World History Bulletin

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World History Association

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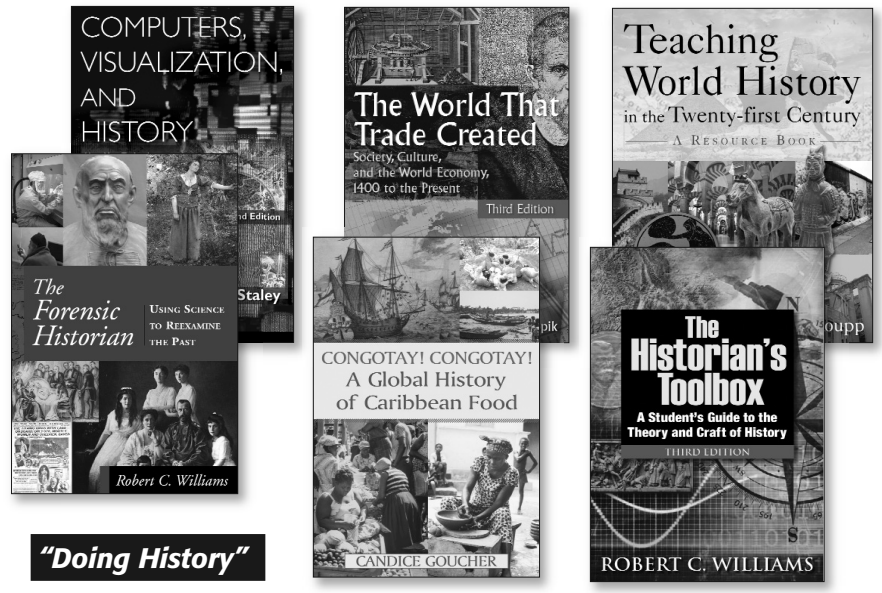

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Editor's Note:

We are excited to present in the Fall issue of the *World History Bulletin* a special section focusing on the theme of "Global Environmental History." The section offers a compelling collection of essays that help us see how to teach the history of the global environment through annotated syllabi, and how to work with environmentally-oriented primary sources in the classroom. The special section also contains a set of essays coming at the problem through the lens of historical research, and J.R. McNeill's ruminations about how to tackle the problem of global environmental history from the standpoint of writing a coherent book are especially useful in light of the turn towards "big history." Together, these essays show how we can begin to develop new strategies of researching and teaching world history in ways that are sensitive to the interactions of humans and their environment. This section of the *Bulletin* was guest-edited by Sarah Hamilton of the University of Michigan. I deeply appreciate the thoughtfulness and rich variety of the section, and I thank Sarah – and the contributors – for their hard work.

As always, the *Bulletin* seeks to publish "short-form" essays on all aspects of historical scholarship including pedagogy, research, or theory. Topics may include the prehistoric, ancient, medieval, early modern, modern, and contemporary periods. Articles may include model syllabi or assignments, if applicable. Or, if you would like to guest-edit a selection of essays on a particular theme, please contact me at jpoley@gsu.edu.

With all good wishes,

Jared Poley

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The *World History Bulletin* is edited by the Southeast World History Association, which is housed in the History Department of Georgia State University.

From the Executive Director

Dear WHA Members,

Focusing on the good and right in our lives is always a positive thing. Our organization is vibrant and dynamic with a bright future filled with professional and personal opportunities for its members.

We concluded a successful conference with wonderful hosting in Minneapolis by North Hennepin Community College in their state-of-the-art institution and are sincerely appreciative for the terrific reception and cooperation we received there.

The symposia model continues to promote the field and offer a wide variety of options for members to present at and attend conferences worldwide. By the time you will have received this, the Fremantle Symposium, hosted by Deborah Gare and team at Notre Dame University will have celebrated an outstanding gathering of scholars in lovely Fremantle. The Hanoi Symposium in late December will be the largest world history gathering of its kind and is well-supported by Vietnam National University and a dedicated group of historians there. In late March, we will have a symposium in Barcelona on "Port Cities in World History," hosted by friends at Universitat Pompeu Fabra and will be a highlight of the year. Finally, our next annual summer conference in Costa Rica will be sure to be one of the most popular ever offered, so be sure to make plans to attend now.

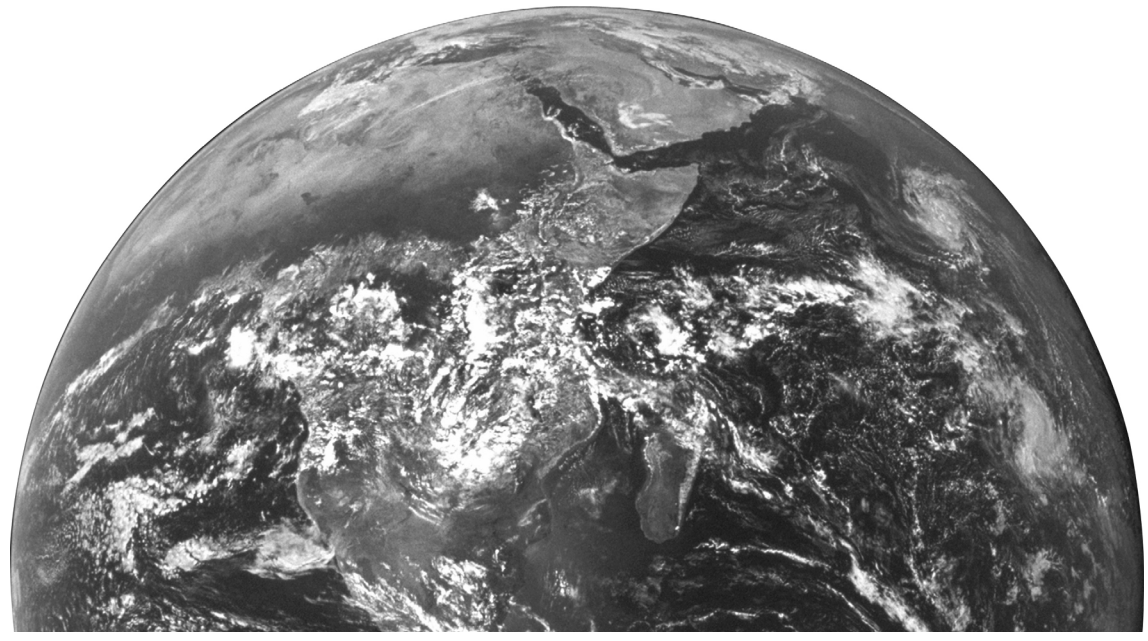
The WHA survives financially by two major funding methods—your membership renewal and our conferences, but these sources alone are not sufficient to meet organizational needs. We also ask that you give generously to our annual fund drive, which provides for a critical gap in our funding needs. Including the WHA in your estate planning makes a lasting contribution and tribute to advancing the goals and mission of the association. Please contact your estate planner or us for more details.

We all owe our sincere thanks to Marc Jason Gilbert, outgoing president of the WHA, who has tirelessly advocated for the WHA throughout his career and especially during his term of office. Similar thanks to all those who serve on the Executive Committee and all the WHA Committees—this is what makes the WHA the strong organization it is. My personal thanks to Jackie Wah, WHA Conferences and Membership specialist, for providing such excellent service for the benefit of the WHA and its membership.

As always, we welcome your comments and suggestions on how we may improve the organization or your membership experience, and thank you again for your support and dedication to the WHA.

I hope that this letter finds you focusing on all the good in your life and the wonderful possibilities life brings.

Winston Welch
Executive Director



Letter from the President of the World History Association

Marc Jason Gilbert, Hawaii Pacific University

This past year may have been the busiest in history for the field of World History as well as our association, with levels of activity reflecting the connectedness of the two. WHA member Kenneth Pomeranz was elected President of the American Historical Association with a commitment to expanding the perspectives of that august body. WHA members Merry Wiesner-Hanks and Wendy Eagan were instrumental in accomplishing much the same task in helping to shape the Social Sciences Framework (known as the "Common Core") that 17 member social studies associations have been working on for three years, including the AHA and the National Council for History Education. Past WHA Presidents Pat Manning and Ross Dunn, along with Tim Keirn, Merry, Wendy, and a host of other WHA members, are contributing to a world history curriculum project flying under the title of "The World History Alliance," supported by the Social Science Research Council and the British Council (UK) among other institutions. WHA members helped raise funds to secure an AHA Book Prize in World History in the name of Jerry Bentley that not only honors our lost friend, but constitutes a signal mark of recognition of our status by our peers in all areas of historical scholarship.

That the WHA Executive Office and Council have experienced its most active year in history was almost inevitable given the changes in administration that were recently introduced. These included the shifting of their semi-annual meeting at AHA and the WHA annual meeting to the WHA annual meeting alone, while expanding the Council's meeting time, thus allowing virtually all your officers to meet collectively and allowing their discussion of WHA business to run a natural rather than artificial length imposed by the AHA/WHA meeting schedules. This step was made possible by the expanded use of the WHA Executive Office and Council listserv, which, in turn, has made it possible to conduct WHA business throughout the year. Without it, it would simply not have been possible to address many fiscal issues (ranging from budget matters to a possible dissertation prize) as well as the soon-to-be-concluded negotiations with the University of Hawaii Press involving the Journal of World History with the degree of transparency and collective decision-making among the elected officers of the WHA that is the hallmark of WHA administration.

One of the advantages of the Internet is that it can supply empirical evidence of growth. By its metrics, the number of discreet visitors to the new on-line journal WHA-affiliated *Middle Ground* has climbed steadily to between 15,000-17,000 this year, while the more senior WHA Affiliated e-journal, *World History Connected*, climbed from 380,000 to 460,000 discreet visitors this past year.

Digital media has enabled the WHA to begin to expand its web footprint and other activities in many ways. The Teaching Committee of the WHA, chaired by James Diskant, has, among other excellent work, been discussing how best to use the WHA homepage as a portal for resources for teachers. It has also enabled the Executive Director, Winston Welch, and his assistant Jacqueline Wah, to administer with the Council's approval the remarkable expansion of WHA-sponsored international symposia. This year will witness three of these closely themed meetings; another will be held this coming spring in Barcelona. Friendships begun at the WHA's triennial international meetings and at these symposia have become enormously productive, not the least in allowing our members to expand their scholarly contacts.

Indeed, potential new partners, such as the California Blueprint and other collaborative curriculum development projects, are coming to the WHA, not for financial support, but for our acknowledged expertise in expanding the horizons of historical study.

In this regard, I am pleased to report that, through the efforts of Douglas Streusand and others, the Society for Military History (SMH) has set aside a Presidential Panel on World History at their annual meeting in return for a panel on Military History at ours. I will chair the first of these panels at the spring 2014 meeting of the SMH. Similar opportunities abound; thanks to the efforts of Winston Welch, WHA member John H. McNeil and the staff of the American Society for Environmental History, we had a splendid joint reception at a recent AHA meeting. Several other associations have broached the idea of a joint meeting, none of which have financial obligations for us beyond those of meeting alone.

Speaking of financial obligations, I would like the membership to know that a recent informative and useful survey completed by those who attended the annual meeting in Minneapolis indicated a real passion for holding our annual meeting at some of the most expensive conference destination cities in the United States. Such venues offer smaller room discounts and higher charges for conference room use, etc. That has not stopped me from pursuing San Francisco and Washington, D. C. as possible future venues (in which the survey showed strong interest). However, this is an opportune time to mention that if you wish meet in such locales, you should look to extending or renewing your membership—larger numbers of members mean bigger discounts and thus make it all the more feasible to book these venues at more reasonable rates.

I look forward to seeing many of you at the triennial international meeting of the WHA which will be held in San Jose, Costa Rica this coming July. It will be presided over by your new President (2014-2016), Craig Benjamin. I am sure he will benefit, as I have, from the consistent support you have lent to your officers over the years; certainly I, as has every departing President, offer my gratitude for the privilege of serving you.

Sincerely

Marc Jason Gilbert,
President, World History Association

Jerry Bentley Book Prize in World History

The American Historical Association invites donations to endow a Jerry Bentley Book Prize in World History, which will honor Professor Bentley's tireless efforts to promote the field of world history, and his signal contributions to it, over a career tragically cut short by his recent death.

Over the past twenty years, the field of world history has developed into one of the most vibrant and energetic areas of the discipline--with a growing volume of books and monographs published in the field, and an expanding presence in history departments and doctoral programs. Professor Bentley played an indispensable role in the development of the field. He began his career as a scholar of Renaissance Italy, but quickly became one of the leading figures in the world history movement of recent decades. He was the founding editor of the *Journal of World History*, and served as its editor from the first issue in 1990 until shortly before his death. He wrote one of the landmark works in the field in 1993, a study of cultural interactions within Eurasia entitled *Old World Encounters*. Through his work with the World History Association, the College Board Advanced Placement program, and his teaching at the University of Hawaii, he helped to elevate world history into a thriving field of both scholarship and pedagogy.

The Jerry Bentley Book Prize in World History will be awarded to the best book in each calendar year in the field of world history. Any book published in English dealing with global or world-scale history, with connections or comparisons across continents, in any period will be eligible. As with all of the book prizes that the American Historical Association awards, its elected Committee on Committees will choose members of a distinguished review panel to review all books submitted for the prize. Most books will be submitted by their publishers, but anyone can submit a book for consideration. The prize will be awarded at the AHA's annual meeting in the first week of January, as part of the Association's awards ceremony.

Donations can be submitted either online http://www.historians.org/donate/ or by check made out to the AHA and mailed to Bentley Prize c/o Robert B. Townsend, Deputy Director, American Historical Association, 400 A St., S.E., Washington, DC 20003. For further information, contact the fundraising co-chairs appointed by the AHA, Alan Karras (karras@berkeley.edu) or Merry Wiesner-Hanks (merrywh@uwm.edu); the prize committee also includes David Christian, Sharon Cohen, Karen Jolly, and Kerry Ward. All contributions are tax deductible.

Special Section: Global Environmental History

The Environment in World History

Sarah Hamilton, University of Michigan

The publication of this special issue coincides with the World History Association's call for papers on "the environment in world history," the theme of next year's conference in Costa Rica. The breadth of the field allows for myriad interpretations: intellectual histories of the various ideas of nature; studies of those ideas' manifestations in daily life; inquiries into the physical and cultural construction of landscapes; and descriptions of the intersection of environments and technologies all find a place within the genre.

The sense that, as Frank Uekötter puts it, "matter matters" has found growing numbers of historians turning to environmental methodologies to analyze a wide range of social, economic, and political questions. The immutable physical characteristics of landscapes and resources resist some transformations and facilitate others, interacting with existing social systems, ecosystems, and ideas to produce new relationships and structures. The essays contained in this issue share an emphasis on the interdisciplinary aspects of environmental research and the need to deal with the nonhuman environment as an active participant in historical outcomes, rather than merely the stage upon which humans perform.

Environmental history lends itself to a global approach in much the same way that environmental problems tend to necessitate transnational cooperation. A historical inquiry involving local spaces, resources, or ideas about nature frequently implicates transnational phenomena, from the physical movements of nonhuman elements of the environment to the transfer of ideas and people from one landscape to another. Transboundary currents, migration patterns, and climates, not to mention the ever-increasing circulation of material resources in global markets, complicate efforts to address many aspects of the natural world on a purely national or local scale. World history, which has long embraced extra-national perspectives, provides a natural framework for thinking about environmental connections and patterns.

The insight that material flows can connect distant societies in economic, biological, and cultural webs is not, of course, a new one, and commodity histories have proliferated since the 1980s.[1] Larry Kessler's article on Hawai'ian sugarcane suggests that such an approach still has much to offer in terms of connecting often-forgotten regions to global networks. Commodity and resource histories like Kessler's also seek to tease out the interactions of human and nonhuman actors within economic, political, and environmental webs. Uekötter, however, suggests that the profound entanglement of humans and resource flows in the modern era resists efforts to treat either as independent, and defies our attempts to identify discrete causes and effects. Shifting our focus from the materials and humans involved in commodity networks to the creation and maintenance of (and obstacles to) the flows themselves offers new ways of thinking about the interrelations between environmental, political, and economic history.

Commerce is only one of many vehicles for transnational material flows. Air and water currents, animal migrations, epidemics, and many other nonhuman-driven phenomena routinely traverse political boundaries and offer exceptional opportunities for research and pedagogy. By integrating historical perspectives with evidence gleaned from the natural and social sciences, environmental historians can offer insights that traditional archival or even archaeological methodologies would miss. Tackling the ongoing debates over the megafaunal mass extinctions of the late Quaternary period, for instance, Paul Jentz demonstrates how cross-disciplinary collaboration can contribute to ongoing paleontological, climatological, and historical debates.

The breadth of knowledge necessary for such interdisciplinary work at times appears overwhelming, perhaps especially to historians already challenged by the need to master the languages and archives used in transnational or global projects. Proving that such concerns afflict even the most respected environmental historians, John McNeill describes his own experience learning to live with a severe case of "inadequate research anxiety syndrome" while writing his award-winning treatise on twentieth-century environmental change, *Something New Under the Sun*. His practical and cheerful advice on the subject can serve as inspiration to many of us who struggle with similar worries.

The pedagogical essays contained in this issue span a wide temporal and geographical range, from Edward Melillo's contemporary, policy-themed course to Michael McInneshin's micro-reader on the role of forest resources in early modern empires. They are similarly varied in scale, from Thomas Anderson's sweeping survey of large-scale environmental disasters to John Soluri's in-depth unit on the Potosí silver mines. This thematic diversity highlights the versatility of an environmental approach, and the extent to which seemingly divergent topics can be tied together by following the movements of material actors. Soluri's piece, for example, uses a story of local resource extraction to explore themes of global geopolitics, technology use and adaptation, demographic shifts, and social justice. All of these essays provide practical materials, as well as theoretical approaches, that can be of use to teachers of world history surveys as well as of dedicated global environmental courses.

The immediate relevance of environmental history to contemporary problems and the interdisciplinary methodologies necessary for its study encourage students to engage actively with the material and teach them to synthesize diverse and complicated ideas in ways that will serve them well outside of the classroom. Knowledge about our environmental past can inform decisions in policy and personal actions, and has become increasingly necessary as we have grown more aware of the changes brought about over the past century. Teachers and scholars of environmental history are all, to a greater or lesser extent, following Donald Worster's exhortation to "try to take part in the great public issues that animate our times: the fate of rural communities,…the aspirations of developing countries, the future of the earth."[2] The transboundary perspective of world historical methodologies, meanwhile, teaches us to "think globally and act locally:" to compare and contrast divergent responses to the environmental challenges of the past; to explore the myriad impacts of seemingly isolated changes in the physical

environment; and to look beyond the individual political case to larger patterns and processes. In both theory and practice, the dynamic field of global environmental history has much to offer.

1 The classic in this genre is, of course, Sidney W. Mintz's *Sweetness and Power: The Place of Sugar in Modern History* (New York: Penguin Books, 1985). Other outstanding examples include Daniel Yergin, *The Prize: The Epic Quest for Oil, Money, and Power* (New York: Free Press, 1991); and John Soluri, *Banana Cultures. Agriculture, Consumption, and Environmental Change in Honduras and the United States* (Austin: University of Texas, 2005).

2 Donald Worster, *The Wealth of Nature: Environmental History and the Ecological Imagination* (Oxford University Press, 1993), ix.

Matter Matters: Towards a More "Substantial" Global History

Frank Uekötter, University of Birmingham

A ghost is haunting the world – the ghost of a new materialism. As in every nascent revolution, protagonists are gathering from multiple directions, and in all sorts of moods: enthused, belligerent, resigned. Some have noted gaping holes in our scholarly landscape, where disciplines like agricultural history, mining history, and forest history have recently been less than fashionable. Others have become alert through their energy bills, or through reports on coltan mining in the Congo or mercury-based gold washing in Latin American jungles. Some have even converted after becoming disaffected with a freewheeling cultural history. Together they form a growing group of people with a common purpose, and we can almost hear them chant what may emerge as the slogan of the new materialism: matter matters.

Of course, it is preposterous, and perhaps a bit wrought-out, to start an essay with a paraphrase of Karl Marx' Communist Manifesto. Revolutionary pamphlets rarely work out as planned, and academia has been wrestling with more than one overambitious call to arms over recent decades. However, the scholarly endeavor that these remarks intend to sketch is already evolving in a number of ongoing research projects, both theoretical and empirical in nature. In a way, the new materialism is already there, as it is not really about a field that is waiting to be explored. It is about a new way of looking at the things that we thought we knew.[1]

Historians have long taken note of the material base of human civilization. We have classics such as Daniel Yergin's *The Prize* and Sidney Mintz's *Sweetness and Power*.[2] We also have a growing number of popular histories that focus on a specific commodity, at times with the emphatic proclamation that they "changed the world."[3] And we certainly do not need to alert environmental historians to the field, as we have quite a number of studies that discuss the environmental toll of resource extraction.[4] Yet, it seems that environmental historians can provide more than insights about ecological costs.

Environmental history is ultimately about changing our view of history. We do not just want a new room in the house of history – we want to rethink the house from the cellar to the rooftop. It seems all the more opportune to stress this mission as the field's revolutionary fervor has been languishing a bit in recent years. Topics have become narrower as the number of scholars increased, and so have geographic and chronological scopes. Specialization is probably an inevitable by-product of academic growth, and certainly an important one, as the gaping holes in our historical knowledge are still legion. However, environmental historians know well that growth usually comes at a price. The merger of global history and environmental history may hold potential for both sides here, as globalization is a good way to encourage the kind of big thinking that once was a key attraction of environmental history.

Matter matters: the rallying cry evokes a key concern of environmental history, namely the agency of non-human entities. Plants, animals and rocks are not merely backdrops against which the drama of human history is playing out. They are actors too, or actants, for those who have read the French sociologist Bruno Latour – players on the scene of history that have their own distinct rationales. From an environmental history perspective, modern history is also the history of ever growing quantities of stuff that circle the globe. By the end of the twentieth century, humans were moving some 42 billion tons of rock and soil per year, often over thousands of miles.[5] For environmental historians, these huge masses are a conceptual provocation of the first order.

If we look at modern history in physical terms, there is no way to deny that the material carries more weight nowadays than the human. If we divide 42 billion tons by the current world population of 7 billion, that makes 6 tons of matter annually for each of us. Should we really assume that this load leaves no imprint on our societies, economies, and mindsets? After all, masses are obstinate entities. We know from physics that masses have momentum: once set in motion, an object pursues its path until an outside force intervenes. If that is so, billions of tons surely have a kind of momentum that challenges human supremacy.

One might object that this is merely a metaphor, as people could stop shuffling oil, wheat, and all the other commodities around the globe at any time. But can they? We know very well that modern societies will be in deep trouble unless we get to move our stuff around as we are accustomed. Wartime starvation, the oil crises of 1973 and 1979, and the recent scare over rare earth metals – whenever the constant flow of resources sputters, modern societies respond with concern, if not outright panic.

During the modern era, the flow of resources has become second nature for people in the West. Resource problems were supposed to be temporary problems at best – short-term exceptions to the general rule that resources were readily available. In modern times, resources were cheap and labor was expensive – for most of human history, it was the other way round. The transatlantic slave trade, where millions of humans died prematurely in the quest for precious commodities such as

sugar, provides one of the more sobering cases in point.

So what happens when we look at resource history in this way: as a story of huge amounts of stuff that get into motion? For one thing, we see that the world was flat long before Thomas Friedman.[6] Commodities connected people in different parts of the world that never met in person. In fact, the material essence of the commodity was the only thing that connected these people. By themselves, resources do not know hierarchies: they only know producers, consumers, and people who bring them from the former to the latter. Commodity chain analysis has made significant strides towards a clarification of who profited along these supply lines and for what reason, and yet the unequal distribution of benefits is not the full drama at play here. There is also the fateful entanglement of everyone along the chain: if something goes wrong somewhere along the way, the flow of resources stops, with repercussions for all parties involved.

With that, environmental history encourages a different reading of modern resource history. Conventional narratives of global trade focus on the people and corporations who built vast supply networks. However, the new materialism is more interested in the obstacles that they encountered and how they were overcome: what were the forces that influenced the speed and volume of global resource flows? What could curtail the stream of material or even block it in full? And when did the flow gain a momentum that challenged human supremacy?

