

URBAN RIVER RESTORATION AND ENVIRONMENTAL JUSTICE:
ADDRESSING FLOOD RISK ALONG MILWAUKEE'S KINNICKINNIC RIVER

by

Nick Schuelke

A Thesis Submitted in
Partial Fulfillment of the
Requirements for the Degree of

Master of Arts

in Geography

at

The University of Wisconsin-Milwaukee

August 2014

ABSTRACT
URBAN RIVER RESTORATION AND ENVIRONMENTAL JUSTICE:
ADDRESSING FLOOD RISK ALONG MILWAUKEE’S KINNICKINNIC RIVER

by

Nick Schuelke

The University of Wisconsin-Milwaukee, 2014
Under the Supervision of Professor Ryan Holifield

Flood risk has only recently received attention in environmental justice research. Few ‘flood justice’ studies in the US have focused on urban inland flooding or flood control efforts. I develop a conceptual framework of a paradigm shift from a technocratic, utilitarian approach to river engineering to that of bioengineering and public participation. Qualitative analysis of a combination of archival, interview, and observational data is conducted using the Kinnickinnic River in Milwaukee as a case study. I demonstrate that the channelization of the river in the early 1960s was largely the result of political pressures following significant flood events, rather than simply the hubris of engineers. Following Walker’s (2009) premise that multiple spatialities to environmental justice exist, I find that multiple temporal and spatial dimensions—including scale, proximity, and place—reveal the complexity and contestability of conceptions of ‘justice’ surrounding the contemporary Kinnickinnic River restoration project.

Keywords: environmental justice, flooding, river restoration, urban environmental history

TABLE OF CONTENTS

LIST OF FIGURES	iv
LIST OF TABLES	v
LIST OF ABBREVIATIONS.....	vi
ACKNOWLEDGEMENTS	vii
CHAPTER ONE: INTRODUCTION.....	1
CHAPTER TWO: ENVIRONMENTAL JUSTICE AND FLOODING.....	6
CHAPTER THREE: ‘FLOOD JUSTICE’ THROUGH RIVER ENGINEERING	24
CHAPTER FOUR: QUESTIONS AND METHODS	41
CHAPTER FIVE: HISTORY OF THE CHANNELIZATION OF THE KINNICKINNIC RIVER.....	47
CHAPTER SIX: COMPETING CONCEPTIONS OF JUSTICE IN THE KINNICKINNIC RIVER REHABILITATION PROJECT	69
CHAPTER SEVEN: CONCLUSION	96
REFERENCES	101

LIST OF FIGURES

FIGURE 1. THE KINNICKINNIC RIVER	2
FIGURE 2. STUDY AREA	4
FIGURE 3. TIMELINE OF KINNICKINNIC RIVER ENGINEERING OPTIONS	48
FIGURE 4. KINNICKINNIC RIVER PRIOR TO CHANNELIZATION.....	53
FIGURE 5. FLOODING ON SOUTH 12 TH STREET NEAR THE KINNICKINNIC RIVER, MARCH 30, 1960.....	55
FIGURE 6. KINNICKINNIC RIVER POST-CHANNELIZATION, JUNE 15, 1961	62
FIGURE 7. 100-YEAR FLOODPLAIN MAP	73

LIST OF TABLES

TABLE 1. JUSTICE CONCERNS IN THE KINNICKINNIC RIVER
REHABILITATION PROJECT 75

LIST OF ABBREVIATIONS

Department of Public Works (DPW)

Environmental Protection Agency (EPA)

Federal Emergency Management Agency (FEMA)

Milwaukee Metropolitan Sewerage District (MMSD)

National Environmental Policy Act (NEPA)

Non-Governmental Organization (NGO)

Southeastern Wisconsin Regional Planning Commission (SEWRPC)

Sixteenth Street Community Health Center (SSCHC)

Technical Review Committee (TRC)

United States Army Corps of Engineers (USACE)

Urban Anthropology Incorporated (UrbAn)

Urban River Restoration Initiative (URRI)

Wisconsin Department of Natural Resources (WDNR)

ACKNOWLEDGEMENTS

This thesis is the culmination of over two years of research and writing, which would not have been possible without the support of several individuals and organizations. I would first like to extend my deepest gratitude to my advisor, Professor Ryan Holifield, whose knowledge, guidance and unrelenting encouragement have been invaluable to me over the course of my academic endeavors. My sincerest thanks also go to my committee members, Professor Anne Bonds and Professor Hyejin Yoon, for sharing their wisdom and providing helpful insight along the way. Special thanks go to the University of Wisconsin-Milwaukee Department of Geography, its faculty, and my fellow graduate students for their support over these years.

My deep thanks go to the numerous individuals who graciously allowed me to interview them and went out of their way to help me obtain documents and resources that were integral to my research. I would like to recognize several organizations and agencies whose assistance made this research possible, including Urban Anthropology Incorporated, Sixteenth Street Community Health Center's Department of Environmental Health, the Kinnickinnic River Implementation Coalition, and especially the Milwaukee Metropolitan Sewerage District. I would also like to thank the staff at the University of Wisconsin-Milwaukee Golda Meir Library Archives and the Milwaukee Metropolitan Sewerage District's Records Management Department for their undying helpfulness and patience as I sifted through several of their impressive but seemingly endless collections of records.

I would like to extend my gratitude to my family for their support and encouragement. Last, but not least, a big "thank you" to all of the individuals, especially

Angelo Menghe, who helped me get through the difficult times and celebrate the good ones.

CHAPTER ONE: INTRODUCTION

The Kinnickinnic River is the smallest of three rivers that flow through Milwaukee. The river stretches for eight miles through Milwaukee's south side and its twenty-five square mile watershed is approximately ninety-three percent urbanized (Milwaukee Metropolitan Sewerage District and Sixteenth Street Community Health Center 2009). Often referred to as the 'Lost River,' it was once an amenity to the neighborhoods that surrounded it. The river was a place where people would fish, take a stroll, or where kids would cool off on hot summer days. But on occasion the Kinnickinnic River would flood the surrounding neighborhoods. By the 1950s, flooding along the Kinnickinnic River and other streams and rivers in Milwaukee had become a problem. Following two catastrophic floods in Milwaukee County in 1960 the Kinnickinnic River was straightened and placed in a concrete channel in an attempt to control flooding in the neighborhoods through which it flowed.

The Kinnickinnic River has been in decline since its channelization, and is often mistaken for a drainage ditch. The Kinnickinnic River was placed on American Rivers' *America's Most Endangered Rivers* list in 2007 due to its severe degradation. Channelization has, on many occasions, failed to prevent flooding of the neighborhoods surrounding the river, and has in fact created numerous other issues for residents. The swift river currents that occur during even moderate rainfall create a safety issue for residents and have resulted in numerous drownings and near-drownings over the past decades. Public health concerns have arisen from sewer backups into streets and basements during significant rain events. Graffiti, crime, and trash dumping plague the

river corridor. The concrete channel provides no ecological or aesthetic value. But a recent river rehabilitation project is underway as an attempt to address the multiple problems the Kinnickinnic River generates for residents in its current condition.



Figure 1. The Kinnickinnic River (Photo by the author)

In 2004, Sixteenth Street Community Health Center (SSCHC) began exploring opportunities to reverse some of the more problematic aspects of the Kinnickinnic River and work toward improving the health and well-being of residents in the communities along the river. SSCHC forged a partnership with the Milwaukee Metropolitan Sewerage District and several other non-governmental organizations (NGOs) with an environmental focus. Over the course of several years these organizations, with input from neighborhood residents, developed the Kinnickinnic River Corridor Neighborhood Plan. The plan focuses on the stretch of river between Interstate 94/43 and South 27th

Street. The neighborhood plan gives particular attention to the residential portion of this stretch between South 6th and South 16th Streets. The plan identifies opportunities to redesign the river channel for flood control, and defines aesthetic, ecological, and recreational goals for the river corridor. It also provides recommendations for improving the overall character of the surrounding neighborhood.

The neighborhood along the Kinnickinnic River between South 6th and South 16th Streets is known as Lincoln Village. The area was settled in the late 19th century primarily by Polish immigrants, who influenced the architecture of the neighborhood, including parapets (“Polish gables”) on building facades and a unique type of house referred to as the “Polish flat.” In recent decades, the predominantly Polish heritage of the neighborhood has given way to a resident composition that is approximately seventy-five percent Latino, yet over one hundred-ten national groups are represented in the community (personal interview). Lincoln Village is one of the most densely populated neighborhoods in the City of Milwaukee. It is a lower-income neighborhood and in recent years has experienced a decline in the condition of its housing stock. However, the current river rehabilitation plan includes measures aimed at revitalizing this neighborhood.

The large-scale flood management and river rehabilitation plan along the Kinnickinnic River is the subject of my research. Although the current project spans a larger extent of the river, the focus of my empirical research is on the Lincoln Village neighborhood and the residential stretch of river between South 6th and South 16th Streets.

In the following chapter I dissect the complexity of conceptions of ‘justice’ and examine the spatial and temporal dimensions of flooding and flood control projects as a

unique environmental justice concern. I propose a historical and conceptual river engineering and social justice framework in Chapter Three through which I situate my historical and empirical research. I discuss my methods for conducting my research in Chapter Four.



Figure 2. Study area (Image source: Milwaukee Metropolitan Sewerage District and Sixteenth Street Community Health Center 2009)

Through a discussion of my research in Chapter Five and Chapter Six, I answer the following questions:

1. What factors influenced the engineering decisions surrounding the Kinnickinnic River, and what justice concerns followed these decisions?

2. What spatial and temporal dimensions of competing conceptions of justice—as distribution, and participation and procedure—emerge through the current effort to rehabilitate the Kinnickinnic River?

In Chapter Five I apply the historical and conceptual framework developed in Chapter Three to investigating the historical circumstances through which the Kinnickinnic River was channelized for flood control and the ‘public good.’ I find that the channelization of the Kinnickinnic River was not so much the product of the “hubris of engineers” as it was the result of political pressures that followed major flood events. Chapter Six also utilizes this framework to examine how the Kinnickinnic River flood management and river rehabilitation project, at face value, appeared to be beneficial for all parties involved, but in reality created controversy over competing conceptions of ‘justice.’ I demonstrate that multiple temporal and spatial dimensions—including scale, proximity, and place—highlight the complexity and contestability of conceptions of ‘justice’ surrounding the river restoration project.

CHAPTER TWO: ENVIRONMENTAL JUSTICE AND FLOODING

Twenty years ago President Bill Clinton signed Executive Order 12898, thereby mandating federal agencies develop and incorporate environmental justice into their programs. The goal was to address emerging concerns over the disproportionate health effects suffered by low-income and minority populations from environmental hazards, such as toxic waste sites or polluting industries. Since then, an enormous amount of scholarly literature has investigated instances and claims of environmental injustice, some of which has led to loose or uncertain conceptions of what defines and constitutes environmental (in)justice.

In this chapter, I situate my empirical study on the Kinnickinnic River flood control and river restoration project with respect to more recent environmental justice literature. I examine the development of how the ‘justice’ in environmental justice has been conceived, as well as the emergence of flood risk as a distinct justice concern in this literature. From there, I explore how river restoration, as one of many ways to mitigate urban flood risk, can generate various outcomes including resident relocation, public amenity creation, and environmental gentrification. These outcomes can raise particular social and environmental justice concerns. I contend that the diverse bodies of literature compiled here demonstrate the varying spatial and temporal dimensions of justice in the processes and consequences of flood control and river restoration projects. Yet, I argue that environmental justice research ought to more thoroughly consider the spatial and temporal dimensions of justice as they relate to flood control projects themselves.

Environmental justice

Defining and conceptualizing social and environmental justice

Developing an adequate and inclusive definition of “environmental justice” would be an extremely difficult (if not impossible) task to undertake (Holifield 2001). Several scholars have noted the multiplicity of “environmental justice” definitions among different grassroots activists, governmental agencies, and academics, as well as within different places and contexts (e.g., Holifield 2001; Walker 2012). Common notions of environmental justice often combine elements of social or political justice with an environmental ethic regarding the distribution of environmental benefits and burdens (Low and Gleeson 1998; Walker 2012). The US Environmental Protection Agency (EPA) defines “environmental justice” as:

Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. (US Environmental Protection Agency 2014)

This definition highlights the fact that race and income level are factors to be considered in environmental justice. It also focuses on how people participate in and are treated by laws and policies.

Notions of social justice are grounded in moral philosophy or, more specifically, normative ethics. Applying normative ethics to understanding the world or society is concerned not with the way things are, but rather exploring how things *should be*:

Social justice is concerned with how people should be treated in particular circumstances, by other people directly or within the human creation of institutions whereby behavior is regulated (Smith 1994: 27).

Several theories of social justice have been developed within moral and political philosophy, including egalitarianism, utilitarianism, discourse ethics, libertarianism, entitlement, and contractarianism (Low and Gleeson 1998; Smith 1994). However, several of these universal theories have been criticized for being so abstracted from social context in order to appeal to reason that they become inapplicable to real-life circumstances (Young 1990).

The emergence of environmental justice

Social justice research was almost nonexistent in Anglo-American geography until the late 1960s, following the spatial science focus of the “quantitative revolution.” The incorporation of social justice into human geographical inquiry appeared in the early 1970s with the emergence of what was then referred to as “radical geography” and marked a break with the spatial science of mid-20th century human geography. Much of this research focused on social ills such as crime, poverty, and hunger (Smith 1994). One of the most seminal works of this time was David Harvey's *Social Justice and the City* (1973), in which Harvey conceptualized social justice as “a just distribution justly arrived at” (p. 98). Later in that decade, many so-called “radical geographers” moved beyond the Marxist tradition to include feminist, anticolonial, and antiracist themes, to name a few (Berg 2010).

In the 1980s, the multidisciplinary field of research now known as *environmental justice* began to emerge. Initial literature examined siting of solid waste facilities and African-American populations (e.g., Bullard 1983), but soon expanded to include different marginalized groups, such as low-income individuals and other racial

minorities. The main focus of most of these studies was the uneven exposure of these groups to environmental health hazards such as air pollution and toxic waste sites (Chakraborty 2009; Pastor et al. 2001). Scholars also noted the importance of uncovering the sociohistorical contexts through which environmental justice concerns arose (Bullard 1996). That is, simple descriptions of present-day environmental inequities are inadequate. Besides these descriptions, environmental justice ought to also explore causal factors of the past, such as market forces, discriminatory policies, or political power, which generated the inequities observed today (Callewaert 2002; Pulido 2000). More recent environmental justice research has included the distribution of environmental goods, such as accessibility of park space (e.g., Boone et al. 2009; Miyake et al. 2010).

Expanding conceptions of environmental justice

Although the distributional focus of so called 'first-generation' environmental justice research has its own particular merits, scholars have noted its failures to address the true dynamics of how injustices are produced and reproduced (Schlosberg 2004; Walker 2009). Recent environmental justice research is attentive to not just *distribution*, but also justice as *participation* and *procedure*, and *recognition* (Walker 2009).

Young (1990) criticizes the distributive paradigm of the universal theories of justice discussed above for conceptualizing justice as a fair and consistent distribution of material things. What is missing from this notion of justice is recognition of the institutional context through which many injustices are produced (Young 1990). From this critique, understandings of justice have come to include *participation* and *procedure* (Low and Gleeson 1998; Schlosberg 2004; Walker 2012). Procedural justice places value

on the fairness of how processes of decision-making and distribution of goods are conducted (Clayton 2000). Procedural justice concerns include ability to participate decision-making, enforcement of rules and laws, and unequal influence on the development of these policies (Clayton 2000).

Environmental justice research has also increasingly begun to explore *recognition* as a dimension of justice (Holifield 2012; Sze et al. 2009). Although several definitions of justice as recognition have been put forth, I provide a couple for illustrative purposes. Recognition has been defined as accounting for the processes through which group differences and identities are respected or denigrated (Honneth 2004). Justice as recognition has also been defined to include issues of domination and oppression (Young 1990) and the social contexts in which these lead to misrecognition and status injury to one's self and identity (Fraser 1998).

So, Walker (2009) appeals for a continued expansion of environmental justice research beyond simple explorations of unequal distributions of and proximity to environmental goods and bads. Rather, examining processes such as uneven distribution of impacts and responsibilities, recognition as respect of group differences and identities, and participation and procedure in terms of inclusion in decision-making are better able to address the underlying factors and complexities that produce justice concerns.

Attempting to determine what is 'just' or 'unjust' based on simple proximity to environmental goods and bads is inadequate. Instead, Walker (2009) contends that there are multiple spatialities to understandings of environmental justice—that is, besides distances and proximities, there are other spatial dimensions such as place, scale, and networks that warrant exploration. Examples of these other spatial dimensions could

include spatial disconnects between those who generate pollution and those who must live with it, or spatial patterns of groups or communities that are particularly vulnerable to the impacts of flooding and what factors produce and reproduce this vulnerability (Walker 2009).

Another dimension that has been explored within social and environmental justice research is *time*. Considerations of time within understandings of justice can take many forms, whether it be respect or honor for individuals or actions of the past, or compensation and reparation for past wrongs. The temporal dimension of justice can also take into account impacts on future generations, including how decisions made at present can affect others down the road, and whether ‘justice’ means maintaining some sort of status quo of conditions of life or aiming to ensure future generations are better off than are the present (Smith 1994).

A geographic understanding and investigation of environmental justice, then, ought to give attention to the varying spatial and temporal dimensions that exist within the broader justice components of distribution, recognition, and participation and procedure. The following sections identify flood risk as an emerging environmental justice issue and highlight several spatial and temporal concerns that arise in addressing it.

Flooding and environmental justice

Flooding and environmental justice literature

As discussed above, human-induced environmental hazards were the primary focus in early environmental justice literature. Flooding received little consideration in

past environmental justice research in the US, primarily because environmental justice had been framed around marginalized groups and exposure to waste and pollution (Walker and Burningham 2011). However, flood risk is one environmental hazard that has recently received increasingly more attention in justice research (Walker and Burningham 2011).

Following Hurricane Katrina in 2005, a fair amount of environmental justice literature appeared in the US, addressing such topics as race, income, preparedness, evacuation, recovery, and rebuilding efforts (e.g., Bates and Swan 2007; Bullard and Wright 2009; Elliot and Pais 2006; Kamel 2012). In the US, most of the environmental justice studies on flooding have focused on major flood events or coastal flooding (e.g., Douglas et al. 2011; Heberger et al. 2011), rather than inland flooding. However, in the UK, inland flooding has received greater attention as an environmental justice issue than in the US (Walker 2012). These studies in the UK have highlighted several spatial and temporal dimensions of flooding as a justice issue, particularly with regard to flood risk and vulnerability (Walker 2012). It is important then to understand how human-flood interactions have traditionally been conceptualized.

Flooding as a natural hazard

There are various types of phenomena that are collectively referred to as *natural hazards*, including earthquakes, volcanic eruptions, wildfires, drought, and flooding. Although the term is sometimes used loosely, a natural hazard “represents the potential interaction between humans and extreme natural events” (Tobin and Montz 1997: 5). Natural hazards, then, represent the likelihood of these extreme natural events occurring,

whereas natural disasters are the outcomes of these events. Humans are continually exposed to the natural forces of the Earth; however, the frequency and magnitude of threats that natural hazards pose to humans varies with geographic location (Tobin and Montz 1997).

