



INTRODUCTION

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THE 1870 REPORT OF THE Rivers Pollution Commission in Britain contained a facsimile of a letter written not in ink but with the darkened, polluted waters of the river Irwell, the notorious stream running through Lancashire and Manchester.¹ Just as Manchester sometimes stands as the paragon of urban-industrial revolution, so too might the Irwell stand as the paragon of the urban-industrial river: a lessening stream, so fouled and mistreated as to run the color of ink, allowing an aggrieved citizen to dip a pen in it and write. The holder of that pen, and the author of that letter, sought to make a powerful point about the loss of beauty, health, and utility. The river Irwell stood for much more than a river. The growth of industry in Manchester, and the explosion of the city in the previous decades, had come at a profound environmental cost that risked undermining the very foundations of urban-industrial life.

The ink, letter, and commission all point to some of the ways in which the Irwell was indeed the paragon of the newly urban-industrial river. The river had not only changed its physical appearance, hydrology, and ecology, but its place and purpose in society had also been altered and become the focus of political conflict. The urban and industrial transformations that remade modern societies in the West from the mid-eighteenth to the mid-twentieth century meted out similar results elsewhere. Such changes did not follow the same course as on the Irwell. In some places, new shipping demands straightened channels, plumbing systems more than industrial processes fouled streams, and hydroelectric dams turned rivers into reservoirs. Often urban growth more than industrialization stood as the driving force. But whatever the scope and motor of change, some patterns were widely experienced: riv-

ers were subjected to a new era of modern engineering and rationalization; new modes of transportation and power generation affected river courses; and the water supply and sewage needs of urban centers altered the flow and ecology of urban rivers as well as distant sources.

While facilitating and supporting urban and industrial growth, the river Irwell, and other rivers like it, also affected the course and form of the new urban era. Rivers shaped cities both internally and externally. The river Irwell ran through Manchester, for example, placing an important division in the city's morphology and structure, a dividing line that was repeated in a host of urban circumstances and that produced similar basic demands for infrastructure, such as bridges, levees, and drains. How the river bisected urban space also contributed to the economic geography of the city and the location of industrial wharves, piers, new housing settlements, and parks. While cities polluted rivers, and sought to benefit from their infrastructural potential, they also had to build atop, around, and in conjunction with rivers. Because rivers delivered risk as well as reward, this could sometimes be a perilous process. The river Irwell may have seemed like a thoroughly conquered, denatured river in 1870, but cities and rivers were always caught up in a multidimensional process of cause and effect.

Urban Rivers examines both the role of rivers in the process of urbanization and the impact of urbanization on rivers. We approach the urban-riverine relationship both from the perspective of environmental history and historical geography, which stresses human and environmental changes and spatial processes. We understand space to be an evolving set of relations conditioned by physical circumstances as well as changing human geographies, not a fixed area or region laid down through time. While human geographers have made the point forcefully that space, like nature, is socially produced, we pull back from the full extent of this constructivist vision and ask how environmental circumstances changed space and put limits on human geographies.² The environment, in this sense, embodies a dynamic set of natural processes, partly shaped by human actions, partly independent of them, and in many instances, so intertwined as to be inseparable.³ Throughout the edited volume, we pursue the space of cities and rivers within and beyond the urban area to understand how the internal organization and functions of the city responded to the opportunities and challenges of river environments and to trace the external authority of cities over space in tapping, transforming, and controlling distant waters.

The term "urban rivers" is most often associated today with the goals of ecological restoration. In a range of contexts, environmentalists have called for the reintegration of rivers into urban life through pollution abatement, parks development, and pathway construction.⁴ The river that is to be re-

gained in this view is that which was “cut off” from the city by transportation infrastructure such as railroads and highways or “ruined” by smoke-belching factories and industrial facilities. The ideal endpoint is a river with green edges, accessible for recreation, carrying water of fine quality and color. In part an aesthetic vision, the idea of the “urban river” also highlights the particular features of riverine transformation that cities have imposed, including changed patterns of sediment deposition and erosion, hydrology and ecology, owing to heightened pollution levels, paved catchments, and canalized stream channels.⁵ While we accept that cities impose particular environmental effects on rivers, we do not imagine that cities and rivers have ever been truly separated. Our use of the term “urban river” is therefore neither normative nor aesthetic but descriptive and analytical. We define urban rivers in a descriptive sense as rivers that flow through cities, and in an analytical sense as those rivers that have been folded into the process of urbanization, whether flowing through urban centers or not.



