

What Kind of History for What Kind of Political Ecology?

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In exploring how historical research might enrich political ecology (and, implicitly, how political ecology could inform historical geography), one might begin by asking the question: “What kind of history for what kind of political ecology?”¹ Although Richard Peet and Michael Watts recognized that “environmental historians raise important theoretical and methodological questions for the study of long-term environmental change,” they neither offered practical guidance for this scholarly project, nor explored the implications.² Piers Blaikie’s political-economic analysis of soil erosion, which quickly became the standard reference in political ecology, included only minor discussion of historical analysis. Yet few would disagree with his unsurprising later argument that “the search for social causes of [land] degradation must also extend backwards in time.”³ Michael Williams, while lamenting that some of the best environmental history has been done “on topics that historical geographers have either not perceived or ignored,” argued that the “tension” between environmental history and historical geography could “be a catalyst for new work.”⁴ Unfortunately, he neglected to elaborate his point. Similarly, Stanley Trimble considered “ironic” the fact that geography has “[relinquished] ground to a field like history with no physical underpinnings,” but also failed to offer specific advice.⁵

If we turn to environmental historians for insight to historical political ecology, we find a mixed message. The African, South Asian, and Southeast Asian literatures include numerous studies focusing on how colonial environmental policies altered traditional resource-access regimes; indeed, these literatures provide the best examples of scholarship that could be described as historical political ecology. Recent research in African environments, for example, has vigorously challenged the “received wisdoms” and “environmental crisis narratives” that often support public policies.⁶

Other environmental history literatures, however, are at least as widely read but show far less concern for the conceptual issues that would inter-

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est political ecologists intent on pursuing historical research. For example, political ecologists would find little use in Donald Worster's plea for abandoning "the common assumption that human experience has been exempt from natural constraints" or in Theodore Steinberg's exhortation to focus on "how the environment has shaped human cultures over time."⁷ Somewhat less deterministic are Andrew Isenberg's idea that environmental history should emphasize "nonhuman nature" as "a dynamic agent in human history" and William Cronon's position that environmental history's center stage should have "a cast of nonhuman characters which usually occupy the margins of historical analysis if they are present in it at all."⁸

My exploration of the question of "What kind of history for what kind of political ecology?" is intended to raise issues relevant to geographers drawn both to the conceptual insights of political ecology and to the environmental turn in history (and historical geography). Rather than review the ever-increasing literature on political ecology,⁹ I discuss four issues that stem from the original question. First, studies of historical political ecology inevitably will confront the issue of "application" or "usefulness." To what extent should historical political ecology be "applied" to current environmental management? Second, historical geographers are well placed to develop key areas in political ecology, such as integrating evidence of biophysical change with political-economic causes, and ideas of how access to land and labor influences environmental change. Third, historical political ecology should be diligent in targeting appropriate written sources, for which "local" archives may be especially useful, perhaps in conjunction with a commodity-chain analytical approach. Fourth, historical-political ecologists need to pay special attention to developing a biophysical baseline, as existing ones may prove dubious or inadequate for their purposes.

I examine these questions while referring to research I began in the mid 1990s in southeastern Brazil, in the western region of São Paulo state (Figure 1). This research required access to written documentation and small catchments. In the region I selected for field work, three catchments with differing soil and topographical characteristics were compared in terms of the environmental impacts of twentieth-century agricultural settlement, as evidenced in post-settlement alluvium. The area I selected also had a district court archive, a repository of written documentation to reconstruct environmental conditions, land tenure, and labor relations. A public university had just taken possession of this archive—elsewhere in Brazil, such archives are being burned with alarming frequency by judicial officials in the interest of saving space. Finally, I developed a close association with a small non-governmental organization led by an agronomist who was deeply concerned with soil conservation and natural vegetation and who assisted in selecting study catchments and gathering field data. While doing field work in the small catchments, I frequently spoke with farmers whose properties I entered. These conversations eventually led to semi-structured interviews on environmental and agricultural issues, since



Figure 1. São Paulo state, showing places mentioned in text.

the farmers had lived in the area for their entire lives. In the archive, I first had to sift through approximately 350 boxes of material, noting the cases (mainly post-mortem property division, land subdivision, land-possession conflicts, and rural labor disputes) to which I would later return for a full reading. In this way, I tried to strike a creative tension between research in the archive and field sites.

The Nature of History

The historical study of resource use, access, and perceptions raises the question of what purpose history should serve. Should the study of past human-environment relations be presentist or applied, that is, dedicated to informing present-day public policies, or guiding present-day public policies? Geographers generally are committed to an applied historical political ecology. In suggesting the usefulness of historical political ecology, Peet and Watts gave two African examples that advanced policy agendas for forest-savanna land cover and agricultural technology.¹⁰ A similarly presentist argument is the idea that historical study of land degradation and land access should identify new policy options and “test” the “key propositions about forces driving land-use change and degradation.” In this view, the past is useful because it offers myriad new policy options and may be used to evaluate present theories about resource uses.¹¹ Another form of presentism may be found in the recent work of Pulitzer-prize winning scholar Jared Diamond, who is perhaps the most prominent of geography’s public intellectuals. Diamond has used his historical research on civilization collapse to show how environmental “stress” and “overpopulation” are causes of international terrorism and global instability.¹²

