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Environmental History: Methods, Research, and Practice

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Environmental History: Methods, Research, and Practice

by

Gavin James Barry
August 2010

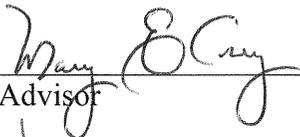
A thesis submitted to the Department of Education and Human Development of the State
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Master of Science in Education

Environmental History: Methods, Research, and Practice

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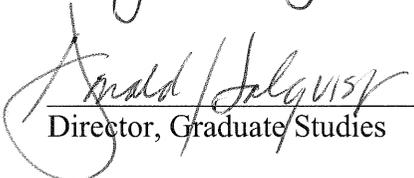
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PART I: Historiography

Tracing the Paths of Environmental History

Environmental history has a relatively brief legacy in terms of historical genres. The growing awareness of environmental issues in the 1960s and 1970s set off a scholarly re-evaluation of the reciprocal relationship between the nature and humanity. However, the path of environmental history has widened greatly in the past 30 years as numerous historians have embraced the challenges and opportunities of investigating the role that the environment has played in shaping human societies and the ways that humanity has impacted the environment. Most historians in the genre have written with an eye towards the present, trying to understand what environmental factors have impacted culture and ideas, politics, the material state of the physical world, and economic systems evolving in different societies around the globe. Environmental history has challenged historians to branch out beyond the borders of traditional sources and disciplines and to utilize different areas of academic study. Environmental history is one the, if not the most, interdisciplinary fields of historical study, pushing scholars to embrace the techniques of disciplines spanning the spectrum from archeology to zoology.¹ The primary branches of environmental history can be loosely divided into three categories: material, cultural/intellectual, and political. Material environmental history focuses on how the changes in biological and physical environments have shaped groups of humans stressing economic systems and technological change. Cultural/intellectual environmental history has focus on how the images and ideas of nature in art and writing have changed over

¹ J.R. McNeill, "Observations on the Nature and Culture of Environmental History," *History and Theory*, Vol. 42, No. 4. December, 2003, 9.

time and how they reflect the culture and ideas of the people and societies they come from. Political environmental history focuses on the laws and policies of governments in relation to the natural world.²

Most environmental historians emphasize one of the three strains but do not limit themselves to in their analysis. The research I have reviewed demonstrates a mingling between these general boundaries with varying levels of emphasis. When analyzing the writing of environmental historians it is helpful to compare the ways that different authors have pursued the subfields, or at times chosen not to mention their influence. Depending on the arguments and underlying purpose of the historian, the material world, politics, cultural ideas tend to carry different levels of value. The wide range of writing in the genre force me to limit my sources to a few of the most well recognized authors of environmental history. The rapid growth of scholarship in both the U.S. and around the world would make any attempt to fully analyze all available environmental history nothing less than an impossible task. Most of the works that I will discuss are the product of American historians specializing in domestic and world history. I will attempt to display the similarities and differences of various kinds of scholarship, focusing on the ways that writers have used a variety of sources and arguments to paint a picture of how the natural and human worlds have shaped each other over time. I will argue that the field of environmental history is one with tremendous opportunities for further study, and is a continually evolving field with growing support from the traditional historical community as well as other branches of academic study. Environmental history provides the opportunity for students and

² McNeill, 6.

scholars to create connections that have often been overlooked by the compartmental nature of academia.

Cultural and Intellectual Environmental History

The investigation of how different individuals and groups have perceived the environment has taken a variety of forms. A number of scholars have studied the intellectual debates surrounding ecology. Different individuals such as Leonard Pinchot and John Muir have been actors in helping to shape the environmental perspective of people in terms of the instrumental or intrinsic value of nature. Over the last thirty years a growing number of historians have written about the changing patterns of cultural and intellectual ideals concerning ecology and the environment.

Donald Worster's book *Natures Economy* is an example of the study of changing ideas of ecology over the past three centuries. The book was written in 1977 and became one of the foundational texts of the study of intellectual history in relation to ideas concerning the natural environment. He traces the roots of ecological study to eighteenth century ideals about the value of the natural world. "Two major traditions in ecology emerged in this period. The first was the "arcadian" stance advocating a simple life for man with the aim of restoring him to peaceful coexistence with other organisms. The second, and imperial tradition sought to establish, through the exercise of reason and hard work, man's dominion over nature."³ These two competing views would form the foundation of Western thought concerning the natural world. Worster argues that these ideals are the foundation of modern

³ Donald Worster, *Nature's Economy: A History of Ecological Ideas*, (London: Cambridge University Press, 1977), 12.

environmental values. Either harmony with or belief in the intrinsic value, or domination of nature for its instrumental value, has shaped the relations of most people and or groups to the natural world.

Later in the text Worster describes the impact of these competing ideals on the U.S. Dustbowl crisis in the 1930's. Lack of understanding of ecology led the Western settlers to create a system of agriculture that worked against the natural equilibrium set up in the Great Plains ecosystem. The result was the devastation of farmer's crops, income and much of the banking structure of the West. According to Worster, the belief that man could dominate nature without understanding its underlying workings led to the tragedy. "The Dust Bowl, the ecologists were arguing in the 1930's was America's most serious failure to adapt to the natural economy."⁴ Worster explores various schools of thought dealing with the debates about control of and adaptation to nature. History has shown that ideas play a powerful role in shaping human relations to the natural world. Metaphors of whether nature is viewed as an intricate organism or a machine for human benefit lay at the heart of these ideals. For Worster, science and technology have enriched and challenged the sustainability of human existence in the world. Yet science also holds the key to understanding how people can correct the mistakes they have made. Ecology is not a single idea; it has many faces that have developed in relation to the needs and desires of modern humanity. Worster concludes that what is needed is a more careful, skeptical, and humble notion of the ways that human ideals of nature impact the world and societies we live in.⁵

⁴ Worster, 253.

⁵ Worster, 346.

William Cronon's *Changes in the Land* is another example of the cultural analysis taken by environmental historians. Cronon investigates the relations between European settlers and Native Americans to the natural ecosystem of colonial New England. One of the key contrasts he describes between Native Americans and European was cultural concepts of land ownership, and how those ideas shaped the natural world. Native Americans had a strikingly different concept of ownership that what European brought with them to New England. Native American's believed land could not be owned, only the products of the land necessary for survival. "Indians owned not the land but the things that were on the land during the various seasons of the year."⁶ This concept was common to many different groups of hunter-gathers and semi-sedentary agriculturalists, and was in stark contrasts to ideal of Europeans who believed that individual owned the physical land as well as its products. Cronon argues that the property systems of Indian culture were a reflection of an economic system that focused on seasonal harvesting of food without the level of stored surplus that Europeans were accustomed to. European settlers used this lack of perceived land development for stored surplus as a justification for acquiring Native lands through legal manipulation and outright theft. "Criticism of Indian ways of life was a near constant element in early colonial writing, and in that criticism we may discover much about how colonists believed land should be used."⁷ Colonial culture believed that land should be physically divided into private property, as opposed to the less formal system of Native Americans. These cultural differences had a direct impact on

⁶ William Cronon. *Changes in the Land: Indians, Colonists, and the Ecology of New England*, (New York: Hill and Wang, 1983), 65.

⁷ Cronon, 55.

the ecosystem of New England. Native Americans used systematic burning of forests to promote game populations for hunting through the clearing and re-growth of plants eaten by deer and other meat sources. The cleared regions would also provide paths to make travel and hunting more efficient. When Europeans began to divide lands, and fence of properties, the decline in annual burnings and changes in migration patterns of animals altered the makeup of the New England ecosystem. Cronon's look at the cultural values of these different groups displays yet another way that the environmental historian can use cultural and intellectual analysis as sources of historical investigation.

Other historians have used the study of different concepts of nature and wilderness to describe the ideas that have shaped human concepts of and relation to the environment. Donald Worster offers additional scholarship by investigating the construction of massive dams in the American west during the 20th century. In another study, *Under Western Skies: Nature and the History of the American West*, Worster describes the ideas that formed the foundation for the building of the Hoover Dam. As the population the West expanded politicians, businessmen, industrial farmers and engineers advocated for the creation of the dam in order to increase the available electricity and water supplies. Worster argues that important underlying beliefs supporting this project were ideas concerning human control and domination of nature, through the limitless progress of science. "Nature is supposed to be under our firm control, working hard to make us all rich; and we go on our way confident that responsible, competent people are in charge, assured that nature is no longer

much of a threat to our welfare and that we are the very lords of life.”⁸With our growing understanding of science and developments in technology nature was not to be worked with, but forced to break to the will of humanity. Yet this belief in the right of control and progress carried unintended environmental consequences as the Hoover Dam changed the ecosystem of the Colorado River for the worse. “The primary environmental threat on the river today, and it is now a very serious one, is from salinity buildup.”⁹ The Hoover Dam, defined as a symbol of human progress and domination of nature has now become a threat to the ecosystem and sustainability of human settlement in the region as the build-up of salt in the water of the Colorado has made farming less-productive and settlement more expensive. Worster provides another example of how cultural beliefs can shape the relations between people and their environment.

The concepts of nature and wilderness have been sustained ideas in the American consciousness and have shaped the creation of national parks as well as responses to environmental damage. Mark Spence describes the ideas that contributed to the growth of national parks in *Dispossessing Wilderness: Indian Removal and the Making of the National Parks*. Using Glacier National Park as an example, Spence describes how the concept of wilderness held by the public, political and park leaders affected the ecosystem of the park as well as the Native American inhabitants, the Blackfeet. Growing industrialization and urbanization pushed American leaders to create “wilderness preserves” in hopes of achieving social and cultural benefits. “For

⁸ Donald Worster, *Under Western Skies: Nature and History in the American West*, (New York: Oxford University Press, 1992), 65.

⁹ Worster, 75.

them, the national park offered a refuge from the profound social and political changes that characterized early twentieth-century America.”¹⁰ Yet, the concept of wilderness didn’t include the Blackfeet Indians who called the area home for generations. Also the managers of the park had preferred species, specifically game animals like elk, deer, and mountain goats, who they felt were threatened by “vermin” predators. Spence argues that this concept of wilderness led to the forced removal of the Blackfeet as well as the eradication of predator species, the result being the destruction of native culture and the explosion of preferred game species in the absence of natural predators. These actions and beliefs changed the ecosystem of the region and questioned the notion of what wilderness is, when it is controlled and altered by humans.

Alston Chase provides a similar case in his study of Yellowstone National Park, analyzing similar cultural ideals and their consequences.¹¹ Environmental historians have analyzed the concept of wilderness and preserving areas un-harmed by human ends in a variety of cultural and intellectual evaluations. Thomas Birkland and Regina Lawrence used this to further investigate the concept in the essay, “The Exxon Valdez and Alaska in the American Imagination.” The authors argue that the widespread reaction to this disaster was rooted in the belief that pristine wilderness should be preserved and protected. Analyzing news coverage and the response of environmentalists they argue that the force of this event provided new grounds for the American environmental movement. “The spill’s setting provided concrete story cues

¹⁰ Mark Spence, *Dispossessing the Wilderness: Indian Removal and the Making of the National Parks*, (NY: Oxford Univ. Press, 1999), 85.