URBAN RIVERS BUILDS UPON and connects three separate bodies of scholarship dealing with the industrial city and sanitary reform, the city’s geographical structure, and the city as an environmental polity. First, any book dealing with the transformations of rivers and cities in the modern period must come to terms with the enormous pressures unleashed by industrialization and urban growth and the countervailing force of sanitary reform. The linked processes of urban and industrial growth produced not only many more and larger cities in the nineteenth century but also reorganized their internal structure, produced increased problems of energy, materials, and food supply, and delivered new waste streams in the air, soil, and water. Although the place of water and waste in the industrializing city has long been a preoccupation of urban environmental historians, rivers do not figure prominently in this literature.⁶ Stripped of any ecological dynamic, they often appear as mere appendages to waterworks and sewage systems. Recent work recognizes that socio-technical infrastructure has never been independent of the rivers from which urban populations ultimately drink or into which they pollute.⁷ Indeed, the nature of rivers, their flow patterns, ecology, and chemical composition, introduce dynamic feedback processes that have frequently disrupted the engineering logic of modern systems.

In part, the inattention to rivers is the logical outcome of the broader preoccupation with sanitary reform. Sanitary reform in the nineteenth-century city aimed to uplift the moral conditions of society by improving the urban environment and its public health. New disciplines emerged in this process, and with them new cultures of expertise. The new figure of the expert—the

scientist, doctor, engineer—saw to the provision of hygienic conditions, at the core of which abundant, potable water figured as a tool for moral rehabilitation and the establishment of a liberal order, where conquering water and conquering society went hand in hand.⁸ Just as sanitarians worried more about the health of drinking water than the health of rivers, historians of the sanitary city have kept their vision trained on the city's society and environment but not its rivers.

Second, the urban-riverine relationship underlines the importance of a spatial analysis of urban development both within the city and beyond its formal boundaries. Cities are rarely studied as islands, but few urban histories seek to emphasize the urban-rural links that construct the environmental foundations of urban life. The urban-hinterland tradition, most recently reinvigorated by William Cronon's *Nature's Metropolis*, places the greatest focus on the problem but tends to emphasize the land-based linkages, epitomized by the railroad.⁹ Rivers, however, have long acted as navigation routes linking cities and hinterlands, and as cities have grown their demands for fresh water and energy have extended urban influence.¹⁰ Like recent scholarship on the "more-than-human geography" of the city, we seek to explore these porous edges, where rivers flow through, with all their truck and trade.¹¹ Rather than the "paths out of town," we consider the rivers to and from the city.¹²

The spatial analysis of urban rivers not only draws our attention to the link between city and hinterland, but it also suggests a wider hydrological context. Rivers vary over time. With the passage of seasons they flow, freeze, and flood with a host of consequences for water transport, diversions, and hazards. Over the long term, variations in river basin regimes can subtly alter the "normal" patterns of flow or deliver abrupt shifts through floods or droughts. Rivers also vary across space. They unite a spatially extensive network of hydrological flows, reaching back to a height of land forming the outer limits of a basin, but are also characterized by a hierarchy of streams and tributaries. Some rivers are large and some relatively small. It matters where a city is located along a river, of what size, undergoing what dynamic seasonal and historical changes.¹³ A delta location introduces different environmental and spatial possibilities and problems for urban growth than a mid-basin location. Such differences have effects not only on trade patterns and the functions of rivers within urban economies but also in terms of governance systems developed to structure watershed management and basin planning. When corrective flood protection work is undertaken, for example, it affects not only a discrete location but also the river's hydrology downstream, sometimes leading to new sediment flow patterns and greater flood episodes.¹⁴ Although river basins, like urban boundaries, are partly social constructions, they create and limit pathways of possibility.¹⁵

If the links between city and hinterland and city and river basin highlight the importance of a spatial approach, so too does any examination of the river in the city. Although the history of water infrastructure in cities is often approached as a socio-technical system, bridging social management and the range of technological elements that combined to make a dynamic operation, rarely is that system read in terms of the evolution of its spatial structure or of how that structure corresponds to the geography of rivers. Rivers fundamentally organized urban space, bounding it directly or indirectly with a network of surface or underground channels. The river at the heart of the city delivered energy for industrial districts and became a true market, a meeting place of wharves and warehouses, where seaward trade met urban consumers.¹⁶ Extending outward, river valleys carved land transportation routes, with roads and railways running along the river's edge; as these roads crossed the city, they consolidated and disrupted spatial arrangements that supported defense, housing, and the supply of goods. Thus, whether considered as a water system or a transportation system, rivers were always also a spatial system woven into the geographical fabric of the city. Sometimes, engineers and city planners aided rivers to shape the space of modern cities by straightening riverbanks, digging navigation channels, and seeking to cope with flood hazards. Just as new disciplines and experts rose to prominence in the sanitary city, so too the engineering profession and the modern planning office gained greater purchase on the reconstruction of the urban environment at the river's edge.

