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## ENVIRONMENTAL HISTORY IN EAST ASIA: RECENT SCHOLARSHIP AND TRENDS

A review article of:

*Environmental History in East Asia: Interdisciplinary Perspectives*, ed. Ts'ui-jung Liu  
(Abingdon and New York: Routledge, 2014), viii + 400 pp., ISBN: 978-0-415-  
71770-0 (hardback).

Robert B. Marks, *China: Its Environment and History* (New York: Rowman &  
Littlefield Publishers, Inc., 2012), xxi + 438 pp., ISBN: 978-1-4422-1277-0  
(hardback).

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### Introduction

As the recent G20 meeting in Brisbane (2014) demonstrated, without China, any hope of meaningfully addressing climate change, let alone successfully checking it, is ultimately doomed. This interpretation is hard to dispute as China consumes ever more of the globe's resources in its drive for development. 'Since 2000 China alone has accounted for two-thirds of the global growth in carbon-dioxide emissions.' Beijing's 'airpocalypse' is now perhaps as infamous as the Great Wall is famous.<sup>1</sup> China's 'staggering mistreatment of the environment ... may well be the most fundamental check on China's reach toward prosperity', noted a perceptive commentator in 2004. Even a decade ago, pollution was shaving off an estimated ten percent of China's annual GDP growth.<sup>2</sup>

One of the pressing issues of our age, then, is how China, and East Asia more generally, will continue to industrialise. Will the region follow the same pattern of industrialisation as the West? If so, China—and the world—will soon run out of resources. Or, will China and South Korea follow a "greener" path, reliant more on non-carbon-emitting energy sources, which may enable these countries to mediate at least some of the many environmental issues they face today? And, what of post-industrial Japan, how can it reduce emissions and its citizens' environmental footprints, and pursue a non-nuclear future?

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1 "The East is Grey," *The Economist*, August 10, 2013, accessed November 17, 2014, <http://www.economist.com/news/briefing/21583245-china-worlds-worst-polluter-largest-investor-green-energy-its-rise-will-have>.

2 Vaclav Smil, *China's Past, China's Future: Energy, Food, Environment* (New York and London: RoutledgeCurzon, 2004), 145.

Environmental history can offer important long-term perspectives from which to understand the pressing ecological crisis of today. Two recent works which do exactly this are *Environmental History in East Asia: Interdisciplinary Perspectives*, edited Ts'ui-jung Liu, and Robert B. Marks' *China: Its Environment and Society*. This article evaluates and places these two works in their historiographical context at the same time as identifying future areas of scholarly enquiry they suggest. Section One provides an overview of the field of environmental history in East Asia, restricting itself to works published in English,<sup>3</sup> while Sections Two and Three respectively evaluate *Environmental History in East Asia* and *China: Its Environment and Society*.

### Environmental Historiography in East Asia

What is evident in any review of the historiography of East Asia is that Chinese environmental history is by far the most advanced, Japanese scholarship is developing, and Korea's is only just beginning. Environmental history in China owes a great deal to the seminal work of Mark Elvin, and the scholarship of Ts'ui-jung Liu and Robert B. Marks (discussed below) among others. Elvin's *Retreat of the Elephants: An Environmental History of China* (2004) really put China's environmental history on the global stage by presenting a masterly overview of the last four thousand years of that country's history.<sup>4</sup> Elvin's *Retreat of the Elephants* continued his earlier interest in China's geographical and economic history, evident in *The Pattern of the Chinese Past: A Social and Economic Interpretation* (1973).<sup>5</sup> Elvin's work of 1973 joined probably the first overview of China's environmental history in English, Yi-Fu Tuan's historical geography—simply titled, *China*—which appeared in Longman's world landscape series in 1970.<sup>6</sup>

Since the publication of Elvin's seminal *Retreat of the Elephants*, many other monographs have examined China's environmental history. Some take as their organising principle a particular period of time. Others instead focus on the exploitation of a resource or natural environment. Still others concentrate on a singular event or individual. While I do not have space to discuss all of these recent books, I shall mention several important works which have appeared since the turn of this century.

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3 An overview of Chinese- and Japanese-language environmental history writing will soon be available as: James Beattie and Ts'ui-jung Liu, "Environment, Modernization and Development in East Asia: Perspectives from Environmental History," in Beattie and Liu, eds., *Environment, Modernization and Development in East Asia: Perspectives from Environmental History* (Basingstoke; New York: Palgrave Macmillan, forthcoming).

4 Mark Elvin, *The Retreat of the Elephants: An Environmental History of China* (New Haven and London, Yale University Press, 2004).

5 Mark Elvin, *The Pattern of the Chinese Past: A Social and Economic Interpretation* (Stanford: Stanford University Press, 1973).

6 Yi-Fu Tuan, *China* (London: Longman, 1970).

One is Judith Shapiro's controversial book, *Mao's War against Nature: Politics and the Environment in Revolutionary China*.<sup>7</sup> Her study posited that the subjugation of nature and the subjugation of people in China during the Mao years, from 1949 to 1976, were intimately associated. Her more recent work—*China's Environmental Challenge* (2012)—presents a fascinating account of China's complex recent environmental history, including discussion of such topics as state and citizen actions, and a sober assessment of possible future trends.<sup>8</sup> Adding further lustre to the riches on Chinese environmental history are several other works written by what one may term the second generation of environmental historians of China. One of those in the vanguard of new Sinological environmental history is Micah Muscolino. His *Fishing Wars...* (2009) examined this resource and its exploitation in late imperial and Republican (1912-) China, while his just-published *The Ecology of War in China: Henan Province, the Yellow River, and Beyond, 1938-1950* promises to push the boundaries of environmental history in this region even further.<sup>9</sup> Muscolino examines war-induced ecological disasters in Henan, northern China, considering the mobilisation of people and resources, along with the actions of climate, as interlinked flows of energy, material and organisms—what he terms “military metabolism.”

