



RESEARCH IN URBAN POLICY
VOLUME 10

COMMUNITY AND ECOLOGY:
DYNAMICS OF PLACE,
SUSTAINABILITY, AND POLITICS

AARON M. McCRIGHT
TERRY NICHOLS CLARK
Editors

COMMUNITY AND ECOLOGY:
DYNAMICS OF PLACE,
SUSTAINABILITY, AND POLITICS

RESEARCH IN URBAN POLICY

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**COMMUNITY AND
ECOLOGY: DYNAMICS
OF PLACE,
SUSTAINABILITY, AND
POLITICS**

EDITED BY

AARON M. McCRIGHT

Michigan State University, USA

TERRY NICHOLS CLARK

The University of Chicago, USA



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DEDICATION

To the victims and survivors of extreme weather events and ecological catastrophes around the globe during 2005's "long September" (from the last week in August to the first week in October).

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1. THE INTERSECTION BETWEEN COMMUNITY SOCIOLOGY AND ENVIRONMENTAL SOCIOLOGY

Aaron M. McCright and Terry Nichols Clark

ABSTRACT

Humans live in social communities that are embedded ecologically within overlapping biophysical environments. The increasing burden that humans have on these environments demands extensive attention from people in all walks of life. This book promotes a dialogue between two related groups of scholars – community sociologists and environmental sociologists – that may help us to better understand how humans interact with each other in social communities and with biophysical environments in an ecological community. Ultimately, these insights may promote broader discussions among a wider group of citizens who mobilize for community and ecological sustainability.

It is a century now since Darwin gave us the first glimpse of the origin of species. We know now what was unknown to all the preceding caravan of generations: that men [sic] are only fellow-voyagers with other creatures in the odyssey of evolution. This new knowledge should have given us, by this time, a sense of kinship with fellow-creatures; a wish to live and let live; a sense of wonder over the magnitude and duration of the biotic enterprise. ... These things, I say, should have come to us. I fear they have not come to many.

– Aldo Leopold in *A Sand County Almanac* ([1949]1989, pp. 109–110)¹

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Approximately 70 years since Aldo Leopold² wrote his visionary essays elaborating his claim that humans exist within an ecological community, we reasonably may conclude that “these things” Leopold mentions still have not come to many people. And this is despite the emergence of ecological sciences and the more widespread ascendance and institutionalization of environmentalism. Indeed, many citizens in the global North continue to believe they largely are exempt from most ecological processes and pressures. A few examples from everyday life may illustrate our claim and provide some context for the necessity of this volume:

- Many citizens live and work in climate-controlled buildings that they believe to be sanctuaries from the harshness and cruelty of the meteorological elements outside. Yet, few contemplate the energy sources for all that electricity necessary to heat and cool our houses and office buildings, even when such citizens endlessly fiddle with their air conditioners and heaters to get temperatures “just right.”
- Many citizens drive around their respective countries in vehicles designed to offer passengers a serene environment inside their vehicle regardless of that day’s weather conditions.³ Yet, few ponder the increasing amount of fossil fuels necessary to power their nation’s fleet of vehicles, and even fewer consider the sheer mass of materials needed to build and maintain these vehicles. However, many are quick to complain if the price of gasoline increases by ten cents a gallon in a week’s time.
- Many citizens consume copious amounts of human-engineered, pre-packaged foodstuffs purchased from large, rationally organized grocery-store chains. Yet, few take the trouble to question how this glut of available food in their country might be related to dietary aspects of public health. Even fewer inquire about the origins of this cornucopia of food – let alone *how* crops and livestock are grown.
- Many citizens purchase and accumulate an extremely large amount of synthetic, non-biodegradable material goods in the belief that possessing them will make them happy or at least satisfied in the short term. Yet, few question these social pressures promoting heightened consumption, and even fewer are willing to examine the extent of natural resources and energy required to produce, transport, and utilize all these material goods.
- Many citizens casually dispose off substantial amounts of waste once or twice a week when sanitation engineers in impressive, albeit smelly, refuse-compacting trucks drive noisily up to their curb to take their

garbage away. Yet, few citizens reflect upon the moral significance of their role in the creation of all this garbage. And even fewer brave souls brood over where all their garbage goes once it is taken away from their curb.

Like many phenomena in our fast-paced, cluttered lives – out of sight, out of mind. Is all this ignorance really bliss? Perhaps, but it is a kind of bliss that has a depressing past,^{4,5} a risky present, and a bleak future.

KATRINA: A WINDOW UPON “COMMUNITY” AND “ECOLOGY”

We may provoke readers to think about these present risks with a single word – Katrina. For decades into the future, mere casual mention of this heretofore harmless name in private conversations or in public discussions will send chills down the spines of those within earshot. If there ever was an event to remind citizens in the global North that they indeed *are* embedded within ecological systems and that they are *not* exempt from ecological pressures, it is Hurricane Katrina. While writing this introduction, we are still in shock regarding the immensity of the ecological, infrastructural, economic, social, and cultural effects to the Gulf Coast by the combination of over one hundred years of development in that region and the sheer power of Hurricane Katrina. The entire “long month” of September 2005 (from the last week of August to the first week of October) was a brutal reminder to the relatively affluent citizens of the North that human–environment relationships do matter. Many humans, in all their individual, organizational, and institutional (familial, governmental, economic, religious, and educational) capacities, influenced and were affected by this extreme weather event.

As we write this introduction, authorities, bystanders, and laypeople continue to assemble the relevant measurements, claims, personal narratives, and testimonies to reconstruct the timeline of events, decisions, and non-decisions regarding Hurricane Katrina. To be sure, all of this will be contested by different parties trying to protect their own interests. Nevertheless, this much is clear. While humans around the earth have coped (successfully and unsuccessfully) with powerful ecological forces and natural disasters for millennia, never before was the spectacle of our struggle laid so bare for bystanders across the world as with the global mass media coverage of Katrina for over a billion pairs of viewing eyes.

And what was this global television audience watching? In essence, the viewing public was observing the complex, dynamic relationship between “community” and “ecology.” For our purposes here, ecology focuses on how humans relate with their biophysical environment. Community, variously defined, is often the interface through which humans interact with their biophysical environment. It is no wonder that ecologists often interpret ecosystems as ecological communities and humans as just one of many community members. Before we proceed, it may be beneficial to elaborate on the different types of environments and some different connotations of the word “community.” We illustrate this discussion in [Table 1](#) below.

Very simply, we may conceptualize the biophysical environment along a continuum based on the degree of human alteration – ranging from little or no

Table 1. Multiple Environments, Diverse Communities.

Three Types of Biophysical Environments	Empirical Examples
Natural environment <i>relatively untouched or unaffected by human activities</i>	Mineral deposits Many wilderness areas Extreme weather events
Modified environment <i>reconfigured by humans to accomplish goals</i>	Agricultural farm land Human-made lakes River paths affected by levees
Built environment <i>human-made urban and suburban infrastructure</i>	Residential housing Factory complexes Highways and bridges
Five Types of Communities	Empirical Examples
Neighborhood	Hyde Park in Chicago Haight-Ashbury in San Francisco
Municipality	New York City, New York San Francisco, California
Collectivity based on ascribed characteristics	The African-American community The Latino community
Collectivity based on achieved characteristics	The medical community The sociological community
Ecological system	Humans embedded within an ecosystem

human influence to almost total human influence. One type of environment is the *natural* environment, which includes those places or phenomena mostly untouched or unaffected by human activities. The natural environment, termed “primal nature” by Murphy (2002), is self-producing and self-regulating for the most part. It includes many wilderness areas, mineral deposits, geological events, extreme weather events, and viruses – just to name a few phenomena. Many environmental scholars claim that the natural environment is becoming more socially influenced and occupied over time.

A second type of environment is the *modified* environment, or what Murphy (2002) calls “recombinant nature.” The modified environment exists where humans have “reassembl[ed] nature’s materials and dynamics in ways not found in pristine nature in order to accomplish goals” (Murphy, 2002, p. 325). Examples of the modified environment abound in the United States: agricultural farm land; the paths of major rivers; damned lakes; and any other place, such as a suburban lawn, where the landscape is planned. A final type of environment is the *built* environment, and this can be described by the general term “infrastructure” – residential housing areas, factory complexes, office parks, highways, and bridges. We typically associate the built environment with urban and suburban developments, but rural areas also include built environments, such as barns, sheds on concrete foundations, and factory farm livestock confinement lots.

All three types of environments were involved in the events surrounding Hurricane Katrina⁶. Briefly, the tropical storm system that unleashed Hurricane Katrina is the essence of a natural environment or primal nature. Furthermore, aspects of the modified environment heightened the actual human catastrophe: the maintenance of the city of New Orleans below sea level; the diversion of the Mississippi River with an elaborate levee system; the artificial creation of Lake Pontchartrain; and the destruction of miles of coastal marshland that otherwise would have served as a valuable buffer between heavily populated areas and the oceanic violence. Finally, much of what the viewing public perceived as catastrophic involved destruction of the built environment where people lived, worked, and were entertained. Bridges collapsed. Houses, businesses, and roads flooded. Sanitation systems and water pumps failed.

As thousands of middle-class and wealthy people drove their vehicles out of New Orleans, thousands more poor and working-class people were left waiting at places such as the Superdome and the Convention Center. In essence, the community of New Orleans was ripped apart literally and figuratively as integrated social networks split into diaspora. The term “community,” of course, has multiple connotations, and any attempt at imposing

the definitive definition will be contested. We may be better served by identifying the different types of communities that scholars study.

First, one may speak of a local *neighborhood* as a community – an integrated network of kin and neighbors often with a common sense of meaning. Residents usually are concerned about their neighborhood, what defines it, and how outsiders perceive it. In this use of the term, community is tied heavily to a sense of a specific place, such as Hyde Park in Chicago or Haight-Ashbury in San Francisco. We may also talk on a larger scale about a *municipality* as a community. In this case, residents often have a shared identity (e.g., New Yorkers or San Franciscans) that bridges the diversity of neighborhoods and provides a common voice to outsiders – even when most residents of a municipality will never meet each other. Communities as municipalities are also the locations for intensive civic planning and contentious political action.

On another level, people often refer to a specific *collectivity based on ascribed characteristics* as a non-geographically based community. Geographically dispersed racial and ethnic groups are perhaps the most obvious example of this type of community. For instance, we regularly hear scholars, policy-makers, and pundits alike refer to “the African-American community” or “the Latino community” when referring to organized or unorganized, geographically dispersed collectivities of African Americans and Latinos respectively. Next, we may talk about a *collectivity based on achieved characteristics* as another type of non-place based community. For instance, we might consider groups of similarly trained scientists or professionals (e.g., the sociological community or the medical community). Equivalent training and apprenticeships help to provide a common identity, and peer-reviewed publication outlets, annual conferences, and complex telecommunications (e.g., e-mail) help members of this type of community stay in contact with other members.

Finally, from ecology, we may refer to an *ecological system* as a community. Indeed, this is the type of community about which Aldo Leopold famously wrote – a community in the broadest sense of the word. Members of this type of community include all plant and animal species and thus number in the billions. Thus, an ecological system is a community in which all humans are embedded and from which we may not escape.

As with the different types of environments above, the various connotations of the term “community” also are illustrated in the events surrounding Hurricane Katrina. As mentioned earlier, the fabric of local neighborhoods was ripped apart as kin and neighbors from different parishes around New Orleans escaped to distant locales such as Baton Rouge, Houston, and San

Antonio among others. Politicians and civic, economic, and religious leaders invoked the common New Orleans identity shared by all residents during evacuation announcements, in descriptions of pervasive damage, and in pronouncements for widespread rebuilding efforts. Yet, representatives and spokespeople for the African-American community routinely identified the blatant disparity in awareness, resources, political might, and aid that broke along the color line in New Orleans. In other words, the disproportionate burden carried by members of the black community challenged the claim of an inclusive, cohesive community of New Orleans.

Also, communities of social and natural scientists heightened efforts to gather data and produce knowledge claims. Natural scientists of all types directed greater focus toward the Gulf Coast to explain the relationships among river flows, lake levels, storm fronts, oceanic levels, and hurricane intensity. Social scientists increased efforts to describe and explain the social, political, cultural, and economic ramifications of all significant events before, during, and after Hurricane Katrina. Finally, various activists, philosophers, and politically minded scientists pointed out that catastrophic events such as Hurricane Katrina are likely to occur over time when humans attempt to alter parts of a functioning ecosystem for the short-term pursuit of anthropocentric goals.

Arguably, the events surrounding Hurricane Katrina may raise public awareness of the fact that our social communities are embedded within a larger ecological community. In other words, more of us may realize that we are not exempt from ecological processes and pressures. Indeed, scholarly attention to extreme weather events and ecological catastrophes may help us understand some aspects of the human–environment relationship that otherwise we would ignore. That is, such catastrophes act as “natural” breaching experiments that serve to make obvious certain taken-for-granted assumptions about our human–environment relationship (see *Bijker, 1993*). Yet, a sole emphasis on catastrophes cannot accomplish a more expansive examination of the wide range of complex, multi-faceted relationships between humans in communities and their biophysical environment. To accomplish this, we need more scholarship to examine different notions of community and a wide range of ecological phenomena varying from acute catastrophes to chronic, incremental problems to mundane ecological processes.

THE (MODEST) GOAL OF THIS VOLUME

Over the past 30 years the discipline of sociology has witnessed both the emergence of a sustained focus on human–environment interactions within

environmental sociology and a lively debate on the dynamics and significance of communities in a globalizing world within community sociology. Certainly some overlap exists between these two fields as many environmental sociologists have training and interests in community sociology and some community sociology scholars study how communities are affected by extreme weather events or ecological catastrophes. These trends have begun to produce a body of works attempting to integrate theories and research agendas across these two fields. This volume merely continues this fruitful line of sociological endeavor.

We organized this volume to facilitate dialogue between community sociologists and environmental sociologists so that the work of the former may bolster and enhance the ongoing work of the latter and vice versa. In addition, we hope that heightened and sustained communication between these two groups of scholars may lead to emergent theoretical, methodological, and substantive insights that may contribute to the discipline of sociology more generally. That is, we hope that this cross-pollination of ideas may facilitate the creation of a more general sociology that is ultimately more powerful in explaining and providing an understanding of the relationships among humans (in social communities) and between humans and the biophysical environment (in an ecological community).

Earlier versions of most of the contributions in this volume were presented at a mini-conference titled "Community and Ecology," the purpose of which was to initiate a new wave of dialogue between community sociologists and environmental sociologists. This mini-conference, organized by the co-editors of this volume, took place in the Hiram W. Johnson State Office Building in San Francisco, California on Friday August 13, 2004. It was co-sponsored by Research Committee 24 (Environment and Society) and Research Committee 03 (Community Research) of the International Sociological Association.

The contributions in this volume seek to increase the dialogue between community sociologists and environmental sociologists in multiple ways with various theoretical perspectives and diverse methodologies. Thus, the contributions in this volume cover an impressive range of substantive topics:

- social movement studies;
- disaster mitigation;
- landscapes and perceptions of place;
- ethnic groups and the built environment;
- sustainable development;
- urban planning policy;

- inequality in public health;
- public reaction to infectious disease; and
- siting of waste incinerators.

The contributions also span a wide array of theoretical frameworks and perspectives:

- theoretical concerns about attachment to place;
- work on recursive-learning processes;
- conceptions of vernacular landscapes;
- political ecology;
- conceptualization and operationalization of sustainable development;
- the political opportunity structure concept;
- discursive framing literature;
- social network theory; and
- social movement theory.

The contributions utilize a robust range of qualitative and quantitative methodologies:

- ethnographic interviews;
- comparative case studies;
- visual analyses;
- narrative analysis of archival data;
- statistical analysis of archival data;
- event/action modeling; and
- participant observation.

Finally, the contributions cover a diverse sample of communities in several countries:

- the Amish in upstate New York;
- Tampere, Finland;
- 166 neighborhoods in New York City;
- Montrose Point on the North Side of Chicago;
- local groups along the Nu River in the Beijing and Yunnan Provinces in China;
- Grand Isle and Terrebonne in southeast Louisiana;
- 257 large American municipalities;
- approximately a dozen localities in England;
- Hong Kong, Hong Kong; Toronto, Canada; Taipei, Taiwan; and Beijing, China; and
- ethnic neighborhoods in several U.S. metropolitan areas.

We have organized the contributions in this volume into three sections that map onto three related thematic areas: the ecological and social significance of place; the challenges of local sustainability; and local environmental politics. Chapters 2–4 deal with *the ecological and social significance of place*. The authors of these four chapters examine different theoretical and substantive dilemmas regarding place and ecology. Their scholarship investigates the significance of place across a range of natural, modified, and built environments.

Chapters 5–7 deal with *the challenges of local sustainability*. Authors of these chapters perform scholarship on multiple dimensions of local sustainability: social, economic, and ecological dimensions. They especially focus on identifying indicators of these dimensions to investigate their interaction. Finally, Chapters 8–11 deal with *local environmental politics*. The authors of these chapters examine the various dynamics of local political processes in communities across three continents. These scholars explicitly examine how the structure of political opportunities in different localities affects the mobilization necessary to recognize and ameliorate environmental problems.

We follow this section with a brief coda that reinforces the claim that the futures of community sociology and environmental sociology do (and should) overlap. By all accounts, this volume is a beginning – an initial step – to demonstrate to other scholars in relevant social scientific fields that good work can be done when boundaries are crossed and we look over the shoulders at what our colleagues in other fields are doing. We simply argue that the cross-pollination of ideas furthered by this volume is an optimal avenue through which to create a more general sociology that is ultimately more powerful in explaining the relationships among humans (in social communities) and between humans and the biophysical environment (in an ecological community).

NOTES

1. At the beginning of each of the three section introductions, our coda, and this introduction to our entire book, we start off with a brief piece of wisdom from Leopold's ([1949]1989) classic *A Sand County Almanac* regarding the ethics of the relationship between community and ecology. Leopold's land ethic is one of the first and most explicit attempts at combining the concepts of "community" and "ecology" in a singular ethical framework. As such, Leopold provides insightful comments through which we may introduce the various sections of this book.

2. Aldo Leopold (1887–1948) is recognized widely as the father of wildlife ecology in America, a pioneer in the American conservation movement, and the father of the

profession of wildlife management. After earning a Masters of Forestry degree from the Yale School of Forestry in June 1909, Leopold immediately joined the U.S. Forest Service and was assigned to the Arizona Territories. During the early years of his tenure in the U.S. Forest Service, he worked at the Apache-Sitgreaves National Forest in Arizona and at the Carson National Forest in New Mexico. He was later assigned responsibility for overseeing all the forest land (and game and fish work) in the Southwest District of the U.S. Forest Service. During this time, he wrote the first handbook for the U.S. Forest Service, the *Game and Fish Handbook*, which defined the duties and powers of forest officers in cooperative game work.

Between 1924 and 1928, Leopold was the Associate Director of the U.S. Forest Products Laboratory in Madison, Wisconsin. In 1928, Leopold began teaching courses in wildlife ecology at the University of Wisconsin. From 1928 to 1932, Leopold conducted wildlife surveys of the North Central states with funding from the Sporting Arms and Ammunition Manufacturers' Institute. In 1931, he published *Report on a Game Survey of the North-Central States*, which was a pioneering regional study of the status of game animals and what was being done to foster their conservation. Two years later in 1933, Leopold published *Game Management*, which defined the fundamental skills and techniques for managing and restoring wildlife populations. This landmark work – which created a new science that intertwined forestry, agriculture, biology, zoology, ecology, education, and communication – was the first to examine population dynamics within the context of ecological relationships. Also in 1933, Leopold organized the Department of Game Management at the University of Wisconsin (the first department of game/wildlife management in the United States), and he held the position of chair for the next 15 years.

In 1935, Leopold purchased a worn-out farm on a bend of the Wisconsin River near Baraboo, Wisconsin – in an area known as “the sand counties.” His farm had a marsh, an unproductive field, a naked hill of drifting sand, and a chicken shed. As Leopold worked to restore this land, he wrote many of the essays that eventually became part of his most influential work, *A Sand County Almanac*. In these essays, Leopold worked out his ideas on: the spiritual, cultural, and social values of wild, authentic nature; the nature of community defined in its broadest sense; the necessary respect due to nature; and the often tenuous relationship among nature, science, and progress. Above all, *A Sand County Almanac* gained fame as the venue through which Leopold defined and clarified his “land ethic”: his argument for an expansion of moral consideration to other species and the biophysical environment.

3. Indeed, most new cars come equipped with “all-weather” tyres giving drivers the inflated confidence that they may drive whenever, wherever, and however in whatever conditions.

4. Scholars (many in note 5 below) have argued that the following societies collapsed in part because of acute or chronic ecological problems.

- The Anasazi in the American Southwest
- Viking/Norse Greenland
- The Moche in ancient Peru
- The Cahokia along the Mississippi River
- Mycenaean Greece
- The Harappan civilization in the Indus Valley

- The Khmer Empire in Southeast Asia
- The Assyrian Empire of Nineveh in ancient Mesopotamia
- The Tiwanaku Empire in the Andean Highlands
- The Mayan empire in the Yucatán
- Easter Islanders in Polynesia
- Great Zimbabwe in Africa
- Angkor Wat in Cambodia

5. Many scholars have detailed the consequences for societies when individuals do not fully realize that their communities are embedded within ecological systems. The following sources are merely some of the major works that partially attribute the collapse of one or more societies to ecological problems: (Beck, [1986]1992, 1999; Brown & Kane, 1994; Bunker, 1985; Catton, 1980; Chew, 2001; Cohen, 1995; Cronon, 1983; Diamond, 1997, 2004; Ehrlich, 2004; Ehrlich & Ehrlich, 1990; Eisenberg, 1998; Fagan, 1999, 2004; Fernandez-Armesto, 2001; Foster, 2002; Freese, 1997a, 1997b; Giddens, 1990, 2000; Hughes, 1975; Hunt & Elliott, 2005; Mumford, 1964; Norgaard, 1994; Perrow, 1984; Ponting, 1991; Redman, 1999; Redman, James, Fish, & Rogers, 2004; Schnaiberg, 1980; Schnaiberg & Gould, 1994; Shepard, [1982]1998; Tainter, 1988; Wackernagel & Rees, 1996; World Commission on Environment and Development, 1987; Yoffee & Cowgill, 1988).

6. Indeed, we might say the same about any of the ecological catastrophes and extreme weather events of 2005s “long September” – lasting from the last week in August to the first week in October. Some of the most widely publicized of these catastrophic events include the following:

- Hurricane Katrina on the American Gulf Coast
- The September 9th 7.7-magnitude earthquake in Papua New Guinea
- Typhoon Longwang on Taiwan and southeast China
- Hurricane Rita on the American Gulf Coast
- The September 26th 7.5-magnitude earthquake in northern Peru
- The extensive forest fires in Southern California
- The flooding along sections of the Weihe River and Hanjiang River in China
- Hurricane Stan on Mexico, Nicaragua, Honduras, and El Salvador
- The October 8th 7.6-magnitude earthquake in Pakistan affecting central Afghanistan to western Bangladesh

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THE ECOLOGICAL AND SOCIAL SIGNIFICANCE OF PLACE

PLACE: WHERE COMMUNITY AND ENVIRONMENT MEET

Aaron M. McCright and Terry Nichols Clark

All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts.

– Aldo Leopold in *A Sand County Almanac* (1949/1989, p. 203)

In his provocatively titled *The Globalization of Nothing*, George Ritzer (2004) extends the work of the anthropologist Marc Augé (1995) on non-places.¹ Ritzer identifies non-places by comparing them to places. If places are “locally conceived and controlled” spaces “that are rich in distinctive substance,” then non-places are “centrally conceived and controlled” spaces “lacking in distinctive substance” (Ritzer, 2004, p. 10). Typical examples of non-places include amusement park chains, big box stores, non-descript suburban subdivisions, and franchised theme restaurants. Progressive social scientists, philosophers, and defenders of the authentic everywhere bemoan the wildfire-like spread of these shock troops of nothingness around the world.

Such advocates criticize this trend by promoting what they believe are two indisputable public goods: (1) the authenticity of a local place and (2) cultural diversity within, but especially across, places. Many claim that it is good for a place to have a unique feel that distinguishes it from everywhere else on the Earth – whether the source of this distinctiveness is the specific people, buildings, terrain, wildlife, or some combination of all of the above and more. Most of us want to believe that we came from someplace special.

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Whether we think of this place as especially good or especially bad largely is a matter of preference!

Also, many people claim that it is good to protect and promote cultural diversity for the long-term development of our human species. On a trivial level, we bank on the expectation that the cuisine served in a mom-and-pop restaurant in San Francisco's Chinatown is more authentically "Chinese" (and thus culturally better) than the cheap eats dished out at the local manifestation of the franchised Happy Wok in our nearby regional shopping mall. More seriously, sociologists and cultural anthropologists alike warn that cultural diversity around the globe buffers against societal collapse. That is, the greater the diversity of robust cultures available to all of us, the more likely that we will be able to identify feasible and effective problem-solving techniques to meet whatever challenges we may encounter.

It is not a coincidence that ecologists and citizens concerned about environmental sustainability utilize similar arguments when promoting environmental protection. Indeed, social scientists and critics probably patterned their claims to closely resemble those promoted by natural scientists, such as biologists and ecologists. Parallel to the two claims above, these natural scientists stress the value of native species to the integrity and stability of a local environment. Also, biologists and ecologists claim that protection of species diversity is an effective strategy for long-term ecosystem health.

The three chapters in this first section deal not with the nothingness of non-place places but with the "somethingness" of unique communities in authentic locales. Specifically, the authors of these three chapters write about the ecological and social significance of place in examining different theoretical and substantive dilemmas regarding place, community, and ecology. Their contributions investigate the significance of place across a range of natural, modified, and built environments.

In Chapter 2, David Burley, Pam Jenkins, and Brian Azcona examine how residents in two communities (Grand Isle and Terrebonne) in coastal Louisiana negotiate perceptions of environmental change within their sense of place. Analyzing narrative data from 47 interviews, the authors investigate how residents in these two communities think about place given the ongoing loss of coastal land. To do this, Burley, Jenkins, and Azcona integrate scholarly conceptualizations of place attachment and landscapes. The authors find that their respondents express substantial vulnerability in descriptions of themselves and their way of life. This vulnerability stems from the certainty of land loss and the potential of the impending "big" hurricane. Such perceived vulnerability, combined with a general sense of disenfranchisement and a heightened awareness of attachment, leads these

residents to distrust coastal land restoration attempts and fear the future more generally.

In Chapter 3, Matthias Gross argues that real-world experiments may allow us to carry forward community-level ecological restoration projects in the face of environmental uncertainties and less than sufficient information. Gross conceptualizes experimentation in this context as a recursive practice aimed at integrating multiple stakeholders from the larger community into decision-making and restoration activities. He then illustrates this type of real-world experiment with a case study about the ecological restoration of Montrose Point, a peninsula built on a landfill in Lake Michigan on the North Side of Chicago. In doing so, he addresses several challenges in implementing this model: (a) negotiating the experimental design among different actors within the community; (b) translating concern into action; (c) monitoring the ongoing experiment; and (d) coping with disruptions and re-negotiating the experimental design. Gross claims that such an experimental design may offer an optimal avenue through which to accommodate both social and environmental changes so as to conduct successful ecological design projects.

In Chapter 4, Jerome Kruse examines the ongoing, dynamic creation of multicultural mosaics within the built environments of major U.S. metropolitan areas. Specifically, Kruse seeks to influence how we theorize about ethnic groups in postmodern cities. He claims that we should use a visual approach to examine how cultural identities are reflected in vernacular landscapes. In observing ethnic neighborhoods in several U.S. metropolitan areas, Kruse hints that such a visual approach may provide rich information on the location, migration, and vitality of ethnic minorities that cannot be obtained from official surveys (e.g., current population survey) or the decennial census. He concludes by arguing that ethnic minorities and the images they create eventually become part of the urban landscape, a process which diminishes their autonomy.

NOTES

1. Augé (1995, pp. 77–78) writes, “If a place can be defined as relational, historical and concerned with identity, then a space which cannot be defined as relational, or historical, or concerned with identity will be a nonplace.”

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2. LOSS, ATTACHMENT, AND PLACE: LAND LOSS AND COMMUNITY IN COASTAL LOUISIANA

David Burley, Pam Jenkins and Brian Azcona

ABSTRACT

This chapter examines how residents of vulnerable communities frame environmental change. Specifically, this study reveals how residents from Louisiana's coastal communities understand coastal land loss. Respondents convey the meanings they give to land loss through constructing a narrative of place. We use a phenomenological approach that focuses on how stories are told and the subjective interpretations of societal members. We suggest that the slow onset disaster of coastal land loss leaves residents feeling vulnerable, forcing a constant and heightened awareness of place attachment. Prior to Hurricanes Katrina and Rita in late summer 2005, residents expressed a sense of separation and alienation from the restoration process. As major restoration plans are considered, residents' place attachment can shed light on the role the communities can play in policy and restoration projects.

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INTRODUCTION

Hurricane Katrina arrived in southeastern Louisiana on Monday August 29, 2005. It was not only academics and other professionals who warned of this disaster, but also the residents of Louisiana's coastal communities have been aware of the potential destruction for generations. In this study, the residents are acutely aware of coastal land loss and, in their accounts, warn of the potential for disaster. Louisiana's coastal wetlands historically have served as a protective barrier to storms and over the years, residents have watched the land disappear adding to a sense of increased vulnerability.

The respondents in this study are from the communities of Grand Isle, Dulac, Chauvin, and Cocodrie, which suffered significant damage from Hurricane Katrina and then a few weeks later from Hurricane Rita. At the time of this writing, the long-term extent of the damage is not known. According to estimates by the Terrebonne Parish Office of Emergency Preparedness (Terrebonne Parish includes the communities of Dulac, Chauvin, and Cocodrie) over 6,000 homes were destroyed in the area. As a local newspaper reporter, Kimberly Solet from *The Houma Courier*, reported through email, "if your home was not elevated at least eight feet, you suffered some sort of damage from the storm; those closer to the ground are pretty much completely destroyed, although as you know because of their strength and determination, many bayou residents are already rebuilding."

While the land, the place respondents live and work, is fragile, their sense of place is not. Many of the residents trace their roots back to the 18th century. They mark history by where their families were for all the great storms including the hurricane in 1893 that killed 155 people and destroyed Cheniere Caminada.

In this study, we examine how residents of two¹ Louisiana coastal communities frame a sense of place in light of slow and rapid onset of coastal land loss. Our study bridges the literature on community and environmental sociology through combining the concepts of place attachment and *landscapes*, symbolic representations of the natural environment (Greider & Garkovich, 1994). The concept of landscapes encompasses the social elements of place attachment. Thus, landscapes reveal how physical and natural features become imbued with social and communal meanings. The respondents in our study convey the disruption to their rooted meanings of place attachment that is brought on by the slow onset environmental change of coastal land loss. Using interviews to gather narratives, we explore the salience of environmental change to an individual's sense of place, as well as their understanding of their social and physical worlds.

CONCEPTUAL FRAMEWORK

The Place of Attachment

The self arises out of the field of experience that includes an identity or core self which incorporates *place*, a geographic location that includes the people, objects, practices, and meanings of that place (Casey, 1993; Harvey, 1996). *Sense of place* about a particular location is reflected in how that place is construed in discourse (Cantrill, 1998, p. 303) and meaning is conferred upon an environment, encompassing everything from the built to the natural, through learned perceptual practice of intimate interaction with place. Meanings of place are shaped by the confluence of geography and time as well as the particular historical moment (Agnew, 1989; Relph, 1976; Tuan, 1979). The meaning conferred on place often results in a felt connection referred to as *place attachment*.

Attachment to place is produced through accrued biographical experiences (Altman & Low, 1992) that are “fulfilling, terrifying, traumatic, triumphant, secret events that happen to us there” (Gieryn, 2000, p. 481). These meaningful experiences help to shape identity facilitating the social construction of place.

Environments, both built and natural, are socially constructed places.² Social relations, the forces of nature, and meaning interact to produce the everyday experience of place (Sack, 1992, p. 1; Williams & Patterson, 1996, p. 375). The narratives that emerge out of the communities of Grand Isle and Terrebonne reveal how particular places are socially constructed and how they differ according to the self-definitions of the narrators.

Transforming the natural environment into symbolic environments through self-definitions yields social constructions called *landscapes* (Berger & Luckmann, 1967; Greider & Garkovich, 1994). The natural/physical environment is independent of our interpretation of it; however, our interpretation transforms the natural environment into “meaningful subjective phenomena” or what we can call landscapes (Greider & Garkovich, 1994, p. 2). In sum, landscapes are reflections of ourselves. Yet landscapes are different from place – a geographic location – and community, which is primarily social, as are the ties to it. It is only when place gains symbolic meaning that may or may not hold definitions of community that it becomes a landscape, which in turn changes as place alters.

When changes in the environment occur landscapes change. Rural sociologists Greider and Garkovich (1994, p. 2) suggest that as changes to place transpire conceptions of self also change “through a process of negotiating

new symbols and meanings.” The meaning of change and self-definitions coalesce through discourse, both in texts and social relations, providing what that change means for a group as well as individuals as part of a group (Fairclough, 1992; Greider & Garkovich, 1994, pp. 8–9; Hastings, 1999). The meaning of change is complex.

Further, Alkon (2004) shows that before changes to place even occur, but where they are thought to be forthcoming, such as with proposed structural changes, different institutional and structural forces play a role in how stories about place arise and are contested. Stories are often disseminated along lines of power as accounts about place emerge purposely adapted and changed for specific reasons (Alkon, 2004). In short, stories that give salience to particular meanings of place arise for specific reasons. Similarly, the stories told here shape how change to place is understood.

In the case of change due to disasters, Philips and Stukes (2003, p. 17) argue that “disasters bring about a renegotiation of place, throwing location and identity into question” (see also Brown & Perkins, 1992). So, a disaster occurs and affects the place ties that define the self and community (Philips & Stukes, 2003). Amends to that disaster are proposed and debated within those disrupted frameworks of place attachment while, as Alkon (2004, p. 148) notes, “people’s ideas about themselves and their daily lives (here, in relation to place) mediate specific political decisions.”

Telling Stories about Place

The ideas we have about ourselves and the way we talk about them reflect the nature of our attachments to place (Greider & Garkovich, 1994). Attitudes and behavior disseminate from the meanings conferred on place. Meanings based on personal memory, susceptible to permeation from different cultural schemas, make up the stories we hold about places. Personal representations and stories of place are communicated through the narratives we tell and these narratives yield meanings generated from identity to produce what is most salient about place (Alkon, 2004; Greider & Garkovich, 1994; Shanahan, Pelstring, & McComas, 1999).

Narratives involve characters that are portrayed in a particular fashion, oriented to a type of structure (drama, tragedy, suspense, humor, etc.), and usually attempt to convey a lesson or moral (Shanahan et. al., 1999, p. 407). In short, there is usually a point to telling a story. The points of stories usually reflect the narrator’s identity saying something about who the storyteller is. Stories vary according to self-definitions derived from such things

as gender, class, and occupation, but they also share commonalities based on a common community and/or culture (Cantrill, 1998).

The concept of landscapes, taking on emphasis of the whole environment, becomes a tool for discerning the complex relationships within narratives. How people think about their environment and the changes that occur there can be understood by how they tell their own stories of place.

Looking at how people tell stories suggests a phenomenological methodology where the meanings subjects give to experiences is examined. A phenomenological approach focuses on respondents' subjective experiences (Creswell, 1997; Smith, 2004) and narratives about place serve as subjective interpretations of place-associated experiences. Further, a phenomenological approach to narrative production examines how societal members continually interpret their social order and thus reproduce and construct knowledge (Gubrium & Holstein, 1997). Telling stories gives our topics meanings (Higgs, 2003), thus it is from the subjective standpoint of the residents that the meanings of Grand Isle and Terrebonne are obtained. As we shall see, respondents give the disaster of coastal land loss salience within narratives about place and this significance is given added weight due to the fact that the interview schedule does not address the issue.

In this chapter, we examine what elements best characterize respondents' landscapes, how change in place is conveyed and understood, and what roles coastal land loss plays in the narratives. These issues are interdependent. The concept of landscapes – transforming the environment into symbolic environments through self-definitions – becomes a tool for discerning the complex relationships within narratives.

SETTING

Our data comes from 47 interviews with 51 participants from Grand Isle and Terrebonne residents in southeast Louisiana gathered during the summers of 2002 (Grand Isle) and 2003 (Terrebonne). Interviews were collected through snowball sampling using various contacts in each community to gain different streams of interviews. Grand Isle is a barrier island off the southeastern coast. Both Grand Isle and the communities of southern Terrebonne Parish are rural and mostly white (U.S. Census Bureau, 2000). Currently, the population is over 96% white. The dominant ethnic heritage is self-identified as Acadian, but also includes a history of Asian, Caribbean, African, French, Portuguese, Spanish, Italian, and Filipino settlers. Southern Terrebonne also has a significant population of Houma Indians who

were pushed southwest from Mississippi and Alabama at the beginning of the 19th century.

Grand Isle's and Terrebonne's socioeconomic development unfold on similar paths: fishing and oil. From the mid-18th century to the present, much of the economy revolved around resource extraction including fishing and other agricultural activities. During the 19th century, beginning around the 1850s, a third socioeconomic factor became part of Grand Isle's development – summer tourism. Offshore drilling for oil became a major economic force in the 1950s. It declined in the 1980s but, along with fishing, continues to be a major economic factor. Tourism, mostly through sport fishing, has been of equal importance to Grand Isle and over the past twenty years has become an increasing element of Cocodrie's development in Terrebonne. Certainly, Hurricane Katrina will be another turning point in the development of these communities.

The fourth factor in the development of Grand Isle and Terrebonne is the focus of this chapter – coastal land loss. This loss occurs in the nation's largest concentration of wetlands. Louisiana loses 20–25 square miles of coastal wetlands a year where it is estimated that an acre is lost every fifteen minutes. Fig. 1 illustrates this rate of land loss.

Natural factors, such as storms and erosion due to wave action, account for some of this loss but scientists agree that nearly 70% of coastal land loss is directly or indirectly the result of human action upon the ecosystem (Farber, 1996). The Mississippi river was levied off eliminating seasonal flooding that naturally replenished the sediment deposits that built the Mississippi delta. Canals dug by oil companies have broken up the wetlands and increased saltwater saturation from the Gulf of Mexico. Researchers generally agree that these canals are a major cause of wetland loss and according to one estimate, account for 69% of all coastal land loss (Turner, 1997).

Aside from the enormous importance of the ecosystem, the region also has great economic value. One hundred million tons of cargo is shipped annually through the waterways. The area is home to a fishing industry that supplies the nation with about 20% of its seafood and 27% of the country's natural gas comes from these marshes and just offshore (Dunne, 2001).

More importantly for the city of New Orleans, the coastal marshes and wetlands provide protection from tropical storms and hurricanes. As the land disappears, these storms retain much of their strength as they move further inland. This does not bode well for New Orleans, which in some

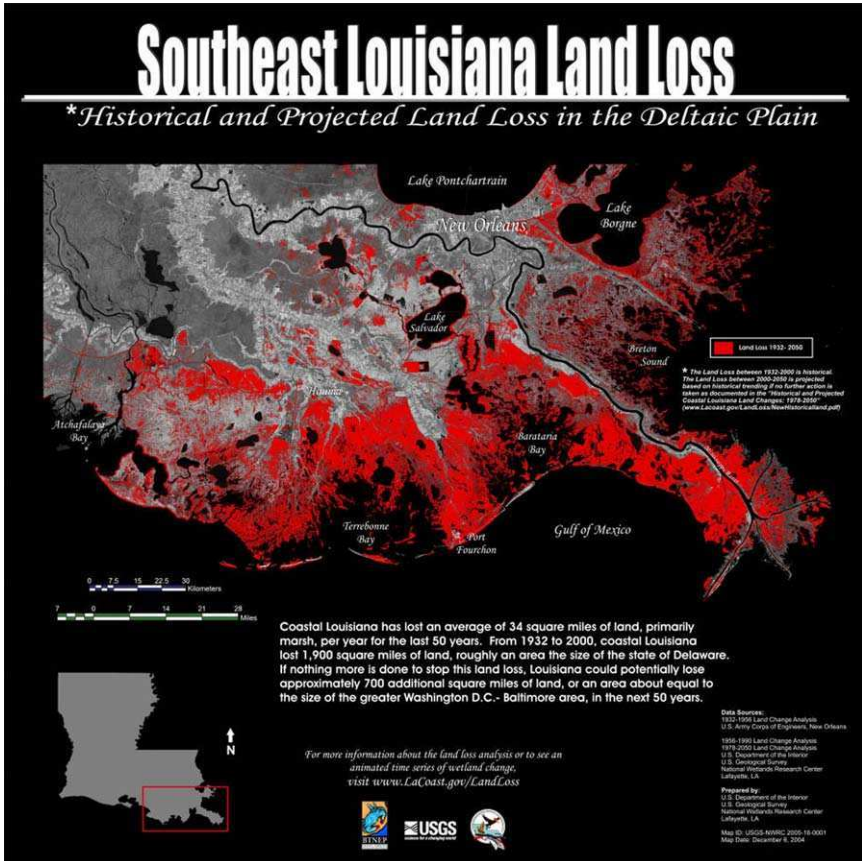


Fig. 1. Historical and Projected Land Loss for Southeast Louisiana through 2050. Source: U.S. Geological Survey, National Wetlands Research Center. <http://lacoast.gov/maps/2004SElandloss/index.htm>

places is 17 feet below sea level. Indeed, Hurricane Katrina caused much damage that would have been lessened by an intact coastal wetland system. Storms inflict rapid land loss and as more land slowly disappears, these storms can wipe away larger and larger spits of land. There is a cumulative effect that increases susceptibility that, as shown below, is not lost on residents. Weaker storms have a greater impact and thus stronger ones prove to be disastrous, further opening the door for future storms.

METHODS AND DATA

Participants were chosen to represent the range of residents, permanent and temporary, native and non-native, as well as six Native Americans from the Dulac area.³ The interview guide is oriented to place through personal history. The instrument asks the respondents two types of questions through an open-ended interview. One type is an inquiry into personal history and the second is an inquiry into reasoning about change in the respondents' community.⁴

Respondents were told that we were researchers from the University of New Orleans studying life in coastal communities.⁵ While not misleading the respondent, this statement does not reveal the exact nature of our study (perceptions of coastal land loss), thus taking care of any glaring questions of social desirability, a common validity problem in qualitative research (Silverman, 2001). Using a phenomenological framework, a more accurate portrayal of the meaning of respondents' experience of land loss is conveyed by allowing the subjects to broach the issue themselves. Thus, the interview guide does not address land loss; it only asks the interviewee to talk about changes to place. It was reasoned that "if it is important to them, they will bring it up."

A limitation of our study, and of much qualitative work, is that it is not generalizable. We cannot, with any scientific accuracy, extrapolate these findings to the population of these communities, nor to populations experiencing similar circumstances. That being said, similarities in the meaning respondents give to experience yield some assurance of accuracy. The research questions allowed themes to emerge from residents' narratives.⁶ For this chapter we focus on the themes *sense of loss*, *community and the consequences of loss*, and *restoration and experts*. Throughout these emergent themes, the element of *vulnerability* characterizes respondents' definitions of landscapes. The presentation of responses, or parts of a narrative, will be in the form of a respondent's uninterrupted passage.⁷

ANALYSIS

Respondents convey a general meaning of vulnerability throughout their narratives thus serving as the element that best characterizes their landscapes. The symbolic meanings of vulnerability run across substantive themes (Gubrium & Holstein, 1997, p. 148). By this, we mean that regardless of the topic, whether speaking about family, work or land loss, they continually expressed vulnerability of place.

While the interviews are wide-ranging, we focus in this discussion on interviewees' accounts of coastal land loss. All but two of the respondents (both from Grand Isle) broached coastal land loss. Residents' perceptions of this topic are the primary objectives of our study and it is of particular interest precisely because interviewees are never asked to address land loss.⁸ Perceptions of land loss are discussed below.⁹

A Sense of Loss: Place and Land Loss

Respondents tend to view themselves as inextricably linked to the place they live and as residents' accounts illustrate, land loss is part of their daily lives. Thus, almost all respondents raised the issue of land loss, many early in the interview.

For some residents, their narratives reflected land loss as a continuous, slow-onset disaster that is imperceptible on a day-to-day basis, yet clearly noticeable over time. Charlie (T),¹⁰ a 36-year-old male employed in an oil related industry, attaches a personal dimension to land loss as he talks about how his father refuses to drive their boat to the family fishing camp:

[Interviewer] *Why won't he get behind the wheel of a boat?*

[Respondent] It's because of the erosion there that's accumulated. It's so bad. We took it upon ourselves to mark spots to go through, from here to our camp. Put signs, put PVC pipe with markers. Talking about having 20 feet of land right here. You put the PVC pipe on the end of the point. Come back a year later and that 20 feet is just about gone. It's weird. There's no way of stopping it that I can see.

Land that used to serve as markers for navigation no longer exists. Those, like Charlie's father, who used to have an intimate knowledge of the waterways, are now distrustful of their own traditional ways of knowing. A particular place knowledge develops through interactions, often with significant others and respondents' narratives reflect this interactive knowledge of place. Susan (GI), a 30-year-old graduate student, expresses how place becomes imbued with social meaning:

He (grandfather) taught me my first ecological lessons. You know, you save the [oyster] shells and put them back there [in the water] so the oysters have something to latch on to. It's gone. That part of the island has been eaten away so much.

Susan goes on to establish how her interactions with her grandfather, mediated by place, served as the basis for her high degree of place attachment. Strong attachment develops, in part, from a significant history with a particular place and residents reflect this by contextualizing their discussions of

land loss within narratives of family and history. Along with the social connections of place, all narratives are stamped with the natural elements of place, especially storms.

The impact of tropical storms and hurricanes increase and illuminate the loss of land that otherwise occurs in such an incremental fashion as to go unnoticed on a daily basis. Jesse (T), 47-year-old, works for a local government agency. She approaches the subject of land loss by talking about a specific event, Tropical Storm Bill, in June 2003.

It's obvious to us having lived here so long that the erosion of the land and the barrier islands is allowing the water to maybe move faster and come higher. And it's very unnerving. This is our home. My children are here. So it's a very serious concern to us that in years to come, I think it's going to get worse.

Jesse and her husband James (T) share a negative outlook for the future of coastal Louisiana. James, 56, also employed at the state agency states:

But the importance of my home has started changing lately with the realization that this area is living on borrowed time. The land underneath my house will not be dry land in the not too distant future. And that affects my whole; it's hard to get attached to something that's not going to be around for long. And that's what's happening to me and my family right now.

James was then asked if he thought the process of land loss could be "staved off." He believes that it can but that Louisiana politics and culture are too shortsighted to make solutions a reality.

Most locals are more hopeful than James; however, they retain distrust. Jerry (GI),¹¹ a 63-year-old government official living in New Orleans, maintains a camp (small summer home) in Grand Isle. Jerry talks about erosion and the importance of sustaining the island and the region:

It's probably the most unique area of its type in the US ... It's something that really alarms me because it's not only an ecological disaster; it's a cultural disaster. There's a whole culture, a very *fine*¹² culture that's interrelated and intertwined with that environment. (Asked if it can be saved, he says) We waited *way* too long. Some things have been irrevocably lost. I'm hopeful but skeptical, how's that?

The meanings Jerry gives to Grand Isle and the region are obvious as he conflates the natural ecosystem with cultural identity. The potential loss of the ecosystem causes the vulnerability of identity and residents' sense of vulnerability is exacerbated by the increasingly likely idea that land loss will continue. This leads residents to consider future possibilities.

Community and the Consequences of Land Loss

Although many view loss of place as inevitable, they speak of action that must occur to sustain community and place, or at least the meaning of place. Theodore (T), a 47-year-old Native American manager, says:

As a tribal leader, we met at the beginning of the year and we did a little brainstorming through all our groups. We determined what would be important issues that the tribe would be facing in one year, three years, five years, ten years. This right here (showing interviewer pictures of tropical storm ravished Isle de Jean Charles – an isolated Native American community on a finger of land at the southern end of the parish), this is the location. We know they are not going to be able to stay there forever. As tribal leaders, we are looking into the future. We are going to need a place for our people living in this area to come inside the levee system. Because all of that is sacrificial land. We are going to have to invest in land. That's the only way that these guys will have a future. Somewhere to go to. What we are seeing now is, we are at that point in our history where we have to make a decision about which way we go from where we are at now. And obtaining land is one of the key elements that we feel that will enable our tribe to stay strong and stay together.

Theodore's thoughts draw on an idea of interdependence between past, present, future, people, community, and the natural world. He speaks of a certain amount of "sacrificing" that his people will have to do to retain its strong community ties. It seems that now, in the wake of Katrina, his fellow community members must sacrifice much more than what Theodore had anticipated. Part of the meaning conveyed in his passage connects community and the land, thus retaining community means maintaining ties to the land. And he goes on to say that they must be able to find land in the region to relocate because it is place, of which the land is a primary component that gives them much of their identity. In much the same way, Evelyn (GI), a 56-year-old educator, resigns herself to an inevitable loss of place:

Well, there's nothing you can do. I mean, nature is nature and it's the strongest thing there is. We've tried the rock jetties which is good. Now it's starting to erode. It can only do so much.

[Interviewer] *So when you think about the rest of your life, what do you think of for yourself?*

[Respondent] I'm moving to Thibodaux (LA). They still have some French-speaking people there and they're not going to be beachfront property for fifty years ... I was going to move to Lafayette, but it's too far away I think. So Thibodaux.

[Interviewer] *But you're not going until it's gone?*

[Respondent] Well sure! I'm the history of the island. I have to be here.

Even as Evelyn moves she wants to carry Grand Isle with her. Her attachment to place is a part of identity and while she may concede the physical of place she does not relinquish the symbolic. Evelyn views the physical of place as inseparable from the social and communal. Thibodaux, in regard to Evelyn's potential move, suffered significant flooding from Katrina but is recovering.

Theodore and Evelyn seek to continue place, identity, and community in another location, but in the same region thus retaining the vestiges of place. Yet some are fatalistic. James' (T) attachment, as he mentioned earlier, is ambivalent:

I really hope that; I want my son to have some place to come back to when he's older and say, 'This is where I grew up. This is my home.' But as I told you, I don't think it's going to happen. That's a false hope.

Perhaps it is this sense of hopelessness that produces ambivalence about place. James struggles with his attachment to place as he anticipates what he perceives to be the certainty of displacement. Loss of land means loss of place. Even if, as Theodore and Evelyn propose, some relocate in another place within the region but continue to lose land, the region and the land that comprises place will disappear. The ambivalence that some residents display may be a way of slowly coming to terms with the increasing possibility that place will fade away. And if James' uncertainty reflects his resigned outlook then it may be that he is more correct than many would have thought. Although most are not as fatalistic as James, residents are wary of the situation and thus far their worries have not been alleviated by the state who they view as taking little to no action. And now, Katrina has validated residents' concerns.

Restoration and Experts

While many locals express serious concerns, they hold on to some degree of hope. However, that hope may wane if the inaction they now perceive continues. Rose (T), 52, a chef, sums up residents' mixed sentiments of hope and skepticism:

If they (agencies charged with restoration) would start doing something with their surveys instead of doing another survey. I'm all for surveys. Don't get me wrong. But once you find out what you need to do, get out there and do it. Don't drag your feet until you need another survey. It's just wasting money and time, valuable time.

[Interviewer] *Do you think anything will be done about it?*

[Respondent] I don't know. Give politicians something to work with and you know what happens. Because, I mean all these years, they have been talking about it and they really have not done anything. Nothing has been done. They'll say they are trying something but it doesn't work. As long as they are trying I am happy. But then they hold another survey and let it drag on again. So by the time they could do something, things have changed. So they need that other survey to figure out what to do again. It just keeps going.

Rose, like many native respondents, recalls community members discussing land loss as a child and has noticed a dramatic increase in loss over the last twenty years. Although coastal land loss in Louisiana has been a community problem for some time, it was never considered a significant issue by the state or the nation. Thus, residents are suspicious of a process that they believe is out of their hands.

This distrust is validated as developers are permitted to build expensive sport-fishing camps that remove wetlands, making remaining land areas even more vulnerable. Rose comments on the conflict between economic expansion and preservation: "And they [new homes] are like one on top of the other. Then they wonder why the land is sinking. Look at these things. They are not camps. They are mansions. These things are huge."

On the other side of the coin, Anna and Sam (GI), a married couple in their thirties, are caught in the conflict of preservation and economic development. They are skeptical about the political machinery revolving around the issue of land loss. Both grew up on Grand Isle, moved away for a short time, were drawn back to the island by family and now run a long held family business. They are also investing in a developing marina on the island. Anna and Sam believe that south Louisiana can be saved; however, their interactions with those responsible for slowing erosion have left them bitter and resentful toward those organizations that they feel are taking advantage of their unique place. Sam gives the following account:

Like the Corps of Engineers ... They had an old man for the Corps that oversaw the project out here. ... This man (from Corps of Engineers) bluntly told him (fellow resident), well the only guy I heard that said it; said it truthfully. He said, 'If we do it right the first time we wouldn't have a job.' ... It's like they don't want to do it right the first time.

Anna: I mean we have a lot of uniqueness about us. I hope my daughter *never* gets to the time when they're building the campground (house) right across the street from the store.¹³

Sam and Anna are distrustful of the process of coastal restoration. In their narratives they characterize the agencies involved in the process as more concerned about their own self-serving agendas than actually restoring the

coast. Doubt and distrust about restoration and the looming possibility of devastating storms adds to the sense of vulnerability, but also the realization of strong attachment. Anna continues, “that’s the only thing we can’t be in control of.” And Sam says, “But that’s what makes you appreciate it, is fearing the storms. So, you know in the back of your head that it *can* be wiped out. So enjoy it while you can; while it’s here.”

Echoing doubt about coastal restoration efforts, Alfonse (GI), a 77-year-old government employee, also thinks the community has great resiliency and is hopeful that the island will persevere, in part, because of the community’s long and deep ties to the land. Thus, Alfonse’s hopes lie with native communities and their local knowledge. At the same time, he is distrustful of outsiders who claim expert knowledge:

I see it [land loss] and I see it now. The more they [scientists and engineers] do, the more it eats away. But the engineers, they’re too smart. They went to too many colleges and never come and looked at it. [It’s] not on the book. No, come and see the climate itself. Come do it. Like, not what you read out of a book. But I guess they get paid not to spend too much money. ... But they’ve never been to Grand Isle and they’re going to tell me how to protect Grand Isle.

While it may seem that Alfonse’s insider knowledge comes from a mere physical presence in place, his opposition to outsiders indicates something more, knowledge cultivated over time through parallel interaction and a developing attachment. Perhaps attachment and the accompanying local knowledge create an aversion to outsiders who, Alfonse feels, devalue local ways of knowing.

Residents, as they have for generations, connect themselves to place while remaining aware of the ominous possibility of its loss. Potential displacement is increasingly likely as the land disappears, thus the salience of place is acknowledged more so than in times past. Kyle (T), a 56-year-old Native American pastor and community activist says, “We are sinking. And you have the increasing water level (of the Gulf of Mexico). So we are in a situation where it’s going to be an ongoing process to preserve what’s here.” Kyle, using “we,” connects the social and the ecological. While it is likely that Kyle’s intention of “we” indicates himself and his neighbors, the intention of this pronoun use also signifies his community’s bond to place; the community is not only its residents but also the land. It is through this connection that we can understand the distrust that many, such as Alfonse, Anna, and Sam, heap on to outsiders who would rectify the problem. Kyle’s conviction to hope is framed around amending past human negligence (Fig. 2):

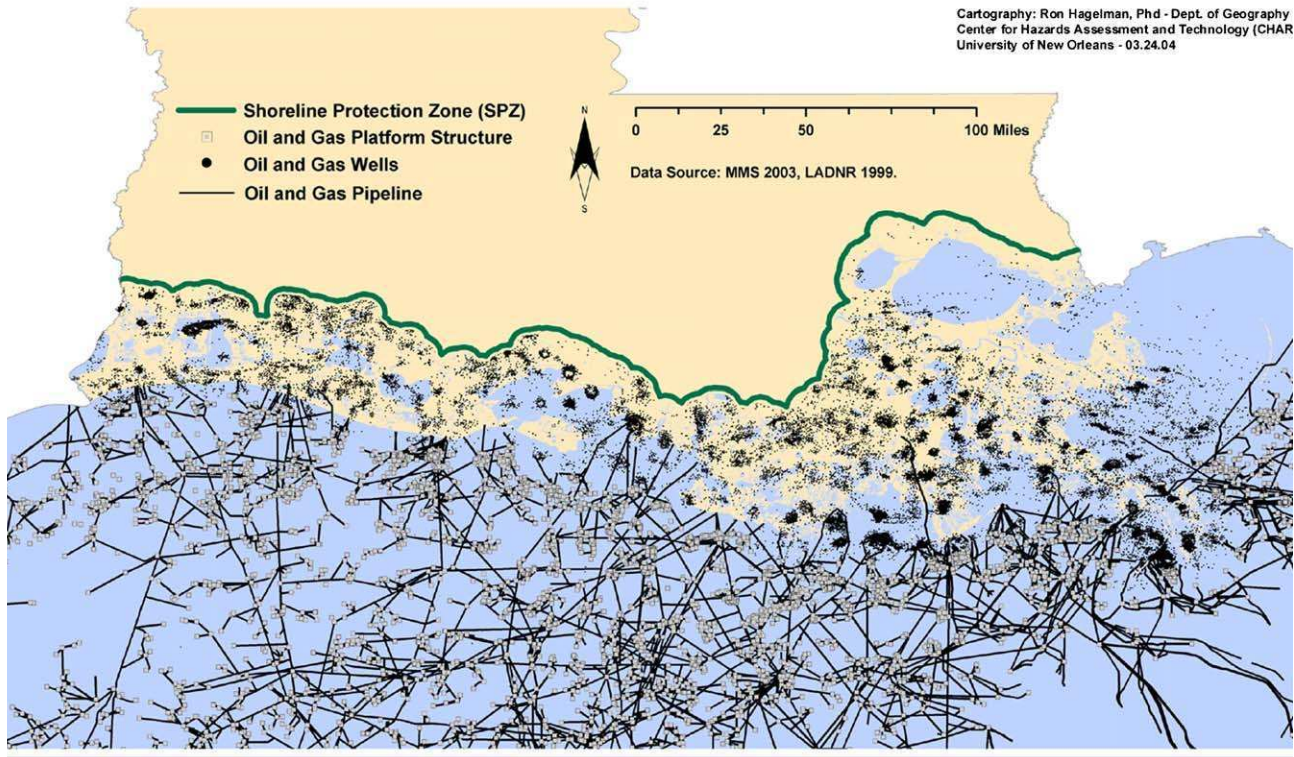


Fig. 2. Oil and Gas Activity along Louisiana's Coast. *Source:* Developed by the Department of Geography and the Center for Hazards, Assessment, Response and Technology at the University of New Orleans for the U.S. Army Corps of Engineers, Louisiana Coastal Area (LCA) Study, 2004. http://www.lca.gov/final_report.aspx

And over time, all kinds of canals were dug to drill [for oil] around there and the rigs were pulled out and nobody thought about sealing it off. You can see all the old channels that were left open; that let the saltwater in and it just killed everything around it. I would say for the sake of the resources and money, people forgot about trying to protect what was there.

[Interviewer] *Do you think anything will be done?*

[Kyle] I believe something will be done. Now there's a lot of projects.... As we are talking to get federal dollars, we have taxed ourselves. The taxes passed a couple of years ago to help match local dollars to get the federal dollars.

Kyle's view of his landscape expresses hope through a conviction that action like a local community tax will pave the way for addressing the vanishing ecosystem. As a town activist, Kyle believes in the community – that action, a revived respect for the ecosystem, and the social attachment to it will lead to coastal restoration.

Kyle's account reflects the belief in his community's ability to affect process. Respondents' landscapes are politicized, but for the most part, unlike Kyle, they are negative. The land and resident's relationship to it, in and of itself, is viewed as mutually benevolent. However, looking at the coast and the environment as a whole takes on elements of societal excess and consumption, the result of political and economic decisions. Residents are wishful for preservation, but realize economic and political determinants play an influential role that may leave the land last in line.

Respondents' landscapes reflect an ecopolitical dimension. They express deep concern for the issue but feel alienated from inclusion in possible solutions that they suspect is played like a game with multiple competitors. Ambiguity about solutions is heightened due to the almost invisible yet dramatic nature of land loss. However, it appears that Katrina has illuminated the issue of coastal land loss and nullified any invisibility at least for the time being.

Respondents vary in their thoughts about the future of what they see as a special place, however, land loss is a fact of life on Grand Isle and in south Terrebonne that enhances awareness of place attachment. Residents' landscapes of their communities and the coastal region are nuanced. The loss of land is slow yet dramatic and Katrina brought rapid and substantial loss, although at this time there are no estimates. It is not just erosion of the land but of stability that is made all the more frustrating by the organizational bureaucracy that for many appears to create conflict and alienation.

CONCLUSION

In this chapter, we attempt to find out what role coastal land loss plays in a narrative of place and how it is experienced. Land loss is a pervasive element of residents' narratives. The primary finding of our study is that land loss is experienced as a sense of vulnerability that is expressed in a myriad of ways as residents describe their selves and way of life. Residents' sense of vulnerability and the added perception that they have "no voice" in the restoration process lead to a distrust of the process and, for the most part, fear for the future.