Among environmental historians, the debate on presentism is more advanced. Scholars of forest change in the northeastern U.S. argued that history must support “any effective forest-management policy to protect [its] health, values and resources.”¹³ For Warren Dean, the history of the destruction of Brazil’s Atlantic Forest must lead to one policy imperative—preservation of Amazonian forests.¹⁴ Another argument for environmental history is that it should identify when societies crossed certain “fundamental thresholds” leading to present crises.¹⁵ Perhaps with unwarranted hyperbole, Stephen Dovers warned that nothing less than the “future prosperity and vibrancy” of environmental history is contingent upon an “explicit purchase on important policy questions.” For Dovers, environmental history is essential to avoiding “policy *ad hocery* and amnesia.”¹⁶ There is even a methodological framework for a “useful” environmental history.¹⁷

Other environmental historians are far less enthusiastic about committing to a presentist project. Richard White warned that environmental historians have “[tended] to produce precautionary tales” that suggest “only a miracle has preserved life on this planet, and that all environmental change has been for the worse.”¹⁸ More recently, White has argued that environmental history has become “less Whiggish” and “less declensionist” in the past fifteen years, changing from “stories of environmental sin and expulsion from an original Eden” to “sympathetic attention” to agricultural and urban landscapes, and using updated ecological concepts.¹⁹ In agreement is Gordon Whitney, who critiqued the “doomsday” approach of “post-Earth Day environmental histories” for their “single-minded focus on human folly” that “runs the risk of creating a biased view of history.”²⁰ Another critic of presentism is keen on rooting out examples of what he calls “Apocalypse Then” scholars who support the idea that “humans went wrong from the Neolithic revolution onwards,” that agriculture “started the dry rot of the world,” and for whom “ecological degradation explains almost everything.”²¹ Arguing from a different perspective, William Cronon’s environmental history would only “offer parables about how to interpret what may happen.” For Cronon, “telling parables that trace the often obscure connections between human history and ecological change” is the way that environmental history might “[suggest] where we ought to go looking if we wish to reflect on the ethical implications of our own lives.”²²

How do we reconcile competing views of the “usefulness” of historical inquiry in environmental issues? Should historical political ecology be an applied field, informing public policies, or should it tell stories about that past with less-than-direct relevance to present-day concerns? Certainly, the excessively “declensionist” and “Whiggish” ideology of some scholarship should give pause to the idea that historical political ecology should be established exclusively on direct engagement with public policies. On the other hand, the historical literature on, for example, African

savannas and forests is so compelling partly because of the close connections drawn between historical research and current policy debates.²³

The Nature of Political Ecology

The question “what kind of history for what kind of political ecology” raises the issue of the type of political ecology to be pursued in historical research. During the past twenty years, scholars have developed several themes within political ecology, offering a wide set of issues that historical geographers might pursue.²⁴ Among the most promising is political ecology’s concern for integrating analyses of biophysical and political-economic phenomena. When Blaikie emphasized the distinction between “place-based” and “non-place-based” phenomena that caused land degradation, he suggested that research begin with investigation of “place-based” physical symptoms of land degradation and with the “smallest decision-making unit,” then extend to the “political-economic structures behind the range of choices” of land users. Moreover, explaining land degradation required that physical and socio-economic interests “be brought together and analytically integrated” in spite of differing notions of evidence and proof.²⁵

Subsequent critiques of Blaikie did not advance the integration debate, and in fact subordinated it to a rather heady agenda that would “[integrate] politics more centrally, [draw] upon aspects of discourse theory . . . and [engage] with the wide-ranging critique of development and modernity.”²⁶ Other scholars sought to reshape political ecology to focus on the “politicized environment” rather than instances of environmental change.²⁷ These criticisms have been countered somewhat by attempts to reclaim political ecology’s primary focus on “the environmental events or changes” by arguing that much recent work is really about “politics somehow related to the environment” motivated by a questionable “populist political agenda.”²⁸ A common feature of studies that have taken up the integration challenge is the collection of new biophysical data, rather than reliance on existing studies, that represent past environmental conditions.²⁹

What challenges does historical political ecology face in confronting the integration issue that Blaikie raised? Geographical scale helps explore these, as I illustrate below using examples from my research in southeastern Brazil. Consider how evidence and epistemology of environmental change vary at different catchment scales, from micro (less than 5 square kilometers) to meso (500 square kilometers). At the micro scale, in a 4.4-square-kilometer catchment, evidence of past soil erosion consists of more than two meters of sediment that are plainly visible above a dark-colored pre-settlement soil along gully walls (Figure 2). The small catchment has been filled with sediment from eroding slopes, where soils are characterized by coarse-textured soils (more than 85 percent sand-sized particles) and argillic B horizons (approximately 25 percent clay-sized particles).



Figure 2. Recent sedimentation in the Barreirinho Creek, São Paulo state, Brazil. Site is approximately 40 kilometers north of Assis.

Results of radiocarbon dating of tree branches indicate twentieth-century origin of the post-settlement alluvium above the pre-settlement A horizon.³⁰

Working at this geographical scale, interviews of long-time residents, analysis of documents consulted in a nearby district court archive, and interpretation of aerial photographs (the earliest date only from 1962) were essential to determining the land-use history. The catchment was forested, at least under the present climate regime, until the mid 1930s, when settlers began clearing forest to plant cotton on slopes, coffee on uplands, and subsistence crops throughout. Landowners, who frequently had purchased title from exploitative fraudsters, used a wide range of share-tenant relations (actual labor relations varied with landowner capitalization and worker assets) to attract landless workers, who frequently were migrants from the states of northeastern Brazil. These migrants left because of drought and limited economic opportunities, while government policies encouraged migration by subsidizing transport to southern states. Cotton farming received other state subsidies in the form of agricultural

technology and market regulation, while soil conservationists who warned of an impending soil erosion crisis did not influence land-use practices. During the mid 1960s cattle pastures began to replace cotton fields, as sharecropping became less popular, cotton subsidies dropped, and soils lost fertility. The resulting decrease in bare soil probably was the key factor in causing gullies to form in the post-settlement alluvium.³¹

