within tracts. A more realistic profile that combined economic and ethnic factors effectively predicted site location. While the authors note that their analysis provides a snapshot of existing patterns rather than historical analysis or evidence of intentions, they argue that policies should “At least do no harm.” Siting and permitting policies should ensure that new facilities do not worsen existing inequities.

This study was methodologically sophisticated. The authors used GIS, mapping, and bivariate and multivariate statistical analyses; ranked air releases by relative toxicity; and explicitly discussed the limitations of TRI data and assumptions made in their analysis. For example, they note that actual health risk from airborne releases can vary, but argue that residential proximity is an important determinant of exposure, citing supporting studies and arguing that proximity to such a TRI site is “neutral at best, but never a positive.”

In his commentary, Bowen concedes that the research was “reasonably well done,” but argues that the article underconceptualizes environmental risk and fails to illuminate the causal processes producing inequitable outcomes. He argues that the article is therefore “largely irrelevant” to policymakers. Bowen’s critique has two parts; this summary describes his technique and Sadd et al’s response for each issue.

First, Bowen’s critique addresses core methodological issues; research drawn from existing empirical data rather than structured experiments allows researchers to identify patterns but not to prove causation; quasi-experimental designs can partially compensate for this problems. Bowen suggests this critique applies to most EJ research, including the article above; while the findings appear reasonable, they cannot meet the most stringent tests of validity.

Sadd et al respond by noting that their article provides a “multivariate mapping,” it does not seek to establish causation. The authors suggest that this critique is disingenuous—existing TRI data does not allow for the type of analysis Bowen desires, a fact of which he is well-aware given his past use of TRI data. More importantly, however, Sadd et al argue that “uncertainty about causality does not imply a lack of policy lessons or policy needs;” policies can seek to insure fairness in siting and provide information to potential movers about facility proximity.

Second, Bowen argues that proximity to a release site should not be used as a proxy for environmental risk; the article discussed explicitly made this assumption. Bowen argues that EJ researchers should instead use conventional risk assessment to measure actual risk because the release of a hazard does not constitute exposure or actual harm. (Risk assessment issues are discussed in one section of the overview essay).

Sadd et al (1999b) contend that the evidence linking residential proximity and health is stronger than Bowen suggests; they draw from research cited by Bowen in supporting this claim. The authors suggest that toxicity weighting would not significantly change their results. Policymakers should be attentive to the correlation between race and TRI facilities and act to avoid exacerbating risks. Furthermore, the authors note, perceived risk may negatively affect the economic development opportunities of poorer minority neighborhoods.

In addition to the general issues discussed above, Bowen also criticizes the authors for their literature review, selection of comparison locations, and issues of spatial correlation. *Literature review:* Sadd et al note that their brief literature review cites the earlier, more extensive review they have published as well as those conducted by others. Regardless of the length of their review, they argue, they would have concluded that the bulk of the evidence supports a correlation between race and environmental hazards. *Space:* The authors contend that the southern California region was an appropriate unit of analysis because it is the locus of critical policy decisions and recognized market region within which risks will be distributed; there are no high-minority communities immediately beyond the borders of their study. Bowen suggests that the inclusion of non-industrial tracts may have biased their results; the authors restricted their analysis to tracts with some industrial land and found their results held.

Bowen also raised the issue of *spatial dependence and spatial autocorrelation*, which can make linear models unreliable. Sadd et al concede that this raises difficult issues, but note that only one study (by Bowen) has addressed this issue to date.

Bowen's conclusion that the article is policy-irrelevant follows from the issues discussed above. Because the article does not meet strict validation standards and does not illuminate causation, it should not be used for policy. Bowen notes that most EJ researchers would find it almost impossible to meet the standards he sets forth; ample data on many factors over time would be required, and the ability to generalize from one case (Los Angeles) to others would still be quite difficult. Regardless, Bowen argues, policymakers can comfortably ignore research that doesn't meet these standards. "There is a crucial sense in which limitations on the available body of empirical knowledge about the problem are also limitations on the scope of governmental responsibility." (131)

Sadd et al argue that their research, and EJ research generally, is policy relevant. They locate their disagreement with Bowen in the level of certainty required for policy action. Sadd et al argue, "It is not unusual for policy makers to have questions that science cannot fully answer, but it may be prudent, despite lingering uncertainty and an incomplete understanding of causality, to develop measured and appropriately risk-adverse policy responses."

Salazar, Debra J, and Lisa A Moulds. 1996. Toward an integrated politics of social justice and environment: African American leaders in Seattle. *Society and Natural Resources* 9: 617-631.

Salazar and Moulds examine EJ from a social movement perspective, evaluating the extent to which an "environmental justice frame" has been adopted by African American leaders in Seattle, WA. The authors interviewed 26 leaders in 1992, focusing on their perception of environmental problems, the relationship between civil rights and the environment, and the environmental movement. Although no EJ organizing had taken place when this study was conducted, the authors found that the EJ frame resonated with these leaders. They tended to define the environment broadly, saw inequitable exposure to environmental hazards as a social justice issue, and suggested a range of responses similar to those proposed by activists. The leaders' opinions regarding whether the environment should be part of the civil rights agenda varied. More than half supported this view, but others felt it might lessen prospects for success. Those who defined the environment narrowly were less likely to believe it should be a priority issue. Because broad definitions of the environment may resonate in other communities as well, the authors speculate that EJ may provide a bridge for cross-racial, working class mobilization.