All respondents' landscapes were affected by coastal land loss. Although respondents perceive the change produced by land loss in varying ways, they all discussed the issue as immediate. This sense of urgency about land loss and place, accentuated by the slow nature of coastal erosion, is conveyed through the meaning and understanding of vulnerability. Hurricane Katrina gives credence to residents' sense of immediacy and has proven them somewhat prophetic. The storm's impact was much greater due to Louisiana's loss of coastal land. Residents' have known this for some time and their intimate relationship with place yields a local and specialized knowledge that they feel outsiders condescendingly reject.

Respondents' identities are wrapped up with place in a way that is seemingly inseparable. They express a melding of the natural and social that has developed over generations of reciprocal interaction with and interpretation of place. They are in the midst of a disaster and this causes, as [Brown and Perkins \(1992\)](#) point out, acknowledgment of previously taken for granted emotions for place. Indeed, we are now attempting to document the effect of Katrina, a much more tangible disaster resultant of the ongoing catastrophe of slow land loss, on residents' construction of place attachment.

During times of relative normalcy, attachment to place resides in the background of consciousness. Post-disaster, attachment rises to the front stage of conscious thought due to loss or perception of what could have been lost ([Brown & Perkins, 1992](#)). Based on respondents' accounts, we found that this heightened awareness of attachment is never far from the fore of consciousness. Carmen (T), a 38-year-old office supervisor, exemplifies this more constant awareness of attachment:

[Interviewer] *What is something that you have learned in your life that has stayed with you?*

[Carmen] Never take for granted that the land that you are on will always be there. Never take it for granted. It disappears in an instant. Never take for granted that you can put something in one spot and when you come back, (in) a couple of years, it will still be there.

Respondents' narratives of place are framed in terms of vulnerability. Thus, they are forced to realize their degree of attachment. While the landscapes of these residents are shaped by the certainty of land loss and, at the time of the interviews the prospect of the "big" hurricane, the framing of their environment in terms of vulnerability also contains elements of hope that go hand in hand with the land – they will hold on and sustain community while never abandoning the idea that they may be forced to move "up the bayou." Now, post-Katrina it appears that these communities escaped total devastation so that "moving up the bayou" remains only an idea that most hope never becomes a reality.

The accrued biographical experience that produces place attachment (Altman & Low, 1992) appears to help produce such hope (sometimes expressed waveringly by respondents) about a place that is always at risk to disaster. The respondents and their families have been part of the region for generations. Their experiences are similar to those that generate place attachment for residents of other places, but in Grand Isle and Terrebonne there is an ongoing traumatic event, coastal land loss, that creates a heightened awareness of place attachment. And they remain attached to place even though it is vanishing not because the land is less important than their understanding of it but because it is symbolic of who they are, their identity. In fact, the land is integral to their understanding of place and it seems, themselves. As indicated by the words of the reporter at the beginning of this article who commented on the strength of residents who are beginning to rebuild, perhaps it is this attachment and awareness of vulnerability that facilitates their resilience, a defiant attempt to stave off the loss of land and identity. Future research will attempt to illuminate this.

A more constant awareness of place attachment is characterized by landscapes of vulnerability and is evident throughout residents' narratives. For researchers, the relationship of a heightened sense of place attachment to policies that address environmental change can bring us further along in understanding not only the nature of place attachment but how we can move toward policies that better serve publics and their environments. Within the particular problem that southeastern Louisiana is facing, now more so than ever, they are understandably untrustworthy of outsiders who they feel make little attempt at including them in restorative processes. If practitioners, in restorative processes in general, want residents "on board" for restoration projects and policies, then they must actively involve residents in actual restoration. Holding conciliatory community meetings, as appears to occur in coastal Louisiana, is not nearly enough. Although this is commonly known, agencies continue to take communities for granted.

Curry and McGuire (2002, p. 181) argue, “Land and oceans management policy solutions will fail because they are individualistic and fail to recognize the existence of community. The culture and its legal discourse proceed primarily in terms of the individual or corporation and/or the state.” These communities already hold a deep relationship with the land. If any real attempts at saving Louisiana’s coast are to be made then involving these communities thus creating a sense of ownership in process can sustain the various processes that will work over time.

Thus, identification with place may serve as the basis for action in accordance with place. More specifically, if a place that one identifies with is perceived to be under threat then they are more likely to act in ways to protect it (Stedman, 2002). Research also shows that familiarity and attachment with places make it more likely that residents and/or stakeholders will demand a greater say in the specifics of managing an area (Clark & Stein, 2003). Uzzell, Pol, and Badenas (2002) findings reveal that communities with strong social and place identity are more supportive of environmentally sustainable attitudes and behaviors. If people believe that others are willing to help solve environmental problems, then they are likely to follow course and engage in the behavior (Uzzell et al., 2002). Thus, collective or group characteristics of place attachment are key ingredients to understanding environmental attitudes and behavioral change (Uzzell et al., 2002). It remains to be seen if Louisiana’s coastal residents can mobilize their communal attachment to affect the restoration of their environment.

In light of Katrina and the now widespread awareness of coastal land loss, it will be interesting to see whether residents’ deep concerns about land loss are heeded, what type of role they themselves will play in any restoration efforts, and if these projects are considered sustainable. Our presently engaged research will seek to illuminate these issues.

NOTES

1. There are two communities. One, Grand Isle, is in Jefferson Parish and the other is actually a small cluster of interdependent communities that are in Terrebonne Parish and we count as a “community” distinct from that of Grand Isle.

2. To be sure, environments exist apart from us, but our interactions with and upon places only occur from the meanings we ascribe to them.

3. Respondents cover a diverse age range from the mid-thirties to the mid-seventies. Forty-two interviews of forty-seven respondents were collected. Prior to entering a community, a secondary analysis (academic, history, and media) was conducted. Informants were then accessed and they provided us with names and phone numbers of residents (Singleton & Straits, 1999). Snowball sampling uses a

process of chain referral: when members of the target population, who are then contacted, interviewed, and asked to name others and so on (Singleton & Straits, 1999).

4. Residents were asked to discuss childhood, parents' and grandparents' lives and occupations, experiences with storms, places they considered important, and changes to place over time including the fishing and oil industry.

5. Two of the authors are from New Orleans and the other has lived there for twenty years. We have not witnessed land loss as have coastal residents, however, as Hurricane Katrina illustrated, we are effected. One author lost her home and the other two moved prior to the storm but have family and friends in the region.

6. Themes that serve as categories were established and continually reformulated until all the data were incorporated.

7. Any interruptions by the interviewer are included in the presentation of the quote. Also, due to the majority of respondents being white, race/ethnicity will only be mentioned when introducing a Native American respondent.

8. Many respondents raise the issue of land loss early in the interview when questions are oriented toward childhood and storms. If a respondent does not raise the issue the interview guide compensates with an indirect question toward the end of the interview that asks about perceptions of physical changes in place over the respondent's lifetime or term of residence. However, if a respondent has not raised the issue of land loss by this point they were more likely to respond to this question with sub-narratives about development and structural changes.

9. Residents' accounts of land loss vary across and within narratives. For instance, some residents waver in their thoughts about the future of their communities saying that they believe it will endure while later saying that land loss cannot be stopped. Yet, all respondents conveyed an attachment to place and all who discussed land loss did so in terms of vulnerability.

10. A "(T)" denotes a respondent from Terrebonne Parish, and a "(GI)" signifies a respondent from Grand Isle.

11. Jerry grew up in Houma – a city in Terrebonne. His father had a fishing camp in Grand Isle that he and his family frequented.

12. Italics denote emphasis given by interviewee.

13. The supermarket Anna operates is on the bay side. Across the street, on the gulf side, there are residences. There is a stretch of land of about fifty yards before there are homes (parallel to beach) and then beach. She hopes the land does not erode away to the point where the beach and homes are right on the other side of the road from her store.

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3. COMMUNITY BY EXPERIMENT: RECURSIVE PRACTICE IN LANDSCAPE DESIGN AND ECOLOGICAL RESTORATION

Matthias Gross

ABSTRACT

This chapter uses the concept of real-world experiments to describe ecological activity that occurs in the wider human community. The case discussed is an ecological restoration project at Montrose Point, a peninsula in Lake Michigan on the North Side of Chicago. In the restoration of Montrose Point, the scientific importance of ecological science is not juxtaposed with the seemingly irrational ideas of the human community, but the human community becomes a part of scientific work. Like experiments in the laboratory, real-world experiments often bring surprises. However, if ecological restoration is recognized to be inherently uncertain, surprises become opportunities to learn rather than failures. The chapter concludes with a discussion how a real-world experimental strategy can help to handle surprises via alternate phases of corroboration by recursive practice.

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INTRODUCTION

Concepts such as sustainable development and precautionary principle have been applied to establish ex-ante devices for guiding implementations in ecological projects on a community level as well as related fields. Important as they are in triggering discourse and redistributing responsibility, their institutional agency has been limited. One reason for this is the unsolvable dilemma of not knowing “before the trial” whether or not the social and ecological risks are acceptable and the knowledge for an intervention is sufficient. In this chapter it is suggested that in some fields of ecological restoration the concept of *real-world experiments* can be seen as a way out of this dilemma.

Whereas the faith in total control and full knowledge of ecological systems and social processes implies an ability to act only when everything is known in advance, an experimental approach allows us to accommodate human and natural elements in spite of gaps of knowledge. Real-world experiments are a means to launch an ecological design project in spite of uncertainties, and uphold it without disrupting the overall process. In this framework, experimentation is a mechanism whose aim is not to overcome or control environmental uncertainty, but to live and blossom upon it. It is a process that is related to what has been labeled “learning while doing” in adaptive management (cf. Covington, 2003; Walters & Holling, 1990). This chapter shall present and illustrate a working model of the requirements and the operating mode of this type of practice in real-world experiments by addressing several challenges: (1) negotiating the experimental design among heterogeneous actors of a community, (2) turning concerned citizens into active participants, (3) monitoring the experiment, and (4) handling surprises and potentially re-negotiating the design.

The chapter will illustrate how the wider community’s experience-based expertise can become part of ecological practice. This approach knits together the study of society–nature interactions, typically attributed to environmental sociology, and processes of community building. Via a notion of experiment that is not bound to the walls of a laboratory, the idea of ecological design can be seen as based on recursive practices that have the potential to deliver a unique understanding of ecological practice as part of the community’s everyday life. Practices, in this context, are to be understood as arrays of human activity, that can also include natural objects like trees or birds (cf. Knorr Cetina, 2001).

Recursive practice hence simply means the use of prior learning to generate new knowledge and new results (cf. Constant, 2000). In such a strategy, experts, on the one hand, are forced to lay open the borders and risks of theoretical models, which in turn reduce the extent of disappointments and increase the readiness to learn from mistakes. To be sure, it is obvious that such a process introduces delays in project progress that may not occur in a top-down structure. However, especially so-called neighborhood restoration projects (e.g., Gobster & Barro, 2000; Gross, 2003; Helford, 1999; Robertson & Hull, 2003) have proven that time-consuming and laborious hearings, the inclusion of volunteer group organizations, and the involvement of stakeholders via focus groups in the long run have been more robust than more top-down approaches of ecological design.

To illustrate this, I will discuss the ecological restoration of Montrose Point, a peninsula built on landfill in Lake Michigan on the North Side of Chicago. It is discussed how in the practice of ecological restoration the idea of experiment can be understood as being built on processes of recursive practice, which includes different parts of the wider community and the natural environment. But before proceeding any further, I want to discuss where the concept of real-world experimentation derived from and why it can be useful for projects in ecology-related community studies.

LABORATORY EXPERIMENTS, SOCIAL EXPERIMENTS, AND EXPERIMENTS BY THE COMMUNITY

In modern times, laboratories have been engineered to make them legitimate places to study “nature.” It seems to be a commonplace in the history of the natural sciences that modern science was born when curious people turned from observation of phenomena in their “natural” setting to the observation of phenomena behind laboratory walls, that is, when they began to look for the laws of nature in a very peculiar situation (cf. Krohn, 1987; Zilsel, 2000). The laboratory was regarded as a politically and morally neutralized space. In an experiment, parts of nature are isolated by artificial measures from nature “out there.” The ideal of shutting out all possible sources of mistakes belongs to the original idea of experimentation itself. Pieces of nature are installed on a bench in a laboratory. This classical scientific experiment is not simply a matter of trying things out and documenting how nature reacts to a certain manipulation, but it is a procedure disciplined by several factors.

Different from the ideal of the laboratory experiment is Donald Campbell's idea of an "experimenting society" of the 1960s. It was a quasi-experimental research design to standardize social experimentation and particularly evaluation of social policies (cf. [Dunn, 1987](#)). Subsequently and on a more general basis, the need to develop an understanding of experiments beyond the laboratory was spurred by the observation that modern research in general is likely to be further extended outside the laboratory ([Krohn & Weyer, 1994](#)). Thus, the borders between technology development and detached scientific knowledge production on the one side and the application of knowledge as well as the implementation of technologies in the wider society on the other side tend to become blurred. The scientist's participation occurs within a complex network of actors whose activities cannot be controlled with traditional scientific methods.

The point made by Krohn and Weyer was that the experimental method in the laboratory is extended to the public, which is being subjected to the risks of these experiments. Consequently, as [Beck \(1995, p. 125\)](#) has nicely put it when discussing the experiments carried out on humankind that elude intervention from the natural and technological sciences: "natural science has thereby forfeited its exclusive right to judge what an experiment signifies." Thus, introducing the methods of science into society means moving research into society, which in turn calls for a new understanding of scientific experimentation. Furthermore, negotiations of these experiments taking place outside the laboratory call for a redistribution of scientific responsibility.

In the following I will further develop this stream of thought, seeking to extend the previous ideas on experimentation outside of the laboratory. I will argue that the concept of real-world experiments, as expanded below, not only delivers a more complete understanding of ecological design practice but also is precisely aimed at integrating the wider community into scientific practice. In doing so I will follow [Cook and Campbell \(1979, p. 5\)](#) that "experiments involve at least a treatment, an outcome measure, units of assignments, and some comparison from which change can be inferred and hopefully attributed to the treatment." However, unlike in Campbell's idea of social experimentation as well as in historical reconstructions of experiments outside the laboratory (e.g., [Bonneuil, 2000](#); [Eckart, 2002](#)), I will outline an approach where the human community can be seen as initiating the experiment and not merely as reacting or adapting to it (cf. [Gross & Krohn, 2005](#)). In general, real-world experiments aim to deliver a theoretical and processual understanding of different scientific activities extended to the "real world" that includes many different human and non-human actors.

A TYPOLOGY OF EXPERIMENTS AND THE PROCESS OF RECURSIVE IMPLEMENTATION

How can the concept of real-world experiments be clarified? How can they be distinguished from other forms of experimentation and implementation? Beneath the objective to characterize real-world experiments with recursive learning processes that knit together the production of knowledge with the application of knowledge, the concept can be captured along two dimensions: First, the variability of knowledge production and knowledge application and, second, the type of boundary conditions. The former refers to the distinction between the respective endpoints of a horizontal line framed by the primary goal to produce knowledge on the one end and by the ideal goal to apply knowledge on the other end. The latter denotes the boundary conditions by positioning an ecological implementation between the endpoints of a vertical line. This line is framed by the practice to produce knowledge under controlled boundary conditions on the one end and under situation-specific boundary conditions on the other.

These two complementary questions allow a categorization of four ideal type forms in a four-fold diagram (see Fig. 1). The forms can be categorized

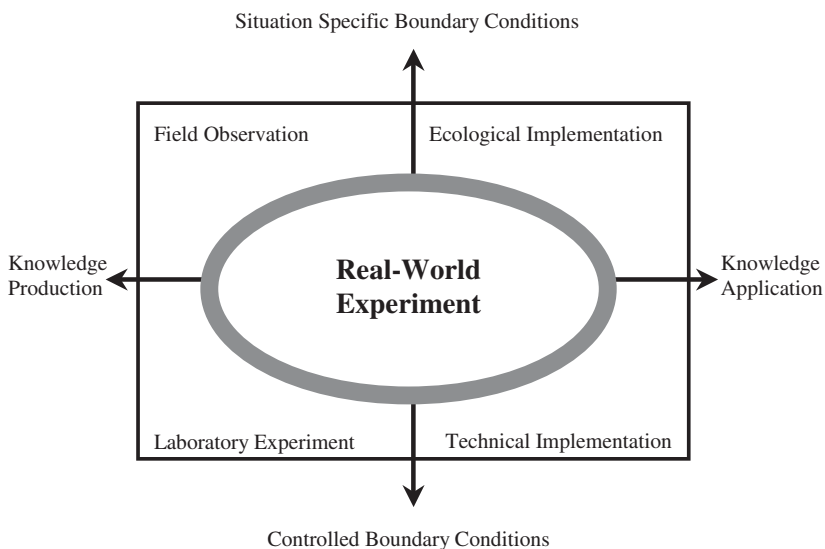


Fig. 1. A Typology of Experimentation Based on Gross et al. (2005).

as traditional laboratory experiments, field observations, ecological interventions, technical interventions. The important point here is that real-world experiments at times can include different objectives of these four forms of experimentation and implementation. Thus, real-world experiments are located in the center of the four-fold diagram.

Both laboratory experiments and field observations belong to the classical research strategies in the environmental sciences. An obvious difference between laboratory and field is, of course, that natural settings are particular and variable places, each one the result of a unique local history. A field observation furthermore does not include an implementation into a system to be observed. However, neither laboratory experiments nor field observations purposefully connect controlled and situation-specific boundaries. A laboratory experiment is undertaken to produce knowledge under isolated laboratory conditions, but in field observations causal connections are difficult to detect. On the right-hand side in the typology “pure” knowledge application is depicted. In this case, knowledge is applied without any intention to produce new knowledge. It is assumed that the existing knowledge is so reliable that the outcome of an intervention is known in advance. Controlled boundary conditions, displayed on the bottom side, are typical for technical implementations and interventions. Situation-specific boundary conditions can be found in ecological interventions.¹

Since real-world experiments are to be understood as taking place *in* and *with* human-nature-systems, the subject of experimentation has been extended so as to make it a societal self-experimentation, or as Krohn and Weingart (1987, p. 53) pointed out with reference to technical inventions, it becomes a double blind test, “an experiment with the experimenters.” In order to analyze an ecological restoration project on the basis of “an experiment with the experimenters,” in the following a working model will be introduced that visualizes a recursive ecological design cycle (see Fig. 2). The cycle is based on the analysis of transcripts, minutes, and published material on Montrose Point, which were codified with a program for qualitative text analysis.² The cycle will be used to subsequently take a closer look at one example of a recursive closure between natural changes and the human reaction to these changes: The development of the so-called “Magic Hedge” on Montrose Point.

At the beginning of the cycle we are dealing with a system that can include social as well as natural elements. The dynamics of the system are being observed: sometimes by natural scientists, sometimes by organized interest groups, or sometimes simply by hikers happening to pass by. An observation is regarded as normal as long as the system changes according to the

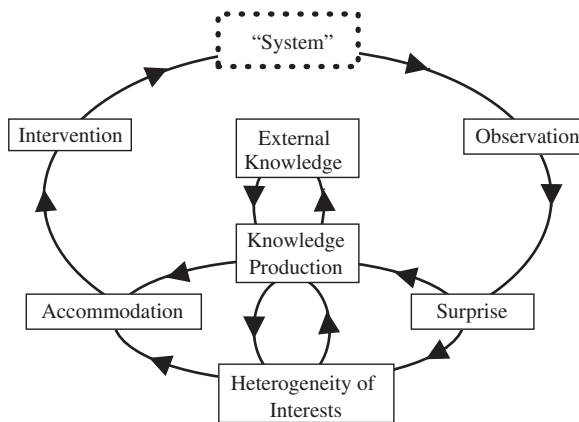


Fig. 2. A Recursive Design Cycle (cf. Gross et al., 2005).

expectations of the observing actors involved. However, things often fail to follow the expected path. Like in experiments in the laboratory, the reaction to such an event can be called a surprise. Talking about a surprise outside of the laboratory, to be sure, is a difficult task, since it can be objected that events are always anticipated by some, albeit not by all observers. Or as Michael Thompson (as quoted by Janssen, 2002, p. 241) summarized the problem: “Whenever something unexpected befalls us, there is always someone who ‘saw it coming.’”

Thus, following Schneider (2001, p. 4671), an “imaginable surprise” can be defined as an event or process that departs from the expectations of some definable community, yet is a concept related to, but distinct from risk and uncertainty. Therefore, a surprise is a condition where perceived reality departs qualitatively from expectation, that is, surprise derives out of a difference between an expectation and what is actually experienced (cf. Kates & Clark, 1996). Seen in this light, there can be no surprise without an anticipation that can be attributed to a certain group or community. Without this, a surprise cannot be registered or observed in a sociologically meaningful sense.

However, if such a registered surprise is taken seriously, it forces the actors to question their previous knowledge of the human-nature-system and to adjust their theories and their future actions accordingly. If a surprise leads to a complete failure of previous arrangements, then a process of negotiation may result in the questioning of existing theories and assumptions about strategies and plans of action that can lead to an “accommodation” of the

original strategies. The term “accommodation” here is used in the sense developed by Park and Burgess (1972 [1921], pp. 663–666). In their understanding the social world does not passively adapt to the environment, nor is it perceived as a successful and all-encompassing resistance against the coercion of the outside world. Rather, it is seen as a hybrid between the two perspectives, which points to human will, but at the same time reminds us of the limits the natural and the social environment can set. This understanding of accommodation thus serves as a bridge between human invention and adaptation to natural occurrences.

Theoretical developments can also be initiated via scientific research in settings outside the ecosystem as well as knowledge stemming from external sources. Furthermore, the entire ecological project (including goals, funding, etc.) is embedded in wider social relations, like national political debates or legal regulations. In Fig. 2, this is summarized as heterogeneity of interests. Scientific strategies, therefore, need to be developed in negotiation with different community actors. These networks of multifaceted actors can consist of policy makers, stakeholders, environmental or other interest groups, as well as academic scientists or outside experts. This requires a research strategy that is open for changes in attitudes and open in outlook toward cooperation and negotiation.

The aspired goals of stakeholders, for instance, can be incompatible with the goals of restoration scientists and engineers. Hence, scientific options and the decision about strategies are closely linked to one another. Whatever the details might be in different real-world experiments, the last step is an intervention into the system. The system subsequently can once again expose its own natural dynamics. A recursive process can be regarded as complete when a reciprocal interaction between observation and intervention leads to a closure of the circle and, on the one side, new knowledge enters into new arrangements and, on the other, new arrangements feed back to produce new knowledge.

RESTORATION IN AN URBAN COMMUNITY: A REAL-WORLD EXPERIMENT PERSPECTIVE

Although ecological restoration has only captured wider interest since the late 1980s, today it has a large following in many parts of the world. The idea of the restoration of ecosystems is normally understood as a step beyond the one-sided conservationist-and-preservationist strategies of traditional

environmentalists and conventional attempts at protecting nature. It is regarded as a development away from the ideal type of a hands-off strategy on the part of the environmental movement designed to protect nature from human influence, to an active attempt to re-create, invent, design, or restore ecosystems. The official definition of ecological restoration endorsed by the *Society for Ecological Restoration International* (SER), defines ecological restoration as “the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed.”³

For Bill Jordan, who coined the term restoration ecology in the early 1980s, it is more. To Jordan (2003, p. 78), it “is work and it can also be play, a way of communicating with other species and with the landscape, a mode of discovery and a means of self-transformation – a way of both discovering the natural landscape and discovering ourselves in that landscape.” Of course, this also means that ecological restoration is nothing static, something that the etymology of the word restoration suggests. Instead: “The process of restoration itself is dynamic, adding to the dynamics of the historic ecosystem the new dynamics of its interaction with the restorationist and the human society that he or she represents” (Jordan, 2003, p. 22).

This view is complementary to the idea of real-world experiments by accepting and including the unintended occurrences as part of restoration work including public perceptions and desires as well as people’s preferences. The latter is even to be seen as a basis for learning from the field. The knowledge resulting from these unexpected “reactions” can be fed into the next step of the project.

Increasingly the planning and practice of ecological restoration involves lay people, volunteers, and academic ecologists alike, and thus brings in elements hitherto regarded as “un-scientific.” However, here it is neither the traditional idea of nature turned into a laboratory for natural scientists, nor – as Krohn and Weyer (1994) have suggested – society that has become the laboratory for scientists. Rather restoring nature has become a “public experiment” where the gaining of new insights and the application of new knowledge go hand in hand (cf. Gross, 2003).⁴ Furthermore, ecological restoration connected with the idea of real-world experimentation can be seen as a way to built community based on the interaction with the natural environment.

The restoration of Montrose Point adds an important case to community involvement of restoration projects. Montrose Point is a peninsula on the North Side of Chicago, which did not exist before 1871. Until the mid-19th century, Chicago’s lakefront was home to sand dunes and wetlands. After the Great Fire in 1871, which destroyed most of the city of Chicago, much

of the debris was pushed into the lake, beginning a process that created what is now park space all along the lake-shores of Chicago. Although at the end of the 19th century, there were plans to construct large buildings and commercial property in the park, it was only in 1911 that it was finally decided the park should remain open.

At Montrose Point (Fig. 3), in subsequent years the waste of the human community and the construction waste that was removed for subway development were thrown into the water and over the years developed into a peninsula of some five acres that is now called Montrose Point (cf. [Gobster & Barro, 2000](#); [Larson, 1998](#); [Martin, 2005](#)). The peninsula was also created to provide more public recreation area and a protected harbor. Today the point is part of the larger Chicago's Lincoln Park, the city's largest, and most heavily used park, which provides lakefront access and diverse recreation, leisure, and cultural opportunities to over 20 million users annually. Montrose Point is only a small section of a larger park system. The peninsula is open to the north and east and serves as a harbor on the south side. It extends nearly three-quarters of a mile lakeward of the pre-lakefill shoreline.

First plans for turning the landfill into a park were already made in 1929, but it took almost another decade until noted landscape architect Alfred Caldwell tried to establish a park in the prairie style of the Midwest. However, with the beginning of World War II the U.S. Army took over the peninsula for use as a radar station. In the 1950s it was used as a missile base as part of the cold war strategy to protect Chicago. Montrose Point was leased to the army who ultimately used it as a Nike missile site served by 300 men. The military area was surrounded by a security fence, which soon was covered by a hedge of non-native honeysuckle bushes. When the military left the peninsula, the surrounding fence was also removed, but remnants of the hedge remained. Finally in the 1970s the area was reclaimed as a park space. By then the landscape consisted mainly of scattered trees and the honeysuckle hedgerow.⁵

In the early 1990s plans were developed to restore the point to a savanna as it might have looked in the early 19th century. The old Caldwell plans were also used as an option for designing the park. However, the ecological reference point to "restore" Montrose Point in the literal sense of the word would be to turn it back into part of Lake Michigan. Instead, ecological restorationists involved in today's project attempt to design a landscape as it might have looked before European settlement if the land that is now Montrose Point had actually existed and the savannas of Illinois had reached into Lake Michigan.



Fig. 3. View from Chicago's Hancock Building to the North Side of Chicago. *Note:* The arrow demarcates Montrose Point on the horizon. Photo taken by author.

An important development in the case discussed here started in the spring of 1996. In a preceding restoration project in the metropolitan Chicago forest preserves, a fierce controversy erupted over the ecological restoration of prairies and oak savannas (cf. Gobster, 1997; Ross, 1997; Siewers, 1998). The local and even national news took great interest in the controversy, which came to be known as the “Chicago controversy.” It was a controversy that grew from arguments about the objectives of restoration in suburban communities in Chicago. Opposing groups were successful in interrupting most of the restoration activity in the Chicago area for about a year. This controversy was used as a touchstone to examine questions about peoples’ values associated with nature.

One of the results was that most people did not object to the idea of restoration per se, but centered their concern on specific practices, such as the killing of deer, tree removal, and especially on how and where it was carried out. The wider public simply wanted to have a say and even wanted to get directly involved in the process. The USDA and the City of Chicago thus learned from this experience that the involvement of the wider public can be the key to successful implementation strategies. Consequently, in the subsequent development of Montrose Point, a bottom-up approach was confirmed as being the most successful strategy. Montrose Point would be a piece of land designed by the human community and for the users of the place.

Today, community involvement is regarded as the key to a long-term survival of Chicago’s nature preserves. Since 1996, as Kathy Dickhut from the Lincoln Park Advisory Council (LPAC) stated, the situation is very different: “Whoever wants to be involved in the process can be. [...] The results will then be given to the landscape architect we hire to inform the design process. And the plan that person comes up with will be subject to a lot of review by the planning committee, which will also have community people involved” (as quoted by Furnweger, 1997, p. 3).

This means that in our cycle (Fig. 2) the observation by experts can go hand in hand with the problems perceived by people so far not involved and not detected as “experts.” Experts here can as well mean “lay” experts, stakeholder groups, or academic ecologists. Indeed, it were the “uncertified lay experts” (Collins & Evans, 2002) of the surrounding human communities whose ideas on nature were first heard, and the academic ecologists were invited later to assess (together with the stakeholders involved) solutions that would be ecologically feasible and desirable. The core interest here is that scientific experts and the broader public met by evaluating options, negotiating strategies, and adjusting knowledge before an intervention.

The most general starting point in the restoration of Montrose Point was that residents wanted their nearby park areas to be more “natural,” an observation that this was not the case so far. Through a participatory process, different stakeholder groups worked to negotiate a design for Montrose Point. *Gobster (2001)* was able to categorize four main visions of nature and what was regarded “natural” as expressed by Montrose Point stakeholders in analyzing focus group interviews beginning in 1997. The first plan that was agreed upon blended different ecological and recreation concerns into a prairie-style site design. This appears to be especially crucial since, as the studies of Montrose Point by *Gobster (2001, 2002)* have shown the spot may be relatively isolated but nevertheless many competing recreation interests among the interest groups exist.

However, the aforementioned hedge in the middle of the peninsula, which developed from the remnants of the military hedge, caused some stir since at least 1997. As the hedge mainly consisted of honeysuckle hedgerow, an invasive and non-native plant from Europe, the plan to restore Montrose Point to a native savanna was questioned because the hedge also attracted many native birds, some of them unseen in Illinois since at least the 1940s. Aptly the area was baptized the “Magic Hedge” by the birdwatcher community, since the hedge was known to be a magnet for birds in an area with many visitors, hikers, picnickers, joggers, as well as a busy road close by. Especially after a cold front in fall or bad weather in spring, the hedge often harbors an immense number of birds. The fact that these birds voluntarily rest there was repeatedly communicated as a surprise. Furthermore, it was relatively unknown territory for academic ornithology. More important, this observation diluted the original plan to “restore” the point to a savanna with mainly native plants and animals.

The conflicting interests in the “restoration” of Montrose Point in 1999 lead the human actors involved to accommodate to the new situation by revising their goals, theories, and approaches according to the natural possibilities and the cultural ideas of nature. New ecological knowledge about native birds and resting habits led to a strategy change that now protects the Magic Hedge. An intervention, as depicted in the cycle above (*Fig. 2*) can thus very well also mean a decision for a non-intervention (*Fig. 4*). The non-intervention in this case was easily agreed upon, since during the negotiations on the future of the hedge some of the participating stakeholders, especially the restoration ecologists, believed that in the course of a few years, the magic hedge might disappear without human intervention due to other native plants and trees that were introduced and would supplant the hedge. Already in 1998 some ecologists believed that the old magic hedge

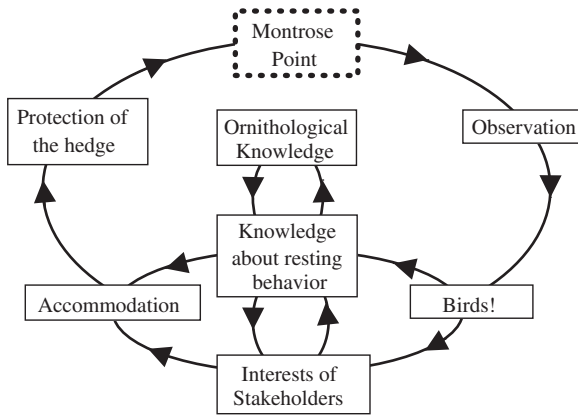


Fig. 4. Magic Hedge and its Birds: An Example for a Recursive Process.

would die, since it was observed that aphids are killing the honeysuckle that makes up a major portion of the hedge. While users and especially the birdwatcher community wanted the hedge not to be disturbed, some ecologists suggested replanting a hedge with mainly native plants that were aphid free. Apparently due to the estimation that the original hedge would die soon anyways, the non-intervention was agreed upon.

Although none of the experts and lay people involved could say for sure, a decision was made on the basis of a considerable amount of uncertainty. No one knew exactly what would happen, but the actors involved went on in spite of gaps of knowledge, solely based on the bird watcher community's wish not to tear out the hedge. The ecologists' account of the future of the hedge thus has not simply conflicted with local people's knowledge, but the birdwatchers feelings for and attachments to the hedge has proven more important than the knowledge of certified experts. Subsequently the hedge was exposed to further observation, so that the recursive cycle was closed.

Although the academic experts' prediction was seemingly validated after one year when even more aphids were found on the hedge, no direct intervention was undertaken, since it was expected that the hedge would die "naturally." However, in 2001 hundreds of bird-friendly, native shade trees, flowering trees, shrubs, and wildflowers were planted in the vicinity of the hedge. By fall 2004 for some reason the original hedge appeared to be stronger and healthier than in the years before and even more attractive for native birds. All the local and academic knowledge together had not been sufficient enough, a surprise was communicated again – both a surprise

about the birds still resting there and even more so about the hedge blossoming. The birdwatchers thus implicitly trusted in the possibility of an environmental surprise. They expected the unexpected. In other words, the process of restoring the point was recognized to be inherently uncertain and surprises were treated as welcome opportunities to learn. Without doubt, this is certainly not going to be the last surprise at Montrose Point.

After almost ten years of restoring Montrose Point with organized interest groups, it has turned out to be practical to carve out the different visions of nature of all the stakeholders involved, who in cooperation with natural scientists and landscape architects design the area. It is interesting to note here that via the work at the point the natural scientists as well as the citizens and volunteers involved developed some new forms of unique local knowledge. Although the impulses on the basic research in the natural sciences, here ornithology, via this “community science” project are not finalized, they certainly have fostered academic ecologists to study birds at Montrose.

The restoration at Montrose Point can be called experimental in our sense of the term since it does not follow a fixed master-plan of action; it is pieced together and built, thought about and tried out, formulated and reformulated, always in negotiation with other people *and* nature. It can furthermore be called experimental since it includes a formulation of a hypothesis concerning the occurrence of a future event. The hypothesis, from the perspective of the sociological researcher, however, can also be discovered *ex post* as an expectation or the experience of participants. Furthermore, the restoration process can be called experimental since observers are identified. Unlike in a laboratory experiment, in a real-world experiment observers can also be individuals or groups of uncertified experts, concerned lay persons, bird watchers, etc. Furthermore, there are observable effects, especially surprising ones and some type of monitoring with interpretation and documentation is given.

In general, a distinctive feature of ecological restoration’s performance is that it is based on “learning by doing” as a strategy. The strategy is not a sign of retrospective failure, but a consciously site-specific approach, one that aims to take full consideration of the non-human nature found in these sites. To put it somewhat differently, restoration practice depends, knowingly, on ignorance as a source for new knowledge. In order to find out about these sources of knowledge, focus group interviews with diverse interest groups were repeatedly conducted to help inform the design and management of the site and to foster surprises to learn. This included birders, restorationists, historic preservationists, recreationists, anglers, and

representatives of disabled and local neighborhood communities. Without the focus group meetings and negotiations between different stakeholder groups, the bird watcher community for instance would not have uttered their knowledge to other participating groups, and thus it could not have been valued by academic ecologists and ornithologists.

In short, without the experimental engagement to unfold the natural dynamics *and* the social changes, there would be no successful community building at Montrose Point, since the stakeholders involved developed a unique type of knowledge in sharing their experiences and expertise by bringing their different sources of knowledge to the agenda. Even more so, the design of the landscape at Montrose Point can be understood as an example of achieving communion with nature (cf. [Jordan, 2003](#)) through an experimental interaction needed to deal with different aspects of uncertainty in the relationship between nature and the human community.

The case of native birds on the Magic Hedge was just one example upon others (cf. [Gross, Hoffmann-Riem, & Krohn, 2005](#)) in order to illustrate how the overall integrity of a community restoration process can be upheld, since its recursive design is able to accommodate revisions and modifications to issues that change, although they were previously agreed upon, and which are fed into the system to expose it to further observation. To be sure, the project at Montrose Point continues to evolve as it moves out of one phase of the cycle into the next in response to changes in actors, policies, and natural factors.

COMMUNITY BUILDING THROUGH RECURSIVE PRACTICE

The case of Montrose Point has shown that ecological practice can be successful via recursive processes to “listen” both to different interest constellations and to react to unexpected natural changes. However, since experiments taking place in the real world often become part of the human community’s everyday life, several challenges have to be addressed.

First and foremost, a community needs to be ready to engage in knowledge production relevant to shaping their lives and environments. This is not self-evident. In a political climate that fosters the belief in certainty through science, ecological real-world experiments will not work. Especially ecological design projects are often undertaken on a tight monetary budget, but they cannot be postponed until every detail of future planning is precisely

known. Thus, before a real-world experiment can be successful, the community needs to be aware that no action is action as well. If the members of the community wish to wait for the ultimate scientific truth, it misuses science as a source for political non-action. If science proposes to deliver reliable knowledge, it overestimates its methodological competence.

The way out of this dilemma is a mutually agreed upon strategy of experimental practice. These two sides need to be clarified, which includes that it becomes part of a real-world experiment approach that the participating community members need to be aware that ecological strategies are based on an enormous amount of uncertainty and ignorance. However, with an experimental strategy as outlined above, gaps in knowledge can be closed via processes of recursive practice, that is, alternate phases of corroboration by use. Ideally – and the example of Montrose Point supports this ideal type – the result can lead to more reliable knowledge (e.g., expertise on the resting of bird) that can be used recursively to produce new knowledge. Ecological practice thus can become able to embed the learning process in such a way that new surprises can be absorbed without bringing the project to a halt.

Furthermore, negotiation of the design among heterogeneous actors needs to be accomplished by turning concerned citizens into participating ones, that is, hands-on practicing actors to handle surprises and to successfully re-negotiate the design. Out of the interaction of different stakeholders with the natural world, new visions of nature can be developed. Community building thus can take place in the interaction with a natural area. In the understanding of real-world experiments outlined above, the human community becomes a part of scientific work, rather than undermining the power of science, as was the case in the traditional presentation of the conflict between “ignorant” lay people and rational or objective natural scientists and other certified experts. The restoration of Montrose Point can be seen as a form of research that tries not to juxtapose the scientific importance of ecological science with the irrational and culturally tainted ideas of the human community. People here are not passive subjects but active agents.

In real-world experiments the relative lack of control in boundary conditions, which is one source of uncertainty can be absorbed and compensated by a recursive design of the research process and the institutional steps in the design cycle, here most important: community participation and the openness to surprises by the actors involved. The recursive process of learning allows for feedback both positive and negative experiences into the next cycle of the design process. One is tempted to speculate that this is

about the only chance to conduct ecological design projects successfully when natural flux and surprises as well as the often-unexpected changes in societal conditions will be taken into consideration. Real-world experiments thus are an attempt to conceptualize, what [Murphy \(2002\)](#) has called, the internalization of autonomous nature into society. In this light, surprising interactions between nature and humans can be perceived as pivotal in the experimental process of community building.

NOTES

1. Needless to say, there are many exceptions to this ideal type (cf. [Kohler, 2002](#)). In some cases technical interventions lack control, but then they are only understood as uncontrolled interventions in retrospect.

2. This working model has been developed out of several case studies of ecological design together with my colleagues Holger Hoffmann-Riem and Wolfgang Krohn. In each case we identified a set of recurring themes, which were compared and discussed until a basic coding scheme was agreed upon.

3. This definition can be found in the “SER primer on ecological restoration” – available online at www.ser.org.

4. Furthermore, ecological restoration implies an experimental approach to research extending along a continuum, ranging from work with systems of different complexities, carried out in the field both with and without controlled conditions ([Gross, 2002](#)). This continuum also indicates a close relationship of restoration with agricultural research as well as other forms of ecological implementations ([Jordan, Gilpin, & Aber, 1987](#)). Similarities of strategies in ecological restoration with those adaptive management, and thus implicitly also with real-world experiments, are discussed by [Murray and Marmorek \(2003\)](#).

5. Most of the information on the Montrose case is based on minutes and transcripts of focus group meetings made available by Paul H. Gobster of the USDA Forest Service, a co-leader of *North Central's Research Program*. For different aspects of the Montrose case, see [Gross and Hoffmann-Riem \(2005\)](#).

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4. VISUALIZING ETHNIC VERNACULAR LANDSCAPES IN AMERICAN CITIES

Jerome Krase

ABSTRACT

Some theories about urban ethnics are synthesized here by looking at “ethnic vernacular landscapes.” Since 1965, the diversity of American cities has drastically changed. It might appear at first glance that the new elements are blending together, but a closer look reveals a complex multicultural mosaic. In the wake of the 21st century, new and old ethnic landscapes co-exist, overlap, and compete with one another, and in the process they define the essence of the new American city. A visual approach can be an important tool in studying this complex and rapidly changing social reality.

INTRODUCTION

This essay attempts to synthesize some of the most important ways, we theorize about ethnic groups in modern and indeed, post-modern, cities by looking at how “the vernacular landscape” (Jackson, 1984) reflects their cultural identities. Beginning with Burgess’ (1925) “concentric zones”

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through “urban imaginary” (Soja, 2000) as well as “hybrid” (Canclini, 1995) and “third” spaces (Gutiérrez, 1999), a central theme in urban studies has been how ordinary people impact extraordinary places.

It is argued here that a visual approach can help us to decipher complex urban scenes by attending to sights that change the meanings of spaces and places. Globalization and post-1965 changes in American immigration laws together have greatly increased the diversity of permanent as well as temporary residents of the nation’s cities (Portes, 1995). From a distance, it might appear that the new elements thrown into the assimilation cauldron of the American “melting pot” are blending together, but up close at the street level they appear more as pieces of a complex and rapidly changing multicultural mosaic.

When the 2000 United States Census was published many of the facts seen on city neighborhood streets contradicted those written in the reports. The lack of fit between visible reality and published data is partly due to the rapidity of localized migration of ethnic minorities. Another factor is the concentration of “illegal aliens” in specific sections of global cities who, although quite apparent to motorists and pedestrians, are often invisible to researchers. Ethnic entrepreneurs also radically change commercial streetscapes and in the process create the appearance of diminutives of their places of origin from Little Africas to Little Vietnams.

From Senegalese sidewalk vendors in the heart of major retail centers and Latinos hawking *piraguas* within the confines of El Barrio, to small Haitian tailoring shops and large Chinese supermarkets, ethnic minority entrepreneurs challenge the visual hegemony and therefore the meanings of highly contested spaces and places. To some, the appearance of migrants is a stigma which indicates the insipient decline of the neighborhood, qua city, or even the country as a whole. To others, thriving ethnic commercial retail centers announce that cities continue to be engines of urban economic vitality which attract legions of needed energetic newcomers (Fig. 1).

NEW AND OLD APPROACHES TO THE URBAN LANDSCAPE

The study of the vernacular ethnic landscapes lends itself to both the new and old urban sciences. Jackson (1984, p. 6) described it as what “lies underneath below the symbols of permanent power expressed in the political Landscape.” His perceptive work neatly complements sociology’s interest in how and why groups are where they are in the city, and how space effects



Fig. 1. Sidewalk Vendor near Ground Zero in New York City. Street vendors can even change the meaning of “hallowed ground.” West African, Asian, and other immigrants, for example, have taken over some of the streets nearby Ground Zero in New York City. This occurred relatively soon after the tragedy on September 11, 2001, and continues today despite the fact that there is a major controversy raging in the city over what are and what are not the appropriate uses for the huge spaces created by demolition of the Twin Towers and other buildings damaged on 9/11. While powerful private economic interests joust with government agencies and groups representing the families of victims these opportunistic entrepreneurs legally, as well as illegally, dominate the periphery. There they continue to hawk commodified sentiments of the global tragedy in the form of T-shirts, posters, and baseball caps to hordes of tourists.

their social interactions and opportunities. Writing about gentrification, and the displacement of the activities of the poor from the streets and city spaces in 18th and 19th century England, Jackson (1984, p. 11) noted that “in brief, much of the traditional play, popular with working class citizens, located at the center of town where the players lived and worded, was driven out, either by the shortage of space or by police decisions to improve traffic circulation and promote order.”

As to why the study of vernacular, as opposed to “polite,” architecture has become more valuable for insight into social history Jackson (1984, pp. 118–119) argued that since the 19th century, “Innumerable new forms have evolved, not only in our public existence—such as the factory, the shopping center, the gas station, and so on—but in our private lives as well.” In the same way, Hayden (1990, p. 7) recognized the potential contribution of immigrant and ethnic vernacular urban landscapes for urban planners in helping to make city life more livable, equitable and at the same time visually interesting. Especially valuable for our purposes here, Jackson (1984, p. 246) commented on the visual competition of commercial streets that he believed represented “a new and valid form of what can be called commercial vernacular.”

Looking like a classic English garden design, for almost a century Burgess’ (1925) concentric zones provided “The” semiotic for the urban landscape. Much “urban” research today continues to focus its lens on the domains of the “inner city” or the “zone of transition” where at the time in Chicago the Ghetto, the Slum, the Black Belt, Chinatown, and Little Sicily were located. Urban Ecology, the study of the spatial distribution of human activity, provided urban researchers and commentators with a parsimonious way to make sense of what was for the period an amazingly complex ethnic and racial scene. The Chicago School of urban sociology had borrowed an analogy from biology, in the principles of cooperation and competition for space and resources, which well served those who sought to understand racial segregation, as well as immigrant and ethnic enclaves.

The discipline of urban ecology was later seen by more radical analysts as too “conservative” for honest analyses of white flight, urban blight, gentrification, and disinvestment (Feagin, 1998, p. 19). However, its basic descriptive principles continue to be of value when contemporized with more analytic notions such as “circuits of capital” and “spatial semiotics.” Under these newer rubrics, the same immigrant and ethnic enclaves are treated not as much as merely “natural” but nonetheless “inevitable.” One must ultimately agree that no concrete entity can adequately serve as an abstract concept, but we must recognize the value of ideas that are grounded in empirical geographical realities.

Looking at Chicago, Howenstine (1996, p. 47) notes how ethnic and racial migrations change the image of a city: "Eighty years ago the ethnic mosaic of Chicago was defined primarily on the basis of first and second generation European groups settling in inner-city neighborhoods. Thirty years ago a large population of first and second-generation Black internal migrants from the South changed the character of that mosaic. Today the mosaic is again being changed by immigrant groups, this time from Latin America and Asia."

As to the power of Latinos to define the heteropolis of Los Angeles, Davis (2001, p. 15) concludes that "Hispanic/Latino" is neither "an artificial, racialized box like 'Asian-American,'" nor "a marketing ploy." For him, *Latinidad* is practice rather than representation. Similarly, my (Krase, 1993) work on Italian and Italian American spaces identified the spatial and visible components of *Italianita* such as how notions of both *omerta* and *bella figura* are visually available as social performance and in vernacular architecture. As might Goffman (1959), I would submit that the way that all ethnics present themselves on the street can be viewed as practice as well as representation. It is their own agency which transforms mere representation into practice.

I use a simple formula for explaining the process by which practice becomes representation. Members of ethnic groups going about their daily business present themselves to the observer. The observer re-presents their performances as written or other description which, when accepted as a standard becomes representation. It might also be useful for us to think for a moment of immigrant and other minority neighborhoods for example as "third spaces" or interstitial places where things such as ethnic identity are being created and then negotiated (Gutiérrez, 1999).

Whereas much of third space discourse concerns the negotiation of identities of persons within real and imagined spaces, my own special interest has been on how those identities change the meaning of the space in which ethnic norms are acted out, or practiced. Via the display of their cultural and social practices migrants can also undo what others did before them. This symbolic invasion and succession is added to the related processes of gentrification, displacement, and renewal, or regeneration. The ethnic succession of Little Italies by Chinatowns in New York, Philadelphia, San Francisco, and Los Angeles are well-practiced examples of this phenomenon.

Compared to 1900, in 2000 the proportion of the total U.S. population that is foreign-born is not nearly as great. In contrast to the simpler times and spaces of the past, the changing uses of urban spaces today give the appearance to some that newer immigrant settlements follow no pattern

whatsoever. It is more likely, however that the patterns are simply recognized. For example, many of the most recent poor and working-class migrants to American cities are no longer found near the expected, stereotypical places where jobs for newcomers were found in decades past.

This is because much of the “traditional” work for immigrants is no longer done in those places. In addition, many of the historical areas of first wave settlements are concurrently being gentrified. Yet to find new immigrant and ethnic enclaves, we still must take into account the same factors that have always been part of location formulas such as public transportation routes, proximity to work, rental rates, ethnic markets, social networks, and ethnic institutions (Fig. 2).

Whether or not “globalization,” “de-industrialization,” “post-industrialism,” and/or “post-Fordism” have produced a “new spatial order” for the “global city” was considered by Marcuse and Van Kempen (2000). The authors (2000, p. 293) cautioned that no uniform pattern can be expected: “The functional, social, and cultural division we expect to find is one of consistent and general tendencies expressed in widely varying contexts, along widely varying lines, with widely varying results.” And to those who are suggesting the decreasing value of the traditional “neighborhood” in the new city, Marcuse and Van Kempen (2000, p. 4) offer contemporary residential community forms in the “citadels of the rich,” gentrified areas, middle-class suburbs, tenement areas, ethnic enclaves, and what is to them a “new type” of ghetto.

In a related way, Beauregard and Haila (2000, p. 23) note that postmodern urbanists tend to “portray the contemporary city as fragmented, partitioned, and precarious, and as a result, less legible than its modernist precursor.” Discussing modernist and postmodernist, Fordist and post-Fordist cities, they (2000, p. 23) write, “No one would dispute that the city of the late 20th century differs spatially from the city of the early to mid-20th century.” They conclude, however, that a distinctly “postmodern” city has not displaced the modern one despite a more complex patterning of old and new, and of continuing trends and new forces. Cities’ urban areas have always been changing. The difference today is primarily the rapidity and variety of that change which produces different kinds of segregation and a different logic of location. Especially important is the uneven spatial competition that lower class immigrants face with more privileged members of society. Gentrification of areas which once offered good-paying blue-collar jobs, industrial loft conversions for artists, and co-op and condo conversions of workingmen’s houses create inner city neighborhoods where visible indications of ethnicity are merely a part of the local “ambiance” (Fig. 3).



Fig. 2. Little Saigon in Anaheim, CA. Some argue that whereas Park and Burgess' compact Chicago was an appropriate model for urban sociology for the first half of the 20th century, sprawling Los Angeles was more appropriate for the second. Whether this change of view is valid or not, at the turn of the 21st century large immigrant enclaves could be found far from anything resembling an urban "Zone of Transition" in which one could find stereotypical Chinatowns and Little Italies. During one recent photographic research in Southern California, for example, I was able to document this visibly ethnicized suburban strip mall in Anaheim's Little Saigon as well as a more traditional-looking Chinatown in "downtown" Los Angeles.

Lofland adds another dimension to our understanding of ethnicized spaces. Lofland (1985, p. 3) argues, "The city, because of its size, is the locus of a peculiar social situation: the people found within its boundaries at any given moment know nothing personally about the vast majority of others with whom they share this space." And Lofland (1985, p. 22) adds that "city life was made possible by an 'ordering' of the urban populace in terms of appearance and spatial location such that those within the city could know a great deal about one another by simply looking." In a richly descriptive chapter titled "*Privatizing Public Space: Locational Transformation*," Lofland (1985, p. 119) outlines three methods by which public space is transformed into private or semiprivate space: (1) the creation of *home*



Fig. 3. Asian Mall in Houston, TX. Another example of the more complex spatial patterning of old and new features of cities today are the indications large ethnic communities which can be found outside of traditional residential areas. In the rapidly expanding and changing city of Houston, much of what once was a poor and working class residential and industrial area in the old city center has been razed for up-scale residential development. This has temporarily left a void around Kim Hung Mall where many members of the diverse Asian (Vietnamese, Indian, Filipino, Chinese, and Koreans) community travel from other sections of the city to shop for traditional foods and commodities which might not be otherwise available elsewhere in the city. It should be noted that in contrast to historical models, Houston's Asian community is educationally and occupationally successful.

territories; (2) the creation of *urban villages*, both *concentrated* and *dispersed*; and (3) the creation of temporary mobile “homes” by means of the *traveling pack*.

Zukin (1996, p. 43) discusses two schools of thought about the urban environment: “One, identified with political economy, emphasizes investment shifts among different circuits of capital that transfer the ownership and uses of land from one social class to another. Its basic terms are land, labor, and capital. The other school of thought, identified with the symbolic economy, focuses on the representations of social groups and visual means of excluding or including them in public and private spaces. From this view, the endless negotiation of cultural meanings in built forms – in buildings, streets, parks, and interiors – contributes to the construction of social identities.” Both approaches help us to interpret urban landscapes of culture and power (Fig. 4).

Another tool for deciphering the complex metropolis is spatial semiotics, defined by Gottdiener (1994, pp. 15–16) as “the study of culture which links symbols to objects.” A spatial semiotician would recognize that social and cultural meanings are attached to urban landscapes as well as to the people and activities observed on the scene. According to him, the most basic concept for urban studies is the settlement space which is both constructed and organized. Looking at an ethnic neighborhood in this way, as part of national and global systems, Gottdiener (1994, p. 16) writes, “It is built by people who have followed some meaningful plan for the purposes of containing economic, political, and cultural activities. Within it people organize their daily actions according to meaningful aspects of the constructed space.” Semiotic and sociospatial analysis makes it possible to see the most powerless of urban dwellers as social “agents” in the local reproduction of regional, national, and global societal relations (Fig. 5).

Most of this work is framed in the terms of Lefebvre’s “spatial practices (Lefebvre, 1991).” Harvey (1989) recognizes that those who have the power to command and produce space are, therefore, able to reproduce and enhance their own power. It is within the parameters outlined by these practices that the local lives of ordinary urban dwellers take place. “Material social practices refer to the physical and material flows, transfers, and interactions that occur in and across space in such a way as to assure production and social reproduction.” “Representations of space encompass all of the signs and significations, codes and knowledge, that allow such material practices to be talked about and understood, no matter whether in terms of everyday common sense or through the sometimes arcane jargon of the academic disciplines that deal with spatial practices.” “Spaces of



Fig. 4. The Hill in St. Louis, MO. For much of the 20th century, concentrated Italian American neighborhoods in central cities served as virtual models for all varieties of “urban villages.” Immigrant and ethnic Italians were highly urbanized and as a result examples of distinctive Italian American vernacular architecture can be found in most major cities. As I (1993, p. 50) have noted, “Among Italians, individuality and competitiveness are emphasized over conformity and cooperation in spatial interactions. In Italian American communities, even when identical houses are purchased by individuals, it is not long before one or the other neighbor adds their own touch to the exterior in an effort to clearly distinguish it from the other.” In St. Louis’ “The Hill” this cultural expression in the local landscape is easy to see.

representations are social inventions that seek to generate new meanings of possibilities for spatial practices.” “The appropriation of space examines the way in which space is used and occupied by individuals, classes, or other social groupings. Systematized and institutionalized appropriation may entail the production of territorially bounded forms of social solidarity.” “The domination of space reflects how individuals or powerful groups dominate the organization and production of space so as to exercise a greater degree of control either over the friction of distance or over the manner in which space is appropriated by themselves or others” (Harvey, 1989, pp. 261–264).

King (1996) speaks of cities as “text” to be read. Ethnic vernacular landscapes are crucial, yet often ignored parts of that text. In basic agreement,



Fig. 5. Polish Sign in Brooklyn, NY. Language also affects the meaning of signs and symbols. Both the foreign words *Odzież na Wage* and the English transliteration “Clothing by the Scale” on this store sign would be incomprehensible to non-Polish speakers. Figuratively the sign means “Used Clothing for Sale.” Street scenes like this help us to understand that some signs are not meant for everyone who sees them. The proprietor of the shop would most likely be surprised if a non-Polish speaker would come in to browse. The English transliteration might also be there because there is a New York State law which prohibits commercial signs to be solely in a foreign language. During my visual researches in Poland I sought out, and found, *Odzież na Wage* stores to confirm their origin in the Post-Socialist state.

Zukin (1996, p. 44) noted that the emphasis and interest by urbanists has been on the geographic battles over access and representations of the urban center: “Visual artifacts of material culture and political economy thus reinforce – or comment on – social structure. By making social rules ‘legible’ they represent the city.” As a sign of decline, for example, Zukin (1996, p. 49) writes, “In the long run vacant and undervalued space is bound to

recede into the vernacular landscapes of the powerless and replaced by a new landscape of power.” Castells (1989, 1996) provides us with another view of how real and imagined urban spaces are used, contested, and transformed by different social groups. For him power is information, and “spaces of places” are superseded by networks of information or “spaces of flows.” Along with this comes the tribalization of local communities. As local identities lose meaning, place based societies and cultures (cities, neighborhoods) also lose power. Castells proposes that this momentum toward the total disempowerment of urban dwellers can be reversed by the reconstruction of place-based meaning via social and spatial projects at cultural, economic, and political levels. Territorially defined ethnic groups, for example, can preserve their identities and build on their historical roots by the “symbolic marking of places,” preservation of “symbols of recognition,” and the “expression of collective memory in actual practices of communication” (Castells, 1989, 1996) (Fig. 6).

VISUAL SOCIOLOGY

According to Becker (2002) as well as Warner and Karner (2005), visual methods are important tools in the repertoire of contemporary qualitative researchers. Prosser (1998, p. 29), a leading visual sociologist, informs us: “Over the last three decades qualitative researchers have given serious thought to using images with words to enhance understanding of the human condition. They encompass a wide range of forms including films, photographs, drawings, cartoons, graffiti, maps, diagrams, signs and symbols. Taken cumulatively images are signifiers of a culture; taken individually they are artefacts that provide us with very particular information about our existence. Images provide researchers with a different order of data, and, more importantly, an alternative to the way we have perceived data in the past.”

Visual sociology of even the most deteriorated central city area would vividly demonstrate the “human agency” of even the least empowered if only by capturing the “deliberate efforts of human beings, thinking and acting, alone or in concert” to create or modify the spaces they occupy, demonstrated in the marking of their own vernacular landscapes with graffiti and vandalism. In this regard, the exquisite photographic work of Vergara (1995) is especially instructive. Visual attention to vernacular landscapes allows us to read conflict, competition, and dominance at a level not usually analyzed. How better to explain ethnic or class-based neighborhoods than when



Fig. 6. Chinatown Gate in Philadelphia, PA. Entrance gates are good examples of symbolic architectural boundary markings. They are a common feature of virtually every major Chinatown which I have documented in the United States and abroad. In most cities outside of China often they mark off the Chinese enclave. In cities in China they can serve many functions such as indicating the boundary of a specific area, like a historical neighborhood, or the entrance to places with specific functions such as a park.

Harvey (1989, p. 266) writes: “Successful control presumes a power to exclude unwanted elements. Fine-tuned ethnic, religious, racial, and status discriminations are frequently called into play within such a process of community construction.”

Bourdieu (1977, p. 188) notes that the production of symbolic capital serves ideological functions, because the mechanisms through which it contributes “to the reproduction of the established order and to the perpetuation of domination remain hidden” (see also King, 1996, pp. 112–136). For a visual sociologist, some of these “hidden” reproductions *cum* re-presentations are in “plain view.” People show themselves to each other in the course of their everyday lives. Bourdieu’s (1977, pp. 72–95) notion of the “habitus” or practices that produce, in this case visible, regularities is also helpful in this regard. Sometimes this kind of performance or visible practice is referred to as the “authentic” community. My sense is that I, as an observer, am not empowered to judge the authenticity of someone’s actions. Journalists, social scientists, writers, and artists observe the community and “re-present” it in various forms. When these “re-presentations” become accepted, standardized, perhaps even commodified, a “representation” is created.

Sennett (1990, p. xii) comments on the management of difference in New York City: “What is characteristic of our city building is to wall off the differences between people, assuming that these differences are more likely to be mutually threatening than mutually stimulating. What we make in the urban realm are therefore bland, neutralizing spaces which remove the threat of social contact: street walls faced in sheets of plate glass, highways that cut off poor neighborhoods from the rest of the city, dormitory housing developments.” Sorkin (1992, pp. xi–xv) sees the theming of the cityscapes as an effort at social control and laments that the consequence is the potential loss of “The familiar spaces of traditional cities, the streets and squares, courtyards and parks, are our great scenes of the civic, visible and accessible, our binding agents” (Fig. 7).