Third, and finally, thinking about urban rivers forces a broader analysis of the city as an environmental polity. Scholars have analyzed the city as an environmental polity in at least two senses: as a complex problem of governance in which different mechanisms have been developed (and subverted) to distribute environmental services and to regulate economic actions with environmental consequences, and as a problem of environmental justice in which social and environmental inequalities have coincided in space and produced social movements for reform.¹⁷ While this literature has often turned on singular questions of access to water, flood risk, riverine location, and exposure to pollution, such separate issues can and should be read and analyzed in combination. However one conceives of the environmental politics of the city, the important social and economic roles of water must place rivers at the center.

A focus on the environmental polity also reminds us that cities did not respond to riverine opportunities and challenges as one person; they were rather sites of intense competition, debate, and conflict about how to use, treat, and respond to rivers.¹⁸ Such forces must be examined in the context of demographic, technological, and economic drivers that shaped urban-riverine relationships but also in terms of the evolution of law, of notions of property, and public purpose. As a result, in the chapters that follow, we consider the power

dynamics of cities, the conflicts between merchants and municipal governments, and different levels of government from the local to the national. This is the traditional fare of urban historiography, but here we tie it directly to the urban-riverine relationship.



THE CASE STUDIES ANALYZED in *Urban Rivers* fall into two broadly defined regional domains, Western Europe and North America. These rough boundaries recognize the comparability of the cases: all within temperate latitudes undergoing broadly similar processes of industrialization, expansion, and urbanization. They also refer to areas where a long history of riverine improvements and urban-riverine relationships left a deep imprint, in terms of ecological change, technical infrastructures, and institutional arrangements, that framed the future uses of the river. These cases are also linked by the fact that they engaged collectively in the diffusion of water technologies in the nineteenth century. Although our aim has not been to chart these technical flows, their existence suggests the level of connection and coherence among cases widely separated in space. By drawing the boundaries in this fashion, we set out to understand whether there might be some broad connections among cities undergoing similar changes. Did cities seek to adapt rivers to industrialization in similar ways? Were they faced with the same legal and political challenges? How did rivers affect the spatial organization of cities undergoing rapid growth and expansion? These kinds of questions can be best answered when some of the factors shaping the cases run along parallel tracks. We are, however, under no illusions that our chosen cases can stand in for a global history of urban rivers, or that they can be simply isolated in some imagined Atlantic or Western world. A recent essay by Matthew Gandy, for example, elegantly makes the case for reading London's history alongside and in connection to Mumbai's.¹⁹ We do nothing of the kind here, but we hope that our comparative analysis might provide foundations for other transnational readings.

We have also elected to focus on a broad temporal period, from the seventeenth to the mid-twentieth century. To be sure, many elements of urban-riverine interaction have ancient foundations, and the growth of at least the European urban system built on a structure partly worked out in the Middle Ages. As Richard Hoffman among others has shown, the role of rivers in urban settlements in the premodern world demonstrates important continuities with the modern period.²⁰ We are struck nevertheless by the relative explosion of urban settlements, particularly after 1800, that characterized both northwestern Europe and the emerging urban system of eastern North America. Urbanization proceeded apace not only in classical industrial cen-

ters like Manchester but in large and complex cities like London and Paris, which both carried out multiple functions as capitals, commercial centers, ports, and industrial hubs. Smaller European capitals and administrative centers like Vienna, Brussels, Oslo, and Edinburgh also witnessed a rapid climb in population and faced all of the political challenges of growth forced by new transportation systems, trade regimes, and water demands. In North America, places that had been relatively modest centers before the second half of the nineteenth century, including Chicago, Cincinnati, and Montreal, grew as organizing points of territorial expansion, building rapidly on the foundations of fur trading posts, missions, and small market towns. Not only did overall population expand at a rapid pace in northwestern Europe and North America in the modern period, but many more people than in previous centuries lived in cities. For this reason alone, it is well to consider how this surge in city building interacted with the rivers that provided some of the critical environmental context of modern urban-industrial life.