Sexton, Ken. 2000. Socioeconomic and Racial Disparities in Environmental Health: Is Risk Assessment Part of the Problem or Part of the Solution? *Human and Ecological Risk Assessment* 6 (4):561-574.

Sexton argues that while risk assessment practices have contributed to environmental justice problems, these problems stem from the manner in which it has been applied. Properly applied, risk assessment principles are essential to attaining environmental justice. Risk assessment provides tools and methods for systematically identifying environmental justice problems and their causes and developing solutions. Sexton notes that increasing evidence supports the contentions that poor people and people of color face disproportionate exposure to environmental hazards and are more susceptible to these exposures. It also has been shown that poor people and people of color live in

poorer health (morbidity) and have shorter lives (mortality). Yet, little is known about the extent to which environmental hazards have contributed to these dynamics.

Unlike some risk assessment advocates, Sexton demonstrates awareness of contestation about the concept of environmental justice and disparate views of risk assessment within the EJ movement. Quoting definitions of EJ from several sources, he links debates about the term, the movement, and appropriate responses to different value orientations (beliefs about fairness, equity, justice) and to the positionality of different actors (activists, business leaders, regulators, scientists). He observes that EJ critiques of risk assessment have raised serious ethical, paradigmatic, empirical, methodological, political, and procedural objections, and he attempts to respond to each of those. In making the link from race and class to environmental health risk, Sexton's conceptual model indicates interrelationships between race/ethnicity and class, links both to hazard exposure and susceptibility, and connects these to health risk. He advocates increased research on these relationships. Sexton also situates disproportionate environmental health risks in a broader social context. He suggests that "large-scale social factors" determine individuals' class, resource access, and exposure.

Given Sexton's thoughtful portrayal of these issues, it is hard to see why he believes that scientific knowledge will lead to effective interventions.

Simon, T. W. 2000. In defense of risk assessment: A reply to the environmental justice movement's critique. *Human and Ecological Risk Assessment* 6 (4):555-560.

Simon argues that the environmental justice movement's challenge to risk assessment is misconceived; in his view, "risk assessment is the most appropriate tool for decision-making in the face of uncertainty within the framework of a democratic society." Simon's conclusion relies upon a highly debatable characterization of the EJ movement, his implicit view of economic outcomes as just (and nondiscriminatory), and his narrow characterization of risk assessment.

Simon counterposes the EJ movement perspective and that of "others," including himself, who believe that "environmental racism is a myth and that economic circumstances alone determine one's living conditions." The EJ movement, as he sees it, believes that "all people, regardless of race or income, have the right to live in an unsullied and pristine landscape without even having to consider exposure to hazardous substances." Simon finds this ridiculous, for freedom from pollution is not a human right and the price of living in modern America is exposure to pollution. Technology and industrialization produce toxic waste; therefore eradicating waste would mean rejecting technology. While Simon concedes that poor people and people of color may have disproportionate exposure, he contends that only "the pursuit of happiness," that is self-improvement and economic advancement, should provide freedom from pollution. More bluntly, the rich have earned their clean air. As discussed in the overview essay (Justice section), few EJ activists or scholars share Simon's beliefs.

Simon makes several claims with regard to risk assessment. First, risk assessment is a useful decision tool, not a technology. Noting that risk assessment does not predetermine decision criteria, Simon implicitly contends risk assessment is neutral. He rejects assertions that risk assessment trades human life for profit, stating that U.S. risk assessors do not place monetary value on human life. Second, Simon asserts that risk assessment properly relies upon the Congressionally-set "brightline"

of one-in-a-million lifetime risk of cancer. For this reason, EJ claims of unreasonable risk are illegitimate; “recourse is available in the voting booth.” Simon fails to consider that hazardous chemicals may pose non-cancer health risks for which no brightline exists. Third, the possible increased susceptibility of poor people and people of color to environmental hazards is spurious. If people live less healthful lives due to “maladaptive life style choices” or inadequate access to healthcare, this has nothing to do with hazardous wastes. Regardless, since toxicity assessments incorporate significant uncertainty, increased sensitivity has been incorporated. [Simon’s discussion assumes exposure to a single chemical, and good hazard information more generally.] Fourth, risk assessment is democratic because the 1994 Executive Order on Environmental Justice has solved past problems. If one does not accept these core assertions, Simon’s argument is unlikely to be persuasive.

Simon, David R. 2000. Corporate Environmental Crimes and Social Inequality: New Directions for Environmental Justice Research. *American Behavioral Scientist* 43(4): 633-645.

