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James Beattie

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**SPECIAL ISSUE: DISASTERS FAST AND SLOW**  
Edited by Fiona Williamson and Chris Courtney

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I am delighted to welcome three new editorial board members: Dr Rebecca Rice, Curator Historical New Zealand Art, Museum of New Zealand Te Papa Tongarewa; her colleague at the museum, Kirstie Ross, History Curator (Modern New Zealand); and Associate Professor Fa-ti Fan, Binghamton University. Together, their expertise in the visual depiction and display of nature will significantly strengthen *International Review of Environmental History*.

Following the success of this year’s earlier issue, ‘Bodies of Knowledge’, guest edited by Alessandro Antonello and Ruth A. Morgan, I am pleased to introduce ‘Disasters Fast and Slow’. Guest edited by Fiona Williamson (Singapore Management University) and Chris Courtney (Durham University), it showcases the methodological and theoretical contributions that environmental history can make to the discipline of history.

The issue not only enlarges our understanding of hazards in environmental history, it also addresses issues at the heart of our discipline, by examining agency, structure and causality through the multiple temporalities that disasters can induce. The perspectives and approaches presented in ‘Disasters fast and slow’ are particularly apposite at a time when we are being subject to greater hazards in our daily lives, from extreme and unstable weather events, to political and social turmoil.

**Call for papers**

I would particularly like to encourage submissions on topics related to history and energy, the atmosphere and water, especially in relation to Africa, South America and Asia. Please also contact me if you are interested in guest editing a special issue.

**Acknowledgements**

I am indebted to the support of so many in making this publication possible. *International Review of Environmental History* is published with the support of the Centre for Environmental History, The Australian National University, whose
Director, Professor Tom Griffiths, enthusiastically backed this venture from the outset. In 2013, Professor Bruce Clarkson, Director of the Environmental Research Institute, University of Waikato, granted me the time to devote to planning and preparing the journal by giving me teaching buy-out. I am especially grateful to the journal’s Associate Editors and supportive and active Editorial Board for permitting me to test ideas and share material with them. Further support for the journal has also come through funding provided by Science in Society, Victoria University of Wellington. Finally, I acknowledge the assiduous copyediting of Austin Gee.

James Beattie, Editor
Dunedin, July 2018
DISASTERS FAST AND SLOW:
THE TEMPORALITY OF HAZARDS
IN ENVIRONMENTAL HISTORY

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History … functions in turn as an eyepiece, a microscope, or a telescope … In changing scale, one does not see things as larger or smaller … One sees different things … There are different concatenations of configuration and causality.

Paul Ricoeur1

Popular representations of disasters tend to focus upon dramatic moments of chaos. They envision panicked communities desperately scrambling for safety as earthquakes reduce cities to rubble or lava turns villages to ashes. Yet disasters actually unfold on numerous temporal scales. Media reports tend to reduce disasters to discrete events, initiated on the shallow causal timescale of a meteorological fluctuation or seismic disruption. Social scientists, by contrast, have often sought to emphasise the processual nature of disasters—embedding causality in the deeper timescale of a community, in which risk and vulnerability build over months or years.2 Environmental historians elongate causality even further, describing how individual or recurrent disasters emerge from longue durée interactions between human and ecological systems. This approach underpinned many classic studies of the genre, including Donald Worster’s description of how the dust storms of the Great Depression emerged from a context of unsustainable agricultural expansion onto the American prairies, and Peter Perdue’s exploration of how chronic flooding in late imperial Hunan was the culmination of centuries of lakeshore reclamation.3 James Warren’s article in this special issue builds upon this tradition, embedding individual famines that struck the Philippines within the longue durée history of economic and ecological exchange.

2  See, for example, David Arnold, Famine, Social Crisis and Historical Change (New York: Basil Blackwell, 1988); Benjamin Wisner, Ian Davis, Piers Blaikie and Terry Cannon, At Risk: Natural Hazards, People’s Vulnerability, and Disasters (London and New York: Routledge, 1994).
Environmental historians have also sought to examine how trends in disaster occurrence are linked to specific time periods of earth’s history. Most dramatically, perhaps, the periodic warming and cooling of the climate has inundated and desiccated the landscape, rendering regions that had once supported thriving human communities virtually uninhabitable. Whilst popular scholars, including Jared Diamond, have characterised such rapid transformations as disastrous civilisational collapses, recently James C. Scott has argued that such events may not be as calamitous as they appear; the collapse of an oppressive central state could benefit a majority of the population by improving their nutrition and freeing them from extractive labour.4 A disaster, it would seem, is a relative concept. It is hard to dispute, however, that rapid temperature changes have created periods of extreme difficulty for individual communities. Timothy Brook has described how periods of acute climatic distress—which he calls ‘sloughs’—blighted the lives of those living under the Yuan (1271–1368) and Ming empires (1368–1644), plaguing them with all manner of hazards, including severe cold weather and flooding.5 Other climate historians have sought to account for the temporal synchronicity of geographically dispersed disasters. While some have posited volcanic activity as a key common factor, the most influential studies of disaster synchronicity have been those examining the El Niño-Southern Oscillation (ENSO), which include the works of Mike Davies and Richard Grove.6 Several of the disasters analysed in this special issue were synchronised with this great climatic metronome, including the Chinese famines and Filipino typhoons examined by Mark Baker and James Warren respectively, and perhaps also the Australian droughts examined by Rebecca Jones.7

When hazards are viewed in generic terms, rather than as specific events or processes, the timescale can be extended even further back, to plot a deep history of disasters. The emergence of conflagrations as a hazard type is inextricable from the gradual process of urbanisation.8 Without cities there would be no city fires. Conversely, the decline of conflagrations in the modern world marked the epochal shift from a world of wood and earth to one of brick and concrete, as Chris Courtney explores in this issue. Likewise, numerous hazard types can trace their roots to the adoption

7 Whilst not explicitly referring to ENSO in her account of late nineteenth- and early twentieth-century Australia, the series of droughts Jones discusses was likely related to the strong ENSO period (especially in the 1890s and 1920s).
of sedentism, a process that fixed communities in the path of erupting volcanoes and raging rivers. The inexorable rise of agriculture created the precondition for famine by fostering dependency on weather-sensitive plants, whilst it incubated epidemics by encouraging zoonoses and overcrowding. Agriculture also reshaped the landscape of risk by contributing to the erosion of slopes and silting of rivers, a topic that Fiona Williamson explores in her article on the disaster of erosion in this issue. Many hazard types that might appear to be timeless consequences of life within a capricious environment, in fact belong to a very distinct temporal setting, being the products of settled agrarianism—a mode of life that is, in the deep history of our species, a rather recent innovation.