¹¹ Alston Chase, *Playing God in Yellowstone: The Destruction of America’s First National Park*, (NY: Harcourt Brace & Co., 1987), 14-37.

for journalists and evoked powerful imagery of Alaska and wilderness. The physical damage of this “unspoiled” and “pristine” setting vividly illustrated key elements of environmentalist thought.”¹² Thus, Alaska and the spill became key images of the cultural and intellectual ideas of Americans concerning the natural environment. The diverse writings of environmental historians on the nature of cultural and intellectual ideas surrounding the relations of humanity and the natural world represent one of the major components of environmental history. Looking at the range of different sources and arguments provides the reader and scholar with a variety of different perspectives on this genre of history. The cultural and intellectual current of environmental and ecological concepts many times spills over into the next sub-section of environmental history in which scholars focus in on political factors.

Political Environmental History

The analysis of political responses to environmental problems forms another important thread of environmental history. Historians have analyzed both the top-down actions of governments as well as the effects of grass-roots movements concerning environmental policy. Jared Diamond’s *Collapse* provides an example of government policy in Japan during the 18th century in response to depletion of forests in the country. The 16th and 17th centuries saw a steady increase in the use of lumber to promote growth, which greatly reduced the availability of trees throughout Japan. During this period Japan had a powerful centralized government under the Tokugawa Shogunate, and saw decades of peace, prosperity, and economic growth. This period

¹² Thomas Birkland and Regina Lawrence, “The *Exxon Valdez* and Alaska in the American Imagination,” *American Disasters*, (New York: NYU Press, 2001), 387.

fueled the demand for timber products for cities and farms and caused drastic environmental changes. “The years from about 1570 to 1650 marked the peak of the construction boom and of deforestation, which slowed down as timber became scarce.”¹³ In response to this growing crisis the political leadership of Japan started a series of reforms to preserve the availability of lumber and halt deforestation. The central government imposed positive and negative measures to limit the cutting of forests and to promote the planting of new trees. Diamond argues that Japan, during the Tokugawa era represents a strong example of the role of politics in environmental history. The policy of Japan’s central authority, in response to this environmental and economic crisis would make Japan one of the most highly forested industrial countries today. “Forest patrols guarded against illegal logging activity. Plantation forestry thereby became widespread in Japan between 1750 and 1800, and by 1800 Japan’s long decline in timber construction had been reduced.”¹⁴ Diamond’s analysis displays one example of environmental history that shows the successful impact of central government policy in resolving environmental and economic problems.

Other examples of central government policy show that they can create environmental problems as well. Paul Josephson analyzes an example of political authority that caused a legacy of environmental problems in *Industrialized Nature*. Josephson investigates the politics behind the construction of massive dams in the American West during the Cold War era. The ideology behind these projects is similar to that described by Worster in his study of the Hoover Dam. U.S. federal

¹³ Jared Diamond, *Collapse: How Societies Choose to Fail or Succeed*, (New York: Penguin Books, 2005), 298.

¹⁴ Diamond, 304.

agencies, in an effort to defeat the Soviet Union technologically, constructed a series of dams along the Columbia River to promote the growth of agriculture, the economy, and population. The dam projects began during the New Deal Era to promote growth but would serve to cause both economic growth and environmental damage. “Beginning in the 1950’s, low-cost publicly subsidized irrigation water and energy provided by the Bureau of Reclamation enabled rich, arid soils to turn out the highest potato yields in the world”¹⁵ Although this provided new economic benefits, the irrigated field required mass amounts of chemical fertilizers which polluted waters and effected natural ecosystems. The dams also had a profound impact on the native salmon populations and commercial fishing companied who depended on them. “By 1947, dams and associated construction had destroyed about 40 percent of the original spawning areas of the Columbia River Watershed.”¹⁶The federal government, through the Army Corps of Engineers, attempted to resolve the situation by constructing transponder routes around dams for the salmon to reach spawning grounds with limited success. “Today’s salmon travel in style, but transponder or not, the number of fish getting upstream declines almost every year.”¹⁷ Josephson provides an example of environmental history that demonstrates the impact of political, as well as cultural, factors and policy in relation to the natural environment, demonstrating a case of overall harm to the natural ecosystems involved.

¹⁵ Paul Josephson, “Pyramids of Concrete: Rivers, Dams, and the Ideological Roots of Brute Force Technology,” *Industrialized Nature: Brute Force Technology and the Transformation of the Natural World*, (Washington D.C.: Island Press, 2002), 50.

¹⁶ Josephson, 55.

¹⁷ Josephson, 59.

Another example of environmental history dealing with politics is found in Ted Steinberg's *Down to Earth: Nature's Role in American History*, where he analyses the growth of suburbs and mass transit in post-World War II America. Steinberg argues that the federal government played an important role in the growth of American suburbs and the expansion of the automobile dependent society. This led to the decline of urban centers and increased the consumption of resources, pollution levels, and destruction of natural habitats in favor of residential and commercial building. "The driving force behind all the road-building and suburban expansion was a set of federal programs that had one thing in common: They conceived of cities as primarily dinosaurs and sought to help residents escape them."¹⁸ Steinberg breaks down different federal programs, which contributed to the growth of the suburban automobile society and the increased negative impact of human activity on the natural world. The Highway Act of 1956 added tens of thousands of miles to the nation's road system and was a direct subsidy for the American automobile industry and American consumer. The Federal Housing Administration and Veteran's Administration also played a role in promoting increased consumption of natural resources through suburban growth, by providing low-interest loans for new houses. Changes in the tax code in the 1940's for mortgage interests and property taxes, "amounted to a huge federal giveaway that fostered suburban growth."¹⁹ One result of these federal policies, which promoted suburban expansion in America, was a series of environmental problems. Increasingly destructive wild fires affected areas of the

¹⁸ Ted Steinberg, *Down to Earth: Nature's Role in American History*, (New York: Oxford University Press, 2002), 216.

¹⁹ Steinberg, 218.

West, especially California, as a result building developments that disrupted the natural burning cycles of dry forests. The popularity of lawns and chemical fertilizers polluted water systems, damaging plant and animal species and reshaping ecosystems. Pollution from automobiles plays a large role in the increase in greenhouse gases, smog, and other air pollutants in the United States. Steinberg demonstrates another example of how federal government policies and political ideology have promoted the reshaping the natural environment.

In addition to top-down political reforms, environmental historians have also focused on grass roots movements, which have shaped the political spectrum. Robert Gottlieb analyzes the development of the environmental movement in his essay *Reconstructing Environmentalism: Complex Movements, Diverse Roots*. Gottlieb describes the various groups or stakeholders of the environmental movement in four main segments: professional groups, environmental justice advocates, traditional conservationists, and local grassroots protest organizations.²⁰ Bob Marshall was the founder of the Wilderness Society as well as a member of National Forest Service, who during the 1920s and 1930s promoted the protection of wilderness areas and the expansion of opportunities for average American's to take part in experiencing nature. He sought to use his position to promote the enriching of life for American's experiencing the social changes of industrial society and increased urbanization. "This search for a green retreat, or a "green utopia," became a continuing passion for

²⁰ Robert Gottlieb, "Reconstructing Environmentalism: Complex Movements, Diverse Roots" Hal Miller et al, eds., *Out of the Woods*, (Pittsburg: University of Pittsburgh Press, 1997), 145.

Marshall both in his governmental activities and advocacy work.”²¹ Gottlieb argues that Marshall was able to walk the line between professional expert and traditional conservationist, showing the sometimes porous borders of distinctions within the environmental movement. Alice Hamilton was another “border crosser,” who used her scientific training in science and medicine as the foundation for grassroots efforts to raise awareness about the impact of industrial poisons. In the early 20th century, “Hamilton became the premier investigator of occupational hazards in the United States, her research and advocacy ranged over a number of industries and toxic substances.”²² Hamilton became a pioneer of workers safety and raised awareness of the negative impact of industrial activities on human health and the environments. Gottlieb goes on to credit the publication of Rachel Carson’s *Silent Spring*, which investigated the negative impact of the chemical pesticide DDT on human health and ecology, with being the major text, which awakened broad environmental consciousness in America. “Through such writing, Carson sought to not only present information but convince her audience about a new kind of danger, to create in effect a new environmental consciousness.”²³ Gottlieb’s study is an example of environmental history, which focuses on the impact of grassroots movement in raising awareness of the impact of human activity on the natural environment and public health.

Gottlieb has also focused on the history of correlations between environmental and social justice movements. In his book *Forcing the Spring: The Transformation of the*

²¹ Gottlieb, 148.

²² Gottlieb, 151.

²³ Gottlieb, 155.

American Environmental Movement, he focuses on the different impacts of environmental poisons on minority groups and the responses to this problem in the 20th century. New awareness of the dangers of pesticides, thanks in large part to Rachel Carson, linked with Cesar Chavez and the United Farm Workers (UFW) to promote the health and safety of migrant Chicano workers in California in the 1960's. The UFW focused primarily on increasing wages and limiting harsh work conditions, and also "a key workplace issue involved the health and safety questions associated with the growers intensive use of pesticides."²⁴The movement to reform the use of pesticides and its negative impact on farm workers, had some success in negotiating UFW contracts with growers, set standards for health and safety, and according to Gottlieb, "laid the groundwork for monitoring, evaluating, and hopefully protecting farmworkers from the complex hazards tied to pesticide use."²⁵Growing awareness of the impact of lead on urban populations, especially poor and urban minority groups, also lead to reform movements at a grassroots level. In the 1965 community groups in Chicago began to organize to promote removal of hazardous lead paint in urban apartments that caused health problems especially in children. "A small community organization, the Citizens Committee to End Lead Poisoning, formed in response to neighborhood concerns about several incidences of lead poisoning."²⁶ By the 1970s dozens of community groups had formed in cities across the East Coast and Midwest to address the hazards of lead paint. The growing grassroots movement eventually led

²⁴ Robert Gottlieb, "Ethnicity as a Factor: The Quest for Environmental Justice," *Forcing the Spring: The Transformation of the American Environmental Movement*, (Washington: Island Press, 2005), 314.

²⁵ Gottlieb, 317.

²⁶ Gottlieb, 320.

to the passage of the Lead-based Poisoning Prevention Act in 1971 that regulated the amount of lead in paints and provided funds for paint removal programs in urban communities. Gottlieb's scholarship provides vivid examples of the links between environmental and social justice movement with a focus on grassroots politics. The writing of environmental historians on the political aspects demonstrate a broad spectrum of ideas related to both centralized and grassroots environmental policy and advocacy.

Material Environmental History

The final strain of environmental history concerns itself with material aspects of history, and focuses on the ways that humans have both been shaped by and shaped the natural environment, with a particular emphasis on geography, economics, and technology. This branch of environmental history has been the most interdisciplinary, drawing from the methods and research of scientists in fields such as physiology, climatology, botany, and other scientific and social science fields.