URBAN RIVERS SETS OUT TO DISCUSS these issues by looking at urban-riverine relationships in cities of different sizes and shapes being reconstituted by the very dynamics fostered by such relationships. We have grouped the contributions into three parts, being fully aware of the potential for overlap. In the first part of the book, a series of case studies organized around a narrowly defined territory and spanning a relatively short time period reveals how the advent of a new technical regime and industrial order triggered conflicts over the use of an urban river. In many cases, these conflicts originated in ecological changes occasioned by industrial and domestic effluents that hampered traditional and sometimes innovative uses, at times creating tension between industrialization and urbanization processes or between the expanding urban population and the distant rural community. Apart from the sanitary issues involved, use of the river to produce and deliver energy ignited opposition from promoters of urban development and industrialists accustomed to conveniently discharging their waste into the river.

In chapter 1, Chloé Deligne opens the first part of the book with an exploration of the transition between two hydraulic regimes in the early stages of the industrialization of Brussels between 1790 and 1870 and its consequences on the relationships between the city and its hinterland. In the preindustrial era, a diversity of users of the Senne and its tributaries engaged in several disputes over water access and management. Many preindustrial uses ceased following the onset of industrialization, but these disputes were replaced by others that opposed local faubourg administrations and the City of Brussels, which was expanding and redrawing its urban territory. The ecological

changes that manifested themselves in the forms of flooding and aquatic pollution intensified these conflicts and forced the redesign of the water intake and sewage network, eventually leading to the disappearance of rivers that ended up being covered and a severance of the ties linking the urban population to its streams.

Riverine transformation poses formidable challenges for a society that needs to adapt its industrial activities to the deleterious aquatic ecology it has created. This is especially true if these activities are based on the use of the water that it has altered. In chapter 2, Jim Clifford examines the case of a London suburb, West Ham, and focuses on the patchwork landscape of the Lea running through it during the rapid growth of London in the second half of the nineteenth century. Using a detailed geographic information system (GIS) database, he tracks the changing suburban landscape from 1867 to 1915 and the consequence of the degraded industrial river that suburbanization and industrialization created out of the Lea. The river Lea offered many possibilities for industrial and urban growth compared to other sites in the Greater London area. Factories benefited from direct access to a river where coal was transported and refuse dispensed. Their multiplication on the shore of the Lea generated environmental problems that prevented London's second river from further encouraging the growth of its manufacturing suburb because its polluted state threatened the economy and public health of West Ham.

In chapter 3, Eyvind Bagle provides another exploration of the relationships among riverine transformation, industrialization, and urbanization. The establishment of various milling industries along the Akerselva River stimulated the growth of Christiania, which became Oslo, at the same time that the urban market accelerated the industrialization of the river. Initially harnessed for driving wood during the protoindustrial era, the Akerselva ended up being tapped to supply fresh water to a growing urban population in Christiania, being harnessed for hydropower production, and subsequently fouled by manufacturing processes. To ensure an adequate supply of fresh water and to modernize its waterworks, the city sought to exercise greater control over the use of the Akerselva, but it was opposed by industrialists. The latter formed the Manufacturers' Association of Akerselva to fight the city's plan. These conflicts were also framed by the Baron Wedel Jarlsberg, heir of the so-called plank nobility and owner of a large portion of the upstream watershed area of Akerselva, who exercised a stranglehold over the management of the river.

Much as the Lea oriented the establishment of industries along its shore in West Ham and supported a particular land use in the Greater London area, a smaller watercourse in the shadow of the mighty St. Lawrence River fundamentally altered the morphology of Montreal, both the city and the island.

The Rivière des Prairies is located on the north shore of the Island of Montreal and forms an extension of the St. Lawrence River. In chapter 4, Michèle Dagenais explores how the Rivière des Prairies—called the Back River because of its distance from the urban heart of the island—was integrated into the urban space of Montreal through different periods and for different uses. The advent of new users, especially with the territorial expansion of the City of Montreal and its urban population, as well as their attending socio-technical systems such as water intake, sewage disposal, and hydropower generation, generated conflicts and transformed the relationships of the riverine population to its Back River. Flooding events and polluted streams but also the creation of a recreational area following the construction of a dam contributed to the changing perceptions of a river whose transformations illustrated the ever-encroaching urbanization process under way in the first half of the twentieth century.