We need not stop there. We could chase the long tail of disaster causality back to the birth of volcanoes or the formation of tectonic plates. Yet infinite retrospection obscures as much as it reveals. The assumption that temporal proximity somehow diminishes the relative importance of a cause is quite erroneous, as every disaster is an agglomeration of both long- and short-term causes. Indeed, if we are to take the processual approach to disasters seriously then we must, as the geographers Michael Watts and Hans Bohle have insisted, think of vulnerability not solely as a pre-existing condition; new forms of vulnerability are created throughout the disaster process. Disasters do not stop being caused at a discrete point in time—’when the levee breaks’, as Memphis Minnie famously put it. Rather, as Paul Ricoeur’s epigram suggests, differing ‘concatenations of configuration and causality’ appear as we change our analytic lens. As much can be learned from a microscopic analysis of the immediate moment of disaster as can be gleaned from a telescopic view of longue durée socioenvironmental interactions. The trick is knowing when to change scale.

Another problem with digressing too far into the realms of ultimate causation is that we risk losing touch with the experiential aspects of a disaster, which can reveal critical causes and consequences. The anthropologist Christos Lynteris has argued that historians of epidemics who insist upon focusing upon processual dynamics tend to neglect the phenomenological dimensions of a disease outbreak. This critique is equally valid for environmental historians of disaster, who are adept at exposing the deep origins of risk but tend to treat the immediate experience of a hazard as little more than rhetorical garnish—descriptive details that help to evoke the scale of a catastrophe but have little analytical value. Recent studies, including Rebecca Jones’s discussion of the experience of drought in this special issue, have

sought to overcome this temporal myopia. Of course, the experience of a disaster itself also unfolds on a variety of temporal scales. As Uwe Lübken and Christof Mauch have highlighted, disasters are often characterised by a slow build-up and, afterwards, their mental and physical impact can take years to erase.\textsuperscript{13}

Differing hazard types create vastly differing temporal experiences, with each varying in the pace of its onset and in its duration. The historian Paul Cohen has observed that unlike floods, which occur at specific moments in time, droughts are essentially non-events. So much so, in fact, that the term drought serves as a metaphor, in sport and other fields, for a period of time in which an anticipated event is conspicuous by its absence.\textsuperscript{14} The agonising experience of waiting for the rains, which Rebecca Jones describes so evocatively in this special issue, was clearly quite different from the frantic scramble for safety experienced by those fleeing from urban fires described by Chris Courtney. Famine is, in some ways, a classic slow-onset disaster. Many of the worst subsistence crises have occurred following back-to-back harvest failures, which stretch hunger over the course of several years, as Cormac Ó Gráda has observed.\textsuperscript{15} Yet when multiple factors combine—such as state requisitioning, military conflict or price fluctuations—then ‘blitz famines’ of the kind that Mark Baker describes in this issue can occur. In 1940s Henan, famine built slowly before unleashing its consequences at terrifying speed, including rapid eruptions of violence and the swift sweep of a cholera outbreak.

In addition to onset and duration, the temporal experience of disaster is influenced by the frequency of recurrence. Greg Bankoff has argued that for some communities and cultures, disasters can be considered ‘frequent life events’, becoming integrated into the fabric of everyday life.\textsuperscript{16} Andrea Janku, Gerrit J. Schenk and Franz Mauelshagen have observed that while historians have preferred to focus on high-magnitude events, such as legendary earthquakes or eruptions, or on countries that experience annual extremes of weather such as typhoons, frequently recurring small-scale disasters have shaped human societies in subtle ways.\textsuperscript{17} In his study of risk perception and flood management in Renaissance Germany and Italy, Schenk argues that everyday hazards became embedded in the cultural and political make-up of these communities, and can, therefore, serve as a frame for understanding

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institutional and social learning. The once in a decade or century events that make headline news should not be ignored, yet daily lived hazards also have a long-term impact on nations and cultures. Recognising this, Eric Hsu has called for a new typology of disaster, one that distinguishes between those that are ‘temporally focused’ and those that are ‘diffuse or recurrent’. This, arguably, better enables us to conceptualise disasters relating to long-term phenomena such as climate change.

The articles in this special issue explore the contrasting temporality of disasters in environmental history across time and space. Focusing on drought, famine, flood, fire and typhoons, they consider the vastly different ways that fast and slow hazards have affected societies and communities over time, from macro-scale political and economic factors, such as levels of social inequality and political marginalisation, to micro-level personal impacts on emotions, families and community cultures. They vary in temporal scope from roughly the 1700s to the 1950s, and range geographically from China, Australia and Malaysia to the Philippines—all the disasters under consideration presuppose a human–nature interaction, created or exacerbated through poor governmental management, unequal sociopolitical structures and/or the indiscriminate degradation of the immediate urban or agricultural environment.

Rebecca Jones highlights the quotidian experience of a disaster, examining life for ordinary Australians during a period of exceptional climate variability. From the 1890s to the 1940s, there were five severe droughts that, she observes, have commonly been thought to have contributed to the forging of a national identity founded on ‘stoicism in the face of hardship’. Jones goes further than this, however, to argue that the droughts had a far deeper reach into Australia’s core cultural identity. Building on the recent emotional turn of social history, she shows how disasters did not simply arouse emotions but that emotions were at the heart of people’s disaster responsiveness and adaption. Concomitantly, she investigates droughts not as single events but as an intermittent milieu of incremental and waning severity that provoked an atmosphere of continued uncertainty and anxiety. The hazards of which Jones writes were not exceptional or extraordinary events. Declining and increasing in scale, impact and intensity over five decades, they came instead to represent a way of living, and of coping, over generations.

