Bourdieu does environmental justice? Probing the linkages between population health and air pollution epidemiology

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Abstract

The environmental justice literature faces a number of conceptual and methodological shortcomings. The purpose of this paper is to probe ways in which these shortcomings can be remedied via recent developments in related literatures: population health and air pollution epidemiology. More sophisticated treatment of social structure, particularly if based on Pierre Bourdieu's relational approach to forms of capital, can be combined with the methodological rigour and established biological pathways of air pollution epidemiology. The aim is to reformulate environmental justice research in order to make further meaningful contributions to the wider movement concerned with issues of social justice and equity in health research.

Keywords: Environmental justice; Population health; Air pollution epidemiology

Introduction

Environmental justice research has coalesced around concern over the societal distribution of environmental hazards and their health effects. The following working hypothesis underlies this literature: health hazards are disproportionately, or unjustly, distributed among social groups, particularly the poor and visible minorities. However, after 2 decades of research, the literature has been stalled by persistent methodological and conceptual problems, casting significant doubt over what, otherwise, is a theoretically intuitive working hypothesis. The purpose of this paper is to probe ways in which environmental justice research can move forward with recent developments in related literatures, namely population health and air pollution epidemiology.

Air pollution epidemiology has come to incorporate social stratification as a health effect modifier, usually based on single variables such as educational attainment. This has occurred alongside a new intra-urban focus, whereby exposure assessment and health effects are being examined at finer (neighbourhood and individual) spatial scales. At the same time, population health has long debated, and now arguably refuted, the use of single variables...
to represent social stratification. Treatment of health and social status gradient has become much more sophisticated than it was in the past, particularly recent incursions using the social theories of Pierre Bourdieu. I argue that if combined, the relative advantages of these cognate literatures can help to mount a reformulated environmental justice research agenda.

This paper first describes the environmental justice literature in order to highlight its principal shortcomings. This is followed by a discussion of recent developments in air pollution epidemiology and population health, and means by which these literatures may be merged. By mounting a new environmental justice research framework, this agenda can become a meaningful constituent of the wider movement toward social justice and equity in health.

**Environmental justice as unwitting interlocutor**

*Limitations of environmental justice research*

Amidst increasing calls for equity and social justice1 as priority themes in health research (Evans and Kantrowitz, 2002; IOM, 2002; Hofrichter, 2003; Macinko and Starfield, 2004), the environmental justice agenda has begun to spread across the developed world. At the same time, there are repeated calls to integrate population health and environmental epidemiology (Krieger, 2003). “It is axiomatic…,” writes Eyles, “…that integration within a population health framework points to the need for shared responsibility to develop ways of knowing and tools to understand, explain and manage health concerns and to enhance health of populations in specific environments” (Eyles, 1999, s33). Indeed, we have seen recent arguments for a merger focussed specifically on air pollution exposure and health effects (O’Neill et al., 2003; Bell et al., 2004). Can environmental justice bring these priorities together? The argument in this paper is ‘yes’, if we incorporate advancements in cognate fields.

The conceptual appeal of environmental injustice has resulted in a massive, though internally problematic literature. Sparked by civil libertarian and minority rights movements in the US, this agenda flies in the face of consensual environmentalism to uncover systematic disadvantage by socioeconomic position (SEP),2 a disadvantage usually accruing to the poor and to African- and Latin-Americans. The aim is to expose the nature and extent of any disproportionate exposures to health hazards, ranging from toxic waste sites and air pollution to the land use siting process and environmental decision-making (Hamilton, 1993; Chakraborty and Armstrong, 2001; Maantay, 2003). The term ‘disproportionate’ refers to the hypothesis that disadvantaged communities ‘consume’ the disbenefits of economic growth and development but do not share equally (proportionately) in the benefits such as employment and rising living standards.

Following a number of foundational studies (e.g. UCC, 1987; Bullard, 1990), two types of empirical research have ensued (Cutter, 1995): ‘process’ studies of the creation of unjust health hazard exposure, usually addressed historically; and ‘outcome’ studies of the extent of injustice usually located at single points in time. In addition, we have also seen a number of conceptual treatments of such notions as equity and justice (e.g. Pulido, 1996; Holifield, 2001). The focus here is on outcome studies, i.e., cross-sectional cases located at a single point in time that examine the unequal spatial distribution of hazards. Fig. 1 is a schematic of the environmental justice conundrum, indicating that as SEP rises, the corresponding exposure to environmental health hazards among individuals and neighbourhoods diminishes. Although we may formalise the notion of disproportionate exposures in this simple manner, and although the research agenda has begun to take shape in Australia, Canada, the United Kingdom and elsewhere (Jerrett et al., 2001; Buzzelli et al., 2003; Lloyd-Smith and Bell, 2003; McCleod et al., 2000; Brainard et al., 2002; Mitchell and Dorling, 2003), the environmental justice literature continues to draw a range of criticisms.