At the meso watershed scale of the Upper Peixe River Valley (550 square kilometers), the question of past soil erosion must be approached quite differently for reasons that follow. Biophysical and land-use patterns are similar—on side slopes, soils have sandy A horizons and argillic B horizons; the onset of deforestation was in the 1930s; cotton cultivation rapidly expanded in the 1940s and 1950s, making Marília a major processing center (Figure 1).³² However, evidence of the impact of agricultural settlement is necessarily different, as the Peixe has hundreds of first-order streams filled with post-settlement alluvium; indeed, its size would present a formidable challenge merely in the interpretation of 1:25,000 scale aerial photographs dating from 1962. Analysis of legal documents and oral narratives attesting to land uses, with the same detail as the micro catchment, would be extremely difficult. At this watershed scale, the most promising evidence found was a land-possession lawsuit, found in a local archive (see discussion below), in which a district judge in 1920 ordered surveyors to measure the width and depth of streams. In 1997 colleagues and I surveyed the profiles of the two main tributaries, the Garça and Alegre (270 square kilometers and 280 square kilometers, respectively), at the same sites. We found that modern stream channels more than doubled in width, probably from increased runoff and soil erosion (Figure 3).³³

In both watersheds there is evidence of recent environmental change—sediment eroded from side slopes that once produced cotton and increased sediment loads produced a considerably wider stream channel—but different potential for integration with political-economic data. The microcatchment's small geographical scale permits greater detail in describing land degradation. The two meters of sedimentation could only have originated in that basin. Relatively little total eroded sediment leaves source drainage basins; most eroded soil is deposited on new or existing alluvial fans, floodplains, or stream channels. However, the data obtained necessarily only relate to this very small area. Can it ever be known whether this microcatchment is indicative of hundreds of other small streams in, say, a 10,000-square-kilometer region? Certainly, similar soil-topography environments might have responded similarly to erosive land uses. Radio-carbon analysis ruled out the possibility that the stream-valley sedimentation resulted earlier than, say, 1900, but only with considerable investment could more precise temporal resolution of soil erosion be obtained.

Scaling up to the Peixe Valley, historical evidence and field study indicated significant changes to stream channels. But how could we know

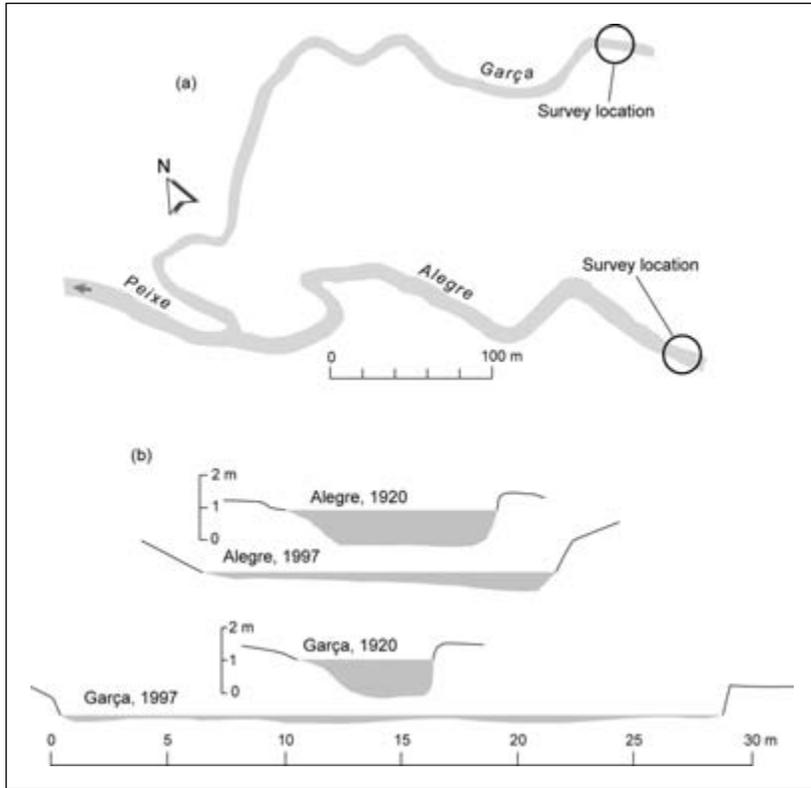


Figure 3. Degradation of the Peixe River, 1920-1997, showing (a) 1920 survey (redrawn from José Antonio Garcia v. Labiano da Costa Machado, *Traslado dos autos de Manutenção de Posse* [1918-20]), Caixa 112, f. 135-46 (Cartório do Primeiro Ofício [CPO], Arquivo do Fórum da Comarca de Assis [AFCA]) and (b) comparison of 1920 data with results of 1997 field work. Site is approximately fifteen kilometers south of Marília, São Paulo state, Brazil.

which tributaries contributed the sediment found in the modern channels? Likely land-use causes, perhaps similar to the ones in the microcatchment, probably could be identified in tributary streams, but there are hundreds of these reaching the Garça and Alegre. Considerable investment in spatial terms, by studying representative catchments that contributed sediment to the main streams, might produce greater detail.³⁴