Jared Diamond, mentioned earlier is an example of a trained scientist who has used his expertise in other areas to better understand the study of history and the relationship between humanity and the natural world. In his well known book *Guns, Germs, and Steel*, Diamond takes a look at the grand scope of human history and how different societies have been shaped by the natural environment in which they developed. Diamond's central thesis is that natural environments, including plant species and geography, have had the greatest impact on the power trajectories of various cultures and societies throughout human history. One of the key factors in

Diamond's argument is the relationship between the availability of suitable plant and animal species for agriculture, and population growth. Through investigation of scientific characteristics of plants and animals Diamond makes a compelling argument that societies which developed in areas with the most nutritious plant foods locally had a tremendous head start in terms of technological and social development and power. The basic set of environmental resources pushed some groups of people down the path towards more advanced politics, economies, and technology and would allow them to dominate other groups they came into contact with. "The peoples of areas with a head start on food production thereby gained a head start on the path leading towards guns, germs, and steel. The result was a long series of collisions between the haves and have-nots of history."²⁷ Diamond claims that the natural resources provided to different groups played a major part in the power structures of the past and modern world.

Diamond also argues that the geography of the planet played a key role in the development paths of different societies. Eurasia has a predominantly east-west axis, as opposed to the north-south axis of Africa and the Americas, allowing for the diffusion of the most useful and productive plants and animals along lines of latitudes with less variation in climate. "Continental differences in axis orientation affected the diffusion not only of food production but also of other technologies and inventions."²⁸ Thus, Diamond argues that the natural advantages of geography allowed for societies in Eurasia to grow larger and more complex technologically, which enabled them to

²⁷ Jared Diamond, *Guns, Germs, and Steel: The Fates of Human Societies*, (New York: W.W. Norton and Co., 1997), 103.

²⁸ Diamond, 190.

eventually overpower groups on other continents. Another important environmental factor were the diseases that migrated from domestic animals to human population, which Diamond credits as a major cause of the domination of the Americas by European colonizers in the 16th through 19th centuries. The exposure of Native American populations to these diseases provided Europeans with a hidden but lethal weapon in the subjugation of different peoples. The estimated mortality rate upwards of ninety percent in many Native American societies exposed to Old World disease provided an opening for the domination and exploitation by Europeans already in possession with more advance technology military technology. This is probably on of the most powerful example of the drastic effects that ecological factors can have on the course of human events.

Diamond closes by urging all historians to utilize the tools of scientific analysis of the natural world to further the search for the truths behind historical change. He closes by saying, “I am thus optimistic that historical studies of human societies can be pursued as scientifically as studies of the dinosaurs—and with profit to our society today by teaching us what shaped the modern world, and what might shape our future.”²⁹ His ideas are worth looking at in light of the impact of the environment on human societies, yet there are some limits to his approach in discounting the cultural values and institutions that have shaped the modern world in important ways. Why did Western Europe come to dominate the world and not the Chinese, when they had virtually the same set of environmental advantages? A synthesis of cultural, political, economic, and environmental history would be more likely to find the answer.

²⁹ Diamond, 425.

The scope of Diamond's argument is impressive when taking into account the whole span of human history. Other environmental historians have tended to limit their focus while using some of the same sources and techniques. J.R. McNeill takes on material environmental history through the range of the 20th century world in his book *Something New Under the Sun: An Environmental History of the Twentieth Century*. McNeill uses an interdisciplinary approach, engaging climatology, geology, and other scientific disciplines to form the basis of his argument that the 20th century has proven to be the era of the most radical impact of human activities on the natural environment. McNeill makes his case by analyzing the impact of humans on different parts of the natural world. He investigates changes in the lithosphere, atmosphere, and hydrosphere as a result of human activities and technology. He uses data collected by scientists to make his case. Concerning soil erosion he shows that humanity has rapidly increased levels of degradation in the last century through mining and agricultural practices, yet advances in technology have postponed the possibility of an immediate crisis to humanity. "The combination of intensive fertilizer use (mainly since 1950), genetically engineered crops (mainly since 1970), and other magic tricks of scientific agriculture masked the effects of soil erosion and degradation."³⁰

McNeill continues his use of scientific data to discuss the changes in the earth's atmosphere as a result of human activities. During the twentieth century air pollution increased in many forms mainly as a result of the burning of fossil fuels for industry and automobiles. Levels of toxic gases caused major problems in metropolitan areas around the world, negatively affecting human health and damaging ecosystems. Yet

³⁰ J.R. McNeill, *Something New Under the Sun: An Environmental History of the Twentieth Century World*, (NY: W.W. Norton, 2001), 49.

for all the negative results McNeill argues that there has been a “silver lining” as many of the worst air pollution problems, has been reduced over the last few decades in different regions of the world. Developed regions have shown declines but decreasing air quality has dogged boom cities in the third world. This provides hope that development, although destructive at first, can lead to both economic growth and environmental sustainability.³¹ McNeill provides interesting and well-researched examples in other cases to drive home his argument for the massive environmental impact of human activity during the 20th century, utilizing economic and scientific data to strengthen his claims.

Ted Steinberg’s *Down to Earth*, mentioned earlier for its focus on politics, also focuses on the material environmental history of the United States. Steinberg uses information from different scientific disciplines to craft his argument for the important role that the natural world has played in shaping the path of American history. In his opening chapter he describes how the landscape and resources of the United States have been more than a passive participant in the process of forming the nation. “The earth’s climate, geology, and ecology are not simply a backdrop, but an active, shaping force in the historical process.”³² The breadth of the work is both interesting and informative, covering the rise of capitalist and industrial economics on shaping the ecosystems of the United States. He analyses the technology and economics behind events such as the clearing of the East Coast forests to hydraulic mining that polluted rivers, flooded cities, and in California, “caused more erosion than any other event in the history of the Sierra Nevada Mountains dating back nearly

³¹ McNeill, 83.

³² Steinberg, 4.

600 million years.”³³ The scope of the book is impressive and while much of the focus is placed on the physical impact of ecosystems on human society, and human society on individuals, he takes time to blend in cultural and political factors that played important roles as well. Steinberg’s work is an example of environmental history that crosses the boundaries between cultural, political, and materials focus. He provides a concise overview that gives the student and scholar of environmental history ample ideas for further research and investigation.

Other environmental history has limited its scope to a more specific chronology and geographic location. William Cronon’s *Natures’ Metropolis* describes the evolution of Chicago as a hub of Western commerce during the second half of the 19th century. Cronon’s central argument is that the idea of a world partitioned between urban, rural, and natural, is nothing more than an illusion. “We cannot understand the urban history of Chicago apart from the natural history of the vast North American region to which it became connected.”³⁴ He uses ecological and economic analysis to demonstrate the ways that cities, farms, and nature all form a unified working order through the lens of Chicago’s intricate connections to the West, and its human and non-human inhabitants. Technology, specifically the railroad and new farming equipment played a decisive role in connection these seemingly separate realms. Cronon uses the analysis of three commodities, grain, lumber, and meat, to show the different ways that human society has intimate material connections to and impacts on the natural world. In his analysis of Chicago’s meat-packing industry he

³³ Steinberg, 120.

³⁴ William Cronon, *Nature’s Metropolis: Chicago and the Great West*, (New York: W. W. Norton and Company, 1992), 19.

sheds new light in the decline of bison herds, the Native America's of the Great Plains who depended on them, and the changes that followed in Chicago. "The disappearance of the bison was but a prelude to complicated changes in Great Plains ecology and economy."³⁵ He uses the study of agriculture to show how the original plants and animals of the West were replaced with corn, wheat, and cattle of the industrial urban marketplace. Chicago became the center for harvesting the resources of the West and converting them into products ready for markets across the U.S. and internationally. Chicago was also the part of a greater economic system, which had profound effects on the natural world and the relationships of human beings separated by physical space but increasingly connected as part of the industrial economy. Cronon provides another example of environmental history that breaks down perceived boundaries between human and the natural world, and shows the complex variables that have contributed to changes in the environment and human societies. His case study of Chicago provides a model for further investigation of other cities, nations, and regions of the world.

Conclusion

The different paths of environmental history provide exciting opportunities for both students and historians to better understand the factors of historical and environmental change over time. While a relatively young field of historical study, environmental history has made important contributions to the profession. The threads of cultural/intellectual, political, and material analysis form important parts of

³⁵ Cronon, 218.

the investigation of causal relationships between human societies and the natural world. The possibilities for taking into account the role the natural world has played on the history of humanity and the planet are abundantly available for the historian who is not afraid to branch out from traditional training and sources. The use of new scientific information and techniques can shed light on the writing of history. The chance to revise the historical record and its analysis in the light of these new perspectives is an exciting chance for fresh scholarship. Applying some of the techniques of the environmental historian to local, regional, national, and global history can bring a fresh perspective to historical inquiry. The links between environmental, cultural, urban and military history seem to also have opportunities for further scholarship as well. Environmental history is here to stay as an important component of the historical profession. Environmental history also provides critical insights for challenges that humanity faces today, in light of the growing problems of pollution, global warming, loss of species diversity, and other actual and potential ecological problems. There has been growing awareness of the importance of understanding nature for the further existence and progress of humanity, and environmental history can help provide clues to solve the challenges of today and in the future.

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PART II: Original Research

Lead-Paint in the Context of the Environmental History of the United States

The study of the effects of environmental factors has become an important part of historical scholarship. An increased recognition, of the ways that the natural and urban environments have shaped human society, has blossomed within the continually evolving field of environmental history. Environmental historians have focused their research on ways that non-human elements have influenced the cultural values, politics, and economics. Evolving perceptions of the natural environment have shaped the cultural values of American society from Thoreau's writings on nature to the modern environmental movement. Americans have both shaped and been shaped by the natural environment. Practices of agriculture, manufacturing, consumption, have brought greater wealth and higher standards of living, and also the hazards of pollution and increased scarcity of resources. Politics have been greatly influenced by environmental issues from grassroots community activism up through the levels of government to federal legislation of actions. The practice of environmental history has traced these diverse paths to the great benefit to the level of historical understanding.

One branch of Environmental history has focused on the ways that chemicals, both natural and artificial have been influential in social, political, and economic contexts. The production and manufacture of a variety of chemicals have caused pollution and damage to the natural environment and created risks to human health as

well. During the last half-century more and more Americans have developed an understanding of and concern for this reality. One chemical that has had major effects in the recent history of the United States is lead.

Lead is a naturally occurring metal that has been used for centuries by human beings. During the 20th century in the United States lead has been used for a variety of industrial purposes and was used as an additive in consumer goods such as gasoline and paint. Lead has been found to have damaging effects on the human body, especially on the development of young children who are exposed to it. In the past forty years, lead exposure and poisoning of children become one of the most important public health issues in America. The investigation of the role that lead-based paint has played in shaping the social, political, and economic landscapes of the United States provides an important perspective on modern American history and culture.

The story of lead-paint from the 1960s through today, can be told through a variety of contexts which provide a glimpse at the reasons why lead-paint has become and will continue affect Americans on a variety of levels. Beginning in the 1960s there was a growing awareness in America of the negative effects of industrial activity on the health of humans and the natural environment. Rachel Carson's book *Silent Spring* provides an important landmark in the shift in American culture, from a dogmatic faith in the benefits of industrial and economic growth, towards a new awareness of and aversion to the health risks that were being caused by pollution and chemicals. This shift in culture affected the politics of America at many levels. The issue of lead in paint became an important political issue on many fronts. Action was taken at the grassroots, local, state, and federal levels to prevent the damage that lead

exposure could cause to Americans especially. These political changes were partly influenced by new scientific investigations into the adverse health affects of lead. Scientific and medical studies also shed light on the role that lead-paint poisoning played in the cognitive development of children, and created social and political costs in education and criminal activity. Lead-paint has also been linked to higher levels of health damage among poor and minority communities. Lead exposure has been brought to the public perception through coverage by the media, which demonstrates the high level of interest among the general public and the concern that has been generated by increased awareness of the risks of lead-paint. All of these different contexts show that lead-paint has played an important role the social, political, and economic life of America in the last three decades.

