Right Answers, Wrong Questions:

Environmental Justice as Urban Research

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Abstract

Environmental justice, a term that incorporates "environmental racism" and "environmental classism," captures the idea that different racial and socio-economic groups experience differential access to environmental quality. This article explores what previous studies have established about environmental justice as a city-based phenomenon and critiques the focus and methodologies of those efforts within the larger context of urban inquiry. After assaying the concepts that have guided most of the research, we consider the arguments that analysts have offered for the causes of environmental injustice. Our review of the literature reveals significant problems of focus, measurement, specification, and research design. Nonetheless, environmental justice research raises critical concerns about how citizens should be treated and what constitutes a just distribution of collective urban goods in a democratic society. In our view, due consideration of these matters can enlighten urban and environmental inquiry and policy.

INTRODUCTION

The term environmental justice incorporates "environmental racism" and "environmental classism." It captures the idea that citizens of different races and classes experience disparate environmental quality. As the basis for a social movement and as a body of research, environmental justice study has significantly influenced the broader body of environmental scholarship. Perhaps the most noteworthy evidence of its

influence is expansion of the idea of "the environment" itself from narratives about pristine, unspoiled "natural" areas to include even the most densely populated urban spaces (Gottlieb 1993). More particularly, this research has led environmental analysts to include the health and quality of life of those who reside in urban centers in their calculus.

Although urban environments have been (and continue to be) the focus of activism and research, few environmental justice studies have been situated within the larger context of urbanization and urban research. To begin to address this omission, this article explores and critiques existing analyses of environmental justice with the aim of identifying key methodological and theoretical possibilities for improving research on urban environments. Throughout, we seek to uncover strengths as well as weaknesses and, more specifically, to chart a course for study that might lead to a deeper understanding of these concerns as an integral feature of urban research.

Our goal in synthesizing and critiquing the environmental justice literature was not to evaluate whether these studies have satisfactorily established environmental inequalities; such reviews may be found in Szasz and Meuser (1997), Bowen (2001), and Schweitzer and Valenzuela (2004). Rather, we have an interest in the common foci of environmental justice and urban studies in order to demonstrate where the methods and theories of the latter may enrich the empirical analyses of the former, and vice versa. For example, a large urban studies literature has evolved that concerns "spatial mismatch," the comparative space-time *separation* of inner city residents from employment

opportunities that have arisen in the suburbs. Statistical analyses of environmental injustice have similarly studied the space-time *proximity* of residents to potentially dangerous land uses. Given the similarity of measures, a cross-fertilization of methods between these two bodies of inquiry would appear to be both natural and useful yet only one recent study (Houston et. al., 2004) has adopted this approach. In our view, this is just the sort of synergy that can result from a thoughtful assessment of the literature and that makes such an undertaking analytically worthwhile.

Our review is not comprehensive; this literature has become too vast to make such a claim. Instead, we sought to examine the overall trends in this research by exploring a representation of the social scientific analyses undertaken to date. In so doing, we sampled the literature longitudinally to capture changes in study frames and methodologies, and at points in time to capture specific concerns or activities that might prove fruitful for future urban analyses.

We found that much of the statistical research on environmental justice replicates findings about urban injustice offered elsewhere. Disparities among groups had been well established in other urban policy arenas–such as housing, schools, health care, and employment access–by the 1970s and 1980s at the genesis of environmental justice research. We do not wish to dismiss this research as merely duplicative—that is not our point; it is important to quantify such disparities for many reasons, such as to support community activism and to aid in epidemiological inquiry. However, urban social scientists ideally need to grapple with whether “the environment” (as risk, pollution,

amenity, etc.) is just another item to add to the list of social injustices, or whether (and how) urban environments are unique among the constellation of urban injustices—either as a generator or a collector (via space) by which to conceptualize urban systems of injustice. In order to begin to address this concern, we describe the themes from the extant literature on environmental injustice and urbanization to develop opportunities for urban environmental research.

ENVIRONMENTAL INJUSTICE AS URBAN INJUSTICE

A series of court cases in Houston, Texas in the late 1970s prompted sociologist Robert Bullard to study landfills and hazardous materials sites in that city. He found that virtually all of these obnoxious land uses were located in or near African-American neighborhoods and that those communities were targeted repeatedly for the siting of such unwanted facilities (Bullard, 1983). Many studies followed his initial effort and each drew similar conclusions about the location of public nuisance activities (United States General Accounting Office,1983, United Church of Christ Commission for Racial Justice, 1987). Over time, however, this early research was criticized for its failure adequately to reflect land markets and industrial location patterns (Anderton et. al., 1994b, Oakes et. al., 1996, Anderton et. al., 1997, Been and Gupta, 1997, Bowen, 2001).

Matsuoka (2001) has argued that just as researchers began to explore the spatial distribution of the location of toxic waste handlers, grassroots organizers from communities of color were beginning to form coalitions around a variety of issues in addition to toxics distribution, including tribal sovereignty, subsistence (Goldtooth,

1995), access to public services (Bath et. al., 1998, Berry, 1998), and economic inequality (Pulido, 1996b). Growing cooperation among these organizations led to a broader and more inclusive environmental justice agenda fueled implicitly, if not always explicitly, by specific conceptions of equality and liberty.