Besides contributing to the integration problem, historical political ecology also could offer insights relevant to how access to labor and land influences environmental resources. A key idea in Blaikie's formulation was that a partially theorized "exogenous political economy" influenced decisions made by land managers through a "chain of explanation," conceptualized as hierarchical scales.³⁵ Blaikie's critics called this idea "fuzzy" and "diffuse," arguing that "political ecology comes closest to [neomarxist] theory when it invokes surplus extraction." However vague it may be, the

idea of a “chain of explanation” encouraged numerous researchers to analyze the many ways in which political economic factors influence access to land and labor, which in turn determine the use of environmental resources.³⁶

In advancing theorization of access to land and labor, many political ecologists have been drawn more to gender and labor as analytical categories, rather than to surplus extraction. Furthermore, analytical concepts from microeconomics, which may seem antithetical to surplus extraction, may develop land-labor access theorization. For example, I have been interested in how microeconomic factors, such as risk and information, influenced access to land and determined labor relations in activities causing environmental change in early twentieth-century western São Paulo state. Labor regimes intensified forest-to-coffee conversion by reducing the expense, risk, and supervision costs of labor. Flexible and coercive labor relations allowed landowners to exploit vast differences in information (information asymmetries) between themselves and landless laborers, while satisfying concerns of risk and labor quality in coffee and cotton production. State policies certainly influenced deforestation, but labor relations were the means by which landowners captured rents from subsidies for transport, price supports, and access to public lands.³⁷

Flexible labor contracts also shaped land-claiming practices that encouraged destructive land uses. Elites used labor relations to convert weak legal claims or fraudulent titles into enforceable land rights, even generating rent streams simultaneously. Labor systems, based on usufruct access to land rather than rent in cash or shares, were manipulated by elites who negotiated regional legal-judicial structures to eventually obtain access to land. Reduced legal fees, enforcement costs, information differences (asymmetries), and risk resulted from the microeconomic logic of such labor relations.³⁸

Logging operated under a similar logic. Subcontracting and flexible labor schemes obtained wood biomass—essential in industries, transport, and households until the early 1960s—from forest and savanna. Merchants constructed subcontracting labor schemes to shield themselves from compensatory claims resulting from frequent injury and occasional death to workers, as well as to cope with the dispersed and bulky nature of wood products. Most laborers did not contract directly with landowners, but rather with timber dealers who served as intermediaries in the contract-based wood trade.³⁹ Using microeconomic concepts or other similar analytical tools in historical research necessarily demands a concerted search for evidence. This problem demands a separate discussion to which I now turn.

The Nature of Evidence

What evidence is required to satisfy historical researchers pursuing a “bottom-up” approach that begins with land-manager decision making? Political ecologists have drawn heavily on ethnographic or participant-observation methods, frequently using household-level data to analyze

patterns of resource use and access.⁴⁰ But, reconstructing past household-level decision making is a major challenge. Instead, researchers might analyze land use, labor relations, land tenure, technology, and policies in historical settings. Toward this objective, I have two suggestions. First, historically minded political ecologists should identify the smallest territory with relevant written documentation—in other words, the “local” archive. For example, my research relied on archives of a district courthouse holding civil, labor, and criminal legal proceedings. Confronted with many options, I settled on four types of documents best suited to a historical geography of environmental change. I found land survey and land subdivision cases (*Autos de Medição* and *Divisão de Fazenda*) essential to reconstruct *circa* 1900 (pre-settlement) vegetation and land cover. These documents often included metes-and-bounds land surveys, often greater than the 1:20,000 scale, which I manually reduced and transferred to a modern 1:50,000 base map. Figure 4 illustrates two examples.⁴¹

I supplemented cartographic data on land cover with *Arrolamento* and *Inventário* (postmortem property inventory) documents. Postmortem inventories with rural assets were especially relevant to my research, so I created a database of nearly 600 cases for 1931 to 1965. Some cases proved useful to assigning land value to vegetation categories, while others were useful for determining relative area of coffee on farms. In addition, I used lawsuits of land conflicts (*Ação Possessória*, including *Manutenção* and *Reivindicação de Posse*) for analyzing both the legal and land-use strategies of land claiming. Nearly all of the cases I consulted could be located on a modern base map, indicating the spatial distribution of land conflicts and labor relations used to claim land. A final category of documents included general civil suits and labor complaints (*Ação Ordinária* and *Reclamação Trabalhista*), which often revealed the terms of the verbal or written contract and included testimony of workers and landowners.⁴² Overall, evidence from legal documents help expose how labor relations were essential to accumulation strategies in land claiming, logging, and farming. The ability to engage in economic activities that caused environmental change depended on securing labor in a context of poor information and high risk. The imperative to secure labor, in this setting, required the development of subcontracting in logging and share-tenant relations in agriculture.

A second strategy, complementary to local archival research, is to focus on commodities. Central bureaucracies often taxed, regulated, or reported on commodities, creating documents held in centralized archives that may include useful data on land, labor, technology, and capital. Records of commodity exchanges may be particularly insightful. In addition, the histories of elite families, prominent individuals, and private firms specializing in production or transport of commodities may be useful to locating written documentation. Finally, a focus on commodities may successfully draw out oral narratives. Beginning semi-structured interviews

using the topics of cotton, coffee, or timber commodities may encourage informants to discuss, in detail, past agriculture and environment.⁴³

The Evidence of Nature

A political ecology of human impacts on past environments presupposes an environmental baseline—the initial characteristics of land use, vegetation, soil, fauna, or streams. It makes little sense to study past human-induced environmental change without reliable information on environments before processes of change allegedly began. Political ecology in present-day contexts, if it seeks to make claims about environmental change, certainly requires careful consideration of a biophysical baseline. However, there are particular challenges in reconstructing past environmental conditions.⁴⁴