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1Notions of ‘equity’ and justice’ have quite disparate meanings and substantive foci across disciplines. Recent calls for equity and social justice in health research encompass environmental health hazards as one of a number of wider social structural relations. Environmental justice research is conceptually similar to environmental economics, though ‘justice’ flags a particular emphasis on health hazards and their effects.

2As discussed by Lynch and Kaplan (2000, p. 14) SEP is used as an all-encompassing notion in social epidemiology, including “…social class, social stratification, social inequality, social status, and socioeconomic status.” SEP is also meant to flag the significance of race more so than these other measures including the commonly used socioeconomic status (SES). See also Krieger et al. (1997).
Data limitations have resulted in two principal problems: exposure misclassification and aggregation/scale effects. Absence of real environmental monitoring data has resulted in a proliferation of exposure surrogates such as buffering and proximity techniques. Symptomatic of this continuing problem is the growing list of papers validating and/or refining surrogates of hazards exposure in the absence of monitoring (Glickman, 1994; Chakraborty and Armstrong, 1997; McMaster et al., 1997; Sheppard et al., 1999; Cutter et al., 2001; Bolin et al., 2002; Harner et al., 2002). To be sure, monitoring data are not entirely absent from the literature, but the application of surrogates has not proceeded with due consideration of either assumptions or local circumstances (Buzzelli and Jerrett, 2004; Maantay, 2002).

Scale effects also raise the uncertainty of conclusions because associations are subject to the ecological fallacy—the arrangement of alternative levels of association at different spatial scales of analysis. Anderton et al. (1994) fired a significant salvo by demonstrating that the strong spatial association of minority communities and toxic waste sites found in an early flagship study (Bullard, 1990)3 changed at different spatial scale of analysis. Anderton et al. (1994) fired a significant salvo by demonstrating that the strong spatial association of minority communities and toxic waste sites found in an early flagship study (Bullard, 1990) changed at different spatial scale of analysis. Together, exposure misclassification and scale effects have resulted in a blanket of doubt wrapped around nearly two decades of research (Bowen, 2001). To be sure, the tall stack of case studies supports the notion that environmental injustice exists. But how, for example, should public policy respond to any particular study?

Finally, a broader blind spot exists. Without monitoring data, health outcomes may only be assumed but never tested directly. In a recent literature search by the author using the ISI Web of Science and Geobase databases, 78 studies dated between 1995 and 2003 had the term ‘environmental justice’ located in their titles and/or abstracts: 41 could have tested for a health association (as to say they were outcome studies), but none did, and only 9 (12%) of these discussed health implications at all.4 The lack of attention to health is remarkable given that health impacts are one of the principal rationales for undertaking environmental justice research. One exception, the work of Harner et al. (2002), makes use of relative risk ratios but is again limited by the absence of monitoring and health data; proxies are used instead. Alongside methodological scepticism, then, is the unanswered question of health effects.

How are we to move environmental justice research forward? In spite of the problems above, it bears repeating that the focus of environmental justice research is the societal distribution of the burden of hazards and their impacts. Equity and social justice are therefore foundational to the particular question of the distribution of environmental health hazards, especially as these occur across space. In this context, we find meaningful intersections with recent developments in air pollution epidemiology and population health.

Recent developments in air pollution epidemiology

Amidst rising concerns over environmental health hazards and their effects (Eyles, 1997), air pollution has arguably become a core theme in epidemiology (Pope et al., 2002; Burnett et al., 1998). Air pollution health research seeks to uncover the impacts of criterion pollutants such as fine particles, ozone, carbon monoxide, sulphur dioxide and nitrogen oxides. Impacts range from morbidity and mortality of lung cancer, impairment of lung function, myocardial infarction and reproductive disorders to the associated hospitalisations and health care costs (Brunekreef and Holgate, 2002). However, the recent discovery of faulty modelling algorithms (Knight, 2002) underscores both grow-

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3This study, and much of the literature, would normally refer to ‘environmental racism’ to flag the priority of race over other measures of socioeconomic position. ‘Environmental justice’ is used inclusively here (see Buzzelli and Jerrett, 2004a).