James Warren adopts an even longer timescale, examining how the periodic famines that have struck the Philippines over the course of four centuries have been incubated by deep patterns of economic, political and meteorological history. The Spanish colonial government set this long-term trajectory in motion, as it diminished the entitlements of communities by preventing them from exploiting diverse natural resources and instead compelled them to engage in a form of export-driven monocrop agriculture. The means of subsistence of ordinary Filipino farmers was sacrificed to serve the demands of a globalising commodity market. This resulted in the slow-motion disaster of chronic hunger, which left the population acutely vulnerable to complete subsistence collapse, particularly in the wake of the highly destructive typhoons that regularly batter the archipelago. The poverty that many rural communities still suffer to this day in the Philippines has, therefore, been centuries in the making.

In British Malaya, Fiona Williamson argues, a less dramatic but no less significant process of land use change and social marginalisation was taking place over the nineteenth and early twentieth centuries. The change from small-scale shifting cultivation to intensive commercial agriculture led to the loss of virgin forests and traditional forms of subsistence living, as well as soil erosion. This last, in turn, was thought by contemporaries to have exacerbated river siltation, increased the intensity and frequency of flooding, and depleted soil productivity. In all cases, it was the poorer, least resilient smallholders who were the worst affected. Essentially, in both cases, fundamental socioeconomic inequalities meant that climatic and environmental extremes were the tipping point, not the source, of disaster.

Williamson's essay also highlights the multi-scalar nature of disaster. In British Malaya, erosion was a slow burner. On one level, erosion led to declining agricultural productivity, affecting the poorest farmers with the least ability to counteract the effect of poor soil with expensive fertilisers, or to mitigate damage by investing in preventative measures, such as terracing. On a different scale, eroded hill slopes could collapse suddenly after heavy rains, causing destruction of property and loss of human life. Ongoing throughout was the potential for soil wash to cause greater river siltation, potentially exacerbating the likelihood and intensity of floods during rainy seasons, according to the contemporary understanding. In this sense then, soil erosion could be considered as either a slow or fast disaster, depending upon the context. Likewise, Jones and Warren explore how drought or food scarcity formed a permanent thread through people's lives, the effects of which would wax and wane on different temporal and geographic scales. Both authors link the peak moments of the respective ongoing hazards to particular circumstances, either political or climatic, or both.

Though urban fire is a very different form of disaster, it shares a similar pattern of multi-temporal causality. Until recently, conflagrations were one of the most pervasive hazards of city life, turning landscapes of timber and thatch into smoke
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and ash at terrifying speed. Yet fires that burn out in a matter of hours are laid over much longer periods, as neighbourhoods are assembled from flammable materials, growing denser over the space of years or even decades. Conflagrations are also a product of their particular epochs—every age has its own style of burning. Previous histories have depicted the Chinese city of Hankou as desperately fire-prone due to a failure to modernise its architecture and urban planning. Chris Courtney argues that, while flammable buildings and overcrowding remained key issues, the nature of fire changed in the late nineteenth century as Hankou was flooded with a range of highly flammable foreign products. The chief culprit was kerosene, a hugely profitable fuel that revolutionised illumination but one that also caused terrible conflagrations. Courtney describes how the subsequent disasters, far from being evidence of the city’s inability to advance into the modern world, were, in fact, by-products of its specific trajectory into material modernity. Though the story he tells is unique to Hankou, many key features were shared by other cities that lost control of their markets and governance during an era of formal and informal colonialism.

In contrast to fire, which is popularly understood to be amongst the most rapid forms of disaster, famine has usually been depicted as a painfully slow catastrophe. Mark Baker complicates this picture by highlighting the multiple temporal dimensions within which subsistence crises unfold. The problems affecting the north-central Chinese province of Henan in the 1940s had, in some respects, been created over the course of centuries, or even millennia. At the same time, they formed part of a multi-decade crisis—a slough as Brook might put it—which was punctuated by several of the worst famines in history. The particular crisis that struck the province in 1942–43 was caused by a range of factors, including war, excessive price increases, grain requisitioning and erratic rainfall, which had affected the province for over a number of years. Although the famine seemed, therefore, to conform to the classic image of a slow-onset disaster, Baker demonstrates how it was punctuated by highly eventful periods, during which the causes and consequences of catastrophe sped up dramatically. The temporality of the famine could stretch out—with rural communities watching the cloudless skies for months on end—but could also compress—with rapidly escalating violence or pathogenic infections. Baker concludes by considering the deeper question of famine temporality in Chinese history, arguing that the crises that affected Henan in the 1940s and 1950s revealed the ‘desynchronisation of time’, caused by an agrarian economy being sacrificed for the ‘short-term exigencies’ of a modern state.
UNCERTAINTY AND THE EMOTIONAL LANDSCAPE OF DROUGHT

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Abstract

Drought is the most ubiquitous climatic phenomenon in Australia, and the late nineteenth and early twentieth centuries were decades of particularly frequent and persistent drought in south-eastern Australia. While the financial and environmental cost of drought has been well documented by historians, less attention has been paid to the emotional landscape of drought. These effects share much with other types of environmental adversity; however, droughts are slow catastrophes that generate a particularly profound level of uncertainty.

This paper explores emotional responses to drought from the 1890s to the 1940s as well as some of the ways in which people coped with and attempted to ameliorate these emotions. I argue that drought elicits a wide range of emotions, but that the dominant experience of drought and the source of many of these emotions was uncertainty, provoked by the particularly ambivalent, incremental character of drought. Farmers are, arguably, the group whose well-being depends most directly on climate extremes and are therefore the group upon which I will focus this paper. Personal sources such as diaries and correspondence provide a window into the lived experience of drought and a rich picture of the emotional landscape of settler-colonisers in Australia in the late nineteenth and early twentieth centuries.