The Growth of the Environmental Movement: Shifting Culture of Risk-Aversion

A growing awareness of the damaging effects of toxins in the urban environment began to crystallize with the publishing of Rachel Carson's *Silent Spring* in 1962. Carson chose as her topic, the effects of industrial chemicals in natural ecosystems in the United States. While many people could deny the relevance to humanity of the death birds and insects, few could deny the negative impact that chemicals had on human beings. Carson argued that awareness of chemical hazards should gather the same level of the concern as urban sanitation reformers in the 19th century in response to disease outbreaks in the cities of the industrial era. "Today we are concerned with a different kind of hazard that lurks in our environment—a hazard

we ourselves have introduced into our world as our modern way of life has evolved.”³⁶The hazard she describes is the introduction of dangerous chemicals in the home and cities that inhabited by Americans.

Carson’s main concern was about the harmful effects of DDT, a pesticide in common use during the 1950s. Carson investigated studies on the effects of DDT to the central nervous system and pointed out the ways that the chemicals used for perceived benefits can actually cause major health and environmental problems. “In view of the severe damage that these chemicals inflict on the central nervous system it was perhaps inevitable that these insecticides would eventually be linked with mental disease.”³⁷The response to Carson’s work was a growing cultural awareness of the way that chemicals can have harmful effects on people.

In the early 1960s *Silent Spring* was an underground success but eventually more and more Americans began become concerned with the impact of chemicals on the human body, and the development of children. Many historians see Carson’s work as the beginning of the cultural shift in America towards a new level of risk aversion against the potential harm of industrial chemicals produced as a result of industrial growth and prosperity. More Americans began to see that the perception of progress was in reality giving birth to a new set of risk factors at work, home, and in public areas. This awareness would lead to the passage of the first federal legislation to protect Americans from the harmful effects of industrial development and unregulated economic growth. They included the Clean Air Act (1970), which limited the emission of industrial gases, metals, and chemicals, the Water Pollution Control

³⁶ Rachel Carson, *Silent Spring* (New York: Mariner Books, 1962), 187.

³⁷ Carson, 197.

Act (1972) as well as a variety of other legislation focused on conservation of natural resources and the protection of public health. One of the most important areas of concern was a new perception of the risks of lead, and the negative effects of lead on the health of Americans.

Getting out the Lead: Political Action Focused on Lead Poisoning and Prevention

The general public did not know the damaging effects of lead until lead was thoroughly immersed in the urban environment through two main pathways. One path was the introduction of lead into gasoline in the early 1920s. Thomas Midgley was a chemist who found that adding lead to gasoline increased the efficiency of the power produced to run the growing fleet of American automobiles. Business interests who wielded tremendous power in American society saw this as a great economic opportunity. Dupont Chemical Company and Standard oil of New Jersey teamed up to deliver the first “ethyl” or leaded gas in 1924.³⁸ Concern about the introduction of lead into the environment and the adverse effects on American lead to a variety of studies published in the 1920s, which downplayed the risk posed by lead to public health.

During the next sixty years leaded gasoline poured nearly seven million tons of lead was release into the air, water, and soil of the United States. The United States began the transition away from leaded gasoline in the 1970s as new information came

³⁸ Ted Steinberg, *Down to Earth: Nature's Role in American History* (New York: Oxford University Press, 2002), 209.

to light of the impact of so much lead released into the atmosphere of human development and health. The effort to remove lead from gasoline was slowed by the pressure of business interests in the automotive and oil industries but eventually public pressure forced the hand of Congress to act. Leaded gasoline was completely phased out by 1986 in residential vehicles, and commercial vehicles used technologies to absorb the dangerous metal. The movement to get lead out of gasoline was a considerable success. In the United States, lead concentrations in the air were reduced by over 90 percent between 1977 and 1994.

Another important vector of lead being introduced into the urban environment was through the use of leaded paint in households across the United States. Lead was seen as an important additive to paint that would provide a higher quality product, preferred by painters and manufacturers. Manufacturers of lead also saw great potential for profit through the use of lead in such a mass consumed product as paint. “White lead paint dominated the market in the early twentieth century because of its covering power and the lead industries economic strength.”³⁹ Nearly all homes in America were drenched in lead as a result of the perception of quality and the ability of lead manufacturers to use the influence to create market demand for there product. Yet the effects of lead paint would have lingering effects for decades to come. The introduction of lead into the homes of America would impact children across the country and had a variety of social, economic, and politic effects.

The effects of lead poisoning began to gain growing attention in the decades leading up the 1970s when the first regulations on the product were proposed in the

³⁹ Christian Warren, *Brush With Death: A Social History of Lead Poisoning* (Baltimore: Johns Hopkins University Press, 2001), 46.

United States at the local, state, and federal levels. Before formal political action was taken, however, grass roots organizations sprang up in cities across the United States as more and more cases of lead poisoning began to be documented and medical professionals turned their attention to the harmful effects of lead on Americans of all classes and ethnicities, but the rate of exposure was highest among poor minorities who commonly lived in dilapidated housing. Chicago was one of the first cities with community activists who pushed for screening of lead levels in children and adults out of concern for public health. The most affected parts of the city were in poor communities where lead paint was found in high concentrations and exposure to the heavy metal was becoming more apparent. Activists and health professionals argued that, “poor children lived in deadly conditions because the greed of landlords went unabated due to the lax or moribund enforcement of regulation by city housing and health bureaus.”⁴⁰

Public pressure built for Chicago to begin universal lead-level testing of all children in the city. Representatives from churches and social agencies formed the Citizens Committee to End Lead Poisoning (CCLEP). CCLEP was successful in pushing for greater screening of children and was able to lead to growing awareness of the impact of lead on children, yet the limit to their ability to solve the problem was related to the approach which they took towards lead, which focused on screening and treatment more than the underlying cause to the problem, no laws against the use of lead paint and lax enforcement of health codes in residential buildings. “Community activists and residents would have to form new alliances to

⁴⁰ Warren, 186.

treat lead poisoning as a social disorder rather than a disease which will be remedied through medical care.”⁴¹ The focus on end of pipe solutions to the problems of lead poisoning were not the only means of achieving the goals of helping those exposed to lead through paint.

In Rochester, NY during the late 1960s there was a different approach to the problem of lead poisoning, focusing more on the discovery and removal of lead paint in city housing. David J. Wilson, a chemist at the University of Rochester was active in beginning a program, in conjunction with the Urban League, to test for lead in housing around the city. The program and testing techniques were picked up by Rochester’s Building Bureau and taken as an important step towards reducing the number of exposures to lead in the area. The connection between academic institutions and community organization in dealing with the problem of lead paint poisoning was seen as an important step towards reducing the levels of exposure and accompanying negative health effects.⁴²

However, the reports of success in Rochester’s program did not fit with the reality of many citizens and their families who faced the destructive effects of lead poisoning. The story of a Rochester meat-packer named Alex Matthews demonstrates the limits of city-based solutions in the prevention and treatment of lead poisoning. In 1969 Matthews, an African-American, first became aware of the potential negative effects of lead while attending a local health fair. He noticed that many of the lead

⁴¹ Warren, 189.

⁴² David J. Wilson, “Citizens v. Lead in Three Communities: 2. Rochester,” *Science and Citizen* 10 (April, 1968): 60-63

hazards were present in his own home, as well as symptoms of lead poisoning that his young daughter had been displaying. The new realization led him to seek the assistance of the Urban League to check his home. The inspection turned up large areas of lead paint contamination. Eventually the Matthews were able to find suitable housing and through determined efforts located treatment for their daughter, Wanda's, lead poisoning. Yet the Matthews case showed that the resources of city based lead programs were not enough to deal with the massive problem of lead paint and the damage it inflicted on mostly poor minority communities who faced difficulties in finding the resources and protection from lead poisoning.⁴³

The growth of community based activism and local political response was an important step towards reducing the threat of lead poisoning. Although it had limited success, the rising awareness of the threat of lead would push the first discussions at the federal level towards action to prevent, test, and treat those affected by lead poisoning. Beginning in the early 1970s lead poisoning became a viable issue at the federal level as discussions for action pushed members of Congress to draft the first legislation to assist local government in dealing with the issue of lead poisoning from exposure to lead paint. Federal representative from New York, Boston and Philadelphia drafted a series of legislative bills to tackle the issue beginning in 1970.

In 1971 President Nixon signed the first federal bill to deal with the lead-paint issue, called the Lead-Based Paint Poisoning Prevention Act (LBPPPA). The LBPPPA provided \$30 million in grants over two years to help cities across the nation to begin programs for lead abatement, testing, and the study of ways to reduce

⁴³ David A. Anderson, "Public Institutions: Their War Against the Development of Black Youth," *American Journal of Orthopsychiatry* 41 (Jan. 1971): 65-73.

the cost and increase the efficiency of testing and removal programs. The funding would not exceed 75 percent of the total cost of the programs so cities would have to contribute at minimum a quarter of the cost of any initiatives. The bill sought to provide education of citizens about the dangers of lead and to provide employment opportunities for residents of affected communities. The LBPPPA also banned the use of lead based paints in all federally funded housing construction and rehabilitation programs, or any project which received federal dollars in any form. It was an important first step towards creating a federal mandate in removing reducing the threat of lead paint.⁴⁴

The growth of federal interest in the issue of lead-paint poisoning would continue through the 1970s. In 1972 another hearing was held in Congress to create amendment for the Act of 1970. The changes included a reduction in the definition of what was considered lead-paint from 1% content to 0.06%, as defined for federal housing projects. The 1972 Amendment also increased the funding from \$15 million annually for two years to \$50 million each year without limit, and federal appropriations not used during one fiscal year could be carried over to the following year.⁴⁵ The commitment of Congress to increasing funding for the prevention, education, and treatment of lead-paint hazards demonstrates the political importance of lead-paint on the national scale as well as the rising economic costs of dealing with the issue.

The hearing surrounding the 1972 amendments to the LBPPPA lasted for three days during which testimony was given by a variety of parties interested in the

⁴⁴ Public Law 91-695, 91st Congress, H.R. 19172, January 13, 1971

⁴⁵ S.3080 92nd Congress, 2nd Session January, 26th 1972

new definitions and changes in the legislation. Doctors from universities and health departments across the nation gave testimony to the damaging effects lead poisoning could cause to children. One study done by the EPA stated that even paint with levels of 0.06% lead could be damaging to children if ingested and argued that they should be further reduced to 0.01% lead content. “Independent analyses support our view that at no time should future use of paint containing lead in excess of 0.05%, and preferably not in excess of 0.01%, be permitted in residential areas.”⁴⁶ Other advocates spoke out for further reductions or and across the board ban of lead paint in all residential housing, not just those tied to federal funds.