In a widely cited work, Foreman (2000) argued that a relative lack of specificity in the definition of environmental justice among analysts and activists has been both boon and bane as the environmental justice agenda has evolved. On the plus side, flexible definition has allowed activists to draw on a wide range of issues, thereby enabling transnational and multi-ethnic coalitions to form around environmental issues that concerned communities of color. By exploring the claims of environmental justice activists, researchers have examined a variety of issues relating race and the environment across many contexts. These have included the challenges of indigenous and community knowledge to dominant power/knowledge frames of risk (Austin and Schill, 1991, Beck, 1992, Arp and Bockelman, 1994, Burby and Strong, 1997, Slovic, 1999, Bullard, 2001), community empowerment and self-determination vis-à-vis larger pressures such as globalization and economic restructuring (Di Chiro, 1996, Faber, 1998), and basic physical questions, usually framed in terms of distributive justice, of the differences in pollution and land use across built environments and, therefore, across human populations (Yandle and Burton, 1996, Pastor, 1998, McCleod et. al., 2000, Pastor et. al., 2001, Morello-Frosch et. al., 2001, Mills and Neuhauser, 2001, Pastor Jr. et. al., 2002, Talih and Fricker, 2002, Mennis, 2002, Mitchell and Dorling, 2003, Buzzelli et. al.,

2003, Pastor Jr. et. al., 2004a, Dolinoy and Miranda, 2004, Krieg, 2005, Schweitzer, 2005).

The studies of the physical, built environment have focused on three major questions:

- Do impoverished communities of color bear disproportionately high environmental costs and receive disproportionately low environmental benefits?
- Is race a stronger correlate of proximity to unwanted land uses or scarcity of environmental benefits (such as parks or regulatory enforcement) than income or class?
- What causes environmental injustice?

Statistical research on these questions has followed a trajectory from national studies conducted at comparatively large levels of population spatial aggregation (county or zip code) to studies that examine particular states or, more commonly, metropolitan regions at progressively smaller spatial scales (Census tract or ward level). The early national analyses conducted at the zip code or higher level of spatial aggregation tended to find evidence of disproportionate proximity of the poor to polluting and unwanted land uses (Bullard, 1983, United States General Accounting Office, 1983, United Church of Christ Commission for Racial Justice, 1987, Bullard, 1990a, Bullard, 1990b, Braddock et. al., 1991, Willard, 1992, Bullard, 1993). Subsequent studies demonstrated that environmental justice analyses using Census data were subject to modifiable aerial unit problem (MAUP) issues in which analyses conducted at different spatial scales yielded statistically different results (Cutter et. al., 1996, Sheppard et. al., 1999, Taquino et. al.,

2002). In addition, national studies blurred the considerable historical, economic, and cultural differences that exist among regions.

The state of the art in most environmental justice analysis evolved into metropolitan regional analysis using much smaller spatial units to represent populations, such as wards or Census tracts. Analysts in this literature uniformly interpreted disparity to be a significant, positive relationship between either binary, count, buffer, or plume (area) measures of factories or pollutant levels and minority population per some unit of land. A long series of these studies found strong evidence of an unjust burden of polluting land uses located near Latino groups in Los Angeles (Boer et. al., 1997, Pastor et. al., 2001, Pastor Jr. et. al., 2002,) and in California more generally (Pastor Jr. et. al., 2004b, Pastor Jr. et. al., 2005).

URBAN METHODS AND REPRESENTATIONS

Researchers have sought to standardize quantitative approaches to measuring environmental inequality in order to deal not only with MAUP (via multi-scale analysis) but also ecological fallacy issues (Phillips and Sexton, 1999, Liu, 2001, Louis and Magipili, 2002). Debate over appropriate methodologies, units of analysis, and research design has generated a thriving interdisciplinary body of research that now seeks to move the literature from its initial focus of parlaying a place on the public agenda to an emphasis on establishing a base on which changes in public policy might be justified.

As researchers continue to rationalize methods and measures, it would be helpful to address the distinct context of urban structures, systems, and cultures in empirical

analysis. Although the ability to build coalitions across spatial boundaries between urban and rural groups has aided environmental justice activism, the practices, systems, and cultures of land settlement and development differ significantly between metropolitan and rural regions. Analysis should reflect these differences.

Perhaps the most important of these differences is that "urban" connotes differing intensities of human settlement; that is, how space is allocated to various human activities varies considerably in both concentration and physical form from one urban context to another, even within the same region. These differences have proven crucial to the study of job access, and although research in environmental injustice has begun to produce cluster analyses, these have been undertaken primarily thus far to secure descriptive model accuracy rather than to capture the reasons behind the grouping of industry, people, and hazards. A second major measurement issue pertains to a special form of clustering in urbanization: residential segregation and, in particular, the multiple and intertwined roles that race and income (and the networks, cultures, and resources they signify) play in allocating urban land, and thus, urban environments.