Keywords: drought, emotions, uncertainty, agriculture, farming, farmers, diaries, Australia

Introduction

Drought is the most ubiquitous climatic phenomenon in Australia and, due to its latitude and topography south-eastern, Australia has one of the most variable and drought-prone climates in the world. The late nineteenth and early twentieth century...
centuries—from the 1890s to the end of the 1940s—was a period of particularly
great climate variability in the south-eastern Australian states of New South Wales,
Victoria and South Australia, during which five severe droughts occurred. The
frequency and recurrence of drought has helped to shape not only the natural but
also the cultural environment of Australia. While the financial and environmental
cost of drought has been well documented by historians, less attention has been
paid to the emotional cost beyond stoicism and endurance. Andrew Gorman
Murray and Kate Darien-Smith have argued that ‘rural’ in Australia has indeed
been defined by stoicism and endurance in hardship. The Federation drought of
1895–1902 was arguably the longest, most widespread and most severe drought
since the establishment of agriculture and pastoralism in south-eastern Australia,
and coincided with economic depression and grave overstocking following decades
of relative prosperity. This drought in particular played a particularly important
role in forging a national identity of stoicism in the face of hardship. The struggle
of the settler against a hostile environment during this time is often compared, by
historians, to that of a battle faced by a soldier in war. Widespread droughts in the
1920s and 1940s, as well as intermittent localised droughts, reinforced the identity
of endurance. Deb Anderson’s detailed exploration of drought in the Victorian
Mallee from the 1980s to the 2000s through oral history emphasises the importance
of historical narratives of endurance in coping with the emotional impact of drought
today. However, more research is required into the nuances of emotional impact
and responses to drought.

Histories of emotions more generally emphasise that the expression, reporting,
interpretation and even experience of emotions are mediated by the particular social,
cultural, temporal (and I would add environmental) milieu in which a person lives.
As Thomas Dixon notes, even the concept of an emotion is historically constituted. Emotions are not only things to which people are subjected, but emotional responses themselves create other emotional states, which, in turn, both hinder and facilitate

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the way individuals respond and adapt to drought. This paper therefore explores emotional responses to drought in the late nineteenth and early twentieth centuries (1890s to 1940s) as well as some of the ways in which people coped with and attempted to ameliorate these emotions. I argue that drought elicits a wide range of emotions such as anger, fear and hope, but that the dominant experience of drought and the source of many of these emotions was uncertainty, provoked by the particularly ambivalent, incremental character of drought. That uncertainty, in turn, created emotions as equivocal as the drought itself.

Farmers are, arguably, the group whose well-being depends most directly on climate extremes such as drought and are therefore the group upon which I chose to focus my research. In attempting to illuminate the emotional landscape of drought in the late nineteenth and early twentieth centuries, I have sought ways to understand the subjective and intimate experiences of people during drought: an environmental and emotional history akin to that which Tim Hitchcock and Martin Lyons describe as a ‘new history from below’, which seeks to reveal the thoughts and actions of ‘ordinary’ individuals. My sources included personal or ‘ego’ documents that reveal the direct and personal voices and lived experiences of people, and produce a rich picture of their intimate worlds. The most useful of these sources have been diaries and correspondence series. Fifteen individual diaries and four series of correspondence have informed this research, although not all are directly cited in this paper. The strength of diaries and correspondence as historical sources is that they draw the reader into the writer’s intimate world, providing a portrait of individuals’ everyday thoughts and feelings unmediated by hindsight. They are the direct voices of people who lived through drought, rather than reflections mediated by institutions, government or the media.

I sought sources written by both women and men and, perhaps predictably, men and women express emotions in different ways in their writings. In the late nineteenth and early twentieth centuries, gender norms made it acceptable, even desirable, for women to write openly and reflect on emotional experiences such as hope, despair, frustration and pleasure, particularly to a private confidant such as a diary, and

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12 A fuller discussion and reflection on the use of diaries in understanding drought can be found in Rebecca Jones, Slow Catastrophes: Living with Drought in Australia (Melbourne: Monash University Publishing, 2017).
13 Katie Holmes, Spaces in Her Day: Australian Women’s Diaries of the 1920s and 1930s (Sydney: Allen & Unwin, 1995).
I observed this candour in the sources. By contrast, men’s expressions of emotions in the diaries and correspondence were usually understated and ambiguous; they do not always tell us, but show us, through underlining, capitalisation or description of action rather than statements of feelings. For example, William Pearse, a wheat farmer in north-western Victoria from 1892 until the 1940s, evoked intensity of feeling simply by underlining a single word in his diary such as ‘ridiculous’. Pearse’s restraint is in keeping with the injunctions of polite society in the late nineteenth and early twentieth centuries that required men to show self-control, discipline and composure and to avoid displays of heightened emotion in public.¹⁴

This paper is divided into four sections. First, I will discuss the particular character of drought, followed by an exploration of the emotions that the uncertain character of drought promoted. The third section will explore some efforts made by farmers to ameliorate the emotional impact of drought. To conclude, the final section will explore the role of acceptance of drought amongst farmers of the nineteenth and early twentieth centuries.

1. The particularly uncertain character of drought

Drought is characterised by deep uncertainty. While I am mindful of the different social contexts of past and present, contemporary disaster literature can usefully illuminate uncertainty as an emotional experience. Uncertainty is defined as doubt or lack of confidence in the ability to predict outcomes.¹⁵ It is a subjective experience: not only is the uncertainty itself experienced differently by people, but what is uncertain for one person may not be so for another in a similar situation, depending on the context. Most environmental uncertainties tend to be either epistemic (the lack of certainty derived from incomplete knowledge) or aleatory (due to intrinsic variability, diversity or fluctuation).¹⁶ Uncertainty in drought derives mostly from intrinsic or aleatory factors, as will be discussed below.

Droughts, unlike many other environmental phenomena such as earthquakes, floods and storms, are not events or incidences but absences—a void of rain. ‘Beautiful fine day’ is a common reprise in diaries and correspondence written by farmers during drought. By definition, droughts are slow: experienced over months and years rather

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¹⁴ Linda Young, *Middle Class Culture in the Nineteenth Century: America, Australia, Britain* (Basingstoke: Palgrave Macmillan, 2002).
than days and weeks. The Federation drought lasted for seven years from 1895 to 1902 and the Millennium drought for between eight and 10 years (depending on location) from the mid-1990s to the mid-2000s. Definitions of drought vary between nations—in Australia, a drought is defined as a deficit of rain over 30 per cent below the mean over at least three months, and droughts are ‘declared’ according to hydrological, social and political as well as meteorological conditions.17 Therefore, the beginning and end of a drought is uncertain and will likely differ between regions and even locales. Unlike many other environmental disasters such as floods, fires and cyclones, droughts lack an obvious ignition point. They arrive stealthily with little warning. Indeed, enshrined in the definition of drought is that only in retrospect can we identify its commencement, when the cumulative effect of the absence of rain reaches a certain point. It is not until water and vegetation are diminished that the impact of drought is felt, and only with hindsight can the anomaly be identified. Gradually, as the rainfall becomes more infrequent, the grass browns and the dams retreat, we look back and realise that a drought has begun.