4See http://www.geog.ubc.ca/~7ebuzzelli/pwias/Mike_Buzzelli/proceedings.html).
ing criticism of traditional approaches and interest in alternative study designs. Major cohort studies—typically regarded as ideal—have been criticised for non-representative samples (Gamble, 1998), potential ecologic confounding (Lipfert and Morris, 2002), short follow-up time for assessing effects (Vedal, 1997) and potential spatial autocorrelation (Krewski et al., 2000; Finklestein, 2002). All of this, some argue, may influence the size and significance of air pollution health effects (Burnett et al., 2001). In this context, two emergent trends represent potential connections with, and support for, environmental justice.

First, alternative study designs have arisen, many based on finer spatial scales of analysis. Setting the standard over the last twenty years is observational time-series analysis. (Evans et al., 1984; Zidek and Bates, 2002). These typically use a single regional monitoring station to assign the same exposure to all residents of that region to examine temporal correlations of morbidity and mortality with acute events, or pollution spikes. But the ‘new science’ of human exposure assessment (Ott, 1995) has diversified to include the intra-urban (i.e. spatial) variability of pollution based on networks (not single) of monitoring stations, proximity to roadways and personal monitoring (Brauer et al., 2003; Hoek et al., 2001; Briggs et al., 1997; Brunekreef et al., 1997). Even the ecological study design has re-emerged: usually maligned for potential ecological fallacy (see Morgenstern, 1995; Wakefield, 2001), Ayers (2002) notes that cross-sectional ecologic studies of chronic exposure have proven effective, inexpensive and timely. As Bates and Vedal (2002, 111) note in their review of air pollution epidemiology, “Although it is easy to raise objections to one particular type of study design, it is difficult to deny the impact of the studies considered as a whole”.

Accompanying these trends is the growing interest in socioeconomic confounding and/or effect modification (e.g. Weed and McKeown, 2003). For example, some flagship studies have shown that individuals with low education are most susceptible to health effects of ambient particulate matter (e.g. Krewski et al., 2000; Pope et al., 2002; see O’Neill et al., 2003 for an overview). This pushes epidemiology past individual risk factor epidemiology to a broader concern with social stratification and equity issues (Coughlin, 1996). Use of variables such as educational attainment necessarily brings air pollution epidemiology into contact with population health. How this interface is developed in future can pay dividends not only for air pollution epidemiology but also for environmental justice.

Incorporation of SEP and use of finer spatial scales provides a direct link with environmental justice. From the environmental justice literature we know that proximity to hazards is influenced by a host of (often debated) social processes including housing market dynamics and discriminatory real estate practices (see Been, 1993; Pulido, 2000). The net effect is that disadvantaged communities usually constitute the urban spaces of greatest risk. Air pollution epidemiology is increasingly concerned with the social composition of these spaces, leading to the basic question: does socio-spatial stratification not only influence exposure to health hazards but also modify their impacts? In their call for a merged air pollution–social epidemiology programme, O’Neill et al. (2003) pose the same question. For a merger to be meaningful, however, social stratification must receive critical treatment. Consider the following conclusion of the influential Health Effects Institute’s landmark Reanalysis Project:

The Reanalysis Team did find evidence of variation in risk among population subgroups: the most important was that the relative risk of mortality association with fine particle air pollution decreased with increasing educational attainment…Although the interpretation of this finding is unclear, it is possible that educational attainment is a marker for socioeconomic status, which in turn may be correlated with exposure to fine particle air pollution (Krewski et al., 2000, p. 232).

For our purposes, the tentative interpretation is just as important as the finding itself. For environmental justice to advance, treatment of social structure cannot rely solely on simple markers of SEP.
Multiple forms of capital

While recent developments in air pollution epidemiology open a window on disease aetiologies at finer spatial scales, how the effects are associated with social structure requires careful consideration. Theory and empirical treatment of social structure is central to population health, especially in recent work applying the insights of the social theorist Pierre Bourdieu. These interpenetrating benefits present two important opportunities—both necessary I argue—for advancing environmental justice.