Much of the foundational groundwork for research on flooding as a natural hazard has been laid down through the extensive body of work from Gilbert White, who has been hailed as the “father of floodplain management” (Kates and Burton 2008: 481). White’s work has had a profound impact on flood management policy both domestically and abroad. One of the most important contributions involved reconceptualizing flood risk as dependent upon complex social and behavioral factors, and that flood risk could be better managed through changes in human behavior rather than simply through engineering solutions (Tobin and Montz 1997). That is, the particular social, political, and economic factors that allow urban development to encroach on floodplains ought to be addressed, rather than a continuation of engineering solutions to protect and perpetuate development (Tobin and Montz 1997). Recognition of these various factors that work to produce flood risk lays an early foundation for understanding the potential injustices of flood risk today.

Flooding has been defined as simply “a flow of water over areas which are habitually dry” (Jha et al. 2012: 134). Flooding is not inherently a bad thing—many communities around the world rely on periodic or seasonal flooding for irrigation and fertilization of farmland, wetland maintenance, or even cleansing of urban environments (Walker 2012). While many definitions of flooding may be fairly simple,

conceptualizations and impacts of flooding can be rather complex and involve several spatial and temporal dimensions.

Flood vulnerability

Vulnerability has been described as “the degree to which a system... is susceptible to or unable to cope with the adverse effects of natural disasters” (Jha et al. 2012: 173). In the case of flooding, the “system” would primarily apply to both people and assets (Jha et al. 2012). Green (2004) adds a temporal dimension to vulnerability in noting that environments where flooding occurs change over time, and the impacts are dependent upon the particular environmental conditions that precede it. Thus, vulnerability to flooding not only affects different individuals in different ways, but is also dependent upon location and timing of flood events. Furthermore, flood vulnerability is dependent upon spatial scale, in that vulnerability at the individual or household level does not necessarily translate to vulnerability at larger scales, such as the community or country as a whole (Green 2004).

Besides unequal exposure to flooding, a second way in which flood vulnerability has been explored is through unequal suffering and susceptibility to the impacts of flooding. This includes *resistance*, or the ability of individuals to handle flood events, and *resilience*, or the means to cope with and prepare for flood events and recover in the aftermath (Walker 2012). Coping ability for individuals following catastrophic flooding has been linked to several factors including social support networks and financial support such as insurance or disaster relief money (Walker and Burningham 2011). Additionally, factors such as disability, age, and gender can also influence how individuals experience

and recover from flooding (Walker 2012).

Flood risk

Floods are a unique type of risk for urban populations—partly caused by natural processes, but also partly by humans through particular conditions of the built environment (Walker 2012). The occurrence of flood events is dependent upon meteorological conditions, as well as the infrastructure of urban areas, including impervious surface cover, sewerage systems, and local waterway design. A definition of flood risk must take into account the flood hazard itself, exposure to the hazard, and degree of vulnerability or resilience to flooding (Jha et al. 2012).

One way in which flooding has been explored in environmental justice literature is through examining who is at risk and why (Walker 2012). This approach often uses spatial proximity, or location, to assess potential exposure to flood risk. One study in the US South used land elevation as a proxy for flood risk (Ueland and Warf 2006). Several studies in the US and the UK have utilized flood risk mapping to determine areas and populations of concern (Jha et al. 2012; Walker 2012). Many studies in the UK have shown deprived (low-income) individuals tend to be subject to disproportionate flood risk; whereas studies in the US have had mixed results with regard to race and income level (Walker 2012).

Justice considerations of flood control projects

As noted above, spatial proximity or distance by itself is an inadequate determinant of environmental justice. A more adequate investigation of 'flood justice'

should incorporate the multiple spatial and temporal dimensions of efforts to mitigate flood risk. In this section I consider such dimensions as they pertain to three processes or outcomes to flood control projects—relocation of individuals, public amenity creation, and gentrification.

Eliminating flood risk through relocation

Relocation of communities has been explored as one approach through which to eliminate risk from natural hazards. Permanent relocation of at-risk communities is becoming increasingly prevalent world-wide, especially in areas that are frequently subjected to flood damage and where flood control methods have a limited effect (Perry and Lindell 1997). Relocation can offer two distinct benefits. It can help avoid death and injury in locations where warning, evacuation, and preventative measures are ineffective or impossible. It can also provide a financial benefit through cost savings from recurring restoration of damaged structures and property (Perry and Lindell 1997).

Perry and Lindell (1997) identify two fundamental problems with employing relocation as a means to mitigate exposure to natural hazards. The first issue is that relocation is extremely disruptive to the lives of residents, uprooting them from the spaces in which a majority of their daily lives are conducted. The other issue concerns the underlying rationale for relocation. Citizens are much more accepting of relocation when it is perceived as means to avoid environmental hazards. However, when residents perceive relocation as a result of processes such as building infrastructure or urban renewal, negative feelings result. In the latter case, residents tend to be perceived as a problem that needs correction or as individuals who inhibit progress. Displaced residents

often feel that others benefit from their suffering and disruption to their lives (Perry and Lindell 1997).

Resident relocation can certainly be problematic. Mustafa (2005) describes the removal of residences that had been built near the River Lai as part of a river engineering project in Pakistan. The river project was designed to alleviate flooding through widening, deepening, and lining a portion of the river channel with concrete. Residents displaced from riverside communities as part of the project expressed concern over compensation for lost residences, lack of affordable replacement housing, increased commuting costs, loss of community ties, and disruption to sense of place. These resident concerns highlight issues of distributive and procedural justice— fair compensation for burdens unevenly distributed, appropriation of private property and space for public benefit, and disruptions to residents' lives.

Besides relocation of residents, flood risk can be mitigated through several structural (e.g., dikes or levees) or nonstructural methods (e.g., floodproofing structures) (Plate 2002). River restoration is one method by which a reduction or elimination of flood risk can be achieved. Depending on the size of the project, residents may still need to be relocated for construction activities and creating an expanded floodplain (Riley 1998). This expanded floodplain may incorporate greenspace and recreational opportunities (Riley 1998), which may have social consequences for neighboring residents, including increased property values (Bailey and Fischenich 2003).

Public amenity creation and environmental justice

Flood control projects along urban rivers often incorporate the creation of public amenities (i.e., parks, parkways, or other types of greenspace) in their design. A small body of literature has begun to explore the impacts of such urban revitalization and public amenity creation on property values in the surrounding neighborhoods. Although this literature seldom focuses specifically on flooding, it highlights justice concerns that arise from the potential or actual displacement of residents that is associated with both flood control projects and environmental gentrification. However, the justice focus here is not on social outcomes following remediation of environmental bads, but rather the potential unintended consequences of creating public environmental amenities. Research in this area has looked at environmental improvements done by both residents and the state.

Anguelovski (2013a) explores the creation of community gardens and public green spaces in a low-income, immigrant neighborhood in Barcelona. These efforts to revitalize the neighborhood presented difficulties in avoiding gentrification and pricing residents out of the neighborhood. However, resident activism in combatting neighborhood decline through the creation of environmental amenities can foster and create a sense of place for communities (Anguelovski 2013b).

On the other hand, Hagerman (2007) has explored how public money used to improve the urban environment through public green space creation has benefitted private real estate developers. The green space along Portland's waterfront led to the development of condominiums and commercial spaces geared toward more well-off individuals, while at the same time excluding marginalized individuals.

With respect to public amenity creation, different sources of investment lead to different outcomes. On the one hand, residents are able to improve their own neighborhood while resisting displacement pressures and, at the same time, creating a sense of community. On the other, public amenity creation through state-led urban redevelopment efforts created spaces of exclusion for marginalized groups and created benefits for enjoyment by wealthier individuals. The displacement of residents, influx of a different socioeconomic demographic, and cost-of-living increases resulting from environmental improvements have all been categorized as characteristic of the phenomenon of environmental gentrification.

Environmental gentrification

Creation of public amenities, such as greenspace, in conjunction with flood control projects can increase the desirability of living near these environmental improvements. One growing concern is that this increase in desirability of real estate in these areas may lead to gentrification or similar processes. While the complex phenomenon of gentrification has been defined and explored in a highly extensive body of literature, most understandings of gentrification maintain similar general characteristics (Banzhaf and McCormick 2012). Increasing rental costs and property values, creation of new or renovation of existing housing and a change in demographic composition (i.e., influx of residents of higher socioeconomic status and/or different ethnic or racial background) are typically seen as identifiers of gentrification (Banzhaf and McCormick 2012).

The concept of environmental gentrification has only recently appeared in academic literature. It was first described by Sieg et al. (2004) with regard to increases in housing costs in Los Angeles neighborhoods following improvements in air quality. The authors noted that cleaning up the air in certain neighborhoods actually had a negative impact on renters (Sieg et al. 2004). Subsequent explorations of the phenomenon have continued in economic research (e.g., Bahnzaf and McCormick 2012; Eckerd 2011), but has also branched out into fields such as urban studies and geography (Checker 2011; Curran and Hamilton 2012; Pearsall 2010; Pearsall 2012). Much of the environmental gentrification literature has focused on the remediation of brownfield or Superfund sites and subsequent gentrification of surrounding neighborhoods (e.g., Curran and Hamilton 2012; Eckerd 2011; Pearsall 2010; Pearsall 2012). However, other environmental gentrification research has linked urban planning and redevelopment processes with explicit environmental goals to the (potential) displacement of low-income and minority individuals (Checker 2011) and the homeless (Dooling 2009). This latter point is of particular interest when considering neighborhood redevelopment that may accompany urban flood control and river restoration projects. Regardless of whether residents are displaced through relocation from flood-prone areas, for river restoration activities, or redevelopment that tends to follow restoration, a justice concern that arises pertains to neighborhood and housing choices, and ability to afford those choices.

The social justice concerns of environmental gentrification tend to be based on the associated displacement of existing residents that tends to follow. Tiebout's (1956) local public goods theory posits that individuals select a neighborhood to live in based on the specific public amenities the neighborhood has to offer and their ability to afford them.

The implication is that lower-income individuals will need to make more concessions regarding availability of public goods than wealthier individuals who can afford to pay for increased costs of living associated with greater availability of public goods. In simple terms, the more money one has, the greater the choice one has in determining where to live (Bahnzaf and McCormick 2012).

When choosing where to live, residents consider environmental conditions (among other things) as an influencing factor. In the case of environmental improvement, such as cleanup of locally undesirable land uses (LULUs) like Superfund sites or brownfields, resulting changes in the surrounding areas (increased rents, change in demographic) may serve to displace residents who seek an alternative neighborhood that will provide the amenities they desire at a cost they can afford (Eckerd 2011). Too often the successes in improvement in the condition of the environment and quality of life for residents are often viewed as win-win situations and ignore the underlying realities of displaced low-income residents (Pearsall 2010). In recognizing the potential displacement consequences of environmental remediation and subsequent gentrification, Checker (2011: 211) frames the “pernicious paradox – must [low income residents] reject environmental amenities in their neighborhoods in order to resist gentrification that tends to follow such amenities?” Research has shown, however, that residents have been able to resist gentrification despite environmental improvements to their neighborhood.

Curran and Hamilton (2012) describe processes through which long-term residents of a New York neighborhood were able to prove resilient against displacement following cleanup of a Superfund site. Gentrifiers worked with long-time residents in community outreach and political influence to ensure environmental remediation and

redevelopment in the neighborhood was only done to an extent whereby cost of living increases would be minimal. This “just green enough” strategy helped retain low income residents in their homes (Curran and Hamilton 2012). However, Pearsall (2012) notes that one strategy that long-term residents of a New York neighborhood used as a resilience strategy – rent stabilization laws—increasingly became ineffective. Landlords were using both legal and illegal means to evict tenants, usually long-term elderly residents locked in at stabilized prices under rent control laws, renovating the apartments and then renting them for higher prices in order to maximize their profit.

Rather than using an economic approach to understanding neighborhood choice as a rational process of balancing and trade-offs, Dooling (2009) instead applies Agamben’s notion of ‘bare life’ to exploring what she terms *ecological gentrification*. Ecological gentrification refers to the processes by which economically vulnerable individuals, namely the homeless, are displaced or excluded from public spaces under the auspices of an urban planning agenda advocating an environmental ethic. Dooling (2009) deliberately uses the term “ecological” as opposed to “environmental” for two reasons. First, to emphasize the strength ecological rationality has on influencing and reversing the negative consequences of urban development. Secondly, “ecological” is used to challenge traditional assumptions that humans are not part of ecologies. Dooling (2009) examines how different conceptions of *home*, *homelessness*, and *public green space*, along with the exercise of sovereign power, lead to particular unjust outcomes. These consequences include the expulsion of homeless individuals from public parks, and ‘housed’ individuals seeking to replace shelters and low-income housing with green space and other eco-friendly amenities as part of urban planning for the future.

Conclusion

As discussed above, understandings of ‘justice’ are complex and include elements of distribution, recognition, and participation and procedure. Recent environmental justice research has begun to expand the ‘first generation’ approach of examining what is ‘just’ and ‘unjust’ based on proximity to environmental goods and bads, and spatial patterns of how these goods and bads are distributed. Rather, a variety of different spatialities have entered the realm of environmental justice and offered a broader view of the nuances of ‘justice.’ Flooding as an environmental hazard only recently been considered in environmental justice research, but has provided a unique opportunity to explore the multiple spatialities of ‘justice.’ I discussed how river restoration, as a method of flood control, can generate several outcomes that raise particular social and environmental justice concerns. The concerns that emerge are well-suited for exploration of the spatial and temporal dimensions that produce differing conceptions of (in)justice, which I demonstrate later in Chapter Six. In the next chapter I expound a historical and conceptual framework through which the justice dimensions of flood control and river engineering projects may be considered.

CHAPTER THREE: 'FLOOD JUSTICE' THROUGH RIVER ENGINEERING

Attempts to control natural processes in urbanizing environments are nothing new. Over the past two centuries, the urban environment has been increasingly manipulated through technology in order to 'tame' nature and mold landscapes to reflect human needs and desires (Karvonen 2011). More specifically, numerous contributions to the field of urban environmental history have explored the consequences that infrastructure and river engineering decisions have on urban environments and populations (e.g., Colten 2005; Gumprecht 1999; Melosi 2008). Kelman (2003) and Orsi (2004) have chronicled particularly rich historical accounts of the role engineering and technology have played in river modifications and urbanization. Several different frameworks have been put forth in this urban environmental history scholarship through which to understand the role engineering decisions play in transforming urban environments (e.g., "path dependence" [Melosi 2008], "historical structure of disorder" [Orsi 2004]). In some cases, scholars have situated such explanations of the roles that engineering and technology have played in shaping the physical environment with respect to broader periodizations of modernity (e.g., Kaika's [2005] "Promethean Project of Modernity"). The extensive work produced in this field has provided a useful lens through which to understand urban environmental conditions of the present-day.

During both the mid-20th century and today, rivers have been engineered to generate a benefit to society through mitigation of flood risk—that is, rivers are engineered in particular ways for the 'public good.' Notions of what the 'public good' entails and how it is determined are also markedly different between those two eras. These different understandings of the "public good" and how they are decided evoke a

shift in how the public and engineers, planners, and the like conceive of social justice. I argue that implicit conceptions of social and environmental justice are embedded into how the river engineering practices of the mid-20th century and early 21st century are viewed as serving the “public good.” Specifically, a shift occurs between the two periods from a primarily technocratic, utilitarian approach toward one in which public participation is viewed as critical to the planning process. I develop this broad historical and conceptual narrative through which to situate my case history and case study explored in Chapter Five and Chapter Six, respectively. However, as will be seen in those chapters, the Kinnickinnic River case study does not conform quite so neatly to this framework.

A paradigm shift in river engineering

Engineering rivers to foster urban development—whether addressing transportation or commercial needs, or mitigating flood risk—is one example of how humans have used technology to redesign landscapes. More recently, a paradigm shift has occurred in river engineering practices aimed at flood control. This shift is characterized by a move from the channelization practices prevalent during the middle part of the 20th century to the river restoration efforts of the 21st century.

The change in engineering approaches is not simply attributable to technological progress. Rather, this change arises from the increasing recognition in the 1970s of the undesirable aesthetic and environmental outcomes that often result from channelization (Brookes 1988). It represents a rethinking of how (or whether) rivers ought to be engineered, recognizing the social impacts of river engineering, and revaluing aesthetics

and the environment (Brookes 1988; Riley 1998). Environmental law also underwent a radical transformation in the 1970s, and a major push began for public participation to be incorporated into the planning process of environmental projects (Reed 2008).

The “older” paradigm

Channelization refers to the processes through which river channels are engineered to reroute, improve drainage, aid in navigation, lessen erosion, or control flooding. These processes, often referred to as “improvements,” include methods such as levee construction, clearing and snagging, dredging, bank stabilization, widening, deepening, realigning (straightening), or the creation of a new channel (Brookes 1988). The main agencies in the US involved in channelization are the US Army Corps of Engineers and the Soil Conservation Service. These agencies are granted authority to do so under the Flood Control Acts of 1936 and 1944, and the Watershed Protection and Flood Prevention Act of 1954, respectively (Brookes 1988). These two agencies “improved” approximately 34,140 miles of waterways during the “golden age of channelization” between the 1940s and 1970s (Riley 1998).

Channelization practices

Engineers tend to examine each river problem as distinct and requiring an individual solution (often a combination of several channelization methods) and incorporate those aspects which are most economical as well as practical (Brookes 1988). River channels reengineered to handle flood flows are typically designed to be wider and deeper than the preexisting natural channel to contain normal and peak flows. The

purpose of widening and deepening is to allow a greater volume of water to flow through the channel. Consideration is given to peak flow discharge during rain events in order to ensure adequate channel design to handle the increased volume of water. Channel cross-sections are often designed in a trapezoidal or rectangular shape (referred to as “resectioning”) and occasionally the channel is lined with an impervious material such as concrete. Resectioning may, in places, be constrained by existing in- or near-channel infrastructure, especially in highly urbanized areas. Impervious linings prevent degradation of the channel from erosion and, coupled with straightening, facilitate rapid conveyance of normal flow and storm flow downstream (Brookes 1988).

There have been several instances in the US in which reactionary river channel engineering projects have been carried out following catastrophic flooding. Often these projects were done on an emergency basis and an inadequate amount of attention was given to the design and exploration of potential environmental impacts (Brookes 1988).

River project planning

Flood control projects of the mid-20th century, including channelization, can be largely characterized by a technocratic approach to channel design (Vojinovich and Abbott 2012). This refers to that fact that (generally speaking) engineers are trained to apply the tools and concepts of mathematics and physics in developing technological ‘fixes’ for real world problems, and that problems faced by society can be solved through technology (Vojinovich and Abbott 2012). Faith was frequently placed in the engineer to utilize scientific and technical expertise to control natural processes (Karvonen 2011).

Public participation was not completely absent from early flood management projects in the US (Watson and Biedenharn 2000). However, river engineering projects of this period largely neglected to involve the public in planning and decision-making processes. The exclusion of local residents from the development of river management policy and practices was not a deliberate attempt to ignore their knowledge, experience, or viewpoints. Rather, engineers and policymakers presumed that the public was simply appreciative of the technological expertise employed on their behalf to mitigate flood risk (Newson 2012). In these instances, the “best” outcome was often determined without public communication or deliberation and, instead, done by the technocratic engineers and planners.