For Harvey (1989, p. 265), “Different classes construct their sense of territory and community in radically different ways. This elemental fact is often overlooked by those theorists who presume a priori that there is some ideal-typical and universal tendency for all human beings to construct a human community of roughly similar sort, no matter what the political or economic circumstances.” For those lacking power (especially “low-income populations”), Harvey (1989, pp. 265–266) writes: “the main way to dominate space is through continuous appropriation. Exchange values are scarce, and so the pursuit of use values for daily survival is central to social action. This means frequent material and interpersonal transactions and the



Fig. 7. Lebanese Sweet Shop in Brooklyn, NY. Simple establishments like Elbaba Sweets in the Bay Ridge neighborhood in Brooklyn help create the character of a recent ethnic enclave. This neighborhood was once the center for Scandinavian, especially Norwegian settlement. Today along with a few traces of the previously dominant population, passersby can attempt to decipher Arabic writing. Although the neighborhood has a wide variety Near and Middle Easterners, the stylized cedar trees in the flag motifs imply that the proprietor is Lebanese. For much of the day the shop is dominated by males who sit and socialize while women frequent the place but pause more briefly to shop. The open boundaries of these changing neighborhoods make it possible for at least causal interactions between diverse groups.

formation of very small-scale communities. Within the community space, use values get shared through some mix of mutual aid and mutual predation, creating tight but often highly conflictual interpersonal social bonding in both private and public spaces. The result is an often intense attachment to place and ‘turf’ and an exact sense of boundaries because it is only through active appropriation that control over space is assured.”

Like the U.S. Census and other survey data, images can also be deceiving. The power of the visual is clearly demonstrated by Steven A. Camarota. Noting stories of immigrant businesses revitalizing neighborhoods are a staple of local news coverage used by immigration advocates to show “that immigrants infuse the country with an entrepreneurial spirit unmatched by

natives” Camarota (2000, Executive Summary, para 1). However, data show that immigrants are not more likely to be self-employed than natives. People are more likely to encounter immigrant entrepreneurs than immigrant workers. “The immigrant restaurant owner who greets customers is much more likely to be remembered than are the immigrant cooks and dishwashers, whom the patron never sees” (Camarota, 2000, Executive Summary, para 9). And, “Most Americans have much more personal contact in their daily lives with self-employed immigrant street vendors or kiosk operators than with immigrant farm laborers or construction workers. Since most people make generalizations based on their own experience, it is not surprising that they see immigrants as particularly entrepreneurial” (Camarota, 2000, Executive Summary, para 9).

Beyond the great public spaces and edifices lies a vast domain of little people and little structures which in fact comprise most of our material society and where ordinary people have created distinct landscapes and places. The designs of these neighborhoods are rich in the way space is socially as well as physically constructed (Krase, 2004, p. 27).

All migrants carry designs for living from their original home environments and adapt them to the resources and opportunities in new locales. Ethnic enclaves are products as well as sources of both social and cultural capital. When new immigrants alter the territory allowed to them, they simultaneously become part of the transformed urban landscape. The images they create eventually come to represent them and in the process they lose their autonomy. In some cases, the enclave comes to symbolize its imagined inhabitants and is also commodified. For example, for the delight of New York’s tourists, the expropriated cultural capital of turn of the century Italians have been turned into an “Ethnic Theme Park.” The San Gennaro Feast in Manhattan’s Little Italy takes place in an area populated primarily by Asians. In these and other cases visual study can show how what the author (1993) has termed “traces of home” and Lefebvre’s “material spatial practices,” are transformed via “representations of space” into “spaces of representation” (Krase, 1993) (Fig. 8).

In the same way, that it has been done for Italian Americans, the spontaneous vernacular expressions of Hispanic agency lionized in Mike Davis’ LA are easily commodified and placed on the cultural tourism menu. According to the *Lonely Planet Travel Guide to Los Angeles* (2004): “A few blocks east of the Civic Center, El Pueblo de Los Angeles is a 44-acre (18ha) state historic park commemorating the site where the city was founded in 1781 and preserving many of its earliest buildings. Its central attraction for



Fig. 8. San Gennaro Festa in Manhattan. Probably the most well-known Little Italy in America, New York's Mulberry Street is an Ethnic Theme Park. The celebration of the Festa di San Gennaro each fall attracts hundreds of thousands of visitors. However, very few Italian American residents remain in the neighborhood and the territory is tightly squeezed by gentrification to the north and an expanding Chinatown on its south. Despite its lack of authenticity as a "real Italian Neighborhood" it is an important element in the city's tourist economy. Other Italian Ethnic Theme Parks can be found in San Francisco's North Beach, Boston's North End, and Philadelphia's Bella Vista.

most visitors is Olvera Street, a narrow, block-long passageway that was restored as an open-air Mexican marketplace in 1930. In addition to its restaurants, Olvera Street teems with the shops and stalls of vendors selling all manner of Mexican crafts, from leather belts and bags to handmade candles and colourful piñatas” (Fig. 9).

SUMMARY

Theoreticians and practitioners in the field of urban sociology are faced with a wide range of apparently competing theories and methods for describing and analyzing the post-modern metropolitan urban scene. Because the main focus in urban studies is “space,” explaining how these actual and virtual spaces are used, contested, and transformed by different social groups is a crucial task. All the “urban” disciplines use visual approaches more or less explicitly whether through mapping, architectural rendering, photographic surveys, or land use and building condition surveys. In architecture and planning, the visual has always been important in documentation, presentation, research, and teaching. Historical photographic archives are used in the processes of historical landmark research, restoration, and preservation. “Windshield” surveys, conducted with eyes, cameras, and camcorders have a long tradition in urban studies (Fig. 10).

In most cases, visual techniques are used in qualitative or descriptive studies. It can be argued that generalizations can also be made from visual surveys and employed in hypothesis testing. The simplest types of analytic studies would be longitudinal studies of physical changes as a consequence of specified variables. In any case, the method used and the link between the evidence presented in “before and after” photographs for example would have to be quite explicit. At the least, as a purely qualitative method, such research ought to produce delightful insights even if of limited generalizability.

My own procedure has been to treat observations and photographs as I do other information, such as interviews, or demographic data which are specific to areas, neighborhoods, streets, organizational boundaries, and census tracts. I should note here that my snap shots attempt to be as close as I can get to what an ordinary person might see as they traverse a space. They are not attempts at artist representation, but are intended to document visual surveys.

Ethnic enclaves often belie any “simple dimension.” When ethnic minorities alter their territories, they simultaneously become part of the



Fig. 9. Olvera Street Mexican Ethnic Theme Park in Los Angeles. The Olvera Street tourist destination was designed to attract people, primarily Anglos and other tourists, back to downtown Los Angeles in a renewed and reinvigorated urban area. What I found most fascinating while I was shooting film was that the vast majority of visitors were Latinos, the main portion of whom were Mexican-Americans. It would be interesting to investigate how they felt about their representations in the “Mexican” marketplace. They obviously were enjoying their children wearing huge sombreros being photographed while astride burros, and being serenaded by roving Mariachi Bands.



Fig. 10. Windshield Survey of Day Laborers. The housing economies of Metropolitan America today depend on immigrant laborers but most do not want them hanging around the neighborhood. As a result, these men congregate on street corners in marginal areas. Day laborers are a common feature of suburban as well as urban roadways. Contractors and others who need skilled and unskilled workers cruise by, size up the workforce, stop and begin to haggle. This particular group contains clusters of Poles, Mexicans, and Russians who compete with each other for work. Most are single men and they are often homeless as well. Not far away from this pick up spot one can find another street corner where diverse groups of women, mostly Polish and Latino, offer their services as household workers.

transformed urban landscape. The images they create eventually come to represent them and in the process lose part of their autonomy. In the wake of the 21st century, new and old ethnic landscapes co-exist, overlap, and compete with one another, but also often get to define the essence of the American city.

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THE CHALLENGES OF LOCAL SUSTAINABILITY

DIMENSIONS OF LOCAL SUSTAINABILITY

Aaron M. McCright and Terry Nichols Clark

The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land.

– Aldo Leopold in *A Sand County Almanac* (1949/1989, p. 204)

Amid increasing global ecological problems in the 1970s, many scholars contemplated whether or not there were limits to growth and where, in fact, these limits might be (e.g., Meadows, Meadows, Randers, & Behrens, 1972). Yet, many scholars, policy-makers, and pundits – still basking in the blinding glow of the dominant myth that humans are exempt from ecological principles – found any overt acceptance of limits to be unpalatable. Over the years, the pessimistic “limits to growth” debate slowly evolved into a more optimistic discussion of how our development could and should proceed (Stockdale, 1989). Most actors’ answers could be simplified into one word: *sustainably*.

The dominant definition of sustainable development (SD) comes from a report titled *Our Common Future*, written by the [World Commission on Environment and Development \(WCED, 1987, p. 8\)](#): “Humanity has the ability to make development sustainable – to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.” Since the introduction of this “official” definition to the present, SD has experienced a level of contestation rarely witnessed with most other concepts. In large part, this results from the vagueness¹ and

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naiveté² of WCED's definition – characteristics that allow an entire continuum of individuals and groups from deep ecologists to aggressive multinational corporations to claim the term as their own and interpret it to promote their own interests.

We can gain insight into all of this by examining the two sentences that immediately followed WCED's (1987, p. 8) definition:

The concept of sustainable development does imply limits – not absolute limits – but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities. But technology and social organization can be both managed and improved to make way for a new era of economic growth.

In other words, WCED's conceptualization is sufficiently opaque for any group to find at least one idea to hang its hat on. There are limits, *but* there are no absolute limits! We can fix our problems with better technology! We can experience further economic growth!

Nevertheless, several scholars have attempted to identify how SD *should* be conceptualized if we are to utilize this concept in a meaningful way in abstract theorizing and practical management. We briefly summarize these leading ideas from a few influential thinkers (e.g., Norgaard, 1988, 1994; Gale & Corday, 1994; Goodland, 1995). Following the lead of Robert Goodland (1995), many who study SD believe it optimal to examine how ecological, economic, and social sustainability are interrelated at local, regional, national, and global levels of analysis.

Ecological sustainability necessitates that humans live in accordance with basic ecological principles within the limitations of the biophysical environment to minimize or eliminate irreversible negative impacts. Very generally, this demands that we hold the scale of human activity within the biophysical limits of the overall ecosystem on which it depends – in other words, that we do not exceed our carrying capacity. More specifically, ecological sustainability requires maintenance of natural capital as a source of resources and as a sink for wastes. In the long run, this demands a shift from the use of nonrenewable resources to the use of renewables, whereby the harvest rates of renewables are kept within regeneration rates. Further, waste disposal must not exceed the assimilative capacity of the environment.

Economic sustainability requires a wholesale shift from neoclassical economics (which perceives the environment as a subsystem of the economy) to ecological or steady-state economics (which perceives the economy as a subsystem of the ecosystem). Consistent with ecological sustainability, economic sustainability requires that natural capital be maintained. In other

words, we may live off “interest” (our renewable resources) as long as we maintain our capital stock (our nonrenewable resources) undepleted for future generations. In this sense, consumption of our capital stock is equivalent to liquidation or disinvestment, the opposite of accumulation. In addition, economic sustainability demands greater implementation of the precautionary principle and a shift from the belief that progress comes from quantitative growth (increase in economic subsystem throughput) to the belief that it comes from qualitative development or increases in maintenance efficiency (stock/throughput) and service efficiency (service/stock).

Finally, *social sustainability* requires that we achieve social justice while we reconfigure our activities in line with ecological principles. Most important, we must avoid harming the future (intergenerational equity) by accomplishing greater justice in the present (intragenerational equity). Indeed, achieving intergenerational equity is all the more difficult if we continue to postpone achieving intragenerational equity in the present. As such, social sustainability demands a strong civil society and heightened community participation. We must not only maintain but also accumulate social capital (e.g., community, integrated social networks, trust, cultural diversity, tolerance, etc.).

The three chapters in the second section deal with specific challenges of local sustainability. The authors perform scholarship on relationships among the three (ecological, economic, and social) dimensions of local sustainability. They especially focus on identifying indicators of these dimensions in order to investigate their interaction.

In Chapter 5, Raymond Murphy utilizes a political ecology of disaster approach to analyze the challenge of disaster reduction for the local sustainability of communities. He suggests, this approach allows scholars to investigate not only the vulnerability of communities to the forces of primal nature but also to the powerful dynamics of recombinant nature. In this chapter, Murphy compares the effects of an extreme weather event (a freezing rainstorm for five days across much of northeastern North America in January 1998) for modern communities (e.g., metropolitan Montreal) and antimodern communities (the northern New York Amish). While the modern communities experienced disaster due to the failure of their centralized electrical grid, the antimodern communities fared much better because of their decentralized energy sources and more appropriate technology. The results of Murphy’s comparison support the expectation of the political ecology of disaster approach that the great wealth and powerful technologies of modern communities do not necessarily guarantee sustainability; indeed, they may accentuate our vulnerability to disasters.

In Chapter 6, Ari Ylönen examines a SD project in Aitolahti-Teisko, Finland, a development on the northern outskirts of Tampere – the third largest city in the country. The city, the University of Tampere, and several other actors developed this SD project in the late 1990s to promote environmentally conscious cooperative planning. In evaluating this project, Ylönen identifies an enduring conflict between the requirements for SD and the residents of Aitolahti-Teisko, who choose to live in the area because they believe it is a good place for raising children. Specifically, the author finds that the use of public transportation decreased, the use of automobiles increased significantly, and residents increasingly chose to live in single-family dwellings – three trends diverging from sustainability. Ylönen concludes that achieving SD in Aitolahti-Teisko at this time would require violating the principles of local democracy and citizen participation.

In Chapter 7, Hilary Silver and Peter Messeri examine the social ecology of health in New York City (NYC), attempting to determine whether social disparities in neighborhood-level health outcomes are due to disparities in the local physical, built, and social environments. Silver and Messeri test their central hypothesis – that physical, built, and social environmental conditions mediate the relationships between race and poverty and a range of 18 public health outcomes – with data for 170 NYC neighborhoods operationally defined as zip codes. The authors find that poorer and predominantly black and Latino neighborhoods have higher rates of illness and mortality. Indeed, Silver and Messeri report that neighborhood poverty and racial composition predict most health outcomes even controlling for environmental conditions. In general, the authors discover that the physical environment is not a major mechanism underlying public health disparities across NYC neighborhoods; however, they find mixed evidence on the significance of the built and social environments of neighborhoods.

NOTES

1. Indeed, the opaque language of WCED's definition raises the following questions:

- What are “needs?” Are we talking about subsistence, some artificial standard of living, or wants and desires? Are needs subjective or objective?;
- What does it mean to “meet the needs?”;
- Whose “present?” That is, do we provide for everyone so that they can live at U.S. standards of affluence or do we merely provide for the lowest common denominator? Or do we provide for peoples' needs proportionate to what they claim are

their needs today (thus perpetuating a massive degree of intranational and international material inequality)?;

- What does “compromise the ability” mean?;
- How far into the future?;
- How do we anticipate future needs?; and
- More generally, (1) what do we sustain; (2) for whom do we sustain it; and (3) for how long do we sustain it?

2. We may raise the following criticisms of WCED’s definition of SD:

- it is politically naïve;
- it is vague and opaque;
- it is overly optimistic;
- it is merely business-as-usual with continued economic growth;
- it does not acknowledge real ecological limits; and
- it does not acknowledge historical and ongoing colonization, exploitation, and oppression.

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5. THE CHALLENGE OF DISASTER REDUCTION

Raymond Murphy

ABSTRACT

This chapter shows that it is important to avoid descending to either an extreme of naturalizing disasters or sociologizing them. Safety depends on the appropriateness of social constructions for nature's constructions, whether inadvertent or based on sophisticated risk assessment. Worse-case scenarios need to be taken into account even if improbable, because assessments of their probability and timing have serious limitations. This chapter demonstrates that modern technology and organization can increase vulnerability to natural disasters. Antimodern communities avoided disaster in this case by stepping off the treadmill of production and practicing technological triage. The challenge for modern communities is to make an ecologically reflexive triage.

Disasters have been referred to as “the monitor of development. ... Whether these processes [of development] have been planned or whether they have been fortuitous, whether they have caused or exacerbated vulnerability, or whether they have reduced vulnerability, will be exposed in the manifestation of natural hazards” (Lewis, 1999, p. 146). Oliver-Smith (1998a, pp. 193–194) argues that “disasters are now becoming sentinel events of processes that are

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intensifying on a planetary scale.” Future disasters have been called “unpaid bills” and an externalized “debt of development” (IDNDR Technical Committee, 1998) because costly preventive measures were not implemented. Sylves and Waugh (1996) and Quarantelli (1998a) conclude that the intensified activities of industrialization have exacerbated vulnerability and will increase the frequency and cost of disasters in the twenty-first century. Development inappropriate for nature’s dynamics leads to “disasters by design” (Mileti, 1999), “repeat disasters” (Platt, 1999), and “unnatural disasters” (Abramovitz, 2001). Erroneous cultural expectations of safety held by the decision-makers involved (Turner, 1978) can lead to disastrous consequences by encouraging social constructions that are incompatible with nature’s constructions. Examples of these decision-makers are the scientists who decided to launch the Challenger and Columbia Space Shuttles under conditions that proved deadly, and the politicians who decided not to reinforce the New Orleans levees. Disaster researchers (Mileti, 1999, p. 18; Mileti, 2002; ISDR, 2002) analyze environmental problems as catalysts of disaster, examine ways to mitigate disaster by diminishing environmental problems, and incorporate protection against natural hazards and disaster reduction as part of sustainable development. They contend that “sustainable development is about disaster reduction” (Handmer, 2002). Disaster reduction is clearly one of the important challenges for the local sustainability of communities.

This chapter seeks to elucidate and clarify elements for analyzing that challenge. It will begin by critically assessing the literature, concepts, and debates in the sociology of disaster. Then, I will suggest the usefulness of several additional conceptual distinctions. The chapter will end by (i) comparing the effects of the same extreme weather event on modern communities and antimodern ones and (ii) comparing the socially constructed responses to two different extreme weather events. This will be done to shed new light on the vulnerability of modern communities and the limitations of modernity as a form of development.

THE SOCIOLOGY OF DISASTER

What is the sociology of disaster? This raises the questions of what is a disaster and what is sociology? The answers are contested. For example, in answer to the second question some sociologists claim that sociology should suspend the natural world and only allow the social world in their accounts. Other sociologists argue that sociology should investigate the interaction between social constructions and nature’s constructions precisely because

the natural world cannot be biophysically suspended, and bracketing (ignoring) it analytically tears the social out of its material context leading to superficial analyses. To answer the question of what is the sociology of disaster, a simple starting point would be as follows. The sociology of disaster is the study from the perspective of the discipline of sociology of what humans call a disaster. It describes, explains, and interprets disasters using the conceptual and investigative tools of the discipline. Of course, this is merely a departure point that dodges the above two contested questions. Satisfactory answers to all these questions can only be developed by examining the work that has been done in the field. What follows in this section is a more complete and nuanced answer to the question of what is the sociology of disaster.

It is important to note from the beginning that “disaster” and “hazard” are defined by humans in terms of severe adverse consequences on human communities. For example, the extinction of the smallpox virus is not referred to as a disaster in human discourse. An earthquake, volcano, or extreme weather event, which threatens land or ocean so remote from humans or so pristine that it has no effect on humans is not viewed as a hazard (Department of Regional Development and Environment, 1990, p. 7). There are many perturbations of nature, as ecologists use the expression (see Worster, 1994), but only the fraction of them that threaten human communities constitute the hazards.

Severe adverse consequences for human communities can occur in different forms. Some researchers (Klinenberg, 2002) focus on fatalities. If disasters are indicated by huge numbers of fatalities (many tens of thousands), then disasters only occurred in the past or are occurring now in developing countries (Aptekar, 1994, p. 7). About 1,300 Americans died as a result of Hurricane Katrina, there were 2,941 fatalities from the terrorist attacks on the World Trade Center, and about 15,000 died as a result of the 2003 heat wave in France. Horrible though these are, they constitute a different order of magnitude than the 220,000 killed by the 2004 tsunami in the Indian Ocean, the 87,000 who died in the 2005 Pakistani earthquake, the 242,000 fatalities in the 1976 China earthquake, the 131,000 who died in the 1991 Bangladesh cyclone, and the 300,000 who died there in the 1970 cyclone. In Japan, the number of fatalities from natural disasters has substantially decreased. Modern technology and organization have dramatically reduced the number of fatalities, making modern communities largely disaster-free by the indicator of many tens of thousands of fatalities. That may not remain true, however, if global environmental change occurs or if an epidemic escapes control. Modern mitigation of fatalities has occurred, but it is tenuous.

If disaster is defined by social disruption and destruction of property, however, then modern communities are severely afflicted by disasters, indeed by ever-more costly and highly disruptive ones. Hurricane Andrew caused enormous disruption and damage in Miami and bankrupted several insurance companies. The escalating costs of disasters are causing serious concern among global reinsurance companies, governments, and the United Nations. Modern technological and organizational methods used to avoid the acute problem of fatalities have created chronic, painfully expensive problems of disaster preparedness and monitoring nature's dynamics, yet costs of disasters are increasing (Tenner, 1997).

The most basic distinction concerning disasters has to do with their source, such as differentiating between natural disasters, technological disasters, and disasters having terrorism at their origin, with all three affecting the local sustainability of communities. This distinction has explanatory usefulness; some researchers (Freudenberg, 1997) argue that natural disasters promote community solidarity whereas technological disasters and terrorist attacks arouse condemnation and conflict. However, these tendencies should not be exaggerated and the opposite propensities occur as well. Natural disasters frequently result in governments being blamed for an inadequate response or preparedness. Epidemics are a particularly dangerous form of natural disaster that can elicit shunning of some people by others. Technological disasters for their part can incite mutual aid in the community. Furthermore, Turner (1978) has shown that what is commonly referred to as a technological disaster often consists of nature's dynamics, which had been assumed technologically harnessed, slipping their leash. I (Murphy, 2002a, 2004) have shown that the disastrousness of what is called a "natural" disaster is determined by the technology used, and I will elaborate on this shortly. Terrorists too use nature's dynamics embedded in technology (e.g., jet-fuel-filled airplanes and gravitational forces on skyscrapers) to cause a disaster. The consequences of Hurricane Katrina on New Orleans reminded everyone that the impact of a natural disaster depends not only on the force of a hurricane but also on the effectiveness of mitigation, preparation, and response. Thus, there is some explanatory usefulness in the distinctions between natural, technological, and terrorist disasters, but that must not obscure the fact that social constructions and nature's constructions are implicated in all three and need to be unpacked case by case.

A division (Clarke & Short, 1993; Sagan, 1993) has arisen between "normal accident" theory (Perrow, 1984) and high-reliability theory (La Porte, 1996; Weick, Sutcliffe, & Obstfeld, 1999). The former argues that interactive complexity and a tightly coupled system using dangerous materials of nature

or in an environment where nature's dynamics are perilous result in trivial operator errors becoming magnified into system disasters. As human error is normal, so too are disastrous accidents in these systems. High-reliability theorists contend on the contrary that interactively complex and tightly coupled systems operating with dangerous materials or locations of nature have few accidents and are highly reliable if they satisfy certain criteria.

The difference seems most evident in Perrow's (1984) prediction for nuclear energy. He entitled a chapter "Nuclear power as a high-risk system: Why we have not had more TMIs—But soon will" (Perrow, 1984, p. 32) and concluded "We have not had more serious accidents of the scope of Three Mile Island simply because we have not given them enough time to appear. But the ingredients for such accidents are there, and unless we are very lucky, one or more will appear in the next decade and breach containment" (Perrow, 1984, p. 60). More than two decades have now passed without a serious nuclear accident in the United States, France, and other nuclearized Western countries since Perrow made this prediction. Are two decades enough for the "soon" hypothesis to be refuted or have we been "lucky?" "Luck" is not usually accepted as a precise sociological explanation and can be used to excuse any failed prediction.

This question is directly connected to the challenge of disaster reduction in communities because nuclear reactors have been proposed as energy sources to replace fossil fuels implicated in global climate change. But if Perrow's hypothesis is correct, a community that replaces fossil fuels by nuclear energy only shifts the potential for disaster from one source to another in an overall conservation of risk. The difference between normal-accident theory and high-reliability theory should not, however, be overstated because much of normal-accident theory (the exception in Perrow's analysis involves nuclear energy) can be interpreted not as claiming that high-technology accidents are inevitable, but rather as a self-denying prophecy to promote measures to make organizations and technologies less tightly coupled, less complex, using less dangerous materials from nature, and hence more reliable.

A further distinction is between sudden disasters and slow-onset ones, for example, drought (Aptekar, 1994, pp. 12–19). Sudden disasters, such as nuclear reactor explosions and chemical spills, can nevertheless contaminate a community for generations. Slow-onset processes of nature inadvertently unleashed by human activities, such as global climate change, have been predicted to bring more frequent, intense extreme weather events thereby fostering sudden disasters (Karl, Nicholls, & Ghazi, 1999; IPCC (Intergovernmental Panel on Climate Change), 2001). Evidence is now coming in to

support this prediction (Webster, Holland, Curry, & Chang, 2005). This “new species of trouble” produced by intensified human activities blurs “the line we have been in the habit of drawing between the acute and the chronic” (Erikson, 1994, p. 22).

Another important difference is between postdisaster research and pre-disaster vulnerability investigations. This distinction must not, however, be overstated because postdisaster research usually involves an important element of learning from the disaster in order to reduce vulnerability and enhance preparations for the threat of disasters. For example, postdisaster investigations (Turner, 1978; Vaughan, 1996) of the incubation of “man-made disasters” have yielded impressive analyses of their sociocultural and organizational origins in mistaken expectations of control over nature’s energy, failures of foresight, structural secrecy that inhibits communication within organizations, etc.

Hazards research (Cuny, 1983, especially chapters 2 and 3; Department of Regional Development and Environment, 1990) has examined disasters of specific origins (hurricanes, tornadoes, earthquakes, volcanoes, wildfires, nuclear reactors, toxic waste spills, etc.) and studied whether communities are robust and resilient to each. This is useful for technical and organizational defenses that are hazard-specific. However, the hazards approach has been criticized for being too focused on technology. Moreover, safety devices against one type of calamity can be vulnerable to other types (Perrow, 1984). Resilience and robustness are best examined not in terms of a single hazard but rather in a field of different hazards. And to some extent, disaster preparedness is generalizable to a set of hazards; the same emergency measures organization can be used to protect against multiple hazards. “By attending to vulnerability, the effects of all potential hazards can be accommodated to some degree” (Lewis, 1999, p. 8). Thus, a broader biophysical vulnerability analysis, for example, of “disaster-prone places” (Lewis, 1999), has been developed.

It is important to avoid overnaturalizing disasters, that is, seeing only nature’s disturbance and failing to perceive socially constructed differences in the vulnerability of various social classes in a community. There has been a shift away from the study of technical defenses toward the investigation of everyday vulnerabilities (Hewitt, 1998; Middleton & O’Keefe, 1998). Joblessness, landlessness, homelessness, food insecurity, social disintegration, marginalization, and morbidity are ongoing sources of vulnerability to whatever force comes along (Lewis, 1999, p. 27) in both developing countries and sectors of developed ones. Klinenberg’s (2002, p. 36) social autopsy of the 1995 heat wave in Chicago concluded that “extreme exogenous forces

such as the heat will prove deadly again so long as extreme forms of vulnerability, isolation, and deprivation remain typical features of the urban environment.” Davis went further by inferring that the state produced vulnerability to extreme weather events in modern Los Angeles (Davis, 1998) and in nineteenth-century Brazil, China, and India (Davis, 2001). Key questions include which groups are most affected and which have most difficulty recovering from disaster. The distinction between voluntary and involuntary risk is central. “A voluntary risk involves personal and group choices to take risks; or contractual and participatory arrangements where the client agrees to share some, at least, of the risk. The main sources of involuntary dangers are also in the social order and actions that place people at risk or deprive them of defenses and resources to cope” (Hewitt, 1998, p. 81). Restoring the situation back to normality is but one of many goals because normality involved poverty, misery, and vulnerability to disaster. “Disasters are more usefully regarded as extensions of a pervasive normal hazardousness, because normal hazardousness is a comprehensible part of normal contexts. If we are going to be able to do anything at all about abnormal hazardousness, we should be attending to normal hazardousness, and our vulnerability to it, which is a part of everyday normality” (Lewis, 1999, p. xi). This points to the necessity “of analyzing the vulnerability implicit in everyday life” (Wisner, 1988, p. 16). Lewis (1999, p. xiii) contends that it is “the policies and activities which seemingly are undertaken without reference to natural hazards, that eventually have the greatest bearing upon them.” Hewitt (1998, p. 81) argues that “remote agencies, that only fire up in emergencies, are not to be relied upon. That too challenges the focus on extreme events, accidents and expert systems.” Separating aid agencies into rival organizations – as does the United Nations (Brown, 1979, chapter 4) in its Disaster Relief Office (UNDRO), its Development Program (UNDP), its Food and Agriculture Organization (FAO), its World Food Program (WFP), its World Health Organization (WHO), its United Nations Children’s Fund (UNICEF), and its Office for the Coordination of Humanitarian Affairs (OCHA) – diminishes the possibility of strategic development that would reduce vulnerability. “Institutional and organizational separation is the greatest single impediment to the integration of development and disaster reduction” (Lewis, 1999, p. 133).

An exclusively social focus has arisen that rejects concern with a destructive agent (a disturbance of nature or technological danger) as a cause in favor of “disaster as the result of the underlying logic of the community” (Gilbert, 1998, pp. 13–15). This has led to a formulation whereby the physical origins of disaster are intentionally not studied – disaster is presumed

social *rather than* physical (Quarantelli, 1986): “there is no reference to disaster agents which implies that all disasters are socially caused” (Dynes, 1998, p. 113). Quarantelli (1998b, p. 259) contends that the “more we get away from our hang-up of including an agent or the physical environment as part of our conceptual view and focus on the social behavior involved, the better off we will be.” In the interpretative current within this approach, the sociologist’s task is “to observe how ‘ordinary’ language itself fashions and shapes human experiences of life’s events and circumstances” (Kroll-Smith & Gunter, 1998, p. 170). This results in a paradigm which argues that “disaster is tightly linked to uncertainty that occurs when a danger, whether real or not, threatens a community, and this danger cannot be defined through causes or effects. ... It is the result of the upsetting in the system of meaning, and not the effect of the difficulty of solving problems of accidents or serious dysfunctions” (Gilbert, 1998, p. 17). The old Thomas premise – “If men define a situation as a crisis, it will be a crisis in its consequences” (Thomas & Thomas, 1928, p. 572) – is used in this paradigm to dismiss the importance of the reality of the danger.

However, humans actively construct in a context not only of language but also of nature’s autonomous dynamics. These dynamics are what Oliver-Smith (1998a, 2001) refers to as exosemiotic, prediscursive processes. Most of the dynamics of nature do not depend on human perceptions or interpretations and yet affect both. Social vulnerability analysis becomes weak if it neglects biophysical hazards analysis because then it lacks “an explanation of how one gets from very *widespread conditions* such as ‘poverty’ to very *particular vulnerabilities* that link the political economy to the actual hazards that people face” (Blaikie, Cannon, Davis, & Wisner, 1994, p. 12). There are many poor people in the United States, but it was in New Orleans where they died or suffered a stressful evacuation because of its geographical vulnerability to hurricanes. It is the interaction between the social and the biophysical that determines disastrousness, not one or the other taken separately. “Vulnerability” is a vacuous concept if it is not paired with an answer to the question: “vulnerable to what?” “By ignoring hazard potential or by the assumption that development of any kind will make disasters go away, disasters could actually be made to increase” (Lewis, 1999, p. 40).

For example, the physical dynamics of an earthquake do not depend on how humans perceive it or interpret it. The risk of disasters is more than linguistic; security or perils are not necessarily what they are said to be. In fact nature’s dynamics, through its routine cycles or its abnormal extremes, affect perceptions and interpretations of safety or danger. Such perceptions and interpretations are influenced by not only prior cultural contingencies

but also material contingencies. Ignoring or downplaying nonsocial forces of nature and their effects on communities, imperfect defenses against them, and the difficulty of solving material problems results in what [Dombrowsky \(1998, p. 29\)](#) refers to as “a misleading sociologism. It is not only human interaction itself, or interaction with material culture and its autodynamics, that may generate failures, but also the interaction with nature and its own autodynamic and self-organizing processes.”

For embodied humans embedded in a material world of nature’s own dynamics, the character of nature’s precipitant has major consequences for what it precipitates in society. Social life is premised on socially constructed expectations about nature’s dynamics, whose independent actions at times contradict those expectations with disastrous consequences because essential material infrastructures that have been constructed depend on the premises being met. Naturalizing disasters yields a weak analysis of them, but so does the opposite fallacy of sociologizing them.

Dismissing the distinction between real and false dangers in a vague conception of uncertainty adds more obscurity than enlightenment. Orson Wells’ social scare of a Martian landing was frightening to those who heard his broadcast in the early years of radio, as was the erroneous prediction of a 1981 great earthquake in Lima Peru ([Olson, 1989](#)), and more recently the millennium bug; but all these are noteworthy more for the speed with which the bogeyman disappeared than for their lasting, severe effects. The triviality of the consequences of these fantasy disasters contrasts sharply with those of real dangers that lead to real disasters. As [Sayer \(1997\)](#) argues, the issue of the reality of claims cannot be avoided in a serious study even if it has to be examined after the fact. It is crucial to distinguish real from bogus threats. Ignoring the “difficulty of solving problems” only weakens the analysis, as does neglecting how this difficulty varies according to the character of the problem.

Deficiencies in cultural protections must not be analyzed in a vacuum, and must be examined by taking into account the question: protections against what? Cultural protections can be satisfactory for some disturbances of nature and totally inadequate for others. Developing cultural protections against previously experienced disturbances of nature (e.g., hurricanes) involves different social dynamics than developing such protections for never-before-experienced perturbations of nature (e.g., global climate change). This is especially the case if “cultural protections” are defined as knowledge ([Stallings, 1998, p. 129](#)). Intentionally ignoring the biophysical environment in research on natural, technological, and even terrorist disasters oversimplifies the analysis and tears it out of context. This blinds us to the

co-evolution of communities and nature (Oliver-Smith, 1998a) and to the way human manipulation of nature turns back to affect communities (Dickens, 2003, 2004). Such nature-blind research is particularly inappropriate for examining the challenge of disaster reduction in an age characterized by global environmental change as a result of human activities.

THE POLITICAL ECOLOGY OF DISASTER

The foregoing shows that a myopic explanatory emphasis on either the biophysical or the sociocultural that brackets and obscures the other constitutes an unnecessary limitation on research. A more comprehensive approach consists of an ecologically grounded perspective that focuses on relationships between people, their environment, and sociopolitical structures. This political ecology of disasters captures their multidimensionality: “disasters are totalizing events. ... [which] bring about the conjunction of linkages in causal chains of such features as natural forces or agents, the intensification of production, population increase, environmental degradation, diminished adaptability and all their sociocultural constructions” (Oliver-Smith, 1998a, p. 178). Disasters are not just nature’s constructions, nor are they just social constructions, but rather consist of an extreme interaction of the two.

Everyday vulnerabilities, inter- and intra-societal conflicts, and nature’s multiple disturbances can lead to a complicated knot of “complex disasters” (Aptekar, 1994, pp. 22–23; Moore, 1996). For example, in 1843, slaves in Antigua had recently been emancipated (and lacked resources). As timber buildings lacked resistance to fire and wind, some had been replaced by masonry, but this resulted in more fatalities when an earthquake struck. The colonial power loaned money for reconstruction, and the repayment of this loan delayed the construction of water-storage facilities. This exacerbated the devastation of crops when a drought set in. The hurricane of 1848, subsequently, caused severe damage in a country made more vulnerable by the earthquake and the drought, but it had the beneficial effect of ending the drought (Lewis, 1999, pp. 74–86).

Oliver-Smith (1998a, p. 188) concludes that “an ecological approach appears to be the most capable of encompassing the causation and production of disasters, their development as social and environmental processes and events, their sociocultural construction, and their implications for the overall sociocultural adaptation and evolution of the community.” Poverty reduction contributes to vulnerability reduction, but the latter also requires

locating real natural hazards and dealing with them. The interaction of nature's hazards and socially constructed vulnerability has had the result that disasters often recur in the same places (Lewis, 1999, p. 50). Thus, Lewis (1999, p. 19) argues that it is necessary to take into account the "characteristics of place" and gives island communities as examples of places having extraordinary vulnerability to nature's dynamics in the form of a normally aggressive sea.

In political ecology, the vulnerability approach is integrated with a hazards approach. The analysis focuses on the conditions and "structures that shape the forms of development that make the society vulnerable to both socio-economically and environmentally generated hazards" (Oliver-Smith, 1998a, p. 189). Development is a fallible attempt at adaptation to the environment, the success of which varies among communities and over time. "The same patterns of adaptation, while reasonably effective for some or many in the short run, may equally sow the seeds of future vulnerability and disasters in the long run" (Oliver-Smith, 1998a, pp. 188–189). Thus, "development is the prime medium of vulnerability and its reduction" (Lewis, 1999, p. xiv).

DISASTER REDUCTION IN THE CONTEXT OF GLOBAL CLIMATE CHANGE

Too often the term "nature" is used to refer to something that is either mastered or idealized (Murphy, 1994, 1997). In order to indicate that technology consists of a rearrangement of nature's dynamics and materials to accomplish particular goals and that nature's dynamics embedded therein retain their potential to escape control, I (Murphy, 2002b) have suggested conceptualizing technology as *recombinant nature*. Furthermore, social constructions are not made in a biophysical vacuum. I have suggested conceptualizing the biophysical context within which humans do their constructing as *primal nature* to avoid mistaking pristine nature as the only form of nature. Pristine nature, untouched by humans, is being eliminated but the independent dynamics of primal nature persist.

The elimination of wilderness on our planet through the occupation of all its land surface by humans and the recently constructed dependence of societies on ship transportation on the oceans and plane transportation in the skies and on communication requiring satellites in space have resulted in many of primal nature's perturbations that were not hitherto hazardous becoming so, which I (Murphy, 2002b) have referred to as "the internalisation of autonomous nature into society." Constructions of primal nature

crash into human social constructions, often unexpectedly. Extreme weather events are examples. Nature retains its self-directed character even as pristine nature is transformed into socially encompassed primal nature and even as technological constructions recombine some of its dynamics.

Two subtypes of primal nature need to be distinguished: *naturogenic* and *anthropogenic*. The first refers to nature's dynamics that have occurred and continue to occur without being significantly affected by human actions. For example, there have been earthquakes, volcanoes, and extreme weather before and after humans emerged on the planet. These have significant effects on the social lives of human agents. The second refers to the dynamics of primal nature as they have been modified or unleashed, often unintentionally, by human activities. The depletion of the ozone layer by the production and use of CFCs and its repercussions constitute an example. Another involves the increased frequency and intensity of extreme weather events predicted by climate model simulations (IPCC, 2001; Milton & Bourque, 1999, p. 82) as human activities provoke global climate change.

Researchers have now documented a large increase in the number and proportion of category 4 and 5 hurricanes, which cause the most damage, over the last 35 years as sea-surface temperature has increased (Webster et al., 2005). They expected to find this trend after several more decades of ocean warming, but were surprised to find it so soon. There have always been *naturogenic* climatic changes and extreme weather events in the cycles of primal nature, but the massive use of humanly constructed recombinant nature (e.g., fossil fuels) is unleashing more of them. The realization that we may be in the incubation period of a man-made, slow-onset ecological disaster implies that we must learn from research on disasters. Meteorological evidence is, however, still only suggestive rather than definitive. In the debate over global climate change, the line of demarcation between *naturogenic* and *anthropogenic* primal nature is a politically contested terrain.

That the poor are typically most affected by disasters should not mislead us into assuming that wealthier groups always fare better. Dynes, Quarantelli, and Wenger (1990) found that middle socioeconomic levels were more affected by the 1985 Mexico City earthquake than were poorer groups, and Lewis (1999, p. 30) documented that fatalities in the Antigua earthquake of 1843 were greater among groups that could afford masonry than among the poor who had to build their homes from timber and shingles. Wildfires in Los Angeles and the French Riviera destroyed high-status homes of wealthy inhabitants who could afford to live in leafy communities. Quarantelli (1998b, p. 262) even speculates that "perhaps such future occasions might even impact more on the better off in social systems, contrary to what most

research presently indicates.” Although that is unlikely, the privileged cannot take their present comforts for granted if human activities unleash new dynamics of nature that have an adverse impact on human communities. For example, sea-level rise, increased precipitation, and extreme weather events resulting from global warming are so powerful they threaten not only Bangladesh communities but also those in the New Orleans¹ and the Netherlands.

TWO COMMUNITIES – SAME EXTREME WEATHER: DISASTER IN ONE, NORMALITY IN THE OTHER

Dickens (2003, 2004) has elaborated the following theory about the interaction between modern communities and nature. The development of modern technology has transformed nature and this turns back and modifies humans psychically: efficient technology has prompted large groups to presume their invulnerability and omnipotence, to become unconcerned with the future and obsessed with the present. Industrial development and massive consumption have led to virtual communities and a culture of narcissism. This egocentric, self-absorbed form of individualism creates the illusion that people are independent by obscuring their deep dependence on other people and on nature’s dynamics. They are alienated from material reality. Industrial capitalism has created a personality-type of passive, unknowing selves engaged in pursuing commodities, which has led to serious environmental problems, including global climate change, and is not conducive to sustainable communities. Dickens (2003, p. 104) argues that “it will take the breaking in of reality, in the form of, for example, a substantial transformation of weather systems, for the culture of narcissism to be transformed.” Thus, he ominously implies that it will take an extreme prompt of disaster to break the culture of consumerism based on the presumption of invulnerability.

Like most authors of Marxist persuasion writing in the post-Soviet period, when the perverse effects of central planning became all-too-evident, Dickens proposes antidotes to these ailments that consist of small-scale production, terminating the division of labor, and promoting red-green social movements. But how is this to be accomplished when people are on a “treadmill” of production and consumption (Schnaiberg, 1980; Schnaiberg & Gould, 1994)? The antidotes suggested by Dickens constitute ideals, but the metamorphosis of ideals into practices that contradict those ideals (e.g., the ethic of Protestant *asceticism* into practices of capitalist *consumption*) and value conflict have been rigorously documented since the research of

Weber (1930/1967). Moreover, Dickens' hypothesis of the transformative effect of the experience of disaster on the culture of narcissism has a menacing weakness as far as climate change is concerned: if the disastrous consequences are irreversible, the transformation may come too late.

Is there a successful practice of development founded on small-scale production, little division of labor, an attachment to ideals that keep consumption in check, and a purposive selection of technology based on fundamental values (and rejection of technologies seen as threatening to those values)? Have there been communities that have successfully stepped off the treadmill of production and consumption rather than accepting every new technology and commodity with all their environmental ramifications? Is there an everyday praxis that does not contribute to global warming and that is robust when confronted by extreme disturbances of nature?

Olshan (1980) documented such communities: the Amish. Rather than constituting traditional communities, Olshan (1980, abstract) found that "the Amish may be more accurately characterized, in Weber's terminology, as a value rational society; that is, they self-consciously formulate the ultimate values governing action and self-consciously evaluate alternate modes of action with respect to their consistency with ultimate values." He discovered that the Amish do not mindlessly hold to seventeenth-century technology as is commonly thought, nor do they unreflectively absorb every new technology that comes along like modern communities do. Instead, they critically examine new technological developments, accepting some (batteries) and rejecting others (electrical power grid), according to their goals of decentralized, self-reliant communities. Similarly, commodities from the surrounding society that do not threaten their values are consumed (commercial mayonnaise), whereas those that are seen to endanger their basic values are vigorously avoided (television).

The Amish have developed a decentralized social structure: different Amish communities have made somewhat different decisions about which technologies to adopt and which to avoid. Schisms abound. The Amish communities in northern New York State where the freezing rain fell were mainly Swartzentrubers, the most conservative of the Amish. Despite some differences, all Amish communities share common values and practices that clearly demarcate them from the surrounding modern society. They all refuse to be dependent on a centralized electricity grid, decline the automobile and modern labor-saving devices, prefer plainness over ostentatiousness, and reject the individualism of modern society in favor of communal collectivism. They are antimodern not merely in discourse but more importantly in their everyday practices.

Olshan (1980, abstract) concludes, “the use of unsophisticated technology does not indicate an unself-conscious or uncritical approach to existing social institutions. In the context of the contemporary United States, its use represents the very essence of self-conscious choice”. Olshan avoids idealizing the Amish. Nevertheless, he (Olshan, 1980, p. 199) concludes that “given current conditions we need more of what the Amish have. How much more and in what form is very much problematic. For the present, however, the Amish constitute a valuable model for development as that term must now be defined.” He concludes that the goals of the restoration of meaning and identity typified by the Amish, “themselves expressions of an end to the process of disenchantment, are likely to be essential to the survival of humankind” (Olshan, 1980, abstract).

What have Amish communities to do with the challenge of disaster reduction? Olshan’s thesis did not deal with environmental problems and vulnerability to disasters; hence, I wish to extend it to treat those subjects. First, these “plain people,” as they call themselves, live lightly on the planet. The consumption by Amish communities contributes little to the depletion of resources and waste accumulation because its quantity is restrained and its quality is biodegradable and renewable. Horse and buggy travel, production based on human and animal labor, and very limited use of pesticides result in trivial effects on the environment.

The self-sufficiency of their local communities is the polar opposite of the fossil-fuel-driven, transportation-reliant, just-in-time interdependency and specialization of modern society. They have no need for dangerous technologies: no nuclear energy and no ultra-rapid jets to travel the globe. The demand pressure to open up Arctic nature reserves for oil and gas exploration is not coming from the Amish. It is not the Amish communities who have produced the “risk society” in Beck’s (1992) sense of constructing novel recombinations of nature’s dynamics that then unleash new autonomous forces of nature that turn back to threaten society. Unlike modern and post-modern communities, the everyday activities of Amish communities result in little, if any, global environmental degradation and danger. Of course, the Amish must not be environmentally romanticized.² They burn wood in their stoves for heat and cooking. They use kerosene lamps and gasoline-powered generators. When they visit distant Amish communities or seek medical service, they travel in buses and vans driven and owned by non-Amish.³ But this level of fossil-fuel emissions is microscopic compared to modern non-Amish who continually drive automobiles, take planes, are connected to the electrical grid for heating and lighting, air conditioning, and information transfer, and buy numerous commodities from fossil-fuel-emitting factories.

Whether we agree with the religiously based values of the Amish or not, their practices constitute a reminder to modern communities that remaining on the treadmill of production and consumption is a socially constructed collective decision and not an inevitable fate determined by technology. The Amish remind us that a technology and commodity does not have to be used just because it has been invented. What I would call *technological and commodity triage* can, and in the case of Amish communities, does occur. This involves selecting some technologies and commodities while rejecting others according to judgments about which are benign and which are threatening to fundamental shared values. If modern and postmodern communities have – unlike Amish communities – brought on new risks of global environmental degradation and slow-onset disasters, this is because their present everyday practices based on narcissistic consumerism are poorly suited for nature's dynamics upon which those communities are superimposed and dependent. The comparison of modern communities with Amish communities in their midst only makes this more evident.

Secondly, I would suggest that in a broad and deep sense modern society can learn about itself and about the challenge of disaster mitigation by comparing its experience of a disastrous extreme weather event with the experience the Amish communities had with the very same event. In January 1998, intense, persistent freezing rain fell for five days across much of northeastern North America. This was caused by unusual warming, that is, warm moist air associated with the El Niño phenomenon traveled across the continent and collided with the usual stagnant cold air mass in this region at that time of year. The intensity and duration of the freezing rain caught meteorologists, power grid designers, and emergency planners by surprise (Murphy, 1999, 2001).

Meteorologists have since hypothesized that this could be a harbinger of extreme weather that will occur under global warming (Environment Canada, 1998). The ice loading from the freezing rain crushed the electrical power grid in western Quebec and eastern Ontario in Canada and the northern parts of New York State and the New England States in the United States (Jones & Mulherin, 1998). The metropolitan area of Montreal was seriously affected and this resulted in the most expensive disaster in Canadian history (Commission, 1999). Millions of people lost electrical power and were left without heat and light in the dark, frigid winter, including hundreds of thousands for two weeks or more.

Although freezing rain fell over a larger area in the United States than in Canada, that area was a sparsely populated rural region. It was only by good fortune that more populous communities were not struck in the United States: "Experts concur that freezing losses similar to those which

devastated Montreal in 1998 could impact Toronto, Boston, New York City, Buffalo, Detroit, Cleveland, Chicago, Minneapolis and/or St. Paul” (Lecomte, Pang, & Russell, 1998, p. 8). Farmers who had invested in electrically based intensive farming were particularly hard-hit. Their livestock became sick and died when there was no electricity to milk cows, pump water, and clean manure.

How did northern New York state Amish communities fare in this modern disaster? “When searchers returned from Norfolk, they reported that Amish families were almost unaffected by the storm” (LaRue, 1998, p. 124). Those families used their labor to work their horses, milk cows by hand, pump water, and they ate preserves as in periods of average weather. They heated their homes with wood stoves where they also cooked their food. Amish communities did not construct disaster preparedness organizations. Instead, their everyday practices based on manual labor and decentralized home heating and lighting eliminated their vulnerability to a disaster of this sort; whereas, the everyday practices of modern society, particularly its dependence on a central power grid, exacerbated vulnerability. The experience of the Amish communities demonstrates that disaster resulted not from the freezing rain per se, but rather from the vulnerability of the infrastructure that modern society had constructed and upon which it had become dependent. A calamity occurred only where an electrically based technology was relied upon that was prone to collapse under the weight of ice. Susceptibility to disaster was manufactured, not natural. The striking contrast between the disastrous experience of modern communities and the normal experience of Amish communities when confronted by the same freezing rain demonstrates that this was not a natural disaster. A nondisastrous disturbance of nature precipitated a technological disaster because of constructed vulnerability in modern society.

Modern societies rationally calculate the probability of occurrence of specific ice loadings, build robustness into the electrical grid to resist loadings of high probability, and judge possible heavier loadings of lower probability to be acceptable risk. The concept of acceptable risk amounts to accepting disaster, assessing it as occurring rarely. This places an extremely heavy safety burden on accurate assessments of probability (e.g., such a storm only occurs once every 100 years) and timing of occurrence (e.g., it will occur in a century rather than tomorrow). With the likelihood of global climate change, already poorly based calculations of probability and timing are rendered even more uncertain and imprecise (Milton & Bourque, 1999). Thus, a scientific inquiry into this disaster entitled its five-volume report “Confronting the unforeseeable” (Commission, 1999).

This reflective rationality of modern society seeking disaster reduction was no match for the everyday practices of Amish communities. A beneficial side effect of technological and commodity triage based on Amish values was protection against this kind of disaster. Robustness did not reside in sophisticated risk calculations and resistant power lines as much as it did indirectly in cultural values, which in the case of the Amish were precautionary about the adoption of new technologies and commodities and hence indirectly precautionary concerning technologically induced disasters. The safety of Amish communities when confronted by intense, prolonged freezing rain was based on a culture and technology appropriate for this type of disturbance of nature. In this case, their technological triage proved to be more substantively appropriate than formally rationalized prediction, defenses, and mitigation.

Unlike the Amish, modern communities with consumerist goals and life styles are dependent on centralized infrastructures like the electrical power grid, on advanced technological knowledge, on specialists to assess risk, on economists to construct a model of projected costs and benefits, and on disaster experts to prepare for emergencies within cost-benefit projections. Infrastructures are constructed to be robust in their interaction with the broader dynamics of nature, but that robustness has its limits because of restrictions on the willingness to pay and the capacity to know. If nature's dynamics exceed expectations, then the consequences can be worse than if the infrastructures, knowledge, and specialists did not exist. This is what occurred in the case of this ice storm. If modern infrastructures are used in order to attain consumerist goals and life styles, then society must reflectively ensure that its emergency preparations are adequate.

Modern communities are condemned to the chronic and expensive problem of making attempts (i) to foresee the frequency, intensity, and timing of nature's destructive dynamics, (ii) to prepare for those hazards, and (iii) to mitigate their consequences using the best possible risk-assessment and emergency-management specialists and organizations (Tenner, 1997). Modern communities may think they have knowledge that transcends the long-term, trial-and-error approaches of the Amish, but they have only pushed trial and error based on short-term experiences to a new level of generating uncertainty. In addition, the more modern communities unleash emergent dynamics of nature such as global climate change, the more difficult it becomes to foresee hazards. Ever greater expertise is required in this circle of technological development, disaster, and monitoring the risky side effects of technology and its interaction with primal nature. Modern communities are condemned to recognizing that attempts at prediction, preparation, and mitigation are fallible.

What is to be made of this finding that Amish communities proved to be less vulnerable to this extreme weather than the surrounding wealthy modern communities dependent on a centralized electrical grid? The environmental anthropologist *Oliver-Smith (1998b, p. 231)* argues that from “the standpoint of adaptation, disasters may be seen as symptomatic not only of specific weaknesses (e.g., construction in flood prone areas) in a social system, but of the overall adaptive fitness of the society’s relationship to its environment.” If their socially manufactured, disastrous vulnerability to this extreme weather is used as an indicator, wealthy modern communities did not prove to be as fit an adaptation to their natural environment as the Amish communities. Wealth cannot be equated with invulnerability or even lesser vulnerability. Nevertheless, Amish communities could be vulnerable to other types of disaster, including those that are socially manufactured by the surrounding modern society with its activities that result in global environmental change.

TWO COMMUNITIES – DIFFERENT EXTREME WEATHER: DISASTER IN ONE, CATASTROPHE IN THE OTHER⁴

The fact that the disastrousness of a natural disaster is in large part determined socially was evident when Hurricane Katrina struck New Orleans in 2005. The vulnerability of the below-sea-level city of New Orleans to a category 4 or 5 hurricane has been known for years, but the budget to reinforce the levees was cut. The weather service predicted an active hurricane season, months in advance, and forecasted the power and path of Hurricane Katrina days before it struck, yet evacuation preparations for the poor and the infirm were inadequate. It is ironic that the community so famous for rehearsing and improvising in music was so bad at rehearsing and improvising for a hazard of nature. At the federal level, the President was slow to become involved and the Vice-President did little. The resulting catastrophe revealed flaws of technologies believed to defend against disaster, weaknesses of leadership, and inadequacies of institutions like the Federal Emergency Management Agency (FEMA) since it was placed under the tutelage of Homelands Security. Different levels of government stepped on each other’s feet and got in each other’s way, and turf wars broke out. Organizational paralysis left residents particularly vulnerable.⁵

In contrast, the effects of the 1998 ice storm in northeastern North America were mitigated because they were well-managed, despite the fact

that its intensity, duration, and scope were unexpected.⁶ Emergency plans that had been choreographed and practiced were put into action. Improvisation, which is always necessary in a disaster, was prompt and efficient. In Quebec, Premier Bouchard and the CEO of the electrical utility Hydro Quebec appeared daily on television to inform the population about the latest movements of nature and their counter moves in order to attempt to normalize the situation and advise people about what they should do. Governor King did the same in Maine. Many people no longer had television, but they received this news via battery-powered radio and telephone calls from friends with electricity. Mayor Bourque of Montreal was on vacation in a distant region of China, but rushed back to deal with the crisis when told of its gravity. Vice-President Al Gore came to Maine and offered any help he could give, including the federal checkbook.

The freezing rain struck an enormous territory, so electrical power crews had to be brought from afar to help with repairs. Central Maine Power arranged with North and South Carolina to borrow crews and bucket trucks, but it would take too long to drive them to Maine. Governor King asked Vice-President Gore for massive military transport planes to transport them. Within 24 hours the planes were landing in Maine with the crews and trucks. This was the golden age of FEMA, sandwiched between its much criticized response to Hurricane Andrew and its inadequate reaction to Hurricane Katrina. The Maine National Guard was available and was sent into action to clear debris, support the electrical workers, provide technical assistance, and do search and rescue.⁷ In Canada, Premier Bouchard of Quebec requested the aid of the Canadian Army from Prime Minister Chretien, and 12,000 troops were promptly placed at his disposition. Despite being on opposite sides of the secessionist–federalist fault line in Canada, the two worked well together during the disaster. There was no evidence that the response to the ice storm was hampered by an attempt on either side to gain a political advantage.

In both Canada and the United States a bottom-up response to disaster has been planned: the municipality is in charge aided by the province or state, but if the municipality becomes overwhelmed the latter takes over, aided by the federal government. The Canadian Army followed the orders of the governments of Quebec and Ontario. The Maine National Guard obeyed the commands of the State of Maine. In both cases, the chain of command was clear. The provincial and state governments were decisional and the federal governments in Canada and the United States played a supportive role. No debilitating turf battle broke out. This structure worked well in both countries when confronted by the ice storm and would likely

have worked well when confronted by Hurricane Katrina had the vulnerability of New Orleans to hurricanes been taken as seriously as terrorism by the federal government of the United States.

The weakness in the preparation, response, and recovery in the case of Hurricane Katrina was not caused by the fact that the federal government was supposed to play a supporting role; rather it was caused by the fact that the federal government failed to play that role adequately. Current suggestions that disaster management should be placed under the command-and-control hierarchy of the Pentagon are unwarranted and would likely result in an inferior response because it would not be as effective in incorporating knowledge, resources, and responsibilities that are local.

In the ice storm, the Canadian Army and the Maine National Guard were present to keep order and this reassured the population, but they were hardly used for that purpose because the crime rate dropped dramatically. Disaster researchers (see Fischer, 1998) have found that people do not usually panic when told bad news calmly and clearly in a disaster. They follow instructions to the advantage of all rather than acting in their own self-interest in ways that harm everyone else. The assumption of panic is part of what those researchers call the disaster mythology fostered by the media, which sensationalize disasters by focusing on rare cases of panic and looting but ignoring mundane but typical orderly behavior. The panic and looting that occurred in New Orleans are the exceptions. They take place where the living conditions of some groups are disastrous in normal weather and when decision-makers themselves panic and respond chaotically.

CONCLUSION

There are many divisions and debates in disaster research: among a focus on technological disasters, natural disasters, or disasters caused by terrorism; on sudden disasters or slow-onset ones; on hazards or vulnerability; and on biophysical vulnerability of place or social vulnerability of position in the stratification system. Some researchers conclude that technology that recombines dangerous materials of nature is socially organized such that it is highly reliable; whereas, others conclude that the tight coupling and interactive complexity of such organizations lead to accidents that could be called normal for those organizations. The review in this chapter has shown that it is nevertheless important to avoid exaggerating these oppositions; in particular, it is imperative not to descend to either extreme of naturalizing disasters or sociologizing them. Integrating these diverse elements that

all-too-often are studied separately or in opposition is necessary. An integrated approach would be valuable not only to investigate the robustness or fragility of communities when confronted by naturogenic primal nature, but also to study how social practices of recombining nature's dynamics to construct novel technologies at times unleash new forces of anthropogenic primal nature. I would suggest from the literature examined here that this more inclusive approach would be particularly helpful for analyzing the challenge of disaster reduction for the local sustainability of communities.

Such an integrated perspective was then used to study an extreme-weather disaster in modern communities. Modern technology and organization have brought many benefits, not the least of which is much greater life expectancy and hence much higher population. Security then requires the chronic burden of risk assessment, mitigation, preparation, and planned response to nature's forces. These measures have tended to reduce fatalities, but not property damage, and they could be overwhelmed because knowledge of nature's dynamics is only partial. This study of the 1998 ice storm constitutes another reminder that estimates of probability of danger or safety are fallible and that disasters often result when risk analysis underestimates the likelihood of danger or cannot provide information about its timing. Worse-case scenarios like this ice storm need to be taken into account even if they are assessed to be improbable (Clarke, 1999, 2005) because they are disastrous and do occur, and because assessments of their probability and timing have serious limitations. This disastrous-but-improbable dimension of precaution should not be ignored.

These modern communities were compared with antimodern Amish communities when they were all struck by an extreme weather event of primal nature. This comparison was not made either to advocate Amishness or to reject risk analysis and its benefits, nor does it assume the worse will happen all the time, nor does it propose the abandonment of the electric power grid. It does not imply that we must reject all modern technology and organization. Rather the comparison was made to increase research variance, namely, to investigate how communities radically different from modern ones fared under the same extreme weather in order to learn more about the strengths and weaknesses of modern communities and the range of possibilities open to them.

This comparison of modern communities with those of the Amish provided a reminder for moderns that safety or disaster depends on the appropriateness of social constructions for nature's constructions, whether that fit be based on sophisticated risk-assessment or be inadvertent. The comparison led to the unwelcome finding that modern technology and

organization in some cases increase vulnerability to what are called natural disasters. Drawing attention to such excess vulnerability and augmenting awareness of difficulties are important steps in addressing problems. Moreover, the Amish have demonstrated that communities can step off the treadmill of production and consumption and that technological triage is possible. The challenge for modern communities is to make an ecologically reflexive triage.

Wealthy modern communities cannot presume their invulnerability: “given the emerging instability and unpredictability of environmental conditions ... , it is no longer possible to simply assume the adaptive fitness of our own social system. Quite the contrary, in fact. A number of factors, including population growth and concentration, the toxicity and volatility of some technologies, and productive forms maximizing resource exploitation, have placed that fitness in some doubt” (Oliver-Smith, 1998b, p. 231). The mismanagement of preparation and response to Hurricane Katrina demonstrated how important it is to take seriously the risk of natural disasters instead of leaders resorting to NIMTOF assumptions (not in my term of office will it happen). The disastrousness of the ice storm was, on the other hand, mitigated because the response was relatively well managed, but it demonstrated that nature can produce unexpected disturbances.