The ending of a drought is as indistinct as the beginning, with no clear demarcation of its conclusion. Drought lacks a predictable duration or trajectory, and the end may be tomorrow, next month or even next year. As the American forecaster Ivan Tannehill wrote in 1947:

> The first rainless day in a spell of fine weather contributes as much to the drought as the last day, but no one knows precisely how serious it will be until the last dry day has gone and the rains have come again.18

The term ‘breaking of the drought’ so often used in popular culture, such as the 1920 Australian film of that name,19 implies that the end is abrupt and comprehensive. In reality, droughts usually end with hesitant, intermittent showers, interspersed with increasingly shorter dry spells, rather than a decisive deluge.

Even once rainfall returns to normal (which in arid and semi-arid areas may be intermittent), recovery of water supplies, plants and animals is slow, and it can take many months for pasture and crops to regrow and stock to recover. Rob Nixon, in his book *Slow Violence and the Environmentalism of the Poor*, describes ‘slow violence’ as situations where destruction is delayed and dispersed and where the impact is incremental and accumulative.20 In semi-arid areas it may take many months of ‘normal’ rainfall to fill a dam or reservoir, and often vegetation is slow to revive. In June 1945, newspapers reported the end of a six-year drought, but southern

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19 Franklyn Barrett (dir.), *The Breaking of the Drought* (1920).
Australian farmers continued to hand-feed stock well into September as late winter and early spring remained too cold for grass to rejuvenate. Even once growth returns there may remain tangible evidence of drought in eroded landscapes, dead vegetation and weakened fleece staple on sheep that have been deprived of adequate nutrition.

Droughts are periods in which normal expectations are overturned. Rainfall often continues during drought, albeit at a much lower level, but it becomes erratic—soaking one district, one farm, even one paddock, while leaving neighbouring land dry. Even once a drought is known to have commenced in one area, it may still be unclear if other areas will also succumb. Even now, forecasting beyond the next six or seven days lacks local precision. In the late nineteenth and early twentieth centuries, forecasting was notoriously imprecise. For the farmer, then, drought appeared to be chaotic—with rainfall eschewing any known patterns. Catherine Currie, a farmer in south-eastern Victoria, wrote during the Federation drought in 1898 that she had lost faith in her usual signals of rain: ‘I do hope it will come [sic] rain this time. I saw the Black Cockatoo flying very low in the green trees. That used to be a sine [sic] of rain but all signs has [sic] failed this long time’. Dust storms epitomised the chaos of drought: soil flies, sand fills the house, daylight becomes darkness, people get lost and birds roost in the afternoon. Northern Victorian sheep and wheat farmer Charles Coote describes a terrible dust storm during the Federation drought in 1902: ‘Very warm wind from N culminating at 4.20 pm in terrible dust storm producing total darkness which lasted 15 min. Most remarkable and disagreeable day in my experience’. The following summer he writes about burning a candle for twenty minutes from 1.30 in the afternoon during another dust storm.

2. Emotional responses to the uncertainty of drought

The particular nature of drought generated profound uncertainty, which was manifested in emotions such as disappointment, anxiety, despair, envy, shame and hope. Without a defined trajectory or distinct end, farmers were left simply watching and waiting for rain. Clouds raised expectations of rain that did not materialise, generating only disappointment. In the early months of the Federation drought in 1895, Currie wrote again and again of dashed hopes: ‘cloudy and cool this morning. I did think we would have rain last night[;] the Glass fell and rose again. So tho it

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is cloudy I am afraid any chance of rain is gone’. Similarly, later during the same drought, the north-eastern Victorian resident Robert Forsyth remarked: ‘Once again I must record weather as fine. Alas! too fine’. 

As Currie’s comments illustrate, uncertainty and confusion are a critical part of many environmental events, and research into contemporary environmental disasters has noted that uncertainty about personal safety and property damage has detrimental effects on emotional well-being. Drought involves many layers of uncertainty: meteorological, financial, environmental and social. This leads to a feeling of loss of control and mastery, of helplessness and a sense of futility. In addition, long-term environmental events may be characterised by obsessive and potentially disabling worry, and uncertainty about what constitutes an appropriate level of worry.

Absence of rain provoked profound anxiety as farmers feared loss of water and feed for their crops, animals and themselves. Currie wrote, again in 1895: ‘still hot and dry. All very anxious as to the weather, the old old February cry for rain’. Always vocal about her emotions, Catherine explained the effect which lack of rain had:

Came a rain shower but only 3 points just stop the threshing, but they went on again till 8 o’clock. Rose [her daughter] laughed at me when I said that little rain causes a sore place at my heart but it did.

The Central Victorian wheat farmer Albert Field explained his fear for the future in a letter to relations in England: ‘a great proportion of the colony was subject to drought. A still greater portion suffered a partial one, which was just sufficient to cause a little suffering and a great fear’. Even more eloquently, in an undated account from rural New South Wales, a member of the Rudder family recalled a period of drought, probably in the early twentieth century: ‘The dreadful heat held on unaltered and night settled down black and sinister. It was as though some doom hung over us’.