Industrial organization and economic geography

To some degree, the measures and methods employed by those studying environmental distribution have replicated the early associative regression methods that previous researchers used at the national scale: factory location variables and logistic models regressed against a selection of socio-demographic and industrial correlates (Anderton et. al., 1994a, Anderton et. al., 1994c, Bowen et. al., 1995, Oakes et. al., 1996, Sadd et. al.,

1999, Morello-Frosch et. al., 2001). This omission suggests one way in which students of environmental justice have suffered by not drawing upon previously established empirical methods associated with urban analysis. Only recently have environmental justice researchers begun to consider the issue that industrial land uses are likely to be clustered spatially in urban areas (Bolin et. al., 2002, Mennis and Jordan, 2005, Pastor Jr. et. al., 2005).

Studies employing clustered methods have, like previous studies of environmental justice, found evidence of environmental racism and classism, but these results have at times differed from those found using simple logistic regressions that assigned factories to individual tracts. For example, Bolin et.al. (2002) employed four different databases to explore the geographical distribution of risk in Phoenix, Arizona and found that different hazard and cluster measures altered the results of their statistical analyses. With small industry clusters, however, the analytic result may not vary much from basic logistic regression (Pine et. al., 2002, Bonacich, 2005).

Even when environmental justice analysts have employed cluster measures, their models ignore agglomeration economies and other reasons that prompt industrial clusters other than municipal zoning and political expediency. There is a difference between clusters and clustering. One represents a spatial group; the other suggests a self- or co-generating process that results in a spatial group. While cluster measures help overcome the basic measurement problems associated with clustered phenomenon in regional analysis, ignoring the reasons for clustering can lead analysts to miss important aspects of

urban economic geography, and, as a consequence, the related environmental issues. Schweitzer (2005), for example, has demonstrated that the joint clustering of intermodal shippers and manufacturing facilities explained more of the frequency of hazardous materials spills during transport to nearby parcels than simply using industry or shipper clusters alone. It also appears important to understand clustering and industrial concentration at multiple spatial and sectoral scales in order to examine the quality of the working environments of urban laborers (Bonacich, 2005).

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The same problem can hamper environmental justice research that endeavors to characterize residential neighborhoods. Several recent environmental justice studies have highlighted the analytical possibilities for cluster analysis of *both* industrial and residential urban land use. Fricker and Hengartner (2001), for example, tested the co-clustering among and between industry sites and populations with a k-means algorithm to represent changes in demographics according to residential population characteristics. In another study, Heitgard and Lee (2003) used a market segmentation approach to merge

Census block groups into neighborhoods according to common socio-demographic characteristics. Mennis (2002) employed a dasymetric mapping method to group spatial areas by socio-demographic characteristics. All of these methods, with the caveat that the last listed has not yet been tested extensively, would be useful both to analysts of environmental justice and to those examining urban form and residential segregation.

Housing discrimination and residential segregation

Residential clustering, like industrial clustering, raises numerous conceptual issues beyond determining how to represent groups of households or "community" or "neighborhood" in models—though this is itself a complicated and perennial question. How and why households of similar socio-demographic status are clustered—segregated—has been become one of the most heavily researched areas of urban study. An enormous literature has developed that seeks to measure urban segregation by race and by class (Jencks and Mayer, 1990, Bickford and Massey, 1991, Fainstein, 1993, Van Kempen, 1994, Clark, 1996, Nelson et. al., 2004b, Dawkins, 2004, Fosset and Warren, 2005) and to understand why it happens—including the influence of housing discrimination. Some writers (Bullard, 1995, Pulido, 1996a) cite urban segregation and housing discrimination as contributors to environmental injustice.

Neoclassical economic critiques of environmental justice, such as those offered by Been (1994) and Lambert and Boerner (1997), have pointed out that simple correlations of contemporary conditions linking minority populations spatially with unwanted land uses did not alone prove discrimination in facility siting decisions. Rather,

in this view, the impoverished or those who face discrimination in housing markets move near such facilities in order to obtain housing that they both need and can afford. Subsequent analysts have dubbed this the "minority move-in" hypothesis, and it roughly parallels the economic and legal concepts of "moving to the nuisance." Perhaps not unpredictably, the longitudinal research demonstrates a mix of findings about the timing of industrial and residential land use changes, with some studies finding in-migration among families of color near polluting facilities (Lambert and Boerner, 1997) and others that found out migration or both in migration and out migration occurring even in the same region (Pastor et. al., 2001, Talih and Fricker, 2002).

Baden and Coursey (2000) found that in the 1960s, poor, ethnic whites (i.e., Irish and Italian immigrants) accessed employment by occupying the areas near Superfund sites. But by 1990, Latinos had replaced poor whites as the proximate workforce to Comprehensive Environmental Response, Compensation, and Liability Act (Superfund or CERCLA) permit sites. On its face, this trend would seem to suggest that growing awareness of the hazards associated with manufacturing—nearly absent in the 1960s but almost ubiquitous by the 1990s—prompted neighborhood population composition change around the noxious locations, but with differences, both in residence and in occupation, in which groups could move away.

In a historical case analysis of industrial development, Boone and Mondarres (1999) traced nearly 60 years of land development in Commerce, California (a municipality in the Los Angeles region). Commerce is currently 90 percent Latino, but it

was mostly unpopulated when industry began to settle in the area in the mid 1930s. Developers began to pursue residential projects closer and closer to manufacturing facilities as housing markets in the region became progressively more competitive and costly over time, such that Latino residents found their opportunities to secure housing located progressively closer to industry.