As modern communities recombine nature’s processes in novel ways and inadvertently modify the autonomous forces of primal nature, they face the dilemma of confronting the unforeseeable. Their need to foresee risk accurately to reflectively construct sustainability and safety together with their incapacity of doing this in cases (i) of true innovations involving recombinant nature and (ii) of the unleashing of new constructions of primal nature is one of the great dilemmas for modern communities.

NOTES

1. This affirmation and the chapter were written well before Hurricane Katrina struck New Orleans, which served to confirm both. A short discussion about Hurricane Katrina has been added in the final revisions.

2. A reviewer hypothesized that Amish agricultural methods require large amounts of land and hence their methods could not provide food for a population the size of the United States. That hypothesis remains to be proven. The Amish are very productive farmers in terms of land use, but they do it with labor power and animal power rather than with fossil-fuel and electricity-driven machinery. Indexes of productivity reflect values: in modern society labor-saving priorities over fossil-fuel-saving goals. If productivity were calculated in terms of production per gallon of fossil fuels rather than per person, then the Amish would be seen as the most

productive workers in America. The reviewer's hypothesis does raise the important question of whether Amish methods (and also traditional and organic ones) for producing food are sufficient for the large population the world now has as a result of modern reductions in mortality rates.

3. There are other characteristics of Amish communities that are far from praise-worthy: strict patriarchy, limitation of education to primary school, shunning of dissenters, etc. (see Olshan, 1980; Kraybill & Olshan, 1994).

4. A "catastrophe" is usually defined as having even more serious consequences than a "disaster."

5. Analyses of the 2005 Hurricane Katrina and New Orleans disaster by America's leading disaster researchers can be found at the web site <http://understanding-katrina.ssrc.org/>.

6. The following information is based on interviews I conducted with Governor Angus King of Maine, Mayor Pierre Bourque of Montreal, and emergency management directors in both countries.

7. In an interview a year before Hurricane Katrina struck, the head of emergency management and of the National Guard for the State of Maine, Major-General Earl Adams, made a comment that now seems like a premonition for Louisiana. He suggested that if an extreme weather event struck Maine now the response would be much more difficult because (a) the National Guard plays such an important role in coping with a natural disaster and (b) half of Maine's National Guard is away fighting in Iraq and not available locally.

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6. SUSTAINABLE DEVELOPMENT IN THE CITY OF TAMPERE: WORKING TOGETHER WITH RESIDENTS

Ari Ylönen

ABSTRACT

One of the main subjects in the history of sociological thought has been the structure and functions of social systems to control the relationship between individual freedom and collective objectives. Sociologists have witnessed both the growing strength of “iron cages” and the liberation of individuals from many kinds of social bonds. Environmental problems call for new ways to build up accord between individual preferences and collective outcomes. The concept of “sustainable development” has been offered for citizens as a moral claim to cut down their options to choose. This chapter studies the acceptance of this offer in Tampere, Finland.

INTRODUCTION

The concept, “sustainable development,” is both useful and doubtful. It is useful for those who are in search for better environment by raising the concept high in the agendas of decision-making bodies. Especially when defined as a progress that ensures the intergenerational equity, the concept is

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widely accepted. This definition has generated not only acceptability but also, as an abstract one, a possibility to use it just as a tool for positive environmental image building. Therefore, it is also doubtful. "The concept of sustainable development is, for many applications, not very operational concept, which, ironically, may be one reason for its wide adoption and acceptance" (Cerin, 2004, p. 309). It is easy for governments as well as for individual actors to follow the general guidelines, as far as the terms of sustainability are not clearly stated.

In Finnish urban policy, new planning systems are adopted to overcome the deficiencies of sector planning in coping with environmental problems. Also here the magic word is "sustainable development." In Tampere the two-year project, "Sustainable Development Through Cooperative Planning," was started in 1997. The university (the author) and a private planning agency were the initiators and gathered knowledge of European Union funding and environmental programs. Later the city of Tampere, the University of Tampere, and several other actors established a research and development project as a part of European Union Life-Program to further environmentally conscious cooperative planning.

The role of research in this coalition of private and public actors was to study the ways of life in the research area as well as to activate residents to evaluate their daily routines against the agendas of "sustainable development" in recent declarations of The United Nations and European Union. The discussions took place in several meetings where the results of the survey were reported to the residents. The discussions with planners, how to further sustainable development in land-use planning, were started and they still are going on. The aim was to give a new starting point to all land-use planning of the city. Several task-groups were established, covering environment and scenery, environmental impact assessment, lifestyle research, land-use and traffic, water supply, waste management and information, and training for local residents; the objective was to improve planning methods and cooperation between different parties.

The research site, Aitolahti-Teisko, the northern part of the city, is a rural area of 515 km², extending 20–40 km north from the central city. While the increasing traffic has been acknowledged as the biggest environmental problem in European as well as in Finnish cities, the city council of Tampere has hesitated about whether Aitolahti-Teisko is a proper area to build new housing and the infrastructure needed. Also the holiday settlements, located in the lakeside areas of the research site, are part of the problem. Many residents would like to change their summerhouses into permanent dwellings or in such a way that a bigger part of the year could be spent there.

Both of these changes would lengthen the average daily travel from home to work considerably.

In Aitolahti-Teisko area there are about 4,000 inhabitants in about 1,500 permanent dwellings and about 2,000 holiday residences. In the 10-year period of 1985–1995, 450 holiday residences and 150 permanent dwellings were built there. In addition to problems that follow from sparse community structure there are other environmental problems. In many drill wells such amounts of arsenic and fluoride components have been found that cause a risk to the health. In these locations the water supply for household consumption should be reorganized.

The residents have, for years, expressed to the city council their hope that new small house areas would be built in the neighborhood of existing villages. This aspiration is in accordance with the public opinion that the supply of sites for small houses is not adequate in Tampere. The argument in public discussion has been that a small house on the fringe of the city is a good environment for families with small children and it offers an option of “green” style of life. Several Finnish studies, however, have shown that daily life on the fringe of a city is more and more dependent on the supply of work and public and private services of the central city and thus is far from sustainable way of urban life (Pekkanen, 1996; Pekkanen, Maijala, Piispanen, & Lehtonen, 1997). The aspirations of the citizens and the pre-conditions for sustainable development are in conflict.

SUSTAINABLE DEVELOPMENT IN CITY PLANNING

Environmental concerns, in Western countries, have slowly proceeded for several decades before the concept, “sustainable development,” was announced by World Commission on Environment. A well-known milestone is the book *Silent Spring* by Rachel Carson (1962). This was followed by some alarming reports that questioned the merits of economic growth in northern USA and Western Europe. The importance in Carson’s book is in the combination of a global, ostensibly benevolent human action (killing insects to ensure food supply) and locally observable, unexpected, and unpleasant consequences (the lack of birds). This is a major advent for worldwide attention in global environmental problems.

The second breakthrough of public awareness in environmental risks was authorized by a series of international reports starting in the early 1970s. The challenge of the idea of maximal GNP, which had previously been the self-evident measure of development, was introduced to a large audience of

decision makers and citizens. The United Nations Conference on Human Environment in 1972 in Stockholm raised considerable public attention. The report by the Club of Rome entitled *Limits to Growth* was published at the same year. The dramatic message of the report was that limited natural resources and ecological problems cast a shadow of doubt on all future development. Fifteen years later, in 1987, the Secretary-General of the United Nations assigned Gro Harlem Brundtland, the Prime Minister of Norway, to prepare a global reform program. The Brundtland Report concluded that the current development could not continue. "Sustainable development" was adopted as the new way ahead.

The United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992 signaled the next phase. The sustainable development action plan, which was adopted at the conference, was called Agenda 21. The countries that signed the action plan – including Finland – announced their commitment to sustainable development.

A few years later sustainable development in community planning was adopted into municipal practice through international agreements. In May 1994, following the European Conference on Sustainable Towns in Alborg, Denmark, a group of European cities signed a joint declaration, the Alborg Charter, committing them to take concerted measures to promote sustainability. The Alborg Charter defines traffic as one of the key issues in sustainable community planning. The impact of traffic is considered to be the most severe environmental problem facing European cities. Land-use plans that increase private car traffic are condemned in the charter. It took over 30 years from the first manifest signs of environmental threat to reach international agreements of the measures needed in city planning.

Tampere is one of the 24 Finnish cities that signed the Alborg Charter. In international perspective Tampere is one of the early cities to adopt the concept as a basis for social, ecological, and economic modernization policy of the city. To realize the internationally accepted ideas in planning Tampere has drawn up an environmental program, where it commits to sustainable development.

European Union (EU) has also been active in policies concerning municipal environmental objectives. In 1998, the EU gave a statement to argue for the importance of urban matters: "It is in urban areas that the problems stemming from economic, social and demographic change, the over-consumption of energy and natural resources and the generation of waste and pollution and the risks from natural and technological disasters are most heavily concentrated. At the same time, because of the concentration of economic, physical and intellectual resources, cities and towns are centers

of communication, creativity, innovation and of cultural heritage” (European Commission, 1998).

In community and land-use planning of Finnish cities, the concept, “sustainable development,” has been adopted both as an administrative planning tool and as a means to gain acceptance for it at municipal decision making bodies. But there are many conflicting ideas and arguments how to realize it at practice. A special problem is the Finnish dispersed community structure and the increasing distances in daily travels from home to work as the majority of new residential areas are built on the urban fringe. This tendency brings forth many problems including increasing traffic and subsequent emissions. The financial burdens of building and keeping up high-quality water supply, wastewater treatment and waste collection far from the existing infrastructure are an increasing problem in municipal finances.

The documents of several international meetings and conferences are a convincing proof of the large acceptance of the idea of “sustainable development.” The political parties in different countries are “greening.” “In the 1990s, 80 percent of Americans, and over two-thirds of Europeans consider themselves environmentalists; party and candidates can hardly be elected to office without ‘greening’ their platform; governments and international institutions alike multiply programs, special agencies, and legislation to protect nature, improve the quality of life and, ultimately, save the Earth in the long term and ourselves in the short term” (Castells, 1997, p. 110). But the reports of the increasing traffic and environmental problems in European cities tell another story. Decision-makers, planners and citizens in different roles may favor green style of life, but the cities as systems everyday life hardly develop into the direction of sustainable development.

THE RESEARCH AND PLANNING PROJECT IN TAMPERE

The conflict between residents’ desires and the actual daily options to follow the practices of everyday life, which would contribute sustainable development, were clearly realized by the research group and the task group of local residents. An intense cooperation with planners and residents was inevitable. The project was carried out step by step. Two actions before the survey and the ecological balance study took place. First, the local newspaper introduced the project and the need for information from residents of the living conditions in the area. Second, a local meeting was arranged and the project manager introduced the project as a preliminary step for the

becoming actual land-use planning. The objectives of the project were introduced as follows (Silta-The Bridge, 1999, p. 8):

1. By the end of this millennium the project will have a clear idea of how we should, and how we want to develop the Aitolahti-Teisko area, as well as how to enhance the prospects in the area.
2. To achieve the objective, the first task of the project is an extensive data collection. A survey on today's Aitolahti-Teisko area and the lifestyles of the inhabitants is to be collected to build the foundations of the project.
3. The different task groups have different needs and sources of information, and a common survey will cover much of the needs of different task groups. Together with the survey the following list of operations was introduced:
 - A. A study of the local inhabitants' lifestyles from the point of view of sustainable development.
 - B. A detailed environmental and landscape investigation of the area.
 - C. An inventory of ground water resources and the current wastewater management in the area.
 - D. A survey of the waste treatment procedures of the local residents' households.
 - E. A study of the ecological balance, i.e., the financial and environmental impact of the various new housing alternatives in the area.

Along with the principles of sustainable development it was necessary to make local inhabitants participate in the development process. To get the local inhabitants' in-depth knowledge of the area, a group of active residents was included in the project organization. A Citizen's Group was founded after the first meeting. The discussions on how to promote environmentally friendlier style of life were started. A particular issue was to solve the drinking water problem at the risk of arsenic. The aim was to make citizens also participate in finding the proper solutions for water problems.

The next step was the survey in February to March 1998. There were 3,903 inhabitants and 1,450 households in the area. The questionnaire was addressed to the households, and there were a few questions to different members of the family. The percentage of returned questionnaires was 73. In spring and summer 1998 several meetings were arranged where the results of the survey were discussed with the residents.

An ecological balance study was addressed to the new housing in the area. The study utilized survey data in selected sub-areas, three types of locations in Aitolahti-Teisko. They were (1) an area where the new construction was situated nearby existing villages; (2) an area with concentrated housing

along the main roads; and (3) single houses and dispersed development. Examples of these locations were selected, and their environmental and economic impacts were compared. According to the calculations, the traffic consumes more energy than maintaining the detached houses and living in them. This is due to long distances as majority of population uses private cars for daily commuting to work and shopping.

The ecological balance study concludes that the use of existing infrastructure for new housing meets best the demands of sustainable development. This is not, however, in accordance with the preferences of those newcomers, who are planning to migrate from cities into countryside. The newcomers are searching for old traditional rural environments and old houses with a rather big lot (Pekkanen et al., 1997). The new housing should, however, be built in locations with existing roads, water and sewerage systems, shops, and other services to fulfill the demands of sustainable development. This would bring savings for both private and public finances. The location near existing villages enables the use of local services and, which is of vital importance, supports the maintenance of the current service level. The costs of land are lower in rural villages than in urban areas, but in the long run the total costs in rural areas are higher than in urban areas.

A guide to ecological life in rural areas, based on the ecological balance study, was produced both for the people living in the area and for those who are considering moving there. Special events for waste management were arranged, and bulletins of ecological life and waste management were delivered to the residents. The results and advices of the ecological balance study were available in the Internet.

The ground water investigation was conducted by The Regional Environment Centre of Pirkanmaa, in cooperation with the Water and Sewerage Works of Tampere. The project analyzed areas in which houses could rely on their supply of water from their own wells and where the water resources would fit for the water cooperative of several households. The dispersed system was evaluated to follow better the principles of sustainable development because it has minor effects on the existing balance of water and it does not require massive construction.

Arsenic was found in wells of some areas of Aitolahti-Teisko. The cooperatives of water supply were needed. The first water cooperative was founded during the research project. By November 1999, approximately 90 real estates had joined the cooperative. Another cooperative for 30 real estates was founded in November 1999. And the third one was under work. Residents belonging to water cooperatives need to pay approximately two thirds of the construction costs of the system. The water cooperatives will be

permanent participants in local activities as legal organizations with economic relevance, and hopefully they further the social activities in the area.

The concrete measures in the area are, most obviously, the main factor to explain the active participation. The residents were active in solving the local problems. The Water and Sewerage Works of Tampere provided expert advice, in finding out the water supply alternatives and founding the new cooperatives. For these reasons it was of vital importance to have representatives from all the villages in the area. The members of the Citizens' Group reported that the fact that representatives of different villages gathered together as a planning group also increased intercourse in other matters among the inhabitants. During the project, three meetings were arranged for the whole population of the area and the Citizens' Group had 13 meetings of their own during the two-year project.

Later the residents of the area were invited to participate in the official site planning process as the master plan for the Viitapohja sub-area was drawn up as part of the project. The planning progressed according to the guidelines of the new Finnish Land Use and Building Act, which became valid on January 1, 2000. Accordingly, the master plan for the Viitapohja includes a participation and assessment plan. The new national Act presupposes that local inhabitants and other participants are involved in the planning process from the very beginning. The inhabitants of the Viitapohja were invited to participate in the land-use planning of their area in an open meeting on September 5, 1998, which was less than a week after the City Council took the decision to start drafting the master plan. The meeting covered the schedule of the project, the plan for the citizen participation and a presentation of the Viitapohja landscape report.

Without any beforehand plans, the activities of the research and planning project and the official municipal planning process were combined and some meeting with residents were utilized by both. This is one of the benefits of the official status of the project, realized in an agreement between the European Union/The Life-Program and the City of Tampere, the University of Tampere, and other actors.

The survey revealed interesting patterns of everyday life. Most of the residents, especially the young families, were active in the use of the waste management system and eager to participate in its development during the project. Young and old families alike clearly favor "green lifestyle," but in different ways. Recommendations to have compost heaps for organic waste were more adopted by the elder generation, and recycling and new methods of waste management by the younger. But most families (80% in the summer and 72% in the winter) use their own car for journeys to work and to

shops. The distance between the work and home varies from 20 to 40 km, which is much more than the average in Tampere. In this sense the everyday life in Aitolahti-Teisko, despite its close contacts with the rural life and nature, is similar to the life on the outer edges of Finnish cities. Life on the fringe of the city simply depends on the employment opportunities and services of the central city area.

The population of the research area has changed significantly during the last 15–20 years. The former majority, the farmers, constitute a small minority, less than 10% of the inhabitants. The statistics of the age structure show that the younger generation, which daily commutes to the central city, is the increasing majority. The services that would maintain the self-sufficiency of the area have declined. The development in the service infrastructure works against the purposes to maintain the preconditions for sustainable development.

EVERYDAY LIFE AND FREEDOM TO CHOOSE IN URBAN THEORY

The long tradition of urban sociology to study everyday life had been started as early as from the essay “Metropolis and Mental Life” by Georg Simmel (1903), and it aroused a large, lasting (two to three decades) interest in the empirical studies of the Chicago School. Later Louis Wirth (1938), a member of the school, following ideas of Simmel, inspired again the discussion whether there is to be found a specific urban way of life and a specific urban personality. The study of the everyday life has still then mobilized a disparate collection of intellectuals. The theoretical orientations have changed, and huge amount of information has been collected about the city life of ordinary folks (Highmore, 2002, pp. 75–112).

There are interesting differences in the approach by the Chicago School and Simmel. Much of the work of the Chicago School was involved with the different patterns of segregation, life in the distressed areas and the logic of the development of the city. Simmel’s interest was in the development of modern culture and in the relationship between global and local. “The deepest problems of modern life flow from the attempt of the individual to maintain independence and individuality of his existence against the sovereign powers of society, against the weight of the historical heritage and the external culture and technique of life” (Simmel, 1971, p. 324). The global for Simmel is not only the external culture but also the money economy, and the local is – the new types of social relationships – the elementary forms of

socialization in the modern metropolis. The Metropolis study is an early formulation of the relationship between global processes and urban life.

The early approaches of contemplating urban everyday life have an important common view in the relationship between the urban dwellers and their social environment. The concepts “form of life” (Simmel) or “way of life” (Wirth) refer city dwellers’ different strategies to cope with the pressures that restrict their individual freedom. The patterns of behavior are responses to concrete conditions in everyday environment. Simmel’s emphasis on person’s incapacity to react to the overwhelming flood of new stimulations and the strategy to adopt is a “blasé” attitude toward the big amount of acquaintances and personal involvement in them. In accordance with the ideas of Simmel, also for Wirth, the impersonal, less friendly relationships in modern urban society are the way to adapt into large, dense, and diverse urban social environment.

The first era of research might be called a formalist one, characterized by conceptualizations how urban dwellers adapt to large, dense, and socially diverse urban environments. The environment of urban personality is the modern metropolis. The second wave of studies of urban everyday life has its origin in the critics of structural explanations. The concept of “style of life” stands for a transition from class determination into new dominant class distinction. Symbolic systems cover economic systems of power. The ordinary folks in Western metropolis were replaced by the middle class in modern France: “the dominant class constitutes a relatively autonomous space whose structure is defined by distribution of economic and cultural capital among its members, each class fraction being characterized by a certain configuration of this distribution to which there corresponds a certain life-style, through the mediation of the habitus” (Bourdieu, 1984, p. 260). Actions that middle-class urban families chose to do, or prefer in their daily life, are expressions by taste of their positions in a spatial social system.

The third example is the cultural approach. In his analysis of connecting everyday life and cultural theory, Highmore gives an account of modernity as boring and also mysterious, as both disconnecting and routine. The account as a contradictory picture of everyday life highlights the importance of the cultural approach: “the vividness of the everyday is not simply related to the events of the social; it is animated by a will, a struggle to rescue the everyday from conformity” (Highmore, 2002, p. 174). The quantitative research may catch up the most repeated actions, the most traveled journeys, and the most inhabited spaces that are daily present. The most traveled journey can become the dead weight of boredom, the most inhabited space a prison, and the most repeated action an oppressive routine (Highmore,

2002, p. 1). The interesting knowledge is what the residents of the area really want, what kind of changes they are motivated to aim for. Also Castells (1997, p. 124) has evaluated that the grass-root potential may be the decisive force of change, the real potential to get out of oppressive routines.

In Simmel’s analysis of the eighteenth century liberation of powerful bonds of a political, agrarian, guild, and religious nature was followed by individual ambitions to distinguish themselves from one another. For Simmel the real achievements of modern man would have been the achievements which make man unique, even if dependent on the activities of others. The search for general human quality in every individual was however replaced by individual qualitative uniqueness. But the task of research for Simmel is “not to complain or condone but only to understand,” as he brings his essay to an end.

A quick glance over some milestones in the sociological discussions of everyday life seems to give proof to Simmel’s farsightedness. The present bonds are the incapability to raise one’s level of living in the comparisons level of the neighborhood and the dullness of daily routines. The present freedom is not far from the option to have at least a little better off than the majority. The fancy style of life might be called a middle-class majority rule, with expressions of high level of consumption and mobility (Fig. 1).

But all the same, families of the study have also chosen many modes of “green lifestyle” for ethical reasons, even if they are time-consuming and presuppose extra efforts. The option to choose a car of one’s own is almost a

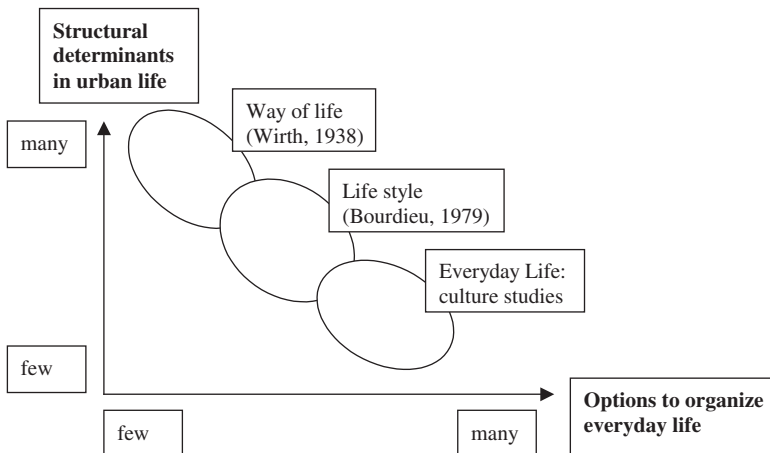


Fig. 1. Urban Theory and the Options to Organize Everyday Life.

necessity to get the daily routines done in decent timetable. There are not many ways to organize the daily commuting between the place of residence and the area of workplaces, shopping centers, and other shops.

SUSTAINABLE DEVELOPMENT AND EVERYDAY LIFE

Two apparent conflicts appear when applying the concept “sustainable development” into practice. Despite international agreements and guidelines in traffic planning, the statistics attest the decline in the use of buses and a big increase in the use of cars in Finland. Secondly, the housing aspirations of the majority of families favor such solutions in land-use, which, even if they give room to “green” life style, also give negative results in the calculations of ecological balance.

In the family budget, the option to live on the fringe of the city in a small house is one, and for many families, the only way to fulfill their housing aspirations. And the concept of “sustainable development” is flexible enough to give room for different interpretations at different levels of global–local dimension. The research group was aware of this when the research was started.

The project adopted several ways to cooperate with the residents. The major objective was to activate and motivate people by starting as soon as possible some concrete developmental processes in the area. With the illustrations of the measures needed for better environment, the discussions of the criteria of good practices were started. After the first meetings it was obvious that there was more lack of good arguments concerning sustainable development at local level than of information of residents’ daily behavior.

The life today on the fringe of the city in Finland is a combination of ways of life imposed by economic factors, by the local labor markets, and by the measures of society, both in the national housing policies and in local land-use planning and, finally, in the interests of families in “green” style of life. There are less and less alternatives of the daily “commuting way of life.” There are options for the “green” lifestyle or more consuming one, and much free symbolic space to adopt a life style of one’s own without pressures from the social environment. But the hard question remains whether the costs of the increasing options to choose must be paid with the losses in sustainable development.

In the few hundred years’ history of modern Western development both the increase of Weberian “iron cages” and the liberation of individuals from

many kinds of social bonds have been found by several famed sociologists. Environmental problems call for new ways to build up accord between individual preferences and collective outcomes. The concept “sustainable development” has been offered for citizens as a moral claim to cut down their options to choose. The acceptance of this offer has been studied at local level in Tampere.

The conclusions of sustainable development in land-use planning in Aitolahti-Teisko area are complicated. To fulfill the strict criteria stated in international and national agreements, the amount of residents in areas like the research area should decrease. This is, however, not possible without violating the principles of local democracy and citizen participation. The conclusion in the final report of the project was: “It is therefore important that the Aitolahti-Teisko area does not remain outside development projects. Aitolahti-Teisko should be developed as an area that can offer an alternative lifestyle for a limited number of new inhabitants.” The residents’ conclusion was: “The officials are no longer faceless.” The project activated residents to participate in planning and to discuss the problems and, hopefully, to catch up new evaluations of the environmental impacts of their everyday life. A lesson for research is that the survey cannot stand for citizen involvement.

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7. THE SOCIAL ECOLOGY OF HEALTH IN NEW YORK CITY

Hilary Silver and Peter Messeri

ABSTRACT

Studies repeatedly have found social disparities of health at many levels of spatial aggregation. A second body of empirical research, demonstrating relationships between an area's racial and class composition and its environmental conditions, has led to the rise of an environmental justice movement. However, few studies have connected these two sets of findings to ask whether social disparities in health outcomes are due to local environmental disparities. This chapter investigates whether the association between racial and socioeconomic composition and multiple health conditions across New York City zip codes is partly mediated by neighborhood physical, built, and social environments.

PRIOR RESEARCH

Social Disparities of Health

The premise of this study is that there is systematic variation in health conditions across space associated with the racial, ethnic, and socioeconomic composition of localities. There is overwhelming evidence supporting

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this relationship at many levels of analysis and for many health outcomes (Marmot, 2001; Diez-Roux et al., 2001; Berkman & Kawachi, 2000; Subramanian, Belli, & Kawachi, 2002; Hillemeier, Lynch, Harper, & Casper, 2003). Much aggregate-level evidence confirms the relationship between an area's socioeconomic conditions and all-cause mortality, cardiovascular mortality, infant mortality, suicide, birth weight, cardiovascular disease, disability, depression, smoking, physical activity, and many other outcomes (Yen & Syme, 1999; National Research Council, 2004).

Health conditions in low-income, inner-city neighborhoods are often abysmal. Death rates in high poverty areas of New York City (NYC), as in other cities, vastly exceed those in the nation as a whole, especially for blacks (Geronimus, John, Waidmann, Hillemeier, & Burns, 1996). A widely reported study found that Central Harlem's prime-age male mortality, which is mainly due to cardiovascular disease, cirrhosis, and homicide, is greater than that in Bangladesh (McCord & Freeman, 1990).

Poverty rates appear to account for much of the racial and ethnic gap in most health outcomes (Public Health Disparities Geocoding Project, 2004).¹ Yet the strong interrelationship between race and income often makes it difficult to unravel which of the two is the more important determinant. Few studies have asked whether relative race and class effects on health vary according to the outcome in question. Our study therefore considers the effects of poverty and race on 18 general and specific health conditions.

African-Americans have excess mortality rates on most of the major causes of death in the U.S. (Williams, 1999; Williams & Collins, 1995). Today the overall death rate for blacks is similar to that of whites 30 years ago (Williams & Jackson, 2005). Blacks and Hispanics are two to six times more likely to die from asthma as are whites. Blacks and Latinos are also two to six times more likely to be pedestrian fatalities killed by cars. African-Americans comprise a majority of the crime and homicide victims in NYC. Segregation levels and black social isolation from whites in major U.S. cities are strongly associated with higher rates of mortality for African-American males and females, although the strength of the association varies by cause of death (Williams & Collins, 1995). Controlling for socioeconomic deprivation explains only part of this association. Thus, race may be "a marker for differential exposure to multiple disease-producing social factors" and for differential access to social resources (Williams & Jackson, 2005, p. 325). As the Institute of Medicine's 2003 report, *Unequal Treatment: Confronting Racial and Ethnic Disparities in Healthcare*, found, there are systematic biases in access of African-Americans to high-quality primary and hospital

treatment. It is reasonable to ask about the pathways responsible for the neighborhood-level relationships between both race and socioeconomic status and health.

Hispanic-Americans, especially the foreign born and before acculturation, tend to be healthier than whites and African-Americans at the same level of income, partly because they engage in less risky behaviors (Abraido-Lanza, Chao, & Florez, 2005). “The Latino Paradox” is that overall mortality rates are *lower* for Hispanics (and immigrants) than whites, although they have lower incomes (Sorlie, Backlund, & Keller, 1995). Nationally, Latinos do have higher death rates for diabetes, cirrhosis, and HIV/AIDS (Williams, 1999), which suggests once again the importance of studying a wide range of health outcomes. Latinos live and work in areas where they can be exposed to air pollution, unsafe water, pesticides, lead, and mercury, which increase their risks of asthma, cancer, cholera, hepatitis, and developmental problems (Quintero-Somainsi & Quirindango, 2004). Thus, we hypothesize that health varies with the environmental quality of Latino-dominated neighborhoods at the same socioeconomic level as white- or black-dominated ones.

Neighborhood Effects

If the health of poor, black, and Latino individuals is worse than that of more affluent white Americans, the next question is whether the ecological association between poverty or race and illness is purely compositional or reflects an additional contextual effect. Many studies report that, regardless of personal characteristics, living in neighborhoods, counties, cities, or states with higher poverty rates has a detrimental effect on mortality and morbidity. The mechanisms by which these contextual effects work are not yet well understood (Ellen, Majanovich, & Dillman, 2001). The vast majority of multilevel studies find that neighborhood socioeconomic conditions affect such health outcomes as infant mortality, low birth weight, childhood asthma, adult infectious diseases, and disability in old age, over and above the individual-level effects of socioeconomic status and race (Diez-Roux et al., 2001; Ellen et al., 2001; Kawachi & Berkman, 2003; Sampson, Morenoff, & Gannon-Rowley, 2002; Robert, 1999; Pickett & Pearl, 2001). Among the proposed pathways are selective migration into poor neighborhoods; contagion through exposure to disease or contact with risky behaviors; social isolation and lack of support; fewer social or public resources such as access to health care or insurance; environmental hazards, degraded housing, lack of parks; and high crime rates.

Many of these factors will have a direct and short-term effect. However, over time, these conditions may also raise stress levels, induce depression, and thereby indirectly compromise health. For example, residents of NYC neighborhoods with more social problems, violent crime, and danger suffer higher rates of emotional distress (Cohen et al., 1982). Another study in Illinois found that, after accounting for compositional, individual-level effects, residents of poor neighborhoods perceive greater neighborhood “disorder,” raising the stress associated with depression (Ross, 2000, but see Henderson, Diez-Roux, Jacobs, Kiefe, West, & Williams, 2005) and lowering self-reported health (Ross & Mirowsky, 2001).

This study aims to portray the “social ecology” of health in NYC. It asks: *why are particular places more unhealthy than others?* It considers processes and mechanisms at the neighborhood level that may link the natural, built, and social environments to adverse health outcomes. In many studies, the selection of contextual variables has been ad hoc or constrained by available data, rather than theoretically driven (Hillemeier et al., 2003). One reason for exploring the social ecology of a city is that collective environmental conditions in neighborhoods may be more amenable to policy change than is individual conduct. Another reason is to identify the characteristics of poor and minority neighborhoods that may be responsible for contextual effects on individual resident health. This study examines several potential pathways identified in the literature, including differential access to medical care, social capital, and – the focus here – environmental characteristics.

In an ecological study such as this one, there are always dangers of cross-level inference. We cannot distinguish compositional and contextual effects. We focus on community-level ecological factors that might reasonably account for any contextual effects of neighborhoods on individuals. This is not to say that we explore ecological correlations simply because individual-level data are unavailable. Environmental conditions transcend individuals. Moreover, their distribution reflects a social process. The environmental variables under consideration (e.g., violent crime rate, industrial land use, density of voluntary organizations) are truly ecological or collective phenomena that are undefined at an individual level. As the recent revisiting of the “ecological fallacy” has shown (Diez-Roux, 2004; Macintyre & Ellaway, 2000; Sampson et al., 2002; Schwartz, 1994), “integral” and even “derived” or aggregate measures of ecological concepts with “construct validity” are appropriate for studying group-level mechanisms that may, in turn, have contextual effects on individuals. Thus, this study does not make claims about the individual-level association between social status and health, but

does have implications for the growing literature already discussed demonstrating neighborhood effects on personal health.

Environmental Inequities

Given the high levels of socioeconomic and racial segregation in NYC, we hypothesize that social disparities of health are a consequence of poorer environmental conditions in socially disadvantaged neighborhoods. The physical, built, and social environments should each contribute to health.

By far, the most attention has been devoted to the *physical* environment. An ecological correlation between social composition and environmental disamenities of a place is often considered evidence of environmental “racism” or “inequity,” which implies deliberate, discriminatory targeting of poor minority areas for dangerous land uses. At the least, it suggests a distribution of hazards based upon aspects of social or political inequality related to race and low income. Disempowered groups, compared to middle-class NIMBY movements, have fewer resources and less organization to resist undesirable land uses. Past siting and land use designations strongly influence future ones. Some neighborhoods become so saturated with undesirable land uses that they become “sacrifice zones” (Bullard, 1993).

In 1991, responding to claims of environmental racism, the National People of Color Environmental Leadership Summit produced some common principles of environmental justice and developed a nation-wide network of grassroots minority organizations, including West Harlem Environmental Action. They won government recognition, and in 1994, President Clinton issued an executive order decreeing that all relevant federal agencies must work to identify and address “disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.”² The US Environmental Protection Agency currently defines “environmental justice” as:

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 (www.epa.gov/compliance/environmentaljustice/index.html).

Accordingly, environmental justice research has concentrated on collecting evidence that minority or low-income communities have a disproportionate share of environmental hazards and nuisances. For example, cross-sectional studies show that the share of the minority community had the strongest correlation of any variable with commercial hazardous waste facilities and uncontrolled hazardous waste sites (Bullard, 1993, p. 21). Since the early 1990s, a large and growing literature documents an ecological relationship between poverty, race, environmental hazards, and other “locally unwanted land uses” (LULUs) (e.g., Asch & Seneca, 1978; Bryant & Mohai, 1992; Bullard & Wright, 1985; Freeman, 1972; Popper, 1981; Taylor, 1989; U.S. Government Accounting Office, 1983). Hazardous waste sites, garbage dumps, incinerators, sewage treatment plants, refineries, chemical and other toxic factories, highways, airports, and social institutions regarded as risky (e.g., halfway houses, pornography shops, drug markets) are disproportionately located in cities or neighborhoods where more poor minorities live. Areas with higher income and fewer blacks have fewer toxic releases, although for different reasons (Allen, 2001). Thus, there is now considerable evidence of “environmental racism,” even if it is sometimes “difficult to disentangle associations between income and environmental quality from racism” (Evans & Kantrowitz, 2002, p. 304; see also Downey, 1998).

A meta-analysis of 49 environmental equity studies found “ubiquitous” evidence of environmental inequities such as pollution, noxious facilities, and Superfund sites, based upon race, and mixed support for environmental injustice based upon class (Ringquist, 2005). Although areas with higher median income tend to have fewer risks, the relationship attenuates when other conditions are controlled. The poverty rate is even less frequently associated with the local environment, with or without controls. There is even a study that rejects a contextual effect of poverty or income inequality on individual health, but finds a significant effect of neighborhood affluence (Wen, Browning, & Cagney, 2003).

One might assume that there is already support for the view that greater exposure to environmental risks – landfills and toxic waste sites, contaminated water, airborne chemicals – is responsible for racial, ethnic, and socioeconomic health disparities. Yet the existing evidence of differential racial and ethnic health outcomes *due to* greater exposure to environmental hazards comes mainly from single city or neighborhood studies that had no control site for comparison of larger environmental effects (Bryant & Mohai, 1992). For example, the Columbia University Center for Children’s Environmental Health is examining the reasons for elevated childhood asthma rates, low birth weight, and other health risks among the children of

African-American and Dominican women in the low-income urban areas of Central Harlem, Washington Heights, and the South Bronx. The study considers prenatal exposure to second-hand smoke, indoor use of insecticides, auto fumes, and other environmental pollutants (Perera, et al., 2002; Whyatt et al., 2004; Tonne, Whyatt, Camann, Perera, & Kinney, 2004). However, it is difficult to know whether these risks, especially in ambient air pollution, are greater in the three study neighborhoods than elsewhere in NYC. Residential proximity to toxic substances may be one reason why segregated low-income, minority neighborhoods have poorer average health, but comparisons with different neighborhoods is necessary to confirm this.

In brief, connecting the dots from the local environment to proximate hazards to actual exposure to morbidity and mortality is a still unfinished task. As Evans and Kantrowitz (2002, p. 324) observed, “To our knowledge, no data indicate that the effects of poverty or income on health are mediated by exposure to multiple environmental risk factors.” Rather, there is evidence that income is often directly related to environmental quality and environmental quality is inversely related to multiple physical and psychological health outcomes, but so far, no one has directly tested a mediational model.

The same neighborhood may have many different kinds of detrimental environmental conditions. Indeed, zoning codes may deliberately concentrate disamenities at the same places. The environmental racism movement has concentrated attention on the location of hazardous waste sites and polluting facilities. However, other environmental conditions are also dangerous to health, and their multiple effects are often difficult to disentangle.

A degraded *built environment* should also be the source of many health problems. Segregation in crowded, dilapidated housing may contribute to the spread of tuberculosis and other infectious diseases (Acevedo-Garcia, 2000). Yet the evidence on the relationship between crowding per se and disease or stress is mixed; such variables as age, SES, ethnicity, housing quality, need for social support, and other factors may account for the inconsistent findings (Ahrentzen, 2003). In contrast, residents of neighborhoods with more housing violations, other things being equal, have lower birth weight babies than residents in areas with better housing (O’Campo, Xue, Wang, & Caughy, 1997). Inadequate heating, dampness and molds, and various allergens are associated with poor respiratory health (Evans & Kantrowitz, 2002). Improper housing maintenance allows pests to breed and raises cockroach allergen levels (Rauh, Chew, & Garfinkle, 2002). In

turn, cockroach, dust mite, and other allergens may be the cause of the greater asthma-related health problems of inner-city children (Rosenstreich, Moday, & Hudes, 2003; Rosenstreich et al., 1997). In sum, degraded housing may explain why inner-city minority neighborhoods are more unhealthy, especially in terms of respiratory illnesses, animal bites, and lead exposure.

Third, the *social environment* also influences disease pathways, in the aggregate and at the individual level net of other personal attributes (Yen & Syme, 1999). Increasingly, epidemiology and public health are drawing upon urban sociological theories of social disorganization, social control, and social stratification to unravel the mechanisms responsible for social disparities of health, especially at the neighborhood level. Since William Julius Wilson's (1987) seminal work on the urban "underclass," numerous studies, especially in Chicago, have examined the impact of concentrated poverty on a wide range of social outcomes. Central to Wilson's theory is the idea that poor neighborhoods are devoid of jobs, institutions, and social control. Isolation from "the mainstream" and the lack of community organizations and successful adult role models give rise to deviant norms and, by implication, violent crime.

Neighborhoods with less social cohesion and trust and less informal social control can be said to have lower "collective efficacy." Poorer neighborhoods and those with more immigrants have lower collective efficacy, while those with residential stability have more. Collective efficacy appears to mediate the positive association between social disadvantage and violence, health, and mortality in Chicago neighborhoods (Sampson, Raudenbush, & Earls, 1997; Browning & Cagney, 2003). Research reports contextual effects of neighborhood economic conditions, disorder, low collective efficacy or social capital, and especially crime rates on such diverse outcomes as firearm injuries, homicides, teenage births, low birth weight, and overall self-rated health (Wei, Hipwell, Pardini, Beyers, & Loeber, 2005; Franzini, Caughy, Spears, & Esquer, 2005). Chronic stressors in the local environment, such as high rates of violent crime, in turn increase physiological stress, anxiety, and depression and promote risky behaviors that ultimately have more serious effects on health (Hill, Ross, & Angel, 2005; Morenoff, 2003). Although not all studies find a relationship between health and the number of active community groups (O'Campo et al., 1997), most report that social cohesion, social networks, community participation, and active community groups reduce stress, improve health, and reduce violence (Macinko & Starfield, 2001; Kawachi, Kennedy, & Glass, 1999; Putnam, 2000; House, Umberson, & Landis, 1988; Berkman & Glass, 2000).

THE STUDY

Data and Methods

Unit of Analysis

The central hypothesis – that physical, built, and social environmental conditions mediate the relationships between poverty and race and health outcomes – is tested with data on the 175 NYC neighborhoods operationally defined as zip codes. Some argue that zip codes are less appropriate units of analysis for examining social disparities in health than census tracts (Anderson, Anderson, Oakes, & Fraser, 1993; Krieger et al., 2002). Zip codes vary more than census tracts in population size, have changed boundaries during the 1990s, and do not conform to political or census boundaries.

However, there is much dispute over the appropriate size of a “neighborhood” for assessing environmental effects. The selection of an appropriate unit of analysis should depend upon the etiology of a given disease. The appropriate level of aggregation for the health indicators examined here may not be identical to that of the environmental variables. We consider health rates as population-level characteristics, but “hot spots” of any given disease may be smaller or larger than a zip code. If we had complete data for all levels of analysis, we could have answered this question.

As for the appropriate level of the environmental variables, contextual effects of the social environment on individual health extend beyond the immediate neighborhood to a wider geographic area (Morenoff, 2003). Just how far from a noxious source should an area be drawn? Most air pollution studies use counties as units of analysis. In other studies and for some health outcomes, inside environmental conditions are far more important than any ambient ones. Measuring the spatial diffusion of air pollution is extremely difficult, especially because there are so many sources of it. Tobacco smoke, vehicle exhaust (polycyclic aromatic hydrocarbons), pesticides (chlorpyrifos), particulate matter in industrial smoke, cockroaches, and other pollutants may suffuse the same air. Finding these chemicals requires sampling the air with monitors whose placement can bias the spatial distribution of data reported across the city as a whole (see Jerrett et al., 2005a; Jerrett, Buzzelli, Burnett, & DeLuca, 2005b; Jerrett et al., 2003). Increasingly, GIS techniques are being used to identify the range of environmental effects, testing for impacts within a 2.5-mile radius of a pollution source (Wen, Cagney, & Christakis, 2005). Despite these concerns, Ringquist’s (2005) assessment of the effect of spatial aggregation bias on the relationship

between race, income, and environmental disamenities concluded that it was minimal. The association did not attenuate at higher or lower levels of spatial aggregation.

The present study selected zip codes as units of analysis for several reasons. First, population density in NYC makes for census tracts that may be as small, territorially speaking, as one block. Zip codes are geographically larger than census tracts and their territorial extent better approximates the social unit of a New York neighborhood. Second, the earliest environmental racism studies, including the 1987 United Church of Christ's Commission on Racial Justice, used zip codes (see Daniels & Friedman, 1999), and the use of zip codes in public health research is increasing (Krieger et al., 2002). Our study is cross-sectional, so changes in zip code boundaries are inconsequential. A third reason for selecting this unit of analysis is that it is possible to match a wide range of data sources to zip codes. This study draws upon not only the U.S. Census, but also data from the NYC Department of Health, NYC Department of Housing Preservation and Development, NYC Police Department, NYC Department of City Planning, IRS, Infoshare, the Social Indicators Survey, as well as 2000 U.S. Census.

Nevertheless, zip codes vary in population size. Therefore, we dropped five largely unpopulated zip codes with less than 1,000 residents, leaving 170 cases with between 6,756 and 106,415 people. With over 1,000 residents, the estimated ecological measures ought to be reliable over all possible samples. Since the OLS assumption of constant variance in the error term may be untenable, given large differences in zip code population size, the multivariate analysis employs *weighted least-squares* to correct for heteroscedasticity of the zip code residuals. The inverse of the 2000 zip code population was used as the weight. Spatial autocorrelation should not bias the coefficients (Anselin, Florax, & Rey, 2004), although future research might profitably consider the environmental effects of contiguous areas.

Causal Reasoning

This analysis is cross-sectional and cannot make claims about the direction of causality among socioeconomic composition, environmental conditions, and health. It cannot assess the "drift hypothesis" that poor health reduces socioeconomic status that leads ill people to relocate in low-cost housing in poorer neighborhoods. Both effects – poverty on health, health on poverty – may reinforce each other. While housing discrimination against those who are already chronically ill may select them into substandard conditions, homelessness, or subsidized housing (Dunn, 2000), it is unlikely that sicker people in general migrate to poorer neighborhoods (Marmot, 2001; Haan,

Kaplan, & Syme, 1989). Not only prime-age household heads but also their family members and retired people exhibit a social gradient of health.

There is a growing body of evidence that disease rates exhibit a patterned regularity between groups and communities over time, even after people come and go from these groups and even after an account has been taken of individual risk factors. Apparently something is going on at the environmental level to account for these differences in rates (Yen & Syme, 1999, p. 302).

We cannot evaluate another reversed causal hypothesis that the location of environmental hazards may reflect low property values that in turn attract poor or minority residents (Gelobter, 1992). Just as these areas are at the bottom of the “filtering” queue of the housing market, so are they situated at the bottom of the land market. Following this reasoning, some environmental justice studies control for land values (Ringquist, 2005). Once in a degraded environment, housing segregation makes it difficult for people of color to move elsewhere. Race still determines the likelihood of moving into or out of a poor neighborhood (Crowder & South, 2005).

To tease out causal relations, one ideally needs longitudinal data on the population dating from the original siting of noxious facilities (Been, 1997; Pastor, Sadd, & Hipp, 2001). At least one study found that local risky facilities preceded current residents’ arrival by a ratio of 2 to 1. It also found few significant differences between Anglo whites and African-, Hispanic-, and Asian-Americans in their reports of risky facilities in their communities. Only African-Americans reported significantly more hazardous “social facilities” in their communities than did Anglos, and a significantly shorter distance to hazardous facilities from their homes (Rogers, 1995).

Even had we analyzed longitudinal data on NYC zip codes, causal direction would still be hard to ascertain because the city has a relatively stable ecology over time. Although we employ data on or about the year 2000, the models also control population turnover, or the share of the population that moved to a different house in the last 5 years. This allows time for the population to be exposed to local environmental conditions. It also controls for rapid turnover, which can promote neighborhood instability and crime.

In what follows, we discuss in some detail the selection of indicators for the dependent and independent variables. The analysis itself begins by assessing the potential for environmental injustice in New York. This is followed by a description of the social ecology of health in the city, identifying where health conditions are better or worse. Then the basic model between socioeconomic status, race, and ethnicity and health is examined, after which the multivariate WLS models are presented and their implications discussed.

Dependent Variables

Social disparities of health depend upon the condition in question. Yet most studies focus on only one or a few health outcomes, such as infant mortality or self-reported health. In contrast, this study examines 18 health outcomes, some of which are more likely to exhibit social differences than others. They are as follows: crude death rates, infant mortality (deaths before 1 year of age/live births), child lead exposure, lung cancer, asthma, tuberculosis, congestive heart failure, hypertension, diabetes, animal bites, alcohol and drug problems, sexually transmitted diseases, AIDS, breast cancer, suicides, homicides, disability, and self-reported health. While all environmental conditions should influence mortality and self-reported health, the literature leads us to expect physical environmental effects especially on asthma, TB, and lung cancer; built environmental effects on these respiratory diseases, lead exposure, and animal bites; and social environmental effects on alcohol and drug addiction, STDs, AIDS, suicides, and homicides.

Data on many of these health conditions come from the Info Share database that combines diverse information on NYC at various spatial levels of analysis. Info Share includes vital statistics reported to the New York State and City Departments of Health (overall death rates and infant mortality as well as cases of tuberculosis, people living with AIDS, HIV, sexually transmitted diseases, child lead exposure (over 20 mcg/dl), animal bites, suicide, homicide, lung cancer, and breast cancer in women over 25 years). These data refer to the year in Info Share closest to 2000. The small figures on cancer, from the NYS Health Department's Cancer Surveillance Improvement Initiative, were aggregated over 5 years. For the outcomes of asthma, diabetes, alcohol and drug dependency, congestive heart failure, and hypertension, Info Share has the NY Statewide Planning and Resource Cooperative System (SPARCS) data from all state hospitals, classified by diagnosis upon discharge and billing address of the patient. From the addresses in the hospital registries, it was possible to place the patient and his/her illness in a zip code. The SPARCS data refer to incidences in 1999 and 2000 of a given illness.³ We calculated neighborhood rates, dividing by the zip code's 2000 population, for 16 of the illnesses.

Two other sources of health data were tapped. The disability rate of the zip code population over 5 years old was calculated with data from the 2000 Population and Housing Census. The Census defines a disability as "a long-lasting physical, mental, or emotional condition. This condition can make it difficult for a person to do activities such as walking, climbing stairs, dressing, bathing, learning, or remembering. This condition can also impede a

person from being able to go outside the home alone or to work at a job or business.”

Finally, self-reported health status (Idler & Benyamini, 1997; Wilson & Kaplan, 1995) refers to the percentage of respondents in the zip code reporting “fair” or “poor” health in answering the question “would you rate your health as excellent, very good, good, fair, or poor?” in the 1997 and 1999 NYC Social Indicators Surveys (SIS). The SIS interviewed random samples of 1,500 New Yorkers by telephone. The response rates were 52% and 67%, respectively. In both waves, the poor rated their health as excellent to good (62–61%) less often than the affluent (94–89%). Similarly, the poor were much more likely to have a work-limiting disability (31–31%) than the rich (3–7%). Unfortunately, the small *N* of the SIS means that the aggregated indicators based on this survey had sufficient cases for only 94 zip codes. Raudenbush and Sampson (1999) propose a “rule of thumb” for aggregate reliability of 25 respondents per neighborhood. Although there may be enough cases for reliable multivariate analysis by this standard, we still consider the results on self-reported health to be preliminary.

Independent Variables

Socioeconomic Status

This study uses the percentage of the zip code population with incomes below the poverty threshold in 1999, from the 2000 Census. Median household income was also examined. It operated in the models similarly to the poverty rate, although the latter usually had higher *t*-values than median income.

Race and Ethnicity

Racial composition was measured with the percentage of the 2000 zip code population black or African-American. Ethnicity refers to the percentage of the 2000 zip code population Latino or Hispanic. Again, the 2000 Census was the source. Poverty rates are imperfectly related to racial and ethnic composition. The correlation between poverty and the share of the population that is black is only 0.41. The comparable correlation with the share of the population that is Latino was a much larger 0.71. This partly reflects the fact that New York has middle-class black areas and poor white areas, but most Latinos live in poor neighborhoods. We also considered unemployment and household type, but they were highly correlated with poverty rates and black population share and so, were dropped from the models to reduce multicollinearity.

Environmental Conditions

This study examined the effects of the physical, built, and social environments on neighborhood health. Unfortunately, data on the physical environment at the neighborhood level are hard to come by, and measurement problems mar even the sparse information available. We explored as many indicators from as many sources of data as possible, but not all performed according to expectation. It is informative to discuss how these measures relate to health outcomes even though not all were included in the final multivariate analyses.

Physical Environment. First, one might anticipate that living near toxic waste sites, incinerators, chemical plants, and the like would have deleterious effects on health in the aggregate. Exposure to hazardous substances was measured in a variety of ways. First, the Environmental Protection Agency's (EPA) data on CERCLIS (Comprehensive Environmental Resources Compensation Liability Information System) sites were reclassified by zip code (<http://www.epa.gov/superfund/sites/index.htm>). CERCLIS is a database of potential and confirmed hazardous waste sites where the EPA Superfund Program was involved in some way. The sites are either proposed to be or are already on the National Priorities List and in the screening and assessment phase for possible listing. Although we considered both the simple presence of sites in the area and the number of sites, these variables were surprisingly unrelated to poverty rates and health. We examined not only current, but also prior archived sites (that EPA assessed and did not place on the NPL), but contrary to environmental justice expectations, neither variable had a significant relationship to race or poverty. The number of sites was correlated with lung cancer, suicide, and STDs, and had a significant positive effect on crude death rates. However, it unexpectedly had a negative correlation with asthma rates.

It is hard to tell if this pattern of effects is real or a consequence of poor measurement. One reason for the nonassociation may be the lack of variation, as CERCLIS sites were found in only 24 zip codes. Previous studies using this indicator used metropolitan areas as units of analysis, encompassing more CERCLIS sites. Furthermore, inspections may be selective, as there were very few sites in the Bronx and Manhattan compared to the other boroughs. The sites that EPA did identify are also very heterogeneous, covering industrial spills of hazardous wastes and chemicals, landfills, incinerators, power plants, and printing presses. The EPA is supposed to monitor, investigate, and dispose of soil and water contamination and related hazards. However, the Superfund program, created in 1980 to clean up

such toxic sites, partly financed by the polluters themselves, has limited funds for sites where responsibility is difficult to assign. The tax levied on the chemical and oil industries to create a trust fund for this purpose expired in 1995, and federal allocations have fallen short of the need. The backlog of sites on the National Priority List with health or environmental risks is growing (Lee, 2004). Cutbacks in the Superfund budget have slowed the designation of new toxic waste sites; only two sites in New York State were proposed in 2004, none in the city. Whatever the explanation, the CERCLIS indicators were dropped from the models.

Second, a number of relevant environmental indicators are simply unavailable at the neighborhood level. These include water quality, weather, and air pollution. Despite considerable effort, it proved impossible to estimate air quality within small geographical areas. The smallest unit in the Toxic Release Inventory data is the county, and there are only five counties in NYC.⁴ Air monitors are placed unevenly throughout the city, and there is an insufficient number of them to build predictive models of air pollution, as others have done elsewhere (Jerrett et al., 2005a, b; Pastor, Morello-Frosch, & Sadd, 2005).

A third source of environmental data was the NYC Department of City Planning's Primary Land Use Tax Lot Output (PLUTO) geographic database. We reclassified these data into zip codes and examined a dozen potentially dangerous or healthy land uses of the buildings or the lots in the area. On the positive side, we considered the share of the land area zoned for parks and recreation and the share of land area for hospitals. Greenery should improve air quality, and prior research shows that residents of neighborhoods with access to places for physical activity engage in more leisure activity (Huston, Evenson, Bors, & Gizlice, 2005). Proximity to hospitals may obviously save lives. On the negative side, we examined the percentage of buildings in the zip code that were prisons, asylums, utilities, transportation depots, sanitation department buildings, gas stations or parking garages, and factories. Although the percentage of buildings that are gas stations and garages was strongly correlated with not a few health outcomes, the effect disappeared when other variables were controlled. The percentage of buildings that are asylums and that are transportation installations also had significant independent effects on quite a few health conditions, but were not consistent in sign. Although these specific land uses were more likely to be found in poorer zip codes, they were unrelated to the share of black residents in an area.

We expected that manufacturing, of all land uses, would affect air quality. Four specifications of an industrial land use variable were assessed: (1) the

percentage of buildings used for manufacturing, (2) the percentage of land area used for manufacturing, (3) the percentage of land area in the zip code zoned for manufacturing, and, (4) because of their intercorrelation, weighted indexes of these indicators. Industrial areas also had more gas stations and garages, which as noted were associated with health conditions. In the end, we retained the “best performing” environmental indicator from the PLUTO dataset for the model, the percentage of buildings with manufacturing uses. The share of buildings in a zip code whose primary use was industrial purposes was the PLUTO indicator most strongly associated with the largest number of health outcomes. Yet, even this indicator had significant relationships with only a half-dozen health indicators. The models estimated both continuous and dichotomous (a dummy variable for the 17 zip codes with the highest share of manufacturing buildings) versions of the manufacturing land use variable, but retained the continuous one. The percentage of local buildings with manufacturing uses was significantly correlated with area poverty rates and Latino population share, but contrary to environmental racism claims, not with the size of the black population.

Built Environment. The built environment also plays a role in promoting or damaging health. Since rents are lower for insalubrious living conditions, the poor are often exposed to more health hazards at home. For example, we expected lead and other toxic substances would be common in older housing. Therefore we examined the *age of housing* (percentage built before 1930) and the share of housing units that were *vacant* or abandoned in the zip code to see their effects on lead exposure rates among children in NYC as a health outcome. Unfortunately, these Census-based indicators proved invalid in New York. In the first case, some of the city’s most coveted real estate is “pre-war”; in the second, vacancies may reflect not only abandonment but also speculative landlords “banking” their property in anticipation of cooperative conversion or rent destabilization.

Another source of data on the built environment was the NYC Department of Housing Preservation and Development’s (HPD) Violation and Building Information Data Base. Similar violations data for census tracts in Baltimore were used by O’Campo et al. (1997). The HPD data include immediately hazardous housing violations from 1999–2003, which we aggregated up to zip codes. The database records all violations of the NYC Housing Maintenance Code and the New York State Multiple Dwelling Law in privately owned residential multifamily buildings.⁵ Owners are legally responsible “to provide essential services, to maintain their properties

in habitable conditions, and to correct and repair housing code violations.” HPD collects information on three classes of housing code violations:

- A: *Non-hazardous* such as minor leaks, chipping, or peeling paint when no children under the age of six live in the home, or lack of signs designating floor numbers. An owner has 90 days to correct an A violation and 2 weeks to certify repair to remove the violation.
- B: *Hazardous* such as requiring public doors to be self-closing, adequate lighting in public areas, lack of posted Certificate of Occupancy, or removal of vermin. An owner has 30 days to correct a B violation and 2 weeks to certify the correction to remove the violation.
- C: *Immediately hazardous* such as inadequate fire exits, rodents, lead-based paint, lack of heat, hot water, electricity, or gas. An owner has 24 hours to correct a C violation and 5 days to certify the correction to remove the violation. If the owner fails to comply with emergency C violations such as lack of heat or hot water, HPD initiates corrective action through its Emergency Repair Program.

Moreover, numerous detailed categories of Class C violations exist. Most categories had only a few violations, but among the most frequent were specifically the presence of rats and vermin. Because animal bites and asthma are among the health outcomes examined, we broke out this category of violation and counted the number per zip code. However, other things being equal, neighborhoods with more buildings cited for rats and vermin surprisingly do not have poorer health. The indicator even had no effect on animal bites, perhaps because dog bites are more common, nor on asthma, perhaps because cockroach infestation is not coded separately. In fact, the indicator had little effect on any health outcome except two, for which the effects ran in the opposite direction from expected.

These findings must be viewed with caution. Housing inspectors do not record all violations. Once a landlord corrects a violation, he or she may remove it from the record by certifying that the violation was corrected within the required time period. Buildings are not regularly inspected, so that places where residents complain are more likely to be cited for violations. In poor neighborhoods, residents may be aware of their rights. For these reasons, HPD does not guarantee the accuracy of the information.

Nevertheless, the share of Class C violations was strongly related to the zip code’s poverty rate and percentage of Latino residents. In the end, we decided to construct a “substandard housing” scale from factor scores of a principle components analysis, with varimax rotation, of the percentage of buildings with one or more “immediately hazardous” Class C housing code

violations from 1999 to 2003 and two related indicators from the 2000 Census, the percentage of occupied housing units lacking complete plumbing and the percentage lacking kitchens. The absence of such facilities impedes daily hygiene and is strongly related to health, even after controlling for neighborhood poverty and race.⁶ The Cronbach's alpha for the standardized scores of the three variables was 0.83.

Social Environment. In this study, the social environment is measured primarily with the zip code's violent crime rate, or the total number of murders, robberies, and felonious assaults per capita. With Info Share data, NYPD precincts were matched to zip codes. We assume that, as in Chicago, neighborhood crime is strongly related to other forms of disorder or social disorganization (Morenoff, 2003).

Control Variables

First, it is important to control alternative causal pathways between race and health at the neighborhood level. For this reason, the final models included indicators for access to local health care (MDs per capita) from Info Share; an indicator of social isolation⁷ from the 2000 census (the extent of language isolation in this city of immigrants); and an indicator of social capital (the number of nonprofit organizations per 10,000 people). Since collective efficacy may intervene between poverty and violent crime, we used an independent indicator of "social capital" from the Internal Revenue Service's Nonprofit Organization Database with information on the number of corporations filing taxes as nonprofit organizations, by type. We were able to break out the nonprofit organizations by their functions. In fact, no real differences by type emerged. Since even the distribution of health organizations was correlated 0.83 across zip codes with total organizations per 10,000 residents, and since the total number (density) of organizations was the only indicator related to health, the more general indicator was retained in the model.

A second set of controls was demographic. Health outcomes are naturally associated with different stages of the life cycle, and thus, the local age structure should be taken into account. In even the most basic models, we controlled for the respective percentages of the population under 18 and over 65 years of age. As mentioned, the final model also controls for population turnover to address residential stability and to allow time for local exposures to work.

Unfortunately, there remain unmeasured variables thought to be important in producing health outcomes. These include, for example, individuals' risky behaviors, stress, health insurance coverage, and genetic predispositions. There is some evidence that residents of disadvantaged neighborhoods are more likely to smoke, get less physical exercise, and have higher-fat diets (Yen & Syme, 1999, p. 300), but no direct data on New York were available to test this. Future research may allow for a fixed effects model to adjust for these omitted variables.