Criticism

Although river channelization methods had been used in the US for over 150 years, it was not until the 1970s that this engineering practice became publicly criticized. Several articles in popular outdoor and nature magazines in the late 1960s and 1970s noted the detrimental impact of channelization on US rivers (Brookes 1988). By the early 1970s, government officials also began to question the practice of channelization. A 1973 report from US House of Representatives Committee on Government Operations stated:

A common thread running through the Subcommittee's hearings, correspondence, and subsequent studies was not that channelization, per se, was evil, but rather that inadequate consideration was being given to the adverse environmental effects of channelization. Indeed there is considerable evidence that little was known about the effects and, even more disturbing, little was done to ascertain them. (quoted from Brookes 1988: 21)

This quote demonstrates that the impacts of the engineering practices of channelization were not fully explored or determined prior to implementation, nor were they afterward. Instead, faith was simply placed in engineers to develop the 'best' solution to river channel management and flood control. It would be misguided to demonize engineers who included channelization in river engineering projects. Rather, it is more useful to understand the mindset and impetus behind such projects.

Channelization and the “public good”

In economic terms, flood control resulting from channelization can be considered a “public good”—it benefits all residents of a particular geographic area in a way that is non-excludable and non-rivalrous (Rogers et al. 2008; Samuelson 1954). This means that no resident can be excluded from the benefit of flood risk elimination resulting from channelization, and that the benefit enjoyed by one resident does not preclude other residents from enjoying the same benefit. The application of economic principles to managing flood risk allows for such an approach to be characterized as utilitarian.

Many of the flood risk management practices of the past have adopted, more or less, primarily a utilitarian approach to mitigating risk (Vojinovic and Abbott 2012). This approach often applies calculated probabilities and cost-benefit analyses in determining flood risk and recommending preferred methods of flood mitigation. The goal of utilitarian approaches to managing flood risk, generally speaking, is to maximize benefits while minimizing costs (Vojinovic and Abbott 2012). The same utilitarian concepts can be seen in river channelization as a specific method of mitigating flood risk.

As a flood control practice, channelization projects were often based on quantitative cost-benefit analyses of measurable values (Brookes 1988). These analyses failed to include potential negative environmental impacts as a cost factor. The 'best' solution is determined as that which presents the lowest cost or the greatest aggregate benefit. Three types of benefits were included in cost-benefit analyses: tangible and direct (e.g., prevention of flood damage), indirect (e.g., prevention of indirect damages), and intangible (e.g., prevention of injury/death). Costs can be both direct and indirect, including study, design, engineering, and compensation for affected parties (Brookes 1988). Channelization is a utilitarian approach to flood control in that the concern is ensuring the best possible outcome rather than the processes or means by which this outcome is arrived at (Low and Gleeson 1998).

Vojinovic and Abbott (2012) note that a shortcoming of the utilitarian approach to past flood control projects is that it neglects to include the social and ecological impacts in its assessment. While this omission is not necessarily inherent to a utilitarian approach, quantitatively factoring these elements into a study such as a cost-benefit analysis can be challenging. Indirect or intangible costs and benefits can be difficult or impossible to ascertain because many of these can arise from unforeseen or unexpected situations.

Low and Gleeson (1998) identify four problems with utilitarianism—measurement, individualism, monism, and anthropocentrism—that complicate the usefulness of such an approach to conceptualizing justice. The utilitarian focus on consequences makes the standards by which outcomes are measured important. However, measuring the level of success of a flood control project can be difficult. If one were to gauge the success of the outcome by reduction in flood occurrence (i.e., 100-year flood),

these measurements are based on probabilities and subject to unpredictable natural processes (rainstorms). If success were to be measured by a material or monetary reduction in flood damages, this ignores the fact that flooding impacts different individuals and properties in uneven ways and that some impacts of flooding are not quantifiable or measurable (e.g., health impacts, loss of property with sentimental value) (Walker 2012). This latter point ties in with the problems of individualism. The utilitarian approach employs a narrow conception of persons, acknowledging only minor differences between individuals. The problem of monism is that it denies the existence of multiple and potentially equally beneficial solutions or outcomes, possibly besides channelization. Decisions to channelize rivers were also anthropocentrically situated—consideration was given to the benefits to humans with little to no consideration of the environmental or ecological effects on nonhumans (although, in theory, it conceivably could have). The above flaws with the utilitarian approach are implicitly incorporated into notions of justice in the new paradigm of river restoration.

The new paradigm

So working toward social justice through a technocratic, utilitarian approach to flood risk can clearly be problematic. As mentioned above, the 1970s marked a reconceptualization of river engineering processes—that channelization practices had failed to account for the environmental problems it caused. This is not altogether surprising, knowing that the environmental movement in the US really began to gather momentum in the early part of that decade. During the same time, John Rawls' *A Theory of Justice* (1971) was published and had a profound impact on how social justice was

conceived (and, arguably, still does today). At risk of grossly oversimplifying Rawls' "Justice as Fairness," his theory proposes that a 'just' distribution can be agreed upon if individuals are behind a "veil of ignorance" (unaware of their social position). So inequalities in society should be distributed in such a manner that they benefit the least well-off individuals.

River engineering paradigm shift

The past couple of decades have seen large strides made in how rivers are managed. Management practices have shifted toward addressing issues that affect entire watersheds (Newson 2010). Newson (2010: 17) identifies six differences in how these approaches have changed: 1) a *sustainability paradigm* which encourages consideration of both human and wildlife needs, 2) an *ecosystem services paradigm* which provides the means and justification for the prior, 3) improving *technical sophistication* which includes gathering and analyzing data, and decision-making that incorporates tools such as GIS and remote sensing, 4) advances in ecological, geomorphological, and hydrological *knowledge*, 5) the importance and usefulness of *local knowledge*, and 6) an overall shift of environmental organizations and agencies from a primary engineering focus to one that is more inclusive of ecological and economical components.

Several developments have influenced the shift from the mechanical paradigm of river engineering to that of restoration and bioengineering (Riley 1998). One significant development is US federal agencies, mainly the Army Corps of Engineers (USACE), adopting new river channel engineering practices and designs that anticipate and allow for natural conditions and processes. Some of this change can be attributed to legislation

that has been passed. It is worth noting, however, that restoration is not a “primary” mission of the USACE (Riley 1998).

River restoration practices

As a consequence of channelization, many rivers in urban areas exemplify what is often referred to as "urban stream syndrome." This condition is characterized by contamination from industrial and urban runoff, an altered hydrology, and severely diminished, if not complete loss of, ecological integrity (Meyer et al. 2005; Walsh et al. 2005). The current condition of these rivers is a direct result of decades-old attempts to mitigate flood damage through quick conveyance of stormwater through urban areas. Many of these projects have failed to deliver the anticipated results (Walsh et al. 2005). In light of the extensive physical modifications and severe ecological damage river engineering has wrought, Moran (2007: 122) notes:

The task of restoration, then, is not to try to put the stream back to its original condition—reversing urbanization is clearly impossible—but rather to re-urbanize and adjust some of the most problematic aspects of urbanization.

Stream restoration (also known as “green streams”) projects may involve a variety of components, from extensive work such as major channel reconfigurations to more modest tasks such as invasive species removal (Moran 2007). Urban rivers exist on one end of the “urban-rural-wilderness continuum” laid out by Kondolf and Yang (2008). Here, encroachment of urban development severely limits the possibilities of restoration activities by generally prohibiting channel widening. Restoration efforts are viewed as a “form of gardening” in which deliberate channel design choices are made, ensuring mindfulness in protecting existing infrastructure from fluvial processes such as erosion.

At the same time, though, channel design is often able to provide a multitude of recreational amenities and public spaces for social interaction (Kondolf and Yang 2008).

Walsh et al. (2005: 707) note that, because humans are an integral component to river restoration, "effective management of these streams will require a broader perspective than traditional stream ecology, one that includes social, economic, and political dimensions." Conceptions of river restoration are no longer just that of a technical problem which scientific, technological, and engineering solutions must overcome. Large-scale infrastructure projects, such as river engineering projects, significantly alter the physical or built environment. Consequentially, such projects have a significant social impact on the communities in which they are located. Thus, the case is often made that the justification for stakeholder participation is to work toward social justice by involving individuals who can help ensure that changes to the built environment have positive outcomes in the social environment (Vojinovic and Abbott 2012).

Stakeholder and public participation in river restoration

Public participation has become widely ingrained in decision-making and implementation processes of contemporary river restoration projects (Kondolf and Yang 2008). This is not altogether new—even as early as 1990, public participation in river restoration planning was recognized as crucial to assessing costs and benefits of such projects (Newson 2012)—however, this approach marks a significant break from the technomanagerial approach of the past.

Stakeholders are often defined as those individuals who are able to affect or are affected by decision-making processes (Reed 2008). Thus, determining who is a stakeholder and who is not based on this definition can certainly be open to debate due to the vagueness of what is meant by 'affect.' Stakeholder participation often extends beyond opportunities to comment on project designs. Rather, a more collaborative approach is used in which stakeholders are provided the chance to play an active role in determining goals and objectives, as well as implementation strategies (Kondolf and Yang 2008).

Public participation in river restoration planning has become institutionalized in recent years. Several federal and state government policies allow for or mandate public participation in restoration projects. The Environmental Assessments required for 'significant' river channel projects in the US under the 1969 National Environmental Policy Act (NEPA) provide opportunities to engage both a multidisciplinary perspective as well as local communities in achieving project success (Kondolf and Downs 1996). The creation and expansion of the Urban River Restoration Initiative (URRI)—a memorandum of understanding between the USACE and EPA—in recent years has worked toward integration of national, state and local agencies and stakeholders in restoration of urban rivers (Deason et al. 2010) .

Innumerable restoration professionals and academics have identified how crucial stakeholder participation is. Collaboration in the planning and decision-making process of river restoration projects from citizens and other stakeholders is believed to be crucial to developing a more socially just plan (Everard and Moggridge 2012; Palmer et al. 2007) and educating the public on the benefits of a more natural, ecologically functioning

river is critical to ensure ongoing support and success of restoration projects (May 2006). Residents often request and even demand a role in the decision-making processes regarding river management because they feel there is value in the local knowledge they can bring to the table (Newson 2012). Public involvement in river restoration-related activities, such as tree-planting or opportunities to provide input on design features prior to construction, can work to create a sense of pride, ownership, and inclusion (Aberg and Tapsell 2012). River restoration projects in urban neighborhoods can provide local communities with a sense of empowerment, environmental education, and foster the development of social capital through community building (Kondolf and Yang 2008).

The justification for stakeholder and public participation in river restoration projects is not simply to achieve ‘justice’ by way of democratic participatory processes. Participation can promote individuals’ abilities to consider their own personal needs and desires in relation to others, or developing reasoning and persuasion skills (Young 1990). Better quality environmental decisions may also be generated through stakeholder participation (Reed 2008).

Political and practical limitations of public participation

Excluding local communities from river restoration projects by focusing solely on ecological goals and a scientific approach can alienate residents and diminish support, thus compromising long-term success of the project (Aberg and Tapsell 2012). The failure of restoration managers to communicate both the social and ecological benefits of restoration projects can lead to feelings of exclusion and disdain, and ultimately poor public support of projects (Aberg and Tapsell 2012). In a worst case scenario, public

misunderstandings of project goals or feelings of alienation from decision-making processes can lead to opposition and stop a project from happening (Riley 1998).

Involving the public in planning may not always be practical as part of river restoration projects. One deterrent to active resident participation in river restoration planning is the time and energy commitment often required to attend meetings that may span the course of one or several years. This commitment can serve as a deterrent or limitation to participating in the process (Kondolf and Yang 2008).

River restoration and the “public good”

Within the restoration paradigm of river engineering a definite shift from decision-making by solely a technocratic elite to that of collaborative decision-making between technical experts and the public and other stakeholders has occurred. Reed (2008) identifies several phases through which stakeholder participation in environmental management has evolved: “awareness raising” of the late 1960s, integration of local attitudes and viewpoints into data collection and planning during the 1970s, recognition of local knowledge in the 1980s, and participation as integral to sustainable development in the 1990s. The progression of these phases has led to current criticisms of the limitations to participation and the emergence of a “post-participation” phase which is sensitive to these limitations (Reed 2008).

The paradigm shift is indicative of a broader change in conceptions of justice as it pertains to river engineering practices. Realizing the greatest beneficial outcome (minimization of flood risk) is still important in river restoration planning, as evidenced by the continuance of performing cost-benefit analyses (Riley 1998). However, the 1986

Water Resources Development Act led to two notable developments in the cost-benefit analysis approach since earlier in that century. The first development requires that flood control projects be selected based on the greatest net benefits created, rather than on the ability to provide protection from severe flooding. The other development is that the calculated benefits of adding environmental improvements to river restoration projects must, at minimum, equal the costs of incorporating these improvements. This latter stipulation helps avoid termination of a project simply because environmental improvements were only figured in as costs in the analysis, which was common prior to 1986 (Riley 1998). These two developments allow for social and environmental considerations to be more frequently factored into cost-benefit analyses.

Still, the justice focus of the restoration paradigm implicitly is more concerned than the utilitarian paradigm with the process by which an outcome is arrived at. That is, 'the ends' do not 'justify the means,' rather 'the means' justify 'the ends.' This conception of justice evokes the political philosophy of discourse ethics. Discourse ethics is characterized as a democratic approach to social justice that involves open public communication and engagement in a two-way process of knowledge exchange. What is considered 'just' is arrived at through dialogue in which individuals are able to participate freely and equally (Smith 1994). Individuals are not merely *subjects* of the outcome, but rather *agents* in the determination of said outcome. Discourse ethics does not presuppose consensus will be reached through open dialogue, rather value is placed in the free exchange of conflicting ideas and interests and the respect of all individuals to do so, regardless of their situation (Low and Gleeson 1998). Consensus may not always be desirable or attainable. Some political theorists contend that a more desirable outcome is

an incremental implementation of decisions that are reached within a community through mutual agreement that alternative options would be less desirable (Rescher 1993).

Discourse ethics has been recognized in watershed management approaches with regard to collaboration between scientists and nonscientists:

“...truly participatory approaches to environmental management must fully respect the knowledge, experiences, values, interests, and resources of various participants. Conversely, the participatory process often fails if it adopts a coercive stance in which one type of knowledge or valuation is intrinsically privileged relative to others at the outset of the management process” (Rhoads 1999: 298).

As Kondolf and Yang (2008) note, collaborative planning processes do not automatically indicate that consensus will be reached among participating stakeholders in river restoration planning. Disagreement among participants is inevitable and will frequently occur because there is often no one particular optimal solution to implementing restoration projects (Kondolf and Yang 2008). In this way, discourse ethics problematizes the assumptions implicit in the utilitarian perspective.

Conclusion

River engineering strategies to alleviate flood risk in urban areas have undergone a significant paradigm shift in recent decades from channelization methods to bioengineering practices. This can be attributed, at least in part, to the failures of channelization as a flood control method, but also the failures of channelization to anticipate and account for social and environmental consequences. Different conceptions of justice are implicitly wrapped up in both channelization and restoration as engineering practices—utilitarianism and discourse ethics, respectively. Channelization was a product of a technomanagerial approach to mitigating flood risk, one in which the public did not

play much (if any) role in decision-making, and utilitarian cost-benefit analyses were used to quantify maximum benefit at minimal cost. In contrast, as part of the river restoration paradigm, public/stakeholder participation in planning-related and decision-making processes are implicitly viewed as socially 'just.'

However, as my empirical study demonstrates, the engineering of the Kinnickinnic River does not fit neatly into the paradigm shift described above. In the next chapter, I turn to the conceptual framework to which I situate my empirical research, and I introduce my research questions and methods.

CHAPTER FOUR: QUESTIONS AND METHODS

Conceptual framework and research questions

Following Walker (2009), I contend that environmental justice research should continue to expand its topical focus not simply for the sake of thematic diversity, but because opportunity exists to continue to uncover the numerous spatial and temporal dimensions of justice. The phenomenon of flooding—as a product of where natural processes meet the built environment—offers a particularly compelling opportunity to broaden explorations of justice. However, 'flood justice' literature, particularly in the US, has remained primarily focused on large, devastating flood events or coastal flooding. Many coastal areas, especially in the US, tend to be populated by individuals of higher socioeconomic status and are, thus, more resilient to flood impacts. Many inland cities have developed along rivers, which leaves the potentially uneven impacts of flooding on large urban populations underexplored. River flooding is also distinct from coastal flooding, in that it is largely dependent upon rainfall rather than a combination of severe weather, tides, and wave action. Thus, river flooding provides an opportunity to investigate the role that the built environment plays in allowing for or preventing inland urban flooding.

Furthermore, 'flood justice' literature has yet to explore what sorts of potential concerns about justice may result from efforts aimed at flood control. This thesis also demonstrates that mitigating flood risk through river restoration is not a simple 'win-win situation.' Rather, several justice concerns may arise regarding processes and outcomes associated with flood control projects, such as resident displacement and displacement and relocation, public amenity creation, or gentrification.

Adopting the direction of much recent environmental justice literature, my research adopts the view that exploring and understanding claims of injustice ought to attend to not only *distribution*, but also *participation* and *procedure*. I adopt Walker's (2009) assertion that multiple spatial dimensions of justice and injustice exist. This thesis will focus on a select few spatialities, including the different (and problematic) scales among which the benefits and burdens of flood control projects are distributed, the implications and, at times, inadequacies of justice as proximity, and how the physical transformations of urban river corridors may create or disrupt a sense of place and identity. Notions of justice can also refer to spaces of participation in decision-making or fairness in processes relating to compensation for burdens suffered.

I develop an understanding of the temporal dimension of flood justice to include the past, present, and future. Past decisions, actions, and inactions regarding water-related infrastructure and flood control (and why they were made) have created the particular conditions through which urban populations experience or avoid flooding. These past conditions and circumstances not only have consequences for people today, but also largely govern the feasibility and appropriateness of decisions and actions with regard to current flood control measures.

My research uses the Kinnickinnic River rehabilitation project on Milwaukee's south side as a case study to demonstrate the implicit and explicit conceptions of justice that inform, motivate, and result from particular flood control and river engineering practices. In Chapter Five, I complicate the "older paradigm" discussed above by demonstrating that the channelization of the Kinnickinnic River was not the outcome of a purely technocratic decision-making process, nor simply a product of the hubris of

engineers at the time. Instead I trace the social and political contexts surrounding several historical “moments” in which engineering decisions were made to prevent flooding in the neighborhood along the river, and why particular paths were chosen over others. In Chapter Six, I examine competing notions of what justice in a flood control and river restoration project entails. The ‘justice as participation’ in the “newer paradigm” discussed above by is complicated by the present-day river rehabilitation project. Different conceptions of what participation should entail caused controversy over the project planning process, and other spatial and temporal concerns have also emerged. Through my research and discussion I answer the following questions:

1. What factors influenced the engineering decisions surrounding the Kinnickinnic River, and what justice concerns followed these decisions?
2. What spatial and temporal dimensions of competing conceptions of justice—as distribution, and participation and procedure—emerge through the current effort to rehabilitate the Kinnickinnic River?

Data and methods

A variety of qualitative methods were used to gather data as part of my research, including semi-structured personal interviews, archival research, document analysis, and participant observation.