After all, the flow of material was merely a trickle throughout most of human history, and premodern societies had plenty of experiences in dealing with scarcities. When grain was getting scarce, home gardens, berries and mushrooms, or hunting skills assured survival. When a conflagration hit a city, the residents allowed forest use beyond sustainability rates for some time. Knowing about the risk of starvation, storing and preserving food for months ahead was a matter of common sense. In short, whenever a stream of resources dried up, premodern societies had other options in play – not because they were more intelligent than modern people but because reserves were what stood between them and disaster.

Resource history thus highlights the fundamental difference between modern consumerist civilizations and their predecessors. In fact, few issues provide a better demonstration of the enduring merits of speaking about modernity than resource history: modern societies took a fundamentally new approach to the appropriation of material resources. Modernity rephrased the key challenge: rather than preparing for scarcity, humans focused on preventing it from occurring in the first place. Modern societies came to rely on a steady flow of resources: commodities were supposed to be cheap and readily available in every desired quantity. We can see the extent to which modern societies hedged their bet on a continuous flow in that premodern reserves were either sharply reduced or dismantled entirely. What had previously been a crucial safety mechanism was now seen as dispensable and wasteful.

Yet even in modern times, the free flow of resources was never simply a given. Supply networks were fragile, and all sorts of things could go wrong: corporations could go bankrupt, ships could sink, politicians could impose taxes or import bans, and consumers could change their tastes. From a new materialist perspective, resource history is a constant repair job – a perennial fight against obstacles to the flow. John Soluri's remark on banana plantations in Honduras has implications far beyond the topic: "Viewed from the ground level, export banana production appeared more like a series of improvisations (both creative and destructive in nature) than a well-scripted global power play."[7]

Modern societies did not really have a more secure resource base. They merely favored a different way to cope with crises, namely delegating the business of extraction and allocation to a specific group of people. Whereas dealing with resource scarcity was a challenge that involved everyone in premodern times, it was now a task for specialists: farmers, miners, foresters. Thanks to dramatic advances in output per capita, all these groups were shrinking throughout the twentieth century, and they increasingly operated in isolation from the rest of society. For most of the time, resource people could pretty much do as they pleased as long as they provided modern consumers with the cheap, hassle-free stuff that they desired.

Looking at the flow of resources forces us to rethink the concepts that we usually take for granted in our research. In a way, resources were global before humans were, as the famous expeditions to the Land of Punt in ancient Egypt or trade along the Silk Road serve to attest. To be sure, the age of nationalism left its imprint on the flow of material, as global trade coevolved with a national branding of resources: there was Texas oil, Egyptian cotton, and Swedish iron ore. However, these nationalizations were always contested, and they mostly faded away in the decades after World War Two – decades which define our thinking about resources to the present day. Characteristically, the Anglo-Iranian Oil Company changed its name to British Petroleum in 1954. Anonymity was not simply there – it was manufactured. Resources without a face and a past were possible only in a society that took the flow of resources for granted.

Nationalism was a relative thing when it came to resources, and so was the power of the nation-state. Generally speaking, the state was at its most powerful as a player of resource history when it was in deep trouble during the Second Thirty Years' War, the crisis years of Europe between 1914 and 1945, when limitations on the global exchange of goods spurred the development of ersatz products, recycling and autarky regimes, and restrictions on consumption. In order to assure the flow of resources, states turned a blind eye to conditions that they would never have tolerated otherwise. Many mining regions became notorious for their lack of order and state control, making them tantamount to colonial areas right in the heart of the West.

Perhaps most crucially, the flow of resources puts the power of key people and corporations into questions. Resource history is full of powerful people who built monopolies and huge fortunes. But maybe their power was not so absolute after all: maybe they were merely captives of a flow of stuff that could collapse at any time. If we see resource managers as people who had to maintain a flow, and a specific course of the flow, at any cost, we see them not so much as drivers but as people who are caught in a stream beyond their control: they either come to work with the momentum of resources, or they drown.

Modern societies need the flow of stuff, far more so than they need the people who manage it. In other words, corporations and people are dispensable entities, subject to replacement if need be. Even more, resource companies lack some of the assets

that have come to assure the permanence of great corporations. Their claims to resource deposits are often contested, organic assets can be diminished by a freak insect or fungus in the blink of an eye, and reputation is primarily a matter of performance. Recent events like the Deepwater Horizon disaster, where one of the world's largest companies was brought to its knees by a malfunctioning valve, reveal the elusiveness of stable structures in the resource business. All that makes for a distinct mindset: dealing with resources is not just about money and power but also about angst – the fear of getting overwhelmed by the flow.

Thus, a new materialist perspective opens a new window upon the inherent brutality that so obviously characterizes resource extraction. Brutality was probably more than a character trait of unwholesome individuals: it was a structural requirement of a system in which the flow of resources had to be maintained *at any price*. Oil from Saudi-Arabia, rubber from King Leopold's Congo, and sugar from the Caribbean are just the best-known cases. It is truly amazing how resource issues are lurking behind seemingly unrelated conflicts. Just consider the case of Sudan: in 1997, the U.S. government imposed economic sanctions in response to the country's support for terrorists and its abysmal human rights record, but it sought to exempt gum arabic, a key ingredient for soft drinks that accounted for about half of Sudan's exports to the United States. The Washington Post spoke of "soda pop diplomacy."[8]

The more "substantial" history that the new materialism is aiming for is not a history devoid of emotions. Quite the contrary, we gain a deeper understanding of key agents once we recognize how they were struggling with a faceless giant that has momentum but neither morals nor memory. It is striking how material challenges produced similar experiences in different parts of the globe. Resources have left a powerful imprint on our collective imagination, and one that we rarely acknowledge – just look at how gold rush experiences unite California, Alaska, Australia, and South Africa's Highveld.

There are deeper issues at stake in a new materialist history that this essay can only touch upon. One of the most exciting questions is whether bringing resources in as actors challenges our ideas about causality. One might argue that resource history ends up with something approaching a post-causal history, where humans and materials are caught in a complex web of mutual entanglements, defying attempts to sort out causes and effects. Reciprocal mobilization is the defining feature of resource history in the twentieth century, and perhaps the most frightening aspect is its ever-increasing speed. Throughout the modern era, the flow of resources grew so much in scale and velocity that it looks uncomfortably reminiscent of a devastating vortex, drawing in humans without hope and escape.

Of course, one may discuss whether such an endeavor is still environmental history. Many of the issues in this essay lap over into other fields, including political history, cultural history, economic history, and the history of science and technology. Maybe that is ultimately an advantage? Doing resource history makes one realize how fragmented the historian's universe has become over recent decades, and that we are paying a price for a plethora of sub-disciplines. As long as the interest in resources remains spread among different communities, with each having its favored approaches, we are uncomfortably reminiscent of the famous parable about the blind men and the elephant.

After his manifesto and the failed revolution of 1848, Marx spent the rest of his life grumbling about mistakes and dilettantism. The new materialists would be well advised to pursue a different path: a new resource history will thrive from books, both case studies and broad syntheses, that demonstrate the potential of the new perspective. Successful revolutions always grow from the ground up, and we shall see the new materialism not so much as a canonical theory but as a way to look at the world of resources. We need to take the material essence of our human existence more seriously, and see it as far more contested and conflict-ridden than we had thought. Decades of cheap, easy resources have nurtured a state of amnesia, and we can see it as a beneficial side effect of recent resource troubles that this mindset is now looking more questionable than ever. Future historians will surely be wondering about a society that perceived itself as immaterial and yet made its citizen the involuntary owners of bloodstained coltan, courtesy of the cell phones that a broad majority is using on a daily basis. Resource history is disturbing, and new materialist resource history is even more disturbing. But then, that is what good history, and certainly global history, should be all about.

1 At the risk of stating the obvious, this article does not seek to provide an exhaustive discussion of the new materialism and its relevance for historical research. It follows one thread in looking at commodities and the flow of resources while leaving other dimensions of materiality (climate, disease, landscape, etc.) for others to explore.

2 Daniel Yergin, *The Prize: The Epic Quest for Oil, Money, and Power* (New York, 1991); Sidney W. Mintz, *Sweetness and Power: The Place of Sugar in Modern History* (New York, 1985).

3 Mark Kurlansky, *Cod: A Biography of the Fish that Changed the World* (New York, 1997); Kurlansky, *Salt: A World History* (New York, 2002).

4 See, for instance, Donald Worster, *Dust Bowl. The Southern Plains in the 1930s* (Oxford and New York, 1979); Duane A. Smith, *Mining America. The Industry and the Environment*, 1800-1980 (Lawrence, 1987); Timothy J. LeCain, *Mass Destruction: The Men and Giant Mines that Wired America and Scarred the Planet* (New Brunswick, NJ, 2009).

5 John R. McNeill, *Something New Under the Sun. An Environmental History of the Twentieth-Century World* (London, 2000), 30.

6 Thomas L. Friedman, *The World Is Flat. A Brief History of the Twenty-First Century* (New York, 2005).

7 John Soluri, *Banana Cultures. Agriculture, Consumption, and Environmental Change in Honduras and the United States* (Austin, 2005), 217.

8 *Washington Post*, November 8, 1997, p. A24.

Special Section: Global Environmental History

Islands Hitched to Everything Else: The Global Environmental History of Sugarcane in Hawai‘i

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Last year in the pages of the *Bulletin*, the historian Patricia Juarez-Dappe wrote about the significance of sugarcane to world history. Cane is the "best example of an Old World crop that could be much more effectively cultivated in the New World….It generated great wealth, contributed to the largest forced migration in world history, incorporated vast areas of the Americas into the emergent international economy, irreversibly altered ecosystems, provoked profound social changes, and determined foreign and domestic policies." I could not agree with these statements more emphatically but one sentence made me pause. Juarez-Dappe, a Latin Americanist, wrote that cane "played a critical role in the Atlantic economy and global capitalism." While I certainly agree with this statement, I also find it problematic. Juarez-Dappe's juxtaposition of the "Atlantic economy" with "global capitalism" seems to imply (or at least allow the reader to infer) that the Atlantic region and the world are coterminous as far as sugarcane is concerned.[1]

The two areas are, of course, not coterminous. Though most histories of sugar—including Juarez-Dappe's excellent work—focus on the Atlantic world, there is a long history of sugarcane cultivation in the Pacific region.[2] Indeed, the plant likely originated in the South Pacific. The Hawaiian Islands were particularly prominent in the global sugar trade. Hawai‘i's first Polynesian settlers brought cane to the islands and cultivated it sometime around 1000-1200 CE.[3] Small-scale manufacture of sugar began in the early nineteenth century and grew rapidly in the mid-century decades. By the end of the 1800s, Hawai‘i ranked among the world's top sugar producers. In the twentieth century, exemplifying the convergence of botanical and industrial innovation in agribusiness, Hawaiian planters bred new varieties of cane and designed advanced mills to make Hawai‘i's plantations the most efficient at converting acres of cane into sugar.[4]

The history of sugarcane in Hawai‘i reveals some valuable insights for global environmental history. When we consider the environmental history of Hawai‘i's sugarcane industry, a maxim of John Muir's becomes apparent. In 1911, Muir wrote, "When we try to pick out anything by itself, we find it hitched to everything else in the Universe."[5] Sugarcane was the thread hitching a remote, formerly isolated group of islands to the rest of the world. Other factors—Euro-American exploration and imperialism in the Pacific, as well as the whaling, sandalwood, and fur trades—certainly created global connections in the islands. However, the sugarcane industry created a sustained pattern of environmental and social change that linked Hawai‘i to foreign places. Cane made Hawai‘i part of a wider ecological network of plantation regions. The history of sugarcane not only spanned the Atlantic and Pacific oceans, but also united the two.

Historians must integrate the history of sugarcane in Hawai‘i (and throughout the Pacific) with that of the Atlantic sugar world. Some broadly framed histories of sugar include brief discussions of cane planting in Hawai‘i and the Pacific region, often as part of a narrative about sugarcane in the Atlantic. Meanwhile, scholarship on sugarcane in Hawai‘i has mainly focused on the local stories of labor and ethnicity in relation to the cane industry.[6] A history of Hawaiian sugarcane in the context of the global environmental history of sugar can take a step toward answering the historian Gary Okihiro's call for the study of a "Pacific civilization" as a corrective to Atlantic-centered histories.[7]

Such a project can also demonstrate the benefits of eschewing regional limitations in an age of global travel and commerce. The case of Hawai‘i suggests that global environmental change often moves on lines of agricultural production. Hawai‘i came to look more like other sites of sugarcane planting. These places shared not only cane, but the many other plants, animals, and pathogens that thrived in or near cane plantations. They also shared patterns of human action, as sugarcane experts and other professionals applied their knowledge to different locations. Further, the rise of the plantation complex in Hawai‘i meant that the islands experienced environmental change in similar ways to other cane-planting regions.

Two concepts from different historical subfields, the plantation complex and ecological exchange, operated in tandem to remake Hawai‘i's environment and to add new significance to environmental change in the islands. The historian Philip Curtin defined the plantation complex as "an economic and political order."[8] This order encompasses not only plantations themselves, but a system of government structured to maintain it, international networks of labor and capital, and the appropriation of land and natural resources for production.

The environmental historian Alfred Crosby popularized the idea of ecological exchange in his work on the environmental consequences of European settlement of the New World. He demonstrated the powerful consequences that the transmission of plants, animals, and diseases to new places can have.[9] Ecological exchange is always due to many factors: nonhuman agents, random chance, and shifts in biotic ranges can all play a role, but ecological exchange is not a free-for-all. As the environmental historian Stuart McCook noted, ecological exchange increases and decreases at various times. Moreover, people have a strong influence over the contours of exchange.[10] As the cane industry grew in Hawai‘i in the late nineteenth century, it came to have greater influence over the islands' exchange with the outside world. The plantation complex dominated Hawai‘i's ecological exchange, as simultaneously environmental change wrought by new species in Hawai‘i influenced the islands's plantation complex.

Crosby called the plants, animals, and pathogens that people take with them—both deliberately and accidentally—to new places "portmanteau biota."[11] Sugarcane had its own particular portmanteau biota. As planters imported foreign varieties of cane from all over the sugar-producing world, cane specimens brought with them devastating diseases and pests such as mosaic disease and the leaf hopper. Once in Hawaiian plantations, sugarcane's portmanteau biota spread to other fields and forests, sometimes becoming invasive species and disrupting existing ecosystems. The islands then became an exporter of cane

pests to other sugar-producing regions. Just as sugarcane spread from place to place, so did cane's companions. To combat disease planters established quarantine stations and imported yet more varieties of cane to develop disease-resistant crops. Hawaiian planters also practiced biological pest control, seeking out and importing many non-native predators and parasites ranging from the Indian mongoose in the 1880s, to the Asian ladybug in the 1890s, to the South American cane toad in 1930s.[12] The deliberate introductions could prove just as environmentally damaging as the accidental ones, however. A certain parasitic wasp, originally imported from Texas and China to control moths in the cane fields, soon spread to Hawaiian forests and preyed upon native species. Just as with the original cane pests, Hawai'i also exported some of these predators. After remarkable success with the cane toad, Hawaiian planters transmitted it to Australia, where it became a particularly invasive species.[13]

Many of the species brought into Hawai'i to control insect pests spread to Hawai'i's forests. They established large populations and fed on animals of all kinds, which can be particularly damaging to island environments. New introductions can prey on some native species and outcompete others for food, causing significant environmental change. Insular environments tend to foster co-evolution among faunal and floral species: birds evolve long, curved beaks, for example, to reach the nectar of certain flowers, while those flowers develop narrow channels to keep their pollen protected from the elements yet available for dispersal. Insular environments also tend to hold a smaller number of total species than mainland environments.[14] These two factors mean that individual species can play a larger role in island ecosystems than in mainland ones, and thus the consequential ripples caused by an ecological disruption such as the introduction of a new predator can be dramatic. Fewer insects for birds to eat translates to fewer birds to pollinate trees, which can then mean fewer trees to provide other animals with food or habitats, and so on. The environmental change caused by introduced species radiated from the plantations to ecosystems throughout the islands.

Even planters' attempts at environmental protection contributed to ecological exchange. From the mid-nineteenth century, some in Hawai'i warned of tree loss—planters and cattle ranchers generally accused each other of being worse offenders—and some planters made efforts at reforestation. As early as 1853, when sugarcane planting in Hawai'i was in its earliest stages, William Little Lee, the Chief Justice of Hawai'i's Supreme Court, President of the Royal Hawaiian Agricultural Society, and partner in a cane plantation, wrote that he considered it an obligation of cane planters to plant trees.[15] Cane planters often favored exotic trees for their reforestation efforts, bringing in trees from Australia, Asia, and the Caribbean. By the early twentieth century, the Hawaiian Sugar Planters' Association and the territorial government partnered for a major reforestation project. They introduced the Indian banyan tree and the Canary Islands' firetree to Hawai'i, which then spread throughout Hawaiian forests, smothering native ferns and crowding out native trees.[16]

Hawai'i's ecological exchange was not limited to biota. Environmental knowledge traveled on networks of the sugar trade as well. Hawai'i became part of a global regime of scientific planting which developed in the late-nineteenth and early-twentieth centuries. In 1851, the Scottish-born Foreign Minister for the Hawaiian Kingdom and sugarcane planter Robert C. Wyllie compared Hawai'i to Barbados, emphasizing that planters and the government should enlist the expertise of global sugar producers.[17] Thereafter, Hawaiians recruited agronomists and technologists from other cane growing places and corresponded with networks of planters. Planters traveled to Louisiana and the Caribbean to study planting and milling practices there. Environmental engineers who were not directly associated with cane became part of this network, too. The engineer Michael O'Shaughnessy, most famous for his work on the controversial Hetch Hetchy Reservoir project in California's Yosemite Valley, designed some of the largest irrigation projects in Hawai'i in the 1890s. These specialists disseminated ideas about land and resource use, and about how to set up fields and mills, which shaped the Hawaiian environment just as the introduction of alien plants and animals did.

This brief overview offers a hint at the extent to which sugarcane revolutionized Hawai'i's environmental history and joined it to the global environmental history of sugarcane. This put additional stress on what, according to ecologist George Cox, is already a place with "one of the most highly endemic, fragile, and endangered biotas on earth."[18] As an active member in a network of ecological exchange, Hawai'i became hitched to the wider world to the detriment of its endemic biodiversity.

Such an outcome is of more than local concern. By examining Hawai'i's sugarcane complex in a global context we can see how the environment can both reflect and influence power relations among members of a plantation society. Cultural encounters between people of diverse interests and identities unfolded upon a backdrop of a dynamic environment increasingly influenced by the sugarcane industry, where the costs and benefits of environmental change were shared unequally. Additionally, with continental forests subject to clear-cutting and bisection from development, biogeographers, conservation biologists, and ecologists see an increasing "insularization" of ecosystems throughout the world. Thus, Hawai'i's case may offer something of a model for the consequences of ecological exchange dominated by the plantation complex.[19]

1 Patricia Juarez-Dappe, "Exploring Diversity: Teaching the History of Sugar in Latin America," *World History Bulletin* 28:2 (Fall 2012), 23.

2 Patricia Juarez-Dappe, *When Sugar Ruled: Economy and Society in Northwestern Argentina, Tucumán, 1876-1916* (Ohio: Ohio University Press, 2010). A thorough review of sugarcane's historiography could take up far more space than the pages of the *Bulletin* allow. For an overview of some books on the history of sugar in Latin America, see Juarez-Dappe, "Exploring Diversity." Histories of sugarcane in the Atlantic world include: Richard S. Dunn, *Sugar and Slaves: The Rise of the Planter Class in the English West Indies, 1624-1713* (Chapel Hill: University of North Carolina Press, 1972); J. H. Galloway, *The Sugar Cane Industry: An Historical Geography from its Origins to 1914* (New York: Cambridge University Press, 1989); Stuart McCook, *States of Nature: Science, Agriculture, and Environment in the Spanish Caribbean, 1760-1940* (Austin: University of Texas, 2002);

Sidney W. Mintz, *Sweetness and Power: The Place of Sugar in Modern History* (New York: Penguin Books, 1985); Stuart B. Schwartz, ed., *Tropical Babylons: Sugar and the Making of the Atlantic World, 1450-1680* (Chapel Hill: University of North Carolina Press, 2004); and Rebecca J. Scott, *Slave Emancipation in Cuba: The Transition to Free Labor, 1860-1899* (Princeton, Princeton University Press, 1985).

3 This is a relatively new estimate of first settlement. Earlier scholarship has dated settlement to between 300 and 600 CE. Patrick V. Kirch, "When Did the Polynesians Settle Hawai'i? A Review of 150 Years of Scholarly Inquiry and a Tentative Answer," *Hawaiian Archaeology* 12 (2011), 3-26.

4 Noel Deerr, *The History of Sugar* (London: Chapman and Hall, 1949), 28; William H. Dorrance and Francis S. Morgan, *Sugar Islands: The 165-Year Story of Sugar in Hawai'i* (Honolulu: Mutual Publishing, 2000), 5.

5 John Muir, *My First Summer in the Sierra* (Boston: Houghton Mifflin Company, 1911), 211.

6 For ethnicity and labor histories of the sugarcane industry in Hawai'i see Clarence E. Glick, *Sojourners and Settlers: Chinese Migrants in Hawaii* (Honolulu: University Press of Hawaii, 1980); Edward D. Beechert, *Working in Hawaii: A Labor History* (Honolulu: University of Hawaii Press, 1985); Ronald T. Takaki, *Pau Hana: Plantation Life and Labor in Hawai'i, 1835-1920* (Honolulu: University of Hawai'i Press, 1983); and Gary Y. Okihiro, *Cane Fires: The Anti-Japanese Movement in Hawai'i, 1865-1945* (Philadelphia: Temple University Press, 1991). Ralph S. Kuykendall, *The Hawaiian Kingdom* 3 vol. (Honolulu: University of Hawai'i Press, 1938) and Gavan Daws, *Shoal of Time: A History of the Hawaiian Islands* (New York: Macmillan, 1968) remain thorough histories of Hawai'i with valuable information on the plantation complex. Recent notable works on the environmental history of sugarcane in Hawai'i include: Carol A. MacLennan, "Foundations of Sugar's Power: Early Maui Plantations, 1840-1860," *Hawaiian Journal of History* 29 (1995), 33-56; Carol A. MacLennan, "Hawaii Turns to Sugar: The Rise of Plantation Centers, 1860-1880," *Hawaiian Journal of History* 31 (1997), 97-125; Carol A. MacLennan, "The Mark of Sugar: Hawai'i's Eco-Industrial Heritage," *Historical Social Research* 29, no. 3 (2004), 37-62. Deerr includes a chapter on Hawai'i and Galloway includes a chapter on the entire Pacific region.

7 Gary Y. Okihiro, "Toward A Pacific Civilization," *The Japanese Journal of American Studies* 18 (2007), 73-85.

8 Philip D. Curtin, *The Rise and Fall of the Plantation Complex: Essays in Atlantic History* (New York: Cambridge University Press, 1990).

9 Alfred W. Crosby, Jr., *The Columbian Exchange: Biological and Cultural Consequences of 1492* (Westport, Ct.: Greenwood Press, 1972).

10 Stuart McCook, "The Neo-Columbian Exchange: The Second Conquest of the Greater Caribbean, 1720-1930," *Latin American Research Review* 46, Special Issue: Contemporary Debates on Ecology, Society, and Culture in Latin America (2011), 11-31.

11 Alfred W. Crosby, Jr., *Ecological Imperialism: The Biological Expansion of Europe, 900-1900* (New York: Cambridge University Press, 1986).

12 George W. Cox, *Alien Species in North America and Hawaii: Impacts on Natural Ecosystems* (Washington, D.C.: Island Press, 1999), 180; R.C.L. Perkins, "The Introduction of Beneficial Insects into the Hawaiian Islands," *Nature*, 25 Mar. 1897, 499-500; Dorrance & Morgan, 180.