So even where migration patterns show in-migration or white flight, there is evidence that the housing opportunities available to families of color are constrained due primarily to racial discrimination in housing markets. However, of the statistical analyses of environmental injustice reviewed, only Hite (2000) has tested explicitly for constrained choices among African Americans seeking housing. Instead, environmental injustice analyses have used either arguments regarding migration (with mixed findings) or descriptive studies that attempt to distinguish whether race is a stronger predictor of facility location or pollution levels than income or class.

In theory, finding race to be a stronger correlate than class in this research would contradict the notion that urban markets are simply sorting impoverished individuals (who may also happen to be persons of color or immigrants) into differing urban environments, equipped with different environmental amenities, according to what they can afford. In practice, however, the ad hoc regression models prevalent in environmental justice research provide weak evidence for the claim that race, independent of income, explains proximity to pollution sources in urban land markets Bowen (2001).

Race is such a pervasive factor in urban and social life that the other explanatory variables common in statistical models of injustice are themselves likely to reflect or embody race-related discrimination at least to some degree. Nonetheless, only a few of the environmental justice studies reviewed here employed an interaction term that might overcome the effect of the separate race and class variables, and none developed an index term that might have stabilized coefficient estimates.

The analytic challenge is to derive a sufficiently nuanced measure of race to be able to sort through income effects, or vice versa, as these relate to the distribution of urban land uses. For decades, urban research on residential segregation and housing discrimination has attempted to establish good quality measures and methodologies with which to study spatial segregation and location choice in markets suffused with racism and discrimination. In our view, this body of work presents a useful source of concepts and methods for measuring income effects in discriminatory markets for students of environmental injustice who want to discern the effect of housing discrimination on allocating urban land (Galster, 1991, Clark, 1996, Gyuorko and Linneman, 1997, Ladd, 1998, Yinger, 1998). These approaches could provide strong evidence of how choice constraints wrought by housing discrimination, combined with other potential causes of environmental injustice (such as unfair zoning or siting practices), contribute to residential proximity to hazards.

Furthermore, it is important to draw a distinction between developing better analyses of housing discrimination's contribution to environmental injustice and testing

the assertion that residential segregation leads to or exacerbates environmental injustice. Although Bullard (1995) and others have argued that urban segregation contributes to environmental injustice, few environmental justice studies have employed the many available summary or index measures of urban segregation, such as the widely used dissimilarity index, spatial segregation indices, or any of the measures discussed or developed by Dawkins,(2004a) or Massey and Denton (1988) that would test the relationship between increased segregation and increased inequality in environmental distributions either associatively or causally. One study, (Chakraborty and Armstrong, 1997) found a slight negative association between segregation and facility proximity for communities of color, suggesting that greater segregation may have an effect opposite to that Bullard (1995) and Pulido (2001) suggest.

Thus, few connections exist between the housing discrimination, residential segregation, and environmental justice literatures even though it appears that each could benefit from insights offered in the others. We have clear empirical evidence of each phenomenon, but scant evidence on how they relate, partially because each is a multi-faceted issue in both theory and measurement. Residential segregation, in particular, can occur for many reasons in addition to housing discrimination, including household self-selection based on a preference to share cultural and community networks. Finally, it is not a foregone conclusion that segregation inherently disempowers communities of color. Community heterogeneity may boost community mobilization and resources in order to influence regional and municipal land use and environmental decisions. Alternatively, it may marginalize. The evidence on this point remains muddy.

PLACE-BASED POWER AND OPPORTUNITY

Researchers have argued that differences in political mobilization and power among communities represent a major structural reason for unwanted facility location. The evidence cited includes industry reports that encourage locating industrial facilities in impoverished communities (Cole and Foster, 2001). Case study analysts have tended to stress differential access to (and influence in) collective decision-making as a primary means by which racism and discrimination result in higher levels of nuisance and environmental risk in minority communities. Wright (1997) has shown that project proponents, frustrated in their attempt to locate the Interstate10 freeway in the Vieux Carré district of New Orleans, next selected the city of Trème, a historic African-American community, for that interstate corridor. In a more contemporary conflict, Shepard and Sonn (1997) described a similar process surrounding the proposed location of the Barney Circle Freeway in Washington, D.C. in an African-American community.

Statistical studies have also examined political activism and power, usually expressed in terms of the costs of and/or the success of neighborhood opposition or environmental activism. These studies have tended to be national in scope rather than metropolitan, arguably due to data limitations. In one study, Hamilton (1993) constructed a model to predict which communities would be successful in preventing expansion of existing toxic facilities and found that the percentage of registered voters in an area correlated closely with successful citizen mobilization to prevent plant extension.

In a second analysis, Hamilton (1995) studied all hazardous waste facility expansions in 156 counties nationwide that occurred from 1987 to 1992 to see whether higher costs associated with neighborhood opposition in affluent communities prompts companies to build hazardous and obnoxious facilities in impoverished areas where such opposition is less likely to occur. Hamilton found that cost variables were not significant predictors of firm behavior.

