Brian C. Black

Introduction

It is one of the most memorable images of the early republic. The principal figure, a slightly portly man wearing knickers and a long jacket, pulls back the red velvet curtain to reveal a grand hall lined with seemingly endless shelves, each holding stuffed and mounted animals. The image is an invitation, a welcoming. In this 1822 self-portrait, Charles Willson Peale invites us to view his grand collection, a celebration of all that is natural in North America at the close of the 1700s. Passing Peale, one gains access to a real physical locale, full of knowledge about the natural wonders of North America; when we view the image and recall this collector and artist's role in American history, though, his invitation also functions on a symbolic level.

An artist and a naturalist, Peale grounded the fledgling American nation in a sense of its natural history. As the nation reinterpreted human society in profoundly new ways, fought for its freedom and definition a few times, and emphasized resource and economic development to establish long-term national growth, Peale made sure that these national ideals also included the context of the natural surroundings. His perspective fed many of the intellectual developments that followed,

© 2013 University of Pittsburgh Press. All rights reserved.

for many of his contemporaries shared his outlook. Over time, this conception of nature shaped a consistent paradigm in American thought. Particularly during the nineteenth century, this intellectual paradigm provided an alternative to the region's predominant effort to expand capitalism and economic development, forming what the cultural theorists Leo Marx and Perry Miller have called a "counterforce." Indeed, a volume on the environmental history of Philadelphia might well be inconceivable had Peale and his scientific colleagues not helped lay the intellectual underpinnings of natural history in the young nation.

In addition to recognizing this unique intellectual foundation, which is partly rooted in Philadelphia, Pennsylvania, the present volume provides an opportunity to inform the approach of environmental historians as they study urban spaces throughout human history. In recent scholarship, environmental historians including Ari Kelman, Matthew Klingle, and others have recast the stories of specific cities, seeking to revise both the accounts of local stories and the field of environmental history in general. In *Common Fields,* for instance, Andrew Hurley suggests that environmental history, which traces its origins to only the 1970s, established "a false dichotomy between the urban and the natural" that led many of its practitioners to resist telling stories of urban America. Although this may have been initially true, the reluctance to confront urban America has been shattered by superb environmental histories of New Orleans, Seattle, Los Angeles, Phoenix, Tucson, Houston, Boston, and Pittsburgh. Many of these grew from the realization expressed by Hurley when he wrote: "If city planners, policy makers, and property holders have not always appreciated the complex natural processes that support urban life, they have nonetheless constructed their cities and organized urban space in the context of a physical world not entirely of their own making." Tracing these stories, even if they appear "unnatural," empowers environmental historians to put "the environment back into the city, or at least into the history of the city."[1]

In *Nature's Entrepôt,* we use a broad definition of environmental history that goes beyond the nature/culture relationship to admit that, particularly in an urban environment, humans take a considerable toll on the natural environment. Continuing in the tradition of Joel Tarr, Martin Melosi, and others, our interest in exploring Philadelphia's environmental history begins with this admission, and this book thus includes chapters that emphasize efforts to mitigate human impact, the push and pull to create a sustainable urban environment in the City of Brotherly Love. Throughout different technological eras, the city has endured as a system in which humans live, albeit with variations in im-

© 2013 University of Pittsburgh Press. All rights reserved.

pact and control, rigidity and sprawl. Thanks to contributions by these earlier scholars, as well as Andrew Isenberg in *The Nature of Cities,* the chapters in *Nature's Entrepôt* need not be concerned with "proving the relevance of urban places."[2]

Therefore, while exploring a foundation in the more utilitarian portions of the city's development, *Nature's Entrepôt* emphasizes Philadelphia's growth and the innumerable variables of location and economic development that contributed to it. Beyond all boosterism, writes the historian William Cronon in *Nature's Metropolis,* his study of Chicago's development, "cities had their roots in natural phenomena but ultimately grew because, for whatever reason, people chose to migrate to them. The demographic pull of cities suggested yet another theoretical basis for predicting urban growth. Cities were like stars or planets, with gravitational fields that attracted people and trade like miniature solar systems."[3] Although Philadelphia's spatial development differs significantly from Chicago's, the city clearly did evolve through an interplay with a "service area," or hinterland. Early on colonists had clustered into settlements along the water for reasons of safety and trade. The early port settlements were lifelines connected back to Europe. Boston was founded in 1631, and Manhattan Island, around 1625. Philadelphia followed in 1681. These early ports combined with southern ports on the Atlantic, including Savannah, Georgia, and Charleston, South Carolina, to provide the connection for trade to Europe. In each case, the developing ports centered cities on rows of wharves that grew out of tightly packed streets full of storefronts and warehouses.