13 Anon., *Sugar in Hawaii: The Story of Sugar Plantations, Their History, Their Methods of Operation and Their Place in the Economy of Hawaii* (Honolulu: Hawaiian Sugar Planters' Association, 1949), 52-58; John L. Culliney, *Islands in a Far Sea: The Fate of Nature in Hawai'i* (Honolulu: University of Hawai'i Press, 2006), 257.

14 David Quammen, *The Song of the Dodo: Island Biogeography in an Age of Extinctions* (New York: Scribner, 1996), 257-258.

15 William Little Lee, "Proceedings of the Royal Hawaiian Agricultural Society," *The Transactions of the Royal Hawaiian Agricultural Society: At its Third Annual Meeting in June, 1853* 1: 4 (Honolulu: Government Press, 1853) 8.

16 Culliney, 194-197; Cox, 178.

17 Robert Chrichton Wyllie, "Communication of R.C. Wyllie," *The Transactions of the Royal Hawaiian Agricultural Society: At its First Annual Meeting, in August, 1851* 1:2 (Honolulu: Government Press, 1851), 114-116.

18 Cox, 175.

19 Quammen, 436.

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Quantitative Analysis of Megafaunal Extinctions and the Tenacity of Pleistocene Overkill: Archeology and the World Historian

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The world historian must rely on the archeological record when telling the story of early humans, so the first pages of a world history textbook are especially beholden to the latest discoveries of those whose primary sources are written in bones, in artifacts, and in the earth itself. In the case of world historians whose specialties involve either early human migration or environmental history, this phenomenon is still more pronounced. Indeed, these scholars must proceed apace not only with archeologists, but, regarding the earliest human history, they must also work with paleoclimatologists, palynologists, paleontologists and practitioners of other related sciences. This paper explores recent scholarship regarding the relationship between climatological and anthropogenic factors in late Quaternary megafaunal extinctions, examines these findings in light of ongoing adherence to the theory of Pleistocene overkill, seeks to understand the relevance of these issues in a world historical context, and argues for the integration of ongoing scientific discoveries into historical narratives. This integration is particularly essential if we are to understand the human story as it unfolded during its earliest phases.

A paper published 5 March 2012 in *Proceedings of the National Academy of Sciences* by five Cambridge scholars determined, through quantitative analysis of data from five global landmasses, that late Quaternary period climate change coincided with the extinctions of most of the northern hemisphere's megafauna that weighed at least 44 kilograms. Furthermore, climate change beginning about 100,000 years ago coincided with the migration of humans in Eurasia, Australia, New Zealand, and later in North America and South America, and by measuring extinction rates of megafauna in these regions the authors determined "that both climatic variables and human arrival were important predictors of extinction rates."[1] Megafaunal extinctions, to name only a few, included the North American and Eurasian mammoth, the North American mastodon and giant sloth, the European woolly rhino, the Australian giant kangaroo and wombat, and the New Zealand moas, a giant flightless bird. The majority of these extinctions occurred in the last 50,000 years.

What distinguishes the Cambridge paper from previous studies is its wide geographical and temporal scope. Climate variability from several hundred thousand years ago was determined through examination of Antarctic ice cores. This data was analyzed in combination with both the earliest and the latest proposed arrival dates for humans on the five landmasses in the study as well as with data regarding extinction dates of megafauna. Generalized linear models were utilized to determine relationships between human presence and climate variation for each landmass. To examine uncertainty between megafaunal extinction and human arrival, the models were subjected to 10,000 combinations of first and last appearances of megafauna for time scales of 700,000 and 100,000 years as well as to 32 combinations of arrival dates for humans, providing a total of 320,000 extinction scenarios.

Regarding climatic variables, a significant relationship was indicated between rates of decrease in temperature and rates of extinction, but rates of temperature increase had a limited effect on extinctions. In most of the predictive models, the combination of climatic variables and human arrival dates coincided with megafaunal extinction rates. However, human arrival provides only "one explanatory variable (compared with four climate variables), which can act in one (700-ky time scale) or two (100-ky time scale) time intervals, whereas climatic variables can act in all of them."[2] Furthermore, the North Greenland Ice Core Project provided data for a 100-ky analysis of climatic variables that compared favorably with the Antarctic Dome C ice core for the same period. Both cores indicated associations between human arrival, the rate of megafaunal extinction, and the maximum rate of temperature decrease among climatic variables.

The quantitative global analysis of climate change in relationship to megafaunal extinction beginning approximately 100,000 years ago further contextualizes this period in human history; moreover, it calls into question the theory of Pleistocene overkill that has been widely accepted since it was first advanced by Paul S. Martin in 1967.[3] Martin's models were, in comparison with the Cambridge paper, only marginally quantitative; indeed, his conclusions were buttressed largely by analogy and by utilizing lack of evidence as evidence, that is, by negative evidence. Although informative, his reliance on range-carrying capacities for mid-twentieth century African game parks and by an isolated historical record "of extraordinary meat consumption and occasional extreme waste among the Plains Indians"[4] are not reliable indicators of either Pleistocene megafaunal population rates or of the manner in which human hunters may have utilized their prey across the range of the entire continent. Furthermore, his human population models assume a reproduction rate that "would unavoidably explode [. . .] with a force that exceeded ordinary restraint," claiming a rate as high as 3.4 percent annually; this rate is based analogously on an isolated example of the settlement rate for Pitcairn Island as reported by J.B. Birdsell in 1957.[5] Martin also assumes an omnipotent perspective by which Paleolithic pioneers, having crossed the Bering Bridge, "found a productive and unexploited ecosystem of over 10^7 square miles."[6] He also narrativizes their march across the continent as if the journey was a matter of only a few generations of hunters "who conquered the frozen tundra of eastern Siberia and western Alaska [. . .] and must have been delighted when they first detected milder climates as their routes turned southward."[7] But most egregious is his near total dismissal of climate variables, an analytical lacuna that clears the way for his hypothesis that humans and humans alone were responsible for the extinction of 35 genera of North American megafauna.

Martin's negative evidence includes the lack of kill sites as proof of the rapid rate of killing: "Extinction would have occurred before there was opportunity for the burial of much evidence by normal geological processes. Poor paleontological visibility would be inevitable."[8] Two more pieces of negative evidence that Martin uses to claim sudden overkill are "the

absence of cave paintings of extinct animals in the New World and the lack of ivory carvings such as those found in the mammoth hunter camps of the Don Basin. The big game was wiped out before there was an opportunity to portray the extinct species."[9]

David J. Meltzer provides a succinct categorical critique of Martin's theory in his 2010 *First Peoples in a New World: Colonizing Ice Age America*. First, Meltzer points to the geographic and environmental challenges faced by people as they colonized the vast stretches of North and South America. He also questions the ability of humans to make the necessary adaptations to live in the wide variety of regions between Alaska and Tierra del Fuego in as little as 1000 years, the time scale proposed by Martin, the brevity of which is essential to accommodate his blitzkrieg liquidation scenario of 35 genera of megafauna within 350 years, and a time scale that posits a colonization front that advances in an unstoppable human wave with the steadiness and determination of an organized army. Second, the reproductive rate of 3.4% that Martin proposes for Pleistocene humans does not correlate to the reproductive rate of approximately 1.5% for most of the world's hunter-gathers. Martin's rate is based largely on isolated and atypical rates such as the Pitcairn Islands following the arrival of the *Bounty* mutineers. Third, each species possesses its own unique behavior, so the tracking and killing strategies of their hunters must vary accordingly; therefore, one might question the ability to amass the continent-wide knowledge base that would be required by Clovis-age peoples to hunt nearly three dozen genera of megafauna to extinction within 350 years. Fourth, foragers tend to move to new areas when resource returns begin to decline, unless groups are prevented from migrating by other bordering peoples, a circumstance unlikely in the thinly populated Pleistocene, so with the opportunity to move to areas promising more lucrative resource returns, it is, in Meltzer's words, "highly unlikely Clovis hunters behaved like Sherman's army in its scorched-earth march across Georgia." Fifth, the naïveté of Pleistocene megafauna as imagined by Martin does not corroborate with evidence regarding the rapid speed at which animals process information regarding new predators. Also, before the arrival of humans, all megafauna were certainly familiar with their predators, and human presence added merely one more to the list. In short, the window of opportunity was likely opened only briefly for Pleistocene hunters to take advantage of their prey's unfamiliarity with new dangers. Sixth, Martin's posited megafaunal naïveté as instrumental to overkill can operate only if humans did not inhabit North America before the advent of Clovis technology, but North American human presence (and potential megafaunal predation) dates to thousands of years before Clovis as indicated by the archeological record.[10]

In 2003, David J. Meltzer and Donald Grayson published "Requiem for North American Overkill,"[11] which met with an acerbic refutation from Stuart Fiedel and Gary Haynes.[12] Echoing Martin's defense of overkill, they cited negative evidence as evidence and argued that the scarcity of kill sites is to be expected, since the period of megafaunal predation lasted only approximately three centuries, coinciding with the overlap of Clovis technology and megafaunal prey.[13] Furthermore, the role of climate change is summarily dismissed:

> Grayson and Meltzer advocate a vague theory of climate change in place of overkill, while candidly admitting that for now, "none (of the climate change hypotheses) connect particular climate variables with particular organisms in powerful ways." Climate change has always been the main theoretical alternative to human predation. Grayson and Meltzer offer no new refinements to the climate model, and seem unaware of recent developments in the study of latest Pleistocene climates.[14]

The recent developments referred to by Fiedel and Haynes concern the Younger Dryas, and these studies led them to conclude that "the Younger Dryas episode is unique in its faunal consequences only because its onset coincided with the arrival of human hunters."[15] Ironically, their zero-sum adherence to the theory of Pleistocene Overkill demanded that climate change could be only coincidental, a mere backdrop to the monocausal megafaunal blitzkrieg, which occurred independent of environmental context. Of course, Grayson and Meltzer were fully aware of the Younger Dryas. Indeed, Meltzer agreed with the conclusion regarding the uniqueness of the era: "the Younger Dryas was unique in the annals of glacial history. It has traditionally been thought the events ending this last glacial cycle were no different than those ending previous glacial cycles." But he went on to explain, "That's now doubtful, but that's good news: it might help explain why many of the Pleistocene mammals, which so successfully had survived previous glacial-interglacial cycles, succumbed to this one."[16]

Martin's own last words on the topic are in his 2005 *Twilight of the Mammoths: Ice Age Extinctions and the Rewilding of America*. Here he continues to dispel the role of climate change as a factor in megafaunal extinctions and continues to argue "that virtually all extinctions of wild animals in the last 50,000 years are anthropogenic, that is, caused by humans."[17] His reaction to the role of climate in Pleistocene extinctions deserves to be quoted at length.

> [S]ome members of the climate-change school are in deep denial (Grayson and Meltzer 2002, 2003). A cadre of archeologists, especially those who claim or prefer to believe that people were in the New World before the extinctions began, agrees with them. In addition, many vertebrate paleontologists of my generation, born in the first third of the twentieth century, support the climatic paradigm.[18]

To his credit, the 1984 *Quaternary Extinctions: A Prehistoric Revolution* that Martin edited with Richard G. Klein includes a section on geologic-climatic models.[19] In the introduction, he generously offers the possibility that "if climatic models ultimately prevail in accounting for Pleistocene extinction, they are likely to be derived from examples offered in this section."[20] Seven articles are included, two of which examine extinctions across the long range: S. David Webb identifies five major extinction episodes over the last ten million years, and his data suggests their potential relationship to terminal stages of glaciation;[21] Philip D. Gingerich also takes the long view of extinctions

with the framing question, "Viewed in the context of the entire Cenozoic era, are Pleistocene extinctions unusual?"[22] Russell W. Graham and Ernest L. Lundelius, Jr. examine the coevolutionary disequilibrium between plants and animals that may have occurred in the late Pleistocene and consequently triggered megafaunal extinctions.[23] The remaining four articles of the section examine Paleolithic climatology and geology along lines similar to these three articles.[24]

Paul Martin was known for his generosity as a scholar, and he welcomed exchange with those who opposed Pleistocene Overkill, particularly because such exchanges would sharpen research into his own theory. Furthermore, Martin's credentials as an extraordinarily meticulous and gifted archeologist were joined with a famously charismatic personality, certainly an overall winning combination that undoubtedly left a highly influential mark on his students. He never absolutely ruled out the possible role of climate change in Pleistocene extinctions, but he remained a loud, if increasingly isolated, proponent of overkill.

Martin did go as far as to say that "climate change can reduce, increase, or shift species' ranges, reduce or increase the availability of nutritional quality of forage; change the length of seasons; and otherwise regulate populations." But as soon as he opened the door, he slammed it shut again by proclaiming "the climate-change proponents seem to me to assume their conclusions rather than to prove it,"[25] a statement that paralleled his remark earlier in the text that "climatic change is always of interest but not crucial in formulating explanations."[26] Martin's rejection of climate change theory resulted in a highly polarized scholarly atmosphere: in one corner is the overkill party; in the other corner is the overchill party.

Paul Martin died in late 2010. Perhaps, had he lived to see the Cambridge study, which was published less than two years after his death, he would have reconsidered his harsh dismissal of climate change as a factor in Quaternary extinctions. Though such speculation is pointless, Martin left no few disciples who have far too many years invested in parroting the overkill theory and, understandably, resist changing their fierce adherence to his dated conclusions. Stuart Fiedel and Gary Haynes are only two examples. Yet, the Cambridge study is by no means a zero-sum analysis and its conclusions do not reject the anthropogenic factor in late Quaternary megafaunal extinctions. Again, as underscored in the study, "both climatic variables and human arrival were important predictors of extinction rates."[27]

Among world historians, a survey of ten current major world history textbooks indicates a widely shared understanding that late Quaternary extinctions were the result of both anthropogenic and climatic actions. Eight of the ten texts provide clear statements regarding the dual roles,[28] one mentions extinctions but does not address a cause for it,[29] and one does not cover the subject of megafaunal extinctions.[30] Though a textbook survey provides only a single metric by which to gauge the current state of understanding among world historians regarding megafaunal extinctions, it is no small measure, and the broad consensus indicates the world historical approach at work, which is to understand events in broad historical context and to maintain a healthy suspicion for monocausal theories.

Of course, when it comes to narrativizing human history in the Pleistocene, world historians must rely completely on the archeological record. It is for this reason that the PNAS paper on megafaunal extinctions is of vital importance to us. Although its conclusions are perhaps not surprising, they are definitive to a degree unmatched by previous studies. The paper further indicates the obsolescence of Martin's term, "Pleistocene Overkill," because the term – and of course the theory to which the term points – is too narrow and does not allow room for the environmental factor in the complex equation concerning late Quaternary megafaunal extinctions.

1 Graham W. Prescott et al., "Quantitative Global Analysis of the Role of Climate and People in Explaining Late Quaternary Megafaunal Extinctions," *Proceedings of the National Academy of Sciences of the United States of America* 109, no. 12 (2012): 4527.

2 Ibid., 4528.

3 Paul S. Martin, "Prehistoric Overkill," *Pleistocene Extinctions: The Search for a Cause*, eds. Paul S. Martin and H.E. Wright (New Haven: Yale University Press, 1967), 75.

4 Paul S. Martin, "The Discovery of America," *Science, New Series* 179, no. 4077 (1973): 972.

5 Ibid., 970.

6 Ibid., 969.

7 Ibid., 970.

8 Ibid., 969.

9 Ibid., 972.

10 David J. Meltzer, *First Peoples in a New World: Colonizing Ice Age America* (Berkeley: University of California Press, 2010), 256 – 258.

11 Donald K. Grayson and David J. Meltzer, "A Requiem for North American Overkill," *Journal of Archeological Science* 30 (2003).

12 Stuart Fiedel and Gary Haynes, "A Premature burial: Comments on Grayson and Meltzer's 'Requiem for Overkill,'" *Journal of Archeological Science* 31 (2004).

13 Ibid., 122-123.

14 Ibid., 124.

15 Ibid 125-126.

16 David J. Meltzer, 60.

17 Paul S. Martin, *Twilight of the Mammoths: Ice Age Extinctions and the Rewilding of America* (Berkeley: University of California Press, 2005), 3.

18 Ibid., 165.

19 Paul S. Martin and Richard G. Klein, eds., *Quaternary Extinctions: A Prehistoric Revolution* (Tucson: The University of Arizona Press, 1984).

20 Ibid., 187.

21 S. David Webb, "Ten Million Years of Mammal Extinctions in North America" in *Quaternary Extinctions: A Prehistoric Revolution*, ed. Paul S. Martin and Richard G. Klein (Tucson: The University of Arizona Press, 1984), 189 – 210.

22 Philip D. Gingritch, "Plesitocene Extinctions in the Context of Origination-Extinction Equilibria in Conzoic Mammals," in *Quaternary Extinctions: A Prehistoric Revolution*, ed. Paul S. Martin and Richard G. Klein (Tucson: The University of Arizona Press, 1984), 211 – 222.

23 Russell W. Graham and Ernest L. Lundelius., Jr., Coevolutionary Disequilibrium and Plesitocene Extinction," in *Quaternary Extinctions: A Prehistoric Revolution*, ed. Paul S. Martin and Richard G. Klein (Tucson: The University of Arizona Press, 1984), 223 – 249.

24 John E. Guilday, "Pleistocene Extinction and Environmental Change: Case Study of the Appalachians, in *Quaternary Extinctions: A Prehistoric Revolution*, ed. Paul S. Martin and Richard G. Klein (Tucson: The University of Arizona Press, 1984), 250 - 258; R. Dale Guthrie, "Mosaics, Allelochemics and Nutrients: An ecological Theory of Late Plesitocene Megafaunal Extinctions,: in *Quaternary Extinctions: A Prehistoric Revolution*, ed. Paul S. Martin and Richard G. Klein (Tucson: The University of Arizona Press, 1984), 259 - 298; Richard A. Kiltie, "Seasonality, Gestation Time, and Large Mammal Extinctions," in *Quaternary Extinctions: A Prehistoric Revolution*, ed. Paul S. Martin and Richard G. Klein (Tucson: The University of Arizona Press, 1984), 299 - 314; and James E. King and Jeffrey J. Saunders, "Environmental Insularity and the Extinction of the American Mastodont, in *Quaternary Extinctions: A Prehistoric Revolution*, ed. Paul S. Martin and Richard G. Klein (Tucson: The University of Arizona Press, 1984), 315 – 339.

25 Paul S. Martin, 2005, 167.

26 Ibid., 48.

27 Graham W. Prescott et al., 4527.

28 See Jerry H. Bentley and Herbert F. Ziegler, *Traditions and Encounters: A Global Perspective on the Past*, 5th ed. (New York: McGraw Hill, 2011), 108-109; Jerry H. Bentley, Herbert F. Ziegler, and Heather E. Streets-Salter. *Traditions and Encounters: A Brief Global History*, 3rd ed. (New York: McGraw Hill, 2014), 64; Felipe Fernández-Armesto, *The World: A History*, 2nd ed. (Upper Saddle River: Prentice Hall, 2010), 24; Edward H. Judge and John W. Langdon, *Connections: A World History*, 2nd ed. (Boston: Pearson, 2012), 97; John P. McKay et al., *Understanding World Societies: A Brief History, Volume 1* (Boston: Bedford, 2013), 10; Peter von Sivers, Charles A. Desnoyers, and George B. Stow, *Patterns of World History: Brief Edition* (New York: Oxford University Press, 2013), 22; Peter N. Stearns et al., *World Civilizations: The Global Experience*, 6th ed. (Boston: Longman, 2011), 167; and Robert W. Strayer, *Ways of the World: A Brief Global History with Sources*, 2nd ed. (Boston: Bedford, 2013), 18, 22.

29 Albert M. Craig et al., *The Heritage of World Civilizations,* 8th ed. (Upper Saddle River: Pearson, 2009), 41.

30 Howard Spodek, *The World's History*, 4th ed. (Boston: Prentice Hall, 2010).

Perils of Writings Global Environmental History

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At the invitation of Sarah Hamilton, I'll offer a few words based on my experiences trying to write global environmental history. I've found it to be harder than it looked when I first contemplated doing it, but, like a lot of things, easier with practice.

My road to global environmental history started about 1993 when Paul Kennedy inquired whether I could recommend anyone, perhaps myself, to write a global environmental history of the 20th century. Kennedy, then as now a prominent professor at Yale, was trying to assemble a roster of 12 or 14 authors for a series of histories of the 20th century. It was to include books on economic history, cultural history, international relations history, and so forth. Most of those books were never written and the series fizzled. But I, unaware that failure to complete a contract was an option, spent the rest of the 1990s trying to liberate myself from my socialization as a historian in order to write the book I had promised to Paul Kennedy.

My socialization and training as a historian was unremarkable, fine as far as it went, but almost counterproductive for the task I took on in 1993. I had been taught in graduate school to frame a subject, read all relevant secondary sources, go to archives until money ran out, come home, and then write. That approximate procedure worked fine for my first two books. But by the time my second book appeared, I had children and could not in good conscience be away from home for more than a day or two at a time, which ruled out visits to archives unless I wanted to become a U.S. historian and work out of NARA, which is about half an hour from where I lived. In those days, I was under the false impression that U.S. history lacked drama. I was not interested in exploring it. One of the attractions of Kennedy's offer was that it could not be done on the basis of archival work and would not require me to go any further from home than the nearest research library – in my case the Library of Congress. So a global environmental history book was much easier to fit with the circumstances of my life.

But it was much harder to do with confidence. When I wrote about 18th-century Havana or Louisbourg, I knew that fewer than 10 people on the face of the Earth knew as much as I did about either of these subjects, and no one knew more about the pair of them. When I wrote another book about environmental changes in Mediterranean mountain regions since 1700, I could feel nearly as confident. And in both cases, I expected that rather few people cared much about any of these subjects – an expectation borne out by the sales of those books.[1] But in writing about 20th-century environmental change, I was venturing into terrain where many people cared passionately, and where more

than a few people knew heaps more than I did.

The basic problem, then, was inadequate research anxiety syndrome, or IRAS. This potentially paralyzing condition can afflict any scholar. I contracted it when trying to go global. Indeed I would venture that IRAS is hyperendemic in the terrain of global history and only the most blithely confident of historians is resistant to it. Symptoms can include heightened irascibility.

I suffered from IRAS for three related reasons. The first one is a vulnerability common among all global historians. I knew that there was no way I could know enough about every corner of the world to do justice to the task. I couldn't learn all the important languages. Specialists on every region might complain that I didn't get it right in their domain, didn't use the original sources, and (in most cases) did not even know the languages of those sources. They might further object that I didn't say enough about their domain, given its importance. That problem exists for all global historians, and surely helps to explain why the series Paul Kennedy tried to create fizzled.

My second reason for developing IRAS was that global environmental history required attention to matters such as atmospheric chemistry, wildlife biology, radiation genetics, and climatology, to name just a few of the many subjects that I had never studied. I had to assess data and interpretations in disciplines that I had either never studied, such as climatology, or not studied since high school (biology). Whom should I believe when interpretations clashed? I often don't know whom to believe when trying to adjudicate for myself quarrels among historians. How to do it among chemists or geneticists? I never found a foolproof way to address this problem. I relied upon the opinions of colleagues at my university and my own guesses about the relative authority of various publications. I knew this was inadequate, but I didn't have time to educate myself in all the natural sciences. In practice, I found some of the shores of chemistry and genetics very hard to navigate, and I worried what people with proper educations in these arenas would think of what I wrote.

The third problem that led to my case of IRAS was that so many scholars and scientists are working in the fields related to environmental matters. Collectively, they published staggering amounts of literature relevant to my research every week. It soon dawned on me that if I managed to read 12 hours a day, I would be further behind in the evening than I was in the morning: in the course of that day many additional relevant publications had appeared, indeed more than I had read. And with diapers to change, and then soccer practices to drive to, I wasn't going to get in many 12-hour days even in summers or when on leave from teaching. When I had been researching colonial Louisbourg, perhaps one or two relevant publications appeared each year (and I could get in more 12-hour days back then too).