The chapters of the second part of the book focus on different elements of the urbanization process—demographic expansion, technical infrastructure, land use and territorial annexation, exchange and circulation—and how they impinge on river use over an extended territory and time period. More precisely, they show the central role of population growth in reordering the place of the river in the city, in terms of both its physical location in the urban space and its influence over the arrangement of urban districts, as well as the services that the river furnishes in the economy of urban life. As it grew and expanded, the city organized its activities and intensified them according to the availability of and access to a stream that directed the urban society toward a territory to transform and occupy. At the same time, urban infrastructures had their conception and implementation fashioned by the rhythm and ecology of the river.

In chapter 5, one of the two chapters that examine the case of Paris and the Seine, Sabine Barles explores the role of urban metabolism during the nineteenth and twentieth century to arrive at an understanding of the relationships between urbanization and riverine transformations. The formation of an urban river was tantamount to a series of revolutions: industrial, urban, and hygienic. The spatial expansion of Paris during the period and a series of natural catastrophes and epidemics led engineers and political authorities to redesign the Seine basin to ensure a sufficient supply of potable water. The tension became more acute, pitting the City of Paris against its neighboring municipalities and distant communes, when population growth increased the demand for fresh water, while the capacity of adjacent agricultural soil to absorb effluent with fertilizing sewage diminished. The construction of an upstream reservoir and the extension of urban infrastructures, while ensuring fresh water for Paris, did not prevent the deterioration of the Seine, as

urban growth in terms of space, population, and industries encouraged the externalization of the city's metabolism, something best illustrated by the outreach of the municipal and departmental governments beyond their territorial jurisdiction.

The extension of urban space by the transformations of large rivers is further explored in chapter 6 in Gertrud Haidvogel's study of Vienna and the Danube. She compares riverine landscapes in the land use systems of the pre-industrial and industrial capital of the Austro-Hungarian Empire. Examples from the Austrian Danube demonstrate the role of floodplains as land resources during the process of population growth in Vienna, as well as the adaptation of riverine communities to changing environmental conditions. The channelization of the Danube for navigational purposes imposed constraints on the use of the settled floodplains, at the same time in high demand by the City of Vienna, which required land for industrial and housing purposes. The Danube and its floodplains, as well as residential developments, ended up being combined in an urban planning scheme to accommodate the demographic expansion of Vienna.

Floodplains are sites of naturally occurring inundations, but once they become settled because of their obvious locational advantages, population and goods become vulnerable. In many cases, floods are not the direct results of the transformation of the river per se but the unintended consequence of intense occupation of the floodplain. As settlement incorporated increasingly complex buildings and infrastructure and integrated them into the urbanization and industrialization processes, damage increased concurrently. As a result, it was not only the death toll and damages to houses that needed to be taken into account but also the delay in industrial production and the reconstruction of transportation, power, and water infrastructure. Hence, urbanization profoundly modified the relationships between cities and rivers—not only by impacting the aquatic ecology, but also by increasing the frequency and intensity of flooding events. In chapter 7, a study of the Ohio River over a two-hundred-year period, Uwe Lübken discusses the consequences of the transformation of floodplains through settlement and urbanization processes. The Ohio River underwent profound changes in the nineteenth century, as it was transformed into a commercial artery with plenty of large cities, industrial sites, and infrastructures to control the regularity of the river flow. Yet, partly as a result of these changes, inundations occurred and affected the cities and their hinterlands on an ever-increasing scale.

Studies of rivers have insisted on their representation in the process of imagining communities and forging national characters. In chapter 8, Jean-Claude Robert explains how Canadian historians and geographers have used the St. Lawrence River in that regard only to insist on a different perspective

that connects the river to the historical geography of the City of Montreal. His chapter offers a revealing example of the inward and outward spatial urban production of the river, looking at the structuring of Montreal's urban morphology and the modulation of its hinterland across North America over a four-hundred-year time span. Using different analytical scales, his chapter illustrates the role of the St. Lawrence in specific periods of economic growth, each spurred by specific commodities and trade routes, with their concomitant impact on an urban space that accommodated these commercial activities. Acting as a hub for intra- and intercontinental exchange, Montreal organized its territory by developing its urban built environment along the river shore, moving up along a northern axis. Technological change (albeit unrelated to the Industrial Revolution in this case but rather to land transportation and merchandise stevedoring) eventually lessened the river's impact on the extension of the urban territory, while tertiarization, deindustrialization, and the transformation of the riverfront into a recreational area ended up redefining the urban relationship to the river.