In an 1997 article, Szasz and Meuser note that environmental justice research may have excluded certain questions of import, including among them (a) the place of the upper class in environmental research and (b) the lack of both a global and historical perspective. Simon (2000) adds to this by placing corporate environmental crimes and state-corporate crimes in their class, geographical, and historical perspective. He describes corporate environmental crimes (patterns of deviant behavior) as having been institutionalized and normalized. They are not evenly spread across all industries. Cinar (1979) found that 60% of all corporate offenses processed by the Department of justice between 1974 and 1976 were in petrochemical, pharmaceutical and automobile manufacturing industries. He also cites the evidence linking organized criminal syndicates to perform various services for corporations and the federal government, including the CIA—that organized criminal syndicates have been useful for years to corporate, labor and political elites for at least the past 50 years, sometimes for antienvironmental purposes in pursuit of profit. Simon finds that the majority of environmental violations by US corporations are found in only a few industries: petrochemicals, petroleum, automobiles, and electrical products. These industries are heavily oligopolistic, where four or fewer firms control over 50% of a market. The corporations in these industries have some important common characteristics:

1. Their boards of directors contain upper class executives from the largest banks and insurance companies. Many of the directors sit on more than one corporate board, and are thus interlocked.
2. They are among the 500 largest industrial firms that sponsor 90% of the nation’s network television programs
3. They are among the corporations that spend the most money per election cycle to lobby Congress and back political candidates.
4. Some are among the 100 largest defense contracting firms, and are often involved in waste disposal at federal facilities.
5. They are among the largest 500 industrial corporations that make 80% of all after-tax profits in manufacturing.

6. They are among the largest 500 companies that make 90% of all profits involved in US foreign trade.
7. A number of large chemical firms have been involved in hiring large criminal syndicates to dispose of toxic waste.
8. The victims of illegal hazardous waste disposal trade tend to be the most poor and powerless populations both in the US and around the world.

Smith, Neil. 1993. Contours of a Spatialized Politics: Homeless Vehicles and the Production of Geographical Scale. *Social Text* 33: 55-81

A New York artist, Krzysztof Wodiczko, constructed two vehicles—the Homeless Vehicle and the Poliscar—that challenge common sense fixings of homeless people at certain scales (urban, local). Neil Smith explores the production of various scales (the body, local, community, region, nation and global) and articulates them with the work of scholars who have explored the construction of those particular scales. These scales becomes sites of intervention; intervention can also be successful by jumping—and transgressing—scale and space. For environmental justice, this piece is useful in thinking about the construction of certain “common sense” spaces and scales, and analysing how activists are more or less successful in either mobilizing or transgressing the scales and spaces in which a dominant state would confine them. Another avenue for scholarly research is to use some of the specific scales that Smith lays out as frames for analysis of the production of scales at work in conflicts around environmental justice.

Szasz, Andrew, and Michael Meuser. 1997. Environmental Inequalities: Literature Review and Proposals for New Directions in Research and Theory. *Current Sociology* 45 (3): 99-120.

Szasz and Meuser’s review of research on environmental inequalities covers the period from 1983 to 1996. (The authors note a small group of 1970s studies exploring the relationship between poverty/social class and exposure to air pollution.) Their review focuses on waste sites and polluting facilities, the area in which most work had focused. Szasz and Meuser highlight the enormous expansion of quantitative and geographic analyses in these areas, the steady improvement in the methodological quality, and the greater variance in findings. They note that findings have been linked with scale; most sub-national studies found relationships between demographics and environmental risk less evident in national studies. Their brief discussion suggests contrasting findings are due to conflicting agendas and methods as well. Although Anderton et al (1994) claimed to find no relationship between race/ethnicity and facility location in the US (contra UCC 1994), Szasz and Meuser observe that their data in fact describe a “bull’s eye’ pattern in which industrial census tracts were surrounded by poorer black neighborhoods.

Szasz and Meuser argue that the studies described have produced a substantial body of information on the distribution of potential environmental risks although only a few studies (for instance, Been (1994), Pulido et al (1996), Hersh (1995)) have explored the *processes* through which environ-

mental inequality is produced. They reference Pulido's (1996a) thoughtful discussion of racial projects as central to understanding alternate pathways and policy responses.

Szasz and Meuser argue that the EJ literature has neglected two important issues. First, there has been little research on the wealthy, an area which raises uncomfortable questions of class in America. Second, research has neglected to explore the global and historical dimensions of environmental inequality. Szasz and Meuser suggest that this research would situate "environmental inequality squarely within the large problem of modernity," tying EJ to enclosure, the rise of capitalism, and the structure of the global economy.

Szasz, Andrew, and Michael Meuser. 2000. Unintended, Inexorable: The Production of Environmental Inequalities in Santa Clara County, California. *American Behavioral Scientist* 43 (4):602-632.

Szasz and Meuser's research illuminates environmental inequality formation (the production of environmental injustice) through a local history of Santa Clara County, the home of Silicon Valley. The authors collected demographic, industrial, and pollution data from national and local sources for the period between 1960 and 1990 and created static and change maps showing the direction and amount of change. The maps show clear evidence of environmental inequality in 1990, at which time hazardous air releases were concentrated in low-to-moderate income Hispano areas, but little inequality in 1960. The authors attribute inequality formation to rapid industrialization with few controls, racial discrimination, and the structural pressures of a tight housing market produced by job and population growth. These factors produced and reinforced a social geography in which neighborhoods were differentiated by class and race, and lower class neighborhoods were situated closer to hazardous facilities.

Szasz and Meuser identify three political implications of their analysis. First, environmental inequality is a result of broader racialization processes; siting-focused politics cannot eradicate environmental inequality. Santa Clara's 1990 demography was not the simple result of intentional environmental discrimination. Second, class drives urban geography as well; removing the link between class and environmental inequality would require a fundamental reorganization of urban geography. Third, because it will take time to change the geography of environmental inequality, a focus on reducing existing hazards and preventing new siting in overburdened areas is most likely to produce short-term benefits.