In addition to the testimony supporting the new legislation was that of opponents from the paint industry, who felt these laws created an unfair set of restrictions and could jeopardize their ability to remain in business. Letters poured into the hearings from large and small paint manufacturers, from powerhouses like Dupont and Sherwin-Williams to small paint companies. The letters range from requests for delays in the enforcement of the law to urgent pleas such as the one from Parker Paint Co. “For the first time in our business existence did we realize how a Federal Law can virtually wipe out an industry and do it legally. Again I ask you HELP! HELP! HELP!”⁴⁷ Other paint manufacturers argued that the real lead culprit was the gasoline used in American autos. These divergent views show the conflict between social issues of health and well-being and the economic interests of business

⁴⁶ K. Bridbord, *A Control Strategy for Lead Paint*, EPA Technical Report, 1972

⁴⁷ Letter from George Martin VP Parker Paint to Senator Warren Magnuson, March 23, 1972

and industry. The collection of documents surrounding the hearing demonstrate the complex web of social, political, and economic issues tied to lead paint.

The economic crisis of 1973 with the OPEC oil embargo and stagflation likely delayed the passage of more strict legislation as well as an outright ban of lead paint used in residential buildings. Yet further concern over the risks of lead based paints continued to carry an outcry for the elimination of all lead containing paints. By 1977 these concerns finally came to fruition with a total ban of lead paint by the U.S. Consumer Product Safety Commission (CSPC). On September 2, 1977 the CSPC issued a statement declaring, “A final ban on lead-containing paint, and on toys and furniture coated with such paint. This action was taken to reduce the risk of lead poisoning in children who may ingest paint chips or peelings.” The ban still allowed for lead paint to be used for certain products such as the backing of mirrors, artists paints, and other technical goods given they carried sufficient warnings to prevent the exposure of children to lead. Companies were provided with 180 days of notice to comply with the new regulations. The growing concern and awareness of the harmful affects of lead gave rise to this legislation. It is likely that the economic and social interests of children and families won out over the arguments of paint manufactures largely due to the growth in the public’s knowledge and perception of the harmful effects of lead paint.⁴⁸

The ban on lead paint prevented the use of paint in new housing yet the danger of lead poisoning in America would remain. While houses built after 1978 contained no lead paint the majority of the housing stock in the United States would

⁴⁸ Office of Information and Public Affairs, *CPSC Announces Final Ban on Lead-Containing Paint*, Sept 2, 1997 Washington, DC

continue to pose risk of lead poisoning up to today. While many middle class and affluent Americans left for new and safe housing in the suburbs, millions of people were limited to housing stock built before the ban. Those most at risk would be the poor and ethnic minorities who remained in urban housing with a significant risk of adverse lead exposure. This would create a problem beyond the grasp or desire of the federal government to expend the resources to prevent the exposure of those most at risk. The issue of lead poisoning remained a potent political social and economic issue from the 1980s up to the present as displayed by news articles, scientific studies, and legal cases to address the scourge of lead poisoning.

Scientific Studies: Understanding the Effects of Lead and who is Most at Risk

The concerns over lead-paint poisoning which created the programs for prevention and abatement were fueled in large part by scientific studies into the negative impact of lead on Americans. After the passage of the legislation much effort was given to understanding how even small levels of lead could have damaging effects on America's children. One study released by the National Institute of Environmental Sciences in the late 1980s focused on the ways that lead exposure affected young children. The success of programs to reduce lead exposure varied. The elimination of lead from gasoline had a direct and universal effect on reducing the amount of lead that Americans were exposed to. Yet the impact of lead in gasoline according to the study shows that there are lingering ways of potential harm.

“Populations will continue to be at risk for exposure from lead contaminated dust and soil, arising from patterns of lead fall out.”⁴⁹ Lead exposure from other sources had successes under federal programs such as those, which reduced lead in food cans.

Data shows that between 1979 and 1988 the percentage of cans containing lead dropped from over 90% to around 5% which closed down another pathway for lead exposure.⁵⁰ However, the ability of federal measures to reduce the effects of lead paint exposure continued to be limited. The primary reason for the problem was the fact that so much of the nation’s housing supply was built before the 1978 ban on lead paint. The population of those most exposed was concentrated in urban housing that still contained the legacy of lead paint. Funding for the removal of lead from single-family Federal Housing Authority (FHA) units was considerable during the late 1980s. Data collected in the study shows that the estimated cost of reducing lead paint in the older housing stock of the United States is considerable. For just five years between 1987 and 1991 the cost of reducing the risk of lead exposure was estimated to cost over \$2.5 billion dollars, of which 95% would be required to be paid by buyers and /or sellers in the private sector.⁵¹ This enormous cost for removal of lead paint was a mere fraction of the actual cost of abatement, since it only estimates housing that is bought and sold in FHA programs.

The continued threat of lead exposure is evident for those majority of homes in which ownership remained unchanged, and would not require compliance with federal regulations. The study found in conclusion that the existing programs for the

⁴⁹ Paul Mushak, “Methods for Reducing lead Exposure in Young Children and Other Risk Groups”, *Environmental Health Perspectives*, Vol. 89 (Nov. 1990), 129.

⁵⁰ Mushak, 130.

⁵¹ Mushak, 127

removal of lead paint did little to reduce the risk of exposure to children living in homes built before 1978. “Leaded paint in older U.S. housing and public buildings remains as significant contributors to U.S. childhood lead exposure and intoxication. To date little in the way of nationwide abatement efforts have been implemented and most have generally failed.”⁵² The significant risk of exposure to lead paint remains highest among poor and minority groups in America who continue to reside in homes containing lead paint. The complicated and expensive measures needed to eliminate risks of lead poisoning in pre-1978 structures had yet to be rallied to resolve the issue when this study was published in early 1990 and continues to effects American families today.

Another study from 1998 focused on the levels of lead paint exposure in the U.S. population between 1991 and 1994. The overall findings of the study show the increased level of risk associated with socioeconomic status of race and class. The study focused on the testing of children who had been found to have elevated blood lead levels. Data collected from the sample shows that of the race and class have a direct association to blood lead levels higher than 10 parts per million which is associated with increased risk of mental and physical impairment. Findings based on race showed that African Americans and Hispanics in the U.S. were more than twice as likely to have higher rates of exposure even when controlled for the year that the homes were built. Those living in houses built before 1946 showed increased levels of exposure. For Caucasians in these homes the level was 5.6%, Hispanics, 13%, and African Americans, 21.9% which shows that levels of awareness and the quality of

⁵² Mushak, 133

abatement efforts has a direct relation to ethnic status. In homes built between 1946 and 1973 the rates of exposure dropped for all groups but Hispanics were still twice as likely as Caucasians to experience lead paint poisoning and African Americans were nearly ten times more likely than whites to have high blood levels.

Class was another issue that correlates to race since the income levels in general are highest for Caucasian Americans. Low income residents of pre-1946 housing were nearly twenty times more likely to suffer from high levels of lead exposure than high income Americans. The rates continue to show similar levels as moving up to housing built after the 1978 ban. The authors of the study argue that the focus on lead screening and prevention should be placed in areas where levels of exposure have been highest, particularly in low income and minority communities.⁵³

The finding of another scientific study published in the late 1990s also supported this level of increased risk of lead poisoning in low income and minority communities. The study focused on the increased level of risk to exposure found among the populations of Syracuse, NY. The exposure to lead according to the study had effects of residents of Syracuse both young and old yet the affect on children carried the greatest concern. "Although continued exposure may cause reproductive-system damage in adults, the primary public health concern is the effects of lead exposure on the mental and physical development of children."⁵⁴Data collected in the study confirms the results of previous investigations that point to the increased level

⁵³ James Pirkle, "Exposure of the U.S. Population to Lead, 1991-1994," *Environmental Health Perspectives* Vol. 106, No.11 (Nov. 1998) 745-750

⁵⁴ Daniel Griffin "A Tale of Two Swaths: Urban Childhood Blood-Lead Levels across Syracuse, New York," *Annals of the Association of American Geographers* Vol. 88, No. 4 (Dec. 1998), 642.

of risk based on race and class. The results of the study showed that African American and Hispanic children experienced the highest levels of lead exposure among the population sample and “Caucasian children displayed the lowest risk of the three groups, though they registered as much as a one-in-five probability of having developmentally significant amounts of lead in their system”⁵⁵The findings of the study demonstrate that all children in the sample had a greater than twenty percent chance of having elevated blood lead levels, which shows the widespread the risk pool for lead exposure. However, minority children continued the show the greatest incidents of the damaging effects of lead-based paint.

The study’s conclusion argues a similar case for the expenditure of testing and prevention resources based on urban residence and age of housing which in general correlate the generally lower socioeconomic status of ethnic minorities. “Findings confirm that intervention strategies should focus on the old and poor neighborhoods of the city, and should address issues of housing quality and maintenance practices.”⁵⁶The study also showed that poverty was the main factor in increased probability of lead exposure and should not focus solely on race yet the reality of American demographics shows that direct relationship in most cases between high levels of poverty and minority communities.

The prevalence of housing with significant risk of lead poisoning for children has continued to be a problem beyond, as the number of older homes remains high. A study in 2002 shows that the number of lead-paint remains a great obstacle in reducing the levels of exposure to lead on and the adverse effects to the mental and

⁵⁵ Griffin, 646.

⁵⁶ Griffin, 661

physical development of children. According to the Study nearly 38 million homes or 40 percent of the U.S. housing stock still contains lead paint. Of those homes with lead-based paint over 60 percent, or 25 percent of the nation's total, had significant lead-based paint hazards that includes deteriorated and chipping paint or contaminated dust that can be ingested or breathed in by small children.⁵⁷ These estimates demonstrate the continued risk existing in the housing stock as well as the potential cost for solving this epidemic problem. If each of the 24 million with significant lead hazard went through abatement cost which range from \$5000-\$10000 the estimated cost would be between \$120 and \$240 billion dollars, a staggering figure of the economic cost of abatement, which doesn't even take into account the costs of testing, medical treatment, educational and social services related to the effects of elevated blood lead levels.

The study also shows the impact of income on the level of exposure to lead among populations in the United States. Households with incomes of less than \$30,000 had a higher level than houses with greater levels of income. Thirty-five percent of homes in the lower income range had significant levels of lead hazards while those above the \$30k threshold had only a 19 percent chance of lead hazards⁵⁸. It is likely, but not shown in the study that as incomes rise in the upper middle and upper class that the rates again are even lower, due to the ability of those households to either abate lead poisoning threats or to avoid them all together by moving into newer housing.

⁵⁷ David Jacobs, "The Prevalence of Lead-Based Paint Hazards in U.S. Housing" *Environmental Health Perspectives*, Vol. 110, No. 10 (Oct. 2002) 601.

⁵⁸ Jacobs, 604.

Regional demographics also played a role in determining the level of hazards with urban areas in the East and Midwest having a greater likelihood of lead hazards as opposed to the South and West. This is mainly do to the fact that the later areas have seen population shifts in the last few decades which have lead to more new housing built after the ban of lead paint in 1978. Although the cost of the testing and abatement would be high, the study projected that a \$2.3 billion dollar investment in lead prevent between 2000 and 2010, it would realize a net benefit of 3-4 times the cost of the program in decreased medical care and other related negative effects of elevated lead blood levels.⁵⁹ Once again the studies tend to show the prevalence of lead paint hazards existing in American homes more than two decades after the federal ban. The study also indicates the inverse correlation between income level and potential risk, and the high economic costs and benefits of testing, prevention and abatement programs.