As Muscolino's recent work illustrates—and, indeed, as they have for Chinese historians over millennia—flooding and flood-control remain key topics for China's environmental historians, albeit often with new inflections. For example, works examining the impacts of China's recent industrialisation—from heavy industry to the agricultural sector—pay particular attention to pollution of both atmosphere and waterways and their impact on human health and habitat.<sup>10</sup> Another theme strongly represented in China's environmental history is study of its borderlands—vitaly important regions which have shaped China's history in significant ways through conflict, cooperation and co-option. Among several prominent works on imperial borderlands and Qing identity are works by Philippe Forêt (2000), Dee Mack Williams

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7 (Cambridge: Cambridge University Press, 2001).

8 Judith Shapiro, *China's Environmental Challenge* (Cambridge and Malden, MA: Polity Press, 2012).

9 Micah S. Muscolino, *Fishing Wars and Environmental Change in Late Imperial and Modern China*. Cambridge, MA: Harvard University Asia Center, 2009; Micah S. Muscolino, *The Ecology of War in China: Henan Province, the Yellow River, and Beyond, 1938-1950* (Cambridge, Cambridge University Press, 2014).

10 Elizabeth C. Economy, *The River Runs Black: The Environmental Challenge to China's Future*, 2nd. ed. (Ithaca: Cornell University Press, 2010); Richard Louis Edmonds, *Patterns of China's Lost Harmony: A Survey of the Country's Environmental Degradation and Protection* (London: Routledge, 1994); He Bochuan, *China on the Edge: The Crisis of Ecology and Development*, trans. Jenny Holdaway, Gao Jian-sheng, Susan Brick, Hu Si-gang, and Charles Wong (San Francisco: China Books and Periodicals, Inc., 1991); Vaclav Smil, *China's Environmental Crisis: An Inquiry into the Limits of National Development* (Armonk: M.E. Sharpe, 1993); Smil, *China's Past, China's Future*; Chris Coggins, *The Tiger and the Pangolin: Nature, Culture, and Conservation in China* (Honolulu: University of Hawai'i Press, 2003).

(2002), Peter Perdue (2005), and, most recently, Jack Hayes (2014).<sup>11</sup> In addition, scholars such as Peter Lavelle and Joseph Lawson have presented new angles on Qing and Republican agricultural modernisation schemes in China's borderlands.<sup>12</sup>

What has been the impact of environmental history on the broader historical profession? In *Food and Environment in Early and Medieval China* (2014),<sup>13</sup> E.N. Anderson's fine monograph has illustrated the very many benefits of connecting environmental and food history in imperial China. And perhaps an indication of the growing acceptance of environmental history among Sinologists is its inclusion in Timothy Brook's general history on the Yuan (1271-1368) and Ming (1368-1644) dynasties, *The Troubled Empire*..., part of Harvard's "History Imperial China" series.<sup>14</sup>

In contrast to China, Japanese environmental history is really only becoming established. Two remarkably prolific authors have written several key works to help put Japan's environmental history on the map. Until recently, Conrad Totman has mainly worked on forestry, especially in the pre-industrial period, including *The Green Archipelago: Forestry in Pre-Industrial Japan* (1989), *The Lumber Industry in Early Modern Japan* (1995), and *Japan's Imperial Forest: Goryōrin, 1889-1945* (2007).<sup>15</sup> He is also one of the few scholars to have written on Korean environmental history.<sup>16</sup> His recent *Japan: An Environmental History* (2014) presents the island group from prehistory to present.<sup>17</sup>

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- 11 Philippe Forêt, *Mapping Chengde: The Qing Landscape Enterprise* (Honolulu: University of Hawai'i Press, 2000); Dee Mack Williams, *Beyond Great Walls: Environment, Identity, and Development on the Chinese Grasslands of Inner Mongolia* (Stanford: Stanford University Press, 2002); Peter C. Perdue, *China Marches West: The Qing conquest of Central Eurasia* (Cambridge, MA: Harvard University Press, 2005); Jack Patrick Hayes, *A Change in Worlds on the Sino-Tibetan Borderlands: Politics, Economies, and Environments in Northern Sichuan* (Lanham: Lexington Books, 2014).
  - 12 Joseph Lawson, "The Chinese State and Agriculture in an Age of Global Empires, 1880–1949," in *Eco-cultural Networks in the British Empire: New Views on Environmental History*, ed. James Beattie, Edward Melillo and Emily O'Gorman (London and New York: Bloomsbury, 2014). Peter Lavelle, "Cultivating Empire: Zuo Zongtang's Agriculture, Environment, and Reconstruction in the Late Qing," in *China on the Margins*, ed. Sherman Cochran and Paul Pickowicz (Ithaca, NY: Cornell University East Asia Program, 2010).
  - 13 E. N. Anderson, *Food and Environment in Early and Medieval China* (Philadelphia: University of Pennsylvania Press, 2014).
  - 14 Timothy Brook, *The Troubled Empire: China in the Yuan and Ming dynasties* (Cambridge, MA: Harvard University Press, 2010).
  - 15 Conrad Totman, *The Green Archipelago: Forestry in Pre-Industrial Japan* (Berkeley: University of California Press, 1989); Conrad Totman, *The Lumber Industry in Early Modern Japan* (Honolulu: University of Hawai'i Press, 1995); Conrad Totman, *Japan's Imperial Forest Goryōrin, 1889-1945* (Folkstone: Global Oriental, 2007).
  - 16 Conrad Totman, *Pre-Industrial Korea and Japan in Environmental Perspective* (Leiden: Brill, 2004).
  - 17 Conrad Totman, *Japan: An Environmental History* (London and New York: I.B. Tauris, 2014).