Methodologically, Szasz and Meuser also raise important questions and develop alternative measures and indicators. Szasz and Meuser argue that local histories trace the complex interactions among industrial, residential, and demographic processes, avoiding the reductionist tendencies of "which came first" research. However, they highlight two methodological challenges. First, the Census's definitions of race and ethnicity changed during this period. They argue that their maps are generally consistent with demographic trends in Santa Clara County; the error remains small relative to other changes. Second, historical data on industrial emissions is lacking; TRI data was first released in 1987. The authors used the general degree of industrialization in each census tract, which they were able to obtain. Szasz and Meuser contend that this variable is a superior indicator of environmental inequality: "Industrial facilities make undesirable neighbors not only, maybe not even

primarily, because they discharge hazardous materials. Industrial districts are physically ugly, noisy, and smelly” (606).

Taquino, Michael, Domenico Parisi, and Duane A Gill. 2002. Units of Analysis and the Environmental Justice Hypothesis: The Case of Industrial Hog Farms. *Social Science Quarterly* 83 (1):298-316.

The authors address methodological and analytical EJ issues and apply their preferred approach to a GIS-based analysis of industrial hog farms in Mississippi. They address two methodological issues, units of analysis and sampling. Observing that researchers have used several varying units of analysis (e.g. census tracts, zip codes, counties) to analyze EJ issues and that different units of analysis sometimes produce different results, the authors argue that “community” should be the appropriate unit of analysis. (See annotations of Mennis (2002) and Williams (1999) for different perspectives.) They define community by “social and economic relationships among people living in geographic proximity to one another and by the relationships between people and the physical environment in which their daily needs are served.” They operationalize this definition in their case study by identifying areas based on central places (census defined places, CDPs), ranking central places by population size, and then defining each community as the census block groups whose center was within 10-minutes travel time of the CDP center. They identified 296 communities in Mississippi. Although the authors suggest that communities have the “legal and social authority to raise concern,” their application of community includes political jurisdictions but is not equivalent to them; their “communities” may include people in different jurisdictions.

Sampling issues are relevant to EJ studies in which either 1) the researchers are not analyzing the full population of relevant cases or 2) the researchers are making comparisons between the cases studied (e.g. communities with industrial hog farms) and another population. Taquino et al argue that each unit selected for analysis should be equally likely to host a controversial facility in a given area. For their case, industrial hog farms develop in proximity to food-processing plants. Although the authors do not explicitly discuss this issue, whether this sampling strategy is appropriate depends upon one’s conception of EJ and environmental inequality formation. If the criteria used to determine likelihood to host a facility (e.g. mixed residential-industrial zoning) are influenced by racial or class factors, then selecting comparison cases by this method may eliminate crucial variance and lead to an underestimation of the effect of race, ethnicity and/or class on site selection. The authors state that the processing plant on which their selection is based was sited in 1936, before industrial hog farming developed in Mississippi.

The authors identified 52 communities within a 60-mile radius of a large food processing plant in West Point, MS, geocoded the hog farms in this area, and analyzed the demographic attributes of communities with and without hog farms using bivariate and multivariate regressions. Their findings generally supported EJ claims; they found significant relationships between race, income, education and hog farm location. They found the strongest relationship between income and farm location; when industrial characteristics and educational data were introduced, race was no longer significant. The authors also collected and analyzed zip code, census tract, and census block group data; they found that results varied somewhat across units.

Taylor, Dorceta E. 1997. American Environmentalism: The Role of Race, Class, and Gender in Shaping Activism 1820-1995. *Race, Gender & Class* 5 (1):16-62.

Taylor argues that common presentations of the history of American environmentalism provide a partial, narrow view—they are “really a history of middle class white male environmental activism.” This article moves toward a more comprehensive history of the movement by identifying specific periods of mobilization, different pathways to environmentalism, and tracing environmental activism by race, gender, and class over the period from the 1820s to the 1990s. Taylor argues that positionality shapes people’s relationship to the environment and thus their activism (c.f., Pulido and Peña 1998). Her analysis disaggregates white activism by class and gender and describes Native American, African American, Latino/Chicano, and Asian American activism separately during the four periods—pre-movement (1820s-1913), post-Hetch Hetchy (1914-1959), post-Carson (1960-1979), and post-Love Canal/Three Mile Island (1980-present)—discussed in the article. Her discussion highlights how rural/urban location, gender roles, and class position affected the issues on which each group was active. During the late nineteenth century, for example, educated white middle class women were active in sanitation, children’s recreation (parks and playgrounds), and settlement houses, areas that could be viewed as properly feminine concerns. In the 1900s, unionized working people of color focused on job discrimination and working conditions, including occupational safety. In tracing this history, Taylor provides a context for the emergence of the environmental justice movement that begins well before the civil rights movement.

Taylor, D. E. 2000. The rise of the environmental justice paradigm: Injustice framing and the social construction of environmental discourses. *American Behavioral Scientist* 43 (4):508-580.

Taylor argues that environmental justice thought has created a new paradigm (the environmental justice paradigm) that is changing, and may transform, environmental discourse. Rooting her analysis in social movement theory, Taylor identifies four environmental paradigms—exploitative capitalism, Romantic environmentalism (emerged ~1914), New Environmentalism (~1960), and environmental justice (~1980), traces the history of each paradigm, and details the major differences between them. The distinct contribution of the EJ paradigm has been to make (in)justice a central and explicit aspect of environmental discourse (a ‘master frame’ in her terminology). EJ discourse has *linked* race, health, labor, and the environment, *amplified* issues through empirical research and attention to processes, and *transformed* environmental thinking, elevating the importance of environmental issues and extending environmentalism to a broader audience. The EJ movement is not just about toxics, and the environmental justice paradigm provides a broad ideological framework that poses a threat to hegemonic new environmentalism.