A scientific study released in 2004 focused in the impact of lead blood levels on the cognitive ability of America's children. The findings of the study show that even at blood lead levels perceived to be safe in prior years, there is a significant impairment of intellectual ability. The study points out that one of the primary sources of high and low level lead exposure in children was consistent with other findings, the culprit being lead paint. " The main sources of lead in children's environments are diet, lead-based paint in older housing, lead in soil and dust from contaminated leaded paint and gasoline, or past and present mining and industrial

⁵⁹ Jacobs, 606

activity.”⁶⁰ The general threshold set by most government agencies for significant blood lead levels in children was 10 parts million, yet the study’s findings demonstrate that levels below that threshold carry a greater risk of intellectual impairment. Although the biases of IQ tests are recognized in the study along with other factors such as genetics and socioeconomics play a role, the study determined that lead blood levels below the 10 parts per million threshold still pose significant risk to cognitive function. “With the recent evidence demonstrating an inverse association between blood lead levels and cognitive function in children exposed to low levels of lead, there is no safety margin in existing exposures.” The findings of the study show that lead-paint has an insidious effect on the development of children who are exposed to it through their residential environment.

The study also points to the need for focused attention on children raised by parents with little knowledge of the risk of low-level lead exposure. “Current lead exposure accounts for a small amount of the variance in cognitive ability (1-4%), whereas covariate such as social and parenting factors account for 40% or more.”⁶¹

The focus of the study pushes for great resolve by federal, state, and local authority in further eliminating lead hazards as well as effecting the social environment which can create increased risk for the intellectual development of children throughout the United States.

⁶⁰ Karen Koller, “Recent Developments in Low-Level Lead Exposure and Intellectual Impairment in Children.” *Environmental Health Perspectives* Vol. 112, No. 9 (2004), 987

⁶¹ Koller, 993

The connection between lead blood levels and the developmental repercussions has also been linked to the levels of criminal activity in the United States. A 2000 study by Rick Nevins gives a strong argument for the connection between lead, lower IQ, and increased rates of crime in the U.S. The study uses statistical modeling to link data between crime and the reduction in lead. Nevins analyzed crime data over the 20th century in relationship to childhood lead exposure, levels of single parent households, and rates of abortion in the United States, in an attempt to understand factors contributing to decreased violent crime rates in the last quarter of the 20th century. According to the findings “only childhood lead exposure was found to have any significant effect on changes in the rate of aggravated assault, which accounts for 60 percent of violent crime.”⁶² The main factor of decreased lead exposure according to the study has been the bans on lead gasoline and lead paint during the 1970s.

Some studies have linked the decrease in violent crime to the increased level of abortions following the Roe v Wade decision of 1973. But based on the evidence of statistical analysis the link between the decline in the number of unwanted pregnancies and decline in violent crime is relatively insignificant while lead and crime has a high level of correlation. “Analysis found that Roe v Wade explained about 5% of the long-term variation violent crime⁶³, whereas childhood lead exposure explained almost 90%.” The strong connection between childhood lead exposure and

⁶²Rick Nevins, “Research Links Childhood Lead Exposure to Changes in Violent Crime Rates Throughout the 20th Century.” *Environmental Research* (May 2000), 2.

⁶³ Nevins, 6.

crime is based on research that links decreased IQ levels to increased levels of criminal activity.

The findings highlight the links between poverty and crime as well. Based on the analysis those living in poverty, of which a significant percent are minority groups, are at an increased risk of exposure to lead as explained by other studies mentioned. This provides a level of insight into the higher rates of crime found among minority communities. “Children living in pre-1978 housing account for about 90% of lead-poisoned children, and children living in pre-1940 housing account for about 70% of all children with blood lead levels above 15 parts per million.”⁶⁴ The majority of cases of lead exposure in these older housing units affect families in poverty and members of American minority groups. This data shows that members of these demographic groups not only have greater risk of reduce IQ, they are also more likely to become caught in the American criminal justice system. The study demonstrates the continued negative effects of lead exposure in American children, even with federal regulation of lead and programs for education and prevention. These social and economic effects of lead poisoning and low-level lead exposure point to the nefarious legacy of lead paint in the United States today. The findings of these various research studies, into the effects of lead paint, offer insight into the continued social, economic, and political contexts of how lead paint has a direct impact on American society.

⁶⁴ Nevins, 8.

Lead in the News: Media Coverage of the Lead Paint Issue

The continued importance of lead exposure through lead paint has also shown itself through the coverage of American news media. The fact that lead paint continues to be covered and has not simply been swept under the rug in light of federal and state measures shows how American interest in risk aversion to lead continues to draw press coverage. Across the United States numerous stories about the ongoing political, economic and social effects of lead keep writers producing material to fill the demand of interested media consumers.

A 1985 article in the *New York Times* reported on the changes in the levels of lead, which define lead poisoning, and elevated blood levels. The new standards set by the Federal Centers for disease control reduced the levels for lead poisoning by nearly thirty percent defining “lead poisoning as a lead level of 35 micrograms per deciliter, down from the previous level of 50 micrograms per deciliter, issued in 1978.” The report shows that that the definition of elevated levels was reduced by 15 percent in light of new evidence of the adverse effect of lead paint. The report also claimed that nearly 4% of American children under the age of 5 had high enough blood level to significantly effect both behavioral and mental development. The report also stated that the CDC viewed lead exposure as one of the most critical issues facing children of all backgrounds in the U.S. between the 9 months and 6 years old. The reporting of these new guidelines by the newspaper provides insight into the level of concern about lead among the American public, as well as the political

resolve of the federal government to regulated lead and prevent its exposure in children.⁶⁵

The New York Times also reported the changes in laws in Massachusetts regarding the removal of lead paint in 1987. The story describes the passage of new legislation by the Massachusetts House of Representative that would require the speedy removal from lead contaminated homes. The state estimated that 59% of its housing units contained lead paint at the time and a study sponsored an the Conservation Law Foundation, an environmental group in New England, estimated that the benefits of removal of lead could save the State large sums of money. The foundation estimated that on average children with high levels of lead exposure would require \$5,500 in remedial education and medical services while the cost of removal of lead in the average home was only \$2500. The new legislation passed was the strictest in the nation at the time, and required lead removal as a standard procedure in all homes sold or rented in the state. According to the story the bill also provided a \$1000 tax credit to help ease the financial burden on those effected by the law. The story also mentions the motivation for the new law came out of increased concerned raised by new research which found that what was previously considered low-level exposure could have damaging effects on a child's development. The report also states that the new law was driven by the argument of a prominent Massachusetts doctor who claimed, "Fetuses exposed to half the CDC's standard for lead toxicity faced a greater risk of cognitive, behavioral and motor handicaps." This article provides further insight into the connection between new medical findings, public

⁶⁵ New York Times, "New Guildelines on Lead Issued" Feb. 8, 1985.

concern, and the political action of state legislatures who have set lead standards at significantly more stringent rates than the federal government.⁶⁶

Yet the federal government would take no real action on increasing the regulation of lead until the mid-1990s, which in no way was as strict as the guidelines set by Massachusetts in 1987. An article from *The Washington Post* published in October of 1994 described new guidelines in which home sellers and landlords would be required to provide an education pamphlet on the hazards of lead to prospective buyers and tenants in order to reduce liability in the case of lead exposure.⁶⁷ Yet the new requirements would not force owners of have homes tested or remove lead paint where it was found, which shows the lack of teeth put into the new regulations.

In 1996 *The New York Times* reported that new federal laws would require disclosure of any lead hazards to buyers or tenants. Data cited in the article describes the prevalence of housing with lead paint was as high as 64 million homes and apartments according to the Federal Department of Housing and Urban Development (HUD). The requirement of disclosure of information carried a harsh penalty up to \$10,000 or one year in jail if the owner failed to comply. The article also states that law states, “owners must provide a purchaser or a tenant with a HUD-approved pamphlet entitled ‘Protect Your Family From Lead in Your Home’ and must insert warnings into leases or sales contracts.” The also required that real-estate agents would be held partially liable if their clients did not comply fully with these new regulations. One of the problems with the legislation that was reported in the article

⁶⁶ New York Times “Stiff Massachusetts Bill Would Speed Removal of Lead Paint August 16, 1987.

⁶⁷ The Washington Post, “U.S. issues Tighter Rules on lead in Homes: Hazard must be disclosed to Buyers, Tenants” Oct 27, 1994.

was that leasers or sellers would only have to disclose a “known” hazard, which could give them the opportunity to plead ignorance and avoid accountability. Also, at the time of the article there were a limited number of certified lead inspectors who would be able to detect lead-paint hazards existing in the dwelling. The article shows the importance of federal legislation in pushing to prevent and educate lead poisoning, but once again displays the limited measures taken to put all lead hazards into the light.⁶⁸

A June 1999 article in *The Washington Post* describes how lead-paint would become a major target of legal battle to hold manufacturers liable for the existence and hazard that lead created throughout America. In light of the limits of federal legislation placed on landlords and home sellers to eliminate lead-paint hazards, government and private lawyers began to prepare cases to recoup money spent on lead abatement, medical care, and special education services. The tactics and arguments used were similar to those, which fought tobacco companies for smoking damages during the 1990s. “In Rhode Island, the attorney general is preparing a lawsuit to recoup medical and other government costs of lead poisoning – a suit that may borrow tactics used against the tobacco industry.” Many of the cities and states where these legal battles were taken on were in the East in which the majority of older housing with lead based paint is found.⁶⁹

⁶⁸ Jay Romano, “Your Home; Federal Rules on Lead Paint” *New York Times*, 5 May 1996

⁶⁹ Sandra Torry “Lead Paint: The Next Big Legal Target” *Washington Post*, 10 June, 1999.

The strategy of suing the manufactures went beyond the measures taken to push individual homeowners and landlords to prevent lead contamination in children across these regions. The potential to recoup the costs of dealing with this problem by governments as well as individuals made the manufacturers a prime target of the lawsuits. “In such lawsuits states or cities would likely argue that they were injured because the paint industry continued to market a deadly product, misled the public and government about its dangers and thwarted government effort to regulate its use.” The focus on the source of the lead paint problem, those who supplied through production was a major step towards dealing with the growing cost of the problem. Yet the success of the effort to sue manufactures remains elusive as manufactures are able to deny liability through the difficulty in proving which paint caused which cases of contamination as well as the manufactures arguments that neglect by landlords and parents were more likely the cause of the poisoning. The news article shows the complex nature of lead in its relationship between governments, individuals, and businesses in the United States.⁷⁰

The continued reporting of issues surrounding lead paint shows the high level of public concern for the problem. In the last few years, articles have been published in local and national newspapers pointing out the successes and continued problems of dealing with the hazards of lead in American homes. An April 2007 article in the *Rochester Democrat and Chronicle* point out some of the successes of lead prevention through the collaboration of federal and local officials and the general public. The article shows that between 1995 and 2006 there was major success in

⁷⁰ Torry, “Lead Paint: The Next Bog Legal Target”.

reducing the number of lead poisoning cases in Monroe County, New York.