The streets in these seaports often differed markedly from those of later inland urban centers. Then as now, ships must maintain balance or risk foundering in stiff winds and high seas. In the seventeenth and eighteenth centuries, most vessels carried stacks of stones, which were usually larger than bricks. Called "ballast rock," this material could be shifted around as a ship's holds grew full or empty. When ships called on foreign ports, they would on- or offload this rock as needed. Most ports wound up with a superfluous supply of ballast rock that could then be used as cobblestones for streets. The collections of stone from around the world can make streets unlike any others in the United States. In addition to the ballast-rock streets, products of the sea itself, such as seafood, oils, and bone, dominated port cities. More important for national development, though, ports fueled the development of specific hinterlands.

"Commerce, not shipbuilding or fishing," writes the historian Benjamin Labaree, "is what distinguishes significant seaports from other

© 2013 University of Pittsburgh Press. All rights reserved.

seacoast communities."[4] He describes seaports as entrepôts for culture and goods. As such, they also served broad swaths of interior land, with goods from both interior and exterior flowing through the port city. Relying on ports for trade in either direction, these hinterlands grew around the idea of access—normally defined as a wagon ride of no more than a few hours—and had a symbiotic relationship to seaports thanks to the economic possibilities the ports embodied.

Of North America's coastal towns, New York was the most favored by nature to become a major seaport. Early on, however, New York lost its initial lead to Philadelphia, which by 1760 was the nation's leading port. Even in 1815, all of America's population centers bordered some body of water. Indeed, the rapidly growing port of Cincinnati, on the Ohio River, was the only population center not located on the Atlantic Ocean. Of the nation's 8.5 million inhabitants, roughly 85 percent lived along the Atlantic coast, with about half the nation's population residing in New England and the Mid-Atlantic states. With roads largely undeveloped, Americans depended on the waters for food, transportation, and trade. In 1830 the French observer Alexis de Tocqueville wrote, "No other nation in the world possesses vaster, deeper, or more secure ports for commerce than the Americans. . . . Consequently Europe is the market for America, as America is the market for Europe. And sea trade is as necessary to the inhabitants of the United States to bring their raw materials to our harbors as to bring our manufactures to them. . . . I cannot express my thoughts better than by saying that the Americans put something heroic into their way of trading."[5] These patterns of growth will be a primary subject of some of the chapters to follow; we start with Peale, however, because there is a larger story emanating from Philadelphia's relationship with its natural surroundings.

Just as Philadelphia has served as the "first city" of the American republic, so too can it be viewed as initiating Americans' unique relationship with nature in a larger sense. Beneath establishing the nation's lofty relationship with nature, however, Philadelphia's environmental history has a hard-packed, organic core. The chapters in this volume explore the city as a changing environment, a meeting place between human ideas and living patterns—culture—on the one hand and natural constraints or details on the other. Pouring the foundation for these stories is the other priority of this introduction: setting the context of European settlement in the swampy, diverse locale that became Philadelphia.

© 2013 University of Pittsburgh Press. All rights reserved.

SETTLEMENT

Situated between the Delaware and Schuylkill rivers, the Philadelphia region comprises parts of Bucks, Montgomery, Delaware, and Chester counties as well as Philadelphia County.[6] Although elevation in the Inner Coastal Plain stays below 100 feet above sea level, the hills of the piedmont lead inland to rise above 300 feet. In addition to the two major rivers, navigable streams defined the area for early inhabitants. This complex watershed provided prehistoric peoples with many attractive resources, including minerals, water life, and good soil for agriculture.

For early inhabitants, though, forests constituted one of the region's most reliable resources. Although lost to blight later, the chestnut defined much of these forests, which also included oak, hickory, white pine, beech, walnut, and sycamore, with an undergrowth of dogwood, chestnut sprouts, ironwood, and many other species. White-tailed deer, wild turkeys, beavers, otters, muskrats, and many other small mammals prospered in such an environment, supporting significant populations of wolves, black bears, mountain lions, and panthers. The fruits and wildlife maintained by this understory made the region bountiful for the first recorded human inhabitants, the Lenape.