Despite his remarkable productivity, Brett L. Walker, the other contributor to Japan's environmental history, is in the second generation of scholars. His works display a greater range of subject-matter than Totman. In *the Lost Wolves of Japan* (2008), Brett L. Walker's highly innovative monograph on the changing status of wolves in Japan contributed at once to agricultural history, identity politics and animal studies. It built on his *The Conquest of Ainu Lands: Ecology and Culture in Japanese Expansion, 1590-1800* (2006), examining the social and environmental tensions in the so-called middle-ground of contact established with Japanese expansion.<sup>18</sup> More recently, Walker's *Toxic Archipelago A History of Industrial Disease in Japan* (2011) has presented a highly sobering study of the effects of Japan's industrialisation over the last 200 years.<sup>19</sup>

The current strength and diversity of the field in Japan is further evidenced in the co-edited volume, *Japan at Nature's Edge: The Environmental Context of a Global Power* (2013). Here, in this fine study, is ample evidence of the innovative nature of current Japanese environmental history—the volume's chapters explore ocean expansion and maritime environmental history, pollution and health, animal history and urban history, literature, policy and risk.<sup>20</sup> While many new areas are still open to scholarly enquiry—most urgently is the need for environmental history scholarship on South Korea and Vietnam—these are exciting times ahead for environmental history in China and the East Asian region as a whole, as the review of the two recently published books demonstrates.

### *Environmental History in East Asia: Interdisciplinary Perspectives*

The first I review is *Environmental History in East Asia: Interdisciplinary Perspectives*, edited by Professor Emeritus Ts'ui-jung Liu, a leading environmental historian of China whose work over the past four decades has significantly shaped the field. Her many publications have examined demography, migration, urbanization, agrarianism and environmental history. With Mark Elvin, she very effectively pioneered environmental history in East Asia. In the early 1990s, they ran probably the first environmental history workshops on China, co-editing a massive two-volume proceedings in Chinese as well as the seminal English-language volume, *Sediments of Time: Environment and Society in Chinese History* (1998).<sup>21</sup> Since then, Professor Liu has served as Vice President of Academia Sinica and has been the main driving force behind the establishment of the

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18 Brett L. Walker, *The Conquest of Ainu Lands: Ecology and Culture in Japanese Expansion, 1590-1800* (Berkeley: University of California Press, 2006).

19 Brett L. Walker, *Toxic Archipelago A History of Industrial Disease in Japan* (Seattle: University of Washington Press, 2011).

20 Ian Jared Miller, Julia Adeney Thomas and Brett L. Walker, eds, *Japan at Nature's Edge: The Environmental Context of a Global Power* (Honolulu: University of Hawai'i Press, 2013).

21 Ts'ui-jung Liu and Mark Elvin, eds., *Chi Chien So Chih: Chung-kuo Huan-ching Shih Lun-wen Chi*, (Taipei: The Institute of Economics, Academia Sinica, 1995); Mark Elvin and Ts'ui-jung Liu, eds., *Sediments of Time: Environment and Society in Chinese History* (Cambridge: Cambridge University Press, 1998).



Association for East Asian Environmental History (AEA EH), for which she served as its first President. Since 2011, this organisation has held two conferences, with a third planned for 2015 in Kyoto. In that time, the number of participants has increased manifold, as has membership of the AEA EH that increased from 193 members in 2009 to 327 at the end of 2013.<sup>22</sup>

The increasing interest in East Asian environmental history, as well as its growing status, is reflected in *Environmental History in East Asia: Interdisciplinary Perspectives*. This is a hefty volume and at well over 150,000 words of text, represents considerable effort on the part of the editor. The work surveys a number of places and periods in China and Japan, but not, significantly, Korea — the absence of a chapter on Korea is not a criticism of the volume, but rather a reflection that, aside from the work of Conrad Totman,<sup>23</sup> environmental history scholarship in Korea is, to my knowledge, in its infancy, as with that on Vietnam.

In Liu's edited book, a number of very different periods and topics receive attention, although the focus remains largely on late imperial Chinese history. The volume presents a series of richly detailed case-studies and very handy overviews of the field, the scale, scope and subject-matter of which reflects a great many different disciplinary perspectives. This includes studies drawn from ecology and historical geography, historical demographics and epidemiology, right to environmental history, geology and sociology. The disciplinary variety of the volume is both a strength and a weakness: a strength both because it showcases the number of scholars and scholarly disciplines working on environment-human interactions and because it brings to an English-speaking readership the work of Chinese scholars; and a weakness, because some scholars do not engage with environmental history literature (a point I discuss below).

Rather than summarise each of the chapters in turn, I would like to present some of the highlights of the volume. This includes fascinating work, respectively, by Mark Elvin on "natural history" in late-Ming and early modern Europe (chapter 1) and Yim-Tze Kwong on *Laozi* (chapter 2). Equally valuable contributions come from Yan Gao on Qing environmental policy in Manchuria (chapter 5), Jianxiong Ma on the co-production of people and environment in Yunnan (chapter 7), Shu-min Huang on globalization on the alpine lake of Lashihai, Yunnan (chapter 8), Xinhao Du and Bo Ren's on water technology and adaptation in Jifu (chapter 10), Shinobu Iguro on water supply technology in north-western China (chapter 11), and Peter Lavelle's study of late-imperial aesthetics and production on the Qing borderlands (chapter 12).