There are several strengths to conducting personal interviews as part of a research plan (Dunn 2010). One of these advantages includes accessing information that other

methods such as document analysis or observation are unable to provide. Another advantage is that interviews provide a researcher with an opportunity to gather information on opinions, perceptions, and debates. Personal interviews also allow a researcher to explore complex social behaviors, emotions, and motivations (Dunn 2010).

To better understand the full scope of opinions, debates, perceptions, emotions, and motivations surrounding various aspects of the Kinnickinnic River restoration project, I conducted semi-structured personal interviews with a select set of individuals. These individuals fell into one or more categories—those who served on the planning committee for the project, those who are active in current project-related activities, or those who are affiliated with organizations that serve residents in the project area. Semi-structured interviews were chosen to ensure certain standard questions were addressed, but also to allow for flexibility in how particular topics or subjects were addressed or discussed.

Conducting archival research using primary source documents provides a unique record of particular events as they unfolded (Roche 2010). Archival research allows a researcher to understand, interpret, and answer questions about past events that cannot be done using other research techniques (Harris 2001; Roche 2010). Archival research was used in my research to gain an understanding of what historical factors played a role in the channelization of the Kinnickinnic River and how the river came to be in its present-day condition. Historical documents analyzed for my research included meeting minutes, letters, technical reports, newspaper articles, and memorandums. These documents were accessed through the University of Wisconsin-Milwaukee Golda Meier Library Archives, Google News Archives, and the Milwaukee Metropolitan Sewerage District Records

Management Department. Chapter Five of this thesis is largely based on this archival research.

Document analysis is a useful qualitative research method that can uncover or add to unspoken information and also provide insight into the past (Hodder 2000). As part of my research I analyzed a variety of documents, including a neighborhood plan document, newspaper articles, meeting minutes, and neighborhood newsletters, to name a few.

Document analysis was incorporated into my research methods for a variety of reasons. A variety of documents were reviewed prior to scheduling personal interviews to provide background information on the goals and activities of organizations involved with the Kinnickinnic River project. Document analysis also provided me with an understanding of particular events and activities that interviewees were unable to recall.

Participant observation as a research method provides a unique opportunity for understanding events, activities, and the like by allowing the researcher to witness or be a part of the spontaneity of interactions (Kearns 2010). I attended neighborhood meetings as an observer to gain an understanding of the variety of topics and issues voiced by Lincoln Village residents. I also attended a community theater play written and produced by Urban Anthropology Incorporated (UrbAn), an anthropological organization based in the Lincoln Village neighborhood. This play provided insight into the organization's perspective on the Kinnickinnic River project—data that may not have been easily obtained through interviews or document analysis.

The archival research formed the basis for the following chapter, History of the Channelization of the Kinnickinnic River. The variety of archival documents that were reviewed provided a detailed understanding of the particular conditions through which

the Kinnickinnic River was channelized and the circumstances which led to its current condition. Data derived from personal interviews, document analysis, and participant observation made possible the analysis of competing conceptions of justice surrounding my empirical case study, as detailed in Chapter Six.

CHAPTER FIVE: HISTORY OF THE CHANNELIZATION OF THE KINNICKINNIC RIVER

At quick glance, much of the Kinnickinnic River in its current condition could easily be mistaken for a drainage ditch. Its long, straight concrete channel is characteristic of an urban river channelized for flood control purposes. The channelization of the Kinnickinnic River was part of a larger county-wide plan of watercourse engineering conducted during the 1960s. The widespread channel modifications within the county were completed following catastrophic flooding that hit Milwaukee County in the early spring and mid-summer of 1960, and engineers modified the river channel again in the 1970s.

Certain aspects of the historical engineering of the Kinnickinnic River coincide with the framework discussed in Chapter Three. The engineers who designed the channel certainly perceived river channelization as an effective method of flood control. Yet, the channelization of the river cannot simply be chalked up to the same trust in engineering solutions for flood control or utilitarian approach to justice. The decision to channelize the Kinnickinnic River was not just a technical decision—it was significantly influenced by political pressure. This pressure led to a hastily implemented engineering solution, rather than a well-thought-out, comprehensive flood control plan. The condition of the Kinnickinnic River today, and the justice concerns over the current rehabilitation project, are direct consequences of particular decisions made over others, done at different times, and for specific reasons (Figure 3). Thus, the below narrative of the flood control projects conducted along the river during the mid- to late 20th century provides a compelling

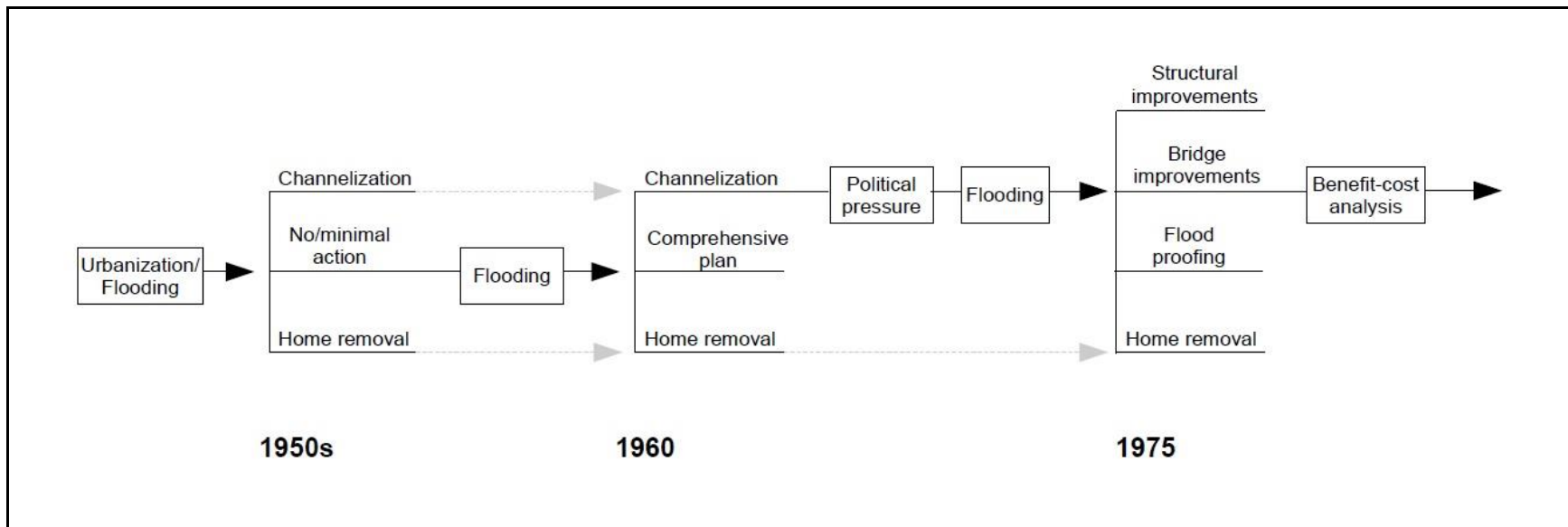


Figure 3. Timeline of Kinnickinnic River engineering options

account of the urban environmental history of the Kinnickinnic River and surrounding neighborhood.

Stormwater management concerns

Flooding was reported along the lower reaches of the Kinnickinnic River, in what is now known as Lincoln Village, as early as 1912 (Department of the Army 1975). Recommendations to channelize and line the Kinnickinnic River with concrete appeared as early as the mid-1940s (Shlensky 1944). Space constraints from structures built along the river were identified early on, and concrete lining was proposed to facilitate faster conveyance of stormwater and, thus, eliminate the need to remove those structures for channel widening (Shlensky 1944). By the early 1950s, the Sewerage Commission of the County of Milwaukee had developed a strategic plan to address increasing flood risk and stormwater management issues.

The Sewerage Commission released a report in 1951 that identified problems with regard to stormwater conveyance through the sewerage system and local waterways (Sewerage Commission of the County of Milwaukee 1951). Several issues surrounding the sewerage system were recognized, including stormwater inundating the sewers and causing sewer backups in homes or combined sewer overflows. The report also recommended several county waterways be “improved” through deepening and widening of their channel (Sewerage Commission of the County of Milwaukee 1951).

Ongoing flooding along Milwaukee County waterways was also identified as a stormwater management concern (Milwaukee County Park Commission et al. 1953). The rapid growth of the urban area in Milwaukee County in the first half of the 20th century

resulted in a large increase of impervious surfaces, such as concrete and asphalt, which prevented stormwater from infiltrating into the ground. Consequentially, the increased amount of storm runoff overwhelmed sewers and connecting streams, and the Sewerage Commission of the County of Milwaukee attributed the resulting periodic flooding along these streams to this increased runoff (Milwaukee County Park Commission et al. 1953). Many of the county's waterways flow through land owned by the Milwaukee County Park System. Thus, flood damage to parks and parkways along these streams and rivers became a significant concern for the Milwaukee County Park Commission (Fowles 1953).

The Park Commission and the Sewerage Commission engaged in a passionate debate during the mid-1950s over how to best handle the issues of sewage and flooding in county waterways. Through a joint meeting, both agencies agreed that illegal downspout connections to the sewerage system ought to be disconnected (Milwaukee County Park Commission et al. 1953). However, significant dispute arose over discussion of modifying area waterways.

Fitting with the paradigm of the day, engineers with the Sewerage Commission proposed increasing the capacity for stormwater conveyance through straightening, deepening, widening and, when necessary, paving county watercourses to alleviate flooding. Doing so, the Sewerage Commission contended, was a natural practice, and it urged the Park Commission to partner with them to rehabilitate county waterways (Milwaukee County Park Commission et al. 1953).

The Park Commission had past experience with losing land to the Sewerage Commission without compensation for stream channel modifications along Lincoln

Creek on the city's north side (Dineen 1954). Thus, the prospects of losing additional and considerable amounts of park land without compensation was highly contested by the Park Commission, as was the conversion of parkway land into what was viewed as a large drainage ditch (Dineen 1954). Likewise, the Park Commission argued, the public would not want to recreate in parks along streams that serve as open sewers, causing the creation and maintenance of these lands to be a waste of money (Dineen 1954). The Sewerage Commission, on the other hand, did not feel it necessary to compensate the Park Commission for land lost from stream channel projects. The Sewerage Commission argued that the primary purpose of county waterways was to convey stormwater—not for parkway development (Milwaukee County Park Commission et al. 1954).

These two competing ideas demonstrate different spatio-temporal concerns over how the waterfront space of the county will best serve the “public good.” The Park Commission defended its conversion of waterfront land to parkways—an undertaking that had been in the works for decades since the parkway master planning of former Parks Secretary, Charles Whitnall (Gurda 1999). By connecting this land with the larger county parks system, the Park Commission hoped to designate these urban spaces as long-term, or ‘indefinite,’ public spaces that could, presumably, be enjoyed by future generations. On the other hand, the Sewerage Commission claimed county streams and rivers were for stormwater conveyance purposes. The implicit rationale was that the waterways could best serve the “public good” by reducing or eliminating flood risk and associated property damage along the river corridors.

Regardless of the Park Commission's objections, the Milwaukee County Board of Supervisors issued an indenture in March 1954 that mandated the cooperation of the

County of Milwaukee and the Park Commission in providing the necessary permits, licenses and land necessary for the deepening and widening of waterways (Milwaukee County Board of Supervisors 1954).

By April 1954, the agencies agreed on the need to provide each other a “right of way” to carry out their respective projects—for the Park Commission it was parkway development, for the Sewerage Commission it was stream channel modifications (Milwaukee County Park Commission et al. 1954). The Park Commission acknowledged it did not foresee stormwater conveyance issues when parkway plans were initially developed. Thus, it would not expect compensation if the land taken for watercourse projects did not impair the character of the parkway. The Sewerage Commission agreed to minimize the amount of land acquisition necessary by increasing the slope or depth of stream channels when possible, rather than widening them. However, the Park Commission challenged the Sewerage Commission’s channel deepening approach. The Park Commission worried individuals attempt to build homes and other structures up to the edges of these modified stream channels, placing themselves directly in the floodplain. The Park Commission noted that, while this concern may not be an issue along certain waterways, it can certainly pose a problem in other areas, especially in the densely populated neighborhood along the Kinnickinnic River, where residents may potentially build in the middle of the floodplain (Milwaukee County Park Commission et al. 1954).

Although the Park Commission agreed to relinquish parkway land as the Sewerage Commission needed, at the same time they, expressed concern about the urban development this might permit in floodplain areas. This apprehension demonstrates that

the Park Commission gave consideration to the potential for individuals to put themselves, knowingly or perhaps unknowingly, into a space of risk, with implicit concern about the potential negative consequences it may create in the future. It would only be a matter of time before concerns over building in the floodplain resurfaced.



Figure 4. Kinnickinnic River prior to channelization (Image source: MMSD)

By the end of May 1954, the agencies had reached a stream channel modification agreement acceptable to both parties and the controversy dissipated (“Statement of Principles...” 1954). Discussion of channelizing the Kinnickinnic River resurfaced in 1956 (Leary 1956). Due to cost, the Sewerage Commission favored 'natural' earth channels rather than concrete lining at this time, even though they recognized that this would require substantially more land acquisition from both private individuals and the county Park Commission to complete, also posing additional cost (Leary 1956). Also

during the mid-1950s, the Sewerage Commission considered converting the area bounded by South Chase Avenue, South 16th Street, West Cleveland Avenue and West Arthur Avenue (through which the Kinnickinnic River flows) to park space, even though this proposal would require significant property acquisitions (Leary 1956). The same issue of structures being built along the river's edge and constraining channels that was noted in the 1940s comes up again. At this time, the Sewerage Commission seemed to agree with the Park Commission desire for this stretch along the Kinnickinnic River to become park land. However, this possibility soon vanished...

The flood of 1960

By the end of March, 1960, Milwaukee had endured a winter that made record books, both as the coldest and with the third heaviest snowfall (“New Rains Threaten City Area” 1960). The thermometer reached the sixties during the last few days of that month, causing the snow to melt rapidly (“Peak Rain Floods City” 1960). Typical spring rain began to fall in the mid-evening of March 29, but over two and half inches of rain had fallen by the next day—the most rainfall Milwaukee had ever received in March during a twenty-four hour period. The ground was already saturated from snowmelt, so the rain had nowhere to go but the storm sewers. The city’s rivers and streams, already swollen from the rapid snowmelt of the previous days, began to flow over their banks (“Peak Rain Floods City” 1960).

The catastrophic flooding that ensued was felt county-wide. Factories in the industrial corridor along the Menomonee River were under as much as seven feet of water and numerous workers had to be evacuated by boat. Six main highways in

Milwaukee County were blocked by floodwaters. Pressure from ice jams in the Root River created a three inch crack in a highway bridge (“Peak Rain Floods City” 1960). Several other ice jams worsened flooding along waterways, prompting firemen to dynamite them to pieces (Photo caption 1960). Flooding knocked out power in many neighborhoods and residents in the worst hit areas had to be evacuated (“Peak Rain Floods City” 1960). The Milwaukee Fire Department was overwhelmed with thousands of telephone calls requesting assistance in pumping flooded basements. But basement pumping was useless until the sewers were able to handle the amount of stormwater falling. The sewerage system was inundated with water flowing in at a rate of 50 million gallons per day over its capacity (“Peak Rain Floods City” 1960).



Figure 5. Flooding on South 12th Street near the Kinnickinnic River, March 30, 1960
(Image source: MMSD)

By April 1, the floodwaters had begun to recede in most areas, but the threat of additional rainfall and continued snow- and ice melt from warm temperatures lingered (“Floodwaters Going Down” 1960). At an emergency meeting of city department heads, Milwaukee Mayor Frank Zeidler complained the absence of planning and zoning regulations that could have prevented the massive flood damage (“Mayor Seeks Disaster Area Ruling” 1960). He noted that several of the worst hit areas were in low-lying floodplain land that should never have been developed, and proposed that more oversight of planning was needed (“Mayor Seeks Disaster Area Ruling” 1960). Zeidler's complaint highlights the fact that flooding is not merely a 'natural' event; it is very much dependent upon human factors—in this case, unchecked urbanization.

At this time Milwaukee was finishing a decade of rapid urbanization and annexation (Gurda 1999). During the 1950s, the City of Milwaukee annexed surrounding areas at an unprecedented rate and quickly provided city services and infrastructure, such as water, roads and sidewalks. Milwaukee's manufacturing sector exploded during this time and the influx of individuals seeking work contributed to a housing crisis. This crisis led to numerous temporary housing “camps” around the city. Homes were, at times, built at a rate of one thousand per month, and any available land was used for home construction (Gurda 1999). Building and zoning codes were not stringently enforced in this atmosphere of rapid growth, allowing for a great deal of unchecked development. All the while, the suburbs exploded as well, leading to increasingly denser development at Milwaukee's fringes (Gurda 1999).

Zeidler suggested the possibility of constructing artificial ponds in these low-lying areas to store floodwater, but the deputy commissioner of public works, Walter Tacke,

informed Zeidler that the county lacked sufficient space to create effective detention ponds (“Mayor Seeks Disaster Area Ruling” 1960). Talk of channelization began the same day by the public works commissioner, Lloyd Knapp, who called for a “crash program” of widening and deepening county waterways to prevent future flooding. Ray Leary, chief engineer of the Sewerage Commissions, stated measures would be taken within two to three weeks to straighten Lincoln Creek in a new emergency channel (“Floodwaters Going Down” 1960).

Leary delivered a report to Zeidler in early April on the Sewerage Commission’s flood prevention plan and obstacles to its execution. The report criticized both the Park Commission and the city for their slow response in identifying land for watercourse modification projects (“Boost Sewer Outlay: Zeidler” 1960). In response to Leary’s study, Zeidler called for more funding for the Sewerage Commission to ensure it has the necessary capital for flood prevention projects. The mayor demanded other infrastructure projects be scaled back so these flood projects could take precedence. Zeidler proposed the purchase and removal of homes along the Kinnickinnic River between 6th and 16th Streets to facilitate its widening. According to Zeidler, “There’s no other way out” (“Boost Sewer Outlay: Zeidler” 1960: 4).

The rapid and unchecked growth of Milwaukee combined with a particular sequence of early spring weather-related events, which resulted in catastrophe. Both urbanization and flooding created a sense of urgency for city and county officials to devise a plan to avoid a similar recurrence in the future. Within days of the flood emergency channelization projects were discussed as reactionary measures, and the mayor urged for the acquisition of homes to widen the Kinnickinnic River. Once again,

river channelization was proposed; however, this time, the removal of homes along the river is also proposed as a flood control solution. Zeidler's term as mayor was coming to an end and the future of the Kinnickinnic would be decided by a different administration.

The “quick fix”

Milwaukee's new mayor, Henry Maier, was sworn in on April 19, 1960. In his inaugural address he stated the dire need for cooperative efforts among government officials and agencies to handle environmental concerns (“Text of Address by New Mayor” 1960). Maier requested that the city, county, and state governments, the Sewerage Commission, and the Park Commission collaborate on flood control projects. He called for the city engineer to complete a study as to the causes of the flood, and assured the public flood issues would be given prompt attention (“Text of Address by New Mayor” 1960).