RESULTS

Table 1 presents the descriptive statistics on the variables in the model, and Table 2 lists the neighborhoods with the highest rates of each health condition. Given a causal model aimed at identifying intervening variables, multicollinearity among indicators was an expected problem. As mentioned, inter-relations among the independent variables – poverty, race, and ethnicity – and potential pathways between them and health received intense scrutiny. The selection of indicators reflects this preparatory analysis. In what follows, we first present the associations between poverty, race, and environmental variables. Then we discuss stepwise weighted least-squares models: a basic model predicting health outcomes with only poverty, percentage black, percentage Latino, and age controls, and then a full model with environmental effects and other variables revealing whether these additional factors altered the initial coefficients.

Environmental Justice?

There is significant variation in the physical, built, and social environments of NYC neighborhoods by poverty, ethnicity, and race. Beginning with the physical environment, the share of manufacturing buildings is related to poverty rates and black population share. Industrial buildings are concentrated in just a few zip codes in New York where residents are likely to be exposed to bad air from both manufacturing and the associated diesel truck traffic, and to polluted water. Over 20% of the buildings in Long Island City/Hunts Point are industrial, as are 16% of those in Hunts Point proper and 10% in Greenpoint. So too are 7% of the buildings in Mott Haven, Williamsburg, Sunset Park, and Fort Greene. However, due to zoning, these areas also have fewer residents than do less industrial neighborhoods, thereby exposing fewer people to risk.

Table 1. Descriptive Statistics of Variables in the Study.

	Mean	Standard Deviation	Minimum	Maximum	Median
<i>Independent variables</i>					
% Poverty ^a	0.19	0.12	0.03	0.48	0.17
% Black ^a	0.24	0.28	0.002	0.94	0.1
% Hispanic ^a	0.24	0.2	0.01	0.8	0.18
Violent crime rate ^b	0.01	0.012	0.0	0.118	0.008
Substandard housing scale ^a	0.02	0.88	-1.3	4.0	-0.23
% Industrial buildings ^c	0.01	0.03	0.0	0.21	0.003
MDs per capita ^d	0.0008	0.001	0.0001	0.006	0.0006
% Linguistically isolated ^a	0.13	0.09	0.01	0.36	0.1
Organizations per 10 K population ^e	36.7	87.0	4.4	835.0	14.6
% Moved in last 5 years ^a	0.38	0.07	0.23	0.61	0.38
<i>Health outcomes</i>					
Asthma ^f	0.007	0.005	0.0009	0.025	0.0055
Diabetes ^f	0.005	0.002	0.0	0.014	0.004
Drug/alcohol ^f	0.004	0.006	0.0	0.052	0.003
Congestive heart failure ^f	0.002	0.001	0.0	0.006	0.002
Hypertension ^f	0.0005	0.0004	0.0	0.002	0.0004
STDs ^g	0.006	0.01	0.0	0.094	0.003
Lead exposure ^g	0.0001	0.0001	0.0	0.0007	0.0001
Deaths under age 1 ^g	0.0066	0.0056	0.0	0.032	0.0057
TB ^g	0.0001	0.0001	0.0	0.0005	0.0001
Homicide ^g	0.00007	0.00007	0.0	0.0004	0.00006
Crude death rate ^g	0.011	0.003	0.001	0.02	0.01
Lung cancer ^g	0.003	0.001	0.0	0.007	0.003
Breast cancer ^g	0.00005	0.00003	0.0	0.0002	0.00004
Suicide ^g	0.0002	0.0001	0.0	0.0005	0.0002
AIDS ^g	0.005	0.005	0.0	0.039	0.004
Animal bites ^g	0.001	0.0006	0.0	0.0038	0.001
Disability ^a	0.23	0.06	0.09	0.39	0.24
Self-reported health (% fair or poor) ^h	0.18	0.09	0.0	0.38	0.18

^a2000 U.S. Census.

^bNew York City (NYC) Police Department, 1997.

^cNYC Department of City Planning, 2004.

^dNew York State Department of Health, 1995.

^eNYC IRS Tax Exemption File.

^fSPARCS, 1999, 2000.

^gNYC Department of Health and Mental Hygiene, 1993-1999.

^hColumbia University, School of Social Work, Social Indicators Survey.

As for those who do live in areas with more industrial facilities, they have higher asthma rates, congestive heart failure rates, hypertension rates, and diabetes rates. Industrial facilities are completely unrelated to crude death rates of people 25 years or older, hospital admissions for alcohol or drugs,

Table 2. New York City Zip Codes with the Three Highest Rates of Each Health Outcome ($N = 175$).

Health Outcome	1	2	3
Asthma	10029 East Harlem	10454 Mott Haven/Port Morris	11237 Bushwick
Diabetes	10035 East Harlem	10004 Battery/Governors Island	10457 Tremont/East Tremont
Drug/alcohol	10304 Stapleton/Fox Hills	10001 Fur/Flower District	10004 Battery/Governors Island
Heart	10037 East Harlem/Northeast Side	10451 Melrose	10039 Central Harlem/Northwest Side
Hypertension	10457 Tremont/East Tremont	11221 Bushwick/Bedford-Stuyvesant	10035 East Harlem
STDs	10001 Fur/Flower District	10037 East Harlem/Northeast Side	10456 Morrisania
Lead exposure	11216 Bedford-Stuyvesant	11221 Bushwick/Bedford-Stuyvesant	11419 South Richmond Hill
Infant mortality	10030 Central Harlem	11436 South Ozone Park	11692 Arverne
TB	10002 Chinatown/Lower East Side	10037 East Harlem/Northeast Side	10030 Central Harlem
Homicide	11233 Stuyvesant Heights	11205 Fort Greene	11207 East New York
Crude death rate	10037 East Harlem/Northeast Side	11692 Arverne	11694 Seaside/Belle Harbour/Neponsit
Lung cancer	11697 Rockaway Point	10037 East Harlem/Northeast Side	11414 Howard Beach
Breast cancer	10021 Lenox Hill	11235 Sheepshead Bay/Brighton Beach	11375 Forest Hills
Suicide	10036 Theater District/Clinton	10475 Coop City/Eastchester	10018 Garment District
AIDS	11370 West Queens	10011 Chelsea	10018 Garment District

rates of STDs, children's lead exposure, infant mortality, tuberculosis, homicides, animal bites, disability, or self-rated health. Unexpectedly, areas with more industry also have lower rates of lung cancer or breast cancer.

Turning to housing degradation, substandard housing is more prevalent in poorer and more Latino neighborhoods, but is less strongly correlated with relative African-American population size. Substandard housing is especially prevalent in the Fur and Flower District of Midtown Manhattan, East Harlem, and again Hunts Point. Before controlling for other factors, the greater the percentage of substandard housing in a zip code, the higher the rates of drug/alcohol admissions, hypertension, STDs, AIDS, TB, and, as expected, lead exposure.

Third, the ranking of neighborhoods by violent crime rates has been very stable over the 1990s, despite the overall decline in crime in NYC. Violent crime rates vary across areas primarily with the poverty rate, but are less strongly correlated with relative African-American and Latino population size. That may be because violent crime is highest in less populated areas, such as the Garment District, Hunts Point, and City Island. Indeed, Hunts Point appears to be a very hazardous section of NYC. To summarize, there are socioeconomic gradients in environmental conditions of New York neighborhoods, but the associations between race and environment are less consistent. Heavily Latino neighborhoods suffer mainly from substandard housing (Table 3).

Social Ecology of Health in New York City: The Basic Model

The poorest neighborhoods in NYC are Hunts Point, Mott Haven, and Morrisania, with poverty rates over 45%. Generally speaking, the higher the poverty rate in a neighborhood, the worse the health conditions there. Controlling only for percentage black, percentage Latino, and age, poverty rates are related to most of the 18 health conditions except infant mortality,

Table 3. Poverty, Race, Ethnicity, and Environmental Indicators.

Indicators	Percentage of Population			
	Poor	Black	Latino	<i>N</i>
Violent crime rate	0.59	0.35	0.29	170
Substandard housing	0.71	0.18	0.58	166
Manufacturing buildings	0.38	0.00	0.34	167

lead exposure, cancer, animal bites, and self-reported health. With these exceptions, all the expected social gradients in health are present.

While some health outcomes are more related to an area's income distribution than to its racial makeup, it is the reverse for other outcomes. Controlling for poverty, percent Latino, and age, the larger the relative size of an area's black population, the greater the crude death rate, infant mortality, disability, homicide, asthma, diabetes, AIDS/HIV, STDs, lead exposure, hypertension, and heart disease. Only breast and lung cancer, suicide, alcohol/drug hospitalization, and self-reported health are unrelated to the black population share in a neighborhood, after the poverty rate is controlled. However, interaction effects between race and poverty were not significant. Health is not significantly worse in neighborhoods that are both high-poverty and high-minority.

The NYC neighborhoods with the highest concentrations of African-Americans (over 90%) are St. Albans, Cambria Heights, and Rochdale/Baisley Park. The level of segregation from non-Hispanic whites is lower for Latinos. The highest concentrations of the Hispanic population are around 75%, found in Bushwick and Washington Heights. Although Latino neighborhoods tend to be poor too, they have some attributes that distinguish them from African-American areas. For example, they have more crowded and deteriorated housing. However, it is hard to see why these differences may account for the mysterious "Latino paradox" of having better health than African-Americans with the same income.

Controlling the poverty rate, percent black, and age, the relative size of the Latino population is positively related to only a few of the health outcomes considered: suicide, asthma, hypertension, and disability. Latino neighborhoods have less lung cancer, as expected from lower Hispanic smoking rates, and less breast cancer. These ecological findings would seem to contradict individual-level findings that Latinos have higher death rates for diabetes, cirrhosis, and HIV/AIDS (Williams, 1999). More generally, the findings provide mixed evidence for the "Latino paradox." Overall, at a given level of neighborhood poverty, the concentration of Latinos is unrelated to most health conditions.

Multivariate Models

The weighted least-squares models predict some health outcomes much better than others (Table 4). Comparing the final R^2 s across equations, the models are rather unsuccessful in predicting variation in rates of drug/alcohol

Table 4. Population-Weighted Least-Squares Regressions on Health Outcomes.

Health Outcomes	Predictors ^a						Model R^2	
	Poverty	Black	Latino	Industrial Uses	Substandard Housing	Violent Crime	Basic	Full
Asthma	+	+	+			+	0.77	0.82
Diabetes	+	+					0.72	0.77
Drug/alcohol	+	-			+		0.07	0.17
Congestive heart failure	+	+				+	0.75	0.79
Hypertension	+	+	+		+		0.68	0.69
STDs			+		+	+	0.35	0.42
Lead exposure					+		0.42	0.45
Infant mortality		+					0.34	0.32
TB					+		0.23	0.43
Homicide	+	+					0.42	0.56
Crude death rate	+						0.60	0.67
Lung cancer	+	-					0.65	0.71
Breast cancer		-				-	0.20	0.35
Suicide	+		+				0.29	0.32
AIDS	+				+	+	0.49	0.74
Animal bites		-					0.10	0.27
Disability	+	+					0.74	0.79
Self-reported health ^b						+	0.19	0.20

Note: Entries are the sign of indicated significant coefficients ($N = 163$).

^aEffects controlling for: age (% under 25 and % 65 and over); % households that moved in last 5 years; access to health care (primary care physicians per capita); and social capital (number of nonprofit organizations; linguistic isolation).

^b $N = 93$.

admissions, animal bites, self-reported health, and infant mortality. In fact, the only significant predictor of neighborhood variation in infant mortality is black population share, and the only important factor in self-reported health is the area's violent crime rate. The addition of environmental and other controls to the basic models on TB and AIDS raises the R^2 s considerably beyond what poverty and race can explain. The R^2 s are moderate (around 0.4) for breast cancer, homicide, and suicide, which respond to variations in social capital, and for STDs, lead exposure, and TB, which are the outcomes most sensitive to the built environment. In contrast, the model performs very well, with R^2 s over 0.7, for overall death rates, heart failure, AIDS, lung cancer, disability, asthma, diabetes, and hypertension.

Reviewing the environmental effects, it appears that, other things equal, industrial areas do not have significant independent effects on *any* health outcomes. The initial social gradients of health associated with manufacturing facilities disappear, which implies that the relationship between

environmental conditions and these diseases was spurious. In contrast, the models reveal significant effects of substandard housing on 6 (STDs, AIDS, drug/alcohol, hypertension, TB, lead exposure) out of 18 indicators. However, we expected a stronger effect of housing on such outcomes as asthma, lung cancer, and animal bites. Finally, violent crime has significant independent effects on 7 of 18, largely different outcomes (STDs, AIDS, asthma, heart disease, animal bites, self-reported health, and less breast cancer). Surprisingly, rates of homicide, suicide, and alcohol and drug problems were unrelated to violent crime after holding other conditions constant.

Two models in particular deserve further comment. AIDS appears to vary across neighborhoods by both poverty and race, but when substandard housing conditions are controlled, the model accounts for much more of the neighborhood variation while the effect of black population size falls to insignificance. This implies a mediating pathway. Similarly, neighborhood variation in STDs initially reflected the poverty rate as well as black population, but when controls were added to the models, the significant effects of substandard housing and violent crime reduced the poverty effect to insignificance. Careful diagnostics confirmed that these changes were not due to multicollinearity, suggesting that the environment does mediate the spatial distribution of social disparities in these health conditions.

The lack of strong findings for other health outcomes may reflect poor measurement or biased data. Recall that the SPARCS data on hospitalizations count serious cases but not all chronic conditions. Furthermore, the cumulative effects of multiple environmental problems may require interactive, rather than additive models. Last of all, the level of analysis may be mis-specified for any given health outcome. However, it is unclear what unit of analysis with health data might perform better in the NYC context.

DISCUSSION

This study has examined the social ecology of health in a global city. As expected from environmental justice studies elsewhere, poorer neighborhoods in New York have worse environmental conditions and higher rates of illness and mortality. On many indicators, so too do predominantly black and Latino neighborhoods at the same poverty level, even if these social groups do not always reside together in the same low-income areas.

It was hypothesized that one reason, among others, for these social disparities in health across space is the degraded physical, built, and social environments in which low-income minority populations reside. However,

this analysis found that poverty and racial composition continue to predict most health outcomes, even after environmental conditions are controlled. Other things being equal, industrial zones of the city do not have worse health. On the other hand, neighborhoods with substandard built environments and high violent crime rates do have higher rates of particular illnesses, but not all. The built environment does partly mediate neighborhood social disparities in AIDS and STDs. In sum, the physical environment, at least as measured here, is not a major mechanism underlying social disparities of health across NYC neighborhoods, but there is mixed evidence for neighborhood built and social environments.

Can we conclude that the health problems found in high percent black neighborhoods after controlling for poverty and other potential pathways partly reflect environmental injustice? With the exceptions of AIDS and STDs, health disparities across areas with different social or racial compositions remain after controlling for environmental conditions. This suggests that socioeconomic and racial residential segregation increases health risks in other ways than simply confining minorities to hazardous environments.

Are the effects of poverty, race, and ethnicity on specific health outcomes in line with expectations? For the most part, no. Industrial pollution of the environment does not appear to affect any health outcome. Substandard housing affects some outcomes as hypothesized – tuberculosis and lead exposure – but not others like asthma, lung cancer, and animal bites. Violent neighborhoods do have higher AIDS and STD rates, but contrary to expectation, not more homicides, suicides, or addictions. In the case of breast cancer, rates vary across NY neighborhoods in an almost opposite way than do other diseases. It is not a poverty disease.

Before concluding that environmental injustice is not a serious problem in NYC, it is important to recall the limitations of this study. We cannot be certain that the lack of evidence for environmental pathways in bringing about social disparities of health is not due to measurement error, cross-sectional design, or the unit of analysis. Ideally, better measures of air quality and other environmental conditions, longitudinal data, and more information on individual-level health behaviors and outcomes would increase our confidence in the negative findings of this study.

What does this study have to say about future research on the relationship of environment and community? First, the environmental conditions examined here are less important for neighborhood health than access to primary care doctors and local social capital (organizational density, linguistic isolation), net of race and poverty. A broader definition of environmental or contextual forces might encompass these institutional factors.

Ecological pathways between socioeconomic status, race, and health appear to be complex.

Second, better measures of local environmental conditions would go far in increasing our confidence in the findings, but they are rarely available at the neighborhood scale. Community-based health initiatives of the type concerned with environmental justice would be excellent for collecting the needed data at a more localized level. They might also demonstrate to policy-makers the importance of improving neighborhood environments at a time when community development funds have been severely cut. Third, disentangling the causal effects of individual- and neighborhood-level data will require fairly complex models that incorporate multilevel data and account for possible spatial and temporal correlations among the random components of such models. Future research should take account of potential spatial autocorrelation, intertemporal correlation, and heteroscedasticity.

Fourth, public health interventions may become more efficient if the causal chain of disease etiology leads back to the local environment. There is evidence that integrating public interventions into multiple environmental conditions can be successful in improving health (Brenner et al., 2003). Too often, health interventions are only at the individual level and directed at personal behavior, but neighborhood-level policy interventions will ultimately be necessary. Even if some diseases are more prevalent in disadvantaged neighborhoods today, they cannot be confined within them for long. Ultimately, the environmental sources of poor health will diffuse to other parts of the city and will require more costly interventions.

More generally, the fields of public health, urban planning, and housing reform should be reconnected, as they once were historically (Corburn, 2004). As professions specialized over time, they stopped conversing about their common objects of study. Scholars have come a long way since Frederick Engels' observations about the poor health of the Manchester working class. If Victorian England ultimately reformed the environment of even its worst slums, the contemporary United States might again recognize the importance of reducing social disparities in both urban living conditions and the health of its citizens.

NOTES

1. There is a lively debate over the relative effects of absolute income, relative income, and income inequality on health. See Marmot, 2004; Subramanian and Kawachi, 2004; Wen, Browning, and Cagney, 2003; Mullahy, Robert and Wolfe (2005). However, this debate is rarely addressed at the neighborhood level where

most research examines poverty rates or median income. We plan to examine the effects of inequality, net of average income, in future work.

2. In 2005, the Bush Administration's EPA drafted a new strategic plan on environmental justice that redefined environmental justice in a way that removes race and income from special consideration.

3. The Department of Health also commissioned a sample survey of 10,000 New Yorkers in 2002 and 2003 that provides information on risky health behaviors reported at the Health District, which is an even higher level of aggregation than zip codes. We are currently seeking to obtain these data at the zip code level, which explains the absence of smoking, unprotected sexual relations, and other behavioral indicators in this analysis.

4. The Toxic Releases Inventory data are available by zip code, but specific toxic substances and their quantities must be selected.

5. See <<http://www.nyc.gov/html/hpd/html/online-tools/hpd-online-portal.html>>.

6. We also explored a zip code indicator from the 2000 U.S. Census of Population and Housing on *crowding* (more than 1.5 persons per room). Since 1960, governments have used a standard of one person per room, so that density over that level is considered crowded (Myers & Baer, 1996). We reasoned that crowding spreads infectious diseases more rapidly throughout a household. However, crowding was too multicollinear to retain in the model.

7. Two other controls were examined and dropped for reasons of multicollinearity: the percentage of the population living alone was extremely correlated with the share of the population under 25 years old, and the share of female-headed households was so closely associated with neighborhood poverty rates as to be synonymous.

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LOCAL ENVIRONMENTAL POLITICS

POLITICAL DYNAMICS OF LOCAL ENVIRONMENTAL PROBLEMS

Aaron M. McCright and Terry Nichols Clark

In short, a land ethic changes the role of Homo sapiens from conqueror of the land community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as much.

– Aldo Leopold in *A Sand County Almanac* (1949/1989, p. 204)

In the last 40 years, environmental issues have become noticeably more political. Three examples from the United States will help us illustrate this. First, citizens individually and in groups – along a continuum ranging from diffuse social networks to formal organizations – increasingly have exercised their political rights to advocate in public arenas for addressing environmental issues. Since the 1960s, numerous grassroot activists, sympathetic scientists, and policy entrepreneurs have mobilized to place environmental issues onto the U.S. political agenda. These environmental issues – such as air quality, water quality, nuclear waste disposal, endangered species protection, toxic waste disposal, energy conservation, recycling, forest conservation, and ozone depletion – are now regulars on the U.S. political agenda (albeit with varying salience over time). Furthermore, the members of the environmental community promoting these issues have gained valuable access to institutional political channels.

Second, in response to this increased mobilization of environmental actors and to other economic, social, and natural resource pressures, multiple levels (e.g., municipal, county, state, and federal) of the government have taken on environmental conservation and protection responsibilities in the

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name of the common good. Government bodies take on these responsibilities primarily through environmental legislation. [Table 1](#) identifies 55 of the most important pieces of U.S. federal legislation dealing with environmental issues between 1947 and 1998. A brief glance at the Table reveals that 12 of these major pieces of environmental legislation were enacted between 1970 and 1972, the time period commonly perceived as the birth of modern environmental policy-making and characterized by its relatively low levels of political contention over environmental issues. As a result of these and other laws, policy-makers within the U.S. federal government created new agencies and commissions and expanded the charge of existing ones to perform key roles in environmental conservation and protection. [Table 2](#) lists many of the major U.S. federal agencies and commissions with some degree environmental policy jurisdiction.

Third, the environmental values, beliefs, and behaviors of citizens regularly divide along ideological and partisan lines (see [Dunlap, Xiao, & McCright, 2001](#)). For instance, most studies of representative samples of U.S. citizens since the 1970s consistently find that political ideology is a significant predictor of levels of environmental concern and support for environmental protection (e.g., [Constantini & Hanf, 1972](#); [Tognacci, Weigel, Wideen, & Vernon, 1972](#); [Dunlap, 1975](#); [Buttel & Flinn, 1976, 1978](#); [Weigel, 1977](#); [Pierce & Lovrich, 1980](#); [Mazmanian & Sabatier, 1981](#); [Samdahl & Robertson, 1989](#); [Howell & Laska, 1992](#); [Jones & Dunlap, 1992](#); [Uyeki & Holland, 2000](#); [Dunlap, Xiao, & McCright, 2001](#)).¹ In these – and many other – ways, environmental issues are noticeably political.

Much of this research on environmental politics – especially in the United States – is performed at the national level of analysis. Yet, some of the most in-depth and impressive studies of environmental politics are conducted at the community level. Two stand out as especially significant in that they successfully analyze subtle power dynamics. Indeed, rather than examine what [Steven Lukes \(1974\)](#) terms “one-dimensional” power (observable decision-making in the midst of overt conflict among parties with subjective interests), these two studies analyze “two-dimensional” power (an extension of one-dimensional power to nondecision-making) and “three-dimensional” power (an extension of two-dimensional power to ideology and hegemony).

[Harvey Molotch \(1970\)](#) used a case study of the 1969 Santa Barbara oil spill to examine how the institutional power and inaction of state and federal policy-makers and bureaucrats effectively could diffuse the dissent of elected officials and local citizens. The inability of Santa Barbara residents to fully air their grievances and successfully protect their interests is especially significant given that they were largely upper middle class,

Table 1. Significant U.S. Federal Environmental Legislation, 1947–1998.

Legislation	Year
Federal Insecticide, Fungicide, and Rodenticide Act	1947
Water Pollution Control Act	1956
Multiple Use-Sustained Yield Act	1960
Clean Air Act	1963
Wilderness Act	1964
Land and Water Conservation Fund Act	1964
Water Quality Act	1965
Highway Beautification Act	1965
Endangered Species Conservation Act	1966
Air Quality Act	1967
National Wild and Scenic Rivers Act	1968
National Trail System Act	1968
Endangered Species Act Amendments	1969
National Environmental Policy Act	1970
Water Quality Improvement Act	1970
Resource Recovery Act	1970
Environmental Education Act	1970
Clean Air Act Amendments	1970
Alaska Native Claims Settlement Act	1971
Water Pollution Control Act	1972
Environmental Pesticides Control Act	1972
Marine Mammal Protection Act	1972
Marine Protection, Research, and Sanctuaries Act	1972
Noise Control Act	1972
Coastal Zone Management Act	1972
Endangered Species Act Amendments	1973
Safe Drinking Water Act	1974
Resource Conservation and Recovery Act	1976
Toxic Substances Control Act	1976
Federal Land Policy and Management Act	1976
National Forest Management Act	1976
Surface Mining Control and Reclamation Act	1977
Soil and Water Conservation Act	1977
Clean Air Act Amendments	1977
Clean Water Act Amendments	1977
Public Utilities Regulatory Policies Act	1978
National Energy Act	1978
Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)	1980
Alaska National Interest Lands Conservation Act	1980
Fish and Wildlife Conservation Act	1980
Nuclear Waste Policy Act	1983

Table 1. (Continued)

Legislation	Year
Resource Conservation and Recovery Act Amendments	1984
Safe Drinking Water Act Amendments	1986
Superfund Amendments and Reauthorization	1986
Clean Water Act Amendments	1987
Nuclear Waste Policy Amendments	1987
Global Climate Protection Act	1987
Federal Insecticide, Fungicide, and Rodenticide Act Amendments	1988
Ocean Dumping Act	1988
Clean Air Act Amendments	1990
Energy Policy Act	1992
California Desert Protection Act	1994
Safe Drinking Water Act Amendments	1996
Food Quality Protection Act	1996
Transportation Equity Act	1998

Sources: Kraft, 2001, p. 87; Sussman, Daynes, & West, 2002, p. 130; Switzer, 2001, p. 312–314.

well-educated, well-organized, and had multiple contacts with national and international elites.

Matthew Crenson (1971) applied a conceptualization of institutional power to examine the differential passage of air pollution legislation in the geographically adjacent Gary, Indiana, and East Chicago, Illinois. According to Crenson, East Chicago passed its rather strong and comprehensive air pollution legislation in 1949 well before Gary passed its own rather weak and narrow legislation in 1962, because Gary was much more dependent economically upon a single company (U.S. Steel), was dominated by a single political party, and had a significantly homogeneous occupational structure. In other words, Gary's economic dependence on U.S. Steel caused most of its residents to fail to perceive air pollution as a problem for a long time.

The literature on local environmental politics has grown since these two early classics, albeit more slowly and in a less comparative fashion than wished by some scholars. The four chapters in this section further this intellectual trajectory by examining several dynamics of local political processes in communities. These scholars explicitly analyze how the structure of political opportunities in different communities affects the political mobilization necessary to recognize and ameliorate environmental problems.

In Chapter 8, Christopher Rootes addresses highly contentious community-level issues of waste management and disposal in England. Specifically, Rootes analyzes the factors that affect the success or failure of local

Table 2. Major U.S. Federal Agencies and Commissions with Environmental Policy Jurisdiction.

- I. Environmental Protection Agency
 - II. Department of the Interior
 - A. Bureau of Land Management
 - B. Bureau of Reclamation
 - C. Mineral Management Service
 - D. National Park Service
 - E. Office of Surface Mining Reclamation and Enforcement
 - F. U.S. Fish and Wildlife Service
 - G. U.S. Geological Survey
 - III. Department of Agriculture
 - A. Agriculture Stabilization and Conservation Service
 - B. Soil Conservation Service
 - C. U.S. Forest Service
 - IV. Department of Commerce
 - A. National Bureau of Standards
 - B. National Oceanic and Atmospheric Administration
 - 1. National Weather Service
 - V. Department of Defense
 - A. Army Corps of Engineers
 - VI. Department of Energy
 - A. Federal Energy Regulatory Commission
 - B. Office of Conservation and Renewable Energy
 - VII. Department of Health and Human Services
 - A. Food and Drug Administration
 - B. National Institute for Occupational Safety and Health
 - VIII. Department of Homeland Security
 - A. Federal Emergency Management Agency
 - IX. Department of Labor
 - A. Mine Safety and Health Administration
 - X. Department of Transportation
 - A. Federal Aviation Administration
 - B. Federal Highway Administration
 - C. Materials Transportation Bureau
 - D. National Transportation Safety Board
 - E. U.S. Coast Guard
 - XI. Consumer Product Safety Commission
 - XII. Federal Maritime Commission
 - XIII. Federal Trade Commission
 - XIV. Nuclear Regulatory Commission
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Source: Switzer, 2001, pp. 62–66.

campaigns against proposed waste incinerators in England, particularly those in the southeastern county of Kent. He analyzes a wealth of data from eight cases of new waste incinerators built or proposed for construction between 1994 and 2003: interviews of relevant stakeholders, observations of public meetings, and archives of available documents. Rootes examines (a) the extent to which the strategies and tactics of campaigners matter more than do the political characteristics of communities and (b) the extent to which framing strategies matter. Briefly, he finds that the political characteristics of communities (e.g., political opportunity structures and decision-making sequences) matter much more in explaining the outcomes of waste incinerator campaigns than do the activities and framing strategies of the campaigners.

In Chapter 9, Aaron M. McCright and Terry N. Clark examine the extent to which the political characteristics of communities explain variation in the mobilization and outcomes of the American environmental movement. More specifically, McCright and Clark utilize U.S. Census Bureau information and a 1996 Fiscal Austerity and Urban Innovation (FAUI) survey of U.S. mayors for 257 large American communities to analyze which political characteristics of communities consistently influence how ambitious, active, politically successful, and efficient the environmental movement is. The authors find that noninstitutional political factors (e.g., the characteristics of other movements and interest groups) are more powerful predictors of environmental movement mobilization and outcomes than are institutional political factors (e.g., formal state structures and political parties). Also, McCright and Clark find that the characteristics of movement allies have a more significant effect on environmental movement mobilization and outcomes than do the characteristics of opponents.

In Chapter 10, Kent P. Schwirian studies the growing threat of plagues in the global network of cities by examining the 2002–2003 outbreak and spread of Severe Acute Respiratory Syndrome (SARS) within a political ecology framework. Using an event/action model as a methodological approach, Schwirian tests two political ecology hypotheses and finds ample support for both. First, he finds that the politics of SARS can be found simultaneously at the local, national, and international levels. Second, he reports that such politics shape a community's responses in three areas: (1) protecting the system; (2) evaluating plague-fighting performances during the outbreak and allocating blame, punishments, and rewards to local actors and officials; and (3) restructuring local organizations to better meet future outbreaks. Schwirian concludes his chapter by stressing the heightened risk we are all exposed to when a plague reaches a city in the global network.

In Chapter 11, Lei Xie and Arthur Mol examine the dynamics of environmental nongovernmental organizations (ENGOs) in China, which have been on the rise since the early 1990s. In the face of a repressive state and narrow formal institutional channels for participation in environmental policy-making, citizens concerned about the environment have facilitated the growth and development of ENGOs largely via informal social networks. Xie and Mol argue that such informal channels are becoming a key avenue through which to organize social movements in Chinese society. Xie and Mol utilize the concept of *guanxi*, or complex connections, to conceptualize the informal networks among friends, relatives, colleagues, neighbors and others that provide the foundation for the emerging Chinese environmental movement. The authors illustrate the purchase of this concept by examining in detail a case study of an environmental campaign against a large dam construction project on the Nu River.

NOTES

1. Much of this same research finds that a self-identified measure of political ideology is associated more strongly with environmental concern and support for environmental protection than is a self-identified measure of political partisanship (e.g., Dunlap, 1975; Mazmanian & Sabatier, 1981; Howell & Laska, 1992; Jones & Dunlap, 1992; Uyeki & Holland, 2000; Dunlap, Xiao, & McCright, 2001).

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8. EXPLAINING THE OUTCOMES OF CAMPAIGNS AGAINST WASTE INCINERATORS IN ENGLAND: COMMUNITY, ECOLOGY, POLITICAL OPPORTUNITIES, AND POLICY CONTEXTS

Christopher Rootes

ABSTRACT

The siting of new waste incinerators has often stimulated vigorous opposition. U.S. research concludes that successful campaigns depend upon the discourse and tactics employed by campaigners and the skills and ingenuity of campaigners rather than the static characteristics of local communities. Evidence from recent anti-incinerator campaigns in England suggests otherwise. In England, community characteristics differentiate, but campaigners' discourse matters less than political opportunities determined by the structure of local political systems, the urgency of local waste authorities' concerns to find solutions to problems of waste disposal, the sequence of relevant planning decisions, and changes in the national policy context.

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Waste is an issue where considerations of ecology and of community are particularly tightly intertwined. Waste is generated in and by communities, and it is communities that are confronted with the consequences of decisions about the management and disposal of waste. But while the generation of waste goes mostly unremarked, the management of waste, and especially the siting of waste disposal facilities, is highly contentious (Luton, 1996). Contention over waste management may divide communities, but it has sometimes served to unite them in campaigns, sometimes successful, to contest proposed waste regimes and facility sitings.

Although all kinds of waste management facilities may be contentious, the siting of waste incinerators has been especially so. Concern about the impacts of incinerator emissions, especially dioxins, upon the natural environment and upon human health has persisted despite the conclusions of epidemiological and environmental impact studies that such impacts are negligible or, at best, unproven (see, e.g., National Research Council, 2000). Nevertheless, while some proposed incinerators have been abandoned in the face of concerted community campaigns, others have been built.

In the United States in recent years, the environmental justice movement has been successful in demonstrating that waste facilities – including those for the incineration of municipal solid waste – have been systematically visited upon the poor, a disproportionate number of whom are people of colour (Cole & Foster, 2001; Visiglio & Whitelaw, 2003). Indeed, the environmental justice movement has been so successful in proclaiming the injustice of the siting of facilities for hazardous waste that during the 1990s the relationship between sitings and community characteristics was inconsistent (Atlas, 2002). Recent approvals of expansion of hazardous waste sites even appear to have inverted the historic relationship, with the result that by the turn of the century, communities with high proportions of people from ethnic minorities were *less* likely than others to harbour approved extensions to hazardous waste facilities (Atlas, 2001).

Not least because the environmental justice movement has provided effective networking among otherwise isolated campaigns, since the development of the national anti-incineration movement in the 1980s, very few new incinerators have been commissioned and many proposed projects have failed to gain approval (Walsh, Warland, & Clayton Smith, 1997, p. 244). Indeed, because so few new waste incinerators have been built in the United States since the 1980s, it has become difficult to answer questions about the determinants of successful anti-incinerator campaigns on the basis of U.S. evidence.

In England, however, the issues have recently appeared in stark relief as a result of changes in British and European policies on waste disposal, as a

consequence of which the spectre was raised of a massive programme of incinerator construction across the country. As a result, England has witnessed a number of nearly contemporaneous proposals and anti-incinerator campaigns, some of which have succeeded and a smaller number of which have failed to prevent the construction of incinerators. Thus, England provides a range of cases sufficient to sustain exploration of a variety of factors and explanations for the fates of such proposals and campaigns. In order to address these questions, we shall consider the cases of eight proposed incinerators in England, with a particular focus upon proposals in the south-easternmost English county, Kent.

BACKGROUND AND CONTEXT

The UK government's draft waste strategy document, *A Way With Waste* (DETR, 1999), laid out the background and context to the recent contention over waste management. In 1999, household waste in England amounted to some 25 million tonnes per annum, and was estimated to be increasing at an annual rate of 3 per cent. Historically, most household or municipal solid waste in England has been consigned to landfill, with only relatively small amounts being incinerated, composted or recycled (Strategy Unit, 2002). By 1999, 85 per cent of English household waste was consigned to landfill, a proportion comparable with those for Italy, Ireland and Greece, and far higher than in other industrialized European countries. Concomitantly, the proportion of domestic waste that was recycled was, at just 8 per cent, very low by comparison with that in other European states or North America.

Most landfill sites in England were voids left by quarrying or the extraction of clay for brickworks, many of them legacies of earlier stages of industrialization. The unsustainability of England's management of domestic waste became increasingly apparent as existing landfill sites filled up and as planning constraints and opposition from the public and conservation organizations, such as the Council (now Campaign) for the Protection of Rural England, made it increasingly difficult to find new sites. Moreover, increased understanding of the hazards associated with landfill both increased the costs of an increasingly tightly regulated method of waste disposal and made it appear increasingly undesirable as a matter of policy. As a result, in an attempt to discourage landfill and to provide economic incentives to the search for more sustainable alternatives, the UK government in 1996 imposed a landfill tax, which subsequent governments have progressively increased.

The urgency of finding alternatives to landfill was, however, greatly increased by the EC Landfill Directive (Council Directive 99/31/EC), which requires the volume of biodegradable municipal waste sent to landfill to be reduced to 75 per cent of the 1995 level by 2010, 50 per cent by 2013 and 35 per cent by 2020. As failure to meet these targets could result in fines of up to GBP 180 million (c. USD 320 million) per year, government has a strong incentive to meet its international obligations, and in order to reach them it has set demanding targets for local waste authorities. Although as early as 1990 government had set a 25 per cent target for waste recycling, the engineer-dominated local waste planning authorities remained skeptical that recycling rates could, even in the most favourable circumstances, be sufficiently increased, and so favoured increased reliance upon incineration.¹ As recycling rates remained stubbornly low, ministers appeared by 2000 to be resigned to the need to build as many as 100 new waste incinerators in order to meet the EU requirements on the reduction of landfill waste (DETR, 2000).

Controversy over the construction of new waste incinerators had, however, already been stimulated by an earlier EC directive on incinerator emissions, the effect of which had been to require the closure or extensive modification of all the then-existing waste incinerators in England. The few regional waste authorities that had historically employed incineration were surprised to find that whereas the operation of the old, polluting incinerators had been generally locally uncontentious, their replacement, often on the same sites, by new, much cleaner incinerators was sometimes fiercely resisted. Resistance was not, however, universal, and the outcomes of local campaigns against proposed new incinerators have varied considerably.

THE CASES

Our data is principally derived from research into eight cases of new waste incinerators built or proposed for construction during the years 1989–2003 (see Table 1).² Of these one – Birmingham Tyseley, which opened in 1997 – encountered only token opposition and that only after the proposal was approved. Another – South East London Combined Heat and Power (SELCHP), at Deptford, which opened in 1994 – encountered only limited local opposition. However, the proposed incinerator at Portsmouth, first announced in 1990, excited vigorous local protests, was rejected, revised and rejected again before being approved on appeal following a public inquiry in 2002. The remaining five cases, all of which were more or less vigorously

Table 1. Waste Incinerator Proposals in England: The Cases.

Case	Location	Date of Proposal	Community Characteristics	Political Structure
SELCHP (South East London Combined Heat and Power)	Deptford, South-east London	1989	Inner urban, socially deprived, high ethnic minority	Unitary urban authority (London Borough of Lewisham)
Portsmouth	Hampshire	1990	Urban, socially mixed	County Council (Hampshire), Unitary authority from 1999
Tyseley	Birmingham	1993	Inner urban, socially deprived, high ethnic minority	Unitary urban authority (Birmingham City Council)
Halling	Medway, Kent	1996	Semi-rural village, socially mixed	County Council (Kent), Unitary authority (Medway) from 1999
Kingsnorth	Medway, Kent	1997	Semi-rural village, socially mixed	County Council (Kent), Unitary authority (Medway) from 1999
Allington	Near Maidstone, Kent	1997	Suburban, socially homogeneous working/lower middle class	County Council (Kent)
Ridham	Swale coast, Kent	1999	Semi-rural villages/ suburban, socially mixed	County Council (Kent)
Shelford	Near Canterbury, Kent	2002	Semi-rural villages/ cathedral city, socially mixed	County Council (Kent)

opposed locally, are in Kent: Halling, where the proposal was abandoned by the developer in 1997; Kingsnorth, abandoned by the developer in 1998; Allington, announced in 1997, granted planning permission in 1999, and finally approved in 2003; Ridham, announced in 1999, refused planning permission in 2000, a decision upheld after a public inquiry; Shelford, where a proposal to build a pyrolysis plant was withdrawn in 2003.³

Our information on these cases is derived from interviews with the protagonists (developers, waste authority officials, local campaigners, environmental activists and local politicians), press reports, documents, and observation at council planning committees, public meetings and public inquiries. Limitations of space preclude more than a summary of conclusions and illustrations from the case studies.⁴

Our concern here is to explain the pattern of variation in the incidence and, especially, the outcomes of the campaigns against the proposed incinerators. The existing literature suggests two main hypotheses:

1. The skills, ingenuity, and determination of campaigners matter more than characteristics of communities;
2. Discourse matters. Campaigns employing universalistic, ecologically modernist arguments are more likely to succeed than are those that employ only or mainly particularistic, NIMBY arguments.⁵

As we shall see, neither of these hypotheses is supported. Other, exogenous factors, appear to be more important.

COMMUNITY

The recently fashionable concerns of social scientists with discourse have often been accompanied by neglect of the structures of power in communities and between communities, governments and corporations. There is, however, evidence that in the U.S. waste incinerators were deliberately sited in areas where least resistance was expected: in smaller, rural communities with poor and poorly educated populations employed in resource-extractive industries or agriculture (Cole & Foster, 2001, p. 3). Other U.S. research, however, found that static characteristics of communities were not strongly determinant of the success of local campaigns against waste incinerators (Walsh, Warland, & Clayton Smith, 1993).

Our English data suggests a more complicated picture. The two cases in the most highly urbanised areas – SELCHP in Deptford, London and Tyseley in Birmingham – were the least contested. Both were located in

economically depressed inner city areas with high proportions of ethnic minority populations whom it was difficult to inform or to mobilise. Tyseley, where there had been a waste incinerator since 1926, was a particularly depressed area and was home to an almost uniformly economically deprived and socially excluded population; it was also a high crime area in which it was difficult to persuade residents to leave their homes to attend meetings. The few activists who campaigned against the incinerator lived outside the immediate area and so were unaware of the proposals until the incinerator was approved.

Deptford was similarly deprived but, because of its proximity to the metropolitan centre, also housed a relatively well-educated if transient minority who had sufficient personal efficacy to resist, even if they lacked the ability to mobilise their less resourceful neighbours. Of the Kent cases, it was the most urban – or, more precisely, suburban – one (Allington) that failed, both to sustain an effective local mobilization and, ultimately, to defeat the incinerator proposal. All the less urban proposals in Kent were withdrawn in the face of concerted opposition, or were defeated.

U.S. research has suggested that prior networks were not an important determinant of successful resistance to incinerator proposals (Walsh, Warland, & Clayton Smith, 1997). However, in England personal and political networks in communities appear to have been crucial to the success of local campaigns, and help to explain why rural or semi-rural village communities have often been more successful in resisting waste facilities, even on ‘brownfield’ sites, than have their counterparts in towns and cities. At the formal, institutional level, villages are distinguished from towns by their possession of a lower tier of local government – the Parish Council – which may act as a nucleus of participatory local organization.⁶ Thus, at Ridham there was greater opposition from the village and rural communities of the nearby Isle of Sheppey than from the larger mainland town, Sittingbourne, which was closer to the site.

The social character of villages also appears to be important. In England, as elsewhere in western Europe, villages are often socially mixed communities in which local interaction is relatively intense as well as socially diverse. Villages, moreover, are the chosen homes of many people who work (or have worked) elsewhere and who are embedded in networks of expertise that can be brought to bear in local campaigns. Thus, in the Halling case, locally resident professionals rallied around a scientifically educated IT consultant who rapidly became an expert on the hazards of and alternatives to incineration and lent his expertise to the subsequent campaigns at Kingsnorth, Allington and Ridham. In the Shelford case, a prodigious range of

expertise was deployed by campaigners drawing upon the skills and connections of recently retired engineers and industrial chemists, among others, who lived in neighbouring villages. By contrast, suburbs (such as Allington, a 1960s housing estate on the edge of Maidstone, the county town of Kent) and inner urban areas are generally more socially homogeneous and often have relatively less resourceful populations.

The strength of local identity may also be an important factor in the vigour of local campaigns. Thus, in the Ridham case, the special character of the Isle of Sheppey (Pahl, 1984) may have assisted mobilization. Although much of its shoreline is an internationally recognized nature reserve, designated as a Ramsar site for the protection of wading birds,⁷ Sheppey is (mostly) relatively economically depressed, but much of it has a rural or village character, is quite isolated, and has a well-cultivated sense of being neglected and exploited (e.g., by the siting there of a high security prison). By contrast, the proximity of Shelford to the cathedral city of Canterbury, which it was feared would suffer both from emissions to air and from sustained high volumes of heavy vehicle movements associated with the proposed pyrolysis plant, was a factor galvanising concerted local opposition.

ECOLOGY AND ECOLOGICAL DISCOURSE

Most recent attempts to explain the pattern of successes and failures of campaigns against waste facilities such as incinerators and landfills have focused upon the ways the issues are framed by the opponents and the proponents of a particular development, and on the language used by them in the course of campaigns.

The development in recent years of ecological modernization (EM) – ‘a discourse that recognizes the structural character of the environmental problematique but none the less assumes that existing political, economic, and social institutions can internalize ... care for the environment’ (Hajer, 1995, p. 25) – has become ‘the most credible way of “talking green” in spheres of environmental policy-making’ (Hajer, 1995, p. 30). If indeed it has become the hegemonic discourse, we might expect that the success of proposals for new waste facilities such as incinerators and of the campaigns against them will be determined, at least in part, by the degree of skill with which the developers on the one hand and the campaigners on the other employ that discourse.

Waste planning authorities and corporations have adapted quickly. Mass burn incineration without energy recovery is now regarded as a mere

‘technological fix’ to the waste problem, but incineration with energy recovery, suitably relabelled ‘energy-from-waste,’ is enthusiastically embraced as the ecologically modern alternative.

For local communities opposed to the siting of waste facilities, however, there are a number of strategic dilemmas involved in attempts to raise the level of campaigns beyond the local and immediate, and the discourse of ecological modernization is less clearly advantageous. Research in the United States has concluded that NIMBY protests are more likely to succeed if they can reframe the issues as wider issues of environmental management capable of appealing to a broader public (Walsh, Warland, & Clayton Smith, 1993). However, whilst the adoption of a universalizing discourse may be a necessary condition if opposition to a facility is to be made respectable in the eyes of and to recruit the support of non-local actors, it may appear abstract and over-complex to less sophisticated local people. Local people may be more easily and more intensely mobilized by NIMBY campaigns that focus on particular local concerns and values.

NIMBY campaigns may, for instance, articulate issues of ecology that more universalistic campaigns overlook. Thus, at Ridham it was local councillors rather than environmental activists who drew attention to the UK government’s obligation to protect the bird habitat designated under the Ramsar convention, as well as employing local and professional knowledge to raise issues of flood risk and local ecology.

Such particularistic concerns seldom persuade planners or political decision-makers. Indeed, public policy preoccupations with development have repeatedly overridden the legally protected status of designated areas of special scientific interest and/or landscape value – as they did during the 1990s road-building program. But if they fail to convince planners and decision-makers, or even the experts of English Nature or the Environment Agency, such arguments may nevertheless perform the useful function of involving and encouraging local people desperate for any weapon with which to defend their habitat. To the extent that such arguments invigorate and prolong campaigns, they make them less likely to be overlooked politically even where the substance of the concerns is unconvincing to decision-makers. Developers faced with the prospect of protracted arguments with planners and regulators as they attempt to address issues raised by campaigners must reckon with the certainty of long delays before final decisions can be reached, and uncertainty about the outcome given the higher likelihood of political intervention in long-running disputes. In several of the cases we have considered, such considerations stimulated reassessment of the commercial risks of the proposed projects and led to their abandonment.

Thus, intense NIMBY campaigns sometimes succeed even where good universal arguments are weak or absent. On the other hand, good universal arguments often fail, and even good universalist decisions may have locally unpalatable outcomes.

The campaigns we considered varied considerably in their sophistication, but the most sophisticated of all – that at Allington – was the only one of the five Kent cases that failed, in the sense that the proposed waste incinerator was eventually approved. The campaign at Allington followed and was informed by that at nearby Halling. To an extent unprecedented in England, campaigners clearly articulated universalistic arguments as well as proposing practical alternatives such as community recycling and composting schemes and in-vessel composting.⁸ Ironically, however, campaigners were advised by Councillors opposed to the incinerator that, because such universalistic considerations had no bearing on the land-use planning decision, they should instead focus upon essentially NIMBY arguments peculiar to the site and especially upon its status in the local structure plan as a protected greenfield area integral to the ‘green wedge’ between two conurbations.

Thus, the discourse employed by campaigners does not appear to have been a decisive factor in determining the outcomes of incinerator proposals. However, it appears that the discourse of campaigners may itself be shaped by the structure of political opportunities, and in particular by the planning approval process through which all such proposed developments must pass. Because any proposal for a new waste facility inevitably focuses upon a particular site, objectors are required to show that *that* site is not suitable for *that* purpose. The required arguments are necessarily particularistic because, ostensibly, the decision will be made on the basis of narrow local land-use planning considerations to which wider policy questions are, strictly speaking, irrelevant. It is for this reason that local politicians advise objectors to concentrate upon land-use planning issues, and so encourage them to become clever NIMBY campaigners rather than to join a larger policy debate for which there is no institutionalised forum and which would almost certainly be considered irrelevant to the decision concerning a particular site. The structure of political opportunities leaves little room for sophisticated ecological discourse.

POLITICAL OPPORTUNITIES AND OPPORTUNITY STRUCTURES

For local campaigners, another dilemma arises if the baton of opposition is passed from local communities to more institutionally privileged actors such

as lawyers and local councillors. Although such actors may more expertly make arguments that are consistent with institutionalized rules, procedures and principles, reliance upon them – and the relocation of contention to courtrooms and council chambers – may hasten the demobilization of the local community, with the resultant loss of the ‘people power’ that is a critical resource when campaigners are attempting to influence political decisions. This helps to explain why, in the Allington case, a highly sophisticated campaign quickly faded as local politicians took up the issue.

Nor are ‘consensus-building’ deliberative and inclusionary procedures necessarily advantageous to local communities. Typically, they involve protracted inquiries and consultations that tax the limited resources of locals and exacerbate the difficulties of campaigners in maintaining the commitment and momentum of those local people who are personally ill-resourced to participate effectively in formal consultative processes. Not only are resources and people that are tied up in consultation not available for community organizing, but the disparity between the resources at the disposal of governmental authorities and corporations on the one hand and local communities on the other may itself be demoralizing to local campaigners. Not infrequently, elaborate consultative procedures produce neither the outcomes local campaigners desire, nor the legitimization of waste facility siting that authorities seek⁹ and, not surprisingly, local campaigners are often cynical about such exercises and sometimes refuse to participate in them.¹⁰

Political opportunities and opportunity structures not only influence the strategy, tactics and discourse of campaigners; they also impact directly upon siting decisions. It is noteworthy that, in both Kent and Hampshire, planning approval was quickly granted for waste planning authority-sponsored incinerator applications within their own county boundaries. However, in the new unitary authorities excised from Kent and Hampshire under local government reorganization in 1999 – Medway and Portsmouth, respectively – local Councillors declared themselves opposed to waste incineration, and incinerator proposals were either abandoned (as at Halling and Kingsnorth, both in Medway) or approved only after prolonged contention (Portsmouth).¹¹

The new local authority boundaries were the final nails in the coffins of proposals for incinerators at Kingsnorth and Halling. However, they had the opposite effect for Allington, because Allington is on the very edge of the redrawn County of Kent. Moreover, the districts in Kent potentially most affected by the incinerator are represented by Liberal Democrat councillors, but the majority of the Councillors who took the decisions were Conservatives representing voters living up to forty miles away in east, west and

north Kent. Many of these Councillors were being strongly lobbied by local campaigners – and the Council for the Protection of Rural England – against landfill operations in their own areas. Thus, they had no interest in rejecting a proposal that appeared to offer a solution to a pressing problem and whose undesirable effects would not be felt by their supporters. It was relatively easy (if misleading) for Kent's Conservative Councillors to represent the waste to be burned at Allington as a problem arising locally and deserving of disposal locally.¹² A similar political logic applied in Hampshire, another geographically extensive county.

Thus, political geography and its attendant political opportunity structures explain much of the variation in outcomes. In geographically large counties such as Kent and Hampshire, it was much easier to get a majority of Councillors to take locally unpopular decisions than it was in geographically compact authorities like Medway and Portsmouth in which, as in other new unitary authorities in England, Councillors had 'no place to hide' from unpopular decisions and so rejected incineration as a means of waste disposal. If the crucial determinants in these cases lay in the political structural contexts within which the campaigns were conducted, it is conjunctural effects that appear best to differentiate them from those that followed. Although political structures may differentiate outcomes in densely populated unitary authorities from those in geographically extensive counties, they are unable to explain differences in outcomes *within* those counties. In these cases it is apparent that it is the sequence of events and the changing policy context that has had most influence on the results of campaigns.

POLICY IMPERATIVES AND PATH DEPENDENCY

In the years that it had taken to find a suitable site for an incinerator, Kent's need for new facilities to deal with an ever increasing quantity of waste was becoming ever more urgent. A succession of government strategy documents had, through the 1990s, urged waste authorities to find alternatives to landfill. Although *A Way With Waste* (1999) no longer simply equated incineration (with energy recovery) with recycling, frustration at slow progress toward recycling targets meant that government was increasingly resigned to the construction of a large number of waste incinerators. Thus, local urgency combined with a lack of national government resolve to resist incineration, and the battle against the Allington incinerator was lost without even a public inquiry. Hampshire was similarly hard pressed as the need to replace the county's decommissioned waste incinerators became more urgent.

If the ways in which campaigners have framed the issues do not appear to have influenced the outcomes, one reason is that, whatever the niceties of planning law, local waste planning authorities also have a statutory responsibility to make satisfactory provision for the disposal of waste. *In extremis*, this statutory obligation over-rides normal planning considerations. The Councils that act as waste planning authorities are caught between the imperatives of their legal responsibilities on the one hand and financial stringency on the other. Both national policy and local political considerations compel waste planning authorities to adopt an especially sharp focus upon the economics of waste management. Among Council officers with responsibility for waste management, many of whom have engineering backgrounds, the approaching exhaustion of permitted disposal capacity concentrates minds and produces a 'something must be done' syndrome and a susceptibility to short-term technical fixes rather than longer-term public education.

This syndrome was reflected at national level when, in 2000 the UK Environment Minister launched a new consultative document on waste which noted the continued increase in waste arisings and the lack of progress toward recycling targets, and floated the possibility of the construction of a network of more than 100 waste incinerators. This was denounced by FoE and by the leading waste management company, Biffa, as a panic reaction and a 'quick fix'.¹³ From the waste authorities' point of view, however, it was, at this late hour, precisely quick fixes that were required if Britain was to meet its obligations under EU directives and if the local waste authorities were to meet their targets.

Discourse on waste is not, for any of the actors involved, static or fixed; rather, it develops in the course of interaction. Thus, as a result of their increasing interaction with environmentalists campaigning on waste issues, Councillors and Council officers appear to develop a more holistic view of waste issues and to become more open to alternatives of which they are initially either ignorant or severely sceptical. Government's consultative documents have also influenced the thinking of and, especially, the language used by council officers. Indeed, by stressing the urgency of the waste problem and the need to find alternatives to landfill as well as by its apparent openness to incineration, *A Way with Waste* appears to have justified council officers in a return to their initial preference for incineration, albeit now simply on the grounds of urgent necessity and with the fig-leaf of 'energy-from-waste'.¹⁴

Despite assurances that permitted emissions present no risk to human health, residents show no signs of being prepared to welcome waste

incinerators into their surroundings. Yet contention has until now largely been focused upon the particular sites designated for incinerators and only belatedly, and often as a by-product of local campaigns of resistance, have more general issues of waste management strategy been raised. Local campaigners have, as a result, been largely at the mercy of the caprice of local circumstances.

But scarcely had the die been cast in favour of incineration than the parameters of waste management planning were changed. Kent County Council (KCC), as the waste planning authority, contracted to deliver a minimum tonnage of waste for incineration at Allington, but new government targets for recycling and the composting of putrescibles threatened to reduce the volume of combustible waste to the point where Allington might be unviable. In committing itself to Allington, KCC thus acquired a strong interest in rejecting possible rival incinerator proposals. In 2000, deploying arguments its members and officers had rejected when they were made by opponents of the Allington scheme, KCC rejected two proposals by the French-owned waste corporation, SITA, to build waste incinerators.

KCC officers recommended refusal of one of these, at Ridham, on grounds of uncertainty about local air quality and effects on wildlife.¹⁵ Yet English Nature concluded that possible emissions from the incinerator would not adversely affect wildlife, and the Environment Agency commented that 'even with the most pessimistic assumptions, National Air Quality Guidelines would probably not be breached'. In recommending refusal, KCC officers emphasized the word 'probably' in order to highlight the possible risk, and in subsequent committee deliberations Councillors obliged, declaring that KCC 'should not do anything that puts at risk the health of the people of Kent'. Yet both Allington and Kingsnorth had been recommended for approval, and Councillors had been disposed to approve them, when the Environment Agency had not received a first stage application and so was unable even to comment on possible environmental hazards. The precautionary principle, it appears, was invoked only when it served political purposes to do so.

The key determinant in the Ridham case appears to have been its place in the sequence of events. Having approved and committed itself to supporting the Allington proposal, KCC did not see the need for a second incinerator, particularly one that might conceivably compete with that at Allington and so make it less commercially viable. This argument gained force with time as the impact of EU and UK government policies appeared increasingly likely to result in a declining supply of combustible waste. Following a protracted public inquiry, the planning inspector upheld KCC's decision on the

grounds that the developer had been unable convincingly to demonstrate the need for a second waste incinerator so close to Allington. Thus, the sequence of decision events combined with the changing policy context to defeat a proposal that might only a few years earlier have appeared irresistible.

Timing also appears to have been a key variable in the Shelford case. The changing policy context, and the increasingly sophisticated understanding of waste issues – on the part of policy-makers, waste authority officers, Councillors and the general public – appears to have defeated the proposed pyrolysis plant on the very site where only a few years earlier expanded landfill had gone uncontested. The independent Technical Panel appointed by KCC to advise on the issues concluded in 2003 that Kent's Waste Local Plan, adopted in 1998, had been so outdated by events and changes in the policy context that it could no longer serve as the basis for decision.

In recent years, national political and environmental groups have been increasingly willing to take up the incineration issue. During 2001, Greenpeace, which had not previously been active on municipal waste issues in Britain, launched a campaign against incineration with a characteristically spectacular protest against the Edmonton incinerator in north London, and in February 2002 Greenpeace activists occupied the SELCHP incinerator in south-east London. The protests were designed to highlight health risks posed by the emission of dioxins, both incinerators having been at least briefly in breach of permitted emission levels, and to encourage consideration of alternative modes of waste disposal such as recycling and composting. In response, the opposition Conservative Party called for a moratorium on the building of new waste incinerators, its environment spokesman demanded that government investigate Greenpeace's claims about dioxin emissions, and Liberal Democrat Councillors and Green Party members of the London Assembly supported the Greenpeace actions. These were indications that the political context was changing and that contention over waste management was shifting from battles over siting decisions to debates about sustainable strategies that bring issues of consumption and civic responsibility to centre stage.

These changes were reflected in the recommendations of the UK government's [Strategy Unit \(2002\)](#) in its review of waste policy. Although incineration was not ruled out, it was ranked below recycling in the waste hierarchy, waste authorities were cautioned about the disadvantages of becoming locked into long-term contracts with waste incinerators, and recycling targets of above 45 per cent were recommended. Since then, there has been a sharp rise in recycling rates – to an average 27 per cent in

2004 – which casts further doubt on the viability of a waste strategy to which incineration is central.

The increased emphasis upon recycling in EU, national and local waste management strategies has not only made local waste plans formulated less than a decade ago appear outmoded, but it promises to reverse the condition that made incineration appear attractive in the first place. Now, far from having to deal with inexorably increasing streams of ever more complex municipal waste, as recycling becomes more popularly entrenched, so local waste authorities face the prospect of *declining* waste arisings, especially of readily combustible paper, card and organic material. In such circumstances, the last thing they want is to be tied to long-term contracts to deliver combustible waste to incinerator operators.

CONCLUSIONS

English experience suggests that we should at least qualify US findings that the properties of communities and the existence of prior networks are less determinant of the success of local campaigns than are the skill, imagination and energy of campaigners (Walsh et al., 1993, 1997). Local environmental action is the contingent product of a volatile cocktail of structural and conjunctural constraints and opportunities, and the actions and inaction of the individual citizens who are confronted by and, sometimes, attempt to surmount constraints and to create opportunities (Rootes, 1997, 1999a). The character of local communities, because it conditions the resources and expertise available to local campaigners, does appear to be a factor bearing upon the vigour of local campaigns and their chances of success. The efforts and ingenuity of campaigners are undoubtedly important, but they are to a significant degree affected by the character of the communities from which they spring or which they seek to mobilize. Moreover, the outcomes of contention over waste facilities seem generally to depend less upon the qualities of campaigns than upon political opportunity structures and decision-making sequences that campaigners are powerless to change.

Campaigners' adoption of a universalizing discourse is no guarantee of success if the political context is unpropitious. Indeed, the ways in which the issues are framed by campaigners appear relatively unimportant to the chances of success of campaigns. Much more important are political opportunities, both those that are genuinely structural (such as local authority boundaries) and those that are more strictly conjunctural (such as the alliance structures within and between local councils). Overriding all of these

are the changing policy imperatives of local and national governments. Just as local governments are obliged to respond to agenda and targets set by national government, so national policy itself is increasingly constrained by international obligations and by increasingly global conceptions of ecological issues. Communities may take matters of ecology ever more seriously, but their opportunities for local control of their ecological destiny are, in the end, principally dependent upon decisions made by more powerful actors elsewhere (Rootes, 1999; cf. Gould, Schnaiberg, & Weinberg, 1996, p. 38).