First, a focus on a specific health hazard allows us to address biological pathways between social structure and a population’s health. This is an important connection not only because environmental justice research has failed to analyse health effects but also because biological pathways continue to be debated without consensus within the population health literature. The latter literature was founded initially on the supposition that social structure fosters differential health via psychoneuroimmunology; that the immune system is somehow in dialogue with one’s social environment and that social stressors in particular manifest as ill-health (Mustard and Frank, 1991). Accordingly, psychosocial stress and stress response models have flourished as explanations of the social patterning of disease (Lynch et al., 2003; Wilkinson, 1996) but the biological linkages are still regarded as tenuous (Berkman and Kawachi, 2000; Brunner, 2000).

Indeed, SEP itself has been labelled a ‘cause’ of health states. While the association is irrefutable given the mountain of evidence accumulated to date, this is not an explanation of how ill-health manifests biologically (cf. Link and Phelan, 1995; Kaplan and Lynch, 1997). Within environmental justice, the relationship has

…two necessary prerequisites—namely that “socioeconomic status (SES) is associated with environmental quality and, in turn, environmental quality affects health. This is not equivalent, however, to the conclusion that SES effects on health are caused by differential exposure to environmental quality. There are few if any data directly testing this proposition. What is necessary…is that the SES health link is mediated by environmental quality (Evans and Kantrowitz, 2002, 303–304).

Within air pollution epidemiology “few studies have looked carefully at how these factors interact with one another” (O’Neill et al., 2003, 1862). The opportunity for environmental justice researchers to incorporate all of these factors and make new contributions therefore exists.

A second opportunity arises from population health’s more critical treatment of social structure. While air pollution epidemiology now routinely includes SEP, treatment of social structure has been mostly undynamic. Viewpoints on the association of ‘the social’ with health include level of economic development, economic growth trajectory and political organisation. The influential work of Wilkinson (1996) both underscored and further popularised the view that social structure and health are related by the nature, and magnitude, of social inequalities (Feinstein, 1993; BMJ, 1996; Bartley et al., 1998; Wagstaff and van Doorslaer, 2004).

However, how inequality and social structure are theorised is subject to much disagreement and debate (e.g. Hayes, 1994; Poland et al., 1998; Raphael and Bryant, 2003), and there is a rising consensus that use of single variables as proxies for social structure is insufficient (e.g. Duncan et al., 2002; Lynch and Kaplan, 2000). For example, income, education and occupation can be highly inter-correlated and have strong associations in a range of morbidity and mortality studies but each represents trade-offs. Income captures the health status gradient best in its inter-quartile range but does a poor job of explaining variations at the extremes. Also, income measured at one point in time is not necessarily representative of the life course, nor can we assume a strong correlation with wealth (Davey Smith and Hart, 1997).

From this ferment has grown recognition that social structure is a complex web of intersecting forms of capital, each implicating health separately and in various combinations (Oakes and Rossi, 2003). Income, education and occupation are the basic ingredients of economic capital while social integration and trust are constituents of the burgeoning social capital health literature. According to Kawachi (2000, 90):

…the process of social stratification takes place along a vast array of dimensions, including (but not limited to) political power (household authority, workplace control, legislative authority), cultural assets (privileged lifestyles, high status consumption practices), social assets (access to social networks, ties, associations), honorific status (prestige, respect, “good reputation”), and
human resources (skills, expertise, training). A major objective of social epidemiology [qua population health] is to elucidate the patterning of health through differential access to the diverse forms of capital—not just economic capital but also social, human, political, cultural, and symbolic capital.

Arguably, the most sophisticated integration of various forms of capital is found in sociological health research that uses the theories of the late Pierre Bourdieu (Bourdieu, 1985, 1986; Gatrell, 1997; Frohlich et al., 2001). Bourdieu’s relational framework seeks to uncover the complexity of social stratification by classifying the various forms of capital into a ‘social space’. Individuals and communities are endowed with various forms of capital, each in different amounts, constituting their position in social hierarchy. “Bourdieu has demonstrated in exquisite detail how position in the social hierarchy is consistently related to almost every aspect of life from home décor, to taste in music and food, to opinions on art and desirable vacations, let alone dietary, exercise, and other behaviours” (Lynch and Kaplan, 2000, 21).

Fig. 2 presents a stylised model of what Bourdieu envisioned, and how some health researchers have implemented, the treatment of individuals and communities in the social space of capitals. Social structure is represented as a composite ‘social space’ that may be associated with the health status of individuals and their neighbourhoods/communities. In this figure, the social space of capitals is reduced to a small number of dimensions—social, economic and cultural; as we see below, a set of dimensions that are not exhaustive but nonetheless recurring in health research. The shaded blocks in Fig. 2 can be thought of as collections of individuals displaying varying quantities and mixes of capital. Collections of like individuals may constitute at-risk communities for exposure to air pollution, perhaps in the same neighbourhoods, and as we shall see this approach also allows us to tease out the nuances of identity, social structure and place of residence.