In chapter 9, T. C. Smout analyzes urbanization and industrialization in Edinburgh and the surrounding region in the context of the Firth of Forth, a salt embayment of the North Sea, fed by twenty rivers, including the Forth. Rivers feeding the Firth of Forth were put to many uses, but by the mid-nineteenth century the expansion of urban settlements and industrial processes contributed a growing waste stream. Despite the constant need for larger volumes of fresh water for domestic and industrial use, waste continued to be disposed of into the estuary and its tributaries, where epidemics and declining fish populations indicated the extent of pollution. A major source of the problem was the extension of the pollution across a large territory with divided jurisdictions. Attempts to control pollution and ameliorate some of the effects of decades of abuse emerged in the second half of the twentieth century.

Urban societies not only modify the ecology of the riverine environment, they also redraw the boundaries of fluvial space, materially and culturally, bringing to the fore environmental and political issues. In such circumstances, they attempt to design the appropriate means of managing the water and its territory. Experts are then mobilized to referee conflicts between users, which in many cases amounts to balancing the public good and the private interests of individuals, communities, firms and industries, as well as governmental bodies of different levels. The chapters of the third part study cases that illustrate political problems resulting from the imposition of a social order on the nature of rivers. The chapters emphasize the role of experts in providing templates that regulated the riverine relationships of society.

In chapter 10, Frédéric Graber studies debates related to the construction of the Canal de l'Ourcq to supply the urban population of Ancien Régime

Paris with water in sufficient quantity and of appropriate quality. The construction of the canal reconfigured the drainage basin of Paris, which could no longer rely solely on the Seine for its water supply as its population increased, stimulated by spatial expansion and suburban annexation that also integrated water-intensive industries. Promoted by private entrepreneurs and public engineers, the project led to confrontations between state experts and countryside communities that were to be deprived of their main source of water. The project steered a series of controversies and debates on the superior quality of water from large (the Seine) or small (the Ourcq) rivers and on the actual and future needs of the urban population and therefore the quantity of water to be diverted, as well as on the dispossession of land and water resulting from the construction of such a project and the ensuing compensation to be paid. The construction of the Canal de l'Ourcq exposes the central role of engineers and experts in framing the uncertainties and irregularities that characterize the hydrology and ecology of rivers, and therefore the management of waters.

In chapter 11, Craig Colten compares developments on the Illinois, Potomac, and Chattahoochee Rivers and the upstream-downstream influences of Chicago, Washington, D.C., and Atlanta on their respective river basins. This comparison reveals the importance of the basin perspective in understanding the urban, ecological, and geographical factors responsible for fashioning the relationships between a city and its riparian hinterland. The case studies exemplify the respective role of social priorities and natural processes in the modification of hydrologic regimes and watershed boundaries. They also present the different experts and water management institutions called in to resolve conflicts between users historically constituted along a transformed riverine system whose territory had been reconfigured to meet the needs and desires of the municipal and regional political elite.

Notwithstanding the role of human actors in diverting and inverting rivers, ecological dynamics have also blurred and modified river pathways and forms. In chapter 12, Shannon Stunden Bower demonstrates the complexities surrounding the spatial definition of the watershed, a concept that encompasses the contemporary understanding of the relation between rivers and the lands they traverse. Her chapter focuses on the history of water management in the province of Manitoba, Canada, with events there serving as a case study to observe the rescaling of the watershed by governmental officials and frictions arising from the discrepancies observed between the boundaries of rural municipalities and those drawn to accommodate environmental patterns. Tensions between private property lines and municipal boundaries as well as with ecological processes and governmental efforts to rescale water management did not materialize in disputes between communities or pro-

motors and riverine populations. However, the autonomy and authority of municipal communities were undermined by the emergence of a new administrative entity, the watershed district, which involuntarily expressed at another level the disharmony between humanity and nature.

In the conclusion we situate both the particular and more general forces that shaped the urban-riverine relationship across Western Europe and North America. We ask how urbanization and industrialization fundamentally altered the use of rivers in cities and with what environmental and social consequences, ranging from the siltation of rivers to the elevation of expertise in river management. Finally, we consider how these transformations also reached beyond the city center and the rivers cutting through urban space. One of the outcomes of urban expansion and industrial growth, we argue, was the rescaling of urban-riverine relationships.

PART I.
INDUSTRIALIZATION AND
RIVERINE TRANSFORMATIONS