NOTES

1. Waste authority functions in England are generally divided between 'waste planning authorities', whose chiefly strategic functions are usually performed by County Councils, and 'waste collection authorities', usually the local district and borough Councils, which have the practical duties to manage the collection of waste. The increasingly numerous 'unitary' authorities – which have mostly been established to govern larger urban areas – combine both functions.

2. Initially, four cases, two in highly urbanized settings (London and Birmingham) and two in less urbanized counties (Hampshire and Kent) were selected so as to provide examples of the range of English cases. Limitations of resources dictated a bias toward relatively accessible cases in southern England. Subsequently, the opportunity was taken to extend the comparison to other cases that arose in Kent, and so to give the investigation a more extended time dimension. Whilst I do not claim that these cases are fully representative of all the instances of contention over incineration in England since 1990 – of which there have been approximately 80 – it does appear that the issues and the processes affecting decisions and the outcomes of campaigns may be more generally applicable. My subsequent research into cases in London and Wales suggests so, but in order to demonstrate that systematically, we must wait on further research.

3. Pyrolysis is a process whereby waste is super-heated to produce gas, which is in turn burned. Because it involves combustion, pyrolysis is regulated as a form of incineration and, like conventional incineration, it can be used to generate electricity. Pyrolysis is, however, widely considered preferable to other forms of incineration because, in principle, the process can be instantly interrupted in the event of malfunction or emissions exceedance, can be economically operated in relatively small modular plants, and generates no toxic ash. It remains controversial because it, like all forms of combustion, produces dioxins and does not eliminate all possible emissions to air.

4. For more detailed discussion of some of these cases, see Rootes (2001, 2003, 2004). The focus of the initial investigations was upon the discourse of the protagonists to contention over waste management, and was conducted principally by means of extended face-to-face interviews, over 50 of which were transcribed and analysed with the aid of NUD*IST. However, in the course of the research, it became apparent that the actor's constructions of the issues and the language they

used were neither the only nor the principal determinants of the development and outcomes of contention, and, especially in later phases of the investigation, the emphasis switched from formal interviews to observation of meetings and public inquiries, and collection and analysis of documents, supplemented by informant interviews.

5. NIMBY = Not in my back yard. The term is usually used as an epithet to stigmatize narrowly self-interested objections to locally unwanted land uses.

6. This point is reinforced by the case of the landraise proposed for Dargate in 1996. The site fell within the boundaries of Whitstable, a town that, as part of the City of Canterbury, had neither a town nor parish council. Local opposition was organized around the nucleus of the Neighborhood Watch committee but, crucially, it gained support and advice from the council of a neighbouring parish (Rootes, 1997a).

7. 'Ramsar sites' are wetlands of international importance designated under the Ramsar Convention (formally, 'The Convention on Wetlands'), signed in Ramsar, Iran, in 1971, an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. There are presently 150 Contracting Parties to the Convention, with 1,592 wetland sites, totalling 134 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance. See <www.ramsar.org/> accessed on March 3, 2006.

8. In-vessel composting is an industrial-scale system for the composting of biodegradable organic waste in which the initial treatment of the waste material is entirely contained in large steel drums and so cannot emit pollutants. It differs from Mechanical Biological Treatment in that it does not involve the shredding of waste and produces a high quality compost suitable for unrestricted use. The campaigners at Allington proposed the adoption of the Bedminster bio-converter system, already in use in parts of the US and Sweden (see Hargraves, 2003, p. 10; <www.bedminster.com/>, and <http://www.partnerships.stockholm.se/search_view.asp?Id=203>).

9. See, for example, Petts (1995) and Renn, Webler, and Kastenholz (1998). A formal inclusive deliberative inquiry was conducted into the Portsmouth proposal but, though it clearly identified the grievances of the campaigners, it failed to deliver a consensus solution. As a result, the proposed incinerator was fought to the last before being approved when the developer appealed against Portsmouth City Council's refusal of planning permission.

10. As they did in the Shelford case, when campaigners attended but declined formally to represent themselves at the Technical Panel inquiry organized by the waste authority.

11. Although the new unitary authorities only formally came into existence in 1999, decisions were made in anticipation of them and in deference to the Labour government, elected in 1997, which was the sponsor of the new authorities.

12. Only much later (in 2001) did it emerge that, in order for Kent County Council to supply the incinerator with the contracted tonnage of waste, it would be necessary to truck domestic waste in from more distant parts of Kent.

13. 'Waste firm attacks "quick fix" plan for incinerators,' *The Guardian*, February 8, 2000.

14. Although *A Way with Waste* did not equate energy-from-waste with recycling as previous government consultative documents on waste appeared to do, the

Department of Trade and Industry and the former Energy minister insisted on treating as 'green' (for purposes of government targets and subsidies) all electricity generated by waste incineration plants. This was despite the opposition of all the environmental groups on the government's working group. Interestingly, in response to customer preferences, most of the electricity generating companies decided not to include energy from waste in their renewables portfolios (Tickell, 1999).

15. The other proposal was for an incinerator at Richborough, near Sandwich. It was summarily refused on grounds of problematic access to what was a relatively small site and the decision was not appealed.

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9. THE POLITICAL OPPORTUNITY STRUCTURE OF THE ENVIRONMENTAL MOVEMENT IN U.S. COMMUNITIES

Aaron M. McCright and Terry Nichols Clark

ABSTRACT

We examine how political characteristics of communities explain variation in the mobilization and outcomes of the American environmental movement in 257 large American communities. In the process, we introduce our own typology of the political opportunity structure concept as a basic accounting scheme. We find that non-institutional political factors are more powerful predictors of environmental movement mobilization and outcomes than are institutional political factors. This is an important finding since non-state dimensions of the political opportunity structure are typically understudied in existing research given the overriding emphasis on formal state characteristics. Also, we find that the characteristics of allies have a more significant effect on environmental movement mobilization and outcomes than do the characteristics of opponents.

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Since the first Earth Day on April 22, 1970, the American environmental movement has achieved several significant accomplishments:

- the creation of many new environmental organizations and increased membership totals of existing ones;
- passage of several important pieces of environmental legislation (e.g., protections and regulations);
- creation of environmental education programs in primary and secondary schools;
- increase in pro-environmental values, beliefs, and behaviors of a substantial proportion of citizens;
- increase in pro-environmental practices in a substantial proportion of corporations; and
- some short-term increases in the quality of the biophysical environment (e.g., cleaner air and water).

Yet, these achievements are not consistent across communities. Indeed, the characteristics of the environmental movement itself vary considerably across communities in the United States.

There is an abundance of national-level research on the emergence, trajectory, and outcomes of the American environmental movement (e.g., Hays, 1987, 2000; Dunlap & Mertig, 1992; Gottlieb, 1993; Sale, 1993; Lester, 1995; Kline, 1997; Brulle, 2000; Kraft, 2001; Sussman, Daynes, & West 2002). Far less common are community-level studies (e.g., Crenson, 1971; Molotch, 1970; Beamish, 2002). Such local-level research consists mostly of case studies that are conducted over different time periods and that often suffer from limited comparability and generalizability. As a result, we know little about what causes variation in the mobilization and outcomes of the environmental movement across U.S. communities.

We begin to address this situation by pursuing a comparative research agenda grounded within social movement scholarship. In recent years, most social movement scholars agree that the emergence, trajectory, and outcomes of a movement are influenced by the structure and dynamics of its political environment. This is evident by the centrality of the Political Opportunity Structure (POS) concept within social movement theorizing (e.g., McAdam, McCarthy, & Zald, 1996; Klandermans, 1997; Tarrow, 1998; Morris, 2000; Meyer, 2004; Meyer & Minkoff, 2004). In another paper (McCright & Clark, 2005), we perform a nearly comprehensive review of the POS literature to identify the entire conceptual domain of the POS. In this chapter, we utilize these insights to examine how the political characteristics

of communities explain variation in the mobilization and outcomes of the American environmental movement.

In the process, we accomplish three objectives. First, we introduce our own typology – a basic accounting scheme (illustrated in Fig. 1) – to codify and integrate the entire POS conceptual domain. We demonstrate how this typology may be used to compare the scope of existing POS conceptualizations. Indeed, this typology helps us better identify the relevant non-institutional aspects of a social movement’s political environment that are often overlooked by a rigid definition of the POS concept that equates the POS solely with institutional, state-based variables. Second, we utilize this typology to explain variation in the mobilization and outcomes of the environmental movement across American communities by reference to

		Political System Channel		
		Institutional	Elite	Noninstitutional
Field of Interaction	Ally	<p>A</p> <p>mobilization and outcomes of Democratic party</p>	<p>B</p> <p>presence of a Democratic mayor</p>	<p>C</p> <p>mobilization and outcomes of civil rights, women’s rights, and gay and lesbian rights movements</p>
	Neutral	<p>D</p> <p>state strength; mayor/council structure; mayor’s political party strength</p>	<p>E</p> <p>mayor’s unpopular positions; spending preferences; implementation of preferences; divided elites</p>	<p>F</p> <p>mobilization and outcomes of individual citizens</p>
	Opponent	<p>G</p> <p>mobilization and outcomes of Republican party</p>	<p>H</p> <p>social conservatism of mayor</p>	<p>I</p> <p>mobilization and outcomes of business groups, taxpayer groups, and the elderly</p>

Fig. 1. A Typology of the POS Concept: Operationalizations for the Environmental Movement.

differences in the institutional and non-institutional characteristics of political power. In the movement literature, most past studies have focused on only one dimension of the POS, often at the national level. This chapter is a first attempt at a more subtle analysis of multiple dimensions of the POS at the community level – a level of analysis that has been understudied but that offers rich variability on key variables.

Third, we introduce a novel data set for movement research. We utilize U.S. Census Bureau information and a 1996 Fiscal Austerity and Urban Innovation (FAUI) survey of U.S. mayors to analyze the mobilization and outcomes of the environmental movement in 257 large American communities. We are fortunate to have a more detailed survey analysis of a large number of localities than most past studies. To summarize, we introduce a new conceptual typology of the POS and adjudicate which dimensions of the local POS matter most in explaining mobilization and outcomes of the environmental movement in 257 large American communities. In other words, with which characteristics of the political context is the environmental movement more or less ambitious, active, politically successful, and efficient?

POLITICAL OPPORTUNITY STRUCTURES

In another paper (McCright & Clark, 2005), we perform a nearly comprehensive review of the POS literature to identify the entire conceptual domain of the POS concept. Our goal in that paper is to conceptualize and operationalize the relevant *dimensions* of the POS. We briefly summarize key ideas from that paper before introducing our own typology of the POS concept as an illustrative accounting scheme.

Our review of the POS literature covers almost all existing works offering a distinct conceptualization of the POS (Eisinger, 1973; Amenta & Zylan, 1991; Brockett, 1991; Kriesi, Koopmans, Dyvendak, & Giugni, 1992; Kriesi, Koopmans, Dyvendak, & Giugni, 1995; Tarrow, 1994, 1996, 1998; Kriesi, 1995, 1996; Diani, 1996; McAdam, 1996; Rucht, 1996; Klandermans, 1997; Meyer, 2004; Meyer & Minkoff, 2004). In that paper, we create a relatively comprehensive list of nine distinct but related dimensions of the POS concept in the literature. We discuss each dimension briefly before introducing our own conceptual typology that may serve as a useful rubric for organizing these dimensions.

One dimension is the *formal governance structure*, or the organizational characteristics of the state. This includes the relatively invariant aspects of

the state, such as the structure of the electoral system (e.g., winner-take-all vs. proportional representation elections) and the separation of powers among different state branches. A second dimension is the *informal practices of state agents* that are often institutionalized. These include typically routinized strategies that state agents utilize with respect to movement actors (see Amenta & Zylan, 1991; Clemens, 1997). A third dimension is *access to the polity* or openness of political input structures (Kitschelt, 1986; Kriesi, 1995, 1996). This includes the degree to which the institutionalized political system (the formal state structure and political party representation system) is meaningfully open or responsive to non-institutional actors. A fourth POS dimension is *state strength*, especially the strength of political output structures (Kitschelt, 1986; Kriesi, 1995, 1996). State strength, or policy implementation capacity (Rucht, 1996, p. 190), is the ability of state agents to carry out official state policies, even in the face of resistance.

State repression and facilitation is a fifth POS dimension. Charles Tilly (1978, p. 100) is credited with the initial emphasis on this dimension, defining repression as that “which raises the contender’s costs of collective action” and facilitation as that “which lowers the group’s costs of collective action.” Research on this dimension has witnessed an explosion in recent years with the publication of numerous works on policing behavior (e.g., della Porta & Reiter, 1998; McCarthy & McPhail, 1998). A sixth dimension is the presence and availability of *influential allies*. Scholars refer here to elites who are potentially efficacious within the institutionalized political system. The presence of such influential elites is likely to provide a movement with a powerful voice within the political system. A seventh POS dimension is the existence of *divided elites*. With this, scholars emphasize the conflict within and among elites in the institutionalized political system. Such a cleavage signals a vulnerability upon which movement actors may try to capitalize. *Shifting alignments* of elites is the eighth dimension. This includes the short-term and longer-term effects of the stability or instability of elite alignments within the institutionalized political system – for example, the effects of a “realigning election” (Asher, 1976).

The final POS dimension is the *configuration of power* that characterizes the combination of actors inside but mostly outside of the institutionalized political system (e.g., movements, interest groups, business organizations, political parties, etc.). The fields of interaction for a given movement include both its alliance system and conflict system. The alliance system of a movement consists of all those individuals, groups, and organizations that provide some sort of support for the movement, while the conflict system consists of all those that oppose or challenge the movement.

We now introduce our typology to integrate and codify these various dimensions of the abstract POS concept. Our objective is to create an accounting scheme that reminds scholars about often overlooked components of a movement's political environment. In addition, we anticipate that this conceptual typology may aid in adjudicating which POS dimensions or which components of which POS dimensions matter most in explaining the mobilization and outcomes of social movements.

To create our conceptual typology, we intersect two characteristics of a movement's political environment: the "field of interaction" of political actors and the specific "political system channel" in which the actors operate – that is, the distinction between institutional and non-institutional power and politics.¹ We divide the field of interaction characteristic into three categories: allies, neutrals, and opponents. Drawing upon Rucht's (1996) ideas, allies are those actors or features of the political environment that provide support for the movement, while opponents are those that oppose the movement. Neutrals are those individuals, groups, and organizations or other features of the political environment that may have no organized a priori stance toward a movement. That is, they are most likely just bystanders, which nonetheless still compete with the movement for scarce organizational resources, personnel, public support, and governmental attention.

We also divide the political system channel characteristic into three categories: institutional, elite, and non-institutional. The first category represents those traditional political channels or institutional features of the political system, while the third category represents non-traditional or extra-institutional features of the political system. The remaining category (elite) is reserved for what is normally conceptualized as elite phenomena in the social movement literature. In reality, the activities of elites may overlap with institutional and non-institutional features of the political system.

We combine the three categories of both characteristics to form a ninefold map of the entire POS conceptual space. In Fig. 1, we illustrate our POS conceptual typology and provide an operationalization of each of the nine cells using variables from our study. As discussed earlier, our typology highlights non-state POS dimensions that are typically ignored in most POS studies. Indeed, five cells in Fig. 1(A, C, F, G, I) represent non-state POS elements. A and G are institutional non-state elements, while C, F, and I are non-institutional non-state features.

We offer this conceptual typology as a general accounting scheme. As such, the nine POS dimensions we identified in our earlier literature review do not map perfectly into the nine cells of our conceptual typology, and this

was never our intention. Multiple POS dimensions may occupy the same cell. The *formal governance structure* and *state strength* dimensions are found within cell D, while the *informal practices of state agents* and *access to polity* dimensions are found within cells C, F, and I. Cells D and E contain the *state repression and facilitation* dimension. The *influential allies* dimension is found within cell B. While the *divided elites* dimension consists of the interaction of phenomena in cells B and H, we nonetheless locate it within cell E for the sake of simplicity. Cells B, E, and H contain the *shifting alignments* dimensions. Finally, the *configuration of power* dimension is found within cells A, C, G, and I, with the former two representing the alliance system and the latter two representing the conflict system.

We believe that this typology may serve as an effective tool for fruitful POS research in the future. While the substantive content of each cell may vary across movements, the general structure of the typology should not. As such, this typology may facilitate much-needed comparative research involving multiple movements. Our objective in this chapter is to examine the relative importance of general features of a movement's political environment. For the sake of space, we focus on two specific aspects. First, this typology allows us to better identify the relative importance of allies and opponents. For instance, when explaining movement mobilization and outcomes, is it more important to have strong allies or weak opponents? Second, this typology also allows us to better identify the relative importance of institutional factors and non-institutional factors. For instance, when explaining movement mobilization and outcomes, do institutional factors matter more than non-institutional factors or vice versa?

A BRIEF NOTE ON KEY MOVEMENT VARIABLES

We examine the effects of variables from each of these nine cells in our typology on two general movement characteristics: mobilization and outcomes. Prior to our discussion of our methodology, we briefly discuss the conceptualization and operationalization of these two characteristics.

An examination of the literature on mobilization and mobilizing structures reveals that three related dimensions are deemed important: (1) style of organized mobilization (e.g., formal organization, diffuse network, or *ad hoc* group); (2) extent of organized mobilization (e.g., budget and membership totals; public accounts of activities); and (3) type of mobilized activity from a repertoire of contention (e.g., boycott, petition, march, or sit-in).

We examine two features of the *extent* of movement mobilization: ambitiousness (or the extent of a movement's budgetary preferences) and activity level (or how active a movement is in achieving these preferences). For both, we utilize perceived measures from surveys of mayors in our sample of U.S. cities.² In our case, these subjective measures are the most consistent indicators across the many cities we study. Also, we believe that the mayor's perception is as important as what the movement actors "actually" do – at least for evaluating the local political impact – as this city official has intimate knowledge of those most closely involved with the policy decision-making process and is the person actually making the decision.

Potential movement outcomes include impacts on: non-organized citizens (e.g., shift in public opinion); organizations (e.g., institutionalization of social movement organizations or SMOs); government (e.g., creation of government agencies); individuals (e.g., creation of activist career trajectories; political socialization); and culture (e.g., changes in political culture). We focus primarily on one narrow range of outcomes: impacts on government policy. We acknowledge the arbitrariness of focusing on policy outcomes. This does not imply that movements are only oriented toward provoking political change (Giugni, 1998), as we demonstrate in our introduction.

We follow Paul Burstein, Rachel Einwohner, and Jocelyn Hollander (1995) in their utilization of Paul Schumaker's (1975) original framework that a movement's outcome can be defined in terms of a political system's responsiveness. Schumaker conceptualizes five stages of political system responsiveness: (1) *access responsiveness*, the willingness of the target to hear the concerns of the movement; (2) *agenda responsiveness*, the target's willingness to place the movement's demands on the political agenda; (3) *policy responsiveness*, the target's adoption of new policies (particularly legislation) congruent with the manifest demands of the movement; (4) *output responsiveness*, the target's effective implementation of its new policies; and (5) *impact responsiveness*, the extent to which this political system activity actually succeeds in alleviating the original grievances of the movement.

Burstein, Einwohner, and Hollander (1995, p. 285) and Burstein and Linton (2002, p. 400) argue that most studies examine policy responsiveness while few analyze access and agenda responsiveness. This is troubling since Thomas Rochon and Daniel Mazmanian (1993) argue that gaining such participation in the policy process itself may even be more important than having an effect on a specific policy, since such access legitimates a group's interests and enables potential influence in future policy issues.

Thus, we examine two features of the extent of movement success: governmental responsiveness (an amalgam of access and agenda responsiveness)

and efficiency.³ The former is a measure of how responsive a municipality is to a movement's budgetary preferences, and the latter is simply a ratio of the movement's responsiveness to its activity level. We argue that efficiency is an important movement outcome since a movement that can realize a noticeable impact with little resource consumption (i.e., high efficiency) may be more competitive at a later date than a movement that is forced to utilize almost all its resources for perhaps a similar level of impact (i.e., lower efficiency).

THE STUDY

In this section, we briefly describe relevant details of our methodology, especially data sources, key variables, and statistical techniques. More elaborate information regarding our data and operationalization of our variables is located in the methodological appendix (Appendix A).

Our data come from two sources: (1) the FAUI Project and (2) the U.S. Census Bureau. The main unit of analysis is a U.S. municipality, and the target population includes every U.S. city with a population over 25,000 in either 1983 or 1996. Most of our variables come from the FAUI Project coordinated by Terry Nichols Clark at the University of Chicago. The FAUI Project was initiated in 1982 as a comprehensive, longitudinal analysis of municipal politics and policy-making in the United States and thirty-five other countries. To date, there are two waves of U.S. FAUI survey data (in 1983 and 1996). In each year, the mayor, a city council member, and chief administrative officer in every city in the target population were mailed a similar self-administered questionnaire. In this chapter, we only utilize data from the 1996 FAUI mayor's survey – which had a response rate of approximately 22% (257 of 1,184 cities) – since this wave contains all four of the necessary items for the environmental movement.⁴ Data for our socio-demographic and economic variables come from the 1994 County and City Data Books published by the U.S. Census Bureau.

As stated earlier, we utilize two variables to measure the extent of the environmental movement's mobilization from the 1996 FAUI mayor's survey: *ambitiousness* and *activity level*. The former is the extent of the movement's budgetary preferences, while the latter is an estimate of how active the movement was in achieving these preferences. We also utilize two variables to measure the environmental movement's outcomes from the 1996 FAUI mayor's survey: *governmental responsiveness* and *efficiency*. The former indicates how responsive a municipality has been to the movement's

budgetary preferences, and the latter is simply a ratio of the environmental movement's responsiveness to its activity level.

We also include three measures of mobilization potential for the environmental movement. According to Klandermans (1997, p. 16), the mobilization potential of a movement includes all citizens who could potentially be mobilized by that movement. According to many new social movements theorists (e.g., Kriesi, 1989; Kitschelt, 1990), the mobilization potential of the environmental movement draws heavily from the "new class:" that segment of society containing young, college-educated adults who largely work in the white collar or service sectors. Three variables were extracted from the 1994 County and City Data Book. *Percent young* is the percent of adults aged 18–34 in the municipality in 1990. *Percent with college degree* is the percent of adults aged 25 or older with a college degree in the municipality in 1990. *Percent in white collar/service sector* is the percent of adults in a municipality employed in the white collar/service sector in 1990.

We now briefly discuss each of our key POS variables – all of which are derived from the 1996 FAUI mayor's survey. We discuss these according to the POS dimensions we identified in our previous literature review. We utilize operationalizations for seven of these nine POS dimensions, each of which is located in its appropriate cell in Fig. 1.

For the formal governance structure dimension, we utilize the *mayor/council structure*, a dummy variable coded for the presence of a mayor and city council. For the informal practices of state agents dimension, we utilize three measures: *responsiveness of three other movements*; *responsiveness of three interest groups*; and *responsiveness of individual citizens*. The first measure is the average responsiveness score for three other movements in the analysis: civil rights, women's rights, and gay and lesbian rights. The second measure in this dimension is the average responsiveness score for three interest groups, whose collective interests may be in conflict with the environmental movement in this study: taxpayer groups, business groups, and the elderly. The third measure in this dimension is the responsiveness score for individual citizens in the general public.

For the access to polity dimension, we utilize the *mayor's political party strength*. This composite measure gauges how strong local political parties are by averaging the scores on three items: how often mayors mentioned their party affiliation during their last campaign; how active their party was in that campaign; and how often mayors meet with local party officials. For the state strength dimension, we utilize four related variables. *State strength* is a composite measure comprising the average score for three items on the importance of professional staff members (as compared to elected officials)

in affecting overall city government spending, in allocating funds among departments, and in developing new fiscal management strategies in the last three years. *Mayor's unpopular positions* is a response to an item asking a mayor the frequency with which he or she took a position against the dominant opinion of his or her constituents. *Mayor's spending preferences* is the mayor's average spending preferences on thirteen budgetary areas ranging from primary and secondary education and mass transportation to fire protection and capital stock. *Mayor's implementation of preferences* is the average success that the mayor reports for implementing his or her spending preferences on the thirteen budgetary areas in the previous item.

We examine both influential allies and influential opponents for the influential allies dimension. While we do not have measures of specific elite allies and opponents in each municipality in our sample, we nonetheless have data on the political party preference and political ideology of the mayor, and these may serve as reasonable proxies. While the mayor in a town may not be classified as an "elite," he or she nonetheless occupies an extremely influential position and thus may facilitate or inhibit movement mobilization and outcomes. *Presence of democratic mayor*, a dichotomous variable for self-reported partisanship, is a reasonable indicator of an influential ally, while *social conservatism of mayor* is a proxy for an influential opponent. This latter variable is a composite measure that takes the mayor's average score on items asking him or her the extent of his or her agreement or disagreement with such salient social issues as gun control, busing, sex education, abortion, and government spending.

For the divided elites dimension, we created a *divided elite* variable, combining responses to the *presence of democratic mayor* and *social conservatism of mayor* variables. *Divided elite* is a dummy variable coded "1" for "a democratic mayor scoring higher than the median score (1.4167) on the mayor's social conservatism index" or "a non-democratic mayor scoring lower than the median score on the mayor's social conservatism index" and coded "0" for the rest of the cases.

Finally, for the configuration of power (alliance system and conflict system) dimension, we utilize numerous variables that are similar in form to ones described above. We have indicators for the mobilization and outcomes of both institutional allies (*ambitiousness of democratic party*; *activity level of democratic party*; *responsiveness of democratic party*; and *efficiency of democratic party*) and non-institutional allies (*ambitiousness of three other movements*; *activity level of three other movements*; *responsiveness of three other movements*; and *efficiency of three other movements*). We also have indicators for the mobilization and outcomes of both institutional opponents

(*ambitiousness of Republican Party*; *activity level of Republican Party*; *responsiveness of Republican Party*; and *efficiency of Republican Party*) and non-institutional opponents (*ambitiousness of three interest groups*; *activity level of three interest groups*; *responsiveness of three interest groups*; and *efficiency of three interest groups*).

We also utilize eight city-level socio-demographic and economic variables as controls in our regression models. Each of these variables comes from the 1994 County and City Data Book, and each allows us to tap into important social and economic features of a municipality. *Total population* is the natural log of a city's 1992 total population, and *percent population change* is the percent change in total population in a city from 1980 to 1992. *Population density* is the natural log of a city's 1992 total population per 1990 square miles, and *percent non-white* is the percent of non-white residents in a city in 1990. *Per capita income* is a city's 1990 per capita income in 1989 dollars, and *poverty rate* is the percent of persons in a city with income below the poverty level in 1989. *Unemployment rate* is a city's civilian labor force unemployment rate in 1990, and *manufacturing value-added* is the natural log of millions of dollars of value added by manufacture in a city in 1987.

We used SPSS 11.0 for Windows to perform all data management procedures (e.g., recoding and merging) and statistical analyses. To examine the effects of each of these operationalized measures of the POS, we performed a series of OLS regressions. For each of the four dependent variables, we report the results of twelve models in Appendices B, C, D, and E respectively: a mobilization model; nine simple POS models; a saturated model; and a best-fit model. In the following section, we only discuss the results of the best-fit model for each of the four dependent variables.

RESULTS AND DISCUSSION

As we stated in our introduction, scholars know little about what explains variation in the mobilization and outcomes of the environmental movement across American communities. We ask the following question: under what political conditions is the environmental movement more ambitious, active, politically successful, and efficient? Table 1 contains our best-fit models predicting variation in these four dependent variables. Prior to evaluating the evidence for effects of the operationalized measures of the POS, we comment briefly on the performance of the other variables in this study.

We first must mention that the predictive ability of our models varied considerably: from 21.5% for the ambitiousness model to 50.3% for the activity

Table 1. Best-Fit Models Predicting Four Characteristics of the Environmental Movement in 257 U.S. Communities.

	Ambitiousness	Activity Level	Governmental Responsiveness	Efficiency
Ambitiousness of environmental movement		0.406***		
Activity level of environmental movement			0.605***	
Ambitiousness of Democratic Party	0.141*			0.195***
Activity level of Democratic Party		0.162*		
Responsiveness of Democratic Party		-0.150*		
Efficiency of Democratic Party				0.135**
Presence of Democratic mayor			0.096**	0.182***
Ambitiousness of three other movements	0.313***	-0.187***		
Activity level of three other movements		0.500***	-0.174**	
Responsiveness of three other movements			0.426***	
Efficiency of three other movements				0.210***
State strength				
Mayor/council structure				
Mayor's political party strength				
Mayor's unpopular positions				
Mayor's spending preferences				
Mayor's implementation of preferences			0.081*	0.118*
Divided elite	0.148*			
Ambitiousness of individual citizens				
Activity level of individual citizens		0.122*	-0.097*	
Responsiveness of individual citizens	0.128*	0.136*	0.184***	
Efficiency of individual citizens				0.275***
Ambitiousness of Republican Party	-0.156**			

Table 1. (Continued)

	Ambitiousness	Activity Level	Governmental Responsiveness	Efficiency
Activity level of Republican Party				
Responsiveness of Republican Party				
Efficiency of Republican Party				
Social conservatism of mayor				
Ambitiousness of three interest groups				0.139*
Activity level of three interest groups				
Responsiveness of three interest groups				
Efficiency of three interest groups				
Adjusted R^2	0.215	0.503	0.695	0.225

Note: Entries are standardized coefficients.

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$ (two-tailed tests).

level model to 69.5% for the governmental responsiveness model to 22.5% for the efficiency model. All of this points to the need for better understanding movement dynamics and the effects of the political, social, and cultural contexts of movements – a topic to which we return in our conclusion.

Various European scholars (e.g., Kriesi, 1989; Kitschelt, 1990) argue that the socio-demographic bases of progressive movements since the 1960s (“new social movements” in their terms) reside within the “new class:” predominantly younger, college-educated adults with occupations in the white collar or service sectors. The percentage of these individuals in a city roughly represents the extent of the municipal mobilization potential for the movements in our sample.

None of the mobilization potential variables or socio-demographic and economic variables have a consistently significant effect on any of the four dependent variables (see Appendices B, C, D, and E). In other words, general indicators of the social and economic context of communities have no robust effect on these variables for the environmental movement. For instance, cities with a better educated populace or a greater percentage of its workforce in the service sector are no more likely to have an active

environmental movement than their respective counterparts. Thus, our results challenge the new class argument at least at the U.S. municipal level. While new class members might be more likely than other individuals to participate in progressive movements, the percentage of new class members in a U.S. city has no demonstrable influence on progressive movement mobilization and outcomes.

In contrast, two movement mobilization variables are relatively strong predictors of both environmental movement mobilization and outcomes. The environmental movement's ambitiousness has a positive effect on its activity level, and its activity level has a positive effect on its governmental responsiveness. That is, the more ambitious the environmental movement is in its municipal spending preferences, the greater its activity level in trying to achieve these spending levels. Also, the more active the environmental movement is, the more often that city officials responded favorably to its spending preferences. Indeed, the measure of the environmental movement's activity level had the largest standardized coefficient value in column three of [Table 1](#). This variable alone accounts for approximately 35% of the explained variance in governmental responsiveness. This strong effect for activity level signals a significant degree of fairness within local American politics, which supports a finding with earlier FAUI data ([Hajnal & Clark, 1998](#)).

We now evaluate the evidence for the effects of the operationalized measures of the POS. The ambitiousness of the environmental movement is influenced by the characteristics of institutional and non-institutional allies, elite and non-institutional neutrals, and institutional opponents in communities. The environmental movement is more ambitious in communities where institutional and non-institutional allies (the Democratic Party and three other progressive social movements respectively) are more ambitious and an institutional opponent (the Republican Party) is less ambitious. Also, the reported responsiveness of city officials to non-institutional neutrals (individual citizens) is positively related to environmental movement ambitiousness. The environmental movement is more ambitious in communities where public officials are more responsive to individual citizens. Finally, the environmental movement is more ambitious in cities with an elite in conflict (i.e., a socially conservative Democrat mayor or a socially liberal Republican mayor). This confirmed relationship gives some credence to the assertion that elites in conflict signal a vulnerability in the power structure upon which movements seek to capitalize.

The activity level of the environmental movement is influenced by the characteristics of institutional and non-institutional allies and non-institutional neutrals in communities. The environmental movement is more active in

communities where an institutional ally (the Democratic Party) is more active but achieves less governmental responsiveness. In other words, the environmental movement is more active where the Democratic Party works hard to accomplish its spending preferences but falls considerably short. Also, the environmental movement is more active in communities where non-institutional allies (three other progressive social movements) are more active but are less ambitious.

In other words, the environmental movement is more active where its progressive social movement allies are quite active but have lower spending preferences. This may indicate that environmental movement leaders realize that the budgets of city governments have a carrying capacity; thus, they strategically mobilize more in those communities where there is more slack in their carrying capacity because of reduced overall demands from the progressive social movement sector. This signals a competitive relationship among related movements from the same movement family. Indeed, our results support *della Porta and Rucht's* (1995, p. 235) assertion that the interactions among movements in a movement family "vary from a friendly attitude of cooperation to a more unfriendly attitude of competition." Finally, the environmental movement is more active in communities where non-institutional neutrals (individual citizens) are more active and achieve greater governmental responsiveness.

The governmental responsiveness achieved by the environmental movement is influenced by the characteristics of elite and non-institutional allies and elite and non-institutional neutrals in communities. The environmental movement achieves greater responsiveness in communities with a Democratic mayor. This makes intuitive sense, since Democratic politicians consistently demonstrate greater support for environmental policies than do Republican politicians (e.g., *Kamieniecki, 1995; Brown, 1997; Kraft, 2000, 2001; Switzer, 2001; Austin, 2002; McCright & Dunlap, 2003*). Furthermore, the environmental movement achieves greater responsiveness in communities where the mayor (independent of party affiliation) is more successful at implementing his or her own spending preferences. Finally, the environmental movement also achieves greater responsiveness in communities where non-institutional allies (three other progressive social movements) and non-institutional neutrals (individual citizens) achieve more responsiveness but are less active.

The efficiency (achieved governmental responsiveness divided by activity level) of the environmental movement is influenced by the characteristics of institutional, elite, and non-institutional allies, elite and non-institutional neutrals, and non-institutional opponents in communities. The environmental

movement is more efficient in communities where an institutional ally (the Democratic Party) is more ambitious and more efficient and where non-institutional allies (three other progressive social movements) are also more efficient. Further, the environmental movement is more efficient in communities with a Democratic mayor. Consistent with above, it makes sense that the presence of a Democratic mayor facilitates greater responsiveness per unit of activity level. Moreover, the environmental movement is more efficient in communities where the mayor (independent of party affiliation) is more successful at implementing his or her own spending preferences. Finally, the environmental movement is more efficient in communities where non-institutional neutrals (individual citizens) are more efficient and where non-institutional opponents (three interest groups) are more ambitious).

Earlier in this chapter, we noted that our conceptual typology allows us to adjudicate between the relative importance of allies or opponents and between the relative importance of institutional or non-institutional factors. In other words, when explaining movement mobilization and outcomes, is it more important to have strong allies or weak opponents? Also, do institutional factors matter more than non-institutional factors or vice versa? We answer these two questions by discussing [Table 2](#), which displays the percent of adjusted R^2 in our four best-fit models that is explained by the nine cells in our POS conceptual typology.

The results in [Table 2](#) demonstrate that the characteristics of allies are more important for environmental movement mobilization and outcomes than are the characteristics of opponents. Indeed, variables in the three opponent cells of the typology only account for approximately 10% of the explained variance of environmental movement ambitiousness and approximately 4% of the explained variance of environmental movement efficiency. On the other hand, variables in the three ally cells of the typology account for a significant percentage of the explained variance for each of the four best-fit models: approximately 71% of ambitiousness; 54% of activity level; 47% of responsiveness; and 51% of efficiency. Thus, it seems more important for the environmental movement to have strong friends rather than weak enemies.

Also the results in [Table 2](#) demonstrate that the characteristics of non-institutional actors are more important for environmental movement mobilization and outcomes than are the characteristics of institutional actors. Variables in the three institutional cells of the typology account for no more than a quarter of the explained variance in any of the four models: 26% of ambitiousness; 16% of activity level; and 19% of efficiency. On the other hand, variables in the three non-institutional cells of the typology account

Table 2. Percent of Adjusted R^2 in the Best-Fit Models Explained by the Nine Cells in Our POS Conceptual Typology.

	Ambitiousness	Activity Level	Governmental Responsiveness	Efficiency
A. Institutional Ally	16.28	15.91	0.00	19.02
B. Elite Ally	0.00	0.00	5.62	9.13
C. Non-institutional Ally	54.35	37.92	41.48	22.81
D. Institutional Neutral	0.00	0.00	0.00	0.00
E. Elite Neutral	12.56	0.00	1.02	15.21
F. Non-institutional Neutral	6.98	30.36	18.50	29.66
G. Institutional Opponent	9.83	0.00	0.00	0.00
H. Elite Opponent	0.00	0.00	0.00	0.00
I. Non-institutional Opponent	0.00	0.00	0.00	4.18
Ally/Neutral/Opponent				
Ally cells	70.63	53.83	47.10	50.96
Neutral cells	19.54	30.36	19.52	44.87
Opponent cells	9.83	0	0	4.18
Institutional/Elite/Non-institutional				
Institutional cells	26.11	15.91	0.00	19.02
Elite cells	12.56	0	6.64	24.34
Non-institutional cells	61.33	68.28	59.98	56.65

Note: The percents in the “Activity Level” and “Governmental Responsiveness” columns do not total 100 since movement mobilization variables account for some adjusted R^2 .

for the lion’s share of the explained variance for each of the four best-fit models: approximately 61% of ambitiousness; 68% of activity level; 60% of responsiveness; and 57% of efficiency. Thus, non-institutional political factors are more powerful predictors of environmental movement mobilization and outcomes than are institutional political factors. This is a significant finding given that most conceptualizations of the POS focus almost exclusively on formal, institutional features of the state. These results support our claim that we ought to pay more attention in our theorizing and empirical research to non-institutional features of a movement’s political environment.

CONCLUSION

As we stated in our introduction, most scholarship on the American environmental movement has been performed at the national level. Furthermore, existing work at the community level often suffers from limited comparability and generalizability. As a result, we know little about what causes variation in the mobilization and outcomes of the environmental movement across American communities. We begin to address these weaknesses by focusing specifically on the significance of political characteristics of communities in explaining this variation.

In the process, we accomplish three objectives. First, we introduce our own typology of the POS concept as a basic accounting scheme. This typology helps us better identify the relevant non-institutional aspects of a social movement's political environment that are often overlooked by a rigid definition of the POS concept that equates the POS solely with institutional, state-based variables. Second, we utilize this typology to adjudicate between the significance of ally and opponent factors and between institutional and non-institutional characteristics of political power. Third, we introduce a novel data set for social movement research. We utilize U.S. Census Bureau information and a 1996 FAUI survey of U.S. mayors to analyze the mobilization and outcomes of the environmental movement in 257 large American communities.

We briefly highlight a couple robust findings that emerged from our analyses. First, non-institutional political factors are more powerful predictors of environmental movement mobilization and outcomes than are institutional political factors. Stated simplistically, the environmental movement mobilized in large American communities mostly independent of formal and informal state characteristics. This is an important finding since non-state POS dimensions are typically understudied in existing research given the overriding emphasis on formal state characteristics. Thus, future POS research should not continue to neglect these crucial non-state POS dimensions. Second, the characteristics of allies have a more significant effect on environmental movement mobilization and outcomes than do the characteristics of opponents. Stated simplistically, it appears more important for the environmental movement to have strong allies than weak opponents – especially as far as non-institutional actors go.

As we stated at the beginning of our results section, the predictive ability of our models varied considerably, and even the best model leaves a significant amount of variance unexplained. Thus, our future work should

focus on better understanding both internal movement dynamics and the characteristics of a movement's external environment, and the interaction between the two. In this chapter, we merely utilized measures of the quantity of a movement's mobilization (i.e., the *extent* of a movement's ambitiousness and activity level). In future research, we also need to address the *quality* of movement mobilization.

For example, we should take into consideration the style of organized mobilization (e.g., formal organization, diffuse network, or ad hoc group) and the type of mobilized activity from a repertoire of contention (e.g., boycott, petition, march, or sit-in). We need to examine what factors explain which styles and types are utilized by the environmental movement and also what consequences these styles and types have for outcomes. How have forms/styles/repertoires of environmental movement participation changed over the years, if at all, and why? We also need to better understand leadership characteristics and their relations with the motivations of rank-and-file members within the environmental movement. Furthermore, we need to better understand the purposive decisions that environmental movement members make in framing the issues salient for their movement, especially when these issues are closely related to those addressed by allied and opposition movements.

Our primary emphasis in this chapter was the local political milieu in which the environmental movement operates. Yet, other elements of this movement's external environment are crucial to understanding its emergence, trajectory, and outcomes. We adopt Dieter Rucht's (1996) tripartite distinction of the political, social, and cultural dimensions of the overall contextual structure. Not only is each an important part of the environmental movement's external environment, but their key causal influences come from their dynamic interactions. This allows a more complete account of environmental movement dynamics. Yet, we must not forget that this movement can have powerful direct and indirect impacts on its political, social, and cultural settings. Thus, while our primary emphasis is on understanding the contextual influences on the environmental movement, we also hope to better explain the effects of this movement on its environment.

While this chapter examined the political structure in-depth, more work needs to be done in this area. For instance, we still only have a rudimentary understanding of the relationship between the environmental movement and major political parties (and institutional politics more generally). This lacuna grows even more significant given considerable emphasis that some scholars now put on understanding the common ideological underpinnings of movements and political parties (see, e.g., Zald, 2000). Furthermore, we

also need to better understand how different movements can have enduring effects on the state as well as on the activities of other (institutional and non-institutional) political actors.

Future work should also examine the social context in which the environmental movement operates. Much existing movement research largely ignores the social setting. We feel that theoretical work and empirical research on citizen participants and the general public has been dormant for too long. It is our intention to reinvigorate this area. So, we ask several questions. What is the role of agency in movement phenomena? What are the roles of the general public vis-à-vis movements? When and where is public opinion, and other forms of public support, crucial for movement mobilization, maintenance, and success? What effects do citizens have on movements and vice versa – especially regarding the belief structures of citizens?

Finally, we need to better understand the cultural context in which the environmental movement resides. Almost all existing movement research on cultural phenomena deals exclusively with the framing processes of movement actors. The framing literature is quite robust, yet we point to a few important questions in need of systematic examination. How does framing affect movement adherents, participants, and the general public – typically, as channeled by the media? And, conversely, how do movement adherents, participants, and the general public impact framing processes within and across movements?

We also argue that it is prudent to take a step back from the specific claims and general frames promoted by movements and examine the cultural context that both constrains and facilitates the creation and utilization of various claims and frames by movement activists, the general public, and state. The cultural material most relevant to movement framing processes includes the extant stock of meanings, beliefs, ideologies, practices, values, myths, and narratives – which constitute the cultural resource base from which new cultural elements, such as innovative collective action frames, are fashioned as well as the lens through which framings are interpreted and evaluated. To this end, future work should examine the effects of the dynamic, yet enduring political culture(s) regularly examined by political scientists.

NOTES

1. Indeed, Klandermans, Staggenborg, and Tarrow (2002, p. 335) note, “the social movement field is based on the recognition of the boundary between institutionalized and non-institutionalized politics.”

2. See Hajnal and Clark (1998, pp. 229–230) for a justification of these subjective measures as well as a discussion of their limitations.

3. See Hajnal and Clark (1998, pp. 233–235) for a discussion of the efficiency measure.

4. Additional FAUI project documentation can be found in Clark (1994, 2003), Clark and Rempel (1997), Clark and Hoffman-Martinot (1998), and Clark and Lipset (2001), or by contacting the authors.

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APPENDIX A. METHODOLOGICAL APPENDIX

Variable	Operationalization	Metric of original item	Mean	S.D.
Environmental movement mobilization variables – Source: 1996 Mayor’s FAUI Survey				
envamb	<i>Ambitiousness</i> : “Please indicate your judgment about the spending preferences of several participants in city government. Does the participant want to:”	1 = spend a lot less on services provided by the city 5 = spend a lot more	3.43	0.73
envact	<i>Activity level</i> : “Please indicate how active the participant has been in pursuing this spending preference. Has the participant carried on:”	1 = no activity 5 = the most activity of any participant	2.07	1.13
Environmental movement outcome variables – Source: 1996 Mayor’s FAUI Survey				
envres	<i>Governmental responsiveness</i> : “Please indicate how often the city government responded favorably to the spending preferences of the participant in the last three years. The city has responded favorably:”	1 = almost never 5 = almost all the time	1.96	1.18
enveff	<i>Efficiency</i> : equals responsiveness score (envres) divided by activity level score (envact)	0.20 = lowest possible value 5 = highest possible value	1.00	0.44
Mobilization potential variables – Source: 1994 County and City Data Book				
pctyoung	<i>Percent young</i> : 1990 percent of adults aged 18–34	14.90 = lowest score 77.90 = highest score	30.33	6.71

APPENDIX A. (Continued)

Variable	Operationalization	Metric of original item	Mean	S.D.
pctcollgd	<i>Percent with college degree:</i> 1990 percent of adults aged 25+ with a college degree	1.60 = lowest score 71.20 = highest score	22.51	11.27
pctwtser	<i>Percent in white collar/service sector:</i> 1990 percent of adults employed in white collar/service sector	6.20 = lowest score 42.50 = highest score	20.60	4.53
Political opportunity structure variables – Source: 1996 Mayor’s FAUI Survey				
Institutional ally dimension				
demamb	<i>Ambitiousness of Democratic Party:</i> “Please indicate your judgment about the spending preferences of several participants in city government. Does the participant want to:”	1 = spend a lot less on services provided by the city 5 = spend a lot more	3.19	0.65
demact	<i>Activity level of Democratic Party:</i> “Please indicate how active the participant has been in pursuing this spending preference. Has the participant carried on:”	1 = no activity 5 = the most activity of any participant	1.77	1.11
demres	<i>Responsiveness of Democratic Party:</i> “Please indicate how often the city government responded favorably to the spending preferences of the	1 = almost never 5 = almost all the time	1.66	1.14

demeff	<p>participant in the last three years. The city has responded favorably:" <i>Efficiency of Democratic Party:</i> equals "demres" divided by "demact"</p>	<p>0.20 = lowest possible score 5 = highest possible score</p>	1.00	0.46
Elite ally dimension				
maydem	<p><i>Presence of Democratic mayor:</i> "Although still are sometimes important. What political party, if any, do you identify with?" many cities have non-partisan elections, parties</p>	<p>0 = no 1 = democrat</p>	0.40	0.49
Non-institutional ally dimension				
mambenv	<p><i>Ambitiousness of three other movements:</i> "Please indicate your judgment about the spending preferences of several participants in city government. Does the participant want to:" ("mambenv" is the average ambitiousness score for the civil rights, women's rights, and gay and lesbian rights movements)</p>	<p>1 = spend a lot less on services provided by the city 5 = spend a lot more</p>	3.26	0.44
mactenv	<p><i>Activity level of three other movements:</i> "Please indicate how active the participant has been in pursuing this spending preference. Has the participant carried on:"</p>	<p>1 = no activity 5 = the most activity of any participant</p>	1.83	0.78
mresenv	<p><i>Responsiveness of three other movements:</i> "Please indicate how often the city government</p>	<p>1 = almost never 5 = almost all the time</p>	1.85	0.85

APPENDIX A. (Continued)

Variable	Operationalization	Metric of original item	Mean	S.D.
meffenv	<p>responded favorably to the spending preferences of the participant in the last three years. The city has responded favorably:"</p> <p><i>Efficiency of three other movements:</i> equals average responsiveness score for three other movements (mresenv) divided by average activity level score for three other movements (mactenv)</p>	<p>0.20 = lowest possible value 5 = highest possible value</p>	1.04	0.25
Institutional opponent dimension				
repamb	<p><i>Ambitiousness of Republican Party:</i> "Please indicate your judgment about the spending preferences of several participants in city government. Does the participant want to:"</p>	<p>1 = spend a lot less on services provided by the city 5 = spend a lot more</p>	2.68	0.69
repact	<p><i>Activity level of Republican Party:</i> "Please indicate how active the participant has been in pursuing this spending preference. Has the participant carried on:"</p>	<p>1 = no activity 5 = the most activity of any participant</p>	1.83	1.14
repres	<p><i>Responsiveness of Republican Party:</i> "Please indicate how often the city government responded favorably to the spending preferences of the</p>	<p>1 = almost never 5 = almost all the time</p>	1.66	1.12

	participant in the last three years. The city has responded favorably:"			
repeff	<i>Efficiency of Republican Party:</i> equals "repres" divided by "repact"	0.20 = lowest possible score 5 = highest possible score	0.96	0.38
Elite opponent dimension				
msoccon	<i>Social conservatism of mayor</i> is the average score for six items: "Would you favor or oppose a law which would require a person to obtain a police permit before he or she could buy a gun?" "In general, do you favor or oppose the busing of black and white school children from one school district to another?" "If a political leader helps people who need it, it doesn't matter that some of the rules are broken." "Would you be for or against sex education in public schools?" "Do you think abortions should be legal under any circumstances, legal only under certain circumstances, or never legal under any circumstances?" "Some U.S. Congressional Representatives say they will try to hold down government spending and taxes. Others say that Congress should pass social programs that would give more money to the poor, the aged, and to schools and	1 = favor/agree/for/any circumstance/hold down spending 2 = oppose/disagree/against/ never legal/ more social programs	1.44	0.13

APPENDIX A. (Continued)

Variable	Operationalization	Metric of original item	Mean	S.D.
	the like. Which position do you agree with more – holding down taxes and spending or spending more money for social programs?			
	Non-institutional opponent dimension			
intgpamb	<i>Ambitiousness of three interest groups</i> (taxpayer groups; business groups; the elderly): “Please indicate your judgment about the spending preferences of several participants in city government. Does the participant want to:”	1 = spend a lot less on services provided by the city 5 = spend a lot more	2.77	0.63
intgpact	<i>Activity level of three interest groups:</i> “Please indicate how active the participant has been in pursuing this spending preference. Has the participant carried on:”	1 = no activity 5 = the most activity of any participant	2.65	0.80
intgpres	<i>Responsiveness of three interest groups:</i> “Please indicate how often the city government responded favorably to the spending preferences of the participant in the last three years. The city has responded favorably:”	1 = almost never 5 = almost all the time	2.69	0.94
intgpeff	<i>Efficiency of three interest groups:</i> equals “intgpres” divided by “intgpact”	0.20 = lowest possible score 5 = highest possible score	1.09	0.39

Institutional neutral dimension

strngst	<i>State strength</i> is the average score for three items: “In the last three years, how important was the professional staff as compared to elected officials in: affecting the overall spending level of your city government; allocating funds among departments, developing new fiscal management strategies?”	1 = elected officials largely set level 5 = professional staff largely set level	3.32	0.91
maycoun	<i>Mayor/council structure</i> is a dummy variable for the form of government (coded by Terry N. Clark)	0 = no 1 = mayor/council structure	0.42	0.49
prtystng	<i>Mayor’s political party strength</i> is the average score for three items: “How often did you mention this party affiliation in your last campaign?” “How active was your party in your last campaign?” “Approximately how often do you meet with local party officials?”	1 = never/party not active in campaign/never 5 = almost always/party helped select and endorse me and was active in campaign/ several times a month	2.27	1.04
Elite neutral dimension				
munpop	<i>Mayor’s unpopular positions:</i> “Sometimes elected officials believe that they should take policy positions which are unpopular with the majority of their constituents. About how often would you estimate that you took a position	1 = never or almost never 5 = regularly	2.15	0.73

APPENDIX A. (Continued)

Variable	Operationalization	Metric of original item	Mean	S.D.
msprf	<p>against the dominant opinion of your constituents?"</p> <p><i>Mayor's spending preferences</i> is the average score for thirteen items: "Please indicate your own preferences about spending on: all areas of city government; primary/secondary education; social welfare; streets/parking; mass transportation; public health/hospitals; parks/recreation; low income housing; police protection; fire protection; capital stock; number of municipal employees; salaries of municipal employees"</p>	<p>1 = spend a lot less on services provided by the city</p> <p>5 = spend a lot more</p>	3.28	0.41
mimprf	<p><i>Mayor's implementation of preferences</i> is the average score for thirteen items: Please indicate how successful you have been in implementing your own spending preferences in this term of office: all areas of city government; primary/secondary education; social welfare; streets/parking; mass transportation; public health/hospitals; parks/recreation; low</p>	<p>1 = almost never</p> <p>5 = almost all the time</p>	3.43	0.66

divelite	income housing; police protection; fire protection; capital stock; number of municipal employees; salaries of municipal employees” <i>Divided elite</i> is a dummy variable for both socially conservative Democratic mayors and socially liberal non-Democratic mayors	0 = no 1 = (maydem = 0 AND msoccon < 1.4167) OR (maydem = 1 and msoccon > 1.4167)	0.50	0.50
Non-institutional neutral dimension				
indctamb	<i>Ambitiousness of individual citizens:</i> “Please indicate your judgment about the spending preferences of several participants in city government. Does the participant want to:”	1 = spend a lot less on services provided by the city 5 = spend a lot more	2.88	0.89
indctact	<i>Activity level of individual citizens:</i> “Please indicate how active the participant has been in pursuing this spending preference. Has the participant carried on:”	1 = no activity 5 = the most activity of any participant	2.71	0.98
indctres	<i>Responsiveness of individual citizens:</i> “Please indicate how often the city government responded favorably to the spending preferences of the participant in the last three years. The city has responded favorably:”	1 = almost never 5 = almost all the time	2.90	1.13
indcteff	<i>Efficiency of individual citizens:</i> equals responsiveness score (e.g., indctres) divided by activity level score (e.g., indctact)	0.20 = lowest possible value 5 = highest possible value	1.14	0.49

APPENDIX A. (Continued)

Variable	Operationalization	Metric of original item	Mean	S.D.
Socio-demographic and economic variables – Source: 1994 County and City Data Book				
nlpop92	<i>Total population</i> : natural log of 1992 total population	9.94 = lowest score 15.81 = highest score	10.99	0.76
pctc8092	<i>Percent population change</i> : percent change in total population from 1980 to 1992	–30.40 = lowest score 587.70 = highest score	20.91	43.54
nlpopdns	<i>Population density</i> : natural log of 1992 total population per 1990 square miles	2.40 = lowest score 10.87 = highest score	8.00	0.71
pctnowht	<i>Percent non-white</i> : 1990 percent non-white	0.01 = lowest score 0.98 = highest score	21.00	17.14
avginc	<i>Per capita income</i> : 1990 per capita income in 1989 dollars	5,561 = lowest score 55,463 = highest score	14766.17	4799.04
povrtyrt	<i>Poverty rate</i> : 1989 percent of persons with income below poverty level	1.10 = lowest score 46.10 = highest score	13.16	7.79
unempyrt	<i>Unemployment rate</i> : 1990 unemployment rate in civilian labor force	1.70 = lowest score 24.60 = highest score	6.45	2.69
nlvalman	<i>Manufacturing value-added</i> : natural log of 1987 value added by manufacture in millions of dollars	–6.91 = lowest score 10.11 = highest score	3.04	5.13

APPENDIX B. OLS REGRESSION MODELS PREDICING THE AMBITIOUSNESS OF THE ENVIRONMENTAL MOVEMENT IN 257 U.S. COMMUNITIES

Independent Variables	Mobilization Model	Model									Saturated Model	Best-Fit Model
		A	B	C	D	E	F	G	H	I		
Percent young	0.173	0.167	0.172	0.053	0.171	0.188	0.173	0.179	0.179	0.171	0.097	
Percent with college degree	0.010	-0.046	0.005	0.111	0.012	-0.027	0.014	-0.028	-0.005	0.001	-0.012	
Percent in white collar/service sector	-0.036	-0.023	-0.036	-0.080	-0.034	-0.050	-0.057	-0.028	-0.041	-0.052	-0.062	
Ambitiousness of Democratic Party		0.243***									0.153*	0.141*
Activity level of Democratic Party		-0.141									-0.132	
Responsiveness of Democratic Party		0.153									-0.015	
Presence of Democratic mayor			-0.049								-0.071	
Ambitiousness of three other movements				0.393***							0.387***	0.313***
Activity level of three other movements				-0.100							-0.103	
Responsiveness of three other movements				0.172								
State strength					0.013						-0.017	
Mayor/council structure					-0.001						0.026	
Mayor's political party strength					0.024						0.081	
Mayor's unpopular positions						0.045					-0.002	
Mayor's spending preferences						0.047					0.064	
Mayor's implementation of preferences						-0.041					-0.111	
Divided elite						0.176**					0.127*	0.148*
Ambitiousness of individual citizens							0.027				0.047	
Activity level of individual citizens							0.061				0.014	
Responsiveness of individual citizens							0.146*				0.132*	0.128*
Ambitiousness of Republican Party								-0.157*			-0.210**	-0.156**
Activity level of Republican Party								-0.010			-0.098	
Responsiveness of Republican Party								0.110			0.173	
Social conservatism of mayor									-0.111		-0.075	
Ambitiousness of three interest groups										-0.008	0.039	
Activity level of three interest groups										0.083	0.028	
Responsiveness of three interest groups										0.052	-0.049	
Total population	-0.017	-0.035	-0.016	-0.044	-0.016	-0.013	-0.032	-0.031	-0.013	-0.021	-0.063	
Percent population change	-0.153*	-0.130*	-0.157*	-0.136*	-0.150*	-0.159*	-0.154*	-0.146*	-0.154*	-0.149*	-0.128*	
Population density	-0.030	-0.043	-0.026	-0.015	-0.032	-0.038	-0.025	-0.044	-0.034	-0.039	-0.017	

APPENDIX B. (Continued)

Independent Variables	Mobilization Model	Model									Saturated Model	Best-Fit Model
		A	B	C	D	E	F	G	H	I		
Percent non-white	0.013	-0.010	0.023	-0.060	0.010	0.036	0.027	0.000	0.015	0.030	-0.059	
Per capita income	0.034	0.068	0.040	-0.054	0.032	0.061	0.013	0.056	0.033	0.028	0.037	
Poverty rate	-0.117	-0.057	-0.106	-0.170	-0.114	-0.110	-0.148	-0.073	-0.116	-0.104	-0.053	
Unemployment rate	-0.073	-0.105	-0.076	-0.052	-0.078	-0.072	-0.067	-0.111	-0.086	-0.105	-0.111	
Manufacturing value-added	-0.066	-0.056	-0.071	-0.057	-0.063	-0.082	-0.065	-0.062	-0.068	-0.066	-0.043	
Adjusted R^2	0.025	0.080	0.023	0.178	0.013	0.047	0.043	0.055	0.033	0.027	0.236	0.215

Note: Entries are standardized coefficients.

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$ (two-tailed tests).

APPENDIX C. OLS REGRESSION MODELS PREDICTING THE ACTIVITY LEVEL OF THE ENVIRONMENTAL MOVEMENT IN 257 U.S. COMMUNITIES

Independent Variables	Mobilization Model	Model									Saturated Model	Best-Fit Model
		A	B	C	D	E	F	G	H	I		
Percent young	0.016	-0.021	0.015	0.072	0.007	0.003	0.035	0.019	0.021	0.015	0.093	
Percent with college degree	0.096	0.160	0.091	-0.064	0.103	0.091	0.104	0.108	0.086	0.095	-0.038	
Percent in white collar/service sector	0.093	0.073	0.092	0.047	0.096	0.087	0.034	0.090	0.089	0.056	0.033	
Ambitiousness of environmental movement	0.447***	0.459***	0.444***	0.413***	0.446***	0.441***	0.396***	0.415***	0.438***	0.413***	0.397***	0.406***
Ambitiousness of Democratic Party		-0.096									-0.083	
Activity level of Democratic Party		0.341***									0.178*	0.162*
Responsiveness of Democratic Party		-0.133*									-0.120*	-0.150*
Presence of Democratic mayor			-0.054								-0.053	
Ambitiousness of three other movements				-0.203***							-0.157**	-0.187***
Activity level of three other movements				0.488***							0.395***	0.500***
Responsiveness of three other movements				0.104							0.128	
State strength					-0.008						0.005	
Mayor/council structure					-0.024						-0.009	
Mayor's political party strength					0.048						-0.024	
Mayor's unpopular positions						0.086					-0.012	
Mayor's spending preferences						-0.001					-0.057	
Mayor's implementation of preferences						-0.056					-0.088	
Divided elite						-0.003					-0.008	
Ambitiousness of individual citizens							-0.019				0.048	
Activity level of individual citizens							0.274***				0.118*	0.122*
Responsiveness of individual citizens							0.132*				0.121*	0.136*
Ambitiousness of Republican Party								-0.061			-0.092	
Activity level of Republican Party								0.267**			0.105	
Responsiveness of Republican Party								-0.072			-0.133	
Social conservatism of mayor									-0.075		0.046	
Ambitiousness of three interest groups										0.007	-0.006	
Activity level of three interest groups										0.129	0.031	
Responsiveness of three interest groups										0.174*	-0.018	
Total population	0.081	0.084	0.082	0.015	0.083	0.089	0.059	0.080	0.084	0.077	0.017	

APPENDIX C. (Continued)

Independent Variables	Mobilization Model	Model									Saturated Model	Best-Fit Model
		A	B	C	D	E	F	G	H	I		
Percent population change	0.079	0.078	0.074	0.056	0.080	0.087	0.065	0.076	0.077	0.078	0.044	
Population density	0.024	-0.029	0.029	-0.044	0.016	0.017	0.029	-0.011	0.021	0.007	-0.048	
Percent non-white	-0.164	-0.148	-0.152	-0.126	-0.169	-0.183	-0.135	-0.166	-0.162	-0.128	-0.125	
Per capita income	0.152	0.108	0.159	0.204	0.148	0.155	0.119	0.151	0.152	0.121	0.195	
Poverty rate	0.200	0.167	0.212	0.109	0.204	0.233	0.124	0.199	0.200	0.207	0.094	
Unemployment rate	0.131	0.149	0.127	0.059	0.126	0.127	0.156	0.137	0.121	0.059	0.118	
Manufacturing value-added	0.021	0.016	0.016	0.003	0.027	0.022	0.003	0.018	0.019	0.015	-0.015	
Adjusted R^2	0.224	0.300	0.224	0.466	0.217	0.221	0.341	0.273	0.227	0.289	0.507	0.503

Note: Entries are standardized coefficients.