“According to the Monroe County Health Department, the number of children from newborn to age five with elevated blood level has fallen 85 percent, from 3,710 in 1995 to 571 in 2006.” The main cause of the decline was attributed to the efforts of local, federal, and private advocacy and financial support. Monroe County was able to secure federal funds through HUD to provide \$5000 grants to homeowners and landlords to speed the process of lead abatement.⁷¹

Monroe County also passed legislation in July of 2006, which required landlords to pay for lead inspections before being issued a certificate of occupancy, which would allow them to rent or lease their properties. Local groups also pushed for greater levels of childhood lead testing by sending hundreds of letters to pediatricians and local leaders reminding them of the importance of testing children yearly for lead between the ages of 1 and 5. These measures by different stakeholders of the county show the impact of lead in social, political, and economic contexts in Monroe County.⁷²

An even more recent article published nationally in *USA Today* provides a short history of the lead-paint issues in the United States; once again displaying the level of interest this issue carries with the American public. The article provides background on federal local, state, and federal legislation concerning lead-paint reduction and poisoning prevention. The article points out the successes and failures of a variety of programs created to deal with the hazards of lead contamination.

⁷¹ Lara Becker Liu, “Lead Poisonings Diminish” *Rochester Democrat and Chronicle*, 10 April 2007.

⁷² Liu, “Lead Poisonings Diminish”.

According to the article Milwaukee was one of the first cities to launch a program dedicated to eliminating lead paint hazards through window replacements in older homes. The city subsidized the efforts of homeowners to replace windows using a combination of local funds and federal grants, and realized great success, similar to those mentioned in Monroe County.

In 1995, 39% of children tested in the City of Milwaukee had elevated lead blood levels; by 2006 the number had fallen to 6.6%. However, the article points out that although levels of lead poisoning have been reduced it remains a significant problem especially for poor children throughout America. “While most middle-class children now live in newer homes built or remodeled since 1978, poor kids are concentrated in older homes, in cities such as Detroit, as many as 90% of homes were built before 1978. This shows that lead remains a problem, and the finding that levels of exposure to children have dropped has pushed federal like HUD to reduce spending on lead control. “Federal funding for lead remediation is limited and will probably drop next year — the 2008 HUD lead-control budget is \$116 million, 23% less than in 2005.” The success of lead prevention has been significant as pointed out by the reduction in overall cases of elevated lead blood levels, yet the hazards of lead remains a lingering problem, which is most likely to effect those children born into poverty. The article provided further evidence of the importance of lead-paint to the American public as a social, economic, and political issue.⁷³

⁷³ Greg Toppo, “For Many Kids Lead Threat is Right in Their Own Home” *USA Today* 28 October, 2007.

Conclusion

The issues surrounding lead-paint and its variety of effects on the American will likely continue to shape the culture, politics, and economy of United States. The investigation of lead-paint provides one of the many possible trends in the study of environmental history. Lead exposure has shaped the residential environment of American in a number of ways, and reveals the growing cultural awareness of the effects of industrial and commercial activity on the quality of life in the country. There was a major turning point in the perceptions of Americans about the impact of chemicals on human health and the natural world beginning in the 1960s. Rachel Carson provides an important piece to this story of a new cultural outlook, which promotes a better understanding of the risks associated with industrial and commercial pollution. As Americans started to rethink their relationship to natural and artificial environments political action soon followed. In response to this awareness grass-roots activism and government legislation pushed for greater control of lead, as well as the prevention and treatment of its ill effects. The complex political activity surrounding lead-paint demonstrates the prevalence of the negative effects of lead exposure and poisoning especially in children. The political discourse also sheds light on the complex stakeholders in the public, medical, and business sectors, who helped craft the outcome of laws and regulation. The economic impacts of lead and public concern drove a variety of scientific investigations into the physical effects of lead on childhood development. This research also revealed the connections between race, class, and the higher rates of exposure. The reality is that lead is equally damaging to children exposed to it, but those at the greatest risk of exposure are often in that position because factors beyond their control. The decline in cognitive ability

related to high lead blood levels has been linked to lower educational performance, lower life-long income, and increased levels of criminal activity. Lead-paint has been costly to American society and is likely a contributing factor to most poor remaining poor, many of whom are from minority groups still dealing with the legacy of race and class discrimination in America. Looking at media sources focused on lead-paint can provide further insight into the social, economic, and political repercussions of lead exposure, as well as the high level of public concern with the issue.

Lead-paint will continue to affect Americans through decreased intelligence, increased spending on special education and abatement programs, and political and legal battles that seek to resolve the negative legacy of lead. There has been much progress but a significant number of children and their families have struggled with and will continue to face the social, economic, and political legacy of lead in the human environment.

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Part III: Application

Teaching Environmental History: Website Project

<http://sites.google.com/site/teachingenvironmentalhistory/>

Introduction:

Environmental history may be a relatively young and small field of historical inquiry at present, but the potential for elements of this genre to reshape the teaching of history at all levels of education is profound. History teachers at the secondary and post-secondary level are all too familiar with historical analysis based on social, economic, and political factors. These vectors form an important foundation for the study of history but more and more historians are beginning to recognize the unique role that environmental factors have played in the changes that have occurred in human society across the world and in many different ages. Many secondary educators in particular can help improve student interest and understanding by using the environment to help young learners develop the tools to be both historical and critical thinkers. With this in mind, I have developed a website (<http://sites.google.com/site/teachingenvironmentalhistory/>) dedicated to helping

teachers collaborate and develop strategies to promote environmental understanding in the study of both New York State Regents Global History and Geography and United States History and government.

This website offers ideas, teaching tools, and web-links to help teachers integrate their teaching with environmental history while maintaining a focus on critical topics found in the New York State Regents curriculum. The rise and fall of Roman civilization is directly connected to environmental factors such as geography, resource scarcity, and some have argued the presence of lead found in the plumbing of urban areas. Following the saga of the French Revolution, Napoleon Bonaparte set out to conquer Europe. A major factor that halted his plans involved the cold climate and terrain of Russia. More than a century later Adolph Hitler would face similar environmental problems in his attempts to dominate Europe. Understanding the rise and fall of these leaders requires an understanding of how natural environments can shape the course of history. The development of the Industrial Revolution reshaped the economy, politics, and social relationships throughout much of the world. Yet the Industrial Revolution also was shaped by the geography and natural resources available to different groups of people. The outputs of industry also caused environmental change as a result of pollution and health hazards that affected both human and non-human species. The United States Civil War was greatly influenced by environmental factors, which helped lay the course for the growth of sectionalism and slavery in America. The geography, climate, and resources in the North and South also heavily influenced the outcome of battles and strategies of engagement, as well as the results of the war. The urban environment and pollution in particular have

had a tremendous effect on society and politics in the U.S. over the last 50 years and could form a case study for a detailed understanding of the politics and legal system of the United States. This brief overview of the purpose and different topics found in the website will hopefully provide teachers with examples and ideas for the integration of environmental history into their practice in a way that is engaging and helps achieve the requirement and standards of the state curriculum.

Ancient Rome:

The study of Ancient Rome is a key component of Global History and Geography usually taught in 9th grade and assessed in 10th grade during the Regents exam. A basic understanding of the rise and fall of Rome as well as the continuing legacy of Roman society up to the present are key objectives for every teacher of this course. To understand the rise of Rome requires an understanding of the geography of the Mediterranean. Students can begin by looking at different maps which show the topography and climate of the region to begin to think about an essential question such as: How did the geography and resources of Europe help Roman Civilization dominate the Mediterranean region for centuries? One of the most basic ideas many students will discover is that Rome is located in the center of the region with both access to trade and routes of military conquest, as well as positioned to defend itself from invasion. Through the study of maps and other visuals of the natural landscapes of Europe, the Middle East, and Africa, students can also begin an inquiry into the

challenges facing Roman government to maintain control over such a vast empire.

Using geography to deepen students' critical thinking skills and visual recognition of different regions of the world are important components of NYS Regents assessment.

Another potential avenue for teachers and students to investigate is the relationship between social class and urban lead poisoning that occurred in Ancient Rome. This provides an opportunity to see that environmental, social, economic, and political factors are not always distinct but often interact, affecting and effected by one another. The Roman social order was directly connected to economic class as well as the political structure of the government. This understanding is fundamental to the knowledge base for a solid understanding of Roman history. Although the lower classes of Roman society lived much harsher lives in general, they did carry reduced risk of lead poisoning at the hands of the plumbing that served mainly the upper classes. The discussion of lead poisoning as an environmental factor in the fall of Roman Civilization can also lead students toward a discussion of the positives and negatives of different social classes and begin to recognize the complexity of human societies, which is often overlooked in survey courses. Aside from providing a variety of images, maps and graphic organizers the website also contains links to other sources of information to act as a springboard for individual or group research projects. Strategies suggested on this webpage are supported by research-based studies, which have demonstrated improved student achievement. One of the most important skills that students will use is exploration of similarities and differences, which has demonstrated percentile gains in student achievement between 31 and 46

percent.⁷⁴ Students can get the chance to work towards proficiency in the Global History curriculum and will also be able to differentiate their assessments in a way that provides broad opportunities for students of different abilities to succeed. By integrating concepts and ideas common to the analysis of an environmental historian, students and teachers can be engaged in powerful exercises in solidifying knowledge and critical thinking skills.

Napoleon, Hitler and the Russian Winter:

Another of the pages found in the website deals with the impact of environmental factors during the French Revolution and World War II which are key topics in the NYS Global History curriculum. While learning key ideas, names, and dates which relate to the causes, events, and effects of the French Revolution students can begin to analyze the important environmental factors which played a significant role in outcomes of conflicts, especially the well known disaster of Napoleon's invasion of Russia during the winter months. Understanding how geography can affect the development of societies and historical events is an important part of the NYS Global History and Geography curriculum. A key component necessary for students to develop this understanding is to become familiar with the various types of environments and ecosystems that exist around the world. Students must develop a working knowledge and mental map of major land features such as oceans, deserts, mountains, rain forests, and plains. Using the maps found in the webpage students can compare and contrast different environments existing on the continents and discuss

⁷⁴ Robert J. Marzano, Debra J. Pickering, and Jane E. Pollock, *Classroom Instruction that Works: Research-Based Strategies for Increasing Student Achievement*, (New Jersey, Pearson Education Press, 2005), 15.

how the geography might impact human beings in general. Once students have practiced making general logical inferences about the relationship between climate, geography, and people, they can be introduced to more specific information and develop the critical thinking skills to better understand how environmental factors affected the course of the Napoleonic Wars.

When students become more familiar with the different types of biomes and geographic environments that exist in the world they can begin to apply this knowledge to develop an understanding of how environments can impact the human beings that live in them in a wide range of historical scenarios. Attached at the bottom of the webpage is a PowerPoint on geography that gives students a solid set of background information about the positive and negative effects that geography can have on culture and society. After introducing students to the impact of geography teachers can use the maps displayed on the page as a starting point for examination of the different ways that the geography of Europe has impacted cultural diffusion, ethnic variations, national boundaries, and affected regions during time of conflict and war.