Tesh, S. N., and B. A. Williams. 1996. Identity Politics, Disinterested Politics, and Environmental Justice. *Polity* 28 (3): 285-305.

Tesh and Williams contend that the environmental justice movement has practiced two forms of politics simultaneously which must be reconciled if each is not to undermine the other. One, a

“disinterested politics,” is based on scientific data and technical expertise; movement advocates seek support from empirical studies showing a relationship between race and/or poverty and the distribution of environmental hazards. The second, “identity politics,” makes claims based on the “lived experience, common knowledge, and shared values of ordinary people;” people of color and low income people argue their experiential knowledge of their communities provides sufficient expertise and documentation of their claims possess (294). Disinterested politics provides policymakers with grounds for action but is vulnerable to the conflicting results and methodological criticism that are part of normal science. The EJ movement could become dependent on scientists for validation and therefore stymied (For example, Bowen (2002, 2001³²) argues that existing studies provide an insufficient basis for policy.) Identity politics empowers local actors but is less valued by policymakers. The EJ movement makes moral and scientific claims upon the polity; both politics are integral to the unit. Tesh and Williams argue that these politics can be reconciled through a social constructivist approach to science. From this perspective, science (like identity politics) is shaped by scientists’ values and hidden assumptions. Because these assumptions shape the questions researchers ask, the methodologies they choose, and the ways in which they interpret their results, no science is value-neutral. (The authors do not advocate a relativist, every approach is equal form of constructivism.) This approach gives EJ activists and other ordinary people an opening for deliberation “over the values that will guide science” (302). Tesh and Williams recognize it would be difficult to get policymakers to adopt this approach to science but argue the challenge is work taking on. “A scientific practice and discourse that forthrightly included the values of justice and the recognition of past discrimination would go a long way to getting us to that goal [of environmental justice] and to a more just society” (305).

Towers, George. 2000. Applying the Political Geography of Scale: Grassroots Strategies and Environmental Justice. *Professional Geographer* 52 (1), 23-36.

Towers argues that grassroots environmentalists are rooted in the scale of everyday experience, and often protest locally unwanted land uses. However, he sees the environmental justice movement as transcending the scale of the local, by articulating concepts of distributive justice and procedural justice. These concepts challenge national and international political struggles. Towers examines how grassroots actors translate their struggles into the language of environmental justice, through the struggle to defeat a proposed electricity transmission line in Monroe County, West Virginia. Monroe County is an economically depressed rural county, with an 11% unemployment rate and a median family income of \$18,217. In 1991, American Electric Company announced its plans to cross the county with an extra high voltage transmission line. On September 30, 1997, AEP applied to the Public Service Commission of West Virginia for approval of a new power line route which would avoid Monroe County altogether. Towers argues that this is due to AEP’s loss of a political struggle with Common Ground and the Border Conservancy, Monroe County grassroots environmental organizations that formed to fight AEP’s power line proposal. Common Ground and the Border Conservancy, constituted by a few dozen residents of Monroe County, with only a small amount of financial resources, were able to defeat one of the country’s largest power corporations by “strategically sliding between the scale of everyday experience and the scale of environmental justice” (24). He

32. Bowen, William M. 2001. *Environmental justice through research-based decision-making*. New York: Garland Pub.

argues that grassroots environmental actors may articulate with environmental justice for various reasons, including a broader scale structural analysis that links local situations with broad patterns of inequity, but also that “the tactical environment facing local actions in siting decisions constitute yet another contextual basis for the grassroots environmental movement’s incorporation of environmental justice” (25). He reviews the literature on the social production of space and scale, and develops an understanding of the Monroe County struggle as one between scales of meaning and scales of regulation, linked through spaces of dependence. Because political contests spill across scales, framings are constructed not for one, but for a variety of scales. He shows how AEP used the claims of impartial expertise (a team of engineers and planners from West Virginia University and Virginia Tech would minimize environmental impact, including social, cultural, economic and other variables) and created a particular scale of meaning (the entire power line). Community activists contested the accuracy of the university-based team’s GIS maps by noting the absence of several important landscape features—a ski resort, two campgrounds, a community center, a city park. The community organization, Common Ground, then challenged the accuracy of AEP’s maps, and West Virginia’s Public Service Commission told AEP to revise and resubmit its application. Towers also highlights that different agencies were sensitive to different scales of meaning—the Forest Service, for instance, would approve the power line based on strictly “environmental” impacts, which included potential impact on land use, cultural attachment, springs and wells, schools, churches, parks, campgrounds, trails, historic sites, health, views, karst topography, and endangered and threatened species. A community cartography project also showed the locations of wells and other important features along the proposed power line route which led to the Forest Service’s decision to bar the line from crossing Jefferson National Forest. Finally, the power line’s opponents worked successfully to designate the New River, on the border between West Virginia and Virginia, a Wild and Scenic River, so that any attempts to enter Monroe County from all sides would be blocked. He ends by saying that the construction of the power line will continue to be contested by citizens’ groups who have taken note of the success of Monroe County.