By the end of June, 1960, flood prevention planning was in full swing. Officials from numerous local, state and federal governments and agencies attended a conference in Milwaukee to discuss several issues on flooding and water pollution in the county (“Flood Control Plans Discussed by Officials” 1960). They drew up plans to consult the US Army Corps of Engineers for flood mitigation plans and to seek money from Congress for an engineering study of the Milwaukee River. However, political pressure had already begun to mount for flood control actions to take place as soon as possible. One local government official stated that, “We don't want more studies. We want something done about the river. Spend the money on that!” (“Flood Control Plans Discussed by Officials” 1960: 9).

Additional political pressure soon emerged for waterways to be channelized. County Supervisor Cornelius Jankowski urged the Sewerage Commission to use their authority to channelize the Kinnickinnic River. Leary echoed this sentiment, calling for all parkway land along both the Kinnickinnic River and Lincoln Creek to be used for widening the channels. By this time, the Park Commission had already relinquished their parkway lands along the Kinnickinnic River to the Sewerage Commission for channel projects (“Flood Control Plans Discussed by Officials” 1960).

Not everyone agreed that stormwater and flood control measures should be decided upon so hastily. The general manager of the county parks, Howard Gregg, expressed concern over the flood control approach being taken, “that we are just pushing our problem ahead of us, solving one by creating another” (“Flood Control Plans Discussed by Officials” 1960: 9). He called for the issues of stormwater management, stormwater in sanitary sewers, and water pollution from sewage in stormwater to be considered as separate problems that require individual solutions (“Flood Control Plans Discussed by Officials” 1960).

Another round of rainstorms in the summer of 1960 added increasing urgency to the political pressure to develop a flood control plan for Milwaukee County. In early August 1960, two large rainstorms hit Milwaukee County within 12 hours of each other, dumping three and a half inches of rain on the county (“Two Violent Storms Strike; Rainfall Tops 3 ½ Inches” 1960). The storms caused power outages and widespread property damage, especially on Milwaukee's south side near the Kinnickinnic River where floodwater filled basements and encroached on the first floor of numerous homes (“Hard Rains Flood Streets, Hamper Traffic in Area” 1960). Soon thereafter, several

officials met to continue discussion on how best to handle the threat from flood risk in Milwaukee County.

The County Board Parks and Recreation Committee held a meeting in mid-August 1960, with representatives from Milwaukee County, several county municipalities, the Sewerage Commission, and the Park Commission present. The consensus was that all public agencies—the Park Commission and Sewerage Commission, in particular—needed to provide their cooperation in addressing the county’s flood problem (“Long Range County Plan Envisioned” 1960).

Despite the urgency that flooding and political pressure generated for flood control projects to commence as soon as possible, Leary estimated that implementing a comprehensive solution to flooding would take five years, but an alderman demanded immediate action, stating residents won't listen to long-range plans (“Joint Flood Fight Urged” 1960; “Long Range County Plan Envisioned” 1960). Deviating from what could be characterized as typical hubris of engineers at the time, Leary echoed Gregg’s view that flood control planning should not be approached so hastily—that a well-thought out plan must be devised—with the understanding that such a plan could potentially take years to develop. But it appeared that many elected officials felt that immediate implementation of flood control measures was in the public interest

Another alderman emphasized that aesthetic concerns will need to give in to watercourse management projects, citing the ongoing problem along South 12th Street by the Kinnickinnic River. Leary stressed the necessity of straightening and widening stream channels within parks in order to effectively alleviate flooding, as well as the need for legal authority to acquire riverfront land for these projects as needed (“Joint Flood Fight

Urged” 1960). The biggest concern for the Sewerage Commission was the Kinnickinnic River, which would require widening, deepening and paving between South 6th and 16th Streets to alleviate the flooding problem (“Long Range County Plan Envisioned” 1960).

In spite of calls to take the time to develop a detailed and comprehensive plan, political pressure won out. In September 1960, the county board passed a resolution on flood control in response to the catastrophic flood earlier that year (Milwaukee County Board of Supervisors 1960). The metropolitan Sewerage Commission was delegated the “duty and authority” to improve all watercourses within its jurisdiction, and move as quickly as possible to complete these projects. The Park Commission and all municipalities in the county were ordered to provide their full cooperation in assisting the Sewerage Commission (Milwaukee County Board of Supervisors 1960). In the years that followed, the Sewerage Commission continued to channelize and install concrete lining in many of the waterways flowing through Milwaukee County, including much of the Kinnickinnic River and its tributaries, to avoid another flood such as the one that occurred in the spring of 1960.

The Kinnickinnic River channelization project commenced in the fall of 1960 and was one of two county waterways to receive priority attention (“Long Range County Plan Envisioned” 1960). The political pressures to implement a 'quick fix' solution to flooding resulted in a 'crash program' to modify the Kinnickinnic River between S. 6th and S. 16th Streets (Wieland 1976). Rather than explore a full range of potential flood control options, an emergency channel was created through straightening, deepening, widening, and lining with concrete. The newly created channel generally conformed to the existing path of the river, and was built utilizing existing bridges and other infrastructure, but

constrained by homes and other structures built near the river's edge (Wieland 1976). The Sewerage Commission knew at the time the Kinnickinnic River was being channelized that the concrete channel would become increasingly incapable of adequately transporting significant stormwater flows should the watershed upstream continue to urbanize (Wieland 1976).



Figure 6. Kinnickinnic River post-channelization, June 15, 1961 (Image source: MMSD)

So, the Sewerage Commission engineers knew they were putting a poorly designed river channel into place, and knew the very real potential for the channel to become inadequate as the river's watershed continued to urbanize. Zeidler's call to purchase and remove homes along the Kinnickinnic River so the channel could be widened seemed to die down after he left office. With the urgency of action looming, it

presumably would have been difficult to pursue, being a lengthy process. Time was of the essence so much that the concrete channel was designed to conform to existing infrastructure. The channel was not just a 'quick fix,' but a temporary one as well.

Emergence of post-channelization concerns

Not long after channelization of the Kinnickinnic River was completed, three instances of flooding occurred in the Lincoln Village neighborhood—March 1969, September 1972, and April 1973. As evidenced by these floods, the 'crash program' turned out not to be a practical solution—only temporary at best. The Sewerage Commission attributed these floods to increased stormwater flows resulting from continued development within the watershed and channel “improvements” completed upstream in the watershed (Department of the Army 1975). So the flooding that was occurring in Lincoln Village was not just a matter of a neighborhood dealing with its own problem—the flooding in Lincoln Village was an inequity stemming from the larger problem of urbanization and watercourse improvements at the watershed scale.

One neighborhood resident on South 9th Street was particularly upset by the property damage from these three floods, with the “last one being the worst, SO FAR” (Bova 1973). City building inspectors informed this homeowner that another flood similar in magnitude to the flood of April 1973 could potentially cause the foundation of his home to collapse (Bova 1973). This resident was agitated at the seemingly little attention given to rectifying the flooding problem (Bova 1973).

Only thirteen years after channelization of the Kinnickinnic was completed, the Sewerage Commission began to consider redesigning the channel. In 1973, the neighborhood's alderman, Robert Kordus, spearheaded an effort to explore home

acquisition and removal to widen the channel (Kotecki 1973). Residents near the Kinnickinnic River were surveyed to gauge whether they would be cooperative with potential government purchase and removal of their home for further channel modifications. Of the forty-six completed surveys, forty residents indicated they would be willing to consider selling their home (Kotecki 1973). Once again, home removal was proposed as a solution to help alleviate flooding along the river—this time, residents volunteered to sell their homes, and a large majority supported home acquisition.

In an attempt to move toward an ultimate solution to the flood problem, assistance was solicited from the 'experts' on flood control. In 1974, the City of Milwaukee applied for a Department of the Army review of the flooding issues along the Kinnickinnic River and to explore options in increasing its flow capacity (Laszewski 1974). The request was granted and the USACE completed their study of the Kinnickinnic River in 1975 (Department of the Army 1975). Four options to address flooding in the neighborhood between South 6th and South 16th Streets were explored as part of the study—bridge improvement, structural improvement, floodplain evacuation, and flood proofing (Department of the Army 1975). If floodplain evacuation was pursued, 380 structures would need to be removed for evacuation of the 10-year floodplain, and almost 500 in the 100-year floodplain. The area where structures were removed would be leveled and was recommended for recreational or open space (Department of the Army 1975). The release of the USACE report once more brings the Kinnickinnic River to a crossroads where flood control decision(s) must be made.

One consideration of the USACE was the social impact from removing several of the bridges that provide north-south connections across the Kinnickinnic River, in terms

of “separating once close neighbors through the elimination of bridges” (Department of the Army 1975: 5). This demonstrates concern over the potential disruptions to a sense of place and sense of community that may result from bridge removal and, thus, loss of physical connections within the neighborhood. The report notes that not much local opposition against bridge removal exists in the neighborhood, indicating that residents had been consulted on the matter. This is characteristic of the paradigm shift discussed in Chapter Three regarding the consultation of local individuals as participation in environmental planning. It also foreshadows particular concerns over a sense of place and community that surface later with regard to the rehabilitation project.

Nonetheless, through a benefit-cost analysis and based on the USACE study of 1975, the Southeastern Wisconsin Regional Planning Commission (SEWRPC) recommended removing all of the bridges spanning the Kinnickinnic River in Lincoln Village and rebuilding bridges at major thoroughfares of South 6th, South 9th, South 13th, and South 16th Streets—bridges that could accommodate larger stormwater flow (Bauer 1978). The Kinnickinnic River channel had originally been designed in 1960 to accommodate these bridges, but the bridges had since been recognized as obstructions to water movement in the channel and added to the risk of flooding. The choice of bridge removal was selected, presumably, because of the high benefit-cost ratio and the fact that the City of Milwaukee would be responsible for the approximately \$3.3 million expense to remove and rebuild bridges (Wieland 1976). The City of Milwaukee began removing and reconstructing bridges over the Kinnickinnic River in the mid- to late 1970s (Bauer 1978).

Removing structures from the floodplain along the Kinnickinnic River again was not pursued. Evacuating and removing structures in the 10-year floodplain were estimated at approximately \$9.2 million and \$11.2 million for the 100-year floodplain, and expected to take ten years to complete. The option of floodplain evacuation also had the lowest benefit-cost ratio—approximately one-third that of bridge removal and reconstruction (Wieland 1976).

The Sewerage District contracted an engineering firm, Donohue & Associates, to assist with design considerations for channel improvements to further improve river flow (Laszewski 1979). The engineering firm made several recommendations for in-channel improvements, but also suggested the creation of earthen dikes and concrete floodwalls in various locations along the Kinnickinnic River (Donohue & Associates, Inc. 1979). Donohue & Associates advised that installation of hand rungs within the concrete channel and an informational program for residents could help address safety concerns associated with the rapid stormwater current of the river. The firm recognized cooperation from neighborhood residents would be particularly important for the success this channel project (Donohue & Associates, Inc. 1979). Additionally, the engineering firm recommended implementing improvements that would improve the aesthetics and recreational opportunities with the neighborhood, including a recreation path and a small park (Donohue & Associates 1979). The firm determined construction of berms or dikes was unnecessary and, thus, these were not included in the final improvements to the Kinnickinnic River corridor (Laszewski 1983). In 1983, the plan for improvements to the Kinnickinnic River channel were suspended indefinitely (St. John 1983).

Conclusion

The decision to channelize the Kinnickinnic River was the result of three factors. Rapid urbanization of the Milwaukee area led to issues with handling stormwater. The large amount of stormwater directed into the Kinnickinnic River from the built environment of its watershed created flooding issues in the Lincoln Village neighborhood. Two major floods in 1960 generated mounting political pressure for the Sewerage Commission to provide immediate relief. So the channelization cannot simply be attributed to the hubris of engineers at the time. The three interrelated factors of urbanization, flooding, and political pressure created a particular set of conditions under which hasty decision-making needed to be and was done. When the failure of the concrete channel to control flooding became evident, the opportunity to implement a more long-term solution arose. A classic benefit-cost analysis was completed and bridge removal was selected as the preferred option for channel modifications in the 1970s. This option had a high benefit-cost ratio, and was almost exclusively funded by the City of Milwaukee, not the Sewerage Commission. Although the removal of homes and other structures from the floodplain or along the river was repeatedly suggested as part of an option for flood risk mitigation, it was continually deferred.

The particular motivating factors and decision-making processes through which the Kinnickinnic River corridor was channelized and reengineered lend themselves to a unique historical account of the transformation of the urban environment in the Lincoln Village neighborhood. What decisions were made, what decisions were not, and why created a particular set of circumstances in which certain paths were chosen over others. The choice made at several points to circumvent home removal only delayed the

inevitable, led to a failure (at times) to achieve the desired outcome of flood control, and generated additional justice concerns over safety and public health that are being addressed today.

In the chapter that follows, yet another flood control project is conducted along the Kinnickinnic River—this time removing the concrete that was installed in the early 1960s and removing homes along the river to facilitate channel widening. These processes are part of a larger river rehabilitation and neighborhood revitalization plan aimed at reversing some of the more troublesome consequences of the past decision to channelize the Kinnickinnic River. Yet, as will be discussed, certain aspects of the present-day project have raised their own concerns.

CHAPTER SIX: COMPETING CONCEPTIONS OF JUSTICE IN THE KINNICKINNIC RIVER REHABILITATION PROJECT

As mentioned in the previous chapter, a new set of concerns has emerged in the Lincoln Village neighborhood since the channelization of the Kinnickinnic River in the 1960s. These concerns include a failing concrete channel, persistent flooding, dangerous storm flows, public health, and loss of ecological habitat (Milwaukee Metropolitan Sewerage District and Sixteenth Street Community Health Center 2009). The current Kinnickinnic River rehabilitation project aims to remove the concrete channel to mitigate flood risk in Lincoln Village. The project also addresses the new set of concerns listed above in yet another engineering attempt to control neighborhood flooding. A project of this nature—one aimed at reducing flood risk, ecological improvements, and neighborhood enhancements—could easily be conceived of as a win-win situation.

However, the activities of different components of this complex, large-scale project have raised several competing conceptions of what 'just' processes and outcomes ought to entail. Just as the previous history chapter challenged the conceptions of justice in the “older” river engineering paradigm discussed in Chapter Three, so too does the present-day Kinnickinnic River project challenge conceptions of justice that are characteristic of the newer paradigm described in the same chapter. This complication of the newer paradigm of Chapter Three is no more evident than through competing conceptions of what constitutes ‘just’ participation in planning processes of river restoration and flood control projects.

As reviewed in Chapter Two, understandings of justice often include components of distribution, recognition, and participation and procedure. Multiple spatialities exist

within a framing of these justice components, such as scale, place, and networks. Justice can also include a temporal dimension—reparation or compensation for past wrongs, or concern for the well-being of future generations. What follows from all of this is that understanding justice of a given situation in a particular context is rarely straightforward. Rather, conceptions and claims of (in)justice are often complicated and open to contestation. Using the Kinnickinnic River project as a case study, I demonstrate how the temporal dimensions and multiple spatialities of justice, including proximity, place, and scale, can be used to highlight competing conceptions of justice in an urban flood management project. In my analysis, I differentiate between short-term and long-term temporal concerns, and two spatially defined groups—those who are displaced as part of the restoration project and those who remain in the neighborhood.

In this chapter I first provide background information on the development of the Kinnickinnic River rehabilitation project. Through this background information I discuss how flood risk and efforts to mitigate it along the Kinnickinnic River in Lincoln Village were determined. I then examine competing conceptions of participatory justice in the project planning process. Finally, different spatial and temporal dimensions of procedural and distributive justice are analyzed with respect to the particular issues associated with flood control and river restoration projects noted in Chapter Two—relocation of residents, public amenity creation, and environmental gentrification.

Background of the Kinnickinnic River rehabilitation project

The process of redesigning the Kinnickinnic River channel was spearheaded by individuals with the Department of Environmental Health of a local nonprofit health

organization, Sixteenth Street Community Health Center (SSCHC). Since 1993, this department has worked toward addressing environmental hazards that impact resident health in the neighborhoods that SSCHC services (personal interview). In 2004, SSCHC began to develop an 'Action Plan' to explore how the river could become an asset rather than a liability for the surrounding neighborhoods. Through the information gathering process, SSCHC became aware of a dormant Milwaukee Metropolitan Sewerage District (MMSD) plan to remove the concrete channel of the Kinnickinnic River. The two organizations soon partnered to work toward reviving the dormant plan and making it a reality (personal interview).

Early in the planning process MMSD was aware that simply removing the concrete channels would increase the propensity for flooding to occur by slowing the river current. Initial estimates indicated approximately fifteen to twenty homes would need to be removed from the expanded floodplain that would result from the concrete removal (personal interview). Simply replacing the failing concrete would likely be met with resistance from the Wisconsin Department of Natural Resources (WDNR), whose approval was required for any channel modification projects (Technical Review Committee 2007a). So MMSD contracted an engineering firm to help explore the feasibility of different options for redesigning the channel and mitigating the increased flood risk that would result from concrete removal. The parties involved in the planning process were attentive to the need to minimize or eliminate home removal along the river as part of the channel redesign. However, the large number of homes along the river—some within a matter of a few feet—coupled with existing sewerage infrastructure connecting to the river channel posed serious constraints on possible channel redesigns.

MMSD, SSCHC, and a local environmental NGO, Groundwork Milwaukee, organized and convened a Technical Review Committee (TRC) (discussed in greater detail below) between 2007-2009 to brainstorm and discuss a range of stormwater management options available (Milwaukee Metropolitan Sewerage District and Sixteenth Street Community Health Center 2009).

In 2007, at the same time the TRC was meeting to discuss channel design alternatives, the Southeastern Wisconsin Regional Planning Commission (SEWRPC) was updating floodplain maps for the Kinnickinnic River watershed. SEWRPC conducted this remapping as part of a larger Regional Water Quality Management Plan (Milwaukee Metropolitan Sewerage District and Sixteenth Street Community Health Center 2009). The previous mapping of the Kinnickinnic River watershed showed the floodplain was contained within the banks of the river. The new mapping completed by SEWRPC indicated over three hundred homes were now located within the 100-year floodplain (Figure 7) (personal interview). Since the Federal Emergency Management Agency (FEMA) considers the 100-year floodplain a high hazard area, flood insurance is required if there is a mortgage on a home in the floodplain, and the mortgage is through a federally insured or regulated lender (personal interview).

The new flood risk estimates of hundreds of homes contained within the 100-year floodplain, as indicated by the SEWRPC map, changed the focus of the project. All parties involved in the Kinnickinnic River project expressed serious concern regarding the considerable increase in the projected number of homes that now fell within the updated floodplain (personal interview). So what began as a channel rehabilitation project transformed into a larger flood management project. MMSD and the TRC, in consultation

with the engineering firm, determined that eighty-three homes along the Kinnickinnic River would need to be removed to create a sufficient floodplain in the neighborhood to contain a 100-year flood. This was true, even though only properties that were required for channel widening or construction access would be removed (Milwaukee Metropolitan Sewerage District and Sixteenth Street Community Health Center 2009). Numerous individuals on the TRC recognized that this larger flood management project would have a significant impact on the neighborhood, and thus recommended development of a broader neighborhood plan aimed at creating value in the neighborhood.