Deep anxiety and despair occasionally became debilitating. The young grazier Mordaunt Hunter, who had sheep and cattle near the Lachlan River in western New South Wales during drought in 1893, wrote: ‘I wish I had never seen the Lachlan…
I wish I had [a home] to go to besides this. It isn’t a sweet one tonight—never will be’.35 After six out of nine exceptionally dry years during the 1940s, the Merino breeder Otway Falkiner retreated to bed prostrate with anxiety. His wife Una wrote in her diary: ‘He says he is done, can’t think clearly[:] “What is the use of trying to do anything[?]”’36 While none of the diaries and correspondence I consulted in this research hint at more tragic consequences of this despair and anxiety, memoirs occasionally describe examples of suicide directly caused by drought, such as Jill Kerr Conway’s account of her father’s death in the 1940s.37 Recent psychological and medical research shows strong empirical links between uncertainty and emotional distress, and prolonged uncertainty has been correlated with serious mental health issues such as anxiety, post-traumatic stress disorder and suicide.38

The geographically arbitrary nature of drought as well as the cruelly erratic nature of rainfall during drought, which left one farm wet while neighbours remained dry, provoked envy on the part of farmers. Many farmers tried not to begrudge others’ rain, but a sense of regret and envy pervaded their writing:

The rain does not come. 15 points yesterday. Am thankful for that but I can’t help feeling envious when we read of the places getting inches—perhaps they were more in need of it than we are.39

Field lamented: ‘I believe there has been plenty of rain in most parts of the colony, a very few miles from here even, but we [are] amongst the unfortunates [sic] ones this time in weather account’,40 and in a later letter: ‘In some districts of the colony they have enjoyed a very fair season, but in this part it has been a strange winter. The rainfall has been very limited’.41 During 1944, in one of the worst droughts that the New South Wales Riverina had experienced, Una Falkiner travelled to Sydney, where she noted crossly: ‘it was raining as usual in Sydney when I arrived’.42

It is the nature of pastoralism and agriculture, which are adapted to particular ecological conditions, that most farmers and graziers in a given geographic area undertake the same or similar activities. Therefore, drought is an experience shared. While it could be a source of comfort for farmers to know they were not alone

35 For example, Arthur Mordaunt Hunter, Diaries and Papers, MS 000887.001-009. Royal Historical Society of Victoria, 30 June and 1 October 1892. Underlining in original text.
36 Falkiner, Diaries, 7 April 1945.
37 Conway, The Road from Coorain, 83.
39 Currie, Diary, 14 February 1898.
40 Field, Correspondence, 83.
41 ibid., 86.
42 Falkiner, Diaries, 6 July 1944.
Uncertainty and the emotional landscape of drought

(see Section 3 below), it also led to close comparisons between farmers who rated their own and each other’s productivity, efficiency and success against their peers. Farming is a very public activity, in the open and on a large scale, and any problems could not be easily hidden: weeds, failing crops, starving sheep and eroding paddocks were public evidence of hardship, or what might be perceived as mismanagement. During the dry 1920s, Charles Coote remarked ruefully: ‘[Neighbours] again good for the year. My crop apparently the worst in the district … fallow hardly up to the average’.43 The sheep and dairy farmer Margaret McCann wrote in her diary at the height of the Federation drought:

We are poor manager’s [sic] but what is the use of grumbling[?] We should have had wethers on instead of ewes and lambs, our 450 ewes were too poor for a time to get in lamb, and now they are too late. We ought to have 2000 sheep instead of only 1000 all told, and [our neighbours are] making more cream and butter.44

Despite the disappointment, fear, despair and shame associated with exceptionally dry weather, droughts also brought moments of elation and euphoria. The Rudder Family Papers recalled the first falls of rain during drought:

It must have been midnight when a faint sound roused me—a tiny sound—like falling raindrops on the roof. I sat up. I listened, yes, there it was again and more of it—did my ears deceive me? … Yes—it was the rain. The sweet, cool, cleansing rains. I climbed out of bed and encountered my father lamp in hand. ‘Boys, girls’—he called in a voice that almost crackled with emotion ‘it[’]s rain—the drought has broken—come to your mother[’]s room.[’] We all went and there he fell to his knees with us all round him and gave thanks to God.45

Similarly, Una Falkiner recounted a conversation she had with her husband, Otway, during drought in the 1940s:

Come and listen, look can you hear it?—3.30 am! Lovely steady rain! That all soaked in. Otway was purring and was so delighted that he went off in his car in the dark to see how the sheep were eating their chaff and oats.46

3. Some efforts to ameliorate uncertainty

People’s response to profound uncertainty was to counteract the seeming chaos by creating a sense of order and control. Meteorological records offered some hope of creating meaning from the unpredictability of drought. Systematic and disciplined recording of weather had been undertaken in Britain since the eighteenth century.

43 Coote, Diaries and Papers, 27 October 1927.
44 Margaret McCann, Diary, 1893–1910, 6 September 1902. MS 9632. State Library of Victoria.
45 Rudder family, Rudder Family Papers.
46 Falkiner, Diaries, 12 December 1944.
These records were one of the tools of science that, it was believed, would enable people to accumulate knowledge and rationalise and organise nature. The practice was brought to Australia with early British settlers and, by the 1880s, a huge network of paid amateurs gathered information such as rainfall, temperature and barometric pressure for colonial meteorological offices. The Currie family were part of this network and, during inclement weather, Catherine regularly consulted barometric pressure (on her verandah) and recorded her readings for the colonial meteorological office. The historian Chris O’Brien observed that weather records enabled European settlers to create order from the seemingly incomprehensible climate they were experiencing.47

The writing of a diary and the inclusion of rainfall records were ways for individuals as well as government to create order out of chaotic weather such as drought. Farmers diligently recorded weather in their diaries. Following the failure of the autumn rains in 1927, the South Australian sheep and wheat farmer Lindsay Bettison was careful to note cloud formations such as ‘fleecy’, ‘streaky’ or ‘thin’, and wrote hopefully: ‘Some thin clouds showing look more like rain clouds than any for some time’.48 Coote created meticulous gridded rainfall charts in his diary that enabled comparisons across years. Inserting rainfall in a grid mediated droughts’ unfathomability. These farmers did not have delusions of controlling the weather, but charts, grids, the orderly arrangement of rainfall records and the search for patterns made the weather more comprehensible, less arbitrary. They suggested the possibility of regulating and tidying the messiness of the weather and wrestling some understanding from the conditions around them.