This treatment of social structure sharply contrasts with the single monological variables typically found in air pollution epidemiology. And it is not armchair theorising: as Bourdieu did, health researchers have begun to implement this framework empirically (Williams, 1995; Poland, 2000; Lovell, 2002). For example, Gatrell et al. (2004) use questionnaire survey data from one lower status and one higher status community each in Lancaster and Salford, England, to classify respondents. Analysing the determinants of psychological morbidity, they step through various stages of data exploration and modelling to derive a small set of variables to classify individual respondents and their communities (using mean respondent scores) with dimensions of social and material capital, in a social space much like Fig. 2.

Two points emerge from locating individuals and communities in the social space of capitals. First, individuals and their neighbourhoods are assigned scores to test the health and SEP relationship. Bourdieu’s relational framework provides a richer picture of social structure than does the usual army of stand-alone variables. Income is one of a series of variables reduced by associations among individuals for the construction of a multi-faceted social capital. This figure and paper are meant to demonstrate the usefulness of the approach and the author hopes that future work will engage the implications of how, analytically, to treat dimensions in the social spaces of capital.

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(footnote continued)

6Another key feature of Bourdieu’s approach to social stratification, treatment of ‘structure vs. agency’, is noted but not addressed directly here. While this also holds promise for insights into the health effects of social hierarchy, the focus here is on how social structure is treated analytically.

7Analytically there is no reason to assume a priori that these or any other forms of capital are orthogonal. Indeed we might expect some overlap. However as we see below, the use of this framework has been to produce mutually exclusive dimensions of capital. This figure and paper are meant to demonstrate the usefulness of the approach and the author hopes that future work will engage the implications of how, analytically, to treat dimensions in the social spaces of capital.

8As one would classify units of observation in a principal components analysis using component scores, except they use multiple correspondence analysis for their categorical survey data.
hierarchy. Oakes and Rossi (2003, 775) make a similar argument in their prescription for more critical and analytical treatment of social structure, stating that “Although separate variables, such as education and income, are preferred when statistically controlling for SES in a regression model, we believe a single composite measure remains best for stratified analyses, graphical presentations, and explanations to lay audiences—tasks common in health-related research.” If traditional variables capture only part of this fine-grained social stratification, then a fuller picture can yield more meaningful insights into the independent role of SEP in air pollution health effects. This is fundamental to a reformulated environmental justice research agenda. Second, the geographical location of individuals in the social space is also apparent and can therefore be linked to a host of material conditions such as air pollution itself. For example, via deliberate inclusion of different types of communities in their study design, Gatrell et al. (2004) could ‘see’ whether social relations, income levels and other indicators of material circumstances, varied with geographical setting (Gatrell et al., 2004, p. 11).

Bourdieu does environmental justice?

We have seen how developments in air pollution epidemiology and population health represent relative strengths: enhanced air pollution exposure classification and refined social stratification. Each separately would advance environmental justice but they can also be brought together for a reformulated environmental justice framework. What would this framework look like? It would be based on the creation of new points of contact along the health and SEP gradient; points connecting individual and community position in a fine-grained social structure with sophisticated air pollution exposure assessment and health effects testing also included.

New contact points are created with a Bourdieuvian approach because individuals and neighbourhoods are arrayed differently along the health and SEP gradient. If income alone produces an order/ranking of individuals and neighbourhoods, other forms of economic capital—of which income is one constituent—will re-shuffle that order. In turn, economic capital is one dimension of a broader social composite in a Bourdiean approach to the health–SEP gradient. Gatrell et al.’s (2004) study is again a good example. While they set as their primary target the visualisation of the social space of psychological morbidity, their geographical study design enables them to conclude thus:

“Mapping the survey respondents in…social spaces reveals a social landscape that is complex and heterogeneous, in that members of relatively deprived areas and neighbourhoods [sometimes] find themselves ‘neighbours’ of those drawn from more affluent areas, and vice versa. This is an important finding; mere co-location in geographical space does not mean that individuals have near-identical stocks of social and material capital” (Gatrell et al., 2004, 11).

Considering their argument closely, the conclusion is more than a cautionary note on data aggregation and scale effects: it speaks to how individuals, neighbourhoods and their relative positioning are bound to change with a more textured picture of social structure.