In chapter 1, Elvin presents a fascinating comparison of the methodology of inquiry employed by Xie Zhaozhe (1567-1624) and Gilbert White (1720-1793), concluding that, while both investigators employed similar techniques, what Xie lacked was

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22 "Membership," Association for East Asian Environmental History.org, accessed 15 December 2014. <http://www.aeah.org/membership.htm>

23 Totman, *Pre-Industrial Korea and Japan*.

participation in a community of scholars interested in “natural history” investigation. Elvin’s work opens up several intriguing lines of inquiry into the possibilities of further cross-cultural comparisons, and suggests the need for historians of science to more carefully consider blanket statements about cultural difference when considering the comparative development of science. As Elvin argues, aside from greater European knowledge in respect of zoology ‘... the two cultures [of China and Europe] were in many respects surprisingly similar...and this raises the suspicion that general attitudes to nature, even among the educated and interested, probably did not play as great a role in making possible or inhibiting the emergence of “modern” science as one might reasonably be inclined to think.’ (12)

In the next chapter, the scholar Yim-Tze Kwong presents a beautifully written commentary on *Laozi* that argues persuasively for the importance of the concepts of balance and interrelationship inherent in this work and how they might guide twenty-first-century responses to the global ecological crisis. His work presents important perspectives to writers and thinkers who, in searching for possible intellectual bulwarks against present environmental degradation, have generally upheld Western writers, or else offered romanticised (and unrealistic) interpretations of “Asian” philosophical traditions.

In chapter 5, Yan Gao presents a sophisticated discussion of the unanticipated human and environmental impacts of Qing settlement policies across the Jiangnan Plain, in the Yangtze’s middle reaches. The author persuasively demonstrates that Qing authorities, while realising ‘the dangers of excessive land reclamation’ (100), were more concerned with easing Manchu-Han tensions on the borderlands than in ensuring the viability of long-term environmental practices. In response to significant migration into this region, Chinese authorities encouraged land reclamation by releasing pastureland from garrisons and encouraging reclamation. Not only did the decreasing extent of pastureland and the building of polders cause flooding, but the resulting social distress precipitated by flooding was magnified by the declining military effectiveness of the Banner Armies, now critically short of mounts and riders and pastureland on which to graze horses. As a result of the ineffectiveness of the Banner Armies, Qing reliance on local militia to maintain law and order further lessened central control. In short, Yan Gao’s chapter encapsulates well the interlinked processes of environmental and social decline leading up to the ecological (and political and social) crisis of late imperial China (see Section Three).

In chapter 6, Jianxiong Ma presents a detailed case-study of western Yunnan’s *Bazi* system near Zhaozhou. Ma analyses Chinese state attempts ‘to integrate a complex social-ecological system into the Chinese empire’ (134) through the restructuring of local power relations through interlinked social and environmental changes. The local term, *Bazi*, originally referring to flatlands in mountainous areas, came by the Ming (1368-1644) and Qing (1644-1911), so the author shows, to denote ‘local social and cultural systems in Yunnan and other provinces of Southwest China’ (131). Ma extends



the meaning of this term still further, to include the eco-cultural systems of the region.<sup>24</sup> He demonstrates how imperial attempts to colonize the region deliberately attempted to alter local usage and understanding of environments and their associated ritual practices. As Ma shows, the extent to which local elites resisted or accepted Chinese authority depended on their use and conceptualisation of such things as agriculture, transport routes and holy sites. The Chinese state—gradually but ultimately fundamentally—reshaped these relationships. The renaming of mountains, the replacement of Buddhist temples with dragon temples, and the construction of *fengshui* pagodas just as effectively undermined local belief and authority structures as did the introduction of neo-Confucian learning among elites and the migration of Han peoples. As social elites, religious practices and landscapes become Sinicized and re-integrated, so Ma shows that the boundaries between the *Bazi* basins and the mountains and their peoples became more clearly defined.

The following chapter also focuses on a region of Yunnan, Lashihai—the wetland and lake near Lijiang City, south-western part of the province. Shu-min Huang provides a detailed and perceptive analysis of the complex and mixed impacts of the damming of Lashihai in 1994. Not least, his chapter refuses to follow the tale of environmental decline so characteristic of many accounts of the environmental impacts of development schemes. Instead, his chapter reveals the Janus face of globalisation and modernisation. While the damming of Lashihai Lake has resulted in ecological damage and species loss, its large water body has attracted significant numbers of migratory birds, sufficient, in fact, to support the establishment of a wildlife sanctuary. In attracting tourists to the area, the sanctuary has also had benefits—superficially at least—for the local Naxi people, in providing them with a livelihood. And while the lake has experienced considerable environmental problems, Huang examines the role of grassroots Non-Governmental Organisations and of the participation of overseas NGOs and the Chinese government in attempting to address the environmental problems associated with rapid development and urbanisation. Notwithstanding many challenges, Huang believes that the case-study of the Lake offers hope for the future, that a Chinese citizenship engaged in environmental matters at home and elsewhere will emerge.

Keeping with the focus on water and development, Xinhao Du and Bo Ren's study on water technology and adaptation in Jifu (chapter 10) provides important new perspectives on technological exchange, environmental limitations and Qing ideological intransigence. With declining environmental conditions during the Yuan (1271-1368)—including most crucially the loss of readily available water for irrigation—rice-growing in the region gradually disappeared. The introduction by late-Ming authorities onwards of rice varieties, expertise, and techniques from southern

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24 For more on this concept, see: James Beattie, Edward Melillo and Emily O'Gorman, eds., *Eco-Cultural Networks and the British Empire: New Perspectives on Environmental History* (New York; London: Bloomsbury, 2014); Beattie, Melillo and O'Gorman, 'Rethinking the British Empire through Eco-Cultural Networks: Materialist-Cultural Environmental History, Relational Connections and Agency', *Environment and History*, 20, 4 (November 2014), pp. 561-575.

China, including paddy-field farming and polder building, ultimately failed by the late nineteenth-century due to natural environmental constraints. Jifu presented challenging conditions for the importation of paddy techniques from southern China. Its climate was significantly colder than southern China, while rainfall varied greatly in amount, timing and intensity. When framed within wider processes of Alfred Crosby's concept of ecological imperialism, chapter 10 provides a fascinating case-study of the manner of technology transfer from the south to the north, within what Crosby termed as the Old World.<sup>25</sup> It also underlines the point made by both Elvin and Marks of the challenges of agricultural development of a polity with such diverse environments.