Scholars have used radiocarbon dating to piece together a snapshot of the region's vegetation prior to European settlement, but one of the most fascinating finds came in a much less scientific manner: while digging for a subway in 1931, workers uncovered upright cypress stumps thirty-eight feet below street level (ten feet below sea level). Such trees are now relegated to the warm, moist climate of the southern United States and demonstrated that approximately 40,000 years ago, the Philadelphia region had been significantly warmer. Paleoindian humans moved through the area and established a settlement in approximately 8,600 BCE at the Shawnee Minisink site, which lay in the floodplain of the Delaware River and Brodhead Creek. Approximately 2,800 years ago, climatic conditions stabilized and allowed humans to establish permanent settlements in the area and to live a more sedentary lifestyle. These new modes of living led to the development of horticulture, ceramics, and village life.[7] These patterns developed through the early 1500s, when European traders and trappers recorded interactions in the Delaware Valley with diverse inhabitants now referred to as the Lenape.

Scientists have established that the Lenape organized their regional existence around productive resource collection. Summer fishing stations allowed significant food collection to take place. Land clearing en-

© 2013 University of Pittsburgh Press. All rights reserved.

hanced hunting grounds and allowed Lenape villages to develop community agricultural fields. By 1500 a dozen Lenape bands existed in the Philadelphia region, where they occupied the west banks of the Delaware River, from Old Duck Creek in northern Delaware up to Tohickon Creek. The word *Lenape,* or *Renappi,* their name for themselves, means "the people" in their language.[8]

Contact with Europeans began after 1524, when Verrazano sailed his caravel *La Dauphine* up the Mid-Atlantic region, observing and recording the residents. A century and a half later, William Penn made his first written description of the Lenape, characterizing them as "swarthy": "Boys . . . go a-fishing till ripe for the woods, which is about fifteen; then they hunt; and after having given some proofs of their manhood by a good return of skins, they may marry, else it is a shame to think of a wife. The girls . . . hoe the ground, plant corn, and carry burdens. . . . The wives are the true servants of their husbands."[9]

By the late 1600s, Dutch and Swedish settlers had purchased tracts of land from the Lenape on the western shore of the Delaware. After English settlement overpowered the others, the Lenape began negotiations with Penn, who wished to acquire property for a new city of his own design. Unlike many other indigenous groups, the Lenape had a tradition of property exchange. John L. Cotter writes: "Not only did each band, or extended family, collectively inherit its rights to a specific drainage along the Delaware or the Schuylkill from the previous generation, it also had the right to sell this land independently of other bands."[10] In one of the first perfectly legal transactions between indigenous leaders and European settlers, Penn paid Lenape generous quantities of goods.

Following this transaction, by the 1730s the Lenape had begun a westward migration. Recording their migration has proven difficult for scholars, but the few rock shelters littered with ceramics and other materials that they left behind have allowed archaeologists to piece together their habits and living patterns. Most famous, the Montgomery site in Chester County has allowed scholars to study a Lenape burial ground. Although residents in the twentieth century came to have significant interest in and appreciation of these early humans, the primary focus of the next century and half was regional development.

During the 1600s the same attributes that brought the Lenape to the confluence of these rivers attracted the Dutch and then the English and Finns as well. By 1655 Dutch soldiers were sweeping through Swedish settlements to create New Netherland, and by 1664 English soldiers under the direction of Charles II's brother James, the duke of York, had

© 2013 University of Pittsburgh Press. All rights reserved.

begun taking New Netherland. Within months English dominion had been established over what would become the colonies of New York and New Jersey, as well as areas on the western shore of the Delaware River. When James lost interest in his New World colonies shortly thereafter, trustees were assigned to oversee them. In a series of subsequent land deals, the thirty-year-old William Penn grew in prominence, in 1681 being named lord proprietor of the 45,000 square miles of land.[11]

With an emphasis on creating a religious refuge for his fellow Quakers, Penn established Pennsylvania, the twelfth of the thirteen American colonies. As proprietor, Penn had powers of government as well as hereditary ownership of the land; in recompense, he paid the king two beaver skins per year and one-fifth of all the gold and silver found in the province. At this time, the population along both shores of the Delaware comprised approximately 2,000 Europeans of various descent with a similar number of Lenape. Penn's true quest, though, was to create a town that would contrast with the division and decay that marked many English towns. After considering various plots, Penn settled on 1,200 acres stretching between the Schuylkill and the Delaware rivers to realize his dream of Philadelphia.