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$ (two-tailed tests).

APPENDIX D. OLS REGRESSION MODELS PREDICTING GOVERNMENTAL RESPONSIVENESS TO THE ENVIRONMENTAL MOVEMENT IN 257 U.S. COMMUNITIES

Independent variables	Mobilization Model	Model									Saturated Model	Best-Fit Model
		A	B	C	D	E	F	G	H	I		
Percent young	0.053	0.026	0.055	0.078	0.049	0.059	0.044	0.012	0.056	0.051	0.073	
Percent with college degree	0.080	0.063	0.090	0.039	0.098	0.020	0.088	0.132	0.076	0.128	0.014	
Percent in white collar/service sector	0.038	0.020	0.038	0.023	0.035	0.029	0.025	0.021	0.036	0.027	0.025	
Ambitiousness of environmental movement	0.065	0.049	0.067	0.092*	0.064	0.048	0.060	0.059	0.062	0.073	0.062	
Activity level of environmental movement	0.683***	0.642***	0.691***	0.522***	0.680***	0.693***	0.628***	0.672***	0.680***	0.629***	0.554***	0.605***
Ambitiousness of Democratic Party		0.031									0.061	
Activity level of Democratic Party		-0.067									-0.039	
Responsiveness of Democratic Party		0.291***									0.158*	
presence of Democratic mayor			0.118**								0.096*	0.096**
Ambitiousness of three other movements				-0.071							-0.077	
Activity level of three other movements				-0.155*							-0.142*	-0.174**
Responsiveness of three other movements				0.507***							0.393***	0.426***
State strength					0.008						0.015	
Mayor/council structure					0.059						-0.008	
Mayor's political party strength					0.074						0.053	
Mayor's unpopular positions						0.008					-0.023	
Mayor's spending preferences						0.062					0.052	
Mayor's implementation of preferences						0.137**					0.083*	0.081*
Divided elite						0.062					0.054	
Ambitiousness of individual citizens							0.037				0.020	
Activity level of individual citizens							-0.107*				-0.099*	-0.097*
Responsiveness of individual citizens							0.261***				0.194***	0.184***
Ambitiousness of Republican Party								0.057			0.012	
Activity level of Republican Party								-0.048			-0.046	
Responsiveness of Republican Party								0.188**			-0.064	
Social conservatism of mayor									-0.038		0.003	
Ambitiousness of three interest groups										0.043	0.017	

APPENDIX D. (Continued)

Independent Variables	Mobilization Model	Model									Saturated Model	Best-Fit Model
		A	B	C	D	E	F	G	H	I		
Activity level of three interest groups											-0.077	-0.055
Responsiveness of three interest groups											0.038	-0.018
Total population	-0.047	-0.069	-0.051	-0.054	-0.045	-0.065	-0.075	-0.039	-0.046	-0.033	-0.103**	
Percent population change	0.007	0.035	0.017	0.019	0.021	0.008	0.005	0.011	0.006	0.064	0.024	
Population density	-0.013	-0.039	-0.024	-0.026	-0.021	0.000	0.002	-0.024	-0.014	-0.011	-0.021	
Percent non-white	-0.007	-0.007	-0.031	-0.009	-0.001	0.019	0.016	0.012	-0.007	-0.001	-0.002	
Per capita income	0.118	0.145	0.101	0.102	0.114	0.103	0.094	0.082	0.119	0.064	0.095	
Poverty rate	-0.019	0.009	-0.046	-0.053		-0.046	-0.035	-0.037	-0.018	-0.045	-0.088	
Unemployment rate	0.173*	0.141	0.179*	0.103	0.154*	0.146	0.164*	0.170*	0.169*	0.147	0.083	
Manufacturing value-added	0.022	0.030	0.034	0.000	0.029	0.021	0.037	0.020	0.021	0.011	0.038	
Adjusted R^2	0.556	0.611	0.567	0.668	0.561	0.580	0.606	0.575	0.556	0.591	0.713	0.695

Note: Entries are standardized coefficients.

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$ (two-tailed tests).

APPENDIX E. OLS REGRESSION MODELS PREDICTING THE EFFICIENCY OF THE ENVIRONMENTAL MOVEMENT IN 257 U.S. COMMUNITIES

Independent variables	Mobilization Model	Model									Saturated Model	Best-Fit Model
		A	B	C	D	E	F	G	H	I		
Percent young	0.029	0.052	0.033	0.023	0.021	0.045	-0.002	0.011	0.030	0.024	0.023	
Percent with college degree	0.116	0.011	0.133	0.144	0.147	0.105	0.132	0.126	0.115	0.151	0.079	
Percent in white collar/service sector	0.050	0.052	0.051	0.042	0.044	0.044	0.054	0.037	0.050	0.050	0.058	
Ambitiousness of environmental movement	-0.012	-0.072	-0.003	-0.041	-0.014	-0.025	-0.038	-0.006	-0.131	-0.017	-0.111	
Ambitiousness of Democratic Party		0.185***									0.233***	0.195***
Efficiency of Democratic Party		0.194**									0.167*	0.135**
Presence of Democratic mayor			0.190**								0.206***	0.182***
Ambitiousness of three other movements				0.025							-0.014	
Efficiency of three other movements				0.244***							0.178**	0.200***
State strength					-0.024						-0.020	
Mayor/council structure					0.077						0.012	
Mayor's political party strength					0.111						0.085	
Mayor's unpopular positions						-0.042					-0.046	
Mayor's spending preferences						0.089					0.075	
Mayor's implementation of preferences						0.191**					0.122*	0.118*
Divided elite						0.073					0.065	
Ambitiousness of individual citizens							0.117				0.039	
Efficiency of individual citizens								0.285***			0.274***	0.275***
Ambitiousness of Republican Party									0.077		0.036	

APPENDIX E. (Continued)

Independent Variables	Mobilization Model		Model									Saturated Model	Best-Fit Model		
			A	B	C	D	E	F	G	H	I				
Efficiency of Republican Party											0.132*		-0.013		
Social conservatism of mayor													0.003		
Ambitiousness of three interest groups													0.126*	0.124*	0.139*
Efficiency of three interest groups													0.114	-0.003	
Total population	-0.117	-0.141*	-0.122	-0.098	-0.115	-0.143*	-0.136*	-0.120	-0.117	-0.103	-0.150				
Percent population change	0.075	0.093	0.092	0.085	0.092	0.053	0.058	0.080	0.075	0.069	0.086				
Population density	-0.042	-0.068	-0.059	-0.028	-0.059	-0.022	-0.027	-0.039	-0.042	-0.034	-0.065				
Percent non-white	0.038	0.018	-0.003	0.052	0.049	0.077	0.051	0.054	0.038	0.031	0.030				
Per capita income	0.033	0.106	0.008	-0.018	0.026	0.017	0.013	0.018	0.033	-0.008	-0.002				
Poverty rate	-0.177	-0.102	-0.218	-0.182	-0.174	-0.225	-0.154	-0.185	-0.177	-0.215	-0.171				
Unemployment rate	0.250*	0.182	0.262*	0.192	0.224	0.219	0.206	0.235	0.248*	0.259*	0.096				
Manufacturing value-added	0.028	0.039	0.047	0.003	0.039	0.029	0.051	0.027	0.028	0.019	0.073				
Adjusted R^2	0.000	0.048	0.023	0.045	0.005	0.037	0.078	0.010	0.000	0.012	0.227			0.225	

Note: Entries are standardized coefficients.

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$ (two-tailed tests).

10. THE POLITICAL ECOLOGY OF PLAGUE IN THE GLOBAL NETWORK OF CITIES: THE SARS EPIDEMIC OF 2002–2003

Kent P. Schwirian

ABSTRACT

In the late autumn of 2002 Severe Acute Respiratory Syndrome (SARS) broke out in Foshan city in the People's Republic of China, and over the next few months it rapidly spread to every continent and 29 countries. Although plagues may be global events, they are ultimately fought at the local level. In discussing the SARS epidemic, I present two theses. (1) In the wake of a plague, politics tends to shape a community's response in protecting the system, evaluating performances and allocating blame, punishments, and rewards, and restructuring organizations. (2) Because of their potential for demographic and institutional destruction, systemic responses to plague tend to become entwined in politics at all levels – the local, national, and international.

INTRODUCTION

In the late autumn of 2002 Severe Acute Respiratory Syndrome (SARS), the first new plague of the twenty-first century, broke out in Foshan city of

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Guangdong Province in the People's Republic of China (PRC) (Chiu & Galbraith, 2004). Over the next few months SARS rapidly spread throughout China, leap-frogged to Hong Kong, and from there spread by global air to every continent and 29 countries. Along the way SARS infected more than 8,000 people and took at least 774 lives. One out of every two older persons who contracted the disease died. Additionally, it snarled global air traffic, cost billions of dollars, heightened political tensions, and brought home the message that cities in the global network are continually at risk for a serious microbe invasion riding along with the daily international exchanges of travelers, products, plants, and animals.

Although plagues are global biomedical and epidemiological events, they are fought ultimately at the local community level. It is in the local community that people fall ill and die. It also is in the local community that diagnoses are made, treatment regimes are established and implemented, and contagion is fought. Plagues typically overrun the normal capacity of community healthcare systems to respond, and without help from external expert systems such as the World Health Organization (WHO), local communities can suffer excessive casualties (Schwirian, 2005). The timely arrival of help from external agencies and organizations is not automatically assured because responses to outbreaks of plague often become tangled in the morass of national and international politics (Fidler, 2004). The WHO has taken on the role of being the chief agency that provides worldwide assistance to countries and communities as they battle overwhelming health crises. Nevertheless, WHO's ability to do its work depends on the willingness of national and local political regimes to request their assistance.

In this chapter, I examine plague from the theoretical perspective of political ecology. My methodological approach is the event/action model.¹ I discuss two theses. My first is that because of their potential for demographic and institutional destruction, systemic responses to plagues tend to become entwined in politics at all levels – local, national, and international. My second thesis is that in the wake of a plague, politics tends to shape a community's response in: (1) protecting the system, (2) evaluating performances and allocating blame, punishments, and rewards, and (3) restructuring organizations. By politics, I mean the social actions taken by individuals, groups, and organizations aimed to obtain and wield political power in order to achieve their goals, protect their position, and control their domains. Plague outbreaks are epidemiological events that quickly become a political event as well.

I examine these theses in case of the outbreak and spread of SARS in 2002–2003. In the following sections of this chapter, I first present an overview

of the growing threat of plagues in the global network of cities. Next, I discuss the political ecology framework and then provide an overview of the course of the SARS epidemic. Finally, I discuss SARS in terms of the two theses.

PLAGUES AND THE GLOBAL NETWORK OF CITIES

The Persistent Threat of Plagues

The 1950s and 1960s was a time of great optimism among public health researchers, medical experts, and government officials. At that time, it was thought that great scientific advances were being made in the field of war on contagious diseases including bubonic plague, malaria, smallpox, typhoid fever, infantile paralysis, and diphtheria. In 1967, William H. Stewart, the then Surgeon General of the United States, told in a White House meeting of state and territorial health officials that we were at a health transition point – the killer infectious diseases were now well controlled and it was time to shift the focus from them to the chronic diseases (Garrett, 1995).

It was widely believed that the victory over smallpox showed what was possible in the war with diseases when research, medical practice, government resources, and international cooperation joined forces. In fact, the World Health Assembly – the governing body of WHO – declared that the world was finally free from the scourge of smallpox (Thirty-Third World Health Assembly, 1980). Concerns over smallpox, though, have been revived recently as some have seen it as a possible agent of bioterrorism (Bollet, 2004). Nevertheless, in global public health circles it was thought that the victory over smallpox, as well as apparent victories over yellow fever, measles, and poliomyelitis, was a portent of things to come in the war against other serious diseases (Oldstone, 1998). That proved not to be the case.

In the last 30 years, 30 new killer plagues, for which there is no known cure, have been identified. Among these is AIDS, which has proven to be the worst pandemic ever faced by human beings (Klesius, 2002). Another 25 microbes that we thought were eradicated have returned in even more virulent forms (Federation of American Scientists, 2003). For example, tuberculosis (TB) has returned stronger than ever and has become linked with AIDS (Gandy & Zumla, 2003). Per year TB affects 8 million people and kills about one million. TB is now a leading cause of death in many parts of the world (DeAngelis & Flanagan, 2005).

Where did the new wave of plagues originate? Research has shown that a number of the old viruses have mutated and have returned with the force of

entirely new diseases. Second, new infections have spread from the natural and animal world to humans as formerly isolated ecosystems have increasingly been disrupted by human economic invasion and settlement expansion. Third, the migrations of people from rural areas to cities worldwide have resulted in fractures of fragile city ecosystems such that many have become potential victims to microbes accompanying city-bound migrants (DeSouza, Williams, & Meyerson, 2003; Noji, 2001).

Outbreaks of epidemics are not easy to predict, and they are often triggered by seemingly minor things. For example, the SARS outbreak in China in November 2002 resulted from a chef coming into contact with an infected exotic animal he was preparing for a restaurant meal. Similarly, the outbreak in Hong Kong resulted from a Chinese physician, who had been exposed to SARS in patients, coming to Hong Kong for a family wedding party, whom he had treated for a common “flu.” According to Malcomb Gladwell (2002), three rules seem to govern epidemics.

The first of Gladwell’s rules is *The Law of the Few*. By this is meant that only a few people are needed to spread an epidemic if they are well connected to others. This law builds on Stanley Milgram’s (1967) small-world research that has come to be popularly referred to as “six degrees of separation.” Milgram showed that most people are linked together by only a few steps in their social networks. It is not that each of us is related to everyone else through the six intermediaries, but that in the chains of these relationships we become connected to “funnels” or persons with much higher-than-average connectivity. They link together social networks that otherwise would remain separate from each other. It is through these people that our individual network connectivity is multiplied. In epidemiology terms, these funnels are referred to as “super spreaders.”

We saw this funnel or super spreader phenomenon in the SARS-infected Chinese physician who came to Hong Kong. He stayed for one night in the ninth floor of Kowloon’s Metropole Hotel. There his virus was contracted by 14 other people staying in the same hotel floor. In turn, by international air travel, the 14 brought SARS with them to several other cities in the global network. One of the 14 who contracted the disease from the physician was an airline flight attendant. She proved to be a super spreader. Over the course of the next few days, she single-handedly infected at least 100 other people and also earned the dubious distinction of being the person who brought SARS to Singapore.

In the spread of a disease throughout a social network and across social networks, the linkages among people need not be permanent. They may only be transitory or very brief; that is, just long enough for the virus or

bacteria to jump from one individual to the other. This form of connection between individuals has been called “weak social ties” by Mark Granovetter (1983), and has been argued to be very powerful in the spread of epidemics (Köhler, 2004). This weak-tie type of contact may take one of several forms, such as coughing or sneezing on another person, touching an infected person, touching a contaminated surface, or ingesting food or water contaminated by another. The variety of possible transmission modes makes contact tracing very difficult for public health researchers, especially with new diseases about which little is known (Kiss, Green, & Kao, 2005).

Gladwell’s second rule is *The Stickiness Factor*. By this is meant the length of time the disease stays with a person, and is contagious to others. The longer one is contagious, the larger the number of persons one may infect. SARS has a high-stickiness factor. Its incubation factor goes up to ten days. Within that time period, a well-connected person may infect many others. For example, on January 31 a man in Zhongshan, China who had been ill for several days was admitted to hospital in Guangzhou. During his short stay he infected 30 people in that hospital. He was then transferred to another hospital where in a matter of a couple of days he infected another 26 people. In addition, over the course of his illness he spread the disease to 19 family members. So, single-handedly, in a few week’s time, he spread SARS to at least 75 people. When the stickiness factor combines with the contact range of a super spreader, a lethal public health threat is created.

One such person in the early 1900s was “Typhoid Mary” Mallon. She was an Irish immigrant to the United States who worked as a cook in several New York households where as a typhoid carrier she infected dozens of people. Mallon became a major public health threat before she was quarantined for life after refusing to cooperate with health authorities and refrain from employment as a cook. Ironically, her last employment as a free person was at New York’s Sloan Hospital where she infected 25 people of whom two died (Leavitt, 1996). This was after she had already been quarantined for the first time and released. Disease carriers such as Mallon, whether of typhoid, AIDS, SARS, or some other infection, are very dangerous as public health threats because of their potential mobility among various social networks. This mobility multiplies the potential damage that one highly infectious person can do.

Gladwell’s third rule is *The Power of Context*. This means that epidemics are sensitive to the time and place conditions and circumstances in which they occur. In the SARS outbreak in China, four major context factors were important. The first was the poor capacity of China’s community healthcare systems to deal with the normal day-to-day needs of their population, let

alone with the emergence and spread of a killer plague (Lampton, 2003; Riley, 2004; Wannian & Chan, 2002).

The second major context factor was the cult of secrecy of the Chinese government in which information about the outbreak and spread of SARS was withheld from the world public health community (Loh, 2004), thereby permitting SARS to spread without the intervention of outside experts on epidemics that could have contained the contagion. The third factor was the political transition taking place in China's top leadership that led them to cover-up the extent and nature of the epidemic out of fear of creating political instability (Loh & Yan, 2004). Fourth was the timing or era of the outbreak. It occurred in the age of daily global air travel in which SARS-infected persons moved across the world in a matter of only hours bringing the disease to others (Schwirian, 2005).

In understanding the course of an epidemic, I add a fourth rule to the three proffered by Gladwell. It is *The Principle of Isolation*. To break the chain of plague transmission, infected individuals must be isolated or quarantined from the general population. This is particularly important in outbreaks in which there are no sure curative treatments and no inoculations to protect those not yet infected. As long as infected persons are able to move freely, they pose a threat to the general population. Isolation of the infected and quarantine of people exposed to the disease are standard public health activities in the face of plague.

But, surprisingly, quarantines anger some people who see them as excessive measures. For example, when SARS struck Toronto the public health officials quarantined almost 30,000 persons and that was far more than were quarantined in Hong Kong, which was at the epicenter of the outbreak. This was met with a negative response in Canada's civil rights quarters. Lesley Jacobs, a professor of law and human rights at York University, stated, "Quarantine infringes on civil and political rights recognized in international law and the legal systems of most constitutional democracies. My research indicates that senior public health officials in Toronto did far less than their Chinese counterparts to accommodate the rights and concerns of front-line health workers, quarantined individuals or SARS patients and their families" (Connor, 2005). To limit the use of patient isolation and quarantine of those exposed to the disease, and who are therefore potential additional victims, removes one of the most effective means of truncating the contagion.

It is one thing to quarantine an individual or group of individuals in a community today, but it is quite another thing altogether to attempt to quarantine a whole city. That would mean shutting off the total flow of

people and commodities across a city's borders. Such an act would in effect temporarily disconnect the city from the global network of cities and shutoff all contact of both the strong as well as weak social ties between city residents and those in other places. The SARS event did result in cities such as Hong Kong and Beijing, having marked declines in flows of tourists and business travelers into the cities, to attend international meetings and gatherings. Millions of dollars were lost to these cities during the period of the active outbreak of the disease. What happened in these cities clearly shows that during a plague a total shutoff of flows would do almost unimaginable damage to a city's economy.

Even if the isolation of a city from the global network were desirable, the important questions are who would take the decision and who would enforce it. There is no single international body that can do this. Today, the WHO is as close as it comes to such an authority (Fidler, 2004; Schwirian, 2005). But while WHO can coordinate the international science and healthcare assault in an epidemic outbreak, it can do little to isolate a city from the global network of cities. WHO can and does issue travel warnings, alerts, and advisories in an attempt to limit contact with an infected city, but WHO is dependent of the voluntary cooperation of the nations involved to heed WHO's advice.

Finally, just what is SARS? It is a potentially lethal syndrome that is characterized by fever, lower respiratory symptoms, and radiographic evidence of pneumonia (Centers for Disease Control and Prevention, 2003, 2005). SARS is regarded by WHO (2003a) as a particularly serious health threat. It has no vaccine and no treatment, except the standard treatments of isolation and quarantine. The virus comes from a family of viruses noted for their frequent mutations. The initial symptoms are general and common and are often taken to reflect normal flu. Available diagnostic tests have limitations. Patients can slip through screenings and spread the disease widely. The maximum incubation period for SARS is 10 days, so air travel makes it possible for the disease to spread rapidly from one city to another.

The Global System of Cities: Hierarchy Versus Network

City Hierarchy Model

Two traditions have developed in the literature for discussing the connectiveness among the world's cities. Both of them help us understand the spread of plague. The two traditions differ not so much in kind as they do in emphasis. The first is the urban hierarchy model. It emphasizes the differential concentration of power and control across the system of cities. It states that in

the world's system of cities, certain places such as New York, London, and Tokyo have become more important than other cities in the flow of people, commodities, power, and influence (Friedman, 1986; Hall, Pfeiffer, & Hall, 2000; Ross, 1987; Sassen, 1994a, b, 1999, 2001).

Drawing on the earlier work of Patrick Geddes (1949 [1915]), Peter Hall (1966, p. 7) wrote of these world cities, "There are certain great cities in which a quite disproportionate part of the world's most important business is conducted." Today it is widely recognized that these cities not only are the focal points for business, political, and cultural matters within their society but they also serve as connection points to other societies. Indeed as Mark Abrahamson (2004, p. 2) has noted, "the key nodes in the international system are (global) cities, not nations. ... Once the linkages among cities became a global network, nations became dependent upon major cities for connections to the rest of the world." The hierarchical positions of specific cities in the world system may be modeled on the basis of international flows of investments (Alderson & Beckfield, 2004).

For students of the spread of plague, the hierarchy model offers some important ideas. First, the leading world cities including New York, London, Paris, and Tokyo are so closely connected through their ongoing daily exchanges of people and commodities that a plague outbreak in one place would likely spread rapidly to another. Indeed as Richard Smith (2003) has pointed out, the transatlantic commuting between New York and London has given rise to a lifestyle for many people that brings the two cities together and results in bringing the bicontinental New Yorkers and Londoners closer to each other than they are to people in other parts of their home country.

A second importance of the model for understanding plagues is that the world cities are also centers of research and administration. They concentrate people with the cutting edge talent and skills necessary for responding to new and threatening events. Thus, the application of science and technology in fighting plagues will largely emanate from these cities or flow through them. Third, the prospect of isolating the world cities from each other as a way to contain a plague is poor. There is simply too much riding on the daily exchanges among them. Finally, the concentration of power and decision-making actors and international organizations in these cities make them the natural sites for organizing the overall response and resistance to global plague outbreaks.

City Network Model

The network model is the second tradition in the study of the global system of cities. While the hierarchy model emphasizes the vertical power relations

among cities, the network model emphasizes the horizontal connectivity among all reaches of the system of cities. Indeed, for many years, transportation geographers recognized that the network model offers a very useful way for analyzing the connectedness among cities and the distances among them through direct and indirect relationships and flows of people, products, and information (Matre & Schwirian, 1970; Taaffe & Gauthier, 1973; Garrison & Marble, 1974).

According to the model, the collection of cities (both global and local) is viewed as a set of interconnected socioeconomic subnetworks in which people, goods, power, information, and influence flow from place to place creating linkages among them of various importance. The overall linkage between pairs of subnetworks depends on the extent to which one or two cities dominate the links of its cities to other subnetworks. For example, for years, all connections between Western and Chinese cities had to pass through Beijing. In effect, connections between U.S. and Chinese cities were shaped importantly by the decision makers in Beijing. So, the linkage between the city networks of the two countries was tenuous. This is somewhat less true today as individual cities in the two countries form economic and social ties. As we will see later in the discussion, Beijing's control of access to its network of cities served to exacerbate the problems created by the SARS outbreak.

The network model differs in an important way from the hierarchy model. The network model's analytical framework draws on the rigors of mathematical graph theory (Jungnickel, 2004) while the hierarchy model does not. This leads to the horizontal focus of the network model, as opposed to the vertical focus of the hierarchy model. The mathematics of graph theory permits the quantitative analysis of the networks of cities and of flows within the network through application of basic graph-theoretical concepts. These concepts include *nodes* and *ties*. Accordingly, cities are the nodes in the network, and ties are the relationships between them. A city network, then, is a map of all relevant ties (flows and relationships) between the nodes (cities). *Direct* and *indirect links* are concepts that refer to the nature of the ties between cities.

For example, Columbus, Ohio is connected to San Francisco through several direct and indirect links. For air travel, there are several direct flights-a-day between the two cities and numerous indirect links through places such as Chicago, St. Louis, Phoenix, Minneapolis, and Dallas. An outbreak of plague in any of these cities has many avenues of travel to the other cities. Network *connectivity* is the extent to which all nodes in the network are linked together by both direct and indirect links. As flows

increase among the world's cities, the world's city system is becoming increasingly connected and interdependent (Friedman, 2005). Plague in city a network of high connectivity could rapidly reach all cities in the system unless immediate actions were taken to isolate those infected individuals from travel to other places in the system. Plague outbreak in a system of low connectivity would have a better initial prospect of being contained.

Centrality is an attribute of a node, or city, in a network. In its simplest form, the centrality of a city is given by the number of ties it has with other places in the network. According to network theory, the greater the number of ties a city has to other cities, the more favorable its overall position is in the network. The ties can be used by city leaders to access resources and information, to exert influence and control, and to play a brokering role in transactions between other places.

For fighting plagues, cities with high network centrality usually make good places for distributing personnel and supplies to cities with plague outbreaks, and for coordinating ameliorative efforts. Centrality and network power are not the same. Philip Bonacich (1972) has argued that it not just the number of ties that confers power on a city, but also with whom those ties are. Being connected to powerful others, confers more power than being connected to the nonpowerful.

Centrality and power can vary by institutional area. Let us take the example of Geneva, Switzerland. Geneva is not normally considered to be among the elite cities of the world's urban hierarchy. Nor is Geneva a city of high centrality in the world flows of commodities and people. But in world health matters, Geneva is both very powerful and very central. It is the headquarters of WHO. WHO in Geneva is connected to every world capital, and it is from its headquarters that it launches programs for fighting diseases and epidemic outbreaks, alerts the world to viral threats, and engages in the promotion of health and well being.

From the standpoint of public health, the network model sensitizes us to the fact that plague may enter the global system from a city at any point in the network. All it takes is a single contagious individual from an infested hinterland region coming to a city and thereby exposing the city dwellers to the infectious microbe. Indeed, SARS had entered the global system in China's Foshan city in Guangdong Province. Foshan, located in the Pearl River delta, has a population of half a million, and is only about 140 miles from Hong Kong.

Once plague enters the global system it can move throughout the system through the normal exchanges of people, animals, and products among the cities in the system. In effect, all cities in the global system are important

when it comes to their potential as an entry point for plague. Of course, the most important places are those that are most central in the system. Most worrisome is the tendency for plague to enter the global network by invading cities at the network's periphery. In those places, the microbes are more likely to become well established than they are in the network's more central cities because the healthcare organizations of the periphery communities tend to have lesser capacities and capabilities to deal with and contain the outbreak.

Taken together, the hierarchy model and the network model further our understanding of the course of a plague. The network model assists us in understanding the pattern of the disease's spread while the hierarchy model points us to the control and command centers from which the disease must be fought.

POLITICAL ECOLOGY

Ecology

Ecology studies the relationships among people, their environment, and their sociocultural system (Schwirian & Mesch, 1993). The three elements are interdependent. A change in any one of the three provokes changes in the other two. The pattern of local response to an epidemic is in terms of the community's culture and organizational pattern as embodied in the network of local interorganizational linkages and in its traditional ways of doing things (see Molotch, Freudenburg, & Paulsen, 2000).

From the ecological perspective communities may be viewed as problem-solving systems that are organized to maintain and improve the health and well being of their residents (Young & Minai, 2002). In matters of healthcare, success or failure may be measured by things such as infant mortality rate, number of years of premature death in the population, murder rate, and hospitalization rate. For a plague outbreak, healthcare success or failure may be measured by indicators such as prevalence of the disease, changing incidence rate, and the case fatality rate for different demographic categories.

When plagues invade a community, healthcare is the first and most seriously hit system. When infected persons present themselves to hospital emergency rooms, the staff and facilities quickly become overrun. Most hospitals have a very limited allocation of beds and rooms to isolation. Diagnostics and treatment become major problems if there is no advance

warning that patients will be arriving with a communicable disease. This is particularly serious when the disease is new and there are no established diagnostic and treatment protocols. Hospital staff is first hit. They come into contact with the contagion often before it is known that the incoming patients are infected with a new and deadly disease.

When SARS invaded Hong Kong, the hospital system quickly became stressed to the limit. Available beds became full with SARS patients and so many staff members fell ill that some hospitals almost ceased functioning. For example, at the Prince of Wales Hospital, a total of 238 staff members came down with SARS many of whom required intensive care (SARS Expert Committee, 2003). The lack of a healthy staff paralyzed hospital operations. Other hospitals became overrun as well. For example, on April 12, after treating 593 SARS cases, Princess Margaret Hospital had spent itself and had to send all new cases to United Christian Hospital. This pattern was repeated in other cities such as Beijing and Hanoi.

Politics

The political ecology approach views major community issues, problems, programs, projects, and events (such as an invasion of plague) as being inherently not only ecological, but also inherently political (Schwirian & Mesch, 1993). Important local matters are influenced and shaped by the community's political regime. The regime is the relatively stable network of government officials and local political actors that largely shape the city's public agenda, plans for the futures, and specific actions on important matters (Shannon, Kleniewski, & Cross, 2000).

In addition to members of the regime, additional community actors come forward when their specific concerns, areas of responsibility, and values become enmeshed in public events, issues, and problems (Curry, Schwirian, & Woldoff, 2004). While regimes function in the backstage, it is ultimately the public officials who are on the front stage that are held responsible by the local populace when things go awry; that is, unless the officials can shift blame to other actors and organizations.

The ecology approach, then, views matters in terms of the connections among people, the environment, and their sociocultural system. Political ecology gives special emphasis to the political facets of local matters since the government and the institution of politics both shape and take actions as issues and problems arise, fester, and flare. Plagues, natural disasters, and terrorist attacks because of their rapidity of onset, damage potential, and

mass stressing of the populace, create such swift and serious local disorder that they are among the worst things that the political ecology system of a city confronts.

THE SARS EPIDEMIC²

The first known case of SARS appeared in Guangdong Province in mid-November 2002. It had spread throughout the province and into the others nearby, for the next two months. On January 23, 2003 a Guangzhou medical official reported to the provincial health department that there was an outbreak of an unknown respiratory disease. Shortly thereafter, a man was admitted to two hospitals in Guangzhou where he infected at least 56 staff members. On February 8, Guangdong health officials informed the central health office in Beijing that there was a serious outbreak in the area, and they went on to hold a press conference in which they reported that everything was under control. For the previous two months, people had been wearing face masks in public and using traditional herbal remedies in the hope of preventing infection.

Two days later, the WHO office in Beijing received an e-mail from a former employee that 100 deaths had occurred from this “strange contagious disease” and that many people were in panic and emptying pharmaceutical stocks for medicines they hoped would ward off the disease. Over the next few days, the Chinese Ministry of Health informed and updated WHO that there was an outbreak in several cities in Guangdong, that it was an atypical pneumonia and a minor problem, and was under control.

For the next two months the central health officials in the People’s Republic continued to underreport the size of the outbreak, prohibited the press from reporting on the serious nature of the outbreak, and refused help from WHO in accessing the extent of the epidemic and in containing its spread. By mid-April, the scale of the outbreak and level of mortality forced Chinese health officials to implement a widespread and aggressive attack on the epidemic. Furthermore, under very strong pressure from WHO and the world community of nations, China became more forthright in reporting the scope and severity of the epidemic. All told, the People’s Republic had at least 5,327 cases and 349 deaths.

SARS came to Hong Kong on February 21, 2003. A physician who had treated SARS patients in Guangzhou stayed one night in Hong Kong’s Metropole Hotel. He came to the city for a family wedding. He felt ill for five days before the trip and was ill on his arrival, but felt well enough to go

shopping and sightseeing with his brother-in-law who lived in Hong Kong. His condition worsened that night and he was hospitalized with respiratory failure the next day. He died on March 4. His brother-in-law died of SARS on March 18. The physician spent one night in the hotel's ninth floor. As it turned out, he infected 14 other residents of that floor and they, in turn, took the disease with them as they went on their travels. They took SARS to Vietnam, Canada, Germany, Singapore, Ireland, and other places as well, including the neighborhoods of Hong Kong.

On February 26, one of the Metropole 14 travelers was admitted to the French Hospital in Hanoi. He subsequently died on March 6. While in Hanoi, he infected many hospital staff members including WHO's Dr. Carlo Urbani who has named the disease, "SARS." Hanoi's French hospital had to be shutdown on February 26. Dr. Urbani subsequently traveled to Bangkok for a conference, fell ill while he was traveling, was hospitalized upon deplaning, and died of SARS on March 29.

The spread of SARS through air travel by the Metropole 14 was repeated in several cities. In each, the pattern was similar: (1) the exposed person becomes symptomatic, (2) the infected person exposes others to SARS both in flight and upon arrival, (3) symptoms show progress and the person has to be admitted to hospital, (4) unsuspecting hospital staff as well as other patients and visitors becomes infected, (5) exposed person, in many cases, died, and (6) SARS spreads to family members and residents of the larger community. This is clearly seen in two cases of Metropole 14.

The first was a 26-year-old flight attendant who was in Hong Kong for shopping and stayed in the Metropole's now infamous ninth floor. Upon returning home to Singapore she felt ill and was contagious. She was admitted to hospital on March 1 where she was visited by her parents, other family members, and members of her church. At the time the hospital staff was unaware of the SARS outbreak, so visitors were freely permitted. The hospital staff learned of SARS too late to stop her from spreading the virus. Single-handedly she infected over 100 cases. Among the dead were her father and mother and her pastor. Several of her family were hospitalized and survived, as did she. Once the SARS outbreak was recognized, she was quarantined in the hospital and prevented from attending her parents' funeral ([Associated Press, 2003](#)). By the end of the outbreak, Singapore had reported a total of 268 cases and 33 deaths.

The second example of the Metropole 14 spreading SARS is a 76-year-old Toronto woman who also stayed in the hotel's ninth floor. She returned home from Hong Kong on February 23 and was admitted to Toronto's Scarborough Grace Hospital. She died of SARS on March 5. She infected

several members of her family including her son who died. Toronto recorded 145 cases and 23 deaths.

During March, April, and May, SARS continued to spread within cities and between cities, but public health systems were now aware of the characteristics of the disease and of the necessity for isolation and quarantine, both of which were widely applied. So were a number of public health measures including closing schools, businesses, and residential complexes that were “hot spots” for the spread of the virus, canceling conferences and meetings, limiting international flights, and screening of passengers.

The capacity of communities to deal with the outbreak was supplemented by the assistance of WHO. In the late winter and spring of 2003, WHO had: (1) declared SARS a worldwide threat; (2) had up and running real-time networks of experts scientists and research laboratories aimed at discovering the nature of the disease, controlling its spread, treating the victims, and protecting healthcare workers from infection; (3) identified the SARS corona virus; (4) provided support to countries with SARS outbreaks that included supplies for infection control and experts that helped improve community healthcare capacity in the fight against SARS; (5) pressured China to provide correct information on its outbreak and to permit WHO research teams to investigate China’s outbreak; and (6) held the first global conference on SARS that issued guidelines on fighting the disease. Without the hard work and coordinating efforts of WHO, it is unlikely that the SARS outbreak would have been truncated as it was by mid-summer 2003.

By the end of the SARS outbreak, it had become very clear in international public health circles, that in order to successfully fight a global outbreak of plague today, a coordinating global expert organization, such as WHO, was required to take the lead in the battle. Without that help individual city healthcare systems were left to flounder as their capacity was overrun. It also became clear that international cooperation with WHO was required to stem the tide of a disease outbreak. Cooperation between the national governments and WHO was on a voluntary basis, and there was a great deal of variation among the states in their actual degree of cooperation.

THE POLITICS OF PLAGUE

My first thesis is: that because of their potential for demographic and institutional destruction, systemic responses to plagues tend to become entwined in politics at all levels – the local, national, and international.

International Politics

The course of SARS in Taiwan shows how tangled plague can become in international politics. SARS brought the issue of Taiwan's sovereignty to the forefront. SARS came to Taiwan in March when an infected man arrived from Hong Kong to visit his brother in Taipei. The disease spread rapidly in Taipei as it did in other global cities. From there it spread throughout Taiwan. Ultimately, Taiwan was third to only China and Hong Kong in the number of SARS cases. Three-hundred-forty-six people were infected of whom 37 died. Unlike the other cities with outbreaks, Taipei was unable to enlist the aid of WHO experts in fighting the disease. The international political context in which Taiwan operated differed greatly from elsewhere.

When World War II ended in 1945, the Allies agreed that Chiang Kai-shek's troops would occupy Taiwan (New Taiwan, 2005). In 1949, Chiang Kai-shek lost the revolution in China to Mao's communist forces. Chiang Kai-shek's government withdrew to Taiwan and established it as the center of the "recognized" Chinese government. However, China's civil war split the country into two. Taiwan represented China in the United Nations until in 1972 its UN seat was given to Beijing. Since that time Taiwan has been declared by Beijing to be a rebellious province of greater China. China has continually objected to any UN involvement in Taiwan and that includes the WHO. This is part of Beijing's policy to isolate Taiwan diplomatically and force it to accept Beijing's rule. Every year, since 1991, Taiwan has petitioned the UN for membership, and each year Beijing has vetoed the petition.

Since the WHO can only supply help to a country when invited by that country to do so, it simply could not move in as it did elsewhere. In fact, it was not until seven weeks after Taiwan reported its first SARS case that Beijing said that it would permit WHO scientists to enter Taiwan. Taiwan had to refuse the help that Beijing finally offered because acceptance would indicate that Taiwan had recognized Beijing's authority. Fortunately, the U.S. Center for Disease Control was able to provide some assistance to Taiwan.

The government in Taiwan blamed China for the SARS invasion since Beijing covered up the fact of the epidemic and its extent, thus leaving cities totally unprepared for coping with an outbreak of an unknown virus. Taipei also blamed Beijing for blocking Taiwan's access to help from WHO. In addition, Taipei blamed WHO for not providing the assistance that it could have supplied in spite of Beijing's posturing.

National Politics

The PRC's national politics directly affected the spread of the SARS outbreak, the number of cities infected, and ultimately, the number of deaths from that plague. Because of the lying and covering up of the outbreak by the Chinese government, expert biomedical responses were delayed by several months, global air travel spread the plague to all continents, and excessive and unnecessary deaths among hospital staff took place. There were several political factors operating in that winter and spring of the epidemic. Underlying each was China's policy that information about population and health conditions was a matter of national security, and hence, secrecy (Loh & Yan, 2004). It was no surprise, then, that Beijing clamped down on the media and on individuals who attempted to make the plague public (Schwirian, 2005). Chinese officials felt that they had too much to lose if word of the plague got out.

One reason for the news blackout was that China's 10th National People's Congress was to be held in Beijing from March 5 to 17, 2003. The top piece of business was the endorsement of the new top government officials including Wen Jaibabo as prime minister and Hu Jintao as president. Tension surrounded the meeting because of the leadership transition. In the winter and early spring of 2003, Beijing's attention was mainly focused on the upcoming transfer of power. They wanted everything to go smoothly, and were concerned that any potentially divisive issue could trigger demonstrations and riots. The goal was to project a message of national unity, continuity, and stability.

As Carol Lee Hamrin (2003), Former Senior China Affairs Specialist with the U.S. State Department, put it, at the meetings of the People's Congress, "There was no 'distracting' discussions of sensitive issues ... on the eve of the Congress, nor grave international matters such as the impending war on Iraq, nor the world health alert regarding a deadly influenza that likely originated in South China."

Other things were at stake for China at that time as well. First, the PRC was in the running for designation as the site for the 2008 summer Olympics. If word about the plague got out, then Beijing would become stigmatized as a plague ridden, unhealthy, and hazardous place. That probably would result in Beijing being bypassed by the Olympics selection committee. Second, tourism means money. Upcoming was the annual May Golden Week celebration in Beijing. Well over half a million tourists normally flood Beijing for the event bringing with them a major infusion of money to the city coffers. Here again, word of hazards-to-health had to be minimized so

that visitors would not be driven away. However, once word was out about the SARS epidemic, the government canceled the celebration and that cost the city several billion dollars.

Local Politics

All issues in Hong Kong ultimately become local political issues. Britain handed Hong Kong back to the PRC in 1997 with the agreement that a “One China, Two Systems” policy would permit Hong Kong for many years to maintain its capitalistic economy with protections for the people’s equal rights and freedoms. Since that time a major segment of Hong Kong’s population has perceived a steady erosion of freedom and civil liberties.

During the winter and spring of 2003 while plague was raging, the healthcare system’s capacity to respond was overrun, and people were dying in the city, Hong Kong was embroiled in serious political issues. One was a growing sense among the general population that Hong Kong’s residents were not being served well by government. At that time Tung Chee-Hwa was Hong Kong’s Chief Executive, and he had become the main focus of public displeasure. He had been handpicked for the job by Beijing and the general sentiment was that he always bend to Beijing’s wishes at the expense of freedom and democracy in Hong Kong. His management style has been described as personal and chaotic and that it undercut the government ministers’ confidence and responsiveness to the public (DeGolyer, 2004).

On March 5, 2003, Hong Kong’s Financial Secretary, Anthony Leung, announced a proposal for a sweeping and major increase in the city’s taxes. It hit all areas – profits, income, a new boarder crossing tax, a new tax on employing foreign domestic helpers, and new fees and charges for a variety of things including the first ever registration tax on automobiles. While the debate over the proposed taxes dragged on, a Chinese language news paper reported that only a few weeks before Leung announced the new taxes he had purchased an expensive new car. By purchasing it before the new registration tax, he saved HK\$190,000 in taxes. The public was furious. Demands for his resignation came from several quarters. He pled that he forgot about the purchase and was distracted by family events. Ultimately he resigned, became the target of a corruption investigation, and faced possible criminal indictment.

A near-final straw in Honk Kong’s political turmoil at the time was the controversy over Article 23 of the Basic Law. The Law functions as Hong Kong’s political constitution. The original proposal included a number of

security issues that a large number of Hong Kong residents considered to be greatly undermining civil rights. The proposal included such items as secret trials without a jury for those charged with treason, secession, and subversion. The public anger that arose over the proposal was such that 500,000 Hong Kong residents demonstrated against it in the streets on July 1, which was the anniversary of Honk Kong's handover from Britain to China.

Anger over the SARS crisis became a part of the opposition to government. There was anger at the PRC for hiding the outbreak, anger at Hong Kong's government-perceived mishandling of SARS early in the outbreak, for its failure to protect hospital workers, and for its general indifference to the well being of the people. As a result of this turmoil several government officials resigned and Tung's local political capital was all but totally expended. Tung did back off on the proposed security bill and said the he would focus on economic development and improving social conditions. That did little to improve his popularity.

COMMUNITY RESPONSE

My second thesis is: *that in the wake of a plague, politics tends to shape a community's response in: (1) protecting the system, (2) evaluating performances and allocating blame, punishments, and rewards, and (3) restructuring organizations.*

Protecting the System

The healthcare system of each city with an outbreak of SARS attempted to protect the city's population to the limits of its capacity. Beyond physical health, other aspects of local life were also adversely affected. Travel was curtailed, shopping had all but ceased, meetings and conventions were canceled, weddings were postponed, schools and public-gathering places closed, and imports and exports declined. City leaders realized that in addition to a medical disaster they were also facing an economic disaster. The economic and political leadership of many of these cities focused their wrath on the WHO.

Isolation and quarantine are among the most frequently used tools to stop the spread of a contagious disease ([Center for Disease Control and Prevention, 2005a, b](#)). In the battle against SARS, WHO issued a series of travel alerts for specific cities when it became clear that the virus was

traveling rapidly by air from one global city to another. On March 12, 2003, WHO issued the first global alert that there was an outbreak of an unknown pneumonia in Guangdong Province, Hong Kong, and Vietnam. Three days later, WHO issued its second global alert and referred to the disease as “SARS.” That alert contained case definitions for probable and suspected cases and issued guidelines for healthcare workers worldwide.

Throughout April and May, WHO kept two expanding lists of cities; one was a list of cities with recent local transmissions of SARS and the other was a list of cities for which travel advisories had been issued. Cities on the lists, in effect, were voluntarily quarantined from the normal exchanges in the global network, and that meant serious loss of revenue for them. By July 5, 2003, WHO announced that SARS was under control and the last place, Taiwan, was removed from the list of SARS-infected places (WHO, 2003b). But the economic damage to the cities had been done.

Protecting the system is illustrated by the case of Toronto. On April 23, WHO extended its travel warning to cover Toronto. At the time, Canada had 330 SARS cases and 16 deaths all of which were in Toronto. In addition, five people were known to have carried SARS from Toronto to other places, including the Philippines, Australia, and the U.S. WHO advised against all unnecessary travel to Toronto for at least the next three weeks. In defense of the city, Toronto politicians, businessmen, health professionals, and biomedical researchers joined forces to oppose WHO’s decision. Mel Lastman, Toronto’s mayor said in a press conference that he was surprised and shocked: “If it’s safe to live in Toronto, it’s safe to come to Toronto . . . I’ve never been so angry in my life” (CBC News, 2003a).

Sheela Basrur, Toronto’s medical officer stated, “The facts of the matter do not warrant this decision at this time” (CBC News, 2003a). She went on to say that the disease outbreak primarily affected staff in a hospital setting and not people in the street. The province of Ontario’s medical officer for health, Colin D’Cunha agreed. He said, “I am frankly disappointed with the WHO’s actions . . . It was made without consulting the province, and we believe it’s an overreaction” (CBC News, 2003b). He further said that he had been in contact with the health officers of Canada’s other provinces and they agreed that no travel advisory was needed. Joe Halstead, Toronto’s commissioner for economic development said that the economy would be severely hurt because it relies heavily on tourism.

The Canadian government also took up Toronto’s cause. Health Canada demanded that WHO immediately lift its Toronto travel advisory. Health Canada sent a formal letter to WHO on April 24 and followed it up with a teleconference meeting between the Canadian and WHO officials. Health

Canada's Dr. Marc-André Beaulieu said that WHO was acting on outdated information (CBC News, 2003c). Health Canada was supported by the U.S. CDC. Dr. Julie Gerberding, CDC's head, said that the CDC was not warning the U.S. citizens to avoid traveling to Toronto. She said, "U.S. citizens traveling to Canada are not at risk for SARS if they stay out of hospitals and follow some common sense precautions" (CBC News, 2003d).

In the face of Toronto's attack on WHO, WHO did not back down. But by April 30, WHO lifted Toronto's travel advisory and by May 14 removed Toronto from the list of SARS-infected places; all this was much to the relief of city leaders. However, by May 26, WHO relisted Toronto as an infected area, given a further SARS outbreak in the city with 34 probable or suspected cases linked to four Toronto Hospitals. By early July, WHO finally removed Toronto from its list of infected cities. But here again economic damage had been done. Tourism was down, hotel occupancy was down by half, many restaurants were barely hanging-on, Elton John and Billy Joel canceled a major concert set for the city, and some major league baseball teams were considering not coming to Toronto to play the Blue Jays. In the face of all this, Dr. Donald Low, head of microbiology at Toronto's Mount Sinai Hospital said, "Toronto is the safest city in the world to visit" (CBS News, 2003).

Evaluating Performances

Performance evaluations, second-guessing, and allocation of blame are common in human affairs. In major events such as a breakout of plague, the finger pointing begins early, proceeds for a long time, and may have serious consequences for those ultimately "blamed." Blame is socially constructed and politicized (Cohen, 1997; Schwirian, Curry, & Woldoff, 2001; Schwirian, 2006). Responsibility for failure may be assigned to a person, group, outside agent, entity, event, or chance. Assigning blame defines the target for negative sanctions. In assigning blame, more powerful actors work to assign it to the least powerful; system insiders tend to assign blame to system outsiders. The ability to assign blame is a powerful tool in political and administrative matters at all levels.

There tends to be three types of response evaluations, the spontaneous, the inside organizational, and the outside organizational. Local politics tends to color all three. The *spontaneous evaluation* is one in which someone gives an off the top-of-the-head response to something. For example, a number of public critics in Hong Kong demanded the resignation of chief

executive Tung Chee-hwa in the wake of both political scandals and his perceived dithering during the SARS crisis (Brown, 2003).

Another example comes from Canada. In responding to WHO's issuing the travel advisory for Toronto, microbiologist Dr. Low accused WHO of having a political and not scientific motivation. He asserted, "I think we're the scapegoat (for the spread of SARS)" (CBC News, 2003d).⁵ A third example of spontaneous evaluation is Taiwan's automatic accusation that Beijing was responsible for the outbreak of SARS in Taipei, and for keeping WHO from providing Taiwan the help it needed to fight the disease.

The *organizationally inside* review may be of two general types. The first is the *inside panel review* in which participants in the event meet to self-assess their performance or to form a general group opinion of how the system performed in general. For a plague outbreak this is the typical hospital medical review. This took place in most hospitals that dealt with SARS patients. Usually, the results of these evaluations are kept confidential, and often they attribute no specific blame to individuals. Frequently, they praise members of the staff that performed admirably during the crisis. Often, they suggest organizational improvements that will elevate future performance when faced with a comparable medical emergency.

The *organizational sacrifice* is the second form of organizationally inside review. People in power in the organization identify someone below them in the power structure to take the fall for the organization's poor performance in a crisis. In Beijing, when the world criticism of the political regime's mishandling of SARS, a decision was made that serious damage control was needed and that some in the government hierarchy had to take the fall for the government. Beijing fired both health minister Zhang Dejiang and Beijing city mayor Meng Xuenong for "their" poor handling of the SARS crisis. In addition, Lui Qi who was the party official responsible for Beijing city, issued a public apology for his failure to keep the public adequately informed about the SARS outbreak.

Outside organizational evaluations were conducted in several cities. In Hong Kong, a SARS Experts Committee was established on May 28, 2003, by Hong Kong's chief administrative official, the unpopular Tung Chee-hwa. It consisted of 11 persons considered to be experts in contagious diseases and responses to them. They came from the UK, Australia, Hong Kong, China, and the U.S. They were to: (1) review the work of the government and the Hospital Authority during the crisis, (2) review the general capabilities of Hong Kong's Department of Health and the Hospital Authority for dealing with such problems, and (3) identify lessons learned during the epidemic.

A fury of criticism greeted the initial appointment of the committee. Many felt that being government appointment it would whitewash the performances of all local parties during the crisis. The Committee's final report blamed no individuals for poor performance but did point out what it felt were a number of shortcomings in the fight against SARS by local agencies. For example, it stated that there were poor and ineffective links in the chain command in fighting the outbreak; there was inadequate contingency planning, poor infection control in the hospitals, and ill-trained hospital staff ([SARS Expert Committee, 2003](#)). The report contains 46 recommendations such as that the government establishes a center for health protection to insure there is ample capacity to deal with infectious disease outbreaks, and that a coordinated effort be made with health entities in the Pearl River Delta region.

The report was not well received by all. Hong Kong's Legislature smelled blood and criticized the report for not naming people. Consequently, it created its own select committee to probe the SARS response deeper than what the Expert committee had done. Its report was released on June 5, 2004, and it was a bombshell. It named several senior Hong Kong officials and hospital administrators for dealing poorly with the SARS epidemic. For example, Yeoh-Eng-kiang, Hong Kong's Health Minister was accused of downplaying the outbreak and withholding information from the public. Margaret Chan Fung Fu-chun, former director of health was accused of not taking the outbreak seriously enough. Leong Che-hung, chairman of the Hospital Authority was accused of not having made a contingency plan to deal with outbreaks of the SARS magnitude. Yeong and Leong quickly resigned their posts. Margaret Chan resigned before the report was issued to work for WHO. William Ho, chief executive of the Hospital Authority, also resigned. Ho had contracted SARS, but that did not save his job.

Restructuring Organizations

The cities that had outbreaks of SARS, engaged in internal evaluations of how they could better deal in the future with an infectious disease outbreak on the scale of SARS, or even larger as it might be the case if bird flu develops as feared. Hong Kong restructured its healthcare response system to a greater extent than did the other places. Following the recommendations from the outside organizational evaluations, it restructured its approach to health. Hong Kong formed from its health resources the Center for Health Protection (CHP). In many ways it is modeled on the U.S.'s CDC ([Schlatter, 2004](#)). It consists of several branches that were previously located in Hong Kong's Department of Health.

Increased funding and manpower gives it an improved potential for action. CHP's branches are: emergency and response, surveillance and epidemiology, infection control, program management, laboratory, and public health services. The public health services branch runs clinics for sexually transmitted diseases, HIV, and TB. So far CHP has been quite active. Of course, its mettle as well as the mettle of other such renewed organizations will be put to the test when the next major plague breaks out.

Another recommendation from the review committees was that Hong Kong should strengthen its ties with other Pearl River Delta region health organizations. That it did. Hong Kong, Macao, and Guangdong have formed a tripartite health group that has met several times since the SARS event. The purpose is to exchange information and work together to improve health in their region. This cooperation has become part of the broader growing cooperation among these communities in economic development and tourism. As is the case with Hong Kong's CHP, the test of this cooperative organization will be when the next plague is upon them.

CONCLUDING REMARKS

Plagues have become global events. They may breakout far away but they may travel rapidly throughout the global network of cities. In this chapter, I have examined two theses. One argues that the politics of plague is not just at the international and national levels but also at the level of the local community. The other argues that the seriousness of plague's impact becomes reflected in local actions including: protecting the system, evaluating plague-fighting performances during the outbreak and allocating blame, punishments, and rewards to local actors and officials, and restructuring local organizations to better meet future outbreaks.

My focus has been on SARS whose epicenter was Hong Kong and southern China; although cities in other parts of the world had to fight SARS as well. The data from these places support both theses for this one event. Subsequent plague outbreaks will provide further tests. These outbreaks could originate in Asia again. They could also originate in Africa, Latin America, or the Middle East. However, one thing is certain. Wherever plague breaks out, once it reaches a city in the global network, we all are at risk.

NOTES

1. The event/action approach seeks to answer the following questions: (1) What event happened or is happening, and how is or did it play out?; (2) What actors and

interests are involved and what are their goals, resources, frames, and strategies?; (3) What actions did they take and what were the anticipated and unanticipated consequences?; (4) How are this event and its actors linked to other events, actions, and/or processes?; (6) What does this event tell us about how society is organized and/or changing?; and (7) how does the analysis of this event contribute to the development of sociological explanation and generalization (see Schwirian, 2005).

2. There are several good and complete chronologies of the SARS outbreak of 2002–2003 available. These include the ones by Chiu and Galbraith (2004), WHO (2003), and Kamps and Hoffman.

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11. THE ROLE OF *GUANXI* IN THE EMERGING ENVIRONMENTAL MOVEMENT IN CHINA

Lei Xie and Arthur P. J. Mol

ABSTRACT

This chapter explores the characteristics of emerging environmental movement organizations in China, and more specifically the role of guanxi – or personal networks – in Chinese environmental activism. While organizational networks of environmental NGOs are still weak in Chinese environmental activism, personal networks of environmental activists are instrumental in building the first sprouts of a green civil society. We explore this via an in-depth case study of relatively successful environmental activism to halt the construction of a number of hydro-electric projects on the Nu River. The case study illustrates that in China, more so than in western countries, informal personal networks, rather than formal organizational networks, play a crucial role in the organization and success of contemporary environmental campaigns. This is partly explained by the immature environmental movement, and partly by the specifics of Chinese social networks.

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THE EMERGENCE OF ENVIRONMENTAL NGOS IN CHINA

During the last decade, environmental voluntary groups and environmental activism has been emerging in China. Characterized by their commitment to improve environmental quality and environmental governance, environmental NGOs (abbreviated as ENGO) and social organizations¹ are becoming the building stones of a growing environmental movement in China. With increasing environmental degradation and resource depletion, and an insufficient state capacity in environmental governance, the emergence of environmentally concerned citizens should be no surprise. But these environmental groups look still very different from what we are familiar with from Western Europe and North America.

The environmental movement in North America and Western Europe has gone through a phase of institutionalization in the 1980s, resulting in increasingly professional environmental groups and NGOs, which play a key role in governmental environmental policies and politics (van der Heijden, 1997, 1999). In comparison, Chinese ENGOs are still limited in their capacities, as they: (1) lack resources to act independently and influentially, such as financial support, a knowledge and information infrastructure, social recognition, and a large constituency, and (2) are restricted in their freedom to act under the current political and legal system in China.

So, when studying the functioning and development of environmental groups in China, they cannot be properly understood without analyzing the interactions between these groups and their external social and political environment. In China, the authoritarian state leaves very limited space for the self-organized social groups and their involvement in politics and policy-making.² It poses various obstacles for collective efforts made by environmental activists and in order to understand the development and functioning of social movement organizations and their specific (Chinese) characteristics, one needs to be aware of these national specifics. In this social context, a social movement can be defined as “networks of informal interactions between a plurality of individuals, groups and/or organizations on the basis of shared collective identities” (Diani, 1992).

In China, the concept of civil society organizations or social-movement organizations not linked to the ruling party is quite new. The development of non-governmental environmental organizations can be traced back to the earlier 1990s, when Chinese environmentalists were greatly enlightened by the Rio Declaration following the 1992 UN Conference on Environment and Development. Later in 1995, women voluntary groups showed their

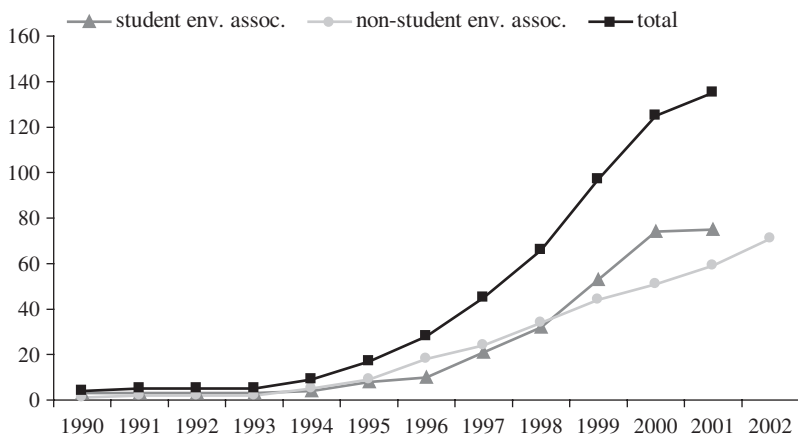


Fig. 1. The Development of Student and Non-Student Environmental Associations, 1990–2002 (Source: Guobin Yang, 2005).

significance in co-organizing World Women Conference in Beijing. These two events encouraged and inspired many Chinese environmentalists in organizing their own voluntary groups and organizations, resulting in the first boom of Chinese NGOs (see Fig. 1).³ While data are most unreliable and vary widely (also due to the unclear definition of environmental NGOs in China), some believe that until 2005 approximately 2,000 environmental groups are officially registered as NGOs, with probably as many registered as for-profit business entities or not registered at all (Economy, 2005).

The significant amount of social organizations on the environment, which are not registered as NGOs, reflects the government’s susceptible attitude toward NGOs in general. Fearing political instabilities that may occur by the booming of NGOs, the state-administrative agency constrains the growth of civil groups through strict registration procedures (Wang, 2003). According to ‘Regulations on Social Organizations’ promulgated in the year 1989, each social group has to be supervised by one institution.⁴ And the Bureau of Civil Affair has the right to give permission in registration. Some NGOs got registered as a company, but in doing so they are in a higher tax regime. Governmental policies not only control the registration and establishment of Chinese environmental NGOs, they also restrict and frame their functioning and strategies. Under the state’s repressive control, very few ENGOs are oriented toward adversarial or confrontational strategies and goals, which contradict governmental policies. Coordinated actions that are not in full line and with full governmental support are difficult to be made.

And special tactics are needed in protesting activities. Most ENGOs are rather engaged in rising environmental awareness of citizens and officials, in dissemination information to the wider public and in clean-up actions in streets and parks. In general, the groups committed to environmental education compose the majority of NGOs (Yang, 2005).

As to NGOs' participation in policies, it is found that opportunities and legal obligations concerning public participation are very limited. While several environmental laws require the government to inform the public, few allow the public to be involved in policymaking processes and decisions. Only in 2003, the newly promulgated Environmental Impact Assessment Act confirms the right of public participation in environmental policies. This act requires that certain projects with significant potential environmental impact should involve consultations with the public, by publicizing information regarding the project and its environmental effects or holding public meetings. Unfortunately, in practice, this law is hardly implemented strictly. In all, the public has very limited institutional access to policy processes.