Williams, Bryan L. and Yvette Florez. 2002. Do Mexican Americans Perceive Environmental Issues Differently than Caucasians? A Study of Cross-Ethnic Variation in Perceptions Related to Water in Tucson. *Environmental Health Perspectives* 110(suppl 2):303–310.

Williams and Florez used standard telephone survey techniques to investigate differences between perceptions of water-related environmental risks in Tucson, Arizona (see Clarke and Gerlak 1998 for site history and analysis). Among other things, the Tucson International Airport is listed as Superfund site, and the resident population near the site is heavily Mexican-American. According to the results of their study, poor Mexican-Americans in Tucson considered themselves to be at higher risk for environmentally-related health problems than did Caucasian residents. Mexican-Americans were also more likely to believe that ethnic discrimination was a problem in Tucson, and exhibited marginally more trust in public institutions, including local government and research institutions. However, these differences were only significant when the researchers controlled for income, education and length of residence.

Williams, Robert W. 1999. Environmental injustice in America and its politics of scale. *Political Geography* 18:49-73.

Williams frames the debate over environmental justice as an issue of scale. He argues that the scales at which environmental justice problems are identified and at which solutions are sought have theoretical and political implications. Drawing from theoretical work in geography, Williams argues that scale is both socially produced—that is, scale is produced by social struggles and relationships—and socially productive—scale shapes society by “setting the terms of the debate.” Privileging one scale over another (e.g. focusing on the local) may have distributional consequences and can determine the outcome of EJ research.

In reviewing environmental justice research, Williams identifies two waves of social science research—the first “outcome-oriented” and the second “process-oriented”—which have produced divergent findings. The first found strong correlations between race and distribution of environmental burdens while the second found little evidence for environmental inequity at state or national levels. (Because research frameworks varied widely, the results are not directly comparable.) The second wave focused on causal dynamics such as intentional racism, procedure unfairness, or market dynamics (See Pulido (1996) for a critique of these approaches). Williams suggests that the first two causes could serve as leverage points for intervention.

In examining market-based explanations for environmental inequity, Williams analyzes the deeply local analytic scale of the neoclassical economics on which it is based: individual people, firms, and public officials. These analyses recognize the existence of extra-local factors, but exclude them from research, locate responsibility at the individual level where those innocent of intentional discrimination cannot be held responsible for collectively inequitable outcomes. Williams notes that the American legal system follows this individualist approach as well. Yet, the contemporary capitalist world economy is fundamentally multiscalar. The EJ movement, Williams suggests, must recognize and engage with the politics of scale.

Wilson, S. M., F. Howell, S. Wing, and M. Sobsey. 2002. Environmental injustice and the Mississippi hog industry. *Environ Health Perspectives* 110 Suppl 2:195-201

Wilson et al investigate distribution of industrial swine operations (corporate hog farms or CAFOs³³) in relationship to African-American and poor communities in Mississippi (cf., Taquino et al 2002). The authors see Mississippi as an important comparison case to North Carolina (cf. Edwards and Ladd 2000) and Iowa where industrial hog farming is more developed. Mississippi is a poor state with a substantial black population and a developing CAFO industry. The state government is involved in the emergence of corporate hog farming; it has underwritten large-scale operations through bonds. Although corporate hog farming may be seen as beneficial to the state as a whole, research has documented substantial adverse effects to ecosystems and human health, and local quality of life.

33. Confined agricultural feeding operation; includes at least 1,000 animals.

The authors conducted their analysis using GIS (choropleth maps), logistic regressions, and prevalence ratios. The unit of observation was the census block group and the authors recorded the number of CAFOs in each census block; densely populated areas and municipal census blocks unlikely to host CAFOs were excluded. The authors explored location dynamics at the state and county-level. Wilson et al. found that the majority of hog CAFOs were located in areas with high percentages of African Americans *or* persons in poverty. High-poverty, African American areas were more likely to host facilities than the reference group but less likely than when these traits were not combined. Hog CAFOs are not distributed equitably across the state or counties; the costs are concentrated among poor and African American communities. This study does not seek to explain why this pattern exists. However, the authors suggest the state focus on attracting environmentally-friendly industries to communities burdened with a disproportionate share of hog CAFOs.

Wolch, Jennifer, John P. Wilson and Jed Fehrenbach. 2002. *Parks and Park Funding in Los Angeles: An Equity Mapping Analysis*. Los Angeles, University of Southern California Sustainable Cities Program and GIS Research Laboratory. <http://www.usc.edu/dept/geography/ESPE/parkspress.htm>

Parks and open space are fundamental to the livability of cities and their neighborhoods. But in Los Angeles, a city historically conceived as a place of low-density homes each with its own private garden, civic leaders set aside extraordinarily modest amounts of land for open space and park/recreational purposes. As the city has grown and become increasingly dense, concern about lack of adequate park and recreation space for city residents has grown rapidly. The question of equity in the distribution of parks has also become particularly acute in the city's communities of color, where a shortage of park and recreation facilities is widely perceived as an environmental justice issue.