In the decades that followed, residents used many methods to put these natural resources to work, many of which inform the topics of the chapters that follow; however, Philadelphia also played a significant role in creating the intellectual framework for other, nonutilitarian ways of viewing natural resources.

ESTABLISHING A NATURAL HISTORY

In the early 1800s many Americans believed that their nation was turning a corner, changing from a settler society into a more civilized nation to rival those of Europe. In trying to stimulate such a society, many Americans made extensive comparisons between the United States and the long-standing European civilizations. The young American nation compared unfavorably in many categories, especially the arts and other aspects of culture. In its natural wonders, however, the United States enjoyed an indisputable majesty. For this reason, some Americans sought new ways to highlight the natural splendor that distinguished their land from Europe. They came to believe that even though the United States had little history when compared to European nations, it could offer a measurable natural history, something with which Europeans had lost touch. The work of these early naturalists helped to construct

© 2013 University of Pittsburgh Press. All rights reserved.

an alternative to development, a fashion for valuing nature that eventually evolved into the conservation of resources and the environmental thought of the twentieth century.

As did most cities, Philadelphia enacted policies and practices reflecting the environmental ethic that developed in the twentieth century, but it had already played a critical role in the formative era of naturalist thought, the late 1700s. During this era, a few largely self-taught patriot scientists sought to chronicle North America's everyday nature and natural history as a matter of both science and nationalism. The leader at this moment was Charles Wilson Peale, who established the United States' first natural history museum in Philadelphia in 1784.[12] The 1822 self-portrait might seem to embellish the role of Peale's guidance, but he truly did play a critical role, as is evidenced by his written invitation to the opening of his museum:

> Mr. Peale respectfully informs the Public, that having formed a design to establish a MUSEUM, for a collection, arrangement and preservation of the objects of natural history and things useful and curious, in June 1785 . . . he began to collect subjects, and to preserve and arrange them in Linnaean method. . . . The museum having advanced to be an object of attention to some individuals, . . . he is there for the more earnestly set on enlarging the collection with a greater variety of birds, beasts, fishes, insects, reptiles, vegetables, minerals, shells, fossils, medals, [and] old coins. . . . With sentiments of gratitude, Mr. Peale thanks the friends of the Museum, who have beneficially added to his collection a number of precious curiosities, from many parts of the world, . . . from Africa, from Indies, from China, from the Islands of the great Pacific Ocean, and from different parts of America.[13]

Referred to as "natural history," this effort to know the continent through the creatures living on it spurred at least one of the young nation's first unified, federal undertakings: Peale's effort to excavate a mastodon skeleton from New York State starting in the late 1700s.

Excavated by Peale from a Hudson River valley farm in 1801, the mastodon quickly became a national spectacle when brought to Philadelphia for study. The ability to excavate and reassemble the skeleton also became an important symbol for the stability of the young republic. For many Americans, the animal's symbolic meaning far outweighed its scientific significance as evidence of extinct species or a prehuman past. "Indeed," writes the historian Paul Semonin, "while Lewis and Clark were exploring the western wilderness, Peale had remounted his skeleton with its tusks pointing downward to magnify its ferocity." Most historians view this as a representative moment of scientific naïveté, yet Semonin suggests that this understandable lapse instead demonstrates

© 2013 University of Pittsburgh Press. All rights reserved.

that the mastodon was "the nation's first prehistoric monster," used by the nation's founders as "a symbol of dominance in the first decades of the new republic."[14]

Beyond spectacle, though, what should this discovery's role have been? In January 1802, shortly after having become president in the previous year, Thomas Jefferson, a vigorous advocate for efforts to establish the nation's natural history, wrote a letter to Peale in which he weighed the degree to which federal dollars should be used to support the Philadelphian's preservation efforts:

> No person on earth can entertain a higher idea than I do of the value of your collection nor give you more credit for the unwearied perseverance and skill with which you have prosecuted it, . . . but as to the question whether I think that the U.S. would encourage or provide for the establishment of your Museum here? I must not suffer my partiality to it to excite false expectations in you, which might eventually be disappointed. You know that one of the great questions which has decided political opinion in this country is whether Congress is authorized by the constitution to apply the public money to any but the purposes specially enumerated in the constitution? Those who hold them to enumeration have always denied that Congress has any power to establish a National Academy. . . . If there were an union of opinion that Congress already possessed the right, I am persuaded the purchase of your Museum would be the first object on which it would be exercised.[15]

Unsuccessful in this funding effort, Jefferson's passion found an outlet in the 1803 Lewis and Clark Expedition, which Jefferson almost single-handedly funded with federal dollars. As part of their preparation for the journey, Jefferson had Meriwether Lewis travel to Philadelphia to receive advice from Peale, the nation's leading naturalist.

Even without federal support after its founding in 1784, the privately financed museum became a mainstay for Philadelphia science and culture. To establish his museum, Peale relied heavily on the help of his sons: Rubens, Franklin, Titian II, Rembrandt, and Raphaelle. To provide context for the American beasts, the Peales accepted donations of trophy animals shot all over the world from many Americans, including George Washington. Other American collectors donated insects, shells, and plants collected internationally. The primary goal of the collection, however, remained to collect knowledge of North America. To this end, following their journey, Lewis and Clark presented Peale with many specimens taken during their exploration of the North American continent. At the turn of the century, Peale listed his holdings as including over 100 quadrupeds; 700 birds; 150 amphibians; and thousands of in-

© 2013 University of Pittsburgh Press. All rights reserved.

sects, fish, minerals, and fossils. Peale also began to collect and catalog various specimens of hitherto unknown creatures and biological oddities.

The commitment to this record of the nation's natural history represented an important watershed to the United States. In the intellectual incubator of Philadelphia, Peale's work inspired and grew from that of others, in particular the work of the American Philosophical Society, founded by Benjamin Franklin, Peale, and others in 1743. Many esteemed Americans moved in and out of this society; of particular importance to Peale's work, though, were John James Audubon, Alexander Wilson, and the Bartrams. Raised on the family's 284-acre farm in Mill Grove, near Valley Forge, Audubon grew up hunting and fishing while also studying the arts. To locate specific species, Audubon learned to study the "nature of the place," which he described as involving the determination of various geological, climatological, and botanical characteristics of the land: "whether high or low, moist or dry, whether sloping north or south, or bearing tall trees or low shrubs"; doing so, he said, "generally gives hint as to its inhabitants."[16] Similarly, Wilson was serving as a Philadelphia-area schoolteacher at the turn of the nineteenth century when he met William Bartram, who inspired his interest in ornithology. Much as Audubon did for his own project, Wilson traveled widely to create his nine-volume collection *American Ornithology,* which was published by 1814, prior to Audubon's publication. Wilson's work illustrated 268 species of birds, 26 of which had not previously been described. Finally, John Bartram and his son William used their training in botany and horticulture to create some of the best-known naturalist writing in American history. Although they traveled throughout the American South, their home was along the Schuylkill River, approximately three miles from Philadelphia.

The combined efforts of these writers and painters functioned with the collections of Peale to shape a foundation for the study of natural history in the United States that would be supplemented with the passions of romanticism and transcendentalism in the mid-1800s. Peale, along with the rest of his naturalist cohort, looked both backward and forward. This group's collective intellect shaped the crucial threshold or portal through which Philadelphia's environmental imagination was unleashed in various tangible forms over more than three centuries. Their combined thought became emblematic of the exchanges—social, cultural, technological, and biological—that lay at the heart of Philadelphia's continuous transformation into the twenty-first century. Short

© 2013 University of Pittsburgh Press. All rights reserved.

strands of this environmental ethic have proven remarkably resilient and adaptive, forming the essence of this city's standing as a place or metropolitan sphere and also as a symbolic leader we call nature's entrepôt.