The next chapter (11) by Shinobu Iguro also focuses on water-supply technology: in case, state attempts to make the desert bloom in north-western China. Again, despite the rhetoric of agricultural development and the considerable expertise of Chinese engineers and agronomists, Iguro shows that the state could not make agriculture flourish in the Hexi Corridor, even over the medium term. The state farms that were established there in the early 1730s relied upon remarkably sophisticated and expensive irrigation works, yet by the end of that decade salinization and sand inundation were becoming serious problems that eventually forced the abandonment of the agricultural settlement.

In chapter 12, Peter Lavelle's study of late-imperial aesthetics and production on the Qing borderlands is perhaps the most important of all of the contributions to the volume. Lavelle has written one of the few works on Chinese environmental history to bridge the divide between aesthetic analyses of gardens in China and their broader economic, political and cultural aspects. Craig Clunas pioneered this kind of analysis in his study of Jiangnan's gardens, *Fruitful Sites: Garden Culture in Ming Dynasty China* (1996) just as Philippe Forêt's *Mapping Chengde the Qing Landscape Enterprise* (2000), did for northern China through its examination of the Qing reorganisation of landscapes and establishment of different spatial hierarchies.<sup>26</sup>

Lavelle extends further the geographical and historiographical boundaries of the works of Clunas and Forêt, by re-examining China's so-called New Territories through exploration of the symbolic, political, aesthetic, and practical function of southern-style Chinese gardens to Qing officials. His chapter follows the garden-making of the Qing military leader, Zuo Zongtang (1812-1885), as he moved through Gansu and Xinjiang in the 1870s and 1880s to suppress rebellion, campaigning which took him further and further into ever more arid territory. Not only did Zuo's garden-making enable him to look back longingly to the lifestyle, people and flavours of southern China, but also, at the oasis town of Hami 哈密, as Lavelle shows, he even hankered after the garden that he built there and had to leave behind at Lanzhou (Gansu)—rendered by Lavelle as The Office Garden.

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25 Alfred W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900–1900* (Cambridge: Cambridge University Press, 1986).

26 Craig Clunas, *Fruitful Sites: Garden Culture in Ming Dynasty China* (London: Reaktion Books, 1996); Forêt, *Mapping Chengde*.

Lavelle's work provides a fascinating window into the importance of garden-making as a symbol of the literati ideal among those serving in office in China's borderlands. Lavelle also situates Zuo's activities within those of non-elite Han through examination of the role of horticulture and seed distribution in this region. In doing so, Lavelle situates garden-making within wider processes of environmental change, and so addresses one of the major lacuna in environmental and garden-history scholarship: the failure, by and large, of both groups of scholars to examine the processes connecting cultural, material and ecological change.<sup>27</sup> Garden historians especially have tended to focus on the symbolic, cultural and political role of gardens without, as it were, peering over the garden wall to examine gardens as part of wider processes of environmental change.

Lavelle also reconnects the wonderful Chinese literature on gardening and eating. Both, of course, appeared as one in accounts by literati, most famously perhaps by the scholar Zhang Dai (1597-1684?). He experienced first the untrammelled conspicuous consumption and bewildering social change of the late Ming, followed by the cataclysmic Ming-Qing transition. If the first undermined the moral status of his elite lifestyle—eating, book collecting, writing and garden-making, and all that they represented—then the latter threatened the very existence of loyalists like Zhang Dai. Facing starvation in the Qing and eking out a life of 'arrant poverty, "his state fallen, his family destroyed", ' as he wrote in *Dream Memories of Taoan*, Zhang Dai was reduced to evoking the taste of his former life and foods, and with that, his former economic, social and political station, in literary works, even in the characters for his own epitaph:

...for the people, food is Heaven  
A greedy Dongpo,  
Starving at Solitary Bamboo.<sup>28</sup>

Aside from anthropologists such as Jack Goody, to my knowledge, environmental historians with the exception of the fine scholarship of E.N. Anderson, have been less willing to examine the inter-relationship of food production, ecological change and environmental transformation, and their social, political and cultural meanings.<sup>29</sup> In this respect, Lavelle's study presents an important example of the topics and kinds of approaches other environmental historians might well follow.

Another is presented in Lavelle's discussion of the taste of home evoked by the cultivation of garden produce familiar to Zuo and other Han Chinese stuck on the outer edges of Chinese civilization who were tasked with transforming wastelands into productive fields and pastoralists into productive agriculturists.

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27 Note, for example, J.A.G. Roberts, *China to Chinatown: Chinese Food in the West* (London:Reaktion, 2004).

28 Zhang Dai, "Zi wei muzhiming" [Inscription for my Own Tomb], translated by Duncan Campbell, cited in Duncan Campbell, *The Obsessive Gourmand: Zhang Dai on Food* (Wellington: Asian Studies Institute, 2006), 1.

29 Anderson, *Food and Environment*.

Turning to some of the other chapters in the book, one concept I found particularly intriguing—even though it was not fully realised in the chapter, which lost its focus after an encouraging beginning—was that of “ecodemics,” a term coined by Mika Merviö (chapter 17). Merviö defines ecodemics as the emergence of new diseases and the heightened risks to human health they pose. These conditions arose from ‘intensive modern agriculture and forestry together with rapid changes in the animal population caused by humans’ (316), but also changing patterns of consumption and lifestyle, in addition to associated technological developments and environmental changes. As Merviö notes, ‘[w]ith such enormous environmental changes as global warming in sight, it can be assumed that in the future people and other animals will encounter new epidemics, and some of these may be more fatal than any previously known’ (316). Ecodemics is, I think, a catchy and useful term which deserves to find a widespread usage.