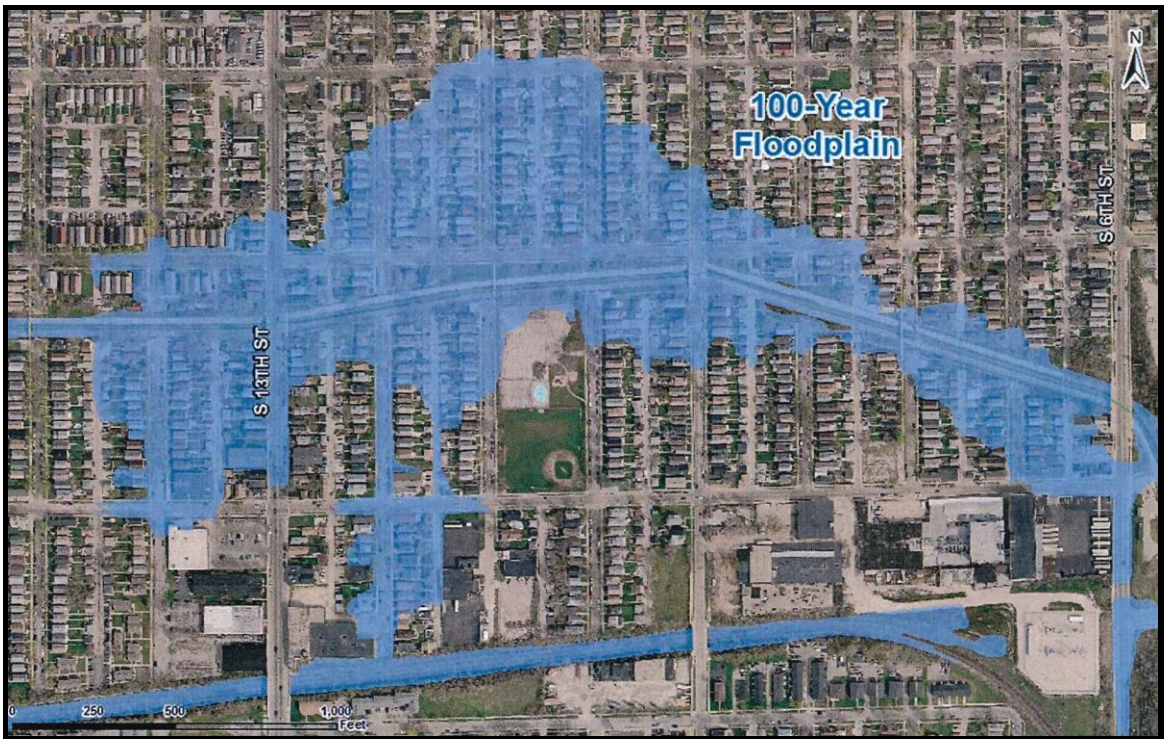


Figure 7. 100-year floodplain map (Image source: MMSD)

The processes through which the neighborhood plan was developed and the river channel design options decided upon, particularly with regard to participation in these processes, were the source of significant controversy over competing conceptions of

participatory justice. I investigate these different notions of participatory justice below, in addition to procedural and distributive justice concerns raised by particular activities of implementing the project, all of which are summarized in Table 1. The different justice concerns raised impact residents being displaced through home removal and those who are not in different ways. But first I briefly discuss the distribution of flood risk within Lincoln Village.

Distribution of flood risk

The new floodplain mapping conducted by SEWRPC (Figure 7) illustrates that the distribution of flood risk extends beyond simple proximity to the river channel. Rather, it is more a function of conditions of the build environment and local topography of the neighborhood. The elevations of homes near the river corridor, based on local topography, would be a contributing factor to flood risk. Those properties at lower elevations in the 100-year floodplain would presumably be at greater risk of experiencing flooding than those properties at higher elevations. Figure 7 also indicates that certain streets and alleyways serve as conduits for stormwater in the event of a 100-year flood, as evidenced by the spatial patterning of the floodplain area on the map.

Project Professional 1 noted the fact that the flood risk along the Kinnickinnic River in Lincoln Village increased through no fault of the homeowners (personal interview). This individual attributed the risk of residing in a 100-year floodplain to the particularities of government action and inaction with regard to allowing for the continued urbanization of the watershed, which exacerbated flooding. Thus, Project Professional 1 felt rectifying the problem ought to be carried out by a government

Table 1. Justice concerns in the Kinnickinnic River rehabilitation project

<i>Justice concept/project concern</i>	<i>Spatial dimension(s)</i>	<i>Time scale(s)</i>	<i>Affected group(s)*</i>	<i>Matters of concern and contestation</i>
Procedural justice				
Participation in planning	Scale, democracy	Short-term	1, 2	<i>Who</i> participates and <i>when</i> , for what <i>purpose</i> , and with what decision-making <i>power</i>
Property acquisition/relocation	Fair process, scale, place	Long-term	1, 2	Compensation and length of time for property acquisition; relocation assistance; disruptions to sense of place; loss of identity, culture and shared history
Distributive justice				
Flood risk	Proximity, scale, topography, built environment	Past, present, future	1, 2	Proximity an inadequate measure of flood risk; uneven exposure of neighborhood residents to flood risk generated within the entire watershed; current and future flood risk a product of past (in)action
Public amenity creation	Scale, use/exclusion	Long-term	1	Displaced residents miss out on enjoyment of future public amenities while remaining residents benefit
Nuisance properties	Proximity	Short-term	2	Health and safety issues associated with nuisance properties; issues persist longer with deconstruction than demolition
Gentrification	Scale, proximity	Long-term	2	Potential uneven distribution of benefits and burdens of neighborhood revitalization; information and protection regarding potential displacement provided to residents

* Group 1: Displaced residents

Group 2: Residents remaining in the neighborhood

agency, such as MMSD (personal interview). This comment marks a spatiotemporal disconnect between the source of flood risk and the location of its effects. As discussed in the previous chapter, unchecked urbanization of the Kinnickinnic River watershed in the 1950s and into the 1960s significantly increased the amount of impervious surface in the watershed. Consequentially, the Lincoln Village neighborhood received considerably more stormwater runoff, which resulted in widespread neighborhood flooding. The spatial distribution of flood risk increases nearer the lower reaches of the Kinnickinnic River. The lasting effects of the flood risk, exacerbated by urbanization have impacted future generations, which include the residents along the Kinnickinnic River today.

Justice in the short run: Participation in the Kinnickinnic River project

A great deal of controversy arose surrounding how the public was involved in the planning process for the Kinnickinnic River project. Different conceptions of what justice as participation ought to resemble came mainly from two different groups—the TRC and UrbAn. These conceptions differed substantially in terms of *who* should participate and *when*, for what *purpose*, and what degree of decision-making *power* individuals should be granted. These two conceptions of justice are categorized by *meaningful* participation and allowing for open dialogue, as understood by the TRC, and *adequate* participation, including decision-making power, envisioned by UrbAn.

Meaningful participation

SSCHC invited three different groups of stakeholders to join the TRC—technical, community, and political. The technical stakeholders comprised the core of the

Committee and included environmental advocates and engineering and regulatory professionals. The community stakeholders were selected based on their role in the neighborhood, not whether they resided in the neighborhood. This group consisted of individuals from community organizations or other social service providers that had programming or facilities in the neighborhood, near the river corridor, or served residents living near the river corridor. So invitations for community organizations to join the committee were based on the spatial scale in which they operated or based on proximity to the Kinnickinnic River. Elected city, county, or state officials and representatives of federal officials made up the political stakeholder group (personal interview).

Residents were invited to participate at a series of three public meetings and workshops to provide input on the various river channel and neighborhood design options developed by the TRC in conjunction with an engineering firm and an environmental planning firm. Question and answer sessions were held following initial presentations at these meetings. After these formal presentations, the planning firm invited the public to visit several stations they hosted that were focused on particular proposed aspects of the project. These stations provided images of current conditions, images of different potential new amenities and improvements, and were organized around particular themes such as river rehabilitation, parks and open space, and housing. Resident comments were gathered at these stations for consideration by the TRC and included in the neighborhood plan document (Milwaukee Metropolitan Sewerage District and Sixteenth Street Community Health Center 2009).

After the first two meetings, the Committee and the planning firm discussed the input gathered from the public at the meetings, and worked to incorporate these opinions

in the development of plan proposals that were presented at subsequent public meetings. Public comments on the proposed ideas were solicited, collected, and incorporated into the plan recommendations. The recommendations listed in the plan cover a variety of goals toward improving the physical condition of homes, commercial corridors, existing parks, and transportation. It also lays out suggestions for the creation of new green spaces and other public and environmental amenities to accompany the river rehabilitation project (Milwaukee Metropolitan Sewerage District and Sixteenth Street Community Health Center 2009).

Project professional 1 explained that while MMSD only has funding to fulfill the flood management objectives of the river project, specific amenities or architectural requests from the public can often be incorporated into the channel design at no additional cost. In the event an additional cost would be incurred, organizations or individuals who wish to provide the additional funding can do so, in order to incorporate whatever particular amenities are desired. In this way, residents have an opportunity to 'make the plan their own,' as opposed to the TRC and planning firms and agencies imposing a plan on the community, or "selling" a plan to the community (personal interview).

The project planners offered one conception of what 'just' participation in the planning process entailed. Individuals with expertise in engineering, regulatory, environmental and similar matters related to planning a flood management and river rehabilitation project convened to develop feasible river channel design options. The public meetings and workshops were then organized to provide, more or less, a democratic space in which information and ideas could be exchanged between the

planners and the public. This provided the public an open forum to ask questions, express concerns, or provide suggestions on environmental matters that impacted them and their neighborhood. Resident input would then be incorporated into the next phase of the planning process. The exchange of information and ideas, as well as providing opportunity for particular amenities or other desires to be incorporated into the river and neighborhood plan was seen as allowing residents to take ownership of the plan. This public meeting and workshop process allowed multiple opportunities, or different times, in which residents were able to participate in the planning process. Time is still important for organizations who were involved on the TRC. Many organizations continue to work with residents, allow residents to voice their concerns, and solicit their input through neighborhood activities, such as river cleanups, installing rain gardens, block parties, and neighborhood meetings (personal interviews). However, there was disagreement regarding this mode of resident participation in the planning process.

Adequate participation

The fact that residents of the Lincoln Village neighborhood were not invited to serve on the TRC was a considerable point of contention during the planning phase of the project. In particular, UrbAn, which views itself as the primary resident-serving organization in the neighborhood, stated that neither it, nor residents, were apprised of TRC meetings or asked to participate (Lackey 2013). The organization was concerned about “the refusal of the planning committee [TRC] to invite residents to serve on this committee” and whether input from residents was actually being considered by MMSD and the TRC in the planning process (Urban Anthropology Incorporated 2009a). UrbAn

organized a meeting where eighteen residents in attendance voted in favor of the majority of the planning committee [TRC] being comprised of neighborhood residents. However, when UrbAn met with individuals on the TRC, the request to have residents serve on the Committee was denied (Lackey 2013).

In response, UrbAn helped residents organize protests outside of the public meetings and workshops on the project. Residents carried signs stating, “Being told is not the same as helping decide” (Urban Anthropology Incorporated 2009a), and shouted phrases such as, “Two-thirds of the residents said no” (Pabst 2009). A representative from UrbAn stressed that the animosity stemmed from the lack of resident participation on the TRC—not regarding the river project itself. This individual stated that very few individuals, even on the TRC, really had any decision-making power, and referred to the public meetings as “dog and pony shows” (personal interview).

UrbAn and the groups of voting and protesting residents put forth a conception of participatory justice that competed with that of the TRC. A planning committee comprised of a majority of residents was viewed as 'just' participation, in that residents would have voting, and thus decision-making, power. UrbAn and the residents it worked with felt that decision-making on activities that impacted the neighborhood should be done through a democratic process of voting that was comprised of a majority of individuals who would be affected by those activities (residents). The implicit concern is that without voting power delegated to residents, TRC meetings become spaces of unfair (or no) representation and unfair power relations. This conception of justice implies that the spatial boundaries of the neighborhood should be considered in determining participants. The decision to not include residents or UrbAn on the TRC, and include

only 'experts,' generated conflict over feelings of exclusion and perceptions of an unequal distribution of power in decision-making.

Understanding the controversy over participation

What 'just' participation entails is complicated by the competing notions of “adequate” participation (request for residents to comprise half of the TRC) and “meaningful” participation (residents contribute where they are best able). Several interviewees that served on the TRC defended the decision not to include residents on the TRC because the planning process itself required a certain level of technical expertise and familiarity with regulatory constraints (personal interviews). It was generally understood among TRC members that residents would be included in the process at a later point—once several technical and engineering obstacles had been resolved, and where residents would be better able to contribute meaningfully (personal interviews). TRC Member 1 stated that having a group such as the TRC be comprised of at least half of residents with no technical expertise is not practical—not for the Kinnickinnic River project or any other similar type of project (personal interview).

Many TRC members that were interviewed noted the tension during the period of controversy and understood the dispute differently. TRC Member 1 believed the contention was a matter of “personality conflicts” and “turf war” issues (personal interview). TRC Member 2 noted that UrbAn saw itself as *the* representative of neighborhood residents, but the TRC perceived them as a city-wide organization. This indicates that in choosing community stakeholders for the TRC, spatial scale was again a factor—that is, the scale at which an organization was perceived to operate determined

whether it was invited to join the committee. TRC Member 2 recognized how UrbAn could certainly have felt as though it was overlooked or even purposely excluded from TRC meetings (personal interview). Both TRC Members 2 and 3 felt that if the TRC knew of the significant interest UrbAn had in the project, it would have been invited early in the process and much, if not all, of the controversy may have been avoided (personal interviews).

TRC Member 2 felt that UrbAn did not correctly understand the project, the planning process, nor the extent of flooding and associated property damage that has occurred during significant rain events. This individual also questioned whether the controversy may have stemmed from the organization feeling as though it should have been the ones disseminating information to the community and that, in response, “somebody was going to pay” (personal interview). This suggests that early identification of all interested stakeholders can be crucial to avoiding conflict in environmental planning.

The two notions of justice as participation surfaced during the planning process for the Kinnickinnic River project—the meaningful participation of the TRC, and the adequate participation of UrbAn and resident groups. What the TRC saw as fair and meaningful participation, UrbAn and certain residents perceived as unfair power relations in decision-making. But procedural justice not only encompasses questions of fair or equal participation in planning; it also can be evidenced by the fairness of the process through which residents were displaced and homes removed for the newly designed river channel.

Justice in the long run: Property acquisition*Justice for the displaced: MMSD procedure*

Eighty-three homes were slated to be purchased by MMSD and deconstructed to make room for the widened river channel. As described earlier, this process directly affects only a portion of the residents whose homes were identified as lying in the newly mapped 100-year floodplain. MMSD established what they determined to be a fair process through which these properties would be acquired from residents. Residents were paid fair market value for these homes which, when appraised, are not evaluated as floodplain properties. MMSD would pay for an independent home appraisal and legal representation if requested, develop of a relocation plan for residents (trying to keep them in the neighborhood if they so desire), and compensate residents for moving expenses. A representative of MMSD, along with a translator when necessary, met with every resident whose home was identified for removal (personal interview). While MMSD reserves the right to exercise eminent domain to acquire these homes, the agency's policy is not to force residents out of their homes. Rather, MMSD prefers to give residents time and allow for a more voluntary move. However, once project construction begins, property owners who are holding out will be subject to the exercise of eminent domain (personal interview). TRC Member 3 explained that MMSD had designed this acquisition process to be as least disruptive to their life as possible (personal interview).

Renters in homes that were acquired are another group of individuals affected by the home acquisition process. Those who moved to a comparable apartment at a higher rent price could receive payment to offset that difference for up to four years (Milwaukee Metropolitan Sewerage District and Sixteenth Street Community Health Center 2009).

The above aspects of the compensation and relocation plan demonstrate a concern on behalf of MMSD as to the potential consequences home acquisition can have on residents. Here, a 'just' or fair process of home acquisition takes into consideration resident well-being and time. The home acquisition package put together demonstrates concern for the well-being of residents and the disruption losing their home has on their lives. Compensation for the burden of displacement is offered for what is determined to be the fair market value of the home, with MMSD offering to pay for an independent home appraisal. MMSD also offers to pay for legal representation for homeowners if they would like. These components indicate attention was given to developing a fair process through which residents do not feel cheated or taken advantage of as part of the home acquisitions. Developing a relocation plan for residents who will be displaced and attempting to help them remain in the neighborhood, if so desired, also indicates concern was given to residents' attachment to the neighborhood as a place and potential ties to the community. Allowing residents time to make the decision on their own without pressuring them to move indicates concern for their emotional well-being and make the decision to sell their home when it is appropriate for them.

Justice concerns about place and the time dimension were implicit in some residents' perceptions of home acquisition. Several residents were upset about having to give up their home as part of the river project. One resident quoted in a local newspaper was extremely upset about this, stating "I don't want to leave because that's my dream - my house" (Montes 2012). An interviewee reported that one resident had even claimed that she would kill herself if her home was taken from her (personal interview). These statements indicate a strong attachment residents have to their home as a place—as a

place that was presumably worked toward attaining or establishing through homeownership, but also a place with deep emotional attachment. Disruption or loss of emotional attachment to one's home would be impossible to compensate for. One resident commented on the home acquisition process, "I hope in six months, this nightmare is over" (Montes 2012). Although MMSD developed what they felt to be a fair process of property acquisition, this resident felt that a more 'just' process of home acquisition should be quicker, rather than a long process.

Justice for those who remain: Concerns over place, identity, culture, and history

MMSD and the TRC worked to minimize the number of homes acquired and removed, as well as develop a fair process through which this would be done. Despite this, several residents and UrbAn perceived the property acquisition component of the Kinnickinnic River project as a direct threat to the neighborhood as a place with a distinct identity, culture, and history. These neighborhood qualities are evidenced through numerous newsletters and other documents in which UrbAn has discursively framed the neighborhood.

The organization has done surveys in the neighborhood that indicate a very diverse resident base – over 110 nationalities are represented (personal interview). Although the majority of the residents are Latino, there is also a large number of families of Polish heritage that have been in the neighborhood for generations. The organization's newsletters often highlight the unique history of the neighborhood, including articles on professional baseball players that have lived there, numerous bicycle clubs of the late 19th century, a soda factory and brewery that once operated in the neighborhood, and

President John F. Kennedy's visit to Pulaski Park. The perceived threat to the neighborhood as a place of identity, culture, and history can be seen, for example, in both a newsletter article and a community theater play.

A newsletter article highlights justice concerns over the spatiality of place as identity, which is rooted in the length of time a family resided by the Kinnickinnic River. The article describes a mother and daughter whose family lived in the same home near the river for generations and operated a Polish dance group from their home. Their house was slated for removal as part of the river project, and thus the dance group was displaced along with the residents. The article asserts “50 years of life, love, work, pride, and identity were to be erased just like that” (Urban Anthropology Incorporated 2009a). This loss of a home as a place is explicitly linked to a disruption to a sense of identity—both family identity, as well as historical and cultural identity.

UrbAn produced a community theater play, *The Follow Up*, on the loss of ethnic neighborhoods that occurred in Milwaukee during the neighborhood razing and construction of the freeway system in the 1960s (Lackey 2014). In the play, the home removal and resident displacement of the Kinnickinnic River project was implicitly correlated with the loss of ethnic neighborhoods during freeway construction. In dialogue between two protagonists in the play, it was discussed that residents in the 1960s did not fight the freeway construction because they were unaware of the consequential loss of community. River channel modification projects were mentioned in the play as a form of infrastructure construction that is disruptive or detrimental to surrounding residents and their lives. Competing ideas of how an urban river should be engineered for flood control

were hypothetically proposed in the play—graded banks resulting in a large loss of homes versus steep and fenced in banks with a small loss of homes.