Allen (2001) modeled the severity of toxic releases as explained by political mobilization variables, such as voter turnout, county revenues and expenditures, membership in mainstream environmental groups (Sierra Club, National Wildlife Federation), geographic region, and attitudinal variables. He found that areas with higher levels of environmental activism have lower toxic releases than do regions lacking or evidencing lower levels of that attribute, and that this correlated with minority residency and lower social class—a finding contradicted by Lester *et. al.* (2001).

Regulatory enforcement and place

In addition to the politics surrounding siting and expansion decisions, environmental justice advocates have argued that differences in political power can influence the vigor with which regulators enforce and monitor environmental regulations. Lavelle and Coyle (1992) offered this view in a much-publicized *National Law Journal* article. These authors argued that penalties for environmental violations were higher in white communities than in communities of color. However, this study has been criticized extensively, both on grounds of its methodology and purported selective use of data (Atlas, 2001, Lynch et. al., 2004, Ringquist, 1998).

Using the full dataset of civil penalties against environmental violators filed under the Clean Air Act, the Clean Water Act, and the Resource Conservation and Recovery Act, Ringquist (1998) found that penalties are not significantly smaller in communities of color than elsewhere. Atlas (2001) similarly found no significant differences among groups in statistical tests or regression models of penalty levels. His article and a response from Rinquist (2001) offered an extensive overview and critique of the questions, data, and methods of inquiry associated with studies of unequal enforcement. Finally, other authors have explored how state and local reliance on industry and varying socio-political cultures factor into the determination of penalties for violations (Lynch et. al., 2004, Mennis, 2005).

Virtually all of these statistical studies suffer from the same problems of scope and scale that beset early studies of environmental goods distribution. Decisions about particular land parcels, once a federal permit has been secured, can vary widely even within the same metropolitan region, let alone states. Unfortunately, most of the readily available data on levels of environmental activity among residents are not available or often not useful at small levels of spatial aggregation even though it may be that such residents congregate within one metropolitan region or municipality. Even so, the decisions to set, monitor, and enforce environmental regulations vary widely by state. The particular cultural and political climate of a state may affect the possibilities for community activism within it. The overlapping and multi-jurisdictional nature of these

environmental decisions pose a challenge to urban analysts who would like to capture differences in political influence in their models (Lester et. al., 2001).

As a result, case studies at the regional level have provided more evidence of political marginalization as an underlying cause of environmental injustice as enacted through discriminatory siting and enforcement by both government and industry (Robinson, 1994, Roberts and Weiss, 2001). The case study literature concerning environmental justice also provides many examples of how communities draw on their resources and build coalitions with larger networks of impoverished communities and communities of color to oppose local environmental and land use decisions that place unwanted facilities near them, or alternatively, to make sure that access to parks and amenities near their communities appear on the policy agenda (Cole and Foster, 2001). The evidence suggests that mobilized and aggrieved populations have found ways of working territorially based politics into greater scales of influence by concomitantly drawing on political action based on both place and identity.

However, questions remain about the broader implications of such organizing on improving group-level rather than individual or neighborhood-level outcomes in urban environmental distribution across a region. This may not be an issue if the ultimate goal is community self-determination rather than a change in the unequal distribution documented in previous analyses—a prospect that raises its own concerns when one examines a related mechanism by which race and class are alleged to structure environmental and land use decisions: environmental blackmail.

Environmental blackmail and the desire for community economic benefits

Bullard (1992) coined the term "environmental blackmail." In this view, disadvantaged communities become so desperate for local jobs or revenues to provide badly needed employment and services that they are willing to accept any type of economic activity regardless of its implications for environmental quality.

Activists have highlighted the willingness of some impoverished Native American tribes to host hazardous, toxic, or even radioactive material on their reservations (Mankiller,1991, Churchill and La Duke, 1992, Gedicks, 1993, Johnson, 1994). Nonetheless and contrary to this claim, as objections to proposed (or expanded) facilities on Native American lands have grown, so has dissent concerning those location choices among tribal groups (Goldtooth, 1995).

This form of conflict has not been isolated to Native American communities. Roberts and Weiss (2001) examined the conflict that erupted over the proposed location of a Shintech facility, a subsidiary of Japanese diversified chemicals corporation Shin-Etsu Chemical Co., in St. James Parish, Louisiana. Two different grass-roots environmental organizations emerged in response to the proposal: one sought to stop construction of the facility while the other supported it as a source of jobs for nearby residents.

In another case study, Pellow (2002) analyzed how decades of discriminatory zoning and transportation construction impoverished the city of Robbins, Illinois. Pellow examined the case of the Robbins Incinerator. Robbins has the longest history of all-African-American municipal government in the northern U.S. When the possibility of building an incinerator in their community arose, elected officials were presented with the opportunity of significantly enhancing the city's revenue. As the decision process progressed, environmental justice organizations from outside the community attempted to organize residents against the incinerator. The ensuing divisions in the citizenry reflected the latent tensions in the environmental justice movement among such issues as neighborhood self-determination and community-wide claims, as well as environmental, civil and economic rights.