To provide a summary of any edited volume—let alone one of this complexity and size—is a difficult task, made all the more so in this instance by the variety of topics and disciplinary perspectives in evidence. One of the strengths but also one of the weaknesses of the volume is its inter-disciplinary contributions. This is, I think, a reflection of the state of environmental history in East Asia, rather than necessarily a criticism of the volume. While I believe environmental history is a broad church, I did find that several of the chapters really did not fit the definition of environmental history, generally because they failed to engage with any historiography and were too firmly rooted in their own disciplinary prison. While I support localised case studies, they need to be placed in a broader context, their broader implications outlined and connected with other scholarship. For example, several extremely technical pieces, involving complex calculations or statistical analyses, do not constitute environmental history because they did not move outside the narrow focus of their own discipline or highlight their relevancy to broader arguments. Other chapters presented equally fascinating analyses of the epidemiological impacts of certain diseases, but also did not elucidate how their findings bore on environmental history literature. A couple of chapters, too, were either too short or lacked the detailed content to warrant inclusion in the book.

These reservations aside, I found the volume offered many, many new perspectives on East Asian environmental history, as I have highlighted in the detailed review of several chapters. The work is also a fine tour de force of editorship by Professor Liu. The variety of its contributors mean that the work should be of appeal to students of Chinese and Japanese environmental history as well as to scholars of global environmental history, historical geography and ecology.

### *China: Its Environment and History*

Another preeminent environmental historian of China who has also recently written a major work on Chinese environmental history is Robert B. Marks. *China: Its Environment and History* is a masterly overview of Chinese environmental history from the dawn of its civilisation to the present, a period covering some 10,000 years. The book’s scope and content are clearly presented, and backed up by impeccable and wide-ranging scholarship, supported by excellent maps and diagrams. After Elvin’s seminal

monograph on China's environmental past, *Retreat of the Elephants*, with *China: Its Environment and History*, Marks has given environmental historians the second great monograph on the topic, one which will appeal greatly to students and prove ideal for undergraduate teaching. Its readability reflects the origins of the work in several courses on Chinese environmental history that Marks has taught at Whittiers' College.

*China: Its Environment and History* evidences, too, its author's ability to burrow down and immerse himself in detail but also to be able to step back and take in the wider picture, place his work in a broad historiographical discussion, and synthesise complex ideas. In many respects, this current work represents the fitting culmination of the focus of two of his previous studies. The first—*Tigers, Rice, Silk, and Silt: Environment and Economy in Late Imperial South China* (1998)—overviewed the interconnections among economic development, the spread of markets and environmental change in southern China.<sup>30</sup> The second—*The Origins of the Modern World: A Global and Ecological History from the fifteenth to the twenty-first century* (2002)—situated China's ecological, economic, demographic and social changes within global currents.<sup>31</sup>

*China: Its Environment and History*, too, is about China and China in the world, but much else besides. As with, in particular, *Tigers, Rice, Silk, and Silt*, Marks' latest book provides several innovative approaches which offer different ways and techniques of approaching Chinese history. For one thing, *China: Its Environment and History* is organised chronologically, although not along traditional lines of periodization, usually based on dynastic rule. Marks instead organises his book according to principal shifts in environmental usage. This means the book is loosely organized into four main periods: the Neolithic, ancient, imperial, and modern.

Chapter 1 sets out the broad themes of the book. It describes the complex environmental and social setting of China, pointing out several particular challenges associated with writing an environmental history of this region. Here he makes another important contribution to Chinese environmental history and environmental historiography more generally. As Marks notes, one key challenge he faced in writing the book was conceptualising of and defining what exactly is China and what isn't as well as who are and who aren't Chinese. Instead of setting up rigid definitions and arbitrary boundaries, Marks sensibly and ingeniously decided to place China within a broader history of environmental-human interactions with other regions and peoples and so examines ecological change within China and in neighbouring regions by Chinese and non-Chinese. Throughout the book, Marks demonstrates the collisions and collusion of Han and non-Han, whose societies and environmental interactions were defined by agriculture and pastoralism respectively. Marks charts the dynamic impacts of Han policies on western regions and the impacts of these peoples on China itself.

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30 Robert B. Marks, *Tigers, Rice, Silk, and Silt: Environment and Economy in Late Imperial South China* (Cambridge and New York: Cambridge University Press, 2006).

31 Robert B. Marks, *The Origins of the Modern World: A Global and Ecological History from the Fifteenth to the Twenty-first Century*, 2nd ed. (Lanham, MD: Rowman & Littlefield Publisher, 2007).

For example, Mongolia and Manchuria provided horses and at times ruling dynasties, until population pressure ushered in ecological changes to these regions from the very late imperial period.

A focus on interactions and inter-relationships in the making of China's environmental history makes a very important contribution to the field in East Asian environmental history in particular and to environmental historiography more generally. This is because, with a few exceptions, environmental historians of China have largely taken the boundaries of the present nation-state or past polities to define the area of their study. A focus on China's interaction with other regions also distinguishes Marks' work from many other environmental histories which, largely present national histories as hermetically sealed units defined by political boundaries. Marks' approach alone merits the book's appeal to readers seeking to pursue different ways of approaching "national" histories. It is an approach which does not simply fall back on either discursive readings of the nation or other such solely culturally informed questioning of the naturalness of the nation. Instead, Marks' approach enabling sophisticated analyses of the material and cultural impacts of a polity's changing and porous boundaries.

Chapter 2 focuses on the emergence of rice cultivation in the Yangtze valley (c. 9,000 to 8,800 years ago) and millet growing in the North (around 8,000 years ago) following the last Ice Age. Here Marks deploys all the tools in the environmental historians' kit, expertly synthesising and presenting in a pithy and digestible form the work of scientists on the varied climate, vegetation, soils and animals of China. Based on their work, he demonstrates that the period from 6000-1000 BCE, representing the warmest over the last 18000 years, enabled the growth of early settlement and environmental change, as well as the formation of the Shang state (*circa*, 1600-1050BCE) in the Yellow River Valley. This early period, Marks demonstrates, was one in which polities rose and fell in the region we today know as China.