At least three major issues arise when scholars confront the historical baseline question. None is easy to address. First is the poor availability of sources (written or oral) to reconstruct a baseline. In some places, such as the U.S. northeast and upper Midwest, abundant previous research allows scholars to synthesize findings on rather large geographical scales. For example, Gordon Whitney has relied on many county-level analyses of pre-settlement vegetation or settlement-era land use that relied on thorough archival and field study. But Whitney's methodological outline and bibliography are the envy of any political ecologist who has had to confront poor environmental data, such as soil and geomorphology maps, or the lack of biophysical analyses based on data such as fluvial or lacustrine sediments, preserved pollen, tree rings, or aerial photographs.⁴⁵

Second, the baseline issue develops relatively easily into a complicated research problem that overwhelms the political ecology question being pursued. Consider Trimble's guide to reconstructing fluvial environments, which reveals how complex the baseline problem may become. Ideal baseline data, a topographic survey drawn at the beginning of the historical period under study, is rarely available; instead, researchers should look for "mobile cultural debris" such as fragments of leather, bottles, tires, plastic, and sawn wood in sediments accumulated on stream banks and alluvial fans, as I did in my research (Figure 2). Bridges built near a single site would suggest the width and depth of the former stream; construction plans for bridges often include topographical surveys. Sediment may have buried dams and mills on floodplains. Roads, causeways and ground and aerial photography also could be used to measure changes in streams. Significant expense would be incurred in using radionuclides, such as Cs¹³⁷, or heavy metals, such as zinc, chromium, and lead, found in sediments downstream of mining sites or tanneries, or resulting from nuclear testing and lead in the atmosphere, to measure and date the accumulation of sediments in fluvial environments.⁴⁶

The third issue in reconstructing a land-cover baseline relates to the period to which baselines refer and criteria used to define baselines. Are

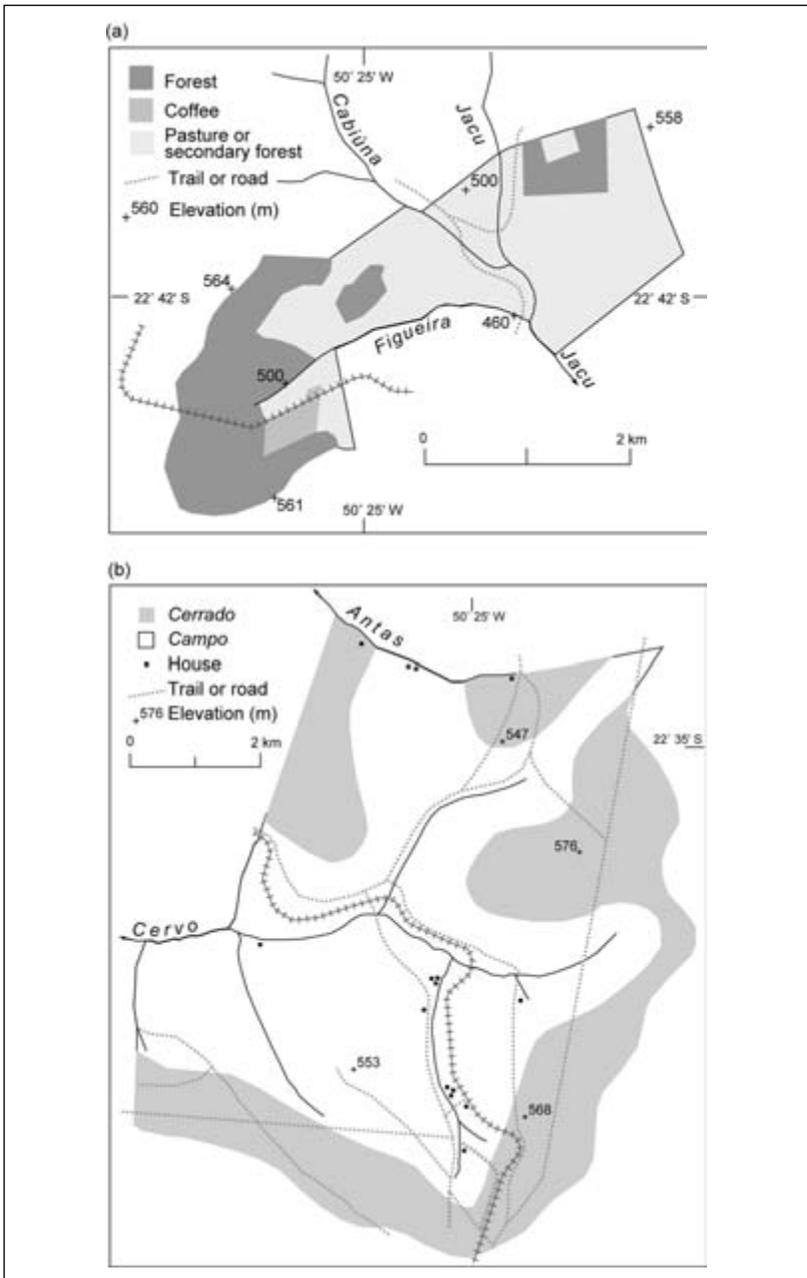


Figure 4. Land-cover survey maps for (a) Jacu Creek (746 hectares) and (b) Cervo Creek (5,420 hectares), near Assis, São Paulo state, Brazil. Sources: (a) Adalberto Penha de Andrade v. J.P. de Andrade, *Divisão da Fazenda Palmeiras, anteriormente denominada Cabiúna* (1923), Caixa 13, f. 129 (original scale 1:5,000) (CPO, AFCA); (b) Joaquim Alves de Araújo Vianna v. H.A.F. Francisco Medição e *Divisão da fazenda denominada Cabeceiras do Cervo* (1920-28), 3 vols., Caixa 12, 13, f. 555 (original scale 1:10,000) (CPO, AFCA).