The search for blame was another way in which individuals coped with the emotions evoked by drought. As Nixon observes, the seeming arbitrariness of slow environmental events that pose no immediate threat to life and property, and that have no obvious cause, hinder efforts to mobilise and act decisively on the part of both individuals and authorities.49 Prior to the Enlightenment, extreme weather events were understood to be visitations of divine wrath for sinfulness, slothfulness and contempt for God. This was still evident among some clergy in the mid-nineteenth century.50 However, by the late nineteenth century, meteorologists and the media, even most members of the clergy, condemned the connection between sin and

49 Nixon, Slow Violence and the Environmentalism of the Poor, 2.
50 For example, Rev. George Stonehouse, The Drought and Its Lessons: A Discourse Delivered in Lefevre Terrace Chapel, North Adelaide, on Sunday Morning, November 12, 1865, theological ed. (Adelaide: Gall, Printer, 1865).
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drought. Days of prayer for rain continued to be held; however, the emphasis moved towards requests for God’s intercession in misery, and none of the writers I consulted, even the most religious such as the Presbyterian Currie or the Methodist McCann, associated drought and sinfulness. Removal of sin as a cause for drought absolved people of a sense of misdemeanour, but its demise left a void of blame. Having something or someone to blame countered uncertainty, but without human cause how could drought be explained?

In the absence of a tangible cause, people created an entity to blame, and late nineteenth- and early twentieth-century farmers directed their emotions at the apparent source of the weather—the sky itself. The sky, and in particular rainless clouds, played the role of an amorphous capricious entity to rail against. ‘Tried hard to rain but didn’t succeed’ and similar laments were regularly written in diaries, as if the sky had the power of choice to give or withhold. The Tasmanian farmer Rowland Skemp noted farmers’ inclination to anthropomorphise weather:

> All farmers are ‘weather minded’. Their livelihood is so dependent on its vagaries that the weather becomes not merely a topic of casual conversation, but a real power for good or evil; not quite a god to be placated, but rather a capricious and somewhat malicious spirit that may be cursed or blessed according to what goods it delivers.52

Drought is a cultural symbol of external threat. Sharing the experience and acknowledging that all were struggling contributed to farmers feeling both less vulnerable and less at fault. Field wrote of drought in the 1870s: ‘we have got thrashed and so [have] all the farmers around here. Everybody concerned is disappointed with the yield … Of course we are in the same position as other people’.54

Currie’s writings are punctuated by many statements of collective troubles experienced by her community of Lardner in West Gippsland: ‘all wishing for rain’ and ‘Been a lot of rain all night will do such a lot of good—we are all very thankful for it coming in time for us’.55 Studies of recent droughts of the 1990s and 2000s suggest that social networks, communities and social capital are significant factors that assist people to cope with the emotional impacts of drought. Immediate family has been found to be particularly important in providing solidarity. Social groups, clubs, community events and institutions also provide emotional support,

52 John Rowland Skemp, Memories of Myrtle Bank (Carlton, Vic.: Melbourne University Press, 1952), 231.
54 Field, Correspondence, 78.
55 Currie, Diary, 18 December 1897 and 29 October 1898.
recreation, escape and solidarity. The communal experience of drought in a local area created a sense of an external foe to be resisted and against which communities united, and there is a preponderance of local and community histories that eulogise the hardships of drought. One very tangible example of united community action against drought is the building of barrages across the Murray River during the 1914–15 drought. When the river dried to a meagre trickle, communities such as Waikerie, Renmark, Wentworth and Nyah in South Australia, New South Wales and Victoria built sandbag barriers to conserve their remaining water (at the expense of those further downstream). This shared endeavour not only preserved their meagre water supply but also gave residents a sense of solidarity.

4. Accepting uncertainty

Settlers in late nineteenth- and early twentieth-century Australia tried to find ways to ameliorate the uncertainty of drought, and to impose order, manageability and control where there appeared to be only disorder and chaos. While these strategies were helpful, a particularly valuable factor that assisted people at the time to adapt to drought was a wider culture of enduring uncertainty reinforced by both environmental as well as social conditions and cultural norms. Uncertainty and lack of control were an inherent reality for most ordinary people of the late nineteenth and early twentieth centuries: irregular income and intermittent employment were the norm rather than the exception for both rural and urban dwellers, unexplained infectious diseases were rife, rates of accidental death were high, social safety nets were almost non-existent and those with little money had few choices in life. Negotiating scarcity and hardship was part of everyday life. The normality of uncertainty in everyday life itself assisted people to accept the uncertainty of drought.

Lack of control was particularly apparent in peoples’ relationships with the environment. European settlers were part of an aggressively confident empire that transformed the vegetation, animals, soil, water and even topography of their adopted land. Despite this, ordinary people were forced to continually acknowledge that control of the physical environment was an illusion: daily life for most people was entwined with the discomforts of heat, cold, wind, sun, dust and mud. People in general and farmers in particular were wholly dependent on resources beyond human control such as rivers for water and transport, pasture for moving around, etc.


57 Photographs in the State Libraries of Victoria and South Australia provide evidence of this.

stock long distances, forests for timber and the non-human world of reproduction, decay, pollination, photosynthesis and respiration that occurred uncontrolled by humans. This inherent uncertainty in society made the unpredictability of drought a little more acceptable, as farmers admitted, through their relationship with the weather, that their mastery of the world was fragile; that the autonomous human was an illusion and that humans did not control the non-human world but were as controlled by it as it was by them. This humility helped them to accept inherent uncertainty in the climate.