So I had to discipline myself to read only a tiny fraction of relevant material on the ozone shield or Amazonian deforestation. I tried to find the most conscientious summary pieces, not the cutting-edge in-depth research. This shaped my decisions about what to put in and what to leave out: if I found a good overview of oil's environmental implications in Nigeria but not in Saudi Arabia, then Nigeria it would be, even if Saudi Arabia had a much longer and larger oil history. Sometimes I felt some subjects were too important to leave out even if I could not find a good overview or three, so I would read a little deeper, maybe 10 or 20 specialist pieces, and then try to compose my own overview. Mexico City's air pollution history fell into this category. But I could not afford to have many entries in this category, or else I would never finish. And even in these cases, I knew I was going to read no more than 5% of the relevant scientific literature before I wrote my own paragraphs.

The book I wrote, an overview of 20th-century environmental change and the forces behind it, argues that in the fullness of time the ecological tumult of the 20th century will be the most important thing about it, more so than the world wars, the end of (many) empires, the social changes, and so forth. The energy system people built and the growth of human numbers (in that order) were the main reasons for this tumult, the likes of which the planet had never seen before. Earth history's prior upheavals, some of them much more disruptive than what humankind accomplished in the 20th century, were not the work of an intelligent species.[2]

I was and remain happy with the book in most respects, but the research procedures behind it ran counter to all my training and prior experience as an historian, and did not sit easily with me, at least not at first. But it is remarkable what one can get used to, or almost used to, in time.

For nearly 20 years, the delights of a house full of children kept me from making trips to distant archives. Most of what I wrote was global in scope and exposed me to continual re-infection with IRAS. I silently vowed, more than once, that when the house emptied I would return to the practices I had been trained in, and write things based on detailed research in multiple archives. To some extent I fulfilled that vow slightly ahead of schedule.[3] But I also found that IRAS can be like malaria, something you can get again and again, but becomes less troublesome with each successive bout. Perhaps it is like cliff-diving: the first time is the scariest. Which is not to say that it can ever be done, except by daredevils, without trepidation.

So I did not try to dissuade myself from another foray when in 2009 Akira Iriye, a prominent Harvard professor of international history, asked me to write a short book on post-1945 world environmental history. Iriye had concluded, as Kennedy had years before, that a general multi-volume history of the globe had to include systematic treatment of environmental history. To ensure that Iriye would not change his mind, I promptly agreed to write such a book. Oceans of new and relevant research had appeared in the intervening years, of which, I knew, I would sample well under 5%.

Without careful contemplation of the risks to which he would be exposed, I recruited a Ph.D. student in environmental history, Peter Engelke, to co-author the book that Iriye wanted. Engelke's prior work, his dissertation, dealt with environmental aspects of urban planning in Munich, c. 1960-1980, on which he had become one of the world's foremost experts. This experience of acquiring real expertise made him highly susceptible to IRAS, because he knew what it meant to do research in depth. He put the completion of his dissertation on hold while we wrote our book, which meant we had to do it fast. We did, and Peter struggled manfully with IRAS when writing about environmentalism around the world, or the evolution of the

global economy. As a veteran sufferer, I tried to soothe his fears. The book we wrote tries to put recent global environmental history into the ongoing debates about the Anthropocene.[4]

So I have not by any means conquered IRAS but am learning to live with it. It seems to me an inevitable risk of doing global environmental history. In some form, it is, I think, an inevitable risk of any and all global history. In politics people sometimes say it is unwise to let the perfect be the enemy of the good. In scholarship, perhaps, it is acceptable to run the risks of IRAS, and to admit the imperfections of the global approach in order to reap the advantages it confers. With luck, the results can be good, if always far from perfect.

1 J.R. McNeill, *The Atlantic Empires of France and Spain: Louisbourg and Havana, 1700-1763* (Chapel Hill: University of North Carolina Press, 1985; J.R. McNeill, *The Mountains of the Mediterranean World: An Environmental History* (New York: Cambridge University Press, 1992).

2 J.R. McNeill, *Something New under the Sun: An Environmental History of the Twentieth-century World* (New York: Norton, 2000).

3 In the form of *Mosquito Empires: War and Ecology in the Greater Caribbean, 1620-1914* (New York: Cambridge University Press, 2010).

4 J.R. McNeill and Peter Engelke, *Into the Anthropocene: Global Environmental History since 1945* (Cambridge, MA: Harvard University Press, 2014 or 2015). The Anthropocene is the term recently proposed as a new geological era to emphasize the role of humankind in shaping the Earth. Geologists are currently debating whether or not to adopt this term, while other scientists, scholars, and journalists use it freely. Among the raging debates is whether to date the onset of the Anthropocene to c. 1945, c. 1800, or earlier. Historians have strong advantages over most other scholars in this particular debate.

Early Modern Empires and Arboreal Environments: A Comparative Micro-Reader on the Destruction, Consumption, and Preservation of Forests

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When explaining global imperialism, we teachers often present world maps of the territories claimed by empires: land masses stained pink here, speckled orange there. These maps, while useful, tell a number of fibs. They take imperial assertions at their word; they largely ignore change over time; and most germane here, they treat imperial landscapes as a featureless space. In reality, these areas were physical places, occupied by biota and defined by local terrains that simultaneously enabled empires and shaped the forms imperialism took.[1] One of these subject environments, woodlands, held "resources … fundamental to the expansion of … great imperial powers."[2] Through a few dozen brief firsthand accounts compiled below, this micro-reader is intended for classroom use, and aims to allow student readers to examine the dialectics of early modern imperialism and forests, gaining greater insights into the relationships among empires, the environment, the globe, and early modernity.

The documents collected here add multiple dimensions to students' understandings of global empire. First, the readings further integrate environmental history into the world-historical narrative of empire.[3] Imperial historiography's vocabulary incorporates some environmental history conceptualizations, as attested in the phrases ecological imperialism, the Columbian Exchange, the plantation complex, and the "world hunt" – the intensifying extermination of wildlife for commercial purposes. But many familiar imperial narratives—cannons and carracks; sugar and silver; colonizers and conquest—scarcely mention the requisite deforestations that provided the materials for transportation infrastructure, cleared the landscape for settlement, and literally fueled the production of imperial manufactures. Second, the documents integrate empire at the micro-level into global narratives. The reader gets a glimpse of what imperial currents meant to individuals (human and botanical), but also what individuals meant to the earth. We see how places were turned into imperial spaces over time and how early modern empires worked on the ground. Third, the sources are drawn from ten different empires, to show that early modern imperialism was not a phenomenon limited to European actors and non-European subjects; this was a global process with many points of origin. All of these empires found challenges and opportunities in the forests they encountered, and the documents offer the reader a material basis for comparison. Of course, imperialism meant different things in different places. Finally, taken as a whole, the readings show the role that forests played in the emergence of the early modern world and the "environmental load displacement" that allowed the growth of the states that were characteristic of the period.[4]

Early modern has been defined as the following: "the creation of global sea passages, the emergence of a world economy, the growth of centralized states, the rise of world populations, the intensification of agriculture, and the spread of new technology."[5] (I am using the formulation that "this periodization does not impute western characteristics across the globe, or make Eurocentric judgments," but rather that these sorts of changes were scarcely unique to Europe.[6]) What, then, makes early modern clear-cutting different from prior deforestations? Humans, after all, have been destroying forests (with fire) since before they were Homo sapiens. The elimination of woodlands only increased with the adoption of agriculture and then the foundation of ancient empires, and political writers have even been discussing deforestation since before the Common Era: Mencius, Kautilya, Isaiah, and Plato all wrote on the subject. But recent scholarship has argued that the scale and reach of imperial states expanded tremendously from about 1400, starting a new era that accelerated the transformation of the earth's surface, its soils, fauna, and flora.[7] In addition, early modern deforestation took on trans-regional and global dimensions, linking metropoles with more distant peripheries. Forests and their trees played a crucial role in imperial policy-making.

The micro-readings have been selected to provide broad colonial and metropolitan coverage, including sites from North and South America, the Caribbean and the Mediterranean Seas, insular Europe and Africa, Inner Eurasia, and South, Southeast, and East Asia. The empires sampled are the Ming, Qing, Mughal, Russian, Ottoman, (Spanish) Habsburg, Portuguese, Dutch, English, and Incan. Mainland Africa is the only major landmass with a significant empire lacking coverage, because the records of Songhay, written and oral, do not reference state projects of deforestation. Certainly that empire used wood, as all did, but the majority of its territory was sparsely forested.[8] Limited imperial deforestation took place in Ottoman and Dutch territories in the north and south of Africa late in the seventeenth century. We also know that smaller African states carved out territory in tropical forest zones, but our best evidence comes from the eighteenth and nineteenth centuries.[9]

The following questions should help interrogate the primary materials:

- Considering who the various authors were, how reliable do you think their reports on deforestation were?
- Why might some of their information have been unreliable?
- How did imperial officials seem to regard the natural world?
- Can you detect how various imperial subjects regarded the natural world?
- Did people hold conservationist notions at the time?
- How did imperial officials regard their human subjects, in relation to trees?
- How did ordinary people experience imperial deforestation, and what were their roles and reactions?
- How was timber a global resource?
- How was the early modern world connected through deforestation?
- In what ways was wood a strategic resource for empires, both directly and indirectly?
- How were forests—not just lumber—an issue of imperial security?
- Did different types of empires have different relationships to forests?
- Were there patterns to imperial resource extraction from woodlands?
- How do these documents illustrate the processes of constructing colonies?
- How do they show the creation of "imperial space"?
- How did these empires try to prevent deforestation?
- How do these documents reveal the limits of the early modern empires' power?

Creating Imperial Spaces (Destruction)

Perhaps the most ready image of imperial activity is the conquering army. Early modern conquests could include the deliberate destruction of forests. The Chinese Ming Empire, which began coalescing in the mid-fourteenth century, repeatedly fought troublesome subject populations (such as the people labeled Yao and Miao) in the rugged terrain on southern frontier lands claimed by the dynasty. In 1465, the Ming army pursued a policy of "eco-war" to defeat rebels in the forested mountains of the "Great Vine Gorge":

> ***1465: [General] Han Yong ordered that the vegetation be set on fire. [The Ming army] cut down the trees on the mountains and drove roads through them. [The Ming soldiers considered the forests] hatefully dense, leaving no place for a human being [yet Yao 'bandits' were] scaling trees and clambering up vines … like gibbons chinning themselves or ants sticking to a surface…***

Imperial officials continued to order deforestation in this region throughout the Ming Dynasty's duration into the mid-seventeenth century. Most of this would be more prosaic felling of trees, clearing the land for Han (Chinese) colonists to plant crops and herd cattle.

At the other end of Eurasia, English glazier George Longe petitioned the state to build factories in Ireland. English elites had claimed parts of that neighboring island for centuries, but London's actions to directly control Ireland had increased in the sixteenth century, including this argument that tree removal would lead to pacifying the subject population.

> ***1597: [Glass factories] will be beneficial … in that the timber and woods in England shall be preserved and the superfluous woods in Ireland to better use employed, being now a continual harbour for rebels. Many idle people will be set to work to cut wood … and much trade and civility will increase in that rude country.***

Standing woodlands allowed many potential subjects a place to resist at least some aspects of imperial rule. In South America, the Incan Empire, which had grown rapidly from a small Andean state in the fifteenth century, literally rooted out rebellion against one of their colonial settlements.

> ***(Recorded) 1609: [T]he Inca [the emperor] … commanded that whosoever should be found guilty of [resistance] should be burnt alive …. This Law of the Inca was so joyfully received by the Natives, that they themselves … executed the Sentence, burning not only the Offenders [but] also they burnt their Flocks and Herds, rooted up the Trees which they had planted …. [This punishment] so affrighted the Natives, that they never after durst [dared] more attempt this wickedness during the time of the Incas.***

Because the Incans possessed no script, we only have Spanish (imperial) records of this history, often recorded by the descendants of Inca elites.

The Mughal Empire, established in what is today northern India in the sixteenth century by a Central Asian dynasty, faced armed frontier resistance similar to that experienced by the Chinese and English empires.

> ***1641-2: A large party was employed to cut down the jungle and make a road wide enough for the army to advance. All settlements on both sides of the road were plundered and destroyed. The wretched enemies withdrew on every occasion to the jungles and the hills …. As [Palámau] fort was on all sides surrounded by impassable jungle … a party of navvies***

[engineers], hatchet-bearers, a detachment of matchlock-men [musketeers], and archers, [were sent] to cut down the trees and clear a spot for the tents.

As Mughal control extended into jungly Bengal, especially in the seventeenth century, they incorporated new subjects less violently by offering incentives to Bengalis themselves to participate in forest removal.

Ca. 1628: From the time of Shah Jahan [Mughal emperor, r. 1628-58], it was customary that wood-cutters and plough-men used to accompany his troops, so that forests may be cleared and land cultivated.… Ploughs used to be donated by the government. ... There was a general order that whosoever cleared a forest and brought land under cultivation, such land would be his [tax farm]. … Each hal mir (i.e., one who has four or five ploughs) should be found out and given a dastar [sash or turban; i.e., mark of honor] so that he may clear the forests and bring land into cultivation. In the manner, the people and the ri'aya [peasants] would be attracted by good treatment to come from other [provinces] to bring under cultivation wasteland and land under forests.

In this manner, a disorderly landscape (from the perspective of imperial officials) was transformed into imperial space, areas where the state could "see," manage, and benefit from its territory. In Bengal this had the concomitant effect of creating an immensely productive "rice bowl," which allowed economic specialization and an elaborate tax-base for the Mughal crown; deforestation here also encouraged the spread of the practice of Islam.[10]

The imperial Russian Rurik dynasty, the heirs to a regional principality in Moscow in the fifteenth century, promulgated similar offers as demonstrated in this Charter granted by Tsar Ivan Vasil'yevich to Grigorey Stroganov on financial, juridical and trade privileges in the empty lands along the river Kama:

1558: This I, Tsar and Great Prince Ivan Vasil'yevich of All Russia, have granted to Grigorey, son of Anika, Stroganov … along the river Kama … lie empty lands, dense forests, wild streams and lakes, empty islands and pools, in all 146 versts [roughly: 150 kilometers] of this wilderness. Until now no ploughing has been done and no dwellings built there, and no kind of dues have come from there to my royal treasury, and this land has not been given to anyone and has not been entered in anyone's name in registers, deeds of sale or legal documents. And Girgory Stroganov has humbly beseeched us wishing to build on that land a stronghold, and to mount in it cannon and muskets, and to station gunners, musketeers and artillery men there for defence against the Nagay [Nogai] people and other hordes, and to fell the forest along the streams up to their headwaters and around the lakes, and to plough the cleared land, and to build dwellings, and to recruit unregistered and untaxed men, and … to build salt works and extract salt. … I have granted him [certain] exemption from taxes for 20 years ….

Under Ivan IV's rule (r.1547-84), the Russians expanded eastward and southward to control more woodland and steppeland.The colonization did not have the same level of success as the Mughals in the early modern period, because the cleared landscape in the Volga basin did not produce nearly as much surplus food, especially during the "Little Ice Age" that followed Ivan's death. These places given away by Ivan were not truly empty of human habitation at the time; nomadic groups lived within.[11]

Incan accounts were a little more honest about indigenous presence, and straightforward about subjecting those people and their places to the empire, a "civilizing" mission apparently as successful as the one in Bengal.

(Recorded) 1609: [I]n ages past all this region and country you see around us was nothing but mountains and wild forests, and the people in those times were like so many beasts …. Our Father the Sun [the Emperor] … took compassion on them … giving them laws … whereunto they might … live in Houses and Society, learn to Sow the Land, cultivate Trees, and Plants.

Generating Imperial Wealth (Consumption)

A substantial portion of early modern deforestation was less a deliberate strategy than the byproduct of fabricating imperial luxuries and necessities. This particular story played out from the beginning of overseas expansion, starting with a number of tiny islands in the Atlantic, laboratories of empire. One of these, Madeira (off the northwest coast of Africa, the name of which translates as "wood" in Portuguese), became home to sugar plantations in the 1420s. By 1515, the Portuguese King Manuel I (r. 1495-1521) decreed that timber could not be cut without royal permission.[12] Richard Ligon, an English traveler on his way to a Caribbean sugar colony, sailed past more than century later:

1647: [Madeira] so Rocky, and Mountainous, and the ground so miserably burnt with the Sun, as we could perceive no part of it … that had the least appearance of green, nor any tree bigger than a small Hathorn, and very few of those.

When Ligon arrived in Barbados, recently claimed by the English, he arrived in an economy based on the growing and processing of sugar cane for home markets. As in Madeira centuries earlier, this required clearing trees for plantation land, as well as lumber for machines and firewood for fuel. Decades later, the forests of Barbados were depleted.

1647: [O]f this timber we make all, or the most part, of the Pots we cure our Sugar in.
[Coal] Mines there are none in this Island … for which reason, we preserve our Woods as much as we can.
1667: [A]t the barbadoes all the trees are destroyed, so that wanting wood to boyle their sugar, they are forced to send for coals from England.

Timber was also shipped from mainland South America to feed the sugar engines across the Caribbean, and continental woodlands fed the furnaces that smelted American silver, the

precious metal that financed imperial expenditures across the globe, directly and indirectly.

> ***1590: There were … upon the sides and tops of Potosi [a South American highland mine], above six thousand Huayras, which are small furnaces where they melt their metal …. [T]hey spend an infinite quantitie of wood in the melting.***

In the unusual case of the Banda islands, the Dutch United East India Company (VOC) actively destroyed trees that were the source of imperial commodities. Created at the very beginning of the seventeenth century, the VOC was a corporation that looked very much like maritime imperial states. In the early decades of their existence, they used armed force (and higher payments using New World silver) to first drive away Portuguese merchants, then local and English competitors for the long-distance spice trade out of insular Southeast Asia. An English observer noted their tactics later in the century:

> ***1686: I have not seen the Nutmeg-trees anywhere; but the Nutmegs this Island produceth are fair and large, yet they have no great store of them, being unwilling to propagate them or the Cloves, for fear that should invite the Dutch to visit them, and bring them into subjection, as they have done the rest of the neighbouring Islands where they grow. For the Dutch being seated among the Spice-Islands, have monopolized all the Trade into their own Hands, and will not suffer any of the Natives to dispose of it, but to themselves alone. Nay, they are so careful to preserve it in their own Hands, that they will not suffer the Spice to grow in the uninhabited Islands, but send Soldiers to cut the Trees down. Captain Rofy told me, that while he lived with the Dutch, he was sent with other Men to cut down the Spice Trees; and that he himself did at several times cut down 7 or 800 Trees.***

Saving Imperial Resources (Preservation)

Not every imperial-arboreal relationship was immediately destructive; early modern empires sometimes preserved trees, or at least imperial officials argued for preservation, even if usually for later use. Ming bureaucrat Han Dazhang wrote:

> ***1507: Investigation indicates that the Zunhua ironworks … moved to its present location [ca. 1440]. At that time the forests were flourishing, and it was not difficult to supply firewood and charcoal. Now … the trees have all been felled and the prices of wood and charcoal are high. If nothing is done to restrict [forest use], within ten years the price will have risen by several-fold.***

In that case, deforestation was not restricted, and the ironworks soon closed due to its high costs. Yu Sen, a Chinese provincial assistant surveillance commissioner, was tasked with rebuilding Henan after the war that deposed the Ming. Yu's plan required every household to plant two hundred and sixty trees to generate marketable fruits, create fuelwood, and prevent erosion.

> ***1690: If within one village there is but one family that grows trees, or if within one county there is but one village growing them, the benefit is small but the risk is great…. If the entire province grows them, the benefit will be broadest of all, and what worry need there be about disaster being concentrated upon any individual? … If now trees are scarce … the human character will become crude and fierce. If trees are plentiful, the soil will not fly up and men will revert to refinement and good order.***

Incan officials also planted trees to counter the loss of woodlands.[13]

From its beginning as an overseas power, England faced homeland deforestation in service of empire (in addition to its growing population's needs). Individual ships of the line--a crucial tool in the expansion and maintenance of the English Empire in the seventeenth century--required "several thousand mature trees" to build and dozens or hundreds more trunks annually to maintain.[14] The charcoal necessary to smelt iron competed with shipbuilding as a consumer of lumber.

> ***1664: [T]he exorbitance and increase of devouring iron mills … near the seas or navigable rivers,--and what if some of them were even removed into another world, the holy land of New-England--for they will else ruin Old-England. It were better to purchase all our iron out of America, than thus to exhaust our woods at home….There was a statute made by queen Elizabeth [r. 1558-1603] to prohibit the converting of timber-trees to coal…for the use of iron-mills, if the trees were of one foot square, and growing within fourteen miles of the sea, or the greater rivers.***

The author of this passage, John Evelyn, argued that the English crown should, in fact, plant (or re-plant) forests.

> ***1664: There are divers Learned, and judicious Men who have preceded Me in this Argument; as many, at least, as have undertaken to Write and Compile vast Herbals, and Theaters of Plants…. But there is none of these [intellectuals] who have taken any considerable pains how to Direct, and Encourage us in the Culture [planting] of Forest-Trees (the grand defect of this Nation) besides some small sprinklings….***
>
> ***It is not therefore that I here presume to instruct Him [King Charles II, r. 1660-85] in the management of that great and august Enterprise of resolving to Plant and repair His ample Forests, and other Magazines of Timber, for the benefit of His Royal Navy, and the glory of His Kingdoms; but to present to His Sacred Majesty, and to the World, what Advices I have received from others, observed my self, and most industriously collected from a studious Propensity to serve as one of the least Intelligences in the ampler Orb of our Illustrious Society, and in a Work so necessary and important…. Since our forests are undoubtedly the greatest magazines of the wealth and glory of this nation; and our Oaks the truest oracles of its perpetuity and happiness, as being the only support of that navigation which makes us feared abroad and flourish at home.***

Evelyn made part of his argument by providing evidence that the Spanish (Habsburg) Empire had its own conservation policies in place.