the tools and methods matched to the needs of historical research in establishing a baseline for a particular historical moment? Again, this is a deceptively simple problem. In places with perennial or seasonally wet environments, pollen analysis may provide data that could be used to establish a baseline, mainly the relative abundance of plant species in a period covering several decades or several years, depending on chronological control. However, in southeastern Brazil, published findings, based on pollen analysis, indicate that forests replaced grasslands approximately 5,000 years ago, while providing little guidance for circa 1900 vegetation.⁴⁷ And, in places where pollen analysis is unavailable, other criteria necessarily guide the way scholars approach the baseline issue. The two criteria available to me, given the general pattern of early twentieth-century land settlement, were land cover and land value. Both were determined from archival documents. I used postmortem property inventories and land-subdivision records, two types of judicial documents discussed above. The latter type of document often included metes-and-bounds maps (Figure 4), which I used to create a baseline of forest-savanna (*Cerrado*) mosaic. This baseline differed from the simple extension inland of the humid forest found in coastal regions of southeastern Brazil, which was asserted in Warren Dean's *Broadax and Firebrand*, a historical account of deforestation.⁴⁸

Conclusion

The question “What kind of history for what kind of political ecology?” inspires contemplation of four issues relevant to historical geographers looking to political ecology, and to political ecologists interested in historical issues. The issues raised could be considered as challenges to the development of historical political ecology. First, historical political ecology could establish a unique space within current debates on “application” or “usefulness” of scholarship. Discussions within environmental history suggest that there is more to historical political ecology than “testing” current policy ideas in past contexts, but also that historical research should not necessarily speak about the present only in metaphorical terms. A second challenge for historical political ecologists is to contribute to key problems in political ecology, especially the integration of evidence for biophysical change with political-economic causes, and issues surrounding access to land and labor. Examples and perspectives from past human-environment relations may greatly enrich current thinking on these issues. Third, historical political ecologists face substantial challenges—similar to those that any historical scholar faces—in finding written sources. For this, “local” archives may be especially useful to their research, particularly in conjunction with a commodity-chain analytical approach. A final challenge for historical political ecologists is to pay special attention to developing biophysical baselines that meet the needs of their research questions.

Notes

1. The form of the question guiding this brief essay borrows from Ron Martin and David Harvey who explored the issues surrounding geography's relationship with the study and formulation of public policies; see Martin, "Geography and Public Policy: The Case of the Missing Agenda," *Progress in Human Geography* 25:2 (2001): 189-210; and Harvey, "What Kind of Geography for What Kind of Public Policy?" *Transactions, Institute of British Geographers* 63: November (1974): 18-24.
2. Richard Peet and Michael Watts, "Liberation Ecology: Development, Sustainability, and Environment in an Age of Market Triumphalism," in Peet and Watts, eds., *Liberation Ecologies: Environment, Development, Social Movements* (New York: Routledge, 1996): 12.
3. Piers Blaikie, *The Political Economy of Soil Erosion in Developing Countries* (London: Longman, 1985): 133-37; and Blaikie and Harold Brookfield, *Land Degradation and Society* (New York: Routledge, 1987): 66-68.
4. Michael Williams, "The Relations of Environmental History and Historical Geography," *Journal of Historical Geography* 20:1 (1994): 9, 16.
5. Stanley W. Trimble, "Preface," in Lary M. Dilsaver and Craig E. Colten, eds., *The American Environment: Interpretations of Past Geographies* (Lanham, MD: Rowman & Littlefield, 1992): xvii. Trimble's recent publications offer somewhat more practical guidance for the environmental turn in historical geography; see "Dating Fluvial Processes from Historical Data and Artifacts," *Catena* 31:4 (1998): 283-304, and "Historical Hydrographic and Hydrologic Changes in the San Diego Creek Watershed, Newport Bay, California," *Journal of Historical Geography* 29:3 (2003): 422-44.
6. For example, see David Arnold and Ramachandra Guha, eds., *Nature, Culture, Imperialism: Essays on the Environmental History of South Asia* (Delhi: Oxford University Press, 1995); Thomas J. Bassett and Donald Crummey, eds., *African Savannas: Global Narratives and Local Knowledge of Environmental Change* (Oxford: James Currey, 2003); William Beinart and JoAnn McGregor, eds., *Social History and African Environments* (Oxford: James Currey, 2003); Stephen Dovers, Ruth Edgecombe, and Bill Guest, eds., *South Africa's Environmental History: Cases and Comparisons* (Athens, OH: Ohio University Press, 2003); Raymond L. Bryant, *The Political Ecology of Forestry in Burma 1824-1994* (London: Hurst and Co., 1997); Nancy Lee Peluso, *Rich Forests, Poor People: Resource Control and Resistance in Java* (Berkeley: University of California Press, 1992).
7. Donald Worster, "Transformation of the Earth: Toward an Agroecological Perspective in History," *Journal of American History* 76:4 (1990): 1088; Theodore Steinberg, *Nature Incorporated: Industrialization and the Waters of New England* (Cambridge: Cambridge University Press, 1991): 11.
8. Andrew C. Isenberg, *The Destruction of the Bison: An Environmental History, 1750-1920* (Cambridge: Cambridge University Press, 2000): 11; William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983): vii.
9. There is no shortage of insightful reviews of political ecology; see Piers Blaikie, "A Review of Political Ecology: Issues, Epistemology and Analytical Narratives," *Zeitschrift für Wirtschaftsgeographie* 43:3-4 (1999): 131-47; Raymond L. Bryant, "A Political Ecology for Developing Countries? Progress and Paradox in the Evolution of a Research Field," *Zeitschrift für Wirtschaftsgeographie* 43:3-4 (1999): 148-57; Michael Watts, "Political Ecology," in Eric Sheppard and Trevor J. Barnes, eds., *A Companion to Economic Geography* (Oxford: Blackwell, 2000): 256-74; Karl S. Zimmerer and Thomas J. Bassett, "Approaching Political Ecology: Society, Nature, and Scale in Human-Environment Studies," in Zimmerer and Bassett, eds., *Political Ecology: An Integrative Approach to Geography and Environment-Development Studies* (New York: Guilford Publications, 2003): 1-25.
10. Peet and Watts, "Liberation Ecology," make reference to two historical works: Mary Tiffen, Michael Mortimore, and Francis Gichuki, *More People, Less Erosion: Environmental Recovery in Kenya* (Chichester: John Wiley & Sons, 1994); James Fairhead and Melissa Leach, *Reframing Deforestation: Global Analysis and Local Realities: Studies in West Africa* (London: Routledge, 1998).
11. S.P.J. Batterbury and A.J. Bebbington, "Environmental Histories, Access to Resources and Landscape Change: An Introduction," *Land Degradation and Development* 10:4 (1999): 284.
12. Jared Diamond, "The Last Americans: Environmental Collapse and the End of Civilization," *Harper's Magazine* (June 2003): 44-45.
13. John F. O'Keefe and David R. Foster, "An Ecological History of the Massachusetts Forests," in Charles H.W. Foster, ed., *Stepping Back to Look Forward: A History of the Massachusetts Forest*