Alongside scientific studies, this chapter makes fascinating and innovative use of Shang oracle bone inscriptions and early pottery shards. The divinations on oracle bones allow Marks to illustrate the importance of agriculture to state formation and, in turn, the reliance on the state on family farming units. The extent of Shang settlement to the north and west, he illustrates, did not extend beyond what is today's 50 cm rainfall boundary or to the south beyond the Yangtze river. Essentially the Shang hacked its civilization from the forests. It domesticated several animals, including the ox which pulled the plough to enable its fields to be tilled. The resources captured by this agricultural system supported a population of 4 to 5 million by the late Shang (c. 1100 BCE), and the growth of a powerful state capable of expansion. However, around this time, climate changes—notably declining rainfall—began to destabilise this agricultural system, contributing also to the decline of the Shang.

A feature evident in Chapter 2 and all subsequent ones is the historical context provided by Marks to readers who might otherwise be unfamiliar with some of the salient characteristics of Chinese history. By no means is this dislocated from the environmental dimensions of the particular period under discussion. As illustrated above in my discussion of Chapter 2, he is able to illustrate the importance of environmental management and environmental factors on state, commerce and society,



while also illustrating, as it were, the social, cultural and political feedback mechanisms of ecological changes. This is yet another strength of the work and makes *China: Its Environment and History* an ideal textbook.

Chapter 3 presents 1300 years of environmental change in China, from 1000 BCE to 300 CE. This period represented the taming of North China, as agricultural expansion, a multi-state system, and war led to environmental exploitation, and eventually, under the brief Qin (221-207 BCE) dynasty, the establishment of a unified state. Over the 1300 year period discussed, Marks illustrates that tillage increased in extent as forests made way for farms, dams and channels were made to irrigate fields and control floods, and as the domestication of animals took place. Marks argues that several key patterns were established in this period which came to define subsequent Chinese society and environmental use. One was the dynamic relationship established between Han agriculturists and their often disunified state on the North China Plain and the nomadic pastoralists of the steppe. Another taken up by the Han (202 BCE to 220 CE) was the importance of peasant-based farming to the maintenance of a centralised agricultural state. By the end of the Han, China's population stood at around 60 million. Its people, engaged in a variety of agricultural and industrial pursuits, presided over a highly modified environment.

Chapter 4 examines the spread of both new technologies and diseases, as well as China's reunification in the period up to 1300 CE, which was characterised by the Han peoples' colonisation of the south. What pushed China's southwards expansion? Military threat from the steppelander; the overflowing of the Yellow River (as a result of environmental changes upstream) that flooded vast areas of the North China Plain, leaving behind only sand; and the removal of most remaining forests in the region. Marks illustrates the dramatic southwards shift in political power, population and matériel through population percentages. During the Han dynasty, nearly 80 per cent of China's population lived in the North. By 750 CE, the proportion of Chinese living in the South was 50 per cent. Eventually by 1200 it was 71 per cent.

This southwards expansion was by no means easy. Han Chinese migrants faced many human and environmental challenges in the south and southeast. Malaria and other contagious diseases debilitated and killed many settlers, while crocodiles (in what is now Fujian province) and other wild animals, long represented a threat, as did fierce local resistance. Draining mangroves and wetlands was a considerable struggle. Yet wet-rice cultivation prevailed. Reliant on complex methods of water control to ensure its successful harvesting, it ultimately provided an energy boon in China, contributing to population increase, greater state revenue, and more intensified environmental exploitation. As in the north, then, water control provided a mechanism for increasing harvests, but also for bringing the empire closer together (The Grand Canal), and for providing some protection against floods. This complex agro-ecosystem, shows Marks, 'replaced natural ones, concentrating solar energy into forms more readily usable by humans...' (168).

Chapter 5 focuses on the late imperial period, 1300-1800. In this period, China's population dipped during the Mongol invasion (1270s) and due to the plague, declining from a high of 120 million in 1200 CE to stabilise at between 65 and 85 million until

1400. It rose to as much as 150 million by 1600 only to dip by 1650 with the Ming-Qing dynastic transition: thereafter it recovered from the 1680s, increasing thereafter. As Marks notes, the dramatic effects of commercialisation and rapid population rise, and resulting resource demands, by 1800 meant that ‘there were few areas of China untouched and unworked by human hands’ (169).

In this period, China experienced what some historians term the “Little Ice Age” (c. 1350-1850). This reduced agricultural growing seasons and the range of some plants, in addition to having other economic, political and social changes. Notwithstanding the effects of the Little Ice Age, China’s borders expanded considerably in these years, southwards, south-westwards, north-, and north-eastwards. Mountainous areas, such as Tibet, and the steppelands of the north came under Chinese control, as did islands like Hainan and Taiwan. And all were transformed environmentally. Population quadrupled from 1300 to 1800, reaching around 400 million by the turn of the nineteenth century. China’s developing overseas connections, as well as growing commercialisation especially in the south, helped to drive environmental change and population increase. From the 1600s, double-cropping, and more intensified land-use was made possible thanks to introductions of New World crops and staples, notably the sweet potato. In response to a higher population, reclamation took place and agriculture spread into ever more marginal land, a policy successful in sustaining further population increase yet one which also precipitated a looming environmental crisis.

Chapter 6 examines the greater incorporation of China into global trade, including, importantly, the ecological impacts of Chinese consumption beyond the polity of China, notably signalled by the sandalwood trade, foreign incursions, and opium demand. Marks also discusses China’s growing ecological crisis, one whose shadow would be cast over the next two centuries. By the nineteenth century, Marks shows, there was no more new land in China to absorb a growing population. China’s hinterlands paid the price for this. Peasants stripped scrubby land of vegetation to provide fuel-wood. They cultivated—and exhausted—marginal soils. In short, China’s high population created resource shortages that degraded environments, and fomented resource conflict and social unrest, problems punctuated by periodically devastating droughts and floods, all of which served to weaken the Qing state.