> ***1664: The king of Spain [Felipe IV, r. 1621-65] has near Bilboa [sic], sixteen times as many acres of coppice-wood as are fit to be cut for coal in one year; so that when it is ready to be felled, an officer first marks such as are like to prove ship-timber, which are let stand as so many sacred and delicate trees; by which means the iron works are plentifully supplied in the same place without at all diminishing the stock of timber. … [E]very proprietor plants three for one which he cuts down; and the law obliging them is most severely executed.***

Spain had become an imperial power in the late-fifteenth century through matrimony (the Habsburg family) and military action, and its fleets helped maintain Mediterranean, Atlantic, and Pacific colonies and fortresses into the nineteenth century. During this period, the question of naval and arsenal timber mattered for one of the Habsburgs' fiercest opponents in the Mediterranean, the Ottoman Empire. Like Spain, the early Ottoman Empire had been established with conjugality and conquest in the 1400s, and by 1520 had become an Indian Ocean power as well. In the sixteenth century Ottoman authorities reserved forests (banning the cutting of certain trees) in Anatolia and the Balkans for the state's charcoal needs (for gunpowder and ironworking) and warship timber.[15] This supply allowed the complete reconstruction of the imperial fleet within a year when most of it was lost at Lepanto in 1571. On the Anatolian coast, according to Italian ambassador Aurelio Santa Croce:

> ***1570s: There was infinite wood to make vessels of combat and above all trees for galleys and ships.***

Yet by the end of the century, the central government lost control of its forest resource management, and the woodlands were depleted. In addition, lumber was reallocated to the largely treeless portions of the empire, such as Egypt.[16] European observers in the early-seventeenth century noted the Sultans' problems:

> ***1621: [T]he falling estate of the Turkish empire, which is so weakened in power, and corrupted in discipline, that it is upheld now more by opinion and reputation, then [sic] by any true and reall greatnes…. Their force at present, which was of most terror, is so abated, that this empire cannott make, well fitted for warre, 100 gallies [galleys], which together dare not looke upon tenne good shipps, nor now appear in the sea…***
> ***1641: Where just a few years before [the Ottomans] cut close to the sea, now they have to go three or four days inland.***

Like the Ottomans, and following the prescription of John Evelyn, English officials also attempted to reallocate timber from one part of the empire to another. The Charter of Massachusetts Bay stated:

> ***1691: [F]or the better provideing and furnishing of Masts for Our Royall Navy Wee [the English crown] doe hereby reserve to us Our Heires and Successors all Trees of the Diameter of Twenty Four Inches and upwards of Twelve Inches from the ground growing upon any soyle or Tract of Land within Our said Province or Territory not heretofore granted to any private persons And Wee doe restrains and forbid all persons whatsoever from felling cutting or destroying any such Trees without the Royall Lycence of us Our Heires and Successors first had and obteyned upon penalty of Forfeiting One Hundred Pounds sterling unto us Our Heires and Successors for every such Tree soe felled cult [sic] or destroyed without such Lycence…***

New England lumber at this time was also shipped to the denuded islands of Madeira and Barbados.[17] The Manchu, who had overthrown the Ming, reserved their frontier territories' stout trees for military purposes, as this poet's lament reveals:

> ***Ca. 1684: To build ships in Jiangnan demands they cut huge trees.***
> ***So strict warrants go to [southern and northwestern areas]:***
> ***'Fell elms and willows in garden groves that are ten spans around,***
> ***And the hundred-foot-tall conifers that stand by burial mounds!'***
> ***Whatever great families, and titled clans, have available they begrudge,***
> ***Yet how can the quotas be obtained from yokels of little substance?***
> ***The county officials mark off trunks, their tallies held in their hands,***
> ***Their commands to the Yangzi villages throwing humble folk into panic.***

The Habsburgs, too, used distant colonial forest supplies:

> ***1590: They bring into Spain from the Havana, excellent timber. In the Island of Cuba, there are infinite numbers of like trees…***

Portuguese fleets were eventually assembled from Brazilian timber and Malabar (southwestern India) lumber constituted Portuguese, Dutch, and British vessels in the long run, though local populations' usages were more responsible for overall deforestation.[18]

Monarchs tried to claim commercial trees for harvest by their own agents. On mainland South America, the Portuguese crown monopolized brazilwood for itself in the imperial colony named for the dyewood.[19] The Royal Charter for the Captaincy of Pernambuco stated:

> ***1534: The brazilwood in the captaincy [the first subdivisions of Brazil] and any spices or drugs of any type found there shall belong to me [King João III, r. 1521-57] and shall always belong to me and my successors, and neither the captain [governor] nor any other person may deal in these things nor sell them there. Nor may they export them…***

These sorts of orders were not necessarily followed, as a letter from the captain, Duarte Coelho, to the king shows:

> ***1546: Under the pretense of developing estates as inhabitants of the land, [Portuguese colonists] are actually exploiting the brazilwood, which they never cease to grow and load. In the***

> ***last three years, they have loaded up more than six or seven ships with it. … [T]he cutting of brazilwood has been abused, and … the territory is in a consequent state of confusion. … The cutting of brazilwood holds back the development of our estates, particularly the sugar plantations. … [Indians, who used to clear forests for sugar plantations, but now trade brazilwood for desired commodities] have become worse than ever: they get all excited, swaggering around and behaving rebelliously.***

Subjects of empire (both colonizers and colonized) could be troublesome, with some felling trees the imperial center wanted standing. A mestizo critic of the Incas' Spanish successors, Guaman Poma, claimed that in the Incan period a law stated:

> ***(Recorded) Ca. 1600: No fruit-tree, timber, woodland or straw shall be burnt or cut without proper authority on pain of death or some lesser punishment.***

Although the Spanish Empire tended to occupy the mainland and larger islands in the Americas, where forest were less easily depleted, they still found problems. In the sixteenth century, the cabildo (a town council composed of elite Spanish settlers) of Quito, where Spanish rule had replaced Incan, dealt with this recurring dilemma:

> ***1553: [C]utting timber in the forests of Uyumbicho is causing great harm to this city because everything is being chopped down in a disorderly manner. … It is imperative that a solution be found to end this destruction because these timberlands are essential to the welfare of the entire city of Quito. … [T]he cabildo ordered that the Indian peasants be forcibly evicted from the forest, their houses burned, and their crops confiscated. If they return they are to be given a public whipping of one hundred lashes.***
> ***1596: … Indians who have been resettled in this town of Uyumbicho have established numerous agricultural fields on the slopes near the town, and they have cut down and destroyed large expanses of forestland. This is damaging to the woodlands and dangerous to the Indians' own livelihood, since these lands contain firewood as well as construction timber. … [L]arge numbers of cattle have been introduced into the forestlands by Indians and Spaniards alike.… Both the farms and the cattle have destroyed the mountainous slopes as well as any new growth …. We declared that the Indians of Uyumbicho be assigned the following lands: … by the entrance to the forest, on another by a swamp, and on the last side by a gorge; … the outer ridges of the mountain that looks down on the town.***

It should be noted that early modern empires were also responsible for inadvertent reforestation: the virgin soil epidemics in the Americas allowed woodlands to expand and the Atlantic slave trade probably did the same in West Africa, as reduced populations of indigenous people did not fell as many trees for daily use.

In the eighteenth century, an era of even more intense environmental change followed, though environmental historians disagree on the precise beginning date, ranging from 1680 to 1800.[20] Mechanization, cheap and powerful transportation technologies, and a burgeoning and richer global population increased the rates that humans consumed lumber. Temperate-zone imperial peripheries became part of the core, and the processes of deforestation diverged more sharply between these places and forests in the tropics.[21] New conceptualizations of nature arose, and governmental and non-governmental organizations implemented forest conservation schemes on a global scale. In the end, imperial relationships with woodlands, the seeds of which you have read here, helped invent the environmentalism of the twentieth-century.[22]

1 The structure of this micro-reader is heavily indebted to Richard Grove, *Green Imperialism* (Cambridge UP, 1996) and John Richards, *The Unending Frontier* (University of California Press, 2006).

2 Stephen Mosely, *The Environment in World History* (Routledge, 2010), 33. See also, Michael Williams, "Forests," in *The Earth as Transformed by Human Action: Global and Regional Changes in the Biosphere over the Past 300 Years*, eds. B.L. Turner II, et al. (Cambridge UP, 1990) , 181.

3 Kenneth Pomeranz, "Introduction: World History and Environmental History," in *Environment and World History*, eds. E. Burke and Pomeranz (University of California Press, 2009), 3.

4 Alf Hornborg, "Global Environmental History," in *Rethinking Environmental History*, eds. Hornborg, et al. (University of Chicago Press, 2008), 1-2. Edmund Burke III, "Preface," *Environment and World History*, xi.

5 Charles Parker, *Global Interactions in the Early Modern Age, 1400-1800* (Cambridge UP, 2010), 11.

6 Parker, 11.

7 Richards, *Unending Frontier*. Parker, 3. Burke, "The Big Story," *Environment and World History*, 41.

8 See John Hunwick, Timbuktu & the Songhay Empire: Al-Sa`dis Ta'rikh al-sudan down to 1613 and other contemporary documents (Brill, 2003). There was, perhaps, actually afforestation at the fringes of the Songhay Empire, though directed by independent villagers, not the capital. See J. Fairhead and M. Leach, *Misreading the African Landscape* (Cambridge UP, 1996).

9 In 1742, Asante armies allegedly included ten thousand woodcutters to clear battlefields, and late-eighteenth-century visitors noted heavily modified forestscapes in the Gold Coast interior. John Thornton, *Warfare in Atlantic Africa, 1500-1800* (University College London Press, 1999), 71.

10 See Eaton and Richards.

11 See Willard Sunderland, *Taming the Wild Field: Colonization and Empire on the Russian Steppe* (Cornell UP, 2004) and Valerie Kivelson, *Cartographies of Tsardom* (Cornell UP, 2006).

12 Peter Russell, *Prince Henry 'the Navigator': A Life* (Yale UP, 2000), 91.

13 Donald Hughes, *An Environmental History of the World*, 2nd ed. (Routledge, 2009), 107-9.

14 Richards, *Unending Frontier*, 224.

15 Sam White, *The Climate of Rebellion in the Early Modern Ottoman Empire* (Cambridge UP, 2011), 29. Gabor Agoston, *Guns for the Sultan* (Cambridge UP, 2008), 103. Ottoman gunpowder manufacture annually consumed as much wood as a city of 100,000 in 1650. J. McNeill, "Woods and Warfare in World History," *Environmental History* 9.3 (2004), 393. 16 Alan Mikhail, *Nature and Empire in Ottoman Egypt* (Cambridge UP, 2011), 144-5.

17 Mosely, 32.

18 Peter Boomgaard, "The VOC Trade in Forest Products in the Seventeenth Century," in *Nature and the Orient*, eds. R. Grove, et al. (Oxford UP, 1998), 389-90.

19 See Shawn Miller, *Fruitless Trees: Portuguese Conservation and Brazil's Colonial Timber* (Stanford UP, 2000).

20 Mahesh Rangarajan, "Environmental Histories of India: Of States, Landscapes, and Ecologies," *The Environment and World History*, 234; Mosely, 36; Grove, *Green Imperialism*, 474. 21 Michael Williams, *Deforesting the Earth* (University of Chicago Press, 2003), 242-4.22. See Grove, and for an argument about dating the origins of environmentalism, Gregory Barton, *Empire Forestry and the Origins of Environmentalism* (Cambridge UP, 2002).

Money From Trees: Mining, Energy, and Environmental Change in the Spanish Empire

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When the wind is fresh they extract much silver, but when there is no wind they cannot by any means extract silver; so that, as the wind is profitable in the sea for navigating, it is so here for extracting silver.

Pedro de Cieza de León (ca. 1550)

World history textbooks and syllabi often emphasize the economic importance of the circulation of silver that tens of thousands of workers extracted from mines controlled by the Spanish crown between the mid-sixteenth and early-nineteenth centuries. Many historians argue that the flows of silver from Potosí (modern Bolivia) and New Spain (modern Mexico) to Europe and China created the first truly global economy. Moreover, sixteenth-century silver mining featured elements that we often associate with twenty-first century economic globalization: long-distance trade networks, technological innovations, migrant labor and piracy. Producing silver also required large inputs of energy, particularly during the refining stage when the precious metal was extracted from the ore. Long before fossil fuels would drive global economies and climate change, silver production's fuel consumption led to environmental degradation on local and regional geographical scales. The environmental history of silver mining, therefore, provides an excellent opportunity to encourage students to think about the significance of energy regimes in the history of economic globalization. If the world economy was born with a silver spoon, then it was nourished by vast quantities of charcoal and water.

I have incorporated the environmental history of silver mining into an introductory survey course called "Latin America and the Global Environment." Drawing from this course, I will provide an example of a writing assignment that requires students to analyze both the regional environmental and social impacts of silver mining, and how historians piece together evidence from disparate sources to produce a coherent interpretation. In other words, I use a dramatic, sometimes tragic, story of global significance to foster student thinking about a perennial question: how do we know what we know?

The Course: Latin America and the Global Environment

The unit on silver mining and environmental change occupies two weeks of a fifteen-week survey course that fulfills a general education requirement for students majoring in the humanities or social sciences at a private, research university. To date, course enrollments have been small enough (approximately 45 students) to permit interactive lectures (twice/week) that are complemented by weekly small group discussions. The primary "skills building" objective of the course is to improve students' ability to write analytical essays and to participate in discussions. There are three paper assignments of increasing length and complexity, a few quizzes to motivate students to keep up with the readings, and a synthetic, take-home final examination. The course structure is not particularly innovative; the novelty lies primarily in the content of lectures and readings that offers an environmental perspective on some classic themes of Latin American/Caribbean history including: first encounters among indigenous people, Africans and Europeans; colonial economies (silver and sugar); chattel slavery and emancipation; political independence and nationalism; export booms; and migrations and urbanization. As indicated by the course title, most, but not all, content stresses "global" exchanges and contexts.

In order to operationalize an environmental perspective, I introduce students to the ecological ideas of biological diversity and energy flows. Biological diversity includes not only the totality of species of flora and fauna, but also the genetic diversity within populations of particular organisms and landscape variation. When discussing biological diversity, we begin with the Columbian Exchange and then complicate Alfred Crosby's original formulation by discussing the importance of exchanges between the Americas and Africa. The theme of biological diversity is carried through to the modern period when we discuss the history of export banana plantations in Central America. However, since many students strongly associate Latin America with tropical rainforests, I also call attention to the diversity of ecosystems and climates found within Latin America, including the Andes (mountains) Pampas (grasslands) and Patagonia (desert steppe). Energy flows, the second idea, are arguably more abstract than a jaguar or the Atacama desert, but they are crucial

for getting students to think about environmental dynamics. The course discusses changes in energy flows associated with the transitions from fuelwood and muscle power to fossil fuels and electricity. The real challenge is helping students to see what these changes meant for people living in specific times and places in Latin America and beyond.

There is no textbook used in the course; readings include two scholarly monographs, a few peer-reviewed articles, and some primary sources in English translation. The decision to eschew a single text is a reflection of my steadfast belief that the use of multiple texts is an effective way by which to introduce students to the interpretive nature of historical inquiry. I use (mostly Powerpoint) lectures to provide broad contexts and connecting themes. I frequently incorporate video, popular music, and documentaries into lectures and discussion. The readings cover the topics listed above but also are intended to provide a sense of the different approaches taken by environmental historians. For example, the first monograph, John McNeill's *Mosquito Empires*, makes an effective and explicit argument about the role played by certain kinds of mosquitoes in making and remaking the geopolitics of the Greater Caribbean. The sweeping narrative, if not global, is at least Atlantic World history. The second monograph, Mark Carey's *In the Shadow of Melting Glaciers*, is more accurately described as a transnational history of how local people, national governments, scientists and business corporations responded to environmental hazards (namely, melting glaciers) linked to climate change in twentieth-century Peru. The value of using such a work is to demonstrate to students how global phenomena (e.g., climate change) manifest themselves on regional scales. Moreover, local histories and national politics still matter a great deal. The level of detail, including the names of many unfamiliar places and people, potentially derails students from thinking about the "big picture," but Carey's book stands as an effective complement to McNeill's more sweeping work by reminding students that when it comes to policy making, the nitty-gritty details, often only visible from a local vantage point, remain crucial.

I begin the unit on silver mining with a sweeping lecture on the economic dimensions of silver. I combine a "history by the numbers" approach with a qualitative one to stress both the silver trade's scale and geographical scope, and how scholarly interpretations have shifted to recognize the importance of Chinese demand. Providing students with a sense of the economic history of silver mining is important not only to "balance" the diverging views of economists and ecologists, but also because environmental historians often interpret economic data to build their arguments (see below). The second lecture focuses on local/regional environmental degradation linked to silver mining in Potosí. Students read the 2010 article by Daviken Studnicki-Gizbert and David Schecter, "The Environmental Dynamics of a Colonial Fuel Rush: Silver Mining and Deforestation in New Spain, 1522-1810," which which forms the basis for the paper assignment.[1]

The Alchemy of Globalization: Making Silver in Potosí

According to one Spanish chronicler, a native Andean named Gualpa first called attention to the rich veins of silver found on a mountain peak near the village of Porco, in whose vicinity the Incas had established mines prior to the arrival of the Spanish. By 1549, Potosí had acquired fame for its rich veins of silver and drew indigenous miners from near and afar. However, the Spaniards experienced problems refining the silver ore with their customary bellows and relied upon indigenous technologies known as *huayras*. Indigenous workers erected thousands of huayras, ceramic ovens shaped like inverted cones with air vents cut into them, in areas where the winds blew strongest. According to Cieza de León, at night, the working huayras gave the mountainside the appearance of a luminary.The huayras required not only windy days and nights to function, but also fuel including wood charcoal, grasses, or dried animal dung. One Spanish source from the 1570s stated that no trees were to be found "on the mountains of Potosí nor in its towns, since the area has been well cut over by Indians and Spaniards alike."[2] Other sources report that animal trains hauled fuel for the mines from as far as 150 kilometers.[3] In addition to consuming considerable amounts of fuel, the huayras emitted lead fumes, raising the possibility of health risks for operators and area residents.

Among other things, the huayra system ensured that most of the silver produced in Potosí literally passed through the hands of indigenous subjects - some of whom were able to enrich themselves. The local circulation of silver led to a massive influx of people and goods that transformed Potosí into an urban area whose population reportedly surpassed that of Paris. But this is not a story of accumulation via unfettered markets for labor and goods. Many of the indigenous people who worked in the mines were *mitayos*, laborers drafted from indigenous highland villages that often lay hundreds of kilometers away. In the seventeenth century, some 16,000 mitayos worked at any given moment. Wage labor also emerged, a reflection not only of the demand for workers but also of the amount of silver that leaked out of official channels.[4] The fuel demands of this growing population undoubtedly contributed to local deforestation; in addition, the need to pasture large herds of llamas and alpacas presumably altered local landscapes by modifying the composition of vegetation.

In the 1560s, the royal share of silver from Potosí (one fifth of official production) declined sharply. This prompted the Spanish crown to authorize Viceroy Francisco del Toledo to investigate the state of silver mining. Toledo's report called for a major reorganization of the industry. Among other things, it recommended that the huayra system be replaced in favor of mercury amalgamation, a process that enabled silver to be extracted from low-grade ore. Spanish authorities had the good fortune of finding important mercury deposits in Huancavelica, Peru, hundreds of kilometers from Potosí, but far closer than the Spanish mines of Almadén. Viceroy Toledo referred to the economic linkage of Huancavelica and Potosí as the "world's most important marriage." By the 1570s, mercury amalgamation helped increase official silver production dramatically.

However, historians Kendall Brown and Nicholas Robins have examined the severe health risks associated with the mining and use of mercury, a potent neurotoxin. Andean people dreaded working in the mines of Huancavelica and their protests compelled Spanish officials to implement reform measures. In Potosí, mill workers inhaled mercury fumes and absorbed the

toxin through their skin when used their feet to mix a slurry of salt, copper sulfate, and mercury.[5]

One environmental dimension of the introduction of mercury amalgamation that has received less attention from historians is the increased consumption of energy that resulted from the Toledan reforms. The molinas of Potosí relied on waterpower to drive machinery that crushed the ore. Spanish authorities directed the construction of aqueducts and the channelization of the river on whose banks Spanish entrepreneurs established more than one hundred mills. The use of hydropower and mercury amalgamation represented key technological changes that help to explain the dramatic increase in silver production that occurred in the late- sixteenth century. However, the use of hydropower, like the earlier system based on wind-dependent huayras, was constrained by natural forces: during the dry season, water levels dropped along with the potential energy available for conversion. The Spanish overcame this obstacle by organizing the construction of thirty-two reservoirs in the Kari Kari mountains between 1573 and 1621. The water stored in these reservoirs powered the mills of Potosí during the dry season. The expansion of silver production in Potosí resulted in part from the construction of a system of energy production and storage.

Disaster struck on March 15, 1626, when the San Ildefonso reservoir burst, releasing a large surge of water that in a matter of two hours destroyed much of Potosí including most of the mills along with hundreds of residences. As is often the case with such disasters, determining precise numbers of fatalities is difficult, but recent research suggests some 2000 people perished (of a total population around 100,000). In addition, a staggering nineteen tons of mercury entered the waters of the Pilcomayo river system, leading to widespread contamination. English-language scholars have written little about this event but it seems reasonable to suggest that it represented one of the world's first "industrial accidents," linked to systems created to store and supply energy for commodity production.[6]

The Alchemy of Globalization II: Making Silver in New Spain

The history of silver production in New Spain (colonial Mexico) is perhaps less dramatic than that of Potosí, but the 450-odd mining areas produced some fifty thousand metric tons of silver between the sixteenth and early nineteenth centuries (40 percent of the world's silver production during that time period). Studnicki-Gizbert and Schecter have explored the consumption of fuel by the mining industry in colonial Mexico, arguing that the scale and intensity of energy use (wood and charcoal) made the colony one of the most important consumers of biomass in the early modern Atlantic world. By way of comparison, the authors assert that late-eighteenth century energy consumption in New Spain's silver industry surpassed fuel consumption in England's iron-making industry by a factor of three.[7]

The authors estimate that from 1558 to 1804, people in New Spain cleared between 315,000 and 392,000 square kilometers of forested lands, an area equivalent to the modern state of Poland or Italy! To convey the scale of environmental change associated with this "colonial fuel rush," the authors include a map with circles representing the theoretical radii of deforestation that extended from colonial Mexico's largest mining regions including Zacatecas, Guanajuato, and San Luis Potosí. Moreover, Studnicki-Gizbert and Schecter briefly "zoom in" to provide a history of San Luis Potosí, drawing on maps and textual sources to document deforestation linked to the work of *carboneros* (charcoal makers). Within two decades of the opening of mines in the region, evidence suggests that fuel was coming from as far as 120 kilometers away.

Mercury amalgamation played a crucial role in driving environmental and social change in colonial Mexico. Interestingly, Studnicki-Gizbert and Schecter note that Bartolomé de Medina, a sixteenth-century advocate for introducing mercury amalgamation, believed that the process not only would enable the profitable refinement of low-grade ores, but also would reduce wood consumption because it did not require heat. Although Medina was technically correct, refiners in New Spain realized that the addition of heat accelerated the chemical process in which mercury bound itself to silver. Consequently, the adoption of hot mercury amalgamation increased both refiners' efficiency and the scale of production, leading to higher temporal rates of deforestation.

Studnicki-Gizbert and Schecter argue that widespread deforestation had major impacts on indigenous populations who carried out extensive hunting and foraging in the highland forests of oaks, pines and willows that would be increasingly felled for fuel in conjunction with the expansion of mining. The result was a "colonial agroecology" in which forests, foragers, and game largely gave way to pastures, carboneros and exotic domesticated animals. In sum, deforestation linked to mining helped pacify indigenous populations.

Finally, although the authors do not invoke the concept, the historical process that they describe seems to be an early modern example of the Jevons paradox: greater energy efficiencies tend to *increase* total energy consumption by stimulating higher rates of consumption. Stanley Jevons, a nineteenth-century British economist, published his counter-intuitive ideas about energy efficiency and energy consumption in 1865 in the context of a debate over British coal consumption. Although its literal application to colonial Mexico is therefore anachronistic, the seeming relevance of the Jevons concept to the historical relationship between mercury amalgamation and fuel consumption points to potential continuities between biological and fossil fuel regimes.[8]

Historians' Alchemy: Turning Silver to Trees

Studnicki-Gizbert and Schecter's concise and clear prose lends itself to writing assignments in an introductory course, provided that most students have a good command of academic English. The writing assignment that I have used is intended to be straightforward yet somewhat open-ended:

> How did silver mining in the Americas help to create global economic connections? How did silver mining affect the people and environments of New Spain (Mexico) over the course of three centuries? What kinds of evidence do the authors Studnicki-Gizbert and Schecter use to calculate the scale of deforestation? Describe one weakness or limitation of their evidence.

I have given some version of this question three times. Students do reasonably well answering the first two parts of the question that require them to comprehend and synthesize material from lecture and the reading. However, most students have struggled when asked to discuss the evidence. In fact, so many students avoided the final part of the prompt that I felt compelled to break down the total point value of the assignment to indicate that all parts of the prompt carried equal weight. This ploy increased the amount of space that most students devoting to writing about the authors' evidence, but surprisingly few have been able to articulate a potential weakness or limitation in the authors' methods

I say "surprisingly" because Studnicki-Gizbert and Schecter included a three-paragraph appendix bearing the subtitle: "Estimating the ratio of silver production to cleared forest areas, a discussion of sources and methods." The authors' explanation of their methodology is extremely useful for helping students to appreciate the challenges associated with writing environmental history. For example, the authors have little choice but to rely on "proxy" evidence for deforestation. Thanks in large part to economic historian Richard Garner's earlier work with royal treasury documents, Studnicki-Gizbert and Schecter began with good data on official silver production for the sixteenth, seventeenth, and eighteenth centuries. They proceeded to work backward in order to translate silver into trees. They used account books from two *haciendas de beneficio* (silver refineries) in order to estimate a ratio of charcoal to silver. However, their evidence was thin; the account books consulted cover only two years (1611-12; and 1782-83 respectively) for the two foundries. The large separation of time notwithstanding, the haciendas' charcoal-to-silver ratios were remarkably similar: approximately 1,200 kilograms of charcoal for every kilogram of refined silver. Based on this evidence, the authors assumed that charcoal-to-silver ratios remained roughly constant throughout the colonial period and from one mining region to another. Finally, the authors relied on contemporary fieldwork to estimate a timber-to-charcoal ratio, measured in terms of both volume of wood and surface area of forest timber.[9]

Studnicki-Gizbert and Schecter's methods are not unusual for environmental historians who often rely on contemporary scientific models and/or data to interpret the past. But, the methodology also raises several questions: What if the nearly identical charcoal-to-silver ratios found in the two hacienda account books separated by one hundred and seventy years is a coincidence? Also, can we assume that charcoal-making methods have remained static across time and space, a critical assumption undergirding the reliance on contemporary fieldwork to determine charcoal-to-wood ratios? Finally, how do we know that the species composition and relative population densities of contemporary forests in Mexico are not significantly different from those of a sixteenth- or seventeenth-century forest?