Because air pollution varies spatially it can be linked to individuals and neighbourhoods arrayed within the Bourdieuvian social space of capitals via their geographic location. At a basic level, then, new contact points along the health–SEP gradient facilitates exposure analysis and health effects testing—an approach that is absent to date in the environmental justice literature. And it does more: by connecting social structure and air pollution exposure in new ways, we can ask whether SEP plays some relative, joint, independent or confounding role, and to what degree (e.g. holding air pollution exposures equal)? This goes to the question of whether effects are proportionate to exposure, or perhaps amplified or diminished by the mix and quantities of capital.

Fig. 3 illustrates scenarios that expand on the modification of air pollution health effects by the social space of capitals. This is built on the notion in air pollution epidemiology that air pollution exposures are not associated with threshold health effects: that the dose–response is reasonably linear and not significantly attenuated, or modified, as exposure changes, even at very low concentrations (Dominici et al., 2002; Daniels et al., 2000; Schwartz and Zanobetti, 2000). Yet there is a

9While it is a minor point, I would object to the argument that composite measures may be easier to convey to lay audiences. Deriving composite measures often involve sophisticated data reduction techniques, e.g., that are not always straightforward; nor are the composite ‘indexes’ themselves straightforward to interpret and understand.
well-documented “health ceiling effect” within population health (see House et al., 1994). Has the use of single monological variables in air pollution epidemiology masked threshold effects? Consider how trust and social integration—meat and drink to social capital—may raise ‘host resistance’ to air pollution insults despite working class occupational status and low income. Either of these measures alone might mask the protective benefits of social capital. Similarly, an income variable alone could conceal the effect modification associated with being of lower status: a ‘triple jeopardy’ effect, whereby low status and exposures, when combined, result in amplified disease rates (see Jerrett et al., 2001). In his now classic overview of the health inequalities literature, Wilkinson (1996, pp. 58, 70) underscores these points:

“…even within any occupation there are very large differences in things like education and income…A purely occupational classification will be blind to many of the differences that exist within occupational categories…inaccurate social classification makes health differences look smaller than they really are.”

Of course any prescription for research comes with limitations. In this context it bears noting that whether we adopt a Bourdieuan air pollution epidemiology strategy or some other approach, better data are needed (see Oakes and Rossi (2003) and Krieger et al. (1997) for similar arguments with respect to treatment of social structure in social epidemiology). Monitoring data, data aggregation and health effects testing will continue to be sticking points unless a meaningful effort is made to rectify the data gap; the stack of environmental justice case studies will grow heavier while simultaneously adding to the groundswell of uncertainty and scepticism. Second, the population health literature would have us consider air pollution as one of several types of environmental exposures; these in turn constituting one class of exposures that reproduce the health and SEP gradient (Evans and Kantrowitz, 2002). Thus, while advancements in air pollution epidemiology provide a focus for SEP–disease pathways, they also limit the analytical scope of analysis to one kind of hazard. Third, the notion of multiple forms of capital may be less relevant at the very bottom of the health–SEP gradient. A neo-materialist would correctly argue that simpler measures of social structure such as income and wealth capture the fundamental problem at this segment of the gradient: deep material deprivation. Alternative approaches to social structure in this case may be less applicable.

Having said this, some environmental justice researchers have begun to develop techniques, albeit focussed strictly on environmental hazards, that provide the scope for integrating a range of exposures (e.g. Bolin et al., 2002). In terms of neo-materialist exceptions, it is interesting to note that Lovell (2002), in her study of injection drug users, finds that alternative forms of (Bourdieuuvian) capitals are in fact useful for understanding infectious disease risk for a cohort characterised by deep material deprivation. She writes:

Forms of capital should thus be particularly useful for differentiating between life circumstances among individuals who might otherwise appear similar, according to a single measure, such as employment level or education, as might be the case for serious substance abusers, chronically homeless persons, or single, unemployed mothers (Lovell, 2002, 806).

More generally, the argument of the present paper is that a merger between population health and air pollution epidemiology represents a meaningful way forward because it combines the foci and strengths of cognate literatures that directly address the shortcomings and priorities, of environmental justice. Perhaps the best indication of this potential is how these literatures throw each others’ weaknesses—disease aetiologies and treatment of social structure, respectively—into high relief. The effective marriage of air pollution epidemiology and
population health represents an opportunity for environmental justice to provide its own insights into the wider movement toward social justice and equity and health research.

References