The legacy of imperial China would, as Marks cogently shows, bequeath severe problems to China’s twentieth-century leaders, especially those post-1949 with the PRC’s singular aim of rapid industrialisation based on agricultural surpluses. Mao’s commitment to industrialisation rested on the dangerous but naïve belief in the inexhaustibility of nature and the human will, underpinned by the pseudo-scientific ideas of Trofim Lysenko and others. Fired by these ideas, the Great Leap Forward (1958-1962) sent the country spiralling into famine, destitution and environmental destruction due to the virulent spread of rampant Maoist rhetoric, un-checked by criticism. Ironically, it was only with the market liberalization of the Deng-era reforms, whose effects rippled then surged from the 1980s, that Mao’s vision became increasingly realised, for, as Marks deftly shows, without inorganic fertilisers or access to the high-yielding plant varieties associated with the so-called green revolution, China could not have produced the surpluses necessary to underpin its staggering industrialisation. The

problem for China was that, without such inputs, its agro-ecological system had simply reached its limits, no matter how hard-working or efficient its people and agriculture. Without inorganic fertilisers, agriculturalists could not hope to increase productivity. China's economic liberalisation meant it could finally access the technology necessary to enable it to produce nitrogen, which, in turn, could finally set it free of the limits of a system reliant largely on natural inputs. This, coupled with population control (introduced in 1979), finally meant China could adequately feed its population and set about increasing the living standards of its population.

In this chapter, Marks also points to the environmental costs of China's breakneck speed of economic development, made possible by such agricultural reforms. Not only the resulting economic boom but also seismic shifts in lifestyle—most notably to energy inefficient sources of protein such as meat—have had profound and shocking results on the ecology of China. A litany of environmental disasters makes for a sobering read, as does the health problems they have created. Marks, too, shows how China's voracious resource demand is having a global impact, on resource depletion but also, most significantly, on climate change, through the increased release of greenhouse gases.

Chapter 8, which serves as a conclusion, draws out the main themes of environment-human interactions in China as Marks sees them. As well, it outlines the drivers of those changes. One key theme is the expansion of settled agriculture over a diversity of environments and its imposition on many non-Han groups. As forests succumbed to the axe, as new land was got from swamp or lake, and as human action, either intentionally or not, reduced the number of species, the development of wet-rice agriculture in the south and cereal growing in the north, and its expansion elsewhere, shows Marks, simplified formerly complex ecosystems. Complex feedback systems, however, served to at variously times to limit and enable environmental change in China, tying together people, animals, environments, climates and society in complex ways. The limits of the so-called old order, based on natural inputs of animal and human labour, sunshine, rain and organic fertilisers was reached, Marks shows, by the 1800s and only circumvented from the 1980s with the advent of inorganic fertilisers and greater inputs of resources from beyond China. The severity of China's pollution—of water, air and ground, combined with severe desertification and failing agriculture—threatens to limit not just its unprecedented levels of economic growth, but the very foundation of Chinese civilisation itself.

Aside from pollution, Marks also identifies several earlier inhibiting factors. This includes periods of global cooling—the so-called Little Ice Age—that limited agricultural growth and contributed to the movement of nomadic groups into China, with knock-on effects for Chinese migration further south- and south-eastwards. Another is the spread of disease associated with the domestication of animals; still others, the growth of larger cities and the inauguration of more efficient transportation systems and markets. As elsewhere, environmental change, Marks illustrates, often unleashed powerful, unanticipated forces of change. Negative feedback loops resulting from environmental change were many: whether upstream deforestation releasing sediment and thereby intensifying floods downstream, or the effects of pollution today on the health of Chinese and eco-systems. In this respect, as Marks notes, 'one of the

paradoxes of Chinese history has been that while the degradation of its environment has been long-term and palpable, the Chinese farming system itself was remarkably sustainable' (335)—to the extent that land reclaimed a thousand years ago still produces rice, fields hewn from forestland two thousand years still produces a yield. Likewise, in recent years, the same areas of land have sustained spiralling populations and remarkable increases in living standards. No one knows the extent to which this most recent phase of China's energy regime will last, or, indeed, what its lasting effects will be.

Viewed over the long term, two other key institutions enabling this astounding transformation has been the family farm and the state. From the Qin onwards, as Marks argues, the family farm was central to driving environmental change and to the expansion of the state, which, whenever it could, encouraged its development. Notwithstanding several exceptions, the institution of private property enabled farming families to develop land and provide taxes to the state. At the same time the Chinese state also helped direct change, whether through preferential tax regimes, seed distribution, suppression of rebellions, establishment of military agricultural colonies, or helping to mobilise other forms of resources to encourage agricultural intensification. 'The understanding that the Chinese family farm could and should transform alien environments and peoples into more familiar ones, and hence enhance the ability of the Chinese state to control the land and the people, was explicit' (339).

Commerce and technological innovation have provided other powerful drivers of change throughout Chinese history. To cite one example from many, technological developments allowed for complex means of control water, whose harnessing was critical not just to the expansion of agriculture and, with it, state power, but also to commercial activity itself.

## Conclusion

Both *Environmental History in East Asia* and *China: Its Environment and History* have much to offer environmental historians, as well as anyone interested in the world environment or the divergent paths to our present global ecological crisis. If the strength of the former is in providing a diversity of voices from Chinese and Japanese scholars on environmental history, then that of the latter is in providing a coherent, clearly argued synthesis of the latest scholarship on China's environment. As such, both works draw from the research of geographers, ecologists, climatologists, anthropologists, historians, and many others besides, although Marks makes these the handmaiden of environmental history, whereas some of the chapters in Liu's volume remain locked within their own disciplinary perspectives. An additional advantage of Marks' book is that it will be an ideal textbook for undergraduate study, while also appealing to specialists in the field: as Marks notes, many sources he draws from 'are widely scattered and not easily accessible, so part of this book's contribution is to synthesize them into a broader historical narrative' (7-8). Together, these books have significantly enriched the environmental historiography of East Asia.