CRITIQUE

Taken as a whole, the environmental justice literature demonstrates that numerous factors foster the frequent proximity between communities of color and perceived hazards. Researchers over the past two decades have offered many reasons for the occurrence of environmental injustice, including outright discrimination and racism during facility siting and environmental enforcement decisions, encroachment by residential land uses on industry, white flight, and growth-machine politics. But these same phenomena—white flight, differences in political power, economic choices—have long been studied as reasons for the unequal distribution of virtually all urban goods, including education, access to jobs, housing opportunities, health care, transportation, and decent grocery stores. The same might be argued concerning locational controversies

regarding the concentration of social service agencies in low-income and minority neighborhoods.

Thus, the appropriate analytic question may not be whether and why environmental quality is unjustly distributed—at least as understood as being evenly available to all population segments—but why anyone would have thought that it would be when so little else in urban spaces is distributed that way. Given the evidence about the multiple, self-reinforcing contributors to urban injustice, the issue of what causes environmental injustices—or, more precisely, what causes the disproportionate concentration of unwanted land uses near residential areas occupied by communities of color—may in fact be less interesting than exploring whether and in what ways the factors that contribute to urban injustice operate differently (or fail to do so) with regard to environmental quality than in creating disparities in access to, or the quality of, say, schools or housing.

Put differently, the question may be whether existing theories of urban inequality adequately explain environmental land use issues. The growth machine hypothesis as recently applied by Roberts and Weiss (2001), for example, was first offered almost two decades ago and has inspired volumes of empirical research, as has white flight, as have many of the arguments about differences in political power that have underpinned research concerning conflicts over environmental justice. The issue is whether environmental justice studies need to replicate that research to reveal something new about individual and institutional actions with regard to the environment as a symptom of

how racism and classism work in cities or whether such is occurring simply because the work of environmental justice researchers has not been well informed by previous urban theory. If the latter is the case, we risk decanting old wine into new bottles by replicating what is already well known about the dynamics of urban politics. If the former is the case, those interested in urban environmental injustice must develop new theory in addition to documenting extant conditions.

A FRAMEWORK FOR URBAN ENVIRONMENTAL RESEARCH

In framing some of the questions for environmental justice research in order to heighten its application to urban environments, it may be helpful to ask just what is unique about environmental difficulties as urban problems—concerns that relate to the material and social culture of large human settlements.

Disparities in environmental quality are treated in much of the environmental justice literature as either a cause or a precursor of other forms of urban inequality. For example, if the health problems in communities of color at the group-level reflect health challenges at the neighborhood scale, those risks and maladies also can contribute to educational disadvantage as less healthy children miss school more often and are less able to perform at their best when they do attend (Pastor Jr. et. al., 2004a). In other words, environmental disparities may be the root cause of other problems. This would seem to create an empirical justification for viewing environmental quality as antecedent to other manifestations of injustice, whether in an urban context or otherwise. When viewed in this light, a major contribution of existing distributional analyses of

environmental injustice has been to begin formalizing a regional understanding of where pollution and dangerous land uses are relative to impoverished communities as a baseline for further public health inquiry and, depending on the results, for understanding improved environmental health as a necessary precondition to social justice.

Besides the health concerns common to both urban and rural populations, urban contexts pose an important set of theoretical and empirical problems for those who are interested in justice and inequality. The "right" questions for environmental injustice analyses specifically as urban research concern the justice issues related to urbanization that Harvey (1996, 2000) has characterized as linked to "uneven geographic development." Irregularity of development means that land use changes incrementally and incompletely across space in urban areas by means of specific human and ecological interactions. These exchanges and relationships raise questions that can push urban environmental analysis toward a closer focus on environments as urban phenomena.

We next outline three apposite questions that may help to develop research in this domain including: What are urban environments and their associated entitlements, if any? How do urban form and the material culture of cities affect urban environments, their distribution, and vice versa? How do urban and supra-urban tax, land, and regulation policies (or the lack thereof) affect urban environments and environmental equity? We discuss each briefly in turn.

What are urban environments and the entitlements thereof?

According to its proponents, environmental justice research came as a "discovery" because previous generations of analysts viewed environmental issues through a privileged, (that is to say, "white" perspective). These individuals lived predominantly in suburban environments and they typically reified the dichotomies between rural "unspoiled" nature in need of protection and urban places as already lost or spoiled and therefore unworthy of protection (Gottlieb, 1993). Far from being the public good assumed by environmentalists and the early rounds of United States environmental legislation, the environmental justice literature and movement established that environments are excludable. Even global environmental threats, such as climate change, portend distinct spatial distributive consequences from which one may be included or excluded (Bohle et.al.,1994, Cutter, 1995, Adger and Kelly, 1999).

Contemporary theorists of urban ecology and sustainability have tended to respond to the problem of uneven geographic environmental quality by proposing to make that good ubiquitous (Beatley, 2000). However, it is unclear how this will happen if previous rounds of law and regulation, designed to do the same thing, have not done so adequately. Some analysts have responded to this dilemma by proposing such design-based strategies as the New Urbanism, low-impact cluster development, transit-oriented development, or variants of these approaches (Duany et. al., 2000, Calthorpe et. al., 2001). These strategies promote sustainable practices in individual urban developments and endeavor to induce environmentally positive behavior (such as not driving) once a development is constructed. In this vision, the built environment of cities will be remade

over time via a mosaic of these developments, resulting in an ecologically sensitive and socially positive urban environment for all groups (Beatley, 2000).