Under such conditions, environmental groups have very limited formal, institutionalized channels to impact on environmental policies and decisions. Informal channels such as social networks and personal ties are then becoming an alternative route of access to policy-making and a way to organize collective actions in Chinese society. The complex connections or '*guanxi*' that widely permeate Chinese culture and society prove to be also essential in environmental activism. Individual connections and relations among friends, relatives, colleagues, neighbors, and so forth are key building stones in the construction of the Chinese environmental movement. Pre-existing personal ties from previous social movements and collective actions are well preserved, for example those from the 1989 student demonstration at Tiananmen Square. Focusing on these individual or personal networks (the two concepts are used alternatively) is crucial when one wants to understand the functioning and development of the still immature Chinese environmental NGOs in a situation where the strategies, resources, and organizational schemes of Western NGOs are largely absent. In the individual networks we find the dynamics environmental activists currently use to overcome the constraints set by a repressive state.

This chapter illustrates the role of *guanxi* in mobilizing resources in environmental struggles in China. It does so mainly by analyzing in detail one major case study: an environmental campaign against a large dam-construction project. This case is particularly adequate to investigate and illustrate the functioning of personal networks, as dams have always been strongly supported by the Chinese state, as has become clear from the Three

Gorges Dam project that was subject of a strong controversy among scientists, scholars, and the state. The case of the projected dams in the Nu River illustrates the dynamics of individual and social networks in environmental campaigning. Before analyzing our case study, we elaborate shortly on the concept of networks in social movement studies, and link it to the Chinese concept of *guanxi*.

SOCIAL NETWORKS IN ENVIRONMENTAL MOVEMENT STUDIES

The idea that networks play an important role in the formation and development of social movements is of course not limited to the Chinese context, but has shown to be of relevance for western contexts much earlier. In research on social movements and collective action in western countries, the so-called social network approach is of growing importance. The main network perspective in western social movement studies focuses on the influence of social ties in the formation of collective actions. Social ties are found to have a significant positive influence in mobilizing participation (Rosenthal, Meryl, Michele, Roberta, & McDonald, 1985; Friedman & McAdam, 1992; Marwell, Oliver, & Pahl, 1988; Diani, 1995).

From a more theoretical point of view social network approaches aim to bridge structural lines of analysis and actor or agency-focused studies; it provides a link between structuralist and rationalist accounts in social-movement studies (Passy, 2003; Gould, 2003). However, one should be cautious with placing network approaches to easy as the combination or integration of the other two approaches. Two assumptions that sometimes lie at the foundation of such an integration perspective are misleading. The first assumption behind the integration function of social-network approaches works from the idea that organizational networks are an aggregation of individual networks (Curtis & Zurcher, 1973). According to it, organizational networks are established by joint activities, joint staff, and joint strategies of organizations.

However, shared activities of individuals of different groups do not necessarily lead to linkages among organizations. So, the aggregation of individual networks does not always result as linkages between organizations, to organizational networks (Diani, 2002). Secondly, the integration argument assumes that social-movement organizations are well-established, and that their relationship with individuals is rather institutionalized. This assumption also leads to the same conclusion, that is, linkages between organizations are

simply the accumulation of affiliated members' ties and shared activities. However, this may not hold in an environment where the relationship between individuals and organizations are less institutionalized and professionalized, that is, China.

Therefore, a conceptual distinction and refinement should be made in network approaches in social-movement studies in order to better understand and explain the role and impact of social ties in environmental activism. Individual networks and ties need to be separated from organizational network structures (McAdam & Paulsen, 1993; Gould, 2003; Passy, 2003).

Distinguishing Dual Identities of Environmentalists

In the context of China, where the development of civil-society environmental organizations is in its early stage, key individuals play significant roles in promoting and developing what we will label informal organizations. The position, role, and identity of key individuals (or leaders) in informal and in more formal social groups may differ. In formal, well-established, institutionalized and professionalized social groups, individual members are "defined" by the groups to which they belong. As Simmel (1955) has suggested, group membership strongly affects individuals' identities. Each person is associated with the set of organizations to which he or she belongs. And this set of organizations strongly shapes the person's identity. So the functioning of individuals in these social groups is to a major extent structured by these groups.

At the same time, individuals cannot be fully reduced to the organizations to which they belong; rather, they remain semi-autonomous actors themselves who can make a difference. Such personal actions, connections, and networks of individuals can be institutionalized as organizations. Subsequently, these personal attributes contribute to structuring the organizational profile. However, in young, informal, and immature organizations, the identity of individuals in such organizations is less associated with and structured by the organization's profile, and continues to remain more autonomous instead. Within these informal, poorly institutionalized organizations individual identities are prevailing above organizational identities. And in environmental activism networks, it is individual characteristics, identities, and ties that construct the network, rather than the profile, characteristics, and relations of organizations.

Personal ties that are mobilized at the individual level are not likely to be automatically institutionalized and remain strongly personal (and thus disappear with the departure of the individual from that organization).

Table 1. Characteristics of Formal and Informal Organizations.

Kind of Organization	Constituency	Responsibilities of Individuals	Relationship of Organization and Individuals
Formal organization	Clear	Clearly defined	Defined by regulations and internally institutionalized
Informal organization	Unclear	Vague	Defined by rules in moral sense

What is more, the characteristics of informal organizations cause a greater inclination to utilize personal networks. There are three main differences between formal and informal social movement organizations (see Table 1).

Firstly, in informal social-movement organizations, the constituency is often not specified. This distinction between inside members and outsiders is often unclear, flexible, and dynamic. Actors that originally do not belong to a social-movement organization may easily get involved in the groups' activities and even work in short time at important positions. The border between this kind of social movement organization and its social environment is fluid. The centrality of personal networks of members contributes to this significant flexibility, dynamism, and unclear borderlines.

Secondly, and following the first aspect, because of the fluid and dynamic boundary among members and non-members, responsibilities of individual members are not defined clearly. In informal organizations, the organizational structure and complexity is very low. Neither a solid membership system nor professional departments and tasks are established and operated strictly. With no clear regulations, procedures, division of tasks, and responsibilities, the rights and obligations of members and staff are hardly specified and protected. Overall, behavior and actions of members and staff may be determined rather by rules in a moral sense, than by 'legal' and institutional rules.

Thirdly, in informal social-movement organizations a mechanism for internal decision-making is often absent or poorly elaborated and formalized. Thus, the relationship between individuals and the organization is not clearly regulated (Fei, 1985; Aubé, 2005). Consequently, influential individuals are more likely to (be able to) act as autonomous units instead of being associated with, and guided and structured by their organizations and organizational profiles. In such circumstances, personal relations and ties are not likely to be institutionalized in the wider organization.

Thus, environmental-movement organizations should be distinguished according to their level of formalization, professionalization, and institutionalization. A formal organization is defined to have a fixed constituency, a stable and developed membership system, and institutionalized mechanisms concerning internal management and decision-making. Informal organizations are inclined to work more via personal relations – especially those of the leading members(s) – than formal organizations. These personal networks that are utilized carry the profile and identity of the leading individual(s), instead of those of the organization.

Chinese environmental movement organizations are better characterized as informal than as formal organizations. This is partly due to their rather recent emergence, but significantly also due to the specific social and political environment in which these emerging social movement organizations operate. Individual ties and relations in China are often referred to as the practice of *guanxi*, a special phenomenon of Chinese society. *Guanxi*, loosely translated as “connections,” is a specific Chinese idiom for characterizing social networks in China, integrally linked to other building blocks of Chinese sociality, such as *ganqing* (sentiment), *renqing* (human feelings), *mianzi* (face) (e.g., Gold, Guthrie, & Wank, 2002).

Guanxi differs from the social connections in western societies in its origin and principles. In western contexts, social relationships are fundamentally based on individualism (Granovetter, 1983). Individuals are separated from each other, and may be bound together mainly by external incentives (Fei, 1985). The principles in developing social connections are based strongly on gain–loss calculations, which can of course be expressed not only in monetary terms. *Guanxi*, to some extent in contrast, is a cultural phenomenon. It originates from Confucianism and throughout its development continues to be formed and structured by broadly accepted social ethics (e.g., Hwang, 1987; Yang, 1994). Relationships are characterized by strong mutual dependence, resulting in strong and deep connections between individuals (Bian, 2002). *Guanxi* leads to intimate connections, with two features: (i) the connections last a relatively long time, and (ii) they are characterized by gifts and mutual favors.

It is suggested that *guanxi* function as a mechanism for coping with the absence of a formal and reliable system of laws and regulations (Guthrie, 1998; Yang, 1994; Xia, 2000). For example, in the hierarchical one-party political system, individual networks are an essential element in successfully accessing government, while at the same time they preserve the strength of the hierarchy and elitism of the political system by their dependencies (Guthrie, 1998; Xia, 2000). In the economic realm, industries construct, maintain, and utilize *guanxi* frequently. Where market economic incentives

and rules are often unclear, ‘private’ economic actors tend to rely on *guanxi* and a gift economy to organize the necessary resources to keep their business going (Guthrie, 1998).

In Chinese social-movement organizations, *guanxi* has two distinctive features. Firstly, *guanxi* is an informal structure and mechanism that fills up the holes and absence of formal, democratic, and institutionalized structures and mechanisms in their social environment. Where western NGOs rely mainly on institutionalized and formalized procedures and structures to access information, policy processes and the media, Chinese social movement organizations rely strongly on the practice of *guanxi*, for instance for accessing information on policy processes or environmental impact studies. As argued and illustrated by Bian (2002), *guanxi* will work as effective information channels when information diffusion is either restricted or ineffective. Because the Chinese bureaucracy is hierarchical, closed, and non-transparent, only limited formal mechanisms and structures exist for interest articulation. Also here *guanxi* is a key mechanism for social movement organizations and interest groups to get their messages across. Using individual networks forms an essential element for environmental movement organizations to interact with the political system and the bureaucracy.

Secondly, *guanxi* has a significant function in disseminating solidarity and mobilizing members. *Guanxi* is a trust-building and maintaining mechanism, which is formative in mobilization (Bian, 2002). It is suggested that the development of *guanxi* is based on commonality, shared identity, and trust (Jacobs, 1979). Each person in a *guanxi* relationship shares an aspect of personal identification that is important to him/her as individual. The shared identification works as a necessity in *guanxi*. When solidarities are constructed according to the Chinese cultural and ethical system, they form close connections.

It can be concluded that through the practice of *guanxi* the capacities and resources of Chinese social-movement groups are enhanced. Since informal organizations may be more inclined to utilize individual *guanxi* networks in mobilization, performing their activities, and reaching their goals, they will probably rely stronger on individual networking capacities than formal organizations (see Table 2). Formal organizations will rely stronger on

Table 2. *Guanxi* and Social Movement Organizations.

Type of Organization	Utilization of <i>Guanxi</i>	Networking Capacity
Informal organization	Inclined to use <i>guanxi</i>	Stronger personal networking capacity
Formal organization	Less inclined to use <i>guanxi</i>	Less stronger personal networking capacity

organizational networks, where ties and relations are institutionally embedded and organized.

METHODOLOGICAL BACKGROUND

The emergence of China's environmental movement – and more specifically also that in the capital Beijing – started with the booming of environmental education NGOs in the second half of the 1990s, resulting in the raising of environmental consciousness of especially young people. Recently, since 2000, environmental-movement organizations started to turn their attention more prominently to affecting policy-making, giving evidence of a larger political room for maneuver and a larger self-confidence of these environmental NGOs. The opposition and campaigns against the building of a series of hydroelectric construction projects in the western provinces, such as those in Yang Liuhu and Du jiangyan in Sichuan province, give evidence of that. The campaign against dam-construction plans in the Nu River can be seen in line with these other campaigns and will be taken as a case study in exploring the role of networks in the emerging Chinese environmental movement organizations.

While in line with earlier dam protest, the Nu river dam campaign is not a representative example, but rather – up until now – a climax in the construction of a more politically oriented environmental movement in China. While the environmental movement organizations did not yet completely halt the dam-construction project, the campaign showed a significant impact of the involved NGOs in promoting transparency and in influencing successfully policy and political processes. By building effective networks of journalists, environmental NGOs, scientists, and the State Environmental Protection Bureau (SEPA) the decision-making process on the Nu River dams was – at least temporarily – turned.

Fieldwork to understand the network dynamics in this case study of NGO protest was conducted from October 2003 until July 2004 in Beijing and Yunnan province, during the mobilization of the campaign on Nu River. Interviews were conducted both with leading individuals and members of involved environmental NGOs, such as Green Environmental Volunteers (GEV), Institute of Environmental Development (IED), Friends of Nature (FON), Global Village Beijing (GVB), Beijing Brooks Education Center (BBEC), and the local environmental NGO Green Watershed. In addition, scientist, officials at SEPA and Yunnan authorities, foreign NGOs⁵ and

journalists were interviewed, sometimes more than once during the campaigns.

Participatory observation was a key method to get information. One of the authors worked as a research staff in the NGO Research Center in Tsinghua University. This center investigates and studies the development of domestic Chinese NGOs. It is well-known among Beijing's NGO community, but less so beyond Beijing. As a researcher on NGOs relatively easy access was obtained to environmental NGOs, as well as to governmental officials of different agencies. At the same time the lead author was also associated as a volunteer with some ENGOs, providing opportunities to participate in numerous ENGO gatherings and campaigns. These experiences provided a rich source of information on the functioning of networks.⁶ Published sources, such as articles in national and local newspapers, news reports and other gray literature, were systematically collected during the campaign.

THE CAMPAIGN AGAINST HYDRO-ELECTRIC POWER PROJECTS ON THE NU RIVER

In July 2003 the report on 'Planning of Electricity Exploration in Middle and Lower Stream of Nu River,' initiated by the National Investigation Institute and the Kunming Investigation Institute, was accepted by the National Development and Reform Commission (NDRC). This report detailed the plan for constructing 13 hydro-electric power stations in the Nu River with the objective to produce more than 20 million kilowatts of electricity per year. The various dams would seriously affect the natural flow of the river with significant environmental and social effects, but these consequences played a minor role in the report.

One month after the launching of the report a high-level meeting was organized by NDRC to discuss the report on "Planning of Electricity Exploration in Middle and Lower Stream of Nu River." Though the State Environmental Protection Agency SEPA expressed its reservation and disagreement during this meeting, the project proposal was accepted by the meeting and was delivered to the State Council. The proposal planned to start dam construction by the end of 2003. But the proposal became object of an environmental and social controversy.

Around this conflict two sides can be identified. SEPA and a coalition of environmental movement organizations formed the core of the opposition

against the plan. In September and October 2003, SEPA started to organize expert meetings and tried to mobilize public opinion on the negative consequences of the project proposal, but this did not make much difference.⁷ The campaign of Chinese environmental NGOs was initiated in August 2003. The arguments of SEPA and the NGOs against the dam project focused on the destruction of thousands of rare and endangered plants and animals and the forced relocation of thousands of people, especially from western Yunnan's 22 ethnic minorities.⁸

The core of the side supporting the dams consists of NDRC in the central government and the local authorities at Yunnan province. NDRC claimed that the amount of electricity resulting from the dam-construction would solve the nation's current energy crisis. The local government in the Nujiang area is not strong and rich enough to initiate such a construction project, and was very pleased to obtain such a large investment project from the central government.⁹ Ecological and social effects of this construction were of minor concern to the provincial and local governments in Yunnan.

After a first delay the conflict culminated in the decision of premier Wen Jiabao in April 2004 to halt implementation of plans to build 13 hydro-electric dams on the Nu River. The various activities of NGOs began to decline in August 2004. However, policy discussions on the dam construction project were resumed in October 2004, when the pro-dam authorities tried to put the project again on the political agenda. The final decision on the dam-construction project has not been taken by summer 2005, and it is yet unclear when that will happen.

INDIVIDUAL NETWORKS AND *GUANXI*

In this campaign, GEV, a Beijing-based environmental movement organization, played a particularly important role in constructing the social movement network around this campaign. However, the central role GEV could play in building this campaign was based to a large extent on the *guanxi* of its leader. The organizational development of GEV makes it a typical informal organization by the time it got involved in the Nu River dam campaign. GEV was founded in the year 1997, initially as a recreational association.

During a number of years GEV's mainstream activities focused on bird watching and raising environmental consciousness among city dwellers. After some years attention changed to issues such as resorts protection and poverty reduction, only to become engaged in campaigning and protesting

Table 3. Characteristics of Members of GEV.

Gender	Male	40%
	Female	60%
Age	Under 25 years old	25%
	25–35	20%
	36–45	15%
	>45	40%
Monthly income (in RMB)	<2000	10%
	2,000–5,000	75%
	5,000–10,000	10%
	>10,000	5%
Occupation	Government	10%
	Journalists/media	30%
	Teachers in primary school and secondary school	10%
	University staff	10%
	Other NGOs	30%
	Freelance	5%
	Other occupation	5%

with the Nu River dam project in 2003. GEV's institutions are especially loosely built. Individuals are accepted as member of GEV once they join any activities of GEV. GEV's leader and founder of the organization, Ms. Wang plays a crucial role in the operation of GEV. Her *guanxi* contributes greatly to GEV's growth and impact.

Being an active journalist and environmentalist, Ms. Wang's *guanxi* network is quite extensive. There is a clear mix of 'deep' *guanxi* with 'not deep' ones. Its composition is shown by the occupation, income, and age levels of members of GEV, a core part of Ms. Wang's *guanxi* (see Table 3).¹⁰ The majority of members have an average income of 2,000–5,000 RMB. The average monthly salary of employed citizens in Beijing in 2004 was 2,362 RMB (US\$295.3).¹¹ The core part of Ms. Wang's *guanxi* is composed of environmentalists (around 200) and journalists. Journalists are significantly involved in activities of GEV and many of them participate in 'journalist salon' and 'birds watching' – fixed programs of GEV. NGO members form another major part of Ms. Wang's *guanxi* network.

Leaders of several important environmental NGOs are closely connected to Ms. Wang, such as those of BBEC, FON, IED, and GGF. A smaller part of Ms. Wang's *guanxi* network is composed of governmental officials and the scientific community. As a last characteristic, women are stronger

represented in GEV than men, which is common in other environmental-movement organizations as well. According to one NGO leader, women represent some of the best virtues in Chinese society: they are determined, patient and affective, and are not just pursuing fame or money.¹²

Most of the people over 45 years of age, the largest cohort among GEV members, have experienced hardship in their youth, when China was a developing country. They witnessed various political movements of the Chinese Communist Party that disturbed many life-histories, the most well-known being the ‘cultural revolution.’ But these older generations gained also a large sense of social responsibilities toward collective interests in contemporary China (Liu, 1996). At the other side of the age spectrum the cohort of young people in GEV especially consist of university students, which should not be too surprising seeing the large number of student environmental groups being established lately in China (see Fig. 1).

The characteristics of Ms. Wang’s *guanxi* contribute to the creation and sharing of a particular kind of environmentalism, which combines social responsibilities with environmental care. This social and environmental solidarity is perceived as a deep commitment that binds individuals. As described by the leader of Green Island, part of Ms. Wang’s *guanxi*:

I like to have commitments in the field of environment: It keeps me moving ahead – to organize more activities, and to work more for protecting the environment ... In the interactions with volunteers, I feel very much encouraged and motivated. I am doing this work with love. I believe Ms. Wang shares this with me too.

It is found that Ms. Wang’s identity tends to be a personal identity not so much shaped by GEV; rather her personal identity strongly influences her personal network and with that GEV. Viewed by the core members of her *guanxi* network, there exists a large homogeneity among GEV members. Though these individuals are part of GEV, their identity was more prominently formed in their connection with Ms. Wang’s *guanxi* network. Thus, Ms. Wang’s *guanxi* network has become an alternative to a formal social organization, as it links individuals by binding their identities.

Structure of Social Movement Organizations Network

By utilizing Ms. Wang’s *guanxi* network, GEV played an important role in this campaign through building linkages at the individual level. Through these build linkages an organizational network was formed around the campaign, composing of environmental NGOs, SEPA, media and scientists.

The network of environmental NGOs in Beijing and at the national level is relatively loose and not institutionalized. Except for specific projects, there is relatively little cooperation and coordination among ENGOs that are committed to similar goals. Around this campaign GEV proved to have a strong networking capacity by using Ms. Wang's *guanxi* with the leaders of several environmental NGOs. It could occupy such a central and coordination positioning in the campaign due to Ms. Wang's *guanxi*. Educational NGOs (FON, BBEC, GVB), NGO research institutes (IED), and voluntary associations (SEA) cooperated in GEV's organizational network around the Nu river dam campaign.

GEV's linkage with SEPA was also of major relevance for the campaign and the final outcome. In the policy debate around the Nu River dams, the National Development and Reform Commission was the main actor initiating this project, and was also responsible for organizing the environmental assessment. SEPA, of the same rank as NDRC, was left with limited authority in influencing the initial policy proposal, the subsequent policy process and the organization of the environmental assessment. The SEPA demand for a strict environmental assessment of the project plan by neutral institutions was not followed.¹³

In order to gain leverage on this project, a minority of officials in SEPA decided to draw on support from environmental movement organizations. The collaboration was mainly based on Ms. Wang's close connections with Mr. Mu, vice chancellor of the supervision department of SEPA. Mr. Mu's clear positive attitude toward environmental NGOs was known and silently approved by a small group of top leaders in SEPA.¹⁴ During the policy process and the campaign Mr. Mu provided Ms. Wang and GEV with update information, both on substantial environmental information as well as on the development of the political debate. Information and news became a very prominent resource in Mr. Wang's *guanxi* network. The capacity to provide information on policy and political dynamics founded the central position of Mr. Wang and her GEV in this movement.

Mass media form an important counterpart of the environmental movement, especially in gaining influence. While there is still large state control on the media, it is no longer monopolistic and especially environmental issues have been given more freedom in the press and on television. (Shambaugh, 2000; Haggelund, 2004). Media coverage can raise the profile of environmental NGOs, gain public support for the anti-dam campaign, and brings a form of recognition from the state as well (as it does not suppress this media coverage). With Ms. Wang's tight connections to journalists, GEV could build close linkages with the media and develop public

opinion and consensus building into one of the main strategies of the anti-dam campaign. While widely practiced in western countries, this is quite remarkable in China, although it was also successfully applied in the struggle against a hydro-electric power project construction in Yang liuhu, in Sichuan province, early 2003.

Scientists are generally valued highly by policy makers (Sullivan, 1994). In this controversy, science developed into a key issue as SEPA accused the environmental assessment on dam building to be subjective and one-sided. Opinions of scientists and scholars became important arguments for SEPA in policy debates and for the movement coalition in campaigns and media. The local government posed serious pressure on local scientists expressing views that were critical of dam construction. As local scientists are more familiar with the specific local situation, integrating local scientists became a critical issue for the environmental movement. Here Ms. Wang's *guanxi* network was of limited direct value.

TACTICS ADOPTED BY THE MOVEMENT NETWORK

In this campaign, the movement network adopted two strategies to influence policy and decision making. First, it mobilized public opinion and tried to build a collective consensus against dam construction, not unfamiliar in Chinese decision-making processes (e.g., Lieberthal & Lampton, 1992). Second, influential collective activities were organized that had an impact on society and policy-makers.

Mobilizing Public Opinion and Building Collective Consensus

Through its close linkages with SEPA and various journalists and media the environmental movement against the Nu River dam was able to develop a strategy of regular publications in local and national journals, radio and television. At the one end, ideas and information of SEPA on the policy proposals, scientific reports and assessments were accessed. The contacts with the media provided good access to the wider public (and policy makers).

According to the issues that were central in this strategy of building public opinion two periods could be distinguished. From August 2003 until February 2004, the aim of publications and information dissemination via the media was to attract public attention to the controversy of dam building in the Nu River. More than 20 newspaper articles could be counted on the

news of dam project and the controversy around that. These articles were not only published in general newspapers for the wider public, but also in the daily newspaper of the Chinese Communist Party, which has major impact on policy makers.¹⁵ At the same time, a television program was made and broadcasted as well.¹⁶

In this period, consensus building by GEV and its coalition was very much focused on ecological and environmental issues. SEPA's early opinion, 'protecting the river that has great ecological significance,' formed the starting point and was continuously repeated in journal articles.¹⁷ This argument became the major focus of the pro-construction side, which constantly insisted on judgments based on growth in local economy and the increase in national energy, using the ecological assessment report to deny serious ecological effects. Rather than relying on SEPA's judgment and impact, GEV increasingly called in experts, who used scientific ecological and environmental arguments. The expert resources were again widely disseminated via the media in order to build public opinion and consensus.¹⁸

The repertoire changed in the second stage, along with GEV's deeper understanding about the project. In February 2004, Beijing-based GEV organized a mission for journalists, Beijing's scholars, and environmentalists to investigate the local situation of the Nu River. During this trip, participants became impressed with the significant impact the dam-construction project would have on the rich biological diversity and cultural diversity in the area. Especially the social consequences were only then fully understood and 'experienced'. Twenty-two minorities and six kinds of religions co-exist in this area, most of whom farm and herd in the isolated mountains above the river. The project would result in the relocation of 50,000 people, especially from the minorities. This excursion led to a large amount of reports and articles especially on the social conditions in Nu River area and how these would be affected by the dams.¹⁹ During this period, consensus building shifted from mere ecological protection, to include concern for the inhabitants.²⁰

The previous consensus building that focused mainly on ecological values was vulnerable to scientific debate and counteracted by arguments regarding the need for local economic development. But the new one was broadly accepted, and it raised attention to social problems in local area. Arguments of economic development by NDRC and local governmental authorities proved of no use in attacking this new consensus. This media strategy and consensus building worked also effectively towards the various environmental movement organizations; it brought them together and pushed the campaign to a new stage.

Formation of Coordinated Actions

In the later period of the campaign, ENGOs collaborated effectively. They organized coordinated actions, although the Chinese context limited the forms of collective action that could be organized. The purpose was constantly to publicize the campaign and produce greater impact on society.

In Beijing, photo exhibitions were held in Beijing's universities. In March and April of 2004, for instance, nine photo exhibitions were held in Beijing's universities (7), a supermarket, an office building, and a post-office. Student Environmental Associations were contacted to help to arrange the time and venue at their campus.

To generate greater influence, an interactive website called 'Nu River Sentiment' was established. This website facilitated exchanging information and communication among movement actors as well. At this website, progress of the campaign was described, photos and articles on dam construction were attached and scientific information was provided. Various environmental NGOs joined in building this website, declared their support to the campaign, edited the content of the website, and provided technical support.

In the campaign, ENGOs also tried to influence the developmental project by participating in institutional channels. FON, an influential NGO with relatively strong access to political institutions, was called in the network. Through its influence in political and policy institutions, it helped to bring scientific reports made by GEV-related experts at various points in the policy making process. For instance, two major studies, 'Protecting Nu River, Stop Water and Hydroelectric Development' and 'Grouping rivers, Coordinating Ecological Protection and Economic Development,' were brought into the National Political Consultative Conference in March 2004 and became part of the political debate there. Individual *guanxi* with policy-makers and politicians in the personal networks of leaders of FON and other environmental-movement organizations proved also instrumental.

CONCLUSION

The campaign of environmental-movement organizations to stop the hydroelectric project on the Nu River can be interpreted as a milestone in the Chinese environmental movement up till now, for several reasons. For the first time environmental NGOs were successful in at least temporarily stopping a major state infrastructure project, that was endorsed so strongly by

the local government and NDRC.²¹ The interference of the prime minister to reconsider the dam-building project was an open support to the environmental NGOs and SEPA. Secondly, the campaign of environmental NGOs was to a significant extent held in public. The debate and controversy was to a large extent openly organized via a strong media strategy, giving evidence of the increasing room for maneuver of environmentalist in contemporary China. Finally, the campaign gives evidence of an emerging cooperation among various environmental-movement organizations, and thus the development of an organizational network.

In highlighting these innovations and explaining the surprising success of the environmental activists, it is interesting to compare this campaign with the environmental campaign on the Three Gorges dam project, which took place in the early nineties of the former century. In both campaigns public opinion raising and consensus building was the main strategy, and scientists and policymakers were also equally important actors in the Three Gorges dam controversy. However, the differences are even more striking than these similarities, both in the campaign and in the final outcome. The different political and social context of the Three Gorges dam campaigns did not allow the emergence of an independent network of environmental movement organizations; instead the opposition remained restricted to individuals, rather than organizations or a movement.

A media campaign such as the one around the Nu river hydro-electrical project was impossible around the Three Georges Dam, as the media were much stronger controlled by the state and infrastructure projects were still seen as sensitive issues. According to Sullivan (1994) nationalism and ethnocentrism were advocated in the early 1990s, instead of the need for transparent policy process. The more open political context with respect to environmental issues at the start of the new millennium allowed also the open support of the top of SEPA, which was impossible in the early 1990s. During the Three Gorges dam project controversy, the political totalitarian system lacked any checks and balances outside the political bureaucracy. The dominant large-scale bureaucracies, the Ministry of Water Resources, and the Yangtze Valley Planning Office, were fully in charge of the debate by controlling information flows and thus determining the outcome.

Although this case study saw the emergence of an effective network of environmental organizations, it was the individual *guanxi* of the leaders of the environmental organizations that was crucial in organizing the campaign and mobilizing support. By distinguishing informal organizations (where individuals rather than organizational structures are decisive) from

formal organizations (where organizational rules and structures determine individual actions on behalf of these organization), it became apparent that individual networks rather than organizational networks could explain the organization of the campaign and the successful use of the various resources. In terms of *Diani's* (2003) distinction between 'brokers' and 'leaders' in movement processes, GEV and Ms. Wang should be clearly considered leader rather than broker.

For informal social groups in China *guanxi* facilitate the formation of a social-movement network, also at the level of organizations. The *guanxi* network of individuals is instrumental in transcending borders and link organizations. What is more, *guanxi* are instrumental in building solidarity and a collective identity. The latter point proved crucial; *guanxi* bring with it a certain level of shared identification among counterparts, which relates to common values and ethics. This cultural content binds individuals and builds solidarity. In this way, the contents of *guanxi* determine to a significant extent the nature of the movement network. But the importance of *guanxi* depends on the geographical location in China. *Guanxi* is more prevalent in the northern part of China than in the Southern and coastal areas. In the North, *guanxi* are rooted deeper in the local culture.

The main reasons that *guanxi* are used in building environmental movement are twofold. It relates to the specific institutional context of NGOs in China and to the level of organizational development of NGOs. One can expect that the democratization of China and the professionalization of environmental NGOs will both result in decreasing importance of *guanxi* in environmental movement campaigns in China. Characteristics of political processes determine the strategy adopted by movement actors. Using *guanxi* proves to be one way to cope with an undemocratic political system as it fills institutional gaps. In this specific context, getting updated information on policy arrangements and political developments has been a main achievement of *guanxi*, because such information has always been strictly controlled by political system in the past.

However, experiences in the Chinese economy and business sector show that the function of *guanxi* network as structural linkages are not easily completely removed, even when these institutional gaps are filled otherwise. While the institutionalization of a market economy is progressing rapidly in China, it has not dissolved the use of *guanxi* in economic transactions, although – again – *guanxi* is less prevalent in the Southern and coastal economies than in the Northern one.

NOTES

1. We will not make a distinction between the terms environmental groups, NGOs, and environmental-movement organization in this chapter.

2. In China, so-called GONGOs, Government Organized Non-Governmental Organization, form a special category of environmental groups with close relations to governmental institutions, but not part of the government. In this chapter, we leave this category aside as no GONGO played a major role in our case study.

3. Personal interviews (held in 2003–2004) with several key figures in environmental social-movement organizations by the authors.

4. The supervising institution is called the mother-in-law institution. These institutions are only qualified if they are administratively on an adequate level. According to the 1989 “Regulation on Social Organization,” the supervising institutions must be specific governmental units or legally permitted specific units that are higher than county level. One can see very different mother-in-law institutions, from governmental Environmental Protection Bureaus to military agencies. Formally, these mother-in-law institutions have obligations and responsibilities toward the environmental NGOs, but in practice the relations are limited.

5. Foreign foundations and NGOs are at the moment the main financial – and sometimes informational – source for Chinese grassroots ENGOS.

6. Journalist Saloon, a program organized by GEV, formed such an occasion where news was released, ideas exchanged, and campaign mobilization took place.

7. Some of the details of the debate and disagreements between the authorities on the Nu river projects can be found in: “Opinions on Development over issue of Nu River,” *China Youth Daily*. April 19, 2004. China: Beijing.

8. It would lead to 490,000 people resettlement in local community. At the same time, this project affects the lower stream countries as well.

9. Compared to the investment of 1.15 billion U.S. dollars it received from the central government over the last 50 years, this opportunity was believed to be a turning point for the Nujiang area. It was estimated that the construction of the dams would bring around 1.25 billion U.S. dollars to Nujiang local government per year, and a total investment of 105.9 billion U.S. dollars. The construction means a transformation in the local economy, with tremendous growth of local income and employment. The energy produced by the dam is estimated to be 1.22 times the electricity produced by the famous Three Gorges dam in the Yellow river.

10. The data are composed via a rough estimation by Ms. Wang in January 2005, a survey among the core members of GEV (around 150) who joined its activities more than three times from 1997, and personal observations during the various activities of GEV during the Nu River dam campaign.

11. According to a report on a website about recruitment news: <http://www.hao86.com/pay/21090.htm>

12. Personal interview. November 12, 2004.

13. The National Investigation Institute, an institution closely linked to NDRC, and Kunming Investigation Institute, a local government institution, completed the environmental assessment. It was later regarded by SEPA and environmental NGOs as neither neutral nor reliable.

14. As remarked by the head of SEPA, NGOs compose an ally of SEPA in environmental protection matters (Pan, 2005).

15. September 11, 2003. Zhao, Yongxin. 'Keep The River of Ecological Significance for Future Generation.' *People's Daily*. Beijing. August 19, 2003. Beijing. Zhang, Kejia. 'Dam Building On Nu River is planned. Construction is Opposed.' *China Youth Daily*. Beijing.

16. December 28, 2003. Ma, Hongtao. 'Conflicts in Dam Building on Nu River.' Half An Hour On Economy. TV Program. By National TV Station. Beijing.

17. These were reported in articles in this period. 'Please Keep the Last River that Has Ecological Significance'. By Wang, Yongchen. *Southern City News*. August 20, 2003. Guangzhou; 'Please Keep the Last River that Has Ecological Significance'. By Wang, Yongchen. *People's Consultancy News*. August, 26, 2003. Beijing; 'Ecology In Nu River Should Be Kept'. By Ding, Pin. *Chinese Environmental News*. September 5, 2003; 'Can Nu River Skip The Fate To Be Exploited?' By Zhou, Yuanchun. *Science Newspaper*. September 14, 2003. Beijing; 'Please Keep the Last River that Has Ecological Significance'. By Wang, Yongchen. *Xinmin Newspaper*. November 7, 2003. Shanghai; 'Nu River—the Last River Not Being Exploited Is In Danger'. By *Phoenix Website*. Hongkong. November 13, 2003; 'Dam Will be Built On Nu River Too'. By Zhang, Hui'e. *Southern City Newspaper*. November 25, 2003. Guangzhou.

18. 'Experts Talk About Gains And Loss On Dam Building On Nu River.' Radio Programme, made by Jin, Xiaodong and Xu, Hualin. National People's Radio. September 4, 2003; 'Scholars Advocating Protecting Nu River'. By Ding, Pin. *Chinese Environmental News*. September 9, 2003; 'Scholars Collectively Oppose Dam Building On Nu River: the Last River of Ecological Significance.' By Zhang, Kejia. *Chinese Youth Daily*. September 9, 2003.

19. Relevant reports, see May 20, 2004. Tang, Jianguang. 'Force that Delayed Construction on Nu River.' *China News Weekly*. Beijing. April 19, 2004. Liu, Chang. 'Visit Nu River.' *International Tribune*. Guangzhou.

20. Personal interview. November 3, 2004.

21. While the suspension and reassessment of the multi-billion dollar electricity projects – as ordered by Premier Wen Jiabao – has yet to be reversed, it is especially the provincial Yunnan authorities that make life for environmental NGOs protesting the dams increasingly difficult (see www.antara.co.id/en/seenws/?id=10048; accessed March 14, 2006).

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CODA

12. THE SHARED FUTURE OF ENVIRONMENTAL SOCIOLOGY AND COMMUNITY SOCIOLOGY

Aaron M. McCright and Terry Nichols Clark

ABSTRACT

This book facilitates the existing dialogue between community sociologists and environmental sociologists on the ecological and social significance of place, the challenges of local sustainability, and local environmental politics. Even after many years into this general intellectual discussion, much remains to be clarified, defined, explained, and understood if we are to provide other concerned actors with meaningful social scientific insights. As such, we conclude this chapter by briefly identifying seven fruitful avenues for future research that follow directly from the contributions to this book.

A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.

– Aldo Leopold in *A Sand County Almanac* (1949/1989, pp. 224–225)

We chose to begin the introduction chapter, the three short section introductions, and this chapter with insightful quotations from Aldo Leopold's *A Sand County Almanac*, one of the most popular works in environmental

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philosophy. Leopold feared that too few people recognized the ecological embeddedness of human activities. Yet, he generally believed that greater education – especially that which is experiential and science-based – and a shift in our values could alleviate this situation. Indeed, his entire intellectual legacy promotes this sentiment. Leopold did not believe there was anything inherently destructive in the human species; rather, he thought we could realize the error of our ways and learn to live according to the “land ethic” defined in the epigraph above. Very simply, Leopold argued that humans are *a part of* – rather than *apart from* – the greater ecological community (“ecosystem” in science-speak) and thus are bound ethically to behave in ways that protect the integrity and well being of this community. In other words, Leopold advocated that humans should be good neighbors to all other inhabitants of our ecological community – a simple idea that nevertheless may be the most serious challenge our species has faced in recent millennia.

This volume modestly furthers scholarship within this intellectual intersection of community sociology and environmental sociology. In assembling this volume, we identified three robust areas of research within this intersection: the ecological and social significance of place, the challenges of local sustainability, and the local environmental politics. We briefly review the overarching themes of these three sections before discussing the implications of this volume for future research directions.

In the epigraph opening our brief introduction to Section 1, Leopold’s message is that an ethic presumes that an individual is part of a community. This first section focused exclusively on place-based communities, addressing the ecological and social significance of place. More specifically, the authors of these chapters examined different characteristics of change within different types of communities. David Burley, Pam Jenkins, and Brian Azcona (Chapter 2) studied perceptions of vulnerability in especially dynamic rural locations where a modified environment meets a natural environment. Matthias Gross (Chapter 3) analyzed the participation of multiple stakeholders in an urban project to restore a modified environment. Jerome Krase (Chapter 4) investigated the tenuous local cultural identity constructed by ethnic groups within the built environment of major metropolitan areas. These three chapters remind us that communities are dynamic and this varying dynamism across different types of communities presents unique challenges to their integrity and stability.

The three chapters in Section 2 furthered this theme by addressing other types of challenges to local sustainability. Leopold’s epigraph advises us to expand our definition of community beyond human residents to include

members of other species (and natural resources more generally) if we are truly concerned about sustainability. In the language of today's scholars, we must be sure to include a focus on ecological sustainability with our ongoing concern for social and economic sustainability. Also, we must make sure that our efforts to achieve one dimension of sustainability reinforce our efforts to achieve the other two dimensions of sustainability.

The authors of the three chapters in this section specifically investigated the relationships among these three dimensions of sustainability. Raymond Murphy (Chapter 5) examined differential social and economic resilience to extreme weather events across different types of communities facing the same ecological phenomena. Ari Ylönen (Chapter 6) studied emerging conflict in a developing urban area among the short-term goals of self-interested individuals, the processual goals of social sustainability (e.g., democratic participation), and the longer term communal goals of ecological and economic sustainability. Hilary Silver and Peter Messeri (Chapter 7) analyzed how the built and social environments within a major metropolitan area mediate the relationship between race and poverty on one hand and several public health outcomes on the other. The topics within this section presumably arouse the political passions of local citizens, and that is the topic of our final section.

Leopold's epigraph opening our introduction to Section 3 re-defined humans as *citizens in an ecological community* rather than *conquerors of an ecological community*. This shift forces change in political regimes. Indeed, several changes are evident in political decision-making in the West in the past forty years:

- new substantive concerns about the ends of our policies (e.g., protection of drinking water quality and air quality);
- procedural innovations with the means of our policies (e.g., increased roles for science in policy-making, increased demand for citizen participation in impact assessments, and reduced tolerance for inequality in implementation of policies);
- new stakeholders who contribute to a range of policies (e.g., individuals and groups who speak on behalf of the environment and individuals and groups who specifically oppose environmental policies); and
- heightened pressure to design longer term policies (e.g., management and disposal of toxic and nuclear waste and protection of endangered species).

These changes indeed have stirred up the political passions of many different types of actors, providing scholars with ample opportunities to study environmental politics and policy-making across multiple contexts.

The four chapters in this final section addressed how the political context of communities may facilitate or inhibit effectively dealing with environmental problems. Christopher Rootes (Chapter 8) found that political opportunity structures and decision-making sequences have strong direct and indirect effects on the outcomes of local campaigns against proposed waste incinerators. Aaron M. McCright and Terry Nichols Clark (Chapter 9) discovered that non-institutional elements of the political opportunity structure better explain the mobilization and outcomes of an environmental movement in over 250 large communities than do institutional elements. Kent Schwirian (Chapter 10) examined how a community's response to an emerging infectious disease is influenced by its location within the global network of cities. Lei Xie and Arthur Mol (Chapter 11) explored how mobilization of an environmental movement within a repressive state – which leaves open only narrow formal institutional channels – may occur successfully through informal social networks.

IMPLICATIONS FOR FUTURE RESEARCH

The 10 substantive chapters in this volume offer a snapshot of the kind of fruitful scholarship that can be performed within the intersection of community sociology and environmental sociology. In the remainder of this coda, we identify seven avenues for future research that follow directly from the contributions to this volume.

Future research within the intersection of community sociology and environmental sociology should continue to explore the *tensions between individualism and collectivism*. Certainly, the conflict between individual interests and the common good is a central focus of traditional scholarship within community sociology. Indeed, it relates to the very essence of what we consider “community” to be. Attention to this tension between individualism and the common good increases in salience when considering the environmental consequences of communities. Many environmental conditions (e.g., air quality, water quality, the ozone layer, the greenhouse-like properties of the atmosphere, and the diversity of non-human species) are especially communal in that there is no technically viable way to privatize ownership or impacts. For instance, we would be foolish to claim that we could distinguish “my” atmosphere from “your” atmosphere. Yet, we may speak reasonably about “our” atmosphere and “our” responsibilities toward it for the common good of all in our social communities.

Thus, conjoint community–environmental scholarship places this individualist–collectivist tension front and center. In this volume, Ari Ylönen identified a significant trade-off between individuals’ short-term decisions in an open marketplace and the longer term ecological aims of sustainable development. Also, Christopher Rootes’ research pointed out that developing and encouraging community as a foundation for ecologically sustainable practices may undermine aggressively materialistic individualism. Several research questions in this area may be promising, but we offer just one for illustrative purposes. What types of value shifts and incentive structures facilitate a shift from individualism to a kind of collectivism crucial for developing sustainably and for effectively managing ecological risks?

Second, we should recognize that instances of *ecological restoration and land-use planning* are promising avenues for studying the dynamics of citizen participation. Ecological restoration in particular emphasizes the significance of community and community-building for successful projects, as stressed by Matthias Gross and David Burley, Pam Jenkins, and Brian Azcona in this volume. Much of the same can be said about the role of citizen participation in land-use planning, according to Ari Ylönen.

The chapter by Burley, Jenkins, and Azcona provides a nice roadmap to future research. Generally, what role do (and should) communities play in the restorative process? What level of community involvement is optimal for successful restorative practices, and what are the most effective mechanisms to promote this involvement? Following the case presented by Burley, Jenkins, and Azcona, how does trust in the state mediate the relationship between residents’ strong place attachment and general feelings of disenfranchisement and alienation? Not only does ecological restoration offer a great way to study community-building, but it also offers researchers the opportunity to gain refined insights into how the natural world affects how communities function. Along these lines, Gross pointed out the relevance of actor-network theory promoted by Bruno Latour and John Law.

Third, future research should examine how the experience of natural catastrophes and waste facility siting controversies may affect *community learning and educational possibilities*. The chapters by Raymond Murphy and Christopher Rootes both point in this direction. Rootes identified research on the role of environmental campaigns in fostering environmental educational opportunities especially for residents in the affected communities. Murphy’s chapter has implications for social learning more generally. His work begs that we address the following questions. What does a community learn from experiencing a disaster, and what factors influence this learning process? How is this learned knowledge constructed and diffused

within this community? Finally, what factors affect the diffusion of this learned knowledge across communities?

Fourth, related to processes of social learning though cast in a more general light, the chapters by Raymond Murphy and Kent Schwirian each brought up the idea that communities may have *differential capacities and capabilities for resilience*. Schwirian's chapter on community-level responses to the SARS epidemic within the network of global cities begs a comparative question. What similar or different capacities (e.g., resources, leadership, skills sets, problem-solving abilities, structural organization) do communities need to respond to low probability, high consequence events ranging from public health plagues (e.g., SARS, Asian bird flu) to natural disasters (e.g., floods, tornadoes, hurricanes, earthquakes) to terrorist attacks (e.g., the September 11, 2001 attacks in the United States, the March 11, 2004 Madrid train bombings, and the July 7, 2005 London bombings)? How are the capacities for proactive responses (e.g., prevention) related to the capacities for reactive responses (e.g., evacuation and recovery)? How are such capacities built and managed over time? Indeed, we may even develop a methodology to index such capacities for comparative community research.

Even further, what are the differential capabilities of communities to bring their capacities to bear on potentially devastating events? Can we index capabilities for comparative community research? What consequences for communities result from a mismatch between capacities and capabilities? Murphy's chapter asks us to take several steps back from the immediate cases at hand to contemplate on a more theoretical level the extent to which modern technological systems render our communities less resilient – or more vulnerable – to these low probability, high consequence events (especially extreme ecological events). What factors explain whether a community attempts to adapt to increased hazardousness and prepare for disasters rather than mitigate the socioeconomic processes that foster potentially catastrophic events?

Fifth, the authors of three chapters in this volume (Christopher Rootes, Aaron McCright and Terry Clark, and Lei Xie and Arthur Mol) specifically call for further research involving more comparative studies across multiple contexts that may offer greater generalizability on *what factors affect local environmental mobilization*. For example, a fruitful way to extend Christopher Rootes' research would be to increase the sample size of waste incinerator proposals, perhaps examining all proposals in England since 1990. Such scholarship also would benefit from the addition of cases from countries such as the United States and Germany to facilitate systematic cross-national comparisons for greater generalizability.

In the conclusion of their chapter, Aaron M. McCright and Terry Nichols Clark argued for further research to expand their study in two directions. First, interested scholars should continue examining how internal dynamics (e.g., mobilization style, repertoire of contention, framing strategies) of local manifestations of the environmental movement relate with characteristics of the movement's external environment. Second, scholars should expand the examination of the environmental movement's milieu from a sole focus on the political context to social and cultural structures as well. And we should examine how interactions among these three (political, social, and cultural) contexts affect environmental movement mobilization and outcomes across multiple communities. For instance, what are the roles of the general public vis-à-vis movements? When and where are public opinion, and other forms of public support, crucial for movement mobilization, maintenance, and success? How does a local political culture affect movement adherents, participants, and the general public – typically, as channeled by the media? And how does this local political culture affect movement actors' interpretation of and action toward different dimensions of the political opportunity structure?

Also, emerging trends of democratization and the professionalization of movement campaigns in China may seem to challenge the importance of *guanxi*, as described by Lei Xie and Arthur Mol in this volume. Yet, the authors note that the use of *guanxi* remains significant for economic transactions within the increasingly institutionalized market economy in China. Thus, future research that extends the work of Xie and Mol presented in this volume should continue to examine the relevance *guanxi* for environmental movement mobilization, especially identifying those factors that mediate the significance of *guanxi* for movement mobilization.

Sixth, following the direction of Hilary Silver and Peter Messeri, future research should continue examining the *complex ecological pathways among race, socioeconomic status, and public health outcomes* across communities in the United States and other societies. These authors specifically identified the need for higher quality data on biophysical environmental conditions (e.g., air quality), more information on individual-level health behaviors and outcomes, and more complete longitudinal data sets. Ultimately, Silver and Messeri argued for greater intellectual coherence among the fields of public health, urban planning, and housing reform and noted that public health policies and related actions may be more effective with such integration of insights.

Finally, future research on the intersection of community sociology and environmental sociology may benefit from *visual analyses*. The one

contribution to this volume from visual sociology (the chapter by Jerome Krase) focused narrowly on the social performance of ethnicity within built environments of major U.S. metropolitan areas. Yet, visual sociology also may be employed effectively to study the relationships between social communities and the biophysical environments in which they are embedded. To be sure, this avenue for further research is the least traveled of the seven we have identified here. As such, our research questions may be more exploratory and open-ended. At this point, it may be beneficial simply to ask the following. What insights can we gain through visual sociology for the study of social communities embedded within natural, modified, and/or built environments? Potential environments may range from the edges of wilderness areas to rural agricultural landscapes to sprawling suburban areas to industrial and post-industrial landscapes in central cities.

We close by reiterating our earlier claim that the futures of community sociology and environmental sociology will (and should) overlap. By all accounts, this volume is a beginning – an initial step – to demonstrate to other scholars in relevant social scientific fields that good work can be done when we cross boundaries to look over the shoulders at what our colleagues in other fields are doing. Again, we reiterate our claim that the cross-pollination of ideas furthered by this volume is a promising avenue through which to create a more general sociology that is ultimately more powerful in explaining the relationships among humans (in social communities) and between humans and the biophysical environment (in an ecological community).

ABOUT THE CONTRIBUTORS

Brian Azcona was born in New Orleans and has taught sociology at Xavier University and the University of New Orleans. As an M.A. student, he worked for the Center of Hazards Assessment, Response and Technology (CHART) at the University of New Orleans, examining the interrelationships among culture, politics, economy, and Louisiana's coastal land loss. He has written about Louisiana coast for local, national, and academic audiences. He is currently completing his Ph.D. at the University of Kansas.

David Burley is an assistant professor of Sociology at the University of Louisiana at Monroe. He recently defended his dissertation (December 2005) in Urban Studies at the University of New Orleans. His dissertation, *Land Loss: Attachment, Place, and Louisiana's Disappearing Coast*, was part of the larger "Coastal Communities Project" from the Center for Hazards, Assessment, Response and Technology (CHART). His research focuses on attachment to place, environmental change, and the social construction of whiteness. Recent publications include: "White Racial Reasoning: Rational Racism in the Perceptions of White Males" in the 2006 winter edition of *Humanity and Society*; an article co-authored with Pamela Jenkins, Joanne Darlington, and Brian Azcona titled "Loss, Attachment and Place: A Case Study of Grand Isle, Louisiana" in volume 5 (#3) of *Reconstruction: Studies in Contemporary Culture*; and a photo essay co-authored with Traber Davis, Pam Jenkins, and Shirley Laska titled "Losing Ground in South Louisiana" in volume 3 (#2) of *Contexts*.

Terry Nichols Clark is a professor of sociology at the University of Chicago. He holds M.A. and Ph.D. degrees from Columbia University, and has taught at Columbia, Harvard, Yale, the Sorbonne, University of Florence, and UCLA. He has worked at the Brookings Institution, The Urban Institute, the Department of Housing and Urban Development, and the US Conference of Mayors. His books include *Citizen Politics in Post-Industrial Society*, *The City as an Entertainment Machine*, *City Money*, *The New Political Culture*, and *Urban Innovation*. Since 1982 he has been coordinator of the Fiscal Austerity and Urban Innovation (FAUI) Project, which includes

a database of over 10,000 municipalities in up to 35 countries. It is the most extensive study to date of local government in the world, including data, some 700 participants, a budget exceeding \$20 million, and 50 published books, much of which is available on the website: <http://www.fau.org>.

Matthias Gross is a research social scientist in the Department of Urban and Environmental Sociology at the Centre for Environmental Research (UFZ) in Leipzig, Germany. He holds a doctorate in sociology from Bielefeld University and currently teaches at the University of Leipzig. He is a board member and treasurer of the research committee on “Environment & Society” (RC24) of the *International Sociological Association* (ISA) and co-founder of the journal *Nature & Culture*. His books include *Inventing Nature: Ecological Restoration by Public Experiments* (2003), *Realexperimente: Ökologische Gestaltungsprozesse in der Wissensgesellschaft* (2005, with Holger Hoffmann-Riem and Wolfgang Krohn), and most recently *Natur* (2006), an introductory textbook on the centrality of nature in sociology. He has published in journals such as *Current Sociology*, *Social Science History*, *The American Sociologist*, *Philosophy Today*, and *Public Understanding of Science*. His current research fields include the interaction between science and its publics in remediation strategies of contaminated sites and post-industrial landscapes.

Pam Jenkins is a professor of sociology and director of the Women’s Studies Program at the University of New Orleans. Her research interests are deeply connected to the community in which she lives – the coast of Louisiana. She has written about women and designed programs for women both at the university and the community. Her other interests include the meaning of place in relation to identity and community especially in regards to disappearing communities in Louisiana and the Midwest. At present, she is involved in two Katrina-related projects: collecting accounts of first responders to Katrina and re-interviewing the participants of the original coastal community project. All six communities in the original study were severely affected by either Hurricane Katrina or Hurricane Rita. Her books include *Preventing Violence in America*, *Witnessing for Sociology: Sociologists in the Courts*, and *Stopping Domestic Violence: How a Community Can Prevent Spousal Abuse*. Her work on the coast and the environment has been published in *Contexts*, *Impact Assessment*, *Society and Natural Resources*, and *Industrial Crisis Quarterly*.

Jerome Krase, emeritus and Murray Koppelman professor at Brooklyn College CUNY, has an Indiana University B.A. and a New York University

Ph.D. His dissertation “The Presentation of Community in Urban Society” explored integrated neighborhoods. He was a community activist/scholar and served as a consultant to public and private agencies. His interests have expanded into visual studies of ethnic and other urban neighborhood communities. He has written and photographed widely on urban life and culture and has lectured, researched, and exhibited his images on “Spatial Semiotics” in the United States and abroad most recently in Bosnia/Herzegovina, and Shenzhen, China. Published works include *Self and Community in the City*, *Ethnicity and Machine Politics* with Charles LaCerra, *Italian Americans in a Multicultural Society* with Judith N. DeSena, and *Race and Ethnicity in New York City* with Ray Hutchinson. With Timothy Shortell, he has an online archive for visual and textual research and teaching resources at www.brooklynsoc.org.

Aaron M. McCright is an assistant professor in the Lyman Briggs School of Science, Department of Sociology, and Environmental Science and Policy Program at Michigan State University. He holds a Ph.D. in Sociology from Washington State University, where he began his specialty in environmental sociology and political sociology. His recent publications include: “To Die For: The semiotic seductive power of the tanned body” (with Phillip Vannini), *Symbolic Interaction*, 27, 309–332; “Defeating Kyoto: The conservative movement’s impact on U.S. climate change policy” (with Riley E. Dunlap), *Social Problems*, 50, 348–373; “Politics and Environment in America: Partisan and ideological cleavages in public support for environmentalism” (with Riley E. Dunlap and Chenyang Xiao), *Environmental Politics*, 10(4), 23–48; “Challenging Global Warming as a Social Problem: An analysis of the conservative movement’s counter-claims” (with Riley E. Dunlap), *Social Problems*, 47, 499–522. His current research focuses on the relationships among dimensions of power, scientific reflexivity, social movements, and environmental problems.

Peter Messeri is an associate professor of Clinical Sociomedical Sciences at the Mailman School of Public Health at Columbia University. He received his Ph.D. in Sociology from Columbia University. His research interests include the delivery of health services, community-level health promotion programs, and tobacco/substance use with an emphasis on HIV/AIDS. Recent articles include: “Evidence of a Dose-Response Relationship Between ‘Truth’ Antismoking Ads and Youth Smoking Preference” (with Matthew C. Farrelly, Kevin C. Davis, M. Lyndon Haviland, and Cheryl G. Heaton), *American Journal of Public Health*, 95, 425–431; “Conceptualizing Youth

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Arthur P. J. Mol is chair and professor in environmental policy in the Department of Social Sciences at Wageningen University in the Netherlands. His fields of expertise and interest are in social theory, environmental sociology, globalization, environmental reforms in Asia, and information and environment. He is the president of the International Sociological Association’s Research Committee on Environment and Society (RC24) from 2002 to 2006. His recent books include: *Ecological Modernization Around the World: Perspectives and Critical Debates*, co-edited with David A. Sonnenfeld (Frank Cass, 2000); *The Environmental State Under Pressure*, co-edited with Frederick H. Buttel (JAI Press, 2002); *Greening Industrialization in Asian Transitional Economies: China and Vietnam*, co-edited with Joost C. L. van Buren (Lexington Books, 2003); and *Globalization and Environmental Reform: The Ecological Modernization of the Global Economy* (The MIT Press, 2003).

Raymond Murphy is professor of sociology at the University of Ottawa. He received his Ph.D. from the University of Toronto. He is the author of four books: *Sociological Theories of Education* (McGraw-Hill Ryerson, 1979); *Social Closure* (Oxford University Press, 1988) translated into Japanese and two chapters into German; *Rationality and Nature* (Westview, 1994) translated into Korean; and *Sociology and Nature* (Westview, 1997) named by *Choice* as one of the Outstanding Academic books published in the United States that year. He has published numerous articles in sociological journals like *Theory and Society*, *British Journal of Sociology*, *Sociological Review*, *Sociology: The Journal of the British Sociological Association*, *Canadian Review of Sociology and Anthropology*, and in interdisciplinary journals like *Environment and History*, *Time and Society*, and *Advances in Human Ecology*. He is presently integrating environmental sociology and disaster sociology through an empirical study of the 1998 ice storm disaster in Northeastern North America.

Christopher Rootes is professor of environmental politics and political sociology in the School of Social Policy, Sociology and Social Research, and director of the Centre for the Study of Social and Political Movements at the

University of Kent at Canterbury, England. He is Convenor of the European Consortium for Political Research Standing Group on Green Politics, and coordinated the TEA (Transformation of Environmental Activism) project. He is joint editor of the journal *Environmental Politics*, and he also edited: *Environmental Protest in Western Europe* (Oxford University Press, 2003); *Environmental Movements: local, national and global* (Cass/Routledge, 1999; Chinese edition, Shandong, 2005); and *The Green Challenge: the development of Green parties in Europe* (with Dick Richardson, Routledge, 1995). His other publications include: "Environmental Movements" in Snow, Soule, and Kriesi (Eds), *The Blackwell Companion to Social Movements* (2004) and "Is There a European Environmental Movement?" in Barry, Baxter and Dunphy (Eds), *Europe, Globalization Sustainable Development* (Routledge, 2004).

Kent P. Schwirian is a professor emeritus of sociology and professor emeritus of family medicine at The Ohio State University. He is also chair of the Inner City Health Research Group in the Primary Care Research Institute of the College of Medicine and Public Health. He teaches sociology courses in human ecology, community, and the sociology of health and illness. In addition, he mentors medical students and hospital residents in social research projects. He received his B.S. degree from Illinois State University and his M.A. and Ph.D. from the University of Iowa. He joined the Ohio State faculty in 1962 and was chair of the department from 1977 to 1982. His current research projects deal with: (1) community responses to overwhelming events, including plagues, terrorist attacks, and natural disasters; (2) neighborhood distress and health and illness; (3) psychological distress in Somali refugees and immigrants to U.S. cities; and (4) the demographic, organizational, and healthcare consequences of urban redevelopment for the inner city. He has published six books, the most recent of which is *High Stakes: Big Time Sports and Downtown Redevelopment* (with Tim Curry and Rachael Woldoff). He also has authored more than 100 papers and articles in professional journals including most recently: "Globalization, Plague and the Local Community: Healthcare Capacity, Politics, and the Microbe War" in *Sociological Focus*, 38, 151–170; and "Measuring Psychological Distress in Somali Refugees" (with Patricia Schwirian) in *New Research in Mental Health*, 16, 228–232.

Hilary Silver is an associate professor of sociology and urban studies at Brown University, where she has taught since receiving her Ph.D. in Sociology from Columbia University. She has written broadly on the subject of

urban inequality in the United States and Western Europe. Recent publications include a number of articles on policies to combat social exclusion. She is writing a book on grassroots initiatives to fight exclusion of the unemployed in France and Germany, and she is editing a book on the impact of new immigrants on urban New England.

Lei Xie is a Ph.D. candidate working in the Environmental Policy Group at Wageningen University in the Netherlands. She began her Ph.D. program in 2003, focusing on Chinese environmental nongovernmental organizations (NGOs) and their roles in establishing an environmental movement in China. She has worked in the NGO Research Center at Tsinghua University in Beijing. Her publications are mainly in Chinese and range from works introducing general theories on NGO studies to legal studies of this sector.

Ari Ylönen is a researcher in the Research Institute for Social Sciences at the University of Tampere, Finland. His publications include several articles and monographs in urban sociology and housing. His latest book is published in Finnish: *The City and the Countryside in the Information Society* (The University of Tampere, 2000). As a member of the international Fiscal Austerity and Urban Innovation Project, he has published several articles and monographs. His current interest is in the history of urban theory with the theme “City as a Metaphor of Modernity.”