In 1996, Los Angeles voters passed the park bond measure, Proposition K, to increase and enhance park and recreation space in the city. Using information on the distribution of existing parks in the City of Los Angeles and census data, this report provides a statistical analysis of access to park space enjoyed by children and youth, and by residents according to their race/ethnicity and socioeconomic status. Further, a mapping of Prop. K grant allocations by location reveals the extent to which the distribution of Prop. K funds has increased access to parks for residents most in need of park space. The analysis finds that:

- * Low-income and concentrated poverty areas as well as neighborhoods dominated by Latinos, African Americans, and Asian-Pacific Islanders, have dramatically lower levels of access to park resources than white dominated areas of the city;
- * Prop. K funding patterns often exacerbate rather than ameliorate existing inequalities in park and open space resource distributions in the City of Los Angeles;
- * Neighborhoods with the largest shares of young people received half as much Prop. K funding on a per youth basis than areas with the least concentration of youth;
- * Districts with the highest rates of park accessibility received as much or more bond funds than many areas with higher poverty, higher concentrations of young people,

and below average park accessibility.

These findings are of particular relevance as the City of Los Angeles decides how to allocate funds from the recent passage of two State of California bond measures (Propositions 12 and 40). In particular, they indicate that creative strategies for providing open space—such as utilizing vacant lots, alleys, underutilized school sites, public or utility-owned property, and unnecessarily wide streets—will be required in the City’s older neighborhoods to redress existing inequities in access to parks.

ADDITIONAL READINGS

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APPENDIX

Environmental Justice Studies using Statistical Techniques, Including Geographic Information Systems

Authors (Year)

Area of Concern

Time Period

Units of Analysis

Approach

Been and Gupta (1997)
United States
1970-1990

Census tract and
hazardous waste facilities

four types of statistical analyses:
comparison of means and distributional
analyses, logist estimations, longitudinal
analysis, and comparative statics

Brainard, Jones, Bateman
Lovett and Fallon (2002)
Birmingham, England (UK)
[no time period listed]

City

Use air quality data on CO and NO₂
to model air quality (statistical smoothing.)
Combine with traffic flow data to model
exposure. Statistical techniques, including
raster-based GIS

Edwards and Ladd (2000)
North Carolina
1980-1997

County

multivariate statistical analysis

Fricker and Hengartner (2001)
Metropolitan New York
[no time period listed]

Census tract and
smoothed data

GIS smoothed over neighbor analysis

Hockman and Morris (1998)
Michigan
1990-1995

Zip code

multivariate statistical analysis

Jerrett, Burnett, Kanaroglou,
Eyles, Finkelstein, Giovis and
Brook (2001)
Hamilton, Canada
1985 – 1994

Census tract

GIS regression analysis with spatial interpolation

[continued]

Major Findings

- Market dynamics did not produce environmental inequality.
 - Facilities were not generally sited in very poor or people of color areas during the period.
 - Instead, facilities were disproportionately sited in Latino communities, but not for African-American communities
 - Facilities were generally sited in working-class and lower middle-class neighborhoods
 - Little evidence of demographic change in neighborhoods after siting
-

- Exposure to CO and NO₂ is disproportionately experienced by ethnic (nonwhite) groups.
 - Blacks' exposures were all over the exposure scale.
 - More Blacks, Pakistanis and Bangladeshis were being exposed to the worst air pollution conditions, although exposure within groups was differentiated by social (economic) class.
 - Economic class alone cannot account for the disparity observed in disproportionate exposure to air pollutants
 - Ethnicity remains a significant factor in accounting for higher exposures
-

- Eastern NC (the Black belt) was the only region in which swine industry growth was associated with farm loss
 - Poorer and minority counties suffered more extensive farm loss
 - Poorer black communities experienced greater farm loss which was associated with a rise in Black poverty
 - Within counties, farm loss was associated with declining poverty among whites and rising poverty among Blacks
-

- Race/ethnicity is still an important factor with respect to the concentration of environmentally undesirable land uses in New York, even after controlling for many other variables of socioeconomic status.
-

- Very little remediation taking place
 - Race strongly correlated with hazards, but cluster of factors (e.g. race, income, owners/renters, population density, housing age, vacant housing) better predictor of "areas more prone to pollution."
 - Relationship between pollution sources and demographics varied; race was most strongly linked with incinerators, leaking underground storage tanks, and hazardous waste treatment facilities.
-

- Dwelling value, low-income and unemployment were the variables most significantly correlated with high concentrations of ambient particulate matter (up to 25% noncompliance rate with air quality standards).
 - Recent immigrants was used as a proxy for race, which was not correlated with high exposures.
 - The "triple jeopardy" hypothesis of increased risk from (1) social and behavioral determinants of health, (2) higher risks from ambient exposure to pollutants and (3) an interaction that makes exposure have increased negative health effects on low-income, low-education populations suggests that government health policy must extend to incorporate arenas beyond individual targets, including reducing pollution "where it is worst and where social deprivation is largest" (971).
-

Environmental Justice Studies using Statistical Techniques, Including Geographic Information Systems

Authors (Year)