- (Cambridge: Harvard University Press, 1998): 19; see also David R. Foster, "Insights from Historical Geography to Ecology and Conservation: Lessons from the New England Landscape," *Journal of Biogeography* 29:8 (2002): 1269-75; David R. Foster and Glenn Motzkin, "Interpreting and Conserving the Openland Habitats of Coastal New England: Insights from Landscape History," *Forest Ecology and Management* 185:1-2 (2003): 127-50; John A. Litvaitis, "Are Pre-Columbian Conditions Relevant Baselines for Managed Forests in the Northeastern United States?" *Forest Ecology and Management* 185:1-2 (2003): 113-26.
14. Warren Dean, *With Broadax and Firebrand: The Destruction of the Brazilian Atlantic Forest* (Berkeley: University of California Press, 1995): 6, 364.
 15. Christian Pfister and Peter Brimblecombe, "Introduction," in Brimblecombe and Pfister, eds., *The Silent Countdown: Essays in European Environmental History* (Berlin: Springer-Verlag, 1990): 1.
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 23. Fairhead and Leach, *Reframing Deforestation*; Bassett and Crummey, *African Savannas*.
 24. Blaikie, "Review of Political Ecology"; Bryant, "Political Ecology"; Watts, "Political Ecology"; Zimmerer and Bassett, *Political Ecology*.
 25. Blaikie, *Political Economy*, 79-80 (emphasis in original). See also Blaikie's more recent claim on the persistence of "methodological challenges" in "Review of Political Ecology," 140.
 26. Peet and Watts, "Liberation Ecologies," 3.
 27. Raymond L. Bryant and Sinéad Bailey, *Third World Political Ecology* (London: Routledge, 1997): 5-6, 27-47.
 28. Andrew P. Vayda and Bradley B. Walters, "Against Political Ecology," *Human Ecology* 27:1 (1999): 168-70, 169.
 29. Compare Andrew Sluyter, *Colonialism and Landscape: Postcolonial Theory and Applications* (Lanham, MD: Rowman & Littlefield, 2002) with Sluyter, "Regional, Holocene Records of the Human Dimension of Global Change: Sea-Level and Land-Use Change in Prehistoric Mexico," *Global and Planetary Change* 14:3-4 (1997): 127-46. Also helpful is Matthew Turner's critique of "scaling parsimony" in integrating biophysical and socio-economic analyses: see "Merging Local and Regional Analyses of Land-Use Changes: The Case of Livestock in the Sahel," *Annals of the Association of American Geographers* 89:2 (1999): 191-219.
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 32. Pierre Monbeig, *Pionniers et Planteurs de São Paulo* (Paris: Librairie Armand Colin, 1952).
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 34. For broader discussion, see John Dearing, "Reconstructing the History of Soil Erosion," in Neil Roberts, ed., *The Changing Global Environment* (Oxford: Blackwell, 1994): 242-61; James C. Knox, "Agriculture, Erosion, and Sediment Yields," in Antony R. Orme, ed., *The Physical Geography of North America* (New York: Oxford University Press, 2002): 482-500; Stanley W. Trimble, "Catchment Sediment Budgets and Change," in Angela Gurnell and Geoffrey Petts, eds., *Changing River Channels* (Chichester: John Wiley and Sons, 1995): 201-15. "Only a fraction, and perhaps a rather small fraction, of the sediment eroded within a drainage basin will