ORGANIZING *NATURE'S ENTREPÔT*

Peale and Philadelphia's other naturalist thinkers in the late 1700s and early 1800s knew that natural history provides context to human existence. Although these individuals may have experienced professional or business success in other fields, their passions focused on the indisputable fact that human culture is connected to and affected by the natural environment. In the following pages, we have tried to remain faithful to this basic precept as we trace the city's general patterns of development from its founding to the present. These insightful and pathbreaking chapters are written by scholars young and old, many of whom would not refer to themselves as environmental historians; nonetheless, they discuss the city in ways that share common approaches and concerns, ones we can most effectively subsume under the heading of "environmental history."

The chapters in part one primarily focus on Philadelphia before 1800. Craig Zabel and Elizabeth Milroy each explore the physical construction of Philadelphia. Zabel looks particularly at Penn's influence, while Milroy emphasizes the aesthetic romanticism that fueled the development of urban parks. The challenges of the young metropolis inform Thomas Apel's exploration of disease and pandemic in the early city.

Part two picks up with specific episodes of growth and development in the late eighteenth- and early nineteenth-century city. Donna J. Rilling considers the environmental consequences of early industry in the urban core. Michal McMahon explores Dock Creek and the prioritizing of Philadelphia's waterfront and ocean-borne trade; Carolyn T. Adams looks for patterns within the city's expansion before 1900, as the urban core moved into the hinterland in the form of diverse small industrial pursuits.

These developments necessitate the discussions in part three. Adam Levine's chapter traces infrastructural development, particularly sewers and water systems, while Michael J. Chiarappa examines the use of the Delaware Estuary's marine resources by those residing within the Philadelphia metropolitan area from the eighteenth through early twentieth centuries, tracing some of the cultural, environmental, and

© 2013 University of Pittsburgh Press. All rights reserved.

economic patterns resulting from these extractive practices. These developments resulted in the modernization of the city's form, which is the topic of Robert J. Mason's chapter on suburbanization and sprawl.

Finally, the scholars whose work appears in part four demonstrate the contemporary implications of these earlier patterns. Although not exhaustive, the chapters in this part are written by a host of prominent scholars who have used their specialties to help us better understand the nuances of the modernizing city: Anne Whitson Spirn on landscape and urban planning as a stimulus for community renewal; Diane Sicotte on environmental justice; Domenic Vitiello on sustainability, particularly that of food; and Ann N. Greene on animal management and coexistence. We hope that this overview of contemporary issues in Philadelphia will spur others to think critically about the city, including its present and future.

As we take a more contemporary view of the patterns in Philadelphia's past, however, it remains crucial to acknowledge significant earlier efforts to catalog the city's unique accomplishments. In *First City* the historian Gary B. Nash scratched the surface of Philadelphia's historical importance when he wrote: "The two most important documents in the history of the United States, the Declaration of Independence and the Constitution of 1787, were drafted and signed at the State House in Philadelphia, not Independence Hall. The city was also the site of the first American paper mill, hospital, medical college, subscription library, street lighting, scientific and intellectual society, bank, and government mint. The city served on and off as the official capital of the country until 1800."[17]

A bit more recently, Russell Weigley's *Philadelphia: A 300-Year History* demonstrated the city as it stood at time of the nation's bicentennial, in 1976, a symbol of the entire nation's past and future. Given its role in U.S. history, such national significance is impossible to avoid. Throughout its history, however, Philadelphia has been more than a symbol; it has also been a place to live and to call home.

In his seminal study *Private City* the historian Sam Bass Warner argued that during the city's early days, its structure helped to dictate and reinforce its culture. "It was the unity of everyday life, from tavern, to street, to workplace, to housing," he writes, "which held the town and its leaders together in the eighteenth century. This unity made it possible for the minority of Revolutionary merchants, artisans, and shopkeepers to hold together, run the town, and manage a share of the war against England, even in the face of Quaker neutrality and Tory opposition."[18]

© 2013 University of Pittsburgh Press. All rights reserved.

By 1860, Warner observes, "the flood of change had so far run that Philadelphia had become something new to the world and new to America—a modern big city."[19] He argues that the structure of the municipality that took shape in the nineteenth century determined many of the successes and failures of the twentieth century. In the following pages, we hope that a glance backward at lessons from earlier times will launch greater scrutiny of the Philadelphia metropolitan area's environmental history and help Philadelphia achieve successes in the present century, with the issues covered in part four perhaps showing the way.

© 2013 University of Pittsburgh Press. All rights reserved.