The premise of *The Follow Up* indicates fear that the perceived past injustices of neighborhood razing, resident displacement, and disruptions to place as identity, culture, community, and shared history will be repeated. These justice concerns evoked by the large-scale freeway construction project of the past are related to similar justice concerns playing out at the neighborhood-scale in the present-day; and that physical transformations in the neighborhood will produce undesired social consequences. Through the dialogue of the play, the engineering method of widening the Kinnickinnic River channel for flood control was implicitly criticized as requiring more home removal than was necessary, resulting in what is conceived of as an injustice for the affected residents. It is implied in the play that resident acceptance of displacement through infrastructure projects stems, at least partly, from the ignorance or lack of understanding of the future outcomes, such as loss of community ties. *The Follow Up* demonstrates spatiotemporal concerns about perceived injustices resulting from the Kinnickinnic River project. Worries over the project's impact on Lincoln Village as a place of identity, cultural diversity, community ties, and shared history come through in the dialogue of the play. A major theme is that these perceived injustices of the past will threaten the future of the current neighborhood.

Acquisition and removal of homes along the Kinnickinnic River has raised justice concerns largely regarding the spatiality of place. Perceived threats to neighborhood identity and culture are seen as impacting both those residents who are displaced, as well as those who will remain. It can sever community ties at several scales—within the

group of displaced individuals (some of which were neighbors), between individuals who are moving and those who will remain in the neighborhood, and between displaced individuals and the community as a whole. Since the properties from which homes were removed will be converted to public amenity space as part of the expanded floodplain, other questions regarding the fairness of this component of the larger river project have been raised.

Justice in the long run: Public amenity creation

As noted above, the home and private property acquisition that is part of the Kinnickinnic River project invited deliberation over implications of what is 'just' and what is not. To complicate the competing conceptions of justice over the home removal process and perceived consequences, the private property being acquired will be converted to public amenities, such as greenspace, bike and walking paths, an amphitheater, and other types of recreational and leisure spaces. In other words, the private property will be converted to public use. The neighborhood plan document and several interviewees stressed the multitude of benefits the river project will have at the neighborhood-scale. However, one TRC member was concerned about who had to bear the burdens for these benefits to be possible.

Justice for the displaced: Missing out on public amenities

TRC Member 4 expressed concern that displacing the residents in homes slated for removal effectively excludes them from enjoying the benefits of the new amenities. Further, these residents suffered through the flooding that occurred over the years, and then in an effort to address the flooding problem, they were told they have to move. TRC

Member 4 felt strongly that these residents were, in essence, being “cheated” (personal interview).

Thus, questions arose regarding the fairness of the distribution of environmental goods coupled with a temporal dimension of justice. TRC Member 4 raised concerns over how the burdens of the project were being distributed. This individual noted that those residents who were continually susceptible to flooding in the past were the same individuals made to bear the burden of having to move, whereby others benefit from the public amenities that would be created on their former property. Also implied is the fact that residents whose homes were contained within the 100-year floodplain, but were not slated for removal would benefit from not only mitigation of flood risk, but also from new public amenities.

There was utilitarian-like conception of fairness implicit in the neighborhood plan and from interviews with other individuals-- the focus was on creating the greatest value or benefit for the largest number of individuals at the neighborhood-scale. There is a temporal dimension to the creation of these public goods and amenities, in that they would provide long-term benefit to the community as a whole. At the same time, though, the property acquisition process has distinct impacts on residents whose homes are not being removed.

Other justice concerns for those who remain

Justice in the short run: Nuisance properties

It is not just displacement of residents that has generated competing conceptions of justice in the neighborhood, it is also the vacant homes and lots that are left behind.

The homes being acquired by MMSD are being deconstructed to allow for the majority of the building materials to be recycled and reused. Due to homes being deconstructed rather than simply demolished, the home removal process takes much longer. Thus, many homes that MMSD purchased have sat vacant for a fair length of time. These properties have raised justice concerns over spatial proximity to these nuisance properties, as well as the temporal dimension regarding the length of time these properties remain nuisances.

Residents have expressed irritation with the amount of time home deconstruction has taken (public meeting). Residents at neighborhood meetings have been upset over the eyesores of boarded up homes—some of which have been broken into, host squatters and drug dealers, or been the target of graffiti or arson. Residents also reported instances of “drive by” trash dumping on vacant lots where homes have been removed (public meeting).

These vacant homes and empty lots are nuisances, but can become larger health and safety issues when they are set on fire or become a site of hazardous or dangerous material disposal. Boarded up homes and lots where trash dumping has occurred concern residents who feel it will contribute to negative perceptions of the neighborhood. These issues more directly affect individuals within close proximity to the nuisance properties. A temporal component also exists to these nuisances—the issues associated with boarded up homes will dissipate once deconstruction is complete, however, issues with empty lots may persist until the project is completed. Yet, individuals interviewed as part of my research also expressed concern over more long-term impacts the river project may bring about, such as resident displacement associated with cost-of-living increases.

Justice in the long run: Gentrification concerns

As noted in Chapter Two, river restoration projects and the associated creation of public amenities tend to increase the property value of surrounding land. A spatiotemporal dimension presents itself in affordability issues that may result in a 'second wave' of resident displacement in the future. This potential 'second-wave' of displacement would occur at a different scale than the initial displacement. While being "priced out of the neighborhood" was a genuine concern among several individuals I interviewed, other interviewees were less than concerned.

TRC Member 4 expressed concern that the river corridor improvements could potentially lead to increased desirability to live along the Kinnickinnic River, raising property values, and leading to a form of gentrification (personal interview). This could result in the displacement of additional neighborhood residents, especially renters, due to an inability to afford cost-of-living increases. The primary concern TRC Member 4 had was that those individuals who suffered with the problems caused by the channelized Kinnickinnic River could also be those who become "priced out of the neighborhood" (personal interview). As part of their work, TRC Member 4 had witnessed resident displacement following park renovation projects and, thus, was really adamant about this "social equity issue" during Committee meetings. Although many TRC members were sympathetic to this concern, this individual felt the issue of unaffordability was not adequately addressed during the planning process (personal interview).

The issues raised by TRC Member 4 demonstrate one way in which the river restoration project can have a disproportionate impact on certain individuals in the future. Proximity to the river corridor is an important spatiality of how justice is conceived in

this case—the potential inequity highlighted by TRC Member 4 has a greater distributive impact on individuals who live near the river corridor. However, beyond proximity, certain subgroups of individuals are noted to be more vulnerable to displacement—particularly renters, but also homeowners who are unable to afford increases in housing costs. Thus, one conception of justice raises concerns over the disproportionate impacts renters or lower-income homeowners may suffer in the future through displacement.

TRC Member 3 noted their past experience with resident displacement following river restoration projects and referred to it as a “difficult conundrum”—one which no one necessarily knows how to prevent (personal interview). TRC Member 2 also did not know how to prevent gentrification, but was also uncertain whether gentrification should be a concern (personal interview). TRC Member 2 indicated that constructing low-income housing in the neighborhood was suggested during TRC meetings as a strategy to help retain residents through inexpensive housing options. However, they also noted that, ironically, many individuals who expressed concern over gentrification also opposed creating affordable housing that could work to help retain residents (personal interview). The suggestion of affordable housing provides one conception of how to ensure a more equal future for all residents—a way to provide resilience for residents who may be vulnerable to forces of the real estate market. Ironically, individuals concerned about future gentrification lacked interest in a proposed solution to combat the perceived unjust outcomes of gentrification.

Project Professional 2 disagreed that gentrification could be a possible outcome of the larger neighborhood project. This individual viewed the revitalization recommendations of the neighborhood plan document as a way to guide investments and

improve the overall character of the neighborhood. Furthermore, this person stated that they have only heard concerns about gentrification from one or two residents—it is not a common concern in the community (personal interview). Project Professional 2 did not perceive neighborhood investment to have an uneven distribution of benefits and burdens at different scales or proximities to the river corridor. Rather, investment was perceived to provide a broad overall benefit at the neighborhood scale.

TRC Member 4 did not expect residents to make a connection between the widespread neighborhood investment recommendations and gentrification. This individual expressed doubt as to whether residents ever received information or were alerted to the prospects of gentrification occurring. If residents were aware of this possibility, residents may have requested some type of protection from displacement through being “priced out of the neighborhood” (personal interview). This raises a procedural justice concern that residents ought to have received information as the planning process unfolded on potential uneven future consequences of the river restoration project.

A representative with UrbAn felt that if residents along the Kinnickinnic River are able to sell their homes for a profit after project completion, and others want to purchase these homes and fix them up as a result of perceived value of living along the river after project completion, this would be a good thing. This individual was unconcerned with the displacement of renters, due to the organization’s research indicating that most renters don’t reside in the neighborhood for longer than a year (personal interview). In this instance, a conception of justice is put forth that property value increases resulting from

the project will distribute benefits to particular individuals (homeowners) without imposing burdens on others (renters).

The neighborhood plan indicates that increased property values may result from the restoration project and help replace the tax base lost from the deconstructed homes (Milwaukee Metropolitan Sewerage District and Sixteenth Street Community Health Center 2009: 52). Increased property values alone are not indicative of gentrification, but are commonly considered a characteristic of gentrification. Whether or not gentrification will occur is purely speculation at this point; however, several individuals who were involved in planning the river rehabilitation project expressed concern over what was conceived as an unjust distributive outcome of particular subgroups of residents being displaced due to cost-of-living increases. Providing neighborhood residents with information during the planning process regarding the possibility of gentrification occurring was seen as a component of procedural justice. Regarding potential resident displacement from gentrification, interviewees did not mention perceived threats to a sense of place, identity, community, and culture that surfaced during the current home acquisition process. This may be due to the fact that the organization that was vocal about these perceived threats did not foresee neighborhood gentrification as a possibility.

Conclusion

This chapter has examined various ways in which different and competing conceptions of justice arise through a flood control and river restoration project, such as the one being conducted along the Kinnickinnic River. I demonstrated how conceptions and claims of (in)justice are complex and open to contestation through uncovering the

temporal dimensions and multiple spatialities of justice, including proximity, place, and scale. Different considerations of justice impact different spatial groups—those residents who are displaced and those who remain—and have different temporal dimensions—short-term and long-term effects. These contestable conceptions of what is ‘fair’ were illustrated through several project components and the distributive and procedural dimensions of justice, but unmistakably evident with regard to what was considered ‘just’ participation in the planning process. Perceptions of unequal power and representation in matters that directly affect individuals can erupt into controversy, as was the case with the Kinnickinnic River rehabilitation project. What one would expect to be a ‘win-win situation’ instead raised unforeseen and competing ideas of what is ‘just’ and what is not.

CHAPTER SEVEN: CONCLUSION

Overview

Justice is a complicated concept. It has been defined and understood differently in various ways and in various contexts. While there may be several commonly accepted elements to justice—distribution, recognition, and participation and procedure—a diverse set of definitions and interpretations of these elements have been proposed. Multiple spatial and temporal dimension exist within these elements. Thus, justice is not a straightforward concept; rather, it complex and contestable.

Flooding has only recently entered into the realm of environmental justice research. The phenomenon of flooding is a unique type of environmental hazard—it is caused partly by natural processes and partly by conditions of the built environment. While existing ‘flood justice’ research has provided many useful insights as to the socio-spatial patterning of flood risk and vulnerability, it has left justice considerations of inland flooding and flood mitigation efforts largely unexplored.

Inland flood risk has historically been mitigated through the engineering of rivers in particular ways for the interest of the ‘public good.’ In the mid-20th century, a technocratic, utilitarian approach to flood control through river channelization was common. The United States in 1970s saw a marked change in how both justice and the environment were viewed. John Rawls’ particular social contract conception of justice emerged, more stringent environmental laws and regulations were enacted, and public concern for the environment exploded. This concern for the environment led to an increasing demand for public participation in environmental management projects. As the negative consequences of river channelization became increasingly evident during this

same time period, river engineering practices shifted toward that of restoring a more ‘natural’ floodplain. Public participation became an important component to the planning process of these restoration projects to serve the ‘public good.’ However, through an exploration of the case of the Kinnickinnic River on Milwaukee’s south side, I challenged this conceptual narrative.

Through archival research I demonstrated that the channelization of the Kinnickinnic River was not simply the product of the hubris of engineers; rather, it stemmed from a complexity of factors. Rapid urbanization of Milwaukee in the mid-20th century increased the amount of impervious surface cover in the Kinnickinnic River watershed which, in turn, increased the propensity for flooding to occur. Two large rainstorms in 1960 generated a considerable amount of political pressure on the Sewerage Commission’s engineers to implement a quick solution to prevent a recurrence of flooding. This pressure precipitated hasty decision-making and a flood control solution that was inadequate and against the better judgment of the engineers. Removing homes along the Kinnickinnic River to facilitate river channel widening was repeatedly suggested, but continually deferred—until the present-day river engineering project.

The Kinnickinnic River flood management and river rehabilitation project currently underway included home removal along the river corridor as a necessary component to address the ongoing flooding in the Lincoln Village neighborhood. The project incorporates several neighborhood improvement goals—such as public amenity creation—as determined through public participation in the planning process. Yet, controversy arose over how the public was included in the planning process. Competing conceptions of participatory justice emerged—justice as adequate participation and

justice as meaningful participation. These different understandings of what constitutes ‘just’ participation in a flood control and river restoration project challenge the newer paradigm discussed in Chapter Three. Other elements of the river project, such as resident displacement, public amenity creation, and prospects of gentrification, also highlighted competing conceptions of justice in a flood control project. The particular nuances of these conceptions of justice were demonstrated through an analysis of their temporal and spatial dimension, including proximity, scale, and place

The controversy over participation in the planning of the current Kinnickinnic River project has illustrated justice as participation includes questions of *who* participates, *when* (at what point), and for what *purpose*. The important role spatial scale plays in determining who is considered a stakeholder was also demonstrated. Relocating residents as part of a flood control project raised competing conceptions of justice as to whether compensation packages are ‘fair.’ Relocation was also perceived as a threat to an individual’s sense of place and identity in both the short-term and long-term. Displacement of residents was also seen as a threat to the history and sense of community within the neighborhood.

Research limitations

There were certainly limitations to the research I conducted for this thesis. The vast majority of the individuals I interviewed were involved in particular aspects of the Kinnickinnic River restoration project in a professional capacity. Thus, the data collected during interviews came from a particular viewpoint—that of environmental project ‘elites.’ Residents were deliberately not interviewed as part of this research due to

concerns expressed during initial interviews about my research potentially reigniting controversy or complicating work being done in the neighborhood. My research may have benefitted substantially by interviewing residents, as they may have provided different viewpoints or different justice concerns. Since there was controversy over particular aspects of the restoration project, some of the responses collected in interviews may have been motivated by emotion rather than fact, which added complexity to analyzing interview data. Also, enough time has passed since the initial planning phase and creation of the neighborhood plan document that certain individuals were unable to recall particular details of the project planning process or activities.

My historical research was largely based on records that are maintained in archival collections. There may be more to the bigger ‘story,’ such as underlying motivations, emotions, or rationale for particular actions or activities, than what is kept as records or beyond the more ‘official’ documents I had access to. Thus, at certain points in constructing my historical narrative I found it difficult or impossible to determine causality of particular events or actions.

Conclusion

The history of flood control engineering along the Kinnickinnic River offers an interesting case to the field of urban environmental history in that political pressure can lead to poor engineering decisions that engineers knowingly made and the future implications of those decisions. This history also demonstrates the recurring ‘path not taken’ with regard to home removal, which has been determined as a necessity in the current river restoration project if adequate flood control is to be achieved. My thesis

continues the exploration in environmental justice research of the multiple spatial and temporal dimensions of claims and conceptions of justice. My research also addresses the underexplored areas of inland urban flooding and flood control efforts in environmental justice research and demonstrate their importance. Future research along the Kinnickinnic River might consider exploring spatial patterns of where displaced residents moved to and their perceptions on the relocation process, or whether gentrification or phenomenon does occur in the Lincoln Village neighborhood following the completion of the Kinnickinnic River restoration project. Only time will tell how the completed restoration project changes (or does not change) the surrounding neighborhood.

REFERENCES

- Aberg, E.U. & Tapsell, S. (2012). Rehabilitation of the River Skerne and the River Cole, England: A long-term public perspective. In P.J. Boon & P.J. Raven (Eds.), *River Conservation and Management*. (pp.249-260). West Sussex, UK: Wiley-Blackwell.
- Anguelovski, I. (2013a). Beyond a livable and green neighborhood: Asserting control, sovereignty and transgression in the Casc Antic of Barcelona. *International Journal of Urban and Regional Research*, 37(3): 1012-1034.
- Anguelovski, I. (2013b). From environmental trauma to safe haven: Place attachment and place remaking in three marginalized neighborhoods of Barcelona, Boston, and Havana. *City and Community*, 12(3): 211-237.
- Bailey, P. & Fischenich, C. (2003). Landscaping considerations for urban stream restoration projects. *EMRRP Technical Notes Collection* (ERDC TN-EMRRP-SR-42). Vicksburg, MS: US Army Engineer Research and Development Center.
- Bates, K.A. & Swan, R.S., Eds. (2007). *Through the Eyes of Katrina: Social Justice in the States*. Durham, NC: Carolina Academic Press.
- Bauer, K.W. (1978). Letter from Kurt W. Bauer (SEWRPC) to Joel Wesselman (Metropolitan Sewerage District of the County of Milwaukee). 14 September. Box 36/3373, MMSD Records Management Department: Milwaukee, WI.
- Berg, L. (2010). Critical human geography. In *Encyclopedia of Geography*, B. Wharf (Ed.). SAGE Publications, Inc. DOI: <http://dx.doi.org/10.4135/9781412939591>.
- Boone, C.G., Buckley, G.L., Grove, J.M. & Sister, C. (2009). Parks and people: an environmental justice inquiry in Baltimore, Maryland. *Annals of the Association of American Geographers*, 99(4): 767-787.
- “Boost Sewer Outlay: Zeider.” (1960). *The Milwaukee Sentinel*. 8 April. p. 4.
- Bova, S. (1973). Letter from Sal Bova (resident) to Robert Kordus (City of Milwaukee Alderman). 9 September. Folder 14, Box 99, Records of the Henry W. Maier Administration, 1960-1988. University of Wisconsin-Milwaukee Golda Meir Library Archives: Milwaukee, WI.
- Brookes, A. (1988). *Channelized rivers: Perspectives for environmental management*. New York: John Wiley & Sons.