Area of Concern

Time Period

Units of Analysis

Approach

Authors (Year)	Area of Concern	Time Period	Units of Analysis	Approach
Lester, Allen, and Hill (2001)	United States	[no time period listed]	State, county, and city	multivariate statistical analysis
Macey, Her, Reibling and Ericson (2001)	South Central Los Angeles (SCLA)	TRI: 1987-96 EPA Cumulative Exposure for Lead: 1990 CA Hot Spots [no time period listed]	Census tract	GIS analysis and multiple regression
Morello-Frosch, Pastor and Sadd (2001)	Southern California	USEPA Cumulative Exposure Project USEPA's Toxic Release Inventory Data [no time period listed]	Census tract	Spatial interpolation based on GIS; multivariate regression
Pastor, Sadd and Morello-Frosch (2001)	Los Angeles United Public School District	1990s:1990 census; 1997 TRI; 1990 exposure; 1997-8 school	Census tract	GIS, multivariate analysis
Sadd, Pastor, Boer, and Snyder (1999)	Southern California	1992	Census tract	GIS with univariate analysis multivariate statistical analyses
Taquino, Parisi, and Gill (2002)	Mississippi	[no time period listed]	"Community": area within 10-minute travel time from a census-defined place; also zip code, census tract, and census block group	Geocoding, multivariate statistical analysis
Wilson, Howell, Wing and Sobsey (2002)	Mississippi	1997 NPDES list of CAFOs; 1990 Census	Census block	GIS (chloropleth maps), logistic regression, prevalence ratios

[continued]

Major Findings

- Findings vary somewhat by level of analysis
 - No support political mobilization as a causal factor
 - Mixed evidence regarding social class
 - Strong support for percent Black population as predictor of hazard location; weaker support for percent Hispanic.
 - Pollution potential was also an important factor
-

- Children's Blood Lead Levels (BLL) in SCLA are elevated
 - BLL for children of color are disproportionately high, even after accounting for socioeconomic status.
 - Elevated BLL are not statistically related to point sources, but they are correlated with transportation corridors.
-

- Risks of high exposure to airborne pollutants are attributable mostly to transportation and small-area sources (mobile sources), not the usually targeted large-facility pollution emissions (area sources).
 - Multivariate regression suggests that race plays an explanatory role in risk distribution even after controlling for other economic, land-use, and population factors.
 - When the category "people of color" are disaggregated, all groups share a disproportionately higher Pollution Risk Index (PRI) than Anglo inhabitants, even when controlling for income.
 - High PRI's are spatially concentrated in the urban core and the San Bernardino area.
-

- Schools tend to be in tracts with hazardous facilities
 - The ethnic composition of schools affects likelihood of hazardous facility and environmental health risks, even when tract demographics are controlled for.
 - Students of color (esp. Latino) are more likely to face hazards.
-

- Latino and Black areas were more subject to airborne releases of hazardous or toxic chemicals than white/Anglo areas
 - Percentage Latino was more important than percent African-American
 - Patterns are strongest within a one-mile "buffer zone" of hazardous facilities
 - Economic factors were most important within tracts.
 - A model that combined economic and ethnic factors effectively predicted site location.
-

- Among communities within 60 miles of a food-processing plant, race, income, education, and hog farm location were significantly related.
 - Strongest relationships were between income and farm location
 - Race was not significant if industrial characteristics and educational data were introduced
-

- Majority of hog CAFOs are in areas with high percentages of African Americans or persons in poverty.
 - High-poverty, African American areas were more likely to host facilities than the reference group but less likely than when these traits were not combined.
-

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ABOUT THE AUTHORS

ROBIN TURNER and **DIANA WU** are graduate students at the University of California, Berkeley. They share an interest in environmental justice and a commitment to its goals, as outlined in the 1991 Principles. Each has experience working with communities on social and environmental issues.

Founded in late 1996, the **BERKELEY WORKSHOP ON ENVIRONMENTAL POLITICS** emerged from a long-standing commitment to environmental studies on the Berkeley campus and from the presence of a core group of faculty whose research and scholarly interests linked environment, culture, and political economy. The workshop draws together over fifty faculty and doctoral students from San Francisco Bay Area institutions (the University of California campuses at Berkeley, Santa Cruz, and Davis, and Stanford University) who share a common concern with problems that stand at the intersection of the environmental and social sciences, the humanities and law. The Berkeley Workshop on Environmental Politics has three broad functions:

- ◆ to assist graduate training and scholarly research by deepening the theoretical and methodological toolkit appropriate to understanding environmental concerns in an increasingly globalized world;
- ◆ to bring together constituencies of local and international scholars, activists, and policy makers for transnational conversations on environmental issues; and,
- ◆ to bring community activists and policymakers to Berkeley as Residential Fellows, thus providing synergistic possibilities for developing new learning and research communities.

The Berkeley Workshop on Environmental Politics is funded by the Ford Foundation, the Hewlett Foundation, the Institute on Global Conflict and Cooperation, the MacArthur Foundation, and the Rockefeller Foundation.

THE INSTITUTE OF INTERNATIONAL STUDIES was established in 1955 to promote interdisciplinary research in international, comparative, and policy studies on the Berkeley campus of the University of California. The current emphasis is on the following intellectual themes: peace and security after the Cold War; environment, demography, and sustainable development; development and comparative modernities across regions; and globalization and the transformation of the global economy. The Institute has several major research programs, and provides support to Berkeley faculty and fellowships to Berkeley graduate students. Ongoing research colloquia bring together faculty, advanced graduate students, and visiting scholars for discussions. The Institute hosts distinguished visiting fellows who participate in Institute programs while in residence at Berkeley. Its public outreach programs include lectures, forums, conferences, interviews, and the *Connecting Students to the World* program. The Institute publishes *Policy Papers in International Affairs*, *Insights in International Affairs*, *Currents*, and the Globetrotter website <<http://globetrotter.berkeley.edu>>.