Missing from the discussion of these development options has been an empirical understanding of just how long these practices would take to make substantial improvements to overall environmental quality and whether such steps actually will decrease, rather than increase, disparities in the quality of urban environments among spatially disparate groups. Moreover, the discourse of post-industrial cities notwithstanding, thousands of hazardous and toxics handling industries continue to thrive throughout the world and show few signs of going out of business. Because they rely on rebuilding and reforming the built environment, theories of urban sustainability and justice are not explicit about what policy action to take in the short term to deal with persistent noxious industries, or even aesthetically unappealing greener industries, and their effects on residential populations.

And while it may be true that environmental thought for many years prior to the advent of research on environmental justice ignored or devalued urban environments in favor of nature conservation, urban designers have long sought to incorporate environmental health and aesthetics into urban spaces. From Patrick Bel Geddes and his “salubrious suburbs” to Ebeneezer Howard and his “Garden Cities of Tomorrow” to Lewis Mumford’s vision of an organic modern city built on the medieval model, influential planners, architects, and urban designers since nearly the advent of the industrial revolution, have advocated and in some cases built, urban settlements intended to serve

human and environment health. Many of these efforts may seem both quaint and misguided in retrospect, but they also show that the idea of greening the city is hardly new. Our "garden cities" of the past (such as Radburn, New Jersey) are now the very expensive, very exclusive, historic enclaves of the present. The same is true of many, if not most, new environmentally themed urban developments (such as Reston, Virginia and Columbia, Maryland) because they are scarce and therefore prized in urban land markets. It is unclear both in theory and in practice how incremental or fragmented ecological urbanism addresses environmental disparities if scarcity cannot be assumed away in the short term, a concern raised and explored by Harvey (2000). Without assessment of the spatial and temporal distribution of the hoped-for environmental spillover effects from these practices in the short term, the consequence may be an "environmental trickle-down" policy that serves neither distributive justice nor broad-scale environmental goals. If that is indeed the case, urban and environmental theory should seek to identify precisely which communitarian claims to environmental quality make up a baseline of local environmental protection and what institutions and spatial policy practices are most likely to work systematically to protect those claims in both the near and long term.

How do urban form and the material culture of cities affect urban environments, their distribution, and vice versa?

For many researchers, segregation enabled through suburbanization created, or at least exacerbated, the distributive inequities of urban spaces. Like advocates of sustainability, an intellectual alliance has formed between those who campaign against injustice and those who advocate for a comprehensive package of place-based land use,

transportation, and regulatory reforms under the rubric of "compact cities." The ways in which dense development is purported to advance social equity include:

- Cheaper and easier access to necessities and amenities by inexpensive means such as walking, cycling, and public transit (Calthorpe, 1993, Goodchild, 1994, Bullard et. al., 2000);
- Less social segregation by race and class due to closer proximities and more mixing in public space (for a partial review of these issues, see Talen, (2006);
- Broader public access to parks and green space due to publicly provided parks rather than privately owned yards (Duany et. al., 2000, Calthorpe et. al., 2001);
- Better urban environmental quality for central city residents (e.g., less air, water, and noise pollution) due to fewer cars (Chen, 1997);
- The promotion of "place diversity" as a social and environmental goal per se (Again, see Talen, (2006).

In theory, compact cities with residents of all groups chock-a-block would exist at a scale so that all and sundry could enjoy the same environmental quality. That is, the physical environment, because is it excludable across the landscape, is one trait of urban inequality that propinquity might improve by putting individuals of all races and classes in the same area rather than allowing some to appropriate better environments and thereby, intentionally or not, exclude others from them. Yet, many dense cities have severe environmental problems, just like their less compact cousins. Such empirical evidence as exists is mixed about whether dense development necessarily leads to any of the desired environmental or social outcomes purportedly associated with it. In fact, for

each major positive assertion about compact development, there exists a counterclaim that denser urban environments will make housing more expensive, increase auto congestion, or decrease individuals' access to open space (Gordon and Richardson, 1997).

The environmental justice literature includes a critical mass of studies conducted on Los Angeles (particularly) and Atlanta, two cities equated in popular parlance with low-density development or sprawl. However, while many lament the environmental problems associated with sprawl, it is unclear that places like Los Angeles or Atlanta are less just—defined in terms of land use or population distribution patterns—than regions like Detroit or Philadelphia (which actually may score higher on segregation indexes), or whether the field has a research bias simply because so many productive scholars use Los Angeles, as a study region (Pastor et. al., 2001, Lejano and Iseki, 2001, Morello-Frosch et. al., 2001, Pastor Jr. et. al., 2002, Houston et. al., 2004, Pastor Jr. et. al., 2004a, Pastor Jr. et. al., 2004b, Schweitzer, 2005, Lejano and Smith, 2006).

More intercity comparative research could help. Burton (2000) has examined the connections between the distribution of urban amenities and compact development. Her models found the strongest correlation between public transport use and compactness, but she also found significant relationships between density and lower levels of racial segregation. On the negative side, she found that concentration was also associated with less living space, less affordable housing, increased crime, and lower levels of walking and cycling overall. Similarly, density was associated with better economic performance but lower environmental quality and social equity in a study of 92 Taiwanese cities (Jen-Jia and Yang, 2006).