- Bullard, R. (1983). Solid waste sites and the black Houston community. *Sociological Inquiry*, 53(2-3): 273-288.
- Bullard, R.D. (1996). Environmental justice: It's more than waste facility siting. *Social Science Quarterly*, 77(3): 493-499.
- Bullard, R.D. & Wright, B. (2009). *Race, Place, and Environmental Justice after Hurricane Katrina Struggles to Reclaim, Rebuild, and Revitalize New Orleans and the Gulf Coast*. Boulder, CO: Westview Press.
- Callewaert, J. (2002). The importance of local history for understanding and addressing environmental injustice. *Local Environment*, 7(3): 257-267.
- Chakraborty, J. (2009). Automobiles, air toxics, and adverse health risks: Environmental inequities in Tampa Bay, Florida. *Annals of the Association of American Geographers*, 99(4): 674-697.
- Checker, M. (2011). Wiped out by the “greenwave”: Environmental gentrification and the paradoxical politics of urban sustainability. *City & Society*, 23(2): 210–229.
- Clayton, S. (2000). Models of justice in the environmental debate. *Journal of Social Issues*, 56(3): 459-474.
- Colten, C. (2005). *An Unnatural Metropolis: Wrestling New Orleans from Nature*. Baton Rouge, LA: Louisiana State University Press.
- Curran, W. & Hamilton, T. (2012). Just green enough: contesting environmental gentrification in Greenpoint, Brooklyn. *Local Environment* 17(9): 1027-1042.
- Deason, J., Dickey, G.E., Kinnel, J. & Shabman, L. (2010). Integrated planning framework for urban river rehabilitation. *Journal of Water Resources Planning and Management*, 136(6): 688-696.
- Department of the Army. (1975). *Reconnaissance Report on Flood Problems on the Kinnickinnic River at Milwaukee, Wisconsin*. June 1975. Corps of Engineers: Chicago, IL. Box 36/3373, MMSD Records Management Department: Milwaukee, WI.
- Dineen, C.R. (1954). Letter from C.R. Dineen (Milwaukee County Park Commission) to C. Stanley Perry (Office of the Corporation Counsel). 18 March. Folder 2, Box 9, Walter Henry Bender Papers, 1913-1966. University of Wisconsin-Milwaukee Golda Meir Library Archives: Milwaukee, WI.
- Donohue & Associates, Inc. (1979). *Kinnickinnic River Improvements – Phase I – Preliminary Engineering Summary*. Box 36/3373, MMSD Records Management Department: Milwaukee, WI.

- Dooling, S. (2009). Ecological gentrification: A research agenda exploring justice in the city. *International Journal of Urban and Regional Research*, 33(3): 621-639.
- Douglas, E.M., Kirshen, P.H., Paolisso, M., Watson, C., Wiggin, J., Enrici, A. & Ruth, M. (2011). Coastal flooding, climate change and environmental justice: Identifying obstacles and incentives for adaptation in two metropolitan Boston, Massachusetts communities. *Mitigation and Adaptation Strategies for Global Change*, 17(5): 537-562.
- Dunn, K. (2010). Interviewing. In I. Hay (Ed.), *Qualitative Research Methods in Human Geography* (Third Edition). (pp. 101-138). Oxford, UK: Oxford University Press.
- Elliot, J.R. & Pais, J. (2006). Race, class, and Hurricane Katrina: Social differences in human responses to disaster. *Social Science Research*, 35(2): 295-321.
- Everard, M. and Moggridge, H.L. (2012). Rediscovering the value of urban rivers. *Urban Ecosystems*, 15(2): 293-314.
- “Flood Control Plans Discussed by Officials.” (1960). *The Milwaukee Journal*. 29 June. p. 1, 9.
- “Flood Waters Going Down.” (1960). *The Milwaukee Journal*. 1 April. p. 1.
- Fowles, J.H. (1953). Letter from John H. Fowles (Metropolitan Sewerage Commission of the County of Milwaukee) to Walter H. Bender (Milwaukee County Park Commission). 16 March. Folder 1, Box 9, Walter Henry Bender Papers, 1913-1966. University of Wisconsin-Milwaukee Golda Meir Library Archives: Milwaukee, WI.
- Fraser, N. (1998). Social justice in the age of identity politics: Redistribution, recognition, and participation. http://tannerlectures.utah.edu/_documents/a-to-z/f/Fraser98.pdf. Accessed 18 May 2014.
- Fried, M. (2000). Continuities and discontinuities of place. *Journal of Environmental Psychology*, 20(3): 193-205.
- Green, C. (2004). The evaluation of vulnerability to flooding. *Disaster Prevention and Management*, 13(4): 323-329.
- Gumprecht, B. (1999). *The Los Angeles River: Its Life, Death, and Possible Rebirth*. Baltimore, MD: Johns Hopkins University Press.
- Gurda, J. (1999). *The Making of Milwaukee*. Brookfield, WI: Burton & Mayer, Inc.
- Hagerman, C. (2007). Shaping neighborhoods and nature: Urban political ecologies of urban waterfront transformations in Portland, Oregon. *Cities*, 24(4): 285-297.

- Harris, C. (2001). Archival fieldwork. *The Geographical Review*, 91(1-2): 328-334.
- Harvey, D. (1973). *Social Justice and the City*. Baltimore: Johns Hopkins University Press.
- Heberger, M., Cooley, H., Herrera, P., Gleick, P.H. & Moore, E. (2011). Potential impacts of increased coastal flooding in California due to sea-level rise. *Climate Change*, 109(1): 229-249.
- Hodder, I. (2000). The interpretation of documents and material culture. In N. Denzin and Y. Lincoln (Eds.), *Handbook of Qualitative Research*. (pp. 703-715). Thousand Oaks, CA: Sage Publications.
- Holifield, R. (2001). Defining environmental justice and environmental racism. *Urban Geography*, 22(1): 78-90.
- Holifield, R. (2012). Environmental justice as recognition and participation in risk assessment: Negotiating and translating health risk at a Superfund site in Indian Country. *Annals of the Association of American Geographers*, 102(3): 591-613.
- Honneth, A. (2004). Recognition and justice: Outline of a plural theory of justice. *Acta Sociologica*, 47(4): 351-364.
- Jha, A.K., Bloch, R. & Lamond, J. (2012). *Cities and Flooding: A Guide to Integrated Urban Flood Risk Management for the 21st Century*. Washington, DC: The World Bank.
- “Joint Flood Fight Urged.” (1960). *The Milwaukee Journal*. 12 August. p. 1.
- Kaika, M. (2005). *City of Flows: Modernity, Nature, and the City*. New York: Routledge.
- Kamel, N. (2012). Social marginalization, federal assistance and repopulation patterns in the New Orleans metropolitan area following Hurricane Katrina. *Urban Studies*, 49(14): 3211-3231.
- Karvonen, A. (2011). *Politics of Urban Runoff: Nature, Technology, and the Sustainable City*. Cambridge, Mass.: The MIT Press.
- Kates, R.W. & Burton, I. (2008). Gilbert F. White, 1911-2006: Local legacies, national achievements, and global visions. *Annals of the Association of American Geographers*, 98(2): 479-486.
- Kearns, R. (2010). Seeing with clarity: Undertaking observational research. In I. Hay (Ed.), *Qualitative Research Methods in Human Geography* (Third Edition). (pp. 241-257). Oxford, UK: Oxford University Press.

- Kelman, A. (2003). *A River and Its City: The Nature of Landscape in New Orleans*. Berkeley and Los Angeles, CA: University of California Press.
- Kondolf, G.M. (2012). The *Espace de Liberte'* and restoration of fluvial process: When can the river restore itself and when must we intervene?. In P.J. Boon & P.J. Raven (Eds.), *River Conservation and Management*. (pp. 225-242). West Sussex, UK: Wiley-Blackwell.
- Kondolf, G.M. & Downs, P.W. (1996). Catchment approach to planning channel restoration. In A. Brookes & F.D. Shields, Jr. (Eds.), *River Channel Restoration: Guiding Principles for Sustainable Projects*. (pp. 129-148). West Sussex, England: John Wiley & Sons.
- Kondolf, G.M. and Yang, C. (2008). Planning river restoration projects: Social and cultural dimensions. In S. Darby & D. Sear (Eds.). *River Restoration: Managing the Uncertainty in Restoring Physical Habitat*. (pp. 43-60). West Sussex, England: John Wiley & Sons.
- Kotecki, S.P. (1973). Letter from Stephen P. Kotecki (City of Milwaukee, Office of the City Clerk) to Donald G. Wieland (Sewerage Commission). 12 June. Box 36/3373, MMSD Records Management Department: Milwaukee, WI.
- Lackey, J.F. (2013). TimelineKKActivities. Received through personal communication. 3 April.
- Lackey, J.F. (2014). *The Follow Up*. Dramatic performance. Milwaukee, WI: Urban Anthropology Incorporated.
- Laszewski, E.J. (1974). Letter from Edwin J. Laszewski (City of Milwaukee DPW) to Robert J. Borchardt (MMSD). 19 September. Box 36/3373, MMSD Records Management Department: Milwaukee, WI.
- Laszewski, E.J. (1979). Letter from Edwin J. Laszewski (City of Milwaukee DPW) to Anthony A. Pitrof (Metropolitan Sewerage District). 15 May. Box 36/3373, MMSD Records Management Department: Milwaukee, WI.
- Laszewski, E.J. (1983). Letter from Edwin J. Laszewski (City of Milwaukee DPW) to Jonathan M. Anderson (WDNR). 10 August. Box 36/3373, MMSD Records Management Department: Milwaukee, WI.
- Leary, R.D. (1956). Letter from Ray D. Leary (Sewerage Commission of the City of Milwaukee) to Jerome S. Wroblewski (Milwaukee County Board of Supervisors). 16 May. Box 36/3373, MMSD Records Management Department: Milwaukee, WI.

- “Long Range County Plan Envisioned.” (1960). *The Milwaukee Sentinel*. 12 August. Second front page.
- Low, N. & Gleeson, B. (1998). *Justice, Society and Nature*. London: Routledge.
- “Mayor Seeks Disaster Area Ruling.” (1960). *The Milwaukee Sentinel*. 1 April. p. 3.
- Melosi, M.V. (2008). *The Sanitary City* (Abridged Edition). Pittsburgh, PA: University of Pittsburgh Press.
- Milwaukee County Board of Supervisors. (1954). Indenture. 11 March. Folder 2, Box 9, Walter Henry Bender Papers, 1913-1966. University of Wisconsin-Milwaukee Golda Meir Library Archives: Milwaukee, WI.
- Milwaukee County Board of Supervisors. (1960). “A Resolution Outlining the Policy of Milwaukee County Relative to Flood Control.” County Board File No. 60-470. 22 September. Folder 3, Box 9, Walter Henry Bender Papers, 1913-1966. University of Wisconsin-Milwaukee Golda Meir Library Archives: Milwaukee, WI.
- Milwaukee County Park Commission, Sewerage Commission of the City of Milwaukee, & Sewerage Commission of the County of Milwaukee. (1953). Minutes of joint meeting. 3 July. Folder 1, Box 9, Walter Henry Bender Papers, 1913-1966. University of Wisconsin-Milwaukee Golda Meir Library Archives: Milwaukee, WI.
- Milwaukee County Park Commission, Sewerage Commission of the City of Milwaukee, & Sewerage Commission of the County of Milwaukee. (1954). Meeting transcript. 27 April. Folder 2, Box 9, Walter Henry Bender Papers, 1913-1966. University of Wisconsin-Milwaukee Golda Meir Library Archives: Milwaukee, WI.
- Milwaukee Metropolitan Sewerage District and Sixteenth Street Community Health Center. (2009). *Kinnickinnic River Corridor Neighborhood Plan*.
- Miyake, K.K., Maroko, A.R., Grady, K.L., Maantay, J.A. & Arno, P.S. (2010). Not just a walk in the park: Methodological improvements for determining environmental justice implications of park access in New York City for the promotion of physical activity. *Cities and the Environment*, 3(1): 1-17.
- Montes, N. (2012). MMSD to destroy south side homes to help prevent floods. 7 February. Retrieved from <http://www.jrn.com/tmj4/news/138866884.html>. Accessed 20 April 2014.
- Moran, S. (2007). Stream restoration projects: a critical analysis of urban greening. *Local Environment*, 12(2): 111-128.

- Mustafa, D. (2005). The production of an urban hazardscape in Pakistan: Modernity, vulnerability, and the range of choice. *Annals of the Association of American Geographers*, 95(3): 566-586.
- “New Rains Threaten City Area.” (1960). *The Milwaukee Sentinel*. 2 April. p. 1.
- Newson, M. D. (2010). From channel to catchment: A 20-year journey for river management in England and Wales. In P.J. Boon & P.J. Raven (Eds.), *River Conservation and Management*. (pp. 17-28). West Sussex, UK: Wiley-Blackwell.
- Orsi, J. (2004). *Hazardous Metropolis: Flooding and Urban Ecology in Los Angeles*. Berkeley and Los Angeles, CA: University of California Press.
- Pabst, G. (2009). 200 attend meeting on Kinnickinnic River flood plan. *The Milwaukee Journal Sentinel*. 13 August. Retrieved from <http://www.jsonline.com/news/milwaukee/53187912.html>. Accessed 20 April 2014.
- Pastor, M., Sadd, J. & Hipp, J. (2001). Which came first? Toxic facilities, minority move-in, and environmental justice. *Journal of Urban Affairs*, 23(1): 1-21.
- “Peak Rain Floods City.” (1960). *The Milwaukee Sentinel*. 31 March. p. 1, 2.
- Pearsall, H. (2010). From brown to green? Assessing social vulnerability to environmental gentrification in New York City. *Environment and Planning C*, 28(5): 872-886.
- Pearsall, H. (2012). Moving out or moving in? Resilience to environmental gentrification in New York City. *Local Environment*, 17(9): 1031-1026.
- Photo caption. (1960). *The Milwaukee Sentinel*. 31 March. p. 3.
- Plate, E. (2002). Flood risk and flood management. *Journal of Hydrology*, 267(1-2): 2-11.
- Pulido, L. (2000). Rethinking environmental racism: White privilege and urban development in southern California. *Annals of the Association of American Geographers*, 90(1): 12-40.
- “Rains Flood Streets, Hamper Traffic in Area.” (1960). *The Milwaukee Sentinel*. 3 August. p. 1.
- Rawls, J. (1971). *A Theory of Justice*. Cambridge, MA: Harvard University Press.
- Reed, M.S. (2008). Stakeholder participation for environmental management: A literature review. *Biological Conservation*, 141(10). 2417-2431.

- Rescher, N. (1993). *Pluralism: Against the Demand for Consensus*. New York: Oxford University Press.
- Rhoads, B.L., Wilson, D., Urban, M. & Herricks, E.E. (1999). Interaction between scientists and nonscientists in community-based watershed management: Emergence of the concept of stream naturalization. *Environmental Management*, 24(3): 297-308.
- Riley, A.L. (1998). *Restoring Streams in Cities: A Guide for Planners, Policymakers, and Citizens*. Washington, DC: Island Press.
- Roche, M. (2010). Historical research and archival resources. In I. Hay (Ed.), *Qualitative Research Methods in Human Geography* (Third Edition). (pp. 173-190). Oxford, UK: Oxford University Press.
- Rogers, P.P., Kazi, F.J. & Boyd, J.A. (2008). *An Introduction to Sustainable Development*. London and Sterling, VA: Earthscan.
- Samuelson, P.A. (1954). The pure theory of public expenditure. *The Review of Economics and Statistics*, 36(4): 387-389.
- Schlosberg, D. (2004). Reconceiving environmental justice: Global movements and political theories. *Environmental Politics*, 13(3): 517-540.
- Sewerage Commission of the County of Milwaukee. (1951). *Sewerage Commission Program of Clear and Storm Water Elimination, Improvements to Sanitary Sewer Collection System as well as Sewage Disposal Plan Facilities*. Folder 1, Box 9, Walter Henry Bender Papers, 1913-1966. University of Wisconsin-Milwaukee Golda Meir Library Archives: Milwaukee, WI.
- Shlensky, A. (1944). Letter from A. Shlensky (Sewerage Commission of the City of Milwaukee) to James L. Ferebee (Sewerage Commission of the City of Milwaukee). 2 November. Box 36/3373, MMSD Records Management Department: Milwaukee, WI.
- Smith, D. M. (1994). *Geography and Social Justice*. Oxford, UK: Blackwell.
- St. John, W. (1983). Letter from Wayne St. John (MMSD) to Edwin J. Laszewski (City of Milwaukee DPW). 5 July. Box 36/3373, MMSD Records Management Department: Milwaukee, WI.
- “Statement of Principles to be Discussed Pertaining to Construction of Storm Water Drainage Channels through County Parkways.” (1954). 19 May. Folder 2, Box 9, Walter Henry Bender Papers, 1913-1966. University of Wisconsin-Milwaukee Golda Meir Library Archives: Milwaukee, WI.

- Stedman, R. (2003). Is it really just a social construction?: The contribution of the physical environment to sense of place. *Society and Natural Resources*, 16(8): 671-685.
- Sze, J., London, J., Shilling, F., Gambirazzio, G., Filan, T. & Cadenasso, M. (2009). Defining and contesting environmental justice: Socio-natures and the politics of scale in the Delta. *Antipode*, 41(4): 807-843.
- Technical Review Committee. (2007a). KK River Channel Rehabilitation Project Meeting Minutes. 26 September 2007.
- “Text of Address by New Mayor.” (1960). *The Milwaukee Journal*. 19 April. p. 11.
- Tiebout, C. (1956). A pure theory of local expenditures. *Journal of Political Economy*, 64(5): 416-424.
- Tobin, G.A. & Montz, B.E. (1997). *Natural hazards: Explanation and integration*. New York: Guilford Press.
- Ueland, J. & Warf, B. (2006). Racialized topographies: Altitude and race in southern cities. *The Geographical Review*, 96(1): 50-78.
- Urban Anthropology Incorporated. (2009a). 84 homes to be lost in KK flood management project. *Lincoln Village Voice*. September newsletter.
- . (2009b). Residents vote on the KK project. *Lincoln Village Voice*. October newsletter.
- US Environmental Protection Agency. (2014). “Environmental Justice.” <http://www.epa.gov/environmentaljustice/index.html>. Accessed 18 May 2014.
- “Violent Storms Strike; Rainfall Tops 3 ½ Inches.” (1960). *The Milwaukee Journal*. 3 August. p. 1.
- Vojinovic, Z. & Abbott, M.B. (2012). *Flood Risk and Social Justice*. London: IWA Publishing.
- Walker, G. (2009). Beyond distribution and proximity: Exploring the multiple spatialities of environmental justice. *Antipode*, 41(4): 614-636.
- Walker, G. (2012). *Environmental Justice: Concepts, Evidence and Politics*. New York: Routledge.
- Walker, G. & Burningham, K. (2011). Flood risk, vulnerability and environmental justice: Evidence and evaluation of inequality in a UK context. *Critical Social Policy*, 31(2): 216-240.

- Walsh, C. J., Roy, A. H., Feminella, J. W., Cottingham, P. D., Groffman, P. M. & Morgan, R. P. (2005). The urban stream syndrome: Current knowledge and the search for a cure. *Journal of the North American Benthological Society*, 24(3): 706-723.
- Watson, C.C. & Biedenharn, D.S. (2000). Comparison of flood management strategies. In E.E. Wohl (Ed.), *Inland Flood Hazards: Human, Riparian and Aquatic Communities*. (pp. 381-393). Cambridge, UK: Cambridge University Press.
- Wieland, D.G. (1976). U.S. Corps of Engineers - "Reconnaissance Report on Flood Problems on the Kinnickinnic River." Memorandum from Donald G. Wieland (Sewerage Commission) to Robert J. Borchardt (Sewerage Commission). December 1976. Box 36/3373, MMSD Records Management Department: Milwaukee, WI.
- Young, I.M. (1990). *Justice and the Politics of Difference*. Princeton, NJ: Princeton University Press.