The concise article by Studnicki-Gizbert and Schecter is a wonderful example of how environmental historians can draw on different forms of evidence to make bold claims. Moreover, because the authors' make transparent their methodology, the article can also serve to show how new evidence could undermine (or confirm) the findings. Finally, the attempt to quantify the geographical area potentially deforested over the course of three centuries by silver mining can help students to come away with a stronger sense of what "significant" or "transformative" environmental change meant prior to the advent of fossil fuels. Silver mining's consumption of fuel may not have contributed to environmental change on a planetary scale, but it undeniably degraded forests in Mexico while contributing to at least one catastrophic event in Potosí.

Viewing the history of silver from an environmental perspective encourages students to think about how economic production took place before the rise of fossil fuels: wind, water and wood, along with mammalian muscles powered the first globalization. The interoceanic circulation of silver drove the transformation of regional environments largely due to this biological energy regime. Environmental history, therefore, can help to focus student attention on the specific localities that literally powered the trade circuits that are so central to world history.

1 Note that there is no article-length, English-language text that covers the environmental history of Potosí. Although there is obvious value in comparing silver mining in Potosí and colonial Mexico, some students invariably get the two settings confused when writing their papers (perhaps understandable since few general readers would assume that Potosí and San Luís Potosí are separated by some 5,000 kilometers!)

2 Marcos Jimenez de la Espada, *Relaciones Geográficas de Indias: Peru*. A valuable collection of translated primary sources is found in John H. Parry and Robert G. Keith, *New Iberian World: A Documentary History of the Discovery and Settlement of Latin America to the early Seventeenth Century*, 5 volumes, Times Books and Hector and Rose, 1984. Also see, Mary Van Buren and Barbara H. Mills, "Huayrachinas and Tocochimbos: Traditional Smelting Technology of the Southern Andes," *Latin American Antiquity* 16 (2005): 3-25.

3 Daniel W. Gade, *Nature and Culture in the Andes*, (Madison, Wisconsin: University of Wisconsin Press, 1999).

4 On the labor power central to silver mines, see Peter Bakewell, *Miners of the Red Mountain: Indian Labor in Potosí, 1545-1650* (Albuquerque, New Mexico: University of New Meixico Press, 1984); and, for colonial Mexico, also by Bakewell, *Silver Mining and Society in Colonial Mexico, Zacatecas 1546-1700* **(**Cambridge: Cambridge University Press, 2002).

5 Kendall Brown, "Workers' Health and Colonial Mercury Mining at Huancavelica, Peru," *The Americas* 57 (2001): 467-496; and Nicholas A. Robins, *Mercury, Mining, and Empire: The Human and Ecological Cost of Colonial Silver Mining in the Andes* (Bloomington: Indiana University Press, 2011).

6 I first came across this event in Spanish- and French language-sources including Alain Gioda, Carols Serrano and Ana Forenza, "Les ruptures de barrages dans le monde: un nouveau bilan de Potosi (1626, Bolivie)" *Houille Blanche*, 4-5 (2002): 165-170; and Carlos Serrano Bravo, *Historia de la Minería Andina Boliviana, siglos XVI-XX* (Potosí, Bolivia: 2004). For an early English-language source see, William Rudolph, "The Lakes of Potosí," *The Geographical Review* 26 (1936): 529-554.

7 Daviken Studnicki-Gizbert and David Schecter, "The Environmental Dynamics of a Colonial Fuel Rush: Silver Mining and Deforestation in New Spain, 1522-1810," *Environmental History* 15 (2010): 94-119.

8 Note that I do not teach the Jevons Paradox in the introductory survey course discussed here.

9 Fortunately, for instructors interested in having students work with primary sources, some of the key evidence used by the authors is available via the web. Historian Richard Garner has posted data sets from the Spanish royal treasuries on a website. Interpreting the data tables is not straightforward, but Garner provides user guides: http://www.insidemydesk.com/hdd.html [accessed 23 Aug. 2013]. A print version of the royal treasury documents also exists: John J. TePaske, Herbert S. Klein et al. *The Royal Treasuries of the Spanish Empire in America* 4 vols. (Durham, NC: Duke University Press, 1982). In addition, a beautiful late sixteenth-century map discussed in the article (but poorly reproduced in the print version of the journal) can be downloaded as a PowerPoint slide http://envhis.oxfordjournals.org/content/15/1/94.full [accessed 23 Aug. 2013].

Disease, Disaster, and Degradation: A Global Environmental History Course

Thomas Anderson, University of New Hampshire

Environmental history courses offer excellent ways to examine and learn about world history because they escape a state-centered approach and instead focus on how humans and nature have interacted and influenced each other globally through individual phenomena. For the past several years I have taught a global environmental history course entitled "Disease, Disaster, and Degradation," geared toward upper level undergrads in both lecture and seminar format. The course examines specific moments of environmental destruction by analyzing their causes and consequences from a global perspective. This method allows students to consider several sets of questions: How have disasters and diseases reshaped societies? How do disasters allow us to understand the priorities and tensions within a society? To what degree have human actions caused or exacerbated these events? Beyond the importance of letting students learn about pivotal environmental moments, another prominent issue of the course revolves around finding concrete examples of global issues – events that crossed borders, and at times sparked global debates or mass movements – in order to draw out the wider patterns and interconnections of world history.

To accomplish this, I designed the course around four major units: Disease, Degradation, Disasters, and Today. Each unit proceeded chronologically, but independently of each other. This format allowed lectures to move forward in a fairly smooth manner, with each class focused on a discrete event. As a seminar, I attempted to find sufficient readings for discussions that connected to the wider themes of the course. In either setting, the course provides flexibility to choose specific examples for a lecture or discussion while retaining the overall goal of studying world history.

Unit 1: Disease

The spread of disease across borders through trade routes, wars, or new methods of transportation provides a way to examine the interconnectedness of past societies and cultures. In this first unit on disease, students debate how societies coped and adapted to devastating demographic losses while emphasizing the importance of environmental forces in history. Two questions are debated: How did cultures redefine themselves in the wake of demographic disasters? How did they explain the causes of epidemics? A coherent narrative can be constructed through major diseases in world history for the last several hundred years: the Bubonic Plague (14th century), Smallpox (16th), Yellow Fever and Malaria (18th), Cholera (19th), Influenza (1918), and HIV/AIDS (20th). I selected these because they offered examples of global transmission and effects while demonstrating change over time in reactions and responses to disease.[1] I allowed three to four weeks to cover this material through lectures as well as with two major debates.

The first debate examined the spread of smallpox into the Americas during the 16th century. As an upper level course, I had students read the famous Brooks-McCaa debate assessing the virulence of the smallpox epidemic on the population size of the Americas. It allowed students the opportunity to study how historians reached their conclusions, and more importantly, the implications of their arguments: a high pre-1492 population and subsequent high mortality rates has far different implications for Spanish colonial interaction in the Americas than a disease epidemic that operated on a lower scale and was no worse than comparable European epidemics.[2] The second debate engaged J.R. McNeill's *Mosquito Empires*. Straightforward in its argument and prose, McNeill's book allowed students to debate the merits of his thesis of the centrality of yellow fever and malaria in shaping historical events, in part because of the familiarity with some of his historical examples such as the American and Haitian Revolutions.[3] These two debates provided an important grounding in several themes of the course: the significance of environmental events as global in cause and dimension, the difficulty in finding and assessing historical evidence, and how environmental influences have been overlooked or marginalized in history.

Unit 2: Degradation

The unit on degradation offers flexibility in content while stressing the importance that resource depletion, deforestation, and climate change had on societies. Here there are multiple examples, ranging from the role of environment on the Roman

and Han Empires to the early modern era of European states and their contemporaries in the Chinese and Ottoman empires.[4] Indeed, scholarship on these issues is exploding. While many teachers have incorporated the Little Ice Age into their lectures concerning early modern Europe, recent scholarship allows a more global analysis, incorporating the Yuan and Ming Empires in China, as well as the multi-continental Ottoman Empire during this same time period. Together, they allow students to debate the limitations of these powerful agrarian empires and how environmental stresses forced changes that rippled across all of society. As with the other units, the purpose of my lectures and discussions is not to compare, but rather to stress a global issue and to examine the patterns in the responses.

My choice, however, was to focus on two specific texts for discussion. After students leave our courses, they are most likely to interact with popular histories – books that tell a good story, but often lack the critical analysis and explanation at the heart of our discipline. I organized this section around Jared Diamond's book *Collapse* and an academic response, *Questioning Collapse*.[6] Whether you use the entire books or simply select chapters out of them to examine a single event, the two provide nice counterpoints to each other allowing students to debate the merits of historical evidence and various interpretations of the same event. While the earlier debates on disease pitted scholars against each other, in this section I also wanted students to learn how to read a popular history. What questions should be asked? How do certain words or phrases influence a work of history? What assumptions are built into the book? How is evidence used?

Diamond's argument concerning about the importance of environmental destruction to the downfalls of societies lent itself well to discussion when combined with *Questioning Collapse*. Instead of a nice read that lulled students into passive acceptance, the chapters in *Questioning Collapse* primed students to pay attention to certain points of evidence or narration in Diamond's work. Further, beyond stimulating debate about the use of historical evidence, *Questioning Collapse* often, although not always, provided alternative theories or interpretations of these events, allowing students to evaluate and debate both works from multiple viewpoints. This pivot between the two books led to strong discussions, often with students reaching new conclusions. I found the chapters in *Questioning Collapse* on Easter Island, the Maya, the American Southwest, and Norse society provoked stimulating debates when combined with Diamond. At the end of the unit, most students displayed a greater appreciation for how historians reach their conclusions while still admiring the readability of Diamond's approach.

Unit 3: Disasters

By the third unit, students were are comfortable with the concept of the environment as a significant player in world history, and capable of more nuanced debate. It is here that I introduced the topic of disasters. We began by evaluating the very definition of a disaster: What is a disaster? What are the implications of applying this term to an event?[7] Most students entered the course defining disaster simply as an earthquake, volcano, hurricane, or some variation on an act of nature, usually seeing them as localized events, often without human interaction. This does lend itself to specific historical questions such as how did societies react and more interestingly, how did they explain this event? For instance, the cluster of earthquakes in the mid-18th century in Lisbon and Lima provides a way to examine the priorities of society and how arguments about the disaster were used to reshape politics, economics, and society.[8]

Yet I wanted students to understand environmental events as global in scope. Volcanoes are another classic example of a natural disaster and, as with earthquakes, are often understood on an entirely local level. The 1815 eruption of Mount Tambora in Indonesia, however, allows students to examine global effects of a disaster, such as its effects on global climate and how societies and governments responded. How did this volcano affect global climate? How did societies and governments respond? Even more intriguingly, the growing literature on how Tambora directly contributed to the spread of cholera as a global disease by disrupting the Indian subcontinent's monsoon system provides a rich discussion, and can tie into the earlier disease unit. A fascinating article in the *Journal of World History* that provides a study of effects of Mount Tambora and focuses particularly on the Qing Empire can be paired for a more in-depth global discussion with the new, readable book on Tambora, *The Year without a Summer*, which tells the story of the volcano's explosion and the subsequent climatic effects in the United States and Europe.[9]

What about unnatural disasters? Are events caused by human actions such as industrial pollution that fouls the air or water equivalent to other disasters? Further, what has been the response to an unnatural disaster versus a natural one? The last two centuries provide a wealth of examples for this section ranging from the smog-ridden air of urban centers, to the toxic waters of Minamata Bay in Japan in 1956, to the polluted neighborhood of Love Canal in New York state during the 1970s, to the industrial accidents of Bhopal and Chernobyl in the mid-1980s. These disasters have sparked global grassroots protests and environmental movements that directly learned from and built off each other. Andrew Jenks's *Perils of Progress* and primary sources provide short overviews of these industrial disasters.[10] When read as a collection, students can create linkages and begin to piece together through discussions a broader, more global picture of responses to these environmental disasters and the growing environmental movement of the 20th century. Both Devra Davis' *When Smoke Ran like Water*, which examines the United States and the roles of corporations and government in the environment, and Brett Walker's *Toxic Archipelago*, an excellent book which investigates how modern Japan emerged by developing and exploiting its natural recourses, leaving behind a legacy of environmental toxins and disease, provide more in-depth looks at specific locations and themes..[11]

After short discussions or lectures on industrial disasters, I have used Mike Davis's *Late Victorian Holocausts*, which examines the famines that followed El Niño droughts in the late 19th century. The work offers a more ambitious reading that blurs the lines between the distinction of disaster versus unnatural disaster, and the role states and societies play in the environment. Due to its length, the book is probably best for seniors or graduate students, but his argument that the massive global famines of the late 19th century were a product of imperial state policies rather than a natural disaster fosters a lively debate.[12] By adding

additional complexity to the entire issue of an environmental disaster and to what degree human societies are culpable, the book can set the stage for debates on topics such as levees on rivers or constructing dwellings in areas prone to hurricanes.

Unit 4: Today

The final unit examines today's world. While not strictly historical, I have found many students want to discuss current events and enjoy finding the earlier lessons can help them understand some of the dynamics and issues involved. For instance, the issue of water can be a rich topic for debate with the growing scarcity of potable water and the geopolitical tensions and problems which students may not have thought about.[13]

For those who want to discuss global warming, Andrew Weart's *The Discovery of Global Warming* provides a nice summary of the historical emergence of global warming as a scientific theory, particularly how the earlier debates were resolved in the scientific community even as a growing ideological movement developed politically to oppose a growing scientific consensus.[14] Another option is Mark Carey's *In The Shadow of Melting Glaciers*, which examines communities in the Andes and provides a more in-depth look at some of the specific effects of global warming over the past few decades.[15]

Conclusion

The challenge for world history courses involves finding sufficient global examples that reveal patterns and connections while still providing enough nuance and detail that students can understand the causes and effects of historical moments. Indeed, I tried to create a flexible format where specific environmental events could be interchanged based upon an individual class, appropriate readings, or time restraints but still retain an argument about world history. Each unit had its own writing assignment, allowing students to synthesize and analyze the material. During the semester, I had students write an op-ed piece about how a society should respond to a disaster, two analytical reviews of works we read, and a final essay that asked students to draw upon the semester's readings and discussions to analyze how an environmental disaster affected society and what solutions existed for either its prevention or recovery. For each writing assignment, I asked students to write from the perspective of world history: how did these works and events allow us to understand the connections or patterns of the field. By focusing on discrete disasters, diseases, and other environmental events, the course offered a way to discuss how an environmental event revealed the interconnectedness of the modern world even as it stressed the central role that the environment plays in human history.

1 For a brief overview of many of these diseases see, John Aberth, *Plagues in World History* (Lanham, MD: Rowman & Littlefield Publishers, 2011); Mark Harrison, *Contagion: How Commerce Has Spread Disease* (New Haven: Yale University Press, 2012).

2 Francis J. Brooks, "Revising the Conquest of Mexico: Smallpox, Sources, and Populations" *Journal of Interdisciplinary History*, Vol. 24, No. 1 (Summer, 1993): 1-29; Robert McCaa, "Spanish and Nahuatl Views on Smallpox and Demographic Catastrophe in Mexico," *Journal of Interdisciplinary History*, Vol. 25, No. 3 (Winter, 1995): 397-431. A more recent response to both is David S. Jones, "Virgin Soils Revisited," *The William and Mary Quarterly* (Oct 2003): 703-742. While not directly talking with these others, a more recent book that can be useful for a teacher due to its wealth of information on disease in the New World is Suzanne Alchon, A *Pest in the Land: New World Epidemics in A Global Perspective* (Albuquerque: University of New Mexico Press, 2003).

3 J.R. McNeill, *Mosquito Empires: Ecology and War in the Greater Caribbean 1620-1914*. (New York: Cambridge University Press, 2010).

4 J Donald Hughes, *Pan's Travail: Environmental Problems of the Ancient Greeks and Romans* (Baltimore: Johns Hopkins University Press, 1994); J Donald Hughes, *An Environmental History of the World: Humankind's Changing Role in the Community of Life (New York: Routledge, 2001); Lukas Thommen translated by Philip Hill, An Environmental History of Ancient Greece and Rome* (New York: Cambridge University Press, 2012); Mark Elvin, *The Retreat of the Elephants: An Environmental History of China* (New Haven: Yale University Press, 2004); Mark Roberts, *China: Its Environment and History* (Lanham, Md: Rowman & Littlefield, 2012)

5 Brian Fagan, *The Little Ice Age: How Climate Made History 1300-1850* (New York: Basic Books, 2000); Sam White, *The Climate Rebellion in the Early Modern Ottoman Empire* (New York: Cambridge University Press, 2011); Timothy Brook, *The Troubled Empire: China in the Yuan and Ming Dynasties* (Cambridge: Belknap Press, 2010).

6 Jared Diamond, *Collapse: How Societies Choose to Fail or Succeed (N*ew York: Penguin Books, 2011); Patricia A. McAnany and Norman Yoffee, eds., *Questioning Collapse: Human Resilience, Ecological Vulnerability, and the Aftermath of Empire* (New York : Cambridge University Press, 2010).

7 There are some short articles on this concept such as Theodore Steinberg, "What is a natural disaster?" *Literature and Medicine* 15, no. 1 (1996): 33-47; Jonathan Bergman, "Disaster: A Useful Category of Historical Analysis," *History Compass* v. 6 (May 2008): 934–946.

8 For some works on these earthquakes, there is a fascinating account on Lima, paying close attention to social reactions to the earthquake, Charles F. Walker, *Shaky Colonialism: The 1746 Earthquake-tsunami in Lima, Peru, and its Long Aftermath* (Durham: Duke University Press, 2008). There also popular histories that examine the Lisbon earthquake such as Nicholas Shrady, *The Last Day: Wrath, Ruin, and Reason in the Great Lisbon Earthquake of 1755* (New York: Penguin, 2008)

9 Shuji Cao, Yushang Li, and Bin Yang, "Mt. Tambora, Climatic Changes, and China's Decline in the Nineteenth Century" *Journal of World History* v 23, no. 3 (September 2012): 587-608; William Klingaman and Nicholas Klingaman, *The Year Without a Summer: 1816 and the Volcano that Darkened the World* (New York: St. Martin's Press, 2013).

10 Andrew Jenks, *Perils of Progress: Environmental Disasters in the Twentieth Century* (Boston: Prentice Hall, 2011). Additional

help for details on the environmental history of the 20th century can be found in J.R. McNeill, *Something New Under the Sun: An Environmental History of the Twentieth Century World* (New York: W.W. Norton, 2001).

11 Devra Davis, *When Smoke Ran Like Water: Tales of Environmental Deception and the Battle Against Pollution* (New York: Basic Books, 2002); Brett Walker, *Toxic Archipelago: A History of Industrial Disease in Japan* (Seattle: University of Washington Press, 2010).

12 Mike Davis, *Late Victorian Holocausts: El Niño Famines and the Making of the Third World* (New York: Verso, 2001)

13Steven Solomon, *Water: The Epic Struggle for Wealth, Power, and Civilization*. (New York: Harper, 2010). For a U.S. example, there is the classic Marc Reisner, *Cadillac Desert: The American West and its Disappearing Water* (New York: Penguin Books, 1993). For a examination of more ancient practices there is Brian Fagan, *Elixir: A History of Water and Humankind* (New York: Bloomsbury Press, 2011)

14 Andrew Weart, *The Discovery of Global Warming* (Cambridge: Harvard University Press, 2003).

15 Mark Carey, *In the Shadow of Melting Glaciers: Climate Change and Andean Society* (New York: Oxford University Press, 2010).

Beginning in the Belly, Ending in the Atmosphere: An Approach to Teaching Global Environmental History

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As historian Donald Worster once remarked, "environmental history begins in the belly."[1] Worster's comment not only reflects the importance of food consumption as a multi-faceted relationship between humans and non-human nature, it also suggests the ambition of environmental historians to relate the personal to the global. To connect students with both meanings is among the goals of a course that I currently teach at Amherst College, "Global Environmental History of the Twentieth Century" (GEH). This introductory-level survey of global environmental history from 1900 to the present is a fourteen-week course, which focuses on Latin America, Sub-Saharan Africa, and China. The class meets for two eighty-minute periods per week. GEH blends a lecture format with in-class discussions about readings and assignments. Enrollment ranges from 60 to 75 undergraduates, and students receive credit in either the history department or the environmental studies program. The course is a prerequisite for students majoring in environmental studies.

When developing GEH, I had three aims in mind for my students. The first was to help them investigate the ways in which societies and cultures outside the U.S. and Europe have interacted with their environments over the past century. The second was to introduce them to comparative and transnational methods in world history. The third was to show them the practical uses of environmental history. In addition to studying the past, GEH participants explore how to use historical knowledge in the formulation of policy recommendations and grassroots initiatives for addressing contemporary environmental issues.

The GEH syllabus is a product of my own ecological fieldwork and historical research in China and Latin America. I began my graduate studies at Yale University in Chinese environmental history and ended up writing a doctoral dissertation on the long-term ecological and cultural connections between Chile and California. At one point, a colleague suggested that I was "the guy who studied places beginning with the letter C." In retrospect, my various Pacific crossings were quite fortuitous; they illuminated many possibilities for developing comparative and transnational approaches to environmental history.[2]

I have incorporated these experiences into the four units of my semester-long course on global environmental history. GEH begins with Latin America, proceeds to Sub-Saharan Africa, and then moves to China. In the fourth unit of the semester, students compare topics and themes from the three regions. Many of the readings, films, and assignments focus on food production and consumption. The final course sessions revolve around "atmospheric" issues – such as climate change – that transcend regional, national, and continental boundaries. When choosing the three geographical zones for GEH, I wanted to focus on places that are underrepresented in U.S. media coverage and inadequately addressed in many environmental history curricula. I struggled with my decision to eliminate India, North Africa, and the Pacific World from the course agenda. In the end, I opted for a pragmatic approach. The areas we study in GEH are places where I have travelled widely, sites where I have conducted research, locations that I have studied extensively, or territories that are not covered by my other course offerings. The GEH format could easily be adapted to accommodate other nations or regions.

I have also designed the course to integrate the "spatial turn" that history has undergone. In recent decades, historians have begun to consider the social production of space as a crucial dimension of the human experience.[3] Many aspects of GEH build upon these geographical insights. At the beginning of each class session, I show several maps that are relevant to the course topics for the day. Often, I remove all titles, legends, and keys before displaying the maps on my lecture screen. I spend the first five minutes of the period talking with students about what sort of arguments and narratives they can derive from the cartographic images in front of them. These conversations not only provide opportunities for "mental warm-up exercises" at the beginning of each class meeting but they also give me the chance to introduce the key topics and themes for the day's lecture. Many of the maps are scanned from books but I also rely upon several websites and map blogs as sources for my images. Three of my favorite sites are:

- http://bigthink.com/blogs/strange-maps
- http://www.radicalcartography.net/
- http://www.bigmapblog.com/

In addition to acknowledging the importance of spatial analyses to the understanding of the past, historians have begun experimenting with an array of techniques to help students

develop empathy with historical actors and to assist them in applying historical methods to everyday issues. Role-playing assignments offer one such option.[4] I have adopted this approach with the GEH paper topics, which ask students to "become" an actor in a current scenario that requires the use of environmental-historical knowledge. I offer students three options for each assignment. The paper topics allow writers to accommodate a variety of viewpoints. Below are samples of such questions from each unit:

Latin America: You are an adviser to a candidate from the state of Chiapas (Mexico's southernmost state) running for office in the next round of Mexican congressional elections. Your candidate has asked you to research the environmental and socio-economic implications of farm subsidies and price supports for the farmers in your state. Your candidate's constituents are predominately small-scale corn farmers of Mayan descent. Please employ historical examples in making your argument about how best to assist these constituents. In your paper, you should make reference to the Green Revolution and its implications for Mexico's environmental history.