- find its way to the drainage outlet," see D.E. Walling, "The Sediment Delivery Problem," *Journal of Hydrology* 65:1-3 (1983): 210. My forthcoming essay develops these points further; see "Talking to Sediments: Reading Environmental History from Post-Settlement Alluvium in Western São Paulo, Brazil," in Brannstrom, ed., *Territories, Commodities and Knowledges: Latin American Environmental History in the Nineteenth and Twentieth Centuries* (London: Institute of Latin American Studies, forthcoming).
35. Blaikie and Brookfield, *Land Degradation*, 68.
 36. Peet and Watts, "Liberation Ecologies," 8. To cite only some of the most recent studies (published in 2002) that analyze the influence of access to land and labor on environmental resources, see Derek Armitage, "Socio-Institutional Dynamics and the Political Ecology of Mangrove Forest Conservation in Central Sulawesi, Indonesia," *Global Environmental Change* 12:3 (2002): 203-17; Leslie C. Gray, "Environmental Policy, Land Rights, and Conflict: Rethinking Community Natural Resource Management Programs in Burkina Faso," *Environment and Planning D: Society and Space* 20:2 (2002): 167-82; Brad D. Jokisch, "Migration and Agricultural Change: The Case of Smallholder Agriculture in Highland Ecuador," *Human Ecology* 30:4 (2002): 523-50; B. Ikubolajeh Logan and William G. Moseley, "The Political Ecology of Poverty Alleviation in Zimbabwe's Communal Area Management Programme for Indigenous Resources (CAMPFIRE)," *Geoforum* 33:1 (2002): 1-14.
 37. Christian Brannstrom, "Coffee Labor Regimes and Deforestation on a Brazilian Frontier, 1915-1965," *Economic Geography* 76:4 (2000): 326-46. For an example of historical research using microeconomic concepts from New Institutional Economics, see Bradford L. Barham and Oliver T. Coomes, *Prosperity's Promise: The Amazon Rubber Boom and Distorted Development* (Boulder, CO: Westview Press, 1996).
 38. Christian Brannstrom, "Producing Possession: Labour, Law and Land on a Brazilian Agricultural Frontier, 1920-1945," *Political Geography* 20:7 (2001): 859-83.
 39. Christian Brannstrom, "The Timber Trade in Southeastern Brazil, 1920-1960," unpublished manuscript.
 40. Blaikie, *Political Economy*, 82, 107; Blaikie and Brookfield, *Land Degradation*, 13, 74. Although there is a recent call for political ecology to "look up" and make "central institutions of power" a category of analysis similar to local organizations and institutions, the environmental historiography in South Asia and Africa already has done this, relying heavily on centralized archives of colonial bureaucracies; see Paul Robbins, "Obstacles to a First World Political Ecology? Looking Near without Looking Up," *Environment and Planning A* 34:8 (2002): 1510; David Arnold and Ramachandra Guha, "Introduction: Themes and Issues in the Environmental History of South Asia," in Arnold and Guha, eds., *Nature, Culture, Imperialism: Essays on the Environmental History of South Asia* (Delhi: Oxford University Press, 1995): 1-20; William Beinart, "African History and Environmental History," *African Affairs* 99:395 (2000): 269-302.
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 42. Brannstrom, "Coffee Labor Regimes," 334; "Producing Possession," 864-6; "Timber Trade."
 43. Several studies in political ecology develop commodity-chain analysis; see Philippe Le Billon, "The Political Ecology of Transition in Cambodia 1989-1999: War, Peace and Forest Exploitation," *Development and Change* 31:4 (2000): 785-805; Jesse C. Ribot, "Theorizing Access: Forest Profits along Senegal's Charcoal Commodity Chain," *Development and Change* 29:2 (1998): 307-41. For an exemplar historical-geographical study of a single commodity, see Thomas J. Bassett, *The Peasant Cotton Revolution in West Africa: Côte D'Ivoire, 1880-1995* (Cambridge: Cambridge University Press, 2001). For studies of prominent individuals, families, and businesses, see Peter Bakewell, *Silver and Entrepreneurship in Seventeenth-Century Potosí: The Life and Times of Antonio López de Quiroga* (Albuquerque: University of New Mexico Press, 1988); Darrell E. Levi, *The Prados of São Paulo, Brazil: An Elite Family and Social Change, 1840-1930* (Athens, GA: University of Georgia Press, 1987). Other recent commodity-oriented studies include Steve Marquardt, "'Green Havoc': Panama Disease, Environmental Change, and the Labor Process in the Central American Banana Industry," *American Historical Review* 106:1 (2001): 49-80 and John Soluri, "Accounting for Taste: Export Bananas, Mass Markets, and Panama Disease," *Environmental History* 7:3 (2002): 386-410. For use of oral narratives, see Martin W. Lewis, *Wagering the Land: Ritual, Capital, and Environmental Degradation in the Cordillera of Northern Luzon, 1900-1986* (Berkeley: University of California Press, 1992): 9-

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44. The idea of nonequilibrium nature complicates the task of creating a biophysical baseline; see Karl S. Zimmerer, "Human Geography and the 'New Ecology': The Prospect and Promise of Integration," *Annals of the Association of American Geographers* 84:1 (1994): 108-25; see also Trimble, "Catchment Sediment Budgets," 201-4.
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46. Trimble, "Dating Fluvial Processes," 284-95.
47. Hermann Behling, "South and Southeast Brazilian Grasslands during Late Quaternary Times: A Synthesis," *Palaeogeography, Palaeoclimatology, Palaeoecology* 177:1-2 (2002): 19-27; Marie-Pierre Ledru, Maria Lea Salgado-Labouriau, and Maria Luisa Lorscheitter, "Vegetation Dynamics in Southern and Central Brazil during the Last 10,000 Yr B.P.," *Review of Palaeobotany and Palynology* 99:2 (1998): 131-42.
48. See full discussion in Brannstrom, "Atlantic Forest," 431-4.