Students and teachers should take note of important features such as the European plains and how that can act as a force for spreading knowledge and ideas such as agriculture and religion. Students may also take note of the ways that climate and weather can influence food, dress, customs, and other cultural components. Social, economic, and political systems that developed in Europe have been greatly influenced by the natural environment. Once students become more familiar with the make up of geography in Europe they can begin to analyze the ways that geography has influenced the course of European History. Two major turning points in European

History were greatly influenced by the geography and climate of Russia. The Russian Winter had a major impact on The French Revolution and the Napoleonic Wars, as well as World War II. The NYS Regents exams have often referred to the impact of the environment in the case of Napoleon's invasions and Hitler's invasions of Russia during and 20th centuries. It also provides an opportunity for teachers to practice higher-level skills of comparing and contrasting and evaluation. The power points and worksheets attached to the webpage provide introductory and cumulative lessons on the French Revolution and World War II. The impact of the Russian winter on these two historical events provides an opportunity for teachers to integrate elements of environmental history into their teaching and provide key preparation for the Global History and Geography Regents exam. Research based support for the approaches mentioned, such as non-linguistic representations or development of graphics, as well as comparison and contrast have been shown to increase student achievement ranging from 20 to 40 percent.⁷⁵

The Environment and the Industrial Revolution:

The Industrial Revolution was one of the most critical turning points in human history. The development of mass production, new inventions and technologies, have drastically improved the standard of living and life expectancy for people around the world. The Industrial Revolution has also led to many harmful effects on the natural environment through pollution and the exploitation of resources, and has created working and living conditions with harmful effects to the people living in industrial societies. The Industrial Revolution offers a number of points of entry for the

⁷⁵ Marzano, Pickering, and Pollock, 74.

integration of environmental history to enrich and engage students with the curriculum, and the webpage created offers many ideas for teachers and students to engage with.

The Powerpoints and worksheets attached to the bottom of the Industrial Revolution webpage offer a spread of material to both introduce and refine student knowledge. Teachers can begin by taking the time to focus on the impact of geography and natural resources in enabling a country or region of the world to industrialize. The factors of production of land and labor are both connected to agricultural and resource management practices, which directly correlate to importance of natural environments and ecosystems in providing the inputs necessary for an industrial economy. Key areas of interest may be a comparative look at the successful industrialization of the United States, Great Britain, and Japan as well as the struggles of other nations and regions to industrialize. In all cases environmental, economic, and cultural variables have played a significant role.

Investigating the effects of the Industrial Revolution provide launch points for integration of environmental history through discussions of the changes to urban living and work environments as cities expanded as well as the changes in natural environments as a result of pollution and extraction of resources. This type of analysis proves relevant for the curriculum of NYS Global History and U.S. History. The images and worksheet attached to the webpage provide points of inquiry and investigation into the environmental history of the Industrial Revolution. Changes in urban population, child labor, factories, mines and graphic organizers provide in depth sources for teachers to engage students in discussion and production of

materials that affected the human and non-human actors of this major turning point in human history. Students are encouraged to make use of advanced organizers in the form of narrative writing exercises and creating graphics. These are both methods that have demonstrated achievement gains in the range of 15 to 25 percent in research-based studies.⁷⁶ There is great potential for integration of environmental history into the study of the Industrial Revolution.

The Environment and the Civil War:

The next webpage found on the site looks at how the development of United States has been influenced by its geography and climate, and suggests key areas to link with concepts of environmental history. Teaching the origins of the Civil War can be one of the many points of entry for the integration of ideas relating to the impact of the natural environment on American history. The colonial era, the founding of the nation, developing sectionalism and the Civil War are abundantly directed by the ecology and environment of the United States.

Students can begin by looking at a map of the climate and ecological zones of the United States. Discussion of the different positive and negative aspects of these environments in terms of agriculture, trade, and development can be used as a starting point. Students can make connections about how the climate of a region can influence culture, economic, and social relationships. The ability to understand, analyze, and make inferences about the way natural environments shape human societies is a key skill to developing a strong historical understanding

⁷⁶ Ibid, 117.

The development of the Atlantic Slave Trade is an important part of the history of the United States, and eventually becomes a major factor in the development of the Civil War. Teachers can utilize maps and graphs found on the webpage to help students see the human impact of the slave trade, the geography of the journey taken by Europeans and Africans, as well as to begin to think of why some areas of the New world demanded more slave laborers than others. Students can begin to integrate environmental history into the development of an understanding of the importance of land, plants, animals, and diseases, in acting as factors of the Trans-Atlantic Slave Trade and how humans and non-human entities have shaped the course of history. This type of inquiry can support higher-level thinking directed toward synthesis and evaluation of content.

After introducing students to the economic, environmental, and political factors underlying slavery students can begin the discussion of how the more immediate causes of the Civil War are directly related to environmental factors. The 1850s political map of the United States found on the webpage almost directly corresponds to the ecological map of climates also found on the page. With explanation and discussion, students should easily be able to understand the relationship between the natural environment and the human divisions, which lead to the Civil War. Other graphs and charts found on the Civil War webpage illustrate some of the differences that existed between the North and South before and during the Civil War. Teachers can encourage discussion and activities that relate to the ways that the environment impacted the social, political, and economic differences and similarities of the North and South and create opportunities for higher-level thinking and discussion. The

environment of the United States can also be discussed for individual battles and analyzed for how they impacted the success or failure of the Confederate or Union armies.

Found at the bottom of the webpage are a number of resources that teachers can use to introduce and expand on student knowledge of the Civil War. The PowerPoint, readings and worksheets can all be linked to connections discussed earlier in regards to the impact of environmental factors on the causes, events, and outcomes of the Civil War. All of the attached readings also provide different reading levels for students of mixed abilities to engage with and understand the different stages of the American Civil War. One of the key strategies suggested in this unit is the use of graphic organizers for classification of information, which has demonstrated improvements in performance ranging from 36 to 41 percent.⁷⁷

The Urban Environment: Lead Poisoning:

The next page found on the website deals with the historical and contemporary occurrence of pollution in the urban environment. When people think of the environment they rarely consider that cities and human shaped landscapes are also part of the external environment that affects both human and non-human elements of the earth. Urban pollution has wide ranging effects on both the inhabitants of city and the surrounding regions. The imaging and diagrams below demonstrates some of the potential pollutants that can affect citizens of urban areas around the world. By introducing urban pollution as a factor of social studies, teachers can engage students

⁷⁷ Ibid, 21.

with social and political issues that affect the communities they live in as well as other parts of the world. There is potential for this thread of environmental history to be incorporated into Global History units on the Modern World, as well as U.S. History units dealing with modern environmental issues, government structure, and the Civil Rights Era.

Lead poisoning has been an important issue in American health since the rise of industry in the 19th century. Concerns about lead poisoning in factory workers was documented by Alice Hamilton at the turn of the 20th century and shaped legal policy for industrial workers. Later in the 20th century lead became a health issue with the rise of automobile culture and leaded gasoline. Legislation was eventually passed in the 1970s that eliminated much of the lead in gasoline that was spread into soil, air, and water across the country. The last major vector for lead poisoning that still carries impacts today exists in building and housing structures erected before 1978. Concern with lead poisoning gave rise to local, state, and federal legislation that banned lead from paint and other products that were common in household use. The environmental history of this social and legal issue can provide students with an understanding of class issues in America as well as engage students with the structure and methods of American government.

Using lead poisoning as a theme can introduce students to the social issues that formed the basis of Civil Rights movements during the 1950s and 1960s. Much of the housing that has been most affected by lead paint has been in poorer neighborhoods across America. The social and legal structure of the U.S. before the Civil Rights era openly allowed for segregation and limited opportunities for minority groups. The

fact that lead poisoning has adversely affected those of lower income levels can be directly related to the inequality and injustice of U.S. society up to the present day. Many of the laws that regulated lead use were pushed by organizations and individuals who had worked for social justice in other areas of American law and society. By using the legal and grassroots approaches pioneered by the Civil Rights movement, legislation and action was eventually taken to limit the potential for lead poisoning in America. The issue of lead can engage students with environmental history while at the same time helping students make connections to topics such as the Civil Rights Era, the legal structure of the U.S. Government, as well as how knowledge from social studies relates directly to situations which shape communities at the local, state, and national level. One of the strongest areas for student achievement suggested in the materials is for students to generate and test hypotheses about the impact of pollution on people living in urban environments. Research has shown that when students use such strategies gains in performance can range from 15 to 30 percent.⁷⁸ Analyzing and engaging with pollution problems in the urban environments around the world can be used to strengthen and personalize the knowledge base of students in both the Global History and U.S. History curriculum.

What is Environmental History?

This webpage found on the site is dedicated to providing resources for students and teachers who are interested in expanding their understanding of the methods and historiography of Environmental History. Environmental History is a growing field of

⁷⁸ Ibid, 106.

historical inquiry that strives to develop a more holistic understanding of human history by investigating and analyzing the impact of ecosystems, geography, and other non-human factors in shaping the course of historical change. The discipline calls for inter-disciplinary scholarship that makes use of historical methods as well as data gathered from biologists, ecologists, chemists, and other scientific areas to create a better understanding of the history.

The three main sub-fields of Environmental History are:

1. Cultural and Intellectual Environmental History - How have human concepts and ideas about the natural world impacted historical events and periods and how have these concepts and ideas changed over time?

2. Political Environmental History - How have the laws and politics surrounding the way that people have dealt with the natural environment changed over time and in different societies?

3. Material Environmental History - How has the ecology, climate, and geography of the world shaped human society, culture, politics, and economic systems and events throughout history?

Each of these sub-fields may at times overlap depending on the focus of historical inquiry. Together they form the general starting points for this important area of history that points out the historical and current connections between humanity and the plants, animals, and natural environments. The website contains a number of web

pages and a basic bibliography of sources for investigation that can mainly be used by teachers to deepen their own understanding of the genre. Attached to the bottom of the page is the historiography of Environmental history that I wrote as the first part of my thesis project, which can act as a summary guide to improve the overall grasp of important terms and concepts mentioned.

Conclusion:

It is my sincere hope that more historians and social studies teachers will begin to embrace elements of environmental history in their teaching and writing. The broad range of topics found on this website hint that similar methods and sources could be applied to nearly every topic found in New York State social studies curriculum. The study of Ancient Rome would not be complete without a consideration of how the natural environment influenced its rise and fall. Also by investigating the lead poisoning hypothesis for Rome's fall students can begin to realize that history is not just a series of cumulative facts, but a system of argument and analysis that is ongoing and dynamic. The study of the geography of Europe and the Russian winter's impact on the campaigns of Napoleon and Hitler show students that history is not just the story of "Great Men" but is sometimes influenced by the same factors no matter the time period. The understanding of how environmental factors influenced the development of industry is key to a historical understanding of the past but is also relevant to current events. Many nations in the world such as China and India are experiencing both the benefits and consequences of rapid industrialization. By linking environmental ideas with past and current events students can develop a holistic

understanding of complex situations as well as gain a grasp of the cyclical nature of history and human development. The Civil War and the make-up of American society have been profoundly influenced by the geography of the United States.

Understanding how climate and geography can shape economic, political, and social structures should be a key element taught in every social studies class. Looking directly into the present by investigating the history of urban pollution, students can see how similar factors of the past still resonate today. Understanding the power of individuals and small grass-roots organizations to promote change can inspire more active participation in social, economic, and political issues that we all face today and will continue to deal with in the future. The series of ideas found in this website is by no means exhaustive. I encourage other teachers to take the opportunity to integrate methods and ideas from environmental history into their teaching practice. I believe this can make the teaching of social studies at all levels more engaging and lead us all closer to the goal of all academic inquiry, truth at complex and holistic levels.

Bibliography:

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