Sub-Saharan Africa: The Government of Botswana's Department of Wildlife and National Parks has hired you as a consultant. They have asked you to write a historical background paper to be used in the creation of a new Wildlife Management Area just north of the Central Kalahari Game Reserve. The department head wants to learn from the past experiences of other African territories and nations so that Botswana can avoid the pitfalls associated with previous strategies for national park development. You should take a strong position on a set of policies that will allow multiple uses (e.g. sustainable agriculture, local food-gathering practices, eco-tourism, etc.) of the areas under conservation.

China: You work as an environmental lawyer in Beijing. A group of transnational companies has recently proposed a new development of factories along a ten-kilometer stretch of the Pearl River, south of Guangzhou. The factory managers are requesting that the Chinese Government allow them to release a substantial monthly quota of untreated chemical effluence into the Pearl River. It is your job to inform the State Environmental Protection Commission (SEPC) about a sensible policy for balancing the imperatives of economic development with the needs of human health and environmental protection. Issues raised in Where the Dragon Meets the Angry River may provide resources for helping you think about this topic.

*Final Exam:*The final exam asks students to reflect upon and integrate various case studies from the four course units. I often ask open-ended questions that provide considerable creative latitude. One prompt that I frequently use is: "Humans have – since at least the beginning of recorded history – shaped, managed, and attempted to control large bodies of water. Using two examples from this course, discuss the repercussions of this hydraulic manipulation for social systems and ecosystems."

Readings: When preparing for each new version of GEH, I revise the readings to keep the course material relevant and up-to-date. To this end, I have experimented with many different core texts for each unit.

For the first unit of GEH, which focuses on Latin America, I currently use John Soluri's elegantly written *Banana Cultures: Agriculture, Consumption, and Environmental Change in Honduras and the United States* (Austin: University of Texas Press, 2005). Beginning in the belly, Soluri takes a familiar grocery store item and examines its complex transnational environmental and labor histories. This is an excellent text for introducing students to commodity chain analysis and unequal exchanges in world history. Several years ago, I taught Oscar Olivera's book, produced in collaboration with Tom Lewis, *¡Cochabamba!: Water War in Bolivia* (Cambridge, Mass.: South End Press, 2004). Written by one of the activists at the heart of Bolivia's popular movement against water privatization, *¡Cochabamba!* introduces students to notions of the Commons, historical experiences of "enclosure," and examples of successful resistance to the commodification of natural resources. It also offers a poignant contrast to Garrett Hardin's "Tragedy of the Commons."[5] The third text that I have assigned for the Latin America unit is J. Timmons Roberts & Nikki Demetria Thanos' book, *Trouble in Paradise: Globalization and Environmental Crises in Latin America* (New York: Routledge, 2003). A model work of "political ecology," it explores the relations among colonialism, "democratic space," and ecological change in Latin America's recent past. Published over a decade ago, *Trouble in Paradise* has begun to feel dated. Even so, its chapters – especially chapter five on Amazonia – could easily be excerpted for use in specific units.[6]

For the second unit of the course, which covers Sub-Saharan Africa, I have taught two different books. I currently use Tamara Giles-Vernick's *Cutting the Vines of the Past: Environmental Histories of the Central African Rain Forest* (Charlottesville: University Press of Virginia, 2002). Although Giles-Vernick's central concept of *doli* – a rich tradition of environmental and historical knowledge practiced by the Mpiemu people in the Central Africa Republic – can be a struggle for the class to grasp, teaching *Cutting the Vines of the Past* is well worth the effort. My students generally appreciate the author's persuasive demonstration of how misperceptions of local land-use practices led outsiders to impose conservation strategies and environmental policies that were destined to fail. I have also taught the Sub-Saharan Africa section with James C. McCann's text, *Green Land, Brown Land, Black Land: An Environmental History of Africa, 1800-1990* (Portsmouth, NH: Heinemann, 1999). This book is useful for challenging the overarching narratives of decline that have characterized many well-known accounts of Africa's land-use history. While the text is strong in many areas it has surprisingly little to say about pastoralism or disease ecology.

During the China unit, I now rely upon R. Edward Grumbine's *Where the Dragon Meets the Angry River: Nature and Power in the People's Republic of China* (Washington, D.C.: Island Press, 2010). Grumbine deftly balances a personal travelogue of his visit to the Nujiang (Angry River) in Yunnan Province with an informative analysis of China's struggle

between biodiversity protection and economic development. His book is useful for upending many of the basic assumptions that underpin North American approaches to wilderness conservation. Previously, I used Elizabeth C. Economy's text, *The River Runs Black: The Environmental Challenge to China's Future* (Ithaca, NY: Cornell University Press, 2004). Ten years on from its publication, Economy's book is somewhat dated. Chapters 4 through 6, which focus on the institutional causes of China's environmental problems, are by far the most useful sections and retain their relevance. These chapters could easily be excerpted and assigned separately from the remainder of the text.

For the "World" unit, I am currently teaching Alan Weisman's *The World Without Us* (New York: Thomas Dunne Books/St. Martin's Press, 2007). Weisman's book, modeled after what Germans call a *Gedankenexperiment* (thought experiment), contemplates the destruction of human civilization and the subsequent rewilding of the planet. Despite the fact that *New York Times* Sunday Book Review editor Jennifer Schuessler accused Weisman of "giving way to the rhetoric of eco-hellfire," students have been drawn to Weisman's imaginative use of environmental history when constructing various post-human landscapes.[7] The World Without Us pairs exceptionally well with Dipesh Chakrabarty's essay, "The Climate of History: Four Theses," in part because Chakrabarty begins and ends his article with Weisman's premises.[8]

I have also tried organizing the final unit of GEH around Ramachandra Guha's *How Much Should a Person Consume? Environmentalism in India and the United States* (Berkeley: University of California Press, 2006). In this history of environmentalism in the U.S. and India, Guha compares North America's "wilderness thinking" style of conservationism with India's "agrarianism" approach to peasant-based land-use policies. Finding deficiencies in both models, Guha advocates a transcendent position – "social ecology" – an environmental ethic that "joins rather than separates the most dominant species on earth with the other species and habitats that we have to share the world with." (88) Students have commented that the book's chapters do not yield a whole that is greater than the sum of its parts; they have also remarked upon Guha's highly selective use of sources. In the future, I am likely to assign only the final chapter, which bears the same title as the book. A third, overarching text that has proved extremely useful is J.R. McNeill's *Something New Under the Sun: An Environmental History of the Twentieth-Century World* (New York: Norton, 2000). McNeill's book offers an accessible overview of major issues in twentieth-century global environmental history. Many students found *Something New Under the Sun* useful for putting paper topics into the broader context of world historical events.[9]

Films: In addition to using maps, books, articles, and an extensive array of lecture images, I show several films during the semester. In the Latin America unit, I often screen *The Power of Community: How Cuba Survived Peak Oil* (The Community Solution, 2006). This unapologetically polemical documentary offers a stimulating account of how Cuban sustainability activists have developed post-Peak Oil resilience strategies over the past three decades.[10]

Among the films that have been most successful in the Sub-Saharan Africa part of the course is *Darwin's Nightmare* (Image Entertainment, 2007). Stimulating discussions tend to arise from students' reactions to Austrian filmmaker Hubert Sauper's probing investigation of one of the planet's most infamous invasive species. Filmed entirely by hand-held camera, the documentary explores how the introduction the Nile Perch (*Lates niloticus*) into Lake Victoria in the 1950s shaped the social history of the East African communities surrounding the continent's largest body of fresh water. Another food – in this case coffee – has also served the course well. *Black Gold* (Mongrel Media, 2006) has led many of my students towards a more complex understanding of their morning (and late-night) beverage. Filmmakers Marc and Nick Francis follow Tadesse Meskela, an Ethiopian coffee farmers' cooperative leader, as he travels the world in search of a better price for his growers' beans. Focusing on the birthplace of coffee, Ethiopia's Oromia Region, the film exposes the myriad connections among New York commodity traders, coffee consumers in Europe and the U.S., and the African farmers who sell their crop for a meager percentage of its traded value on international markets.

During the China unit, I now show *The Warriors of Qiugang: A Chinese Village Fights Back* (Yale e360, 2011). Filmmakers Ruby Yang and Thomas Lennon profile the activists of Quigang, a small town in Anhui Province, where a chemical company's contamination of local air and water became so egregious that local citizens began fighting back.[11] I have also used *Manufactured Landscapes* (Zeitgeist Films, 2007), a film that focuses on Ed Burtynsky's photography of unprecedented landscape transformations in China. The documentary begins with a slow pan of the assembly line in a one-kilometer-long factory that employs over 23,000 people and produces most of the world's clothing irons. We later see footage of those same irons, sent back to China to accumulate in the nation's colossal municipal dumps. While the section on the Three Gorges Dam is now outdated, the film retains its power to demonstrate the vast scope and scale of environmental change in the world's most populous country.

During the "World" unit, I turn to the transnational issue of climate change and screen *The Island President* (Samuel Goldwyn Films, 2011). For the most part, students have been impressed by this moving documentary, which chronicles the efforts of former Maldives President Mohamed Nasheed to confront the threat of sea-level rise to his low-lying island nation.

What follows is a sample syllabus from the Fall 2011 iteration of GEH:

Course Description: This course examines the environmental history of the world since 1900 with a particular focus on Latin America, Sub-Saharan Africa, and China. We will use books, articles, films, and a range of online media to illuminate the comparative and interdisciplinary possibilities of global environmental history. In addition to studying the past, we will explore how to use historical knowledge in the formulation of policy recommendations and grassroots initiatives for addressing contemporary environmental issues.

Special Section: Global Environmental History

Assignments:

Three short papers: During the second week of the semester, I will provide you with a list of possible essay topics for the three short papers that you will write this semester. Each of these topic questions will ask you to use your knowledge of environmental history to formulate a policy recommendation or design a grassroots initiative to help solve a contemporary problem. For each of the essays, you will have three or four options from which to choose. If you have taken careful notes during my class lectures, read the assigned articles, participated in discussions, and completed the book for each unit, you should not have to do extensive research for these short-paper assignments. Be sure to support your arguments with properly cited sources. You may cite my lectures as "Edward Melillo, 'in-class lecture,' …date." Your essays should be between 5-6 pages in length (no longer), 12-point font, and double-spaced. Each essay is worth 15% of the final grade. You will hand in your hard copy of each essay at the end of class on the day that it is due. Late assignments will lose a grade point per day (e.g. A becomes A-).

Three Map Quizzes: During the Latin America, Africa, and China units, I will ask you to locate a series of relevant countries, key cities, and/or major ecological and topographical zones on a map. One week prior to each quiz, I will provide you with a study guide.

Occasional Reading Reviews: When necessary, I will ask you to respond to a few, short questions on the reading assignments for a particular session.

Final Exam: The final exam is a take-home test, which will consist of short identification questions, a short essay section, two long essays, and a matching section. The goal of the exam is to encourage you to make comparisons and contrasts among the case studies that we have discussed this semester.

Assessment of Your Work: Your final grade will reflect your performance on the short papers (45%), the map quizzes (10%), the final exam (20%), and your class participation (25%). I will factor your reading reviews into your class participation grade.

Required Texts:

John Soluri, *Banana Cultures: Agriculture, Consumption, and Environmental Change in Honduras and the United States* (Austin: University of Texas Press, 2005);

Tamara Giles-Vernick, *Cutting the Vines of the Past: Environmental Histories of the Central African Rain Forest* (Charlottesville: University Press of Virginia, 2002);

R. Edward Grumbine, *Where the Dragon Meets the Angry River: Nature and Power in the People's Republic of China* (Washington, D.C.: Island Press, 2010);

Alan Weisman, *The World Without Us* (New York: Thomas Dunne Books/St. Martin's Press, 2007).

Course Schedule

Latin America:

Session 1

Lecture/discussion Topic: "Course Introduction."

Assignments for next session:

- Lise Sedrez, "Environmental History of Modern Latin America," in *A Companion to Latin American History*, ed. Thomas H. Holloway (Malden, Mass.: Blackwell Publishing, 2011), 443-60;
- Mark Carey, "Latin American Environmental History: Current Trends, Interdisciplinary Insights, and Future Directions," *Environmental History* 14, no. 2 (2009): 221-52
- Myrna Santiago, "Rejecting Progress in Paradise: Huastecs, the Environment, and the Oil Industry in Veracruz, Mexico, 1900-1935," *Environmental History* 3, no. 2 (1998): 169-88.

Session 2

Lecture/discussion Topic: "The Social Ecology of Mexican Oil: An Environmental History of Vera Cruz, Mexico, 1900-1938."

Assignments for next session:

- *Banana Cultures*, Chapters 1-4;
- Peter B.R. Hazell, "Green Revolution: Curse or Blessing?" *International Food Policy Research Institute* (2002), available at: http://www.ifpri.org/pubs/ib/ib11.pdf

Session 3

Lecture/discussion Topic:"The Green Revolution in Mexico: A Pandora's Box of Possibilities, 1944-Present"

Assignment for next session:

- Paul S. Sutter, "Nature's Agents or Agents of Empire?: Entomological Workers and Environmental Change during the Construction of the Panama Canal," *Isis* 98, no. 4 (2007): 724-54;
- Look at Google Maps satellite image of the Panama Canal: http://maps.google.com/maps?q=Panama+canal&ll=9.277994,-79.913006&spn=0.115880,0.204826&t=k&hl=en

Session 4

Lecture/discussion Topic: "A Diseased Artery: Mosquitoes, Race, Gender, and the Making of the Panama Canal, 1904-1914."

MAP QUIZ #1 – Latin America

Assignment for next session:

- Steve Marquardt, "Pesticides, Parakeets, and Unions in the Costa Rican Banana Industry, 1938-1962," *Latin American Research Review* 37, no. 2 (2002): 3-36;
- Complete *Banana Cultures* (Chapters 5-8).

Session 5

Lecture/discussion Topic: Discussion of *Banana Cultures* and "Pesticides, Parakeets, and Unions…"

Assignment for next session:

- Philip M. Fearnside, "Deforestation in Brazilian Amazonia: History, Rates, and Consequences," *Conservation Biology* 19, no. 3 (2005): 680-88;
- Alexi Barrionuevo, "To Fortify China, Soybean Harvest Grows in Brazil," *The New York Times* (April 6, 2007), available at: http://www.nytimes.com/2007/04/06/business/worldbusiness/06soy.html

Session 6

Lecture/discussion topic: "Vegetable Steel: The soybean's unlikely journey from China to Brazil."

Assignment for next session:

- Ed Ewing, "Cuba's Organic Revolution," *The Guardian* (April 4, 2008), available at: http://www.guardian.co.uk/environment/2008/apr/04/organics.food

Session 7
Lecture/discussion topic: In-class film – "The Power of Community: How Cuba Survived Peak Oil" (The Community Solution, 2006)
ESSAY #1 DUE AT THE END OF CLASS
Assignment for next session:
- Gregory Maddox, ed., "African Environments in the Age of Conservation and Development," in *Sub-Saharan Africa: An Environmental History* (Santa Barbara: ABC-CLIO, 2006);
- Jane Carruthers, "Tracking in Game Trails: Looking Afresh at the Politics of Environmental History in South Africa," *Environmental History* 11, no. 4 (2006): 804-29;
- William Beinart, "African History and Environmental History" (June 11, 2001): http://www.h-net.org/~environ/historiography/africaeh.htm

Sub-Saharan Africa:
Session 8
Lecture/discussion topic: "Africa's history is more than the sum of its famines!"
Assignments for next session:
- Lynne Heasley, "Reflections on Walking Contested Land: Doing Environmental History in West Africa and the United States," *Environmental History* 10, no. 3 (2005): 510-31;
- David Quammen (Photographs by George Steinmetz), "Tracing the Human Footprint," *National Geographic Special Issue on Africa* (September 2005), available at: http://www7.nationalgeographic.com/ngm/0509/feature1/index.html
- *Cutting the Vines of the Past,* pages 1-68.

Session 9
Lecture/discussion topic: "Peanuts: The Groundnut Scheme in Tanganyika, 1946-1951."
Assignments for next session:
- Dirk Verschuren, *et al.*, "History and timing of human impact on Lake Victoria, East Africa," *Proceedings of the Royal Society of London* 269, no. 1488 (2002): 289-94;
- *Cutting the Vines of the Past,* pages 69-118.

Session 10
Lecture/discussion topic: In-class film: Hubert Sauper, dir., *Darwin's Nightmare* (Image Entertainment, 2007)
Assignments for October 19th session:
- Freek J. Venter, *et al.* "The Evolution of Conservation Management Philosophy: Science, Environmental Change and Social Adjustments in Kruger National Park," *Ecosystems* 11, no. 2 (2008): 173-92;
- Edward M. Bruner and Barbara Kirshenblatt-Gimblett, "Maasai on the Lawn: Tourist Realism in East Africa," *Cultural Anthropology* 9, no. 4 (1994): 435-70;
- Complete *Cutting the Vines of the Past*.

Session 11
Lecture/discussion topic: Finish watching *Darwin's Nightmare* & Discussion of *Cutting the Vines of the Past.*

Session 12
Lecture/discussion topic: "Frozen in Time, Yet Forced to Change: The Maasai and Serengeti National Park, 1921-2008."
MAP QUIZ #2 – Sub-Saharan Africa
Assignment for next session:
- Doctors Without Borders/Médecins Sans Frontières, "Sleeping Sickness," (2008), available at: http://www.doctorswithoutborders.org/news/issue.cfm?id=2401

Session 13
Lecture/discussion topic: "The Strange Career of Sleeping Sickness: From Ecological Equilibrium to Neglected Disease, 1896-2007."
Assignment for next session:
- Judith A. Carney, "African Rice in the Columbian Exchange," *The Journal of African History* 42, no. 3 (2001): 377-96.

Session 14
Lecture/discussion topic: "Rice and Race: Re-examining African Contributions to the Columbian Exchange."
Assignment for next session:
- Khadija Sharife, "DRC's magic dust: Who benefits?" *Pambazuka News* 468 (February 4, 2010), available at: http://www.pambazuka.org/en/category/features/61992//
- Victoria Brittain, "Colonialism and the Predatory State in the Congo," *New Left Review* 1, no. 236 (1999), available at: http://www.newleftreview.org/?view=2085

Session 15
Lecture/discussion topic: "A Ghost in the 'Lungs' of the World: From Rubber to Coltan in the Congo, 1885-2008."
ESSAY #2 DUE AT THE END OF CLASS
Assignment for next session:
- Micah S. Muscolino, "Global Dimensions of Modern China's Environmental History," *World History Connected* 6 (2009), available at: http://worldhistoryconnected.press.illinois.edu/6.1/muscolino.html
- J.R. McNeill, "China's Environmental History in World Perspective," in *Sediments of Time: Environment and Society in Chinese History*, ed. Mark Elvin and Liu Tsui'jung (New York: Cambridge University Press, 1998), 31-49.

China:
Session 16
Lecture/discussion topic: "All the World's a Stage…and China Has the Most Players!"
Assignment for next session:
- *Where the Dragon Meets the Angry River*, 3-59.

Session 17
In-class film: *Manufactured Landscapes* (Zeitgeist Films, 2007)

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Session 18
Lecture/discussion topic: "'Revolution Is Not a Dinner Party': A Social and Environmental History of The Great Leap Forward, 1958-62."
Assignment for next session:
- *Where the Dragon Meets the Angry River*, 60-107.

Session 19
Lecture/discussion topic: In-class film: *Up the Yangtze* (National Film Board of Canada, 2007) and discussion.
Assignment for next session:
- Complete *Where the Dragon Meets the Angry River*;
- Susan Greenlaugh, "Science, Modernity, and the Making of China's One-Child Policy," *Population and Development Review* 29, no. 2 (2003): 163-96.

Session 20
Lecture/discussion topic: "A Nation of 'Little Emperors': China's Planned Birth (One-Child) Policy, 1979-Present" & discussion of *Where the Dragon Meets the Angry River*.
Assignment for next session:
- Xu Honggang and Zhang Chaozhi, "National Parks in Transition: Wuyishan Scenic Park in China," in *Tourism and National Parks: International Perspectives on Development, Histories and Change*, ed. Warwick Frost and C. Michael Hall (New York: Routledge, 2009), 225-37.

Session 21
Lecture/discussion topic: "Eco-Toursim with Chinese Characteristics"
Assignment for next session:
- Kenneth Pomeranz, "Political Economy and Ecology on the Eve of Industrialization: Europe, China, and the Global Conjuncture," *The American Historical Review* 107, no. 2 (2002): 425-46.

Session 22
Lecture/discussion topic: "Life on the Hydrocarbon Frontier: Building the Energy Foundations for the World's Most Populous Country."
MAP QUIZ #3 – China
Assignment for next session:
- Megan Sweeney and Susan McCouch, "The Complex History of the Domestication of Rice," *Annals of Botany* 100, no. 5 (2007): 951-57.

Session 23
Lecture/discussion topic: "Eating from the 'Iron Rice Bowl': Rice Culture and Cultivation in Chinese History."
ESSAY #3 DUE AT THE END OF CLASS
Assignment for next session:
- *The World Without Us*, 1-216.

The World:
Session 24
Lecture/discussion topic: In-class film: *Black Gold* (Mongrel Media, 2006)
Assignment for next session:
- *The World Without Us,* pages 217-end of book.
- Immanuel Wallerstein, "The Ecology and the Economy: What is Rational?" Paper delivered at Keynote Session of Conference, "World System History and Global Environmental change," Lund, Sweden, 19-22 September 2003: http://www.binghamton.edu/fbc/iwecoratl.htm

Session 25
Lecture/discussion topic: "Using Environmental History to Anticipate Environmental Futures" (Discussion of *The World Without Us*).
Assignment for next session:
- Mike Davis, "Who Will Build the Ark?" 61 *New Left Review* (Jan.-Feb. 2010): 29-46;
- Dipesh Chakrabarty, "The Climate of History: Four Theses," *Critical Inquiry* 35, no. 2 (2009): 197-222.
- Spencer Weart, "Spencer Weart on Depicting Global Warming," *Environmental History* 10, no. 4 (2005): 770-75.

Session 26:
Lecture/discussion topic: "Temperature Rising: Environmental Movements in the Anthropocene."

Final Assignment: Take-home final exam due at my office by 5:00 PM.

1 Donald Worster, as quoted in Nicolaas Mink, "Forum: It Begins in the Belly," *Environmental History* 14, no. 2 (2009): 312.

2 For discussions of the analytical possibilities that emerge from an emphasis on transnational connections in history, see Edward D. Melillo, "The First Green Revolution: Debt Peonage and the Making of the Nitrogen Fertilizer Trade, 1840-1930," *American Historical Review* 117, no. 4 (2012): 1028–1060; Micol Seigel, "Beyond Compare: Comparative Method after the Transnational Turn," *Radical History Review* issue 91 (Winter 2005), 62–90; and Kenneth Pomeranz, *The Great Divergence: China, Europe, and the Making of the Modern World Economy* (Princeton: Princeton University Press, 2000), 3–27.

3 See Ralph Kingston, "Mind over Matter? History and the Spatial Turn," *Cultural and Social History* 7, no. 1 (2010): 111–121; and Peter Stearns, "Social History and Spatial Scope," *Journal of Social History* 39, no. 3 (2006): 613–14. Much recent work on the spatial dimensions of the past draws upon the insights of Henri Lefebvre, *The Production of Space*, trans. Donald Nicholson-Smith (Cambridge, Mass.: Blackwell Publishing, 1991).