It also may be that metropolitan-scale growth, fueled by a rapid urban population rise internationally, challenges the notion of more defensible distributive outcomes via propinquity. Spatial patterning in many other developed nations is quite different from that in the United States and United Kingdom, and before even hazarding hypotheses concerning whether specific land use aggregations and juxtapositions are more or less just, analysts should be deeply familiar with what is commonplace in the nations being studied. The logic in favor of such a cautious approach appears ineluctable; a major share of the populations of these nations is, by definition, quite vulnerable. Second, peri-urban development in many developing nations has created different forms of agglomeration economies in the urban centers of those countries and different living patterns as well. Those realities will doubtless structure the utility of specific environmental justice methodologies so far developed, but they do not render them moot in our view. Last, massive agglomerations of very poor populations with insufficient potable water and sewerage infrastructure, typical of many major urban centers in developing nations, already constitutes what many might label as injustice on a massive scale. And the roots of those conditions lay well beyond the specific pattern of land uses found within a given urban morphology. This fact raises afresh the provocative question of the appropriate scale at which to seek to examine claims of environmental injustice: what may be desirable and workable in Portland, Oregon may not be practical for Mumbai, India for reasons of scale as much as culture.

The literature on urban form, urban environments, and the distribution of environmental quality among city residents tends to assume a one-way relationship between those characteristics. That is, urban form dictates the quality of urban

environments, especially with regard to air quality. But land characteristics can determine the scale and density of urbanization or redevelopment; the presence of lakes, mountains, and other geographic features influence the shape of metropolitan form. Lang (2003) has demonstrated that development patterns in the western United States differ substantially from those in the east partially due to environmental factors such as aridity, surrounding mountains, and the presence of federal lands unavailable for development. Using remote sensing, Burchfield et.al. (2006) found that ground water availability, temperate climates, and rugged terrain have all contributed to "sprawl" (as measured by an index) along with early public transport availability and job decentralization.

How do urban and supra-urban tax, land, and regulation policies (or the lack thereof) affect urban environments and environmental equity?

Some have proposed a national law to establish a civil right to environmental protection in the United States (Hasler, 1994). This stance assumes that federal attention and policy would help overcome the problems of local government capture and provide protections against environmental racism analogous to those obtained via the Civil Rights Act of 1964. Yet attaining an optimal mix of federal involvement and local engagement can prove elusive in both theory and practice in environmental and civil rights protection. The debate over the appropriate balance of power and authority among jurisdictions in our federal system is a hardy perennial.

On the one hand, environmental justice activism and research has highlighted the need for community empowerment as a means of using local and embodied knowledge of environments to create systems of community-based regulation of land use and

environmental decisions. On the other hand, fragmented and decentralized decision-making in environmental and land use regulation may itself prove to be an issue when the means for financing local or regional government activities prompts inter-jurisdictional competition concerning land or retail taxes. This problem may be especially severe, as Pellow (2002) has observed, in light of other longstanding urban geographic inequalities, such as transit provision.

Finally, claims for increased public and community services along with environmental quality, such as those offered by Sandweiss (1998) and Harvey (2000) among others, occur within an anti-tax, anti-regulatory culture. One area for future direction for research on environmental inequality would quantify the connections between the fragmented, often inadequate, provision of public services across urban landscapes and existing methods for collecting and distributing revenues for those services. Further, it would be helpful to examine the possibilities for restructuring formulas and fiscal equalization across services both at the regional and the supra-regional level for services in addition to schools—with the aim of changing jurisdictional incentives and protecting vulnerable places. Such a research agenda would seek to identify the conditions necessary to secure increased community and governmental cooperation aimed at attaining more equity in urban land use choices.

CONCLUSIONS

We have argued that the environmental justice literature may be criticized on theoretical and methodological grounds and that these shortfalls limit its application to urban studies. These concerns include:

- Insufficient empirical attention to the role that agglomeration economies and residential segregation play in environmental quality;
- Insufficient attention to isolating race effects from income effects in urban land markets and poor controls on income variables when it has been tested;
- Too great a willingness to presume-single cause explanations for how race affects the complex outcome that is a community's residential living patterns and urban distribution.

While these appear to be reasonable criticisms, our concerns about the direction of the environmental justice literature as a separate form of urban studies run deeper. This literature has indeed identified many important answers for urban inequality while too often asking the wrong questions about environmental injustice as a symptom of urban inequality, partly because research in environmental injustice has not drawn extensively on the methods available for urban analysis. We have suggested the reverse is also true.

In addition, empirical research on environmental justice could develop a more nuanced understanding of the outcomes of urban governance at multiple analytic scales. Any given distribution of noxious land uses may or may not constitute a desirable outcome depending upon a host of other factors and issues in a given community. Democratic governance suggests that both individuals and communities are likely to

debate different understandings of equality and environmental quality and there is no reason to suppose that they will settle on one conception once and for always (Baden and Coursey, 2000). Failure to integrate urban environmental problems into the larger frame of urban studies, and vice versa, portends that both bodies of scholarship will continue to identify many important answers while continuing to ask the wrong questions.

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