More emphasis was placed on enduring than on certainty. While, as Anderson notes, stoicism is an important aspect of cultural narratives of drought amongst many farmers in semi-arid areas today, in the late nineteenth and early twentieth centuries, forbearance in hardship was elevated to a virtue and accepted as an unquestioned philosophy or faith. Religious belief played an important role in people accepting misfortune and suffering. Indeed, the Presbyterian Currie’s regular laments about desiccating crops and the absence of rain were almost always punctuated by statements of acceptance and religious faith such as: ‘Oh how I wish we had some rain but it must be God’s Will. Lord increase my faith’.59 While there were many religions present in Australia at the time, the dominant religious and cultural influences were Catholicism and Protestantism, and non-conformist Methodists and Presbyterians were particularly well represented among settlers in south-eastern Australia. Catholics and Protestants created meaning by assigning redemptive power to suffering, as Joanna Bourke discusses in *The Story of Pain*. Hardship was believed to nudge the sufferer towards virtue, stimulating personal development and ensuring salvation, as well as being punishment for sin, as discussed above.60 However, as Bourke notes, often the exact meaning of suffering was obscure, as Currie lamented during the Federation drought in 1896: ‘windy very drying, when we want rain most, must be for the best, some way if we only knew’.61

**Conclusion**

The aleatory nature of uncertainty during drought in which the nature of the drought itself was innately uncertain—the beginning and end ill-defined, the duration long and slow, and the pattern of scarce rainfall erratic—meant that uncertainty was one of the most profound emotional experiences of drought as recorded by Australian farmers in their personal papers during the late nineteenth and early twentieth centuries. This uncertainty in turn generated a range of emotions such as anxiety, despair, envy, shame, fear and elation, to name but a few. Although these emotional

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59 Currie, *Diary*, 1 February 1898.
experiences were profound, people did find ways to ameliorate their impact though community solidarity and creating a sense—at times an illusion—of control in which their diaries and personal papers played an important role in helping them to gain an understanding of the drought experience. But it was the social acceptance of uncertainty in many facets of Australian society at the time that contributed most to buffering the emotional experience of drought. Today, we are less accepting of uncertainty than people were 100 years ago. Unknowability, intangibility and the absence of blame are distasteful to today’s sense of manageability and mastery, and industrial agricultural systems require predictability, order and someone to be accountable. And yet we live in a world of ever-increasing climatic uncertainty, and perhaps can we learn a little from early settlers’ humility in the face of uncertainty.

Acknowledgements

The research for this article was funded by an Australian Research Council Discovery Early Career Research Award (DE120100786). The author would also like to thank participants of the Disastrous Pasts: New Directions in Asian Disaster History conference, Asia Research Institute, National University of Singapore, as well as Dr Tania Colwell and Dr Karen Downing from the School of History at The Australian National University for their helpful comments on drafts of this paper.
Abstract

In this paper, I explore why so many people have starved in the Philippines when typhoons, floods and droughts have occurred since the seventeenth century and governments of the day have been unable to provide relief. Why, in the twenty-first century, are millions of Filipinos still living in the shadow of hunger? I draw attention to the causes and consequences of food shortages and famine and the relationship between climatic and weather factors, especially storms, floods and drought, and food supply (ownership and exchange), regional characteristics and social structure. In examining famines over time, I stress the structural links between food shortages, the nature of Filipino peasant societies and the weather factor. In addition, I explore the developing historical relationship between economic and political changes and societal group inequality, involving the loss of entitlements that become more explicit in times of famine. I also examine the lingering impacts of climate variability and extreme weather—typhoons, floods and drought—linked to past and present famines. Filipino farmers have not vanquished famine. Destitution and death from disasters and famine were all continual and familiar experiences under both Spanish and American rule, and remain so to the present day.

Keywords: famine, Philippines, typhoons, food supply, peasant societies

Introduction

Until recently, scholars of the Philippines have largely ignored the subject of famine and starvation and its links to the impacts of major weather events. Consequently, only a limited effort has been made to understand the causal relationship between starvation in the Philippines and famines, and their historical bases and social and
behavioural effects.¹ In this paper, I will draw attention to the causes and consequences of food shortages and famine and the relationship between climatic and weather factors, especially storms, floods and drought, and food supply (ownership and exchange), regional characteristics and social structure.²

**Definition of famine**

Famine is defined as a shortage of food ‘so extreme and protracted as to result in widespread persistent hunger, notable emaciation … and a considerable elevation of community death rate’.³ David Arnold’s definition emphasises its exceptional characteristics. Famine is, he argues:

> a collective catastrophe of such magnitude as to cause social and economic dislocation. It generally results in abnormal levels of destitution, hunger and death … and can lead to the complete disintegration of customary patterns of work and subsistence and … [can] greatly disrupt customary norms of work mortality and social behavior.⁴

While famine is exceptional, Arnold notes it is closely linked to economic and political structures and the vagaries of nature. Famine also has major demographic consequences, including excess mortality, often caused by epidemics linked to hunger, a decline in birth rate and increased migration.⁵

Entries giving historical usages for food in early dictionaries, like Lisboa’s classic 1628 work, *Vocabulario de la Lengua Bicol*, reveal how people in southern Luzon suffered periods of extreme hardship when typhoons and floods reduced the supply of food.⁶ Lisboa defined *tingating* as ‘an extended dry season before the rains return’, suggesting the possible adverse effects of a prolonged drought. Terms pertaining to food scarcity suggest the Bikol region experienced famine from time to time, and that its people went hungry in the seventeenth century. Malcolm Mintz notes that

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³ Bennett, ‘Famine’, 322.


⁵ ibid., 6–7.

Lisboa’s entry for *hawad* refers to offering *linsa*, edible taro, to the starving or dying during a time of food scarcity; hence *linsa lamang an nakakhawad samuya*, or ‘only taro is keeping us alive’. Indeed, it is from entries like *halop*, ‘famished, very hungry’, and *pinahugan*, ‘to let people starve to death by not cooking for them or looking after them’, that we discover that a Bikolaño in the early Spanish period had barely enough food to keep body and soul together in a time of famine.

## Causes of famine in the Philippines

Climatic variability has been one of the principal sources of fluctuations in food production in the archipelago, particularly in the semi-arid, flood-prone parts of the country. Climatic variability has magnified and contributed to hunger, famine and social dislocation, but from the standpoint of the individual peasant in the Philippines, famine must be seen not as an absolute scarcity of food in particular regions, but rather as a loss of one’s entitlements to food and/or the means of subsistence.

The identity of past and present famine-generating agents in the Philippines needs to take account of both the ‘supply side’ (Malthusian, climatic or ecological factors) and the ‘demand side’ (entitlements or market failure) explanations.\(^7\) Severe food shortages of the past in the archipelago were often not due to a lack of food in the area of the famine. For example, rice was being exported from Pampanga to Manila in the same years of the sixteenth century that starving Pampangueños were being forcibly taken off their land to work in the gold mines of Ilocos, or conscripted to cut timber for the construction of the Manila galleons meant to bring the porcelain and silk of China to the