4 For examples, see Steven S. Volk, "How the Air Felt on My Cheeks: Using Avatars to Access History," *The History Teacher* 46, no. 2 (2013): 193–214; and Edith Sheffer, "Creating Lives in the Classroom," *Chronicle of Higher Education* (November 22, 2009), available at: chronicle.com/article/Teaching-Matters-Creating/49211/ For a much earlier version of this pedagogical approach, see Harold Gorvine, "Teaching History through Role Playing," *The History Teacher* 3, no. 4 (1970): 7–20.

5 Garret Hardin, "The Tragedy of the Commons," *Science* 162,

no. 3859 (1968): 1243-48. For a retrospective critique of Hardin's concepts, see David Feeny, et al., "The Tragedy of the Commons: Twenty-Two Years Later," *Human Ecology* 18, no. 1 (1990): 1–19.

6 For a more general introduction to the key thinkers and major works of political ecology, see Paul Robbins, *Political Ecology: A Critical Introduction*, 2nd ed. (Malden, Mass.: John Wiley & Sons, 2012).

7 Jennifer Schuessler, "Starting Over" *The New York Times* (September 2, 2007): http://www.nytimes.com/2007/09/02/books/review/Schuessler-t.html?pagewanted=all

8 Dipesh Chakrabarty, "The Climate of History: Four Theses," *Critical Inquiry* 35, no. 2 (2009): 197–222.

9 McNeill's book is just one of many recent works that attempt to address the environmental history of the world in a single volume. For an insightful review of some of these texts, see Robert B. Marks, "World Environmental History: Nature, Modernity, and Power," *Radical History Review* issue 107 (Spring 2010): 209–24. Anthropologist Alf Hornborg has pointed out, "Although rich in empirical detail, studies in environmental history often strike world-system analysts as theoretically underdeveloped. They generally do not address the fact that landscape changes in core areas have been recursively interconnected with those in peripheral areas. Although several recent books claim to deal with global environmental history… they are rarely 'global' in this sense. They tend to offer a series of national and local case studies, focusing more on the environmental records of individual nations and groups than on the global historical processes and material flows that have generated their problems as well as their options." See Alf Hornborg, "Towards a Truly Global Environmental History: A Review Article," *Review: Journal of the Fernand Braudel Centre* 33, no. 4 (2010): 295.

10 In 1956, Shell geoscientist Marion King Hubbert suggested that the history of oil extraction from the lithosphere followed a bell curve with a point of maximum volume followed by a decline. Hubbert correctly predicted that petroleum production in the lower 48 states would peak in 1970. See M.K. Hubbert, "Nuclear Energy and the Fossil Fuels," A Paper Presented before the Spring Meeting of the Southern District Division of Production, American Petroleum Institute, Plaza Hotel, San Antonio, Texas (7-9 March, 1956), available at: www.hubbertpeak.com/hubbert/1956/1956.pdf

11 A streaming video of "The Warriors of Qiugang" is available at: http://e360.yale.edu/feature/the_warriors_of_qiugang/2358/

Reframing the Edwardian Crisis: Contentious Citizenship in the British Empire before the First World War

Ian Christopher Fletcher, Georgia State University

In the wake of the global financial crisis, our world is proving to be turbulent as well as connected. In 2011, the pro-democracy and anti-austerity demands of the Arab Spring and Occupy Wall Street demonstrated the power of social movements, simultaneously rooted in local spaces and leaping over borders, to shake the world.[1] More recently, of course, the imposition of states of siege and the outbreak of civil wars have underlined the bodily risks rather than political rights of citizens who confront their governments or each other. World historians can point to other dramatic moments, sometimes fleeting, sometimes sustained, of widespread challenge, crisis, and change in the long twentieth century. Certainly 1968 symbolizes one such moment of contentious politics.[2] The explosion of 1919, combining anticolonial, nationalist, labor, socialist, and fascist challenges, is another.[3] In fact, the First World War was bracketed by global turbulence. Although it did not reach the explosive levels of the postwar period, when whole empires lay in seeming ruin, the widespread prewar unrest was punctuated by revolutions in the Russian, Ottoman, and Chinese empires as well as in Iran and Mexico.

When we examine the protest cycles that wound through the British empire before the war, we see connections that linked metropole and colonies as well as drew on wider global movements of women, workers, colonial subjects, and people of color. One of the most intriguing aspects of the Edwardian conjuncture is the sense of immanent possibilities held by those who observed or participated in the unrest. While the prewar certainly prefigured aspects of the postwar, as Michael Adas shows with figures like Rabindranath Tagore and Mohandas K. Gandhi in his account of the collapse of belief in the civilizing mission, few Edwardians imagined a world without empires.[4] An insight about the late eighteenth century from Jane Burbank and Frederick Cooper, who argue that "struggles for political voice, rights, and citizenship took place *within* empires before they became revolutions *against* them," illuminates the early twentieth century as well.[5] While some advocates of change sought to overturn the British empire, others sought to open it up. Even a radical nationalist like Bipin Chandra Pal envisioned a pacific alliance between an *independent* India and the empire against what he perceived as the aggressive blocs of Europe, the Islamic world, and East Asia.[6]

Mingling metropolitan, colonial, and diasporic histories, my brief essay seeks to reframe in an imperial and global panorama what historians call the Edwardian crisis in Britain and Ireland. This enlargement of the picture, so to speak, brings the wider Edwardian turbulence into view and places the crisis in perspective. I sketch the protest movements in the British isles, trace the contemporaneous movements and cycles of protest elsewhere in the British empire, and take a closer look at imperial (dis)connections. Highlighting demands around citizenship reveals the contours of the political imagination of challengers in metropole and colonies. When H.S.L. Polak, for example, likened Indians in South Africa to "helots within the Empire," quoted imperial statesmen to the effect that "British citizens, whatever their colour, should be treated as such," and called on Indians in India to mobilize against "differential legislation," while swerving around the subjugation of Africans in South Africa, he was simultaneously drawing and erasing possible connections.[7]

If citizenship is the condition of belonging to a political community and possessing a complement of rights and responsibilities, the subordinated and excluded often make claims to citizenship and the recognition and representation it entails. Scholars who study contemporary forms of "contentious citizenship" show that struggles can call into question the very boundaries of the polity.[8] This contentiousness encompasses the interaction of not only states and challengers but also rival political actors claiming to speak for "the people" and other collective subjects, for the demand for inclusion invites counter-demands for continued exclusion or subordination. In the Edwardian era, the "citizen" could be defined in opposition to the "alien" as "one who is a constituent member of a state in international relations and as such has full national rights and owes a certain allegiance."[9] This denied or deferred the citizenship of those in-between subjects of empire who did not qualify in national, racial, and civilizational terms. As Edwardian students of Roman history knew, however, there was precedent for extending citizenship to all sorts of subjects.[10] Contradictory conceptions and divergent arrangements around citizenship could invite comparison, criticism, and controversy.

George Dangerfield's *The Strange Death of Liberal England* (1935) remains the classic narrative of the conflicts that convulsed Britain and Ireland a century ago.[11] He recounts several "rebellions" in politics and society that followed the coming of the Liberals to power in 1905 after two decades of Conservative dominance. The aristocratic revolt sought to protect the power of the unelected House of Lords and resist Liberal social, fiscal, and constitutional reforms. The women's revolt centered on the demand for suffrage. Frustrated for decades by lack of support in the Liberal and Conservative parties, groups like the Women's Social and Political Union used increasingly confrontational tactics to press the cause. The workers' revolt sprang from grievances that were only partially relieved by trade unions, the newly founded Labour party, and social welfare measures. Encouraged by militant syndicalists and socialists, workers took industrial action in a wave of strikes that swept Britain and Ireland beginning in 1910 and only cresting in 1913. Finally, the revolt of Ulster unionists, who supported the union of Britain and Ireland and opposed the Liberal government's home rule bill for Ireland, won the support of the Conservative opposition in parliament. They threatened armed resistance if the bill became law. This led to a counter-mobilization by Irish nationalists and then a collapse of authority in the spring of 1914, when army officers refused orders to reinforce positions in and around Ulster. When soldiers fired on a crowd in Bachelor's Walk in Dublin on 26 July 1914, a civil war in Ireland seemed days away.

Contentious citizenship offers a key to the Edwardian crisis of authority and legitimacy. Women's suffragists were not the only activists demanding the right to participate in the polity, nor were anti-suffragists the only opponents of expanding democracy. The labor unrest turned on the political, economic, and social rights of workers in a semi-democratic state and class-divided society. Even though the suffrage and socialist movements debated methods and demands to the point of antagonism, their activist networks often overlapped. In Ireland, nationalists and unionists shared a demonstratively masculine repertoire of drilling and marching inherited from a tradition of volunteer militias reaching back to the 1780s, but they divided

over competing notions of who constituted the Irish people and determined Ireland's relations with Britain and the wider empire. For unionists and some nationalists, this sense of belonging included national and imperial layers, while for more radical nationalists, it was fundamentally national, republican, and separatist. Although Edwardian challengers on both the left and the right found some allies in the Liberal and Conservative elite, they drew on a long tradition of popular-radical constitutionalism and a rich repertoire of rhetorical and tactical militancy. As prospects for bargaining over reforms seemed to recede and the cycle of protest and repression accelerated, the unruly claims of contentious citizenship began to vie with the constitutional conventions of the supremacy of parliament and the rule of law.

At the same time, insults and injuries were accumulating across the wider Edwardian empire. The highhanded rule of Cromer in Egypt and Curzon in India, the "white Australia" policy of the new Commonwealth of Australia in 1901, the subordination of what Vivian Bickford-Smith calls the "creole elite" of British West Africa and South Africa were parts of a larger pattern of entrenching civilizational and racial hierarchies.[12] Douglas Lorimer argues that the discursive balance tilted decisively during the late Victorian and Edwardian eras from a belief in the moral and intellectual assimilability of people of color to British civilization to a conception of the social and cultural incompatibility of European and other peoples.[13] This shift, whose terms recall David Theo Goldberg's distinction between "historicist" and "naturalist" forms of racism, not only reduced support for the equal rights of colonial subjects, both indigenous and diasporan, but also reinforced "yellow peril" xenophobia.[14]

The disintegration of what had appeared to be a common British subjecthood opened up the question of citizenship, leading some colonial subjects to press harder for imperial citizenship and drawing others to alternative notions of belonging. In British West Africa, J.E. Casely Hayford and other activists founded the Gold Coast Aborigines' Rights Protection Society in 1897 and began to defend indigenous systems of land and labor and advocate for the "opportunity … to take part in the work of legislation."[15] In India a year later, as the Indian National Congress stalwart Surendranath Banerjea later recalled, plague, protest, violence, and repression sent "dark clouds rolling over the political horizon."[16] In South Africa, war between the British empire and the two Afrikaner republics in 1899-1902 produced wide-ranging effects across metropole and colonies. British party and popular politics sharpened over the rights of "natives" and "Asiatics" as well as "uitlanders" and "Boers," with opponents and supporters of the war facing each other in the streets as well as in press and parliament. The war divided Ireland between the British and Afrikaner causes and stimulated both "Anglo-Saxon" imperialism and settler nationalism in Australia, Canada, and New Zealand.[17] Although the British had sometimes justified the war as promising better prospects for colonial subjects in South Africa, white supremacy served as the basis for the peace settlement and the grant of responsible government in the former republics a few years later. The use of Chinese indentured workers not only further subordinated African migrant workers in the mining industry but also galvanized white workers in South Africa, gave the Liberals the cry of "Chinese slavery" to win the general election in Britain in 1906, and probably contributed to the anti-Japanese and anti-Indian immigration disturbances on the Pacific coast of Canada and the U.S. in 1907.

Searching for political opportunities in divergences between the settlers' "white man's country" and the "mother country," Africans and Asians organized and advocated for their rights where they could find interlocutors. In 1906, even as a brutally suppressed Zulu uprising in Natal showed the limited avenues for indigenous protest, an African deputation lobbied the imperial government in London and three years later the South African Native Convention called for "full and equal rights and privileges" as white British and Afrikaner settlers prepared to establish the Union of South Africa.[18] What is more, Indians in South Africa declared a satyagraha (truth power) against worsening restrictions on traders and professional men as well as indentured workers and sent a deputation to London in 1906. The arrest and imprisonment of satyagrahis followed, including Gandhi for the first but not the last time two years later. When a second deputation traveled to London in 1909, it declared that "Self-Government has no special or beneficial meaning" for Indians who endured discriminatory laws that made it clear they would not be counted as citizens of the new dominion.[19]

Even greater challenges came in India and Egypt, where settlers did not stand between colonial subjects and the Raj and the Occupation. Instead, Indians and Egyptians could look around them and see reforms, revolutions, constitutions, and parliaments in Russia, Iran, and the Ottoman and Chinese empires in the years before the world war. The precipitant of protest in India in 1905 was Curzon's partition of the province of Bengal, which bore the marks of a strategy of divide and rule over Hindus and Muslims. Indians began to organize around the project of swadeshi (self-reliance) in economic and educational spheres. While the tactic of boycott against British goods and government schools and seemingly contradictory demands for colonial self-government and national independence opened up divisions between "moderate" and "extremist" nationalists, they fostered a broadly contentious sense of citizenship among Indians alienated by the arrogance and abuses of colonial rule. A "new spirit," as it was often called, asserted itself not only among nationalist constituencies like students and professional groups, but also among low-caste communities, Muslims, Sikhs, women, urban workers, and peasants. Repressive measures under Curzon's successor Lord Minto, such as the deportation of Lala Rajpat Rai in 1907, the sentence of six years imprisonment imposed on B.G. Tilak in 1908, and ongoing police surveillance and press controls, disorganized the popular movement and persuaded some self-defined revolutionaries to form clandestine groups and carry out armed actions. Indians disagreed whether the reforms of provincial and viceregal councils in 1909, which increased elected Indian representation and introduced separate communal electorates, were an advance or a setback. Fortunately for both the new viceroy Lord Hardinge and the badly divided Indian National Congress, the rescinding of the partition of Bengal on the occasion of George V's durbar in 1911 did allow something of a fresh start.[20]

In Egypt, nominally part of the Ottoman empire but effectively held by the British, the precipitants in 1906 included the harsh collective punishment of the villagers of Dinshaway for a clash between protesting peasants and British soldiers. After years of political intrigue by the Egyptian khedive, the establishment of the Umma and Watani parties in 1907 offered "moderate" and "extremist" alternatives on constitutional and

social reform, the question of British withdrawal, and the role of Egypt in the Ottoman and Pan Islamic cause. Students and professional groups were not alone in taking part in the unrest, for women organized associations and meetings, workers formed unions and went on strike, and Muslims and Coptic and Syrian Christians oscillated between hostility and solidarity. Swinging between the khedive and the moderates for a partner in government, the British under Cromer's successor Sir Eldon Gorst also made use of repressive measures in 1909 against the press and again in 1910 in response to the uproar over plans to extend British control of the Suez Canal and the assassination of the prime minister Butrus Ghali. The Watani leader Mohammed Farid had fled into exile by the time the new consul-general Lord Kitchener floated a proposal to reform the legislative council and general assembly in 1912.[21]

The protest cycles in Egypt and India were coming to a close just as unrest began to expand and escalate in the new Union of South Africa. The union parliament codified the color bar in industry in the Mines and Works Act 1911, restricted Indian immigration in the Immigrants Regulation Act 1913, and dispossessed many African cultivators in the Natives' Land Act 1913. African activists founded the South African Native National Congress in 1912 and sent a deputation to lobby the imperial government in London against the land legislation in 1914. In the meantime, black women showed the way in a militant protest against pass laws in 1913 that earned them comparisons with the British suffragettes. Gandhi revived the Indian satyagraha, this time with much broader participation by Indian workers, many of whom went on strike in November 1913 and endured beatings and detention when they marched through Natal to the Transvaal border to protest controls on internal movement by Asians. At the same time, the government was dealing with increasingly fractious politics among the classes and communities of white citizens. Afrikaner nationalists had become restive under the rule of Afrikaner politicians who had made their peace with British South Africans and the British empire. The white miners of the Transvaal went on strike in July 1913, and amid the ensuing bloodshed British troops were deployed to restore order. A wider general strike of white workers in January 1914 led to martial law and the deportation of strike leaders from South Africa. Perhaps the only bright spot from the viewpoint of the union government was a compromise settlement of the South African Indian controversy ending the satyagraha.[22] Asked in July by a journalist about further claims to "political equality" by Indians in South Africa, the ever surprising Gandhi made a virtue of necessity by answering that "passive resistance is infinitely superior to the vote."[23]

Thus we can see a series of challenges and crises unfolding in almost syncopated fashion around the Edwardian empire. When Casely Hayford warned of "the fever of unrest" spreading to British West Africa in 1913, he made it clear he was aware of historical and contemporary developments in Egypt, India, and South Africa.[24] Color bars, unfair laws, lack of the right to make claims before government, much less take part in the practice of ruling and being ruled repeatedly posed the question of citizenship. Yet the possibilities and limits of contentious politics differed across the empire. West African anticolonial critics coped with the constraints of small numbers by couching their demands in loyal terms, seeking alliances with local rulers, making use of Pan African connections around the black Atlantic, and imagining a confederal past and future. Indeed, Casely Hayford and colleagues in several colonies took the first steps just before the war in 1914 that would lead eventually to the establishment of the National Congress of British West Africa in 1920.[25] By contrast, Egyptian and Indian anticolonial activists could mobilize larger numbers and employ a broader range of militant tactics and rhetoric. The radicals among them could even begin to reach beyond the empire and construct alternative notions of belonging, from Pan Islamic solidarity with the Ottoman empire to a "nationalist" view of India that conceived the nation in imperial terms of its own or conflated it with Hindu civilization.[26]

Connections – and disconnections – bridged these moments of unrest in metropole and colonies. The imperial state straddled what was often perceived by Edwardians to be a bifurcated empire, composed in the words of the Colonial Office official Sir Charles Prestwood Lucas of a "sphere of rule" and a "sphere of settlement."[27] One set of connections linked the United Kingdom and the dominions. For advocates of closer union, according to Daniel Gorman, the capacious ideal of imperial citizenship offered a way to bind together those peoples or nations variously categorized as white, Anglo-Saxon, and British in the empire.[28] Colonial and imperial conferences declined to embrace the most ambitious versions of imperial citizenship and eventually the British Nationality and Status of Aliens Act 1914 affirmed the powers of dominion governments to police and manage their own borders and populations. In deepening the divide between those who ruled themselves (and ruled others) and those who were ruled by others, the stakes were raised for any struggle over the borderlands of this two-in-one empire of citizens and subalterns.[29] It is suggestive that the moderate Irish nationalist leader John Redmond asked in 1913 whether Ireland "was the only one white race in the Empire that is to be denied the right to govern herself?"[30]

The question of imperial citizenship concerned the Edwardian labor, socialist, and suffrage movements, not surprisingly given the rising levels of immigration around the empire. In 1907, the British Labour leader Ramsay MacDonald made a carefully calibrated case for an "Imperial Standard" to be upheld by Britain and the dominions. He offered the granting of women's suffrage in Australia and New Zealand and expressions of support for Irish home rule as signs of the democratic nature of the self-governing colonies. He conceded the restriction of Chinese and Japanese immigration as a means to maintain standards of living for white working-class settlers, while calling for humane treatment of indigenous people and recognizing the civilized nature of Indians and some other colonial subjects. He did not address the restriction of Indian immigration, although by this time Gandhi had launched his satyagraha in the Transvaal, doubtless because it would have discomfited his friends in the dominion labor parties and the Indian nationalist movement.[31] It was the travails of white workers in South Africa that mobilized the labor and socialist movement around the empire. The deportation of strike leaders to Britain in January 1914, coming on the heels of the imprisonment of the strike leader Jim Larkin in Ireland in November 1913, underlined the contested nature of any imperial standard for (white) labor rights.[32] The suffrage movement was more fortunate, with enfranchised women citizens from Australia and New Zealand encouraging British and Irish as well as Canadian and South African suffragists. This cooperation

culminated in the British Dominions Woman Suffrage Union's empire-wide conference in London in 1914.[33]

Another set of connections bearing on citizenship linked the dependent colonies as well as the United Kingdom and the dominions. We have seen, for example, that deputations from the colonies regularly brought their claims to the imperial government in London, where Jonathan Schneer has shown that anticolonial activists were already sojourning by 1900.[34] We know that some exiled radicals formed transcolonial and global networks and that moderates as well as militants in the ranks of Egyptian, Indian, and Irish nationalists maintained contact with each other as well as with sympathetic British and Irish ethical reformers, pacifists, and socialists.[35] In a world ordered and dominated by great powers, many anticolonial activists understood the fact of empire and pursued courses of action predicated on education, organization, reform, and resistance rather than outright rebellion. Not unlike contemporary transnational advocacy networks pressing for the realization of human rights in international norms, these Edwardian activists used the claim of citizenship along with notions of equality and civilization to challenge imperial norms that explicitly or implicitly discriminated between white subjects and subjects of color.[36] Indeed, according to Sukanya Banerjee, both loyalist and nationalist Indians sought to practice imperial citizenship as a form of belonging in an empire that did not recognize Indian nationhood.[37] But would-be imperial citizens and their friends found color bars everywhere in their way.

The color bar crystallized what were in effect imperial disconnections, arising from demands for rights – equality before the law, the franchise, "home rule" – that appeared equivalent in British and dominion contexts but were discrepant in colonial contexts. A keen observer of the empire in 1912, Lucas recognized that the presence of indigenous peoples in the dominions as well as the spread of the South Asian diaspora meant that the spheres of rule and settlement were "not quite mutually exclusive." Indeed, India had "supplemented Great Britain … by playing the part of a Mother Country."[38] Indian soldiers, laborers, farmers, traders, students, professionals, and activists posed a growing challenge, not just for South Africa but also for Australia and Canada, precisely because they hailed from within rather than without the empire. In May 1914, as deputations from the Indian National Congress as well as the South African Native National Congress were converging on London, a Japanese vessel, the *Komagata Maru*, arrived in Vancouver with nearly four hundred Sikhs and other Indians on board. The passengers staged a floating protest in the harbor rather than depart when the Canadian authorities refused them permission to land. Supporters and opponents of the Indians' right to travel and settle were quick to mobilize in British Columbia, and this extraordinary exercise of contentious citizenship soon gained attention across Canada, India, and the rest of the empire. In Britain, Lala Lajpat Rai argued that what Indians wanted were the "rights of British citizenship" and predicted dire consequences if Sikhs, the backbone of the Indian army, were denied.[39] In the *African Times and Orient Review*, Duse Mohamed declared that "a British citizen should be a British citizen everywhere, whatever his creed or colour" and vowed that "Asiatic ambition of to-day will be African ambition of to-morrow."[40] In a display of what Nico Slate has called "colored cosmopolitanism," he went on to promise that the "equal rights" of the empire's "coloured majority" would not be frustrated and suggested that "coloured rebellion" was a possibility.[41] In the event, the bulk of the *Komagata Maru*'s passengers lost their bids to enter Canada, and the ship began its return journey across the Pacific in the last week of July.[42]

The question is sometimes posed, what would have happened after the shootings in Dublin if the outbreak of the world war had not interrupted the crisis over Irish home rule and Ulster exclusion? It is tempting to ask as well, but for the war what further challenges to the color bar might have followed in the wake of the *Komagata Maru*? There are no historical answers to these speculative questions, of course, but they underline the turbulent nature of the late Edwardian conjuncture. Reframing the crisis in the United Kingdom along imperial and global rather than simply national lines shows that it was not exceptional. Nor were the movements and cycles of protest in Egypt, India, South Africa, and elsewhere. However uneven the fault-lined terrain, the Edwardian empire served as the ground on which citizenship was imagined, claims were advanced, and struggles were undertaken. In turn, contentious citizenship marked the possibilities of subaltern alliance among the subordinated and excluded across metropole and colonies. While many would-be citizens could not grasp the "chain of equivalence" that might articulate their struggles and others rejected it out of hand, small yet growing numbers were beginning to reach for it around the empire before the First World War.[43] If there are uncanny parallels between the contemporary era and the Edwardian era, such as the situations of immigrants and refugees now and colonial subjects then, one that should not be forgotten is the ongoing claim and demand that all of us belong.[44]

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