A TALE OF TWO WATERFRONTS

1 Commerce, Industry, and the Environmental Transformation of Minnesota's Twin Cities

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IN THE SECOND HALF OF THE NINETEENTH CENTURY, the Twin Cities of Saint Paul and Minneapolis grew from tiny, remote outposts on the margins of a rapidly expanding country into large, thriving cities with regional, national, and international significance. The two cities, whose downtown business districts are separated by just fourteen meandering miles of the Mississippi River, shared an important location, standing at the crossroads between the land and natural resources of the areas now known as Minnesota, the Dakotas, and Canadian Manitoba on one hand and the markets of a growing United States on the other. Although both cities rose to prominence in the same half-century of rapid growth by absorbing a flood of new settlers and capitalizing on the surrounding region's natural wealth, the economies of each city connected Minnesota's ecosystems to expanding national markets in different ways.

As a result, the Twin Cities of Minnesota developed as distinct and independent river cities, each with its own local and regional environmental relationships that can be seen in the evolving ways that residents shaped and interacted with their downtown waterfronts. Saint Paul, located at the head of navigation on the Mississippi River just below its confluence with the Minnesota River, built and rebuilt its waterfront around trade during its period of rapid growth, focusing on developing the transportation networks—first steamboats and then railroads—that tied the surrounding region to the city's merchants and delivered the region's natural resources and farm produce to distant markets. Minneapolis, on the other hand, grew to prominence by straddling Saint Anthony Falls, the only major waterfall on the Mississippi River. By constantly tinkering with how they managed the waterfall and harnessed its power, the city's millers turned the waterfront into a center for processing the region's two most valuable natural resources—timber and grain—for regional, national, and international markets. The environmental history of Saint Paul and Minneapolis during their rise to prominence is thus the tale of two waterfronts, one commercial and the other industrial, each built around a different strategy of cashing in on the region's natural abundance during the period when American settlers seized control of the region's land and natural resources.

BEFORE THERE WERE CITIES

Before there were cities called Saint Paul and Minneapolis, before there was a state called Minnesota, there was Dakota land. Both Saint Paul and Minneapolis became cities during the second half of the nineteenth century as the United States pushed its borders westward past the Mississippi. As part of this westward expansion, settlers ultimately wrested land away from the Dakota and Ojibwe (also known as Anishinaabe) peoples who called Minnesota home in order to knit the region's land and abundant natural resources into the fabric of a growing United States. Without controlling the land and its resources and without the ability to remake the region around new economic relationships with the rest of the United States, neither Minnesota nor the cities of Saint Paul and Minneapolis could have emerged as they did. Yet the processes of settler colonialism and colonial conquest did not follow a straight line.[1]

At the site that eventually became the city of Saint Paul, the land began to take its current shape roughly twelve thousand years ago under the powerful forces of retreating glaciers. The Glacial River Warren, which drained the meltwaters of Glacial Lake Agassiz, carved the valleys of the Minnesota and Mississippi Rivers. At the site that is now Saint Paul, a giant waterfall formed, stretching roughly 2,700 feet across with a 175-foot drop, similar in width and height to the modern horseshoe falls on the Canadian side of Niagara Falls. Traversing bedrock composed of three different strata—a thick layer of soft Saint Peter sandstone at the bottom, followed by a thin layer of soft Glenwood shale and a cap of hard Saint Peter limestone—the waterfall slowly receded as falling water eroded away the softer bottom layers at the foot of the falls, undercutting the limestone and causing its unsupported lip to collapse. As the glacial meltwaters receded, the waterfall shrank in size as it eroded its way slowly upstream. The waterfall split at the confluence of the Mississippi and Minnesota

Rivers, devolving on the Minnesota side into rapids two miles upstream, where the limestone layer disappeared. On the Mississippi side, where the Dakota named the waterfall Owamniyomni, it continued to retreat upstream, carving a gorge with 90-foot bluffs through the bedrock.[2]

According to Dakota spiritual beliefs, it was at the place they called Bdote, where the Minnesota River (Mni Sota Wakpa) flowed into the Mississippi River (Haha Wakpa), that the Dakota people were brought from the stars to live over the center of the earth. Beyond Bdote, they called the land Mni Sota Makoce, and eventually spread out in four bands across much of what are now the states of Minnesota, North and South Dakota, and Nebraska, as well as parts of Iowa, Wisconsin, and the Canadian provinces of Manitoba, Saskatchewan, and Alberta.[3] This homeland incorporated a number of different ecosystems, stretching from rich deciduous and coniferous woodlands in the east to prairie grasslands in the west. The Dakota moved around from season to season, living some of the year in portable lodges covered with bison hides and the rest in more substantial structures. By moving their homes with the seasons, they were able to take advantage of the ample sources of food that each ecosystem provided—staying put on fertile agricultural soils to grow corn, squash, and beans for some parts of the year, and during others moving to the places where food was most seasonally abundant, hunting bison, deer, and waterfowl; fishing in lakes and rivers; harvesting wild rice; foraging for nuts, berries, and roots; tapping maples to make sugar; and trapping smaller animals.[4]

Outside forces eventually intruded on the Dakota and their way of life, a process that began even before the arrival of Euro-American settlers. The most disruptive early foreign arrivals in the region, for example, were not settlers but European microbes like smallpox, to which the Dakota lacked immunity. Those European-introduced diseases killed so many that the Dakota population fell by one third between 1680 and 1805.[5] The initial effects of expanding Euro-American settlement also came indirectly, when Ojibwe migrants, themselves pushed from their homelands by white settlers, began to move west onto Dakota land. Initially the Ojibwe acted as important intermediaries between the Dakota and French voyageurs, helping to establish a thriving fur trade. In the late seventeenth century, however, Ojibwe migrants reached the edge of Dakota land, and by the early eighteenth century were beginning to encroach into eastern Minnesota. In the 1730s tensions flared into war.[6] Meanwhile, French and British traders also competed for access to the region, not with the aim of seizing land for colonial settlement but to determine who would control the profits from the region's lucrative fur trade.[7]

In the late eighteenth century, as European empires jockeyed for advantage in North America, war and revolution combined to realign imperial politics. First, at the end of the Seven Years' War in 1763, France surrendered its colonial holdings in North America to Britain. Then, soon after the United States emerged victorious from the American Revolution in 1783, the new nation began to compete vigorously with British traders from Canada for control of the region. Its first important foray came in 1805, shortly after the Louisiana Purchase gave the United States claim to the area west of the Mississippi, when Lieutenant Zebulon Pike visited Bdote as part of an ultimately unsuccessful US expedition to find the headwaters of the Mississippi River.[8] While in the area he brokered an unauthorized treaty with local Dakota leaders, securing some one hundred thousand acres around the confluence up to Saint Anthony Falls for the construction of a military fort. The first American troops did not arrive until 1819, however, and did not finish work on the fort that came to be known as Fort Snelling until 1825.[9]

Built on the bluffs overlooking the confluence of the Minnesota and Mississippi Rivers, Fort Snelling quickly became the center of American activity in the region. The fort's primary purposes were to secure American control over the fur trade by protecting American interests against British Canadian competitors, to try to keep the peace between competing Dakota and Ojibwe groups, and to prevent settlers from encroaching on the area and disrupting the fur trade.[10] In 1825 the American Fur Company opened a headquarters in Mendota, directly across from Fort Snelling on the far bank of the Minnesota and just above Pike Island and the confluence with the Mississippi. It attracted lively activity and helped the company achieve dominance over the fur trade by the end of the 1820s. By the mid-1830s Fort Snelling stood at the center of a fur trade network that extended north into Canada and as far west as the Missouri River.[11]

By the mid-1830s, however, the system of credit on which the fur trade depended had become overextended and structurally unsound, with fur traders' account books brimming, in the words of their primary historian, with "accumulated losses masquerading as bad debts."[12] As a result, leading fur traders began to assess the steady western push of American settlers with a new eye. Until then they had staunchly opposed opening new territory for settlement because settlers threatened the conditions—social, economic, and environmental—on which the fur trade depended. As the credit underpinnings of the fur trade became increasingly unstable, however, its leaders began to develop a new goal: leveraging the federal treaty-making process for personal advantage. In 1836 the fur traders at Mendota saw their chance when the new territorial governor of Wisconsin Territory, Henry Dodge, began to push for a land cession treaty in what is now western Wisconsin and eastern Minnesota. The fur traders inserted themselves into the process, which produced two treaties in 1837, one with the Ojibwe and another with the Dakota, that together ceded millions of acres of valuable timberlands in current-day Wisconsin and Minnesota, including the portion of Minnesota known as the Saint Croix Triangle, which occupies the area between the Mississippi and Saint Croix Rivers below a line running east from near current-day Brainerd, Minnesota, into Wisconsin. In addition to the mix of immediate and deferred annual payments (called "annuities") that went to the Ojibwe and Dakota in exchange for the land cessions—and in a windfall for traders—the federal government also agreed to make direct cash payments to fur traders to cover significant portions of the recorded debts they carried on their books.[13]

The 1837 treaties opened a new era in the region's history, marking a shift in American interests away from a single-minded focus on exploiting furs and toward a much grander objective: seizing direct control of Dakota and Ojibwe land. That land was rich with natural resources, especially timber, the potential worth of which made the profits of the fur trade pale by comparison. It also had rich soil, which in the long run would make the region attractive for settlement and agriculture. Upon ratification of the Dakota treaty in 1838, land east of the Mississippi in the Saint Croix Triangle officially opened to settlers, who immediately began to make land claims. This set in motion the processes that transformed and divided Dakota land into the privately deeded parcels that the US legal system recognized.[14] It was at this point that two ramshackle towns began to develop within the ceded area on the east bank of the Mississippi: Saint Paul, located at a break in the bluffs just below the Fort Snelling military reserve's boundary, and Saint Anthony (later part of Minneapolis), located alongside the waterfall that the Dakota called Owamniyomni but that settlers called Saint Anthony Falls.[15] Adopting a commercial orientation from the start, Saint Paul's population grew in the 1840s in proportion to its steamboat traffic, which began regular packet service to Saint Louis in 1847. Steamboat arrivals rose steadily through 1849, when ninety-five steamboats made their way up the Mississippi to dock at Saint Paul. In Saint Anthony, by contrast, upon receiving word that the 1837 treaties had been ratified, Franklin Steele, an enterprising young storekeeper at Fort Snelling, managed to outrace the fort's commander, Major Joseph Plympton, to stake the crucial claim to the land along the east bank of Saint Anthony Falls. Lacking the capital required to develop the site, however, it took Steele almost a decade to erect a milldam and open his first sawmill.[16]

The 1837 treaties created an opening for settlers, but before Americans could fully exploit the region's natural wealth and before they could create the conditions that would propel the transformation of these two tiny new towns into the large, flourishing cities of Saint Paul and Minneapolis, the new settlers had to make good on their designs to gain firmer control over the Dakota and Ojibwe land beyond the boundaries of the Saint Croix Triangle. The first step in this direction came in 1848 when Wisconsin became a state, prompting Congress in early 1849 to organize Minnesota Territory from the area running west from the Saint Croix River to the Missouri River and north from Iowa to the Canadian border. Congress named Saint Paul as the territorial capital, sparking a building boom and prompting the town's population to double within three weeks.[17] Among other things, organizing Minnesota as a territory meant introducing new forms of sovereignty to the region, including naming a territorial governor, creating a territorial legislature, introducing a new set of legal relationships with the United States, and providing a clear path to statehood.[18]

Almost immediately after the creation of the Minnesota Territory, its political leaders began to push Dakota and Ojibwe leaders to sign new land cession treaties that would legally open the rest of Minnesota for settlement and natural resource extraction. In 1851, after two years of careful planning, American negotiators pressured Dakota leaders into signing two separate treaties—one with the Wahpetun and Sisseton bands at Traverse des Sioux and another with the Mdewakanton and Wahpekute bands at Mendota. The treaties together ceded nearly all remaining Dakota lands in Minnesota for a mix of annuities and onetime payments while confining the Dakota to a long, narrow reservation on the upper Minnesota River. In addition, the Americans were able to trick some Dakota leaders and pressure others into signing separate "trader's papers," which obligated them to repay all of the recorded debts accumulated by individual members of their bands—some of which stretched back as far as 1819. It was, in the words of one of the episode's major historians, "a sorry spectacle of deceit, coercion, and promises broken almost before they were recorded."[19] The state's leaders then turned their attention to the Ojibwe, whose land was less attractive for farming but contained vast pinelands that promised ample riches for American timber operators. As a result, the treaties of La Pointe (1854) and Washington (1855), which ceded all but the northernmost portions of Ojibwe lands in exchange for a mix of immediate payments and long-term annuities, focused primarily on opening the territory for logging rather than settlement. As lumbering operations slowly turned the region's forests to stumplands, however, the environment could no longer support and sustain traditional Ojibwe ways of life.[20]

Once these land cession treaties opened the rich ecosystems of Minnesota Territory to the claims of settlers and timber operators, immigrants began to pour in. In 1850, just after the formation of Minnesota Territory, the territory's population stood at just 6,077. By 1857, following the key treaties in 1851, 1854, and 1855, its population had swelled to more than 150,000, with farmers spreading across its fertile soils and loggers advancing into its vast pinelands.[21] Political leaders used this rapid growth to launch a campaign for statehood that culminated in Minnesota's entry into the union as its thirty-second state on May 11, 1858.[22]

As settlers rushed to claim the land as their own, the United States finalized its conquest of Dakota land in the short, brutal US-Dakota War of 1862. The war began in August, after a summer of crop failures, hunger, and the failure of Indian agents to issue rations provoked tensions that flared into violence. The fighting, which ended before the end of September, provided the state's leaders with all the reason they needed to banish the Dakota from Minnesota. First, a military commission held perfunctory trials of Dakota combatants that ultimately resulted in thirty-eight hangings, the largest mass execution in American history. Next, they confined some 1,600 Dakota noncombatants in a camp through the winter on Pike Island, where overcrowding, disease, and exposure killed several hundred people. That spring Congress used the war as a pretext to extinguish all former treaties with the Dakota, dismantle their reservation, and relocate the survivors of the Pike Island camp to the Crow Creek Reservation in Dakota Territory. As far as the US government was concerned, this was no longer Mni Sota Makoce, land of the Dakota, but Minnesota, part of the United States of America.[23]

MARKETING NATURE IN SAINT PAUL

With this transformation the new state's fertile soils, valuable pinelands, and rich mineral deposits stood ripe for the taking, and over the next several decades a wave of new settlers rushed in to take advantage of the bounty. The state's population more than doubled between 1860 and 1870 from 172,023 to 439,706, nearly doubled again to 780,773 in 1880, and reached 1.3 million in 1890. In its first decades of rapid growth, Saint Paul's leaders maximized the city's advantages as the head of navigation on the Mississippi River by orienting their activities toward the waterfront, building Saint Paul around the steamboats that linked Minnesota to larger national markets. In doing so they established the city's status as the region's primary commercial center, and later cemented that status by becoming the region's railroad hub. As a result they ensured that as the state's population grew and as settlers remade the state's environment, much of the countryside's trade would flow through Saint Paul as Minnesotans interacted with the broader American economy.[24]

The founders of Saint Paul picked a good place to build a city around steamboats. Located at a break in the bluffs, the site had ready access to the waterfront from the east bank of the river (Figure 1.1). In addition, it had two natural levees where steamboats could land and unload, each of which adopted a distinct commercial focus that capitalized on a different aspect of the city's crossroads location within the developing region. Located just below the Mississippi's confluence with the Minnesota River, the Upper Landing cultivated trade up the Minnesota River and then across a short portage to the Red River, which flows north to Manitoba. The larger Lower Landing, on the other hand,

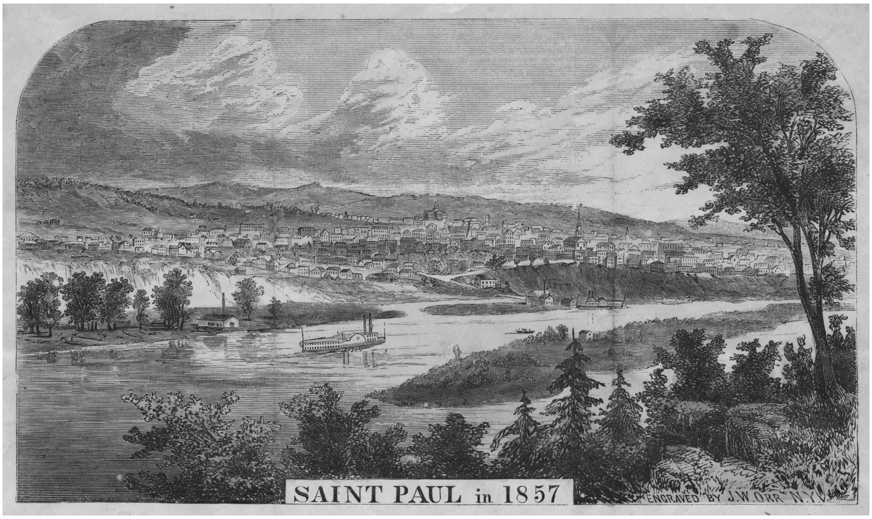

Figure 1.1. In this 1857 view of Saint Paul, a steamboat chugs upstream past Harriet Island, headed toward the Mississippi's confluence with the Minnesota River, while another steamboat docks at the Upper Landing. Behind the landing, the burgeoning town's buildings crowd around the break in the bluffs. Courtesy of the Minnesota Historical Society.

devoted itself to the steamboats plying the Mississippi River, where Saint Paul's location at the river's head of navigation gave it a clear strategic advantage: nearly all of the new settlers streaming into Minnesota during its early period of growth came up the river and disembarked in Saint Paul. Initially most arrived via a seven-hundred-mile steamboat journey from Saint Louis, but after 1854 Chicago became the major way station for settlers. By then railroad tracks radiated outward from Chicago in all directions, allowing settlers to travel by rail to Rock Island, Illinois, before making the final 350-mile trip to Saint Paul by steamboat. As Minnesota's population swelled, so did trade in Saint Paul, where both of its levees teemed with activity. In 1857, for example, 216 boats from the Minnesota River docked at the Upper Landing, while 1,026 traveled up the Mississippi to the Lower Landing.[25]

Through the 1850s and into the 1860s Saint Paul built its commercial dominance by capitalizing on its position at the center of regional transportation networks during the period when settlers were fanning across Minnesota to establish new towns and farms. For every steamboat that traveled up the Mississippi to Saint Paul, a new group of passengers disembarked to find hotels and boardinghouses to house them, banks and loan offices standing ready to extend credit, land agencies and real estate firms offering to facilitate land acquisitions, and, for those who wanted to stay, plenty of jobs. For those who left Saint Paul to establish farms in other parts of Minnesota, or to join the timber companies operating in Minnesota's vast pineries, the city's merchants built a lively trade equipping them with tools and supplies. Just as important, the city's overland transportation firms (known as express companies) built a robust overland transportation system, with Saint Paul at its center, that specialized in moving goods, supplies, and passengers between the city and new interior settlements. Meanwhile Saint Paul's merchants were well positioned to distribute commodities from the surrounding region, including both farm products and timber, to both local and downriver markets.[26] Because of these relationships, Saint Paul grew along with the region, sprouting from a town of less than a thousand residents in 1849, the year it became the capital of Minnesota Territory, to a population of eleven thousand on the eve of the Civil War, a rate of growth all the more impressive given that the city lost half of its population in the aftermath of the deep nationwide economic recession known as the Panic of 1857.[27]

Through this period both Saint Paul and its surrounding hinterland depended on the free-flowing Mississippi River to connect with the outside world. At the time the Mississippi was both wider and shallower than it is today, with marshy, somewhat indistinct banks that varied considerably as the river rose and fell. Islands and sandbars braided the channel, making it tricky to navigate by steamboat without running aground, especially during low water. Fallen trees created snags that could (and sometimes did) do serious damage to boats. Above Saint Paul, where the river became narrower and faster above its confluence with the Minnesota River, and where huge chunks of limestone left by the retreat of Saint Anthony Falls lined the riverbed, the Mississippi quickly became unsafe to navigate, reinforcing Saint Paul's status as the river's last port of call. In Saint Paul people filled, leveled, and extended the levees to serve the commercial needs of expanding steamboat operations. The river itself, however, remained unchanged until 1868, when the Army Corps of Engineers began operating two boats on the Upper Mississippi that focused on scraping sandbars, clearing snags and overhanging trees, and removing wrecked ships from the channel. Each change of the seasons cast the river's importance to Saint Paul in sharp relief. Every winter the river froze, causing the city's economy to slow to a standstill, and every spring the ice cleared, reawakening the economy as soon as steamboats could once again make their way upstream to the city.[28]

As central a role as steamboats played in Saint Paul's early development, the city's heyday as a steamboat city was short-lived. Even as Minnesota's territorial leaders were preparing for statehood, they already had begun to view the city's future through the prism of railroads, envisioning a network of four trunk railways radiating outward from Saint Paul. The Panic of 1857 wrecked these initial plans, but the Civil War revived both the economy and Minnesota's railroad fever; leaders then concentrated on building an intrastate network of railroads focused on the Twin Cities. In June 1862 the Saint Paul–headquartered Saint Paul and Pacific Railroad (SP&P) began to operate the state's first railroad, a ten-mile link between Saint Paul and Saint Anthony. Within a few years its tracks reached north across the state into the fertile Red River Valley. Meanwhile, the Minnesota Valley Railroad (MVR) began to stretch southward into Iowa and Nebraska, facilitating the transition of Commodore William Davidson (who dominated Saint Paul's steamboat trade) and James C. Burbank (who owned Saint Paul's dominant express company) into railroading.

The pace of construction accelerated after the Civil War, reinforcing Saint Paul's central location as the state's total mileage of railroad tracks jumped from 210 in 1865 to 560 in 1868. Often built to follow the transportation routes that express companies had already established, the railroads quickly absorbed trade that formerly belonged to steamboats and express wagons. But even as railroads captured this trade, causing steamboat arrivals in Saint Paul to fall steadily after 1858, the early railroad network was still focused on Saint Paul's waterfront, where the river remained the only outlet to eastern markets. As a result, the Lower Landing's warehouses, distribution activities, and freight forwarding operations continued to hum with activity. Even after the first railroad connections to Chicago opened—including a roundabout connection in 1869 and a direct one in 1872—Saint Paul retained both its position at the center of the region's transportation system and its regional commercial dominance.[29]

As railroads built outward from the Twin Cities, federal land policies attracted immigrants and sped the transformation of southern and western Minnesota's grasslands—until only recently Dakota land—into privately deeded farmland. The Homestead Act of 1862, for example, offered 160-acre plots to US citizens and intended citizens in exchange for a modest filing fee and the promise to live on the land for five years. Immigrants responded immediately, filing ten thousand Homestead claims in Minnesota by the end of the Civil War; by 1880 the number of claims swelled to sixty-two thousand, accounting for nearly one-seventh of the state's land.[30] The federal government also granted extensive land holdings to railroads to spur their expansion, attracting an additional wave of settlers. In 1856, for example, Congress designated 12 million of Minnesota's 53.5 million acres for land grants to encourage railroad construction, following the general template established earlier in the decade which stipulated that unless lines were completed within a designated period, the lands would revert back to the United States. In 1864 Congress chartered the Northern Pacific Railroad Company (NPR), ensuring that a transcontinental line would extend west through Minnesota on its way to western ports on Puget Sound. After the Civil War—while Saint Paul's leaders maneuvered to ensure that the NPR would share tracks with the SP&P and thereby stop in Saint Paul—railroad companies raced to construct their lines before the land grants elapsed. Upon completing their routes and securing their land grants, the railroads sold the land to immigrants seeking farmland and directed the proceeds toward constructing new routes (and securing new land claims).[31] By the mid-1880s, as railroads completed the construction of their trunk lines and Minnesota's population climbed past 1.1 million, all of the state's best soils had been settled, transformed into farms, and tied by rail to the Twin Cities.[32]

As the state grew so did Saint Paul, which undertook extensive renovations to remake its waterfront around railroads. In doing so, however, it began to marginalize the once central place of the river in the city's everyday life. Around the Lower Levee, which became the focus of railroad activity even before the first Union Depot railroad station opened in 1880, the railroads created the space they needed to operate by extending the shoreline into the river. They began by constructing their lines on trestles that spanned sandbars and seven small islands in the river itself. Later they razed local hills and used them to fill in the area between the old shoreline and their tracks. In places where the river was too narrow to accommodate new railroad tracks, such as at Dayton's Bluff and in parts of downtown Saint Paul, they blasted the bluffs back to make room. Soon the entire stretch of waterfront between the Upper and Lower Levees had been filled and extended into the river, shrinking the river's width by as much as a thousand feet as it flowed through Saint Paul.

With an economy less dependent on an ice-free river and the daily movements of steamboats, and with a formidable barrier of railroad tracks rising between downtown and the waterfront, the city's daily life and commerce reoriented around the railroads. During the same years that the city's population burgeoned from 20,030 in 1870 to 111,397 in 1885, residential growth also turned away from the river. Aided by a horse-drawn streetcar system that began operating in 1872, the city's elites and middle-class residents relocated into new neighborhoods along the bluffs to the west of downtown, leaving the lower-lying industrial corridors along the river to the city's poor and working-class residents.[33]

Ironically, the most ambitious plans to tame the Mississippi to serve navigation interests came to fruition only after railroads replaced steamboats as the region's dominant transportation system. Facing political pressure from farmers who chafed at their growing dependence on railroads and what seemed like their capricious rate-setting practices, in 1878 Congress authorized the Army Corps of Engineers to undertake the wholesale transformation of the Upper Mississippi by creating a continuous four-and-a-half-foot-deep navigation channel from Saint Paul to the mouth of the Illinois River, just above Saint Louis. For the next two decades, the Army Corps transformed the river with two primary tools: "wing dams," which narrowed the river by creating new shoreline, and "closing dams," which forced the main river channel to stay on one side of each of the many islands dividing the river. Together these changes constricted the flow of water, ensuring that even at low water the river's current would carve through sandbars and maintain a navigable channel with a consistent minimum depth. In addition to ensuring that the steamboat trade in Saint Paul, no matter how diminished, would not entirely disappear, the project also caused what one of its leading historians has called "dramatic changes in the physical and ecological character" of the river.[34]

The career of James J. Hill, Saint Paul's most famous and powerful resident, illustrates Saint Paul's evolving relationships with the river and with the surrounding region. Hill migrated to Saint Paul in 1856 from Canada when he was eighteen, finding work on the docks before becoming a clerk for a steamboat line. In 1866 he built a warehouse and launched a company focused on the efficient transfer of freight between steamboats and railroads. Soon he began to specialize in handling coal, which fueled both steamboats and railroads, and became wealthy by dominating the region's fuel trade. In the early 1870s he expanded into the steamboat business, focusing on the Red River Valley trade. In 1877 he made a momentous leap into railroads, joining a group known as "the Associates" in the purchase of the SP&P, which had fallen victim to the Panic of 1873. Renamed as the Saint Paul, Minneapolis, and Manitoba railroad (Manitoba), Hill served as its general manager and quickly turned it into a thriving enterprise by hastening the transformation of the Red River Valley. In the booming real estate market of the early 1880s, the Manitoba sold off its land grants to eager settlers, who soon transformed the valley into prosperous farmland. Meanwhile, the Manitoba connected Saint Paul to Winnipeg and became a profitable line, carrying people, goods, and agricultural products—especially wheat—between the Red River Valley and the Twin Cities.

As his wealth grew, Hill's interests shifted away from the original waterfront focus that had animated his rise to power. Hill helped cement Saint Paul's residential shift away from the river in the early 1880s, for example, by leaving his Canada Street mansion near the Lower Levee to build an opulent 36,500-square-foot mansion on the bluffs overlooking the city. By the mid-1880s Hill's personal and business interests also no longer focused on the city's waterfront, but on the vast regional transportation system that he controlled. Then in the late 1880s his ambitions shifted even further afield as he began to earn the nickname by which he is known today, the "Empire Builder." The Manitoba became the Great Northern Railway in 1887, and Hill began to build westward toward the coast, completing a transcontinental line to Seattle in January 1893. Its completion symbolized a new, more national and interconnected period in Saint Paul's history.[35]

By the time Hill began to enact his transcontinental dreams in the late 1880s, Saint Paul's initial flush period of runaway development—based on rapid population growth and a steadily expanding trade with the settlers who were busy remaking Dakota and Ojibwe land into a patchwork of farms and timber operations—was coming to an end. After 1880 commercial Saint Paul fell steadily behind industrial Minneapolis in size and influence, despite more than tripling its population from 41,473 in 1880 to 133,156 in 1890. In the next decade, however, Saint Paul's growth slowed, adding a more modest 30,000 residents by 1900. Even so, Saint Paul remained a thriving city situated at the center of a wealthy region's transportation system. In the last two decades of the nineteenth century, Saint Paul embarked on a new era in its environmental history, turning its attention toward modernizing its infrastructure: building a water system, installing sewers, paving streets, and electrifying its streetcar network.[36] New residential development continued to spread farther and farther away from the waterfront that had been central to the city's early development, and the river became less and less central to its overall economy and civic identity. Having sprung to life as a town built around its steamboat landings, by the end of the nineteenth century Saint Paul had become a railroad city, all but turning its back on the river as the central, defining feature of its everyday life.

ENGINEERING NATURE IN MINNEAPOLIS

Unlike Saint Paul, which began to grow immediately after the 1837 treaties opened the Saint Croix Triangle for legal settlement, growth at Saint Anthony Falls was constrained by limited access to land and capital in the decades before the Civil War. Franklin Steele claimed the valuable east bank of Saint Anthony Falls in 1838—the same year that Saint Paul began to grow—but it took him a decade to attract investors, secure formal title to the land, and finish the initial construction of his dam, sawmill, and related operations there. Not until 1849 was he able to subdivide his land, file plats, and formally found the town of Saint Anthony, prompting its first growth spurt. In 1852 four sawmills on the east bank milled 8 million board feet per year, and in 1857 Saint Anthony's population reached 4,689.[37] Across the falls, where the land remained part of the Fort Snelling Military Reserve until 1852, the many squatters there were not able to purchase clear title to their claims until 1855–1856. Only after securing title were they able to found the town of Minneapolis in 1856, the same year that the territorial legislature chartered two waterpower companies—the Saint Anthony Falls Water Power Company on the east bank and the Minneapolis Mill Company on the west bank—to develop the waterfall's power.[38]

Despite identical charters, the two companies diverged significantly in their approaches, which explains Minneapolis's surge ahead of Saint Anthony. Short of capital, the Saint Anthony Company suffered from chaotic management, contentious relationships among a churning group of investors, and the loss of a key waterpower site on Nicollet Island. In Minneapolis, by contrast, a small, unified group of wealthy owners modeled their operations on the leading milling center in the United States at the time, the mills at Lowell, Massachusetts. In addition to adopting Lowell's leasing system for waterpower, in 1857 they dug a 40-foot-wide, 215-foot-long, 14-foot-deep power canal into the soft sandstone of the river's west bank to supply their mills, along with an extensive network of head- and tailraces. By 1858 Minneapolis had seven sawmills to Saint Anthony's six. Over the next decade Saint Anthony's population stagnated, numbering just 5,013 in 1870, while Minneapolis—which added mills after extending its power canal to 600 feet in 1866—surged ahead of Saint Anthony to 13,066.[39]

As the leaders of Minneapolis and Saint Anthony developed an industrial waterfront around Saint Anthony Falls, they confronted a variety of environmental challenges. Perhaps most significantly, the sawmills at the waterfall depended on an untamed river whose most troublesome characteristic, from the perspective of the millers, was its variability. In a typical year the river ran high with meltwater in the spring, lost half its volume or more by late summer and into the fall, and then fell by half again after icing over during the winter. But not every year was typical, and the river could behave unpredictably: both flooding and droughts were ever-present possibilities. In addition to shaping the river, seasonal fluctuations also shaped the logging industry on which the sawmills depended. Each winter crews spread into the forests to cut timber, and each spring, after the ice broke, they floated it downstream to the sawmills.[40] Three boom companies formed to handle the log drives, including one that operated in the field at the site of the cuts, another that operated above the waterfall, and a third that operated below it.

The variability of the river, together with certain timber industry practices, created headaches for the sawmill operators at the falls. Floods could be particularly damaging, for example, threatening not only the sawmill platforms that lined the waterfall, which floodwaters occasionally swept away, but also the falls themselves. Driven by the high water, both ice and logs routinely pounded the thin limestone lip of the waterfall, accelerating natural processes of erosion. By 1866 leaders of the Minneapolis Mill Company had become so concerned by this problem that they invested $35,000 to erect a wooden apron across the western channel of the falls, only to see a flood promptly batter it beyond repair in June 1867. The episode underscored both the river's destructive force and the growing focus of the waterpower companies on finding engineering solutions to their problems.[41]

The desire to engineer the falls came into dramatic conflict with natural processes of erosion and with the river's destructive power in October 1869. First, rising floodwaters brought work on a new, half-built replacement apron to a temporary halt. Then the river dramatically escaped its bounds, opening a break into an underground tunnel being excavated as a tailrace. As the river plunged into the tunnel, it soon created an expanding whirlpool that eroded away big chunks of Hennepin Island on the east side, threatening the falls themselves with collapse. Frantic efforts through the winter managed to seal the hole with masonry walls, but another flood in spring 1870 reopened the hole, sucking a mill and warehouse into the river. Again crews leapt into action, and Congress, watching with a wary eye from Washington, appropriated funding for the Army Corps of Engineers to take over the rescue operation.

Things soon seemed to be in hand, but in spring 1871 yet another break opened in the east-side millpond at a different point along the tunnel, prompting a strategic reassessment that ultimately led to a more thorough reengineering of the falls.[42] Further study revealed problems much bigger than the leaking tunnel: the protective top layer of limestone thinned and disappeared just 1,200 feet upstream of the falls. Worse, water was already infiltrating through the limestone and into the soft lower layer of sandstone, creating an existential threat to the waterfall. The best way to proceed, the engineers decided, was to build a vast underground dike above the falls—a thick concrete wall sunk 40 feet deep into the riverbed and spanning its entire width—to prevent further erosion. With funding from Congress, the Army Corps spent the remainder of the decade reengineering the falls. Corps crews began with the dike, followed by a new apron across the falls, low dams above them, and a sluiceway to control the passage of logs.[43] Construction crews also filled the problematic tunnel with tens of thousands of cubic feet of gravel to prevent any future collapses.[44] The result was a heavily engineered waterfall that bore only passing similarity to the one that had initially drawn residents to the area. Just as Saint Paul had remade its waterfront to serve the steamboats and railroads that made it a commercial hub, Minneapolis's newly remade waterfall clearly reflected the industrial purposes to which the city's residents put the river.

At the time of the tunnel break, the primary (though not exclusive) industrial function of Saint Anthony Falls was to provide power to sawmills, whose soaring output through the 1850s and 1860s drove population growth and economic expansion on both sides of the river and increasingly gave the two towns a sense of common identity. Sawmills at the falls were the leading employers in both towns from the start, steadily expanding their production from 12 million board feet in 1856 to more than 90 million in 1869—enough lumber to build a plank road eight feet wide and four inches thick stretching across 532 miles, or the distance between Minneapolis and Saint Louis. Meanwhile the total value of forest products swelled from $357,900 in 1860 to $1.73 million in 1870.[45] Connected to seemingly inexhaustible northern forests by the Mississippi River and its major tributaries, the sawmills at Saint Anthony and Minneapolis sang the song of prosperity and together propelled the two towns into position as one of the nation's leading sawmilling centers. As Saint Anthony and Minneapolis rose in stature, the common ground between them increasingly came to seem more important than their rivalry, especially given the prominence of their common downstream competitor, Saint Paul. In 1872 the two towns became one, with Minneapolis legally absorbing Saint Anthony into its boundaries, forming a united city with a population of twenty-eight thousand residents.[46]

During the same decade that engineers remade the falls, equipping them with a new dike, apron, and dams, a quiet technological revolution catapulted the flour industry ahead of the timber industry at Saint Anthony Falls, changing the city's environmental relationships both with the falls themselves and with the hinterland that kept its mills humming with activity. Before the 1870s traditional flour milling techniques produced a relatively undesirable flour from the region's primary variety of wheat, hard spring wheat. The low-quality flour had a limited market, and in 1870 the city's flour mills produced just 193,000 barrels, making them a distant second to sawmills as the most important industry at the falls. Beginning in the early 1870s, however, millers introduced a series of new technologies that allowed them to grind hard spring wheat, at low cost and in steadily increasing quantities, into a fine, white flour that fetched a premium price. Production grew quickly, and by 1873 Minneapolis's flour production jumped to 585,000 barrels of superior flour. The newfound capacity to engage in large-scale, profitable flour production benefited not just millers, but also wheat farmers, spurring a rapid expansion of wheat cultivation in western Minnesota and the Dakotas that sent a rising torrent of grain flowing to Minneapolis's mills.[47] As a result of these changes, the city's millers increased both the range of natural resources that they processed for the market and the geographical extent of the environmental relationships that sustained industrial operations at the falls. After being dependent primarily on timber operations in the North Woods through the 1860s, in the 1870s the city's waterfront industries began to diversify to make use of a new natural resource: the new fields of waving grain spreading ever westward across Minnesota and the Dakotas.

As the fortunes of the city's flour mills rose, they slowly began to displace sawmills at Saint Anthony Falls, helping remake Minneapolis's civic identity from two competing "sawdust cities" into a single city famous for its flour production.[48] As late as the middle of the 1870s, despite the growing profitability of flour milling, any casual observer at the falls could conclude—after taking in the river full of logs and listening to the steady whine of the gang saws at work in the sawmills lining the falls—that the timber industry still dominated the newly unified city. Indeed, taken together in 1876, the nineteen sawmills at Saint Anthony Falls were still far and away the city's largest employer and collectively sawed 53 million board feet of lumber.[49] But 1876 proved to be a turning point.

That year, as the Army Corps of Engineers finished its massive concrete dike project, it warned the two power companies that sawmills threatened the future of the falls, partly because logs and other debris continued to damage the lip of the waterfall and partly because sawmill platforms constrained the river channel in ways that exacerbated flood damage. Soon after the Minneapolis Mill Company announced that it would not extend the leases of the west-side sawmills after they elapsed. Between 1876 and 1880 it purchased the remaining sawmills and began to phase out production. Flour mills pushed into the opening but suffered a dramatic setback on May 2, 1878, when the Washburn "A" flour mill exploded, killing eighteen and leveling much of the west side. The tragedy, however, only prompted leading millers to double down on their commitment to rebuilding the industrial district with even larger, more technologically advanced flour mills.[50] By 1880 twenty-two flour mills were operating on the west side alone, although just two companies—C. A. Pillsbury and Company on the east side, then in the process of building the world's largest flour mill, and Washburn, Crosby and Company on the west side—together produced over half the city's flour.[51] Milling a combined 2 million barrels of flour valued at over $20 million in 1880, flour for the first time surpassed timber as the city's leading industry, pushing Minneapolis past Saint Louis as the nation's leading flour producer—just as the city's population nosed past Saint Paul's by 5,500 residents.[52]

The rise of the flour mills at Saint Anthony Falls did not spell the end for sawmills in Minneapolis, however; instead, in a sign of broader changes then sweeping over American industry, the timber industry continued to prosper after relocating to North Minneapolis. Although the sawmills remained dependent on both the Mississippi and northern forests for a steady supply of logs, sawmill operators found it easy enough to replace the power once provided by Saint Anthony Falls with power from steam engines. Steam cost more per horsepower than the inexpensive energy provided by falling water, but the margins were smaller for the timber industry than for most others, since it could repurpose its chief by-product—sawdust—as fuel.[53] There were also economic advantages to being able to spread out unencumbered on the inexpensive land north of the falls, which the timber industry quickly filled with mills, warehouses, railroad yards, and other associated industries even as it filled the river north of the city with new booms.[54]

Although the timber industry cut its ties to Saint Anthony Falls, it retained its easy access to the ample supply of logs floating down the Mississippi from northern forests, and by adding new methods and technologies, the sawmills were able to remain a leading industry in the city. In fact, their output steadily *grew,* climbing from almost 180 million board feet in 1880 to over 325 million board feet in 1890, making Minneapolis the nation's leading lumber producer through 1899, when it milled 594 million board feet. Thereafter production began to fall—slowly, at first, but then rapidly after 1915 when the northern forests gave out.[55] Propelled by its embrace of steam power, the timber industry's successes in the last two decades of the century marked a new era for Minneapolis, in which population growth and expanding industrial operations became less reliant on the power of falling water—and thus less tightly bound to the city's industrial waterfront—even as the city's industries continued to focus on processing the surrounding region's natural wealth for national and international markets.

As the millers at Saint Anthony Falls focused first on saving the falls themselves and then on boosting their industrial output, James J. Hill, Saint Paul's railroad magnate, moved to strengthen the position of his railroad empire by establishing firmer control over the wheat flowing into Minneapolis. In 1880 Hill oversaw the purchase of the Saint Anthony Falls Water Power Company and became its president in 1882, not because he was interested in adding waterpower development or milling to his activities but to give his railroad operations a foothold on the Minneapolis waterfront. After acquiring control of the power company in 1880, Hill moved quickly to begin construction of the Stone Arch Bridge, which even today remains the signature feature of Minneapolis's waterfront, aside from the falls themselves. Opening in November 1883, the 2,100-foot bridge snakes elegantly across the river below the falls, crossing twenty-three enormous stonework arches to connect the east- and west-side mills. Hill also opened a new Union Depot in 1885, a few blocks away from the west-side milling district.[56] These facilities fully integrated the waterfront flour mills into Hill's extensive network of railroads and grain elevators, establishing indelible connections to the western wheat fields and ensuring that a steady supply of wheat would flow along the tracks of Hill's transportation empire into Minneapolis's mills (Figure 1.2).

As Hill competed with other railroads to bind western wheat fields to Minneapolis's mills, the millers at the falls developed a keen interest in gaining more reliable control over the other key resource flowing into their mills: the water itself. By the late 1870s the millers had moved beyond a simple understanding of the immediate economic damages wrought by extreme river conditions—flood and drought—and were moving toward a new view of fluctuating water levels as a sign of economic inefficiency. When water was higher than normal, even if it did not cause flood damage, the water overtopping the dams at Saint Anthony Falls represented potential production capacity gone to waste; when water was lower than normal, even at levels that did not amount to drought, mills could not operate at full capacity. To solve this problem, Minnesota representative William D. Washburn—who, along with his brother Cadwallader C. Washburn and cousin Dorilus Morrison, was a major stakeholder in the

Figure 1.2. In this postcard (ca. 1890), a larger-than-life version of Pillsbury's massive flour mill sits astride Saint Anthony Falls on the right, with the iconic Stone Arch Bridge in the foreground. The west-side milling district, including most prominently the facilities of Washburn, Crosby and Company, which had been rebuilt after they exploded spectacularly in 1878, are on the left. Courtesy of the Minnesota Historical Society.

Minneapolis Mill Company and various flour and timber mills—began to seek congressional funding for a reservoir system in the Mississippi River headwaters region. A handful of strategically located dams to create reservoirs, he argued, would allow the Army Corps of Engineers to even out the flow of the Mississippi, impounding water when the river ran high and releasing it when it was running low. This would benefit navigation interests along the river—a legitimate interest of Congress—but would also benefit Minneapolis's millers, including Washburn himself.

Yet building dams would also create problems. Congress appropriated money for its first dam in 1880, and over the next decade built dams on lakes Winnibigoshish, Leech, and Pokegama, as well as on the Pine River. The dams had their largest impact, however, not on boats or mills, but on the Ojibwe residents of the headwaters region, where fluctuating water levels decimated wild rice grounds, fishing areas, and hay supplies, while damaging sugar-making trees and inundating graveyards. "I am heartsick over this whole matter," wrote Henry Whipple, an Episcopalian bishop and advocate for Native American rights, in 1883. "It is one of the many instances where we have clearly violated principles of justice."[57] The injustice proved all the more piercing because even as the Army Corps built the new headwaters dams, Minneapolis's flour mills were beginning to install auxiliary steam engines that allowed them to maintain consistent production schedules when the river ran low. The backup power systems were expensive to install and operate, but managers calculated that the profits from operating at a consistent capacity year-round would more than offset the extra costs that came with providing supplemental steam power when necessary.[58]

The introduction of auxiliary steam power in the mills at Saint Anthony Falls reflected the degree to which the world of the 1890s differed from the period of ascendant growth in which Minneapolis and Saint Anthony grew around their waterfront industries into a unified city. In the decades after the Civil War, the city's industries had used the power of Saint Anthony Falls to cash in on the natural resources of the many far-flung environments that fed industrial growth in Minneapolis—including trees in the North Woods, the rich soils of western farms, and even the water flowing to the city from headwaters lakes. By the 1890s, however, the city no longer depended on Saint Anthony Falls for its industrial success. Sawmills had given way to flour mills at the falls, and both industries turned in varying degrees to steam power, either to replace or supplement hydropower from the falls. In another sign of a new era, in 1889 British investors formed the Pillsbury-Washburn Company, consolidating the Washburn Mill Company, C. A. Pillsbury and Company, the Minneapolis Mill Company, and the Saint Anthony Water Power Company into a single entity that controlled roughly a third of the city's flour production capacity, signaling the growing influence of international wheat markets over local and national interests.[59] In a final momentous change, between 1890 and 1908 Pillsbury-Washburn erected new hydroelectric dams that slowly converted the falls away from directly powering industry toward producing electricity. On completion of the new Lower Dam in 1897, Pillsbury-Washburn signed a lease with the Twin Cities Rapid Transit Company to provide electricity for its expanding streetcar network. Both literally and symbolically, repurposing the power of Saint Anthony Falls to disperse the city's population along a far-flung network of streetcar tracks underscored the degree to which the industrial waterfront had ceased to be the primary focus of everyday life in Minneapolis.

In 1850 both Saint Paul and Minneapolis were tiny new river towns on the western edge of a rapidly expanding United States, each focusing on a distinctive set of waterfront activities and just beginning to nurture dreams of an urban future. A half-century later both had grown into important, prosperous cities. Neither city existed until the United States took control of Dakota and Ojibwe land, but both exploded when settlers flooded into Minnesota to claim the land as their own, with each city using its river location in a different way to connect the region's natural resources to eastern markets. Saint Paul's waterfront reflected the burgeoning city's role as a commercial center, built first around express company routes and steamboat landings and later remade around railroads. As the railroad network grew larger and more connected, first to the well-developed East and then to the developing transcontinental West, Saint Paul's waterfront became progressively less important to the city's civic identity. Minneapolis's urban waterfront also propelled the city's rise, first as a sawmilling center built around a natural waterfall and a river full of logs, and later as a sophisticated flour milling empire built around a highly engineered waterfall with extensive rail links to a vast hinterland of western wheat farms. By 1900, when Saint Paul's population reached 163,065 and Minneapolis's burgeoned to 202,718, both were well-established cities in the middle of a wealthy region, with maturing economies and sizable populations, and both had grown beyond a singular focus on the waterfront activities that had fueled their rise.

James J. Hill again helps encapsulate the nature and degree of these changes. By 1900 Hill was in his early sixties and was just beginning to achieve the peak of his power and influence. In 1893 he finished the transformation of the Manitoba into a fully realized transcontinental line, the Great Northern Railway, and in 1900 finally gained control over the Northern Pacific Railroad as well.[60] His pastimes included long late-night conversations with his friend and neighbor, Frederick K. Weyerhaeuser, a lumber baron who had built his empire from the forests of Wisconsin and Minnesota and whose mansion was just up from Hill's on Summit Avenue. As Hill's interests moved westward, his conversations with Weyerhaeuser began to include frequent, impassioned soliloquies about the forests of Washington State, which Weyerhaeuser regarded as too removed from existing markets to be of serious interest. By 1900, as Hill's influence over the Northern Pacific grew stronger, he proposed a deal that Weyerhaeuser could not refuse: nine hundred thousand acres of prime timberland in Washington for just $6 per acre. This was an expensive proposition, but also an incredible deal—accountants ultimately concluded that it worked out to just ten cents per thousand board feet of lumber. Weyerhaeuser said yes, and in doing so set in motion the American timber industry's shift from the Upper Midwest to the Pacific Northwest. To secure the deal, Hill offered preferential rates on hauling timber from Washington to the Twin Cities, ensuring Weyerhaeuser a competitive way to market his lumber and filling the Northern Pacific's eastward-bound cars with steady, rate-paying traffic that it would not otherwise have had.[61] In the twentieth century even Saint Paul–based enterprises like Hill's railroads and Weyerhaeuser's timber operations, both of which had been fundamental to the rise of the Twin Cities and the development of Minnesota, now focused much of their attention outside the region. After just a half-century of rapid growth, during which settlers built the Twin Cities by transforming Dakota and Ojibwe land into the thirty-second US state, taking advantage of two very different waterfront sites to link the region's abundant natural wealth to national markets, the first era in the history of the Twin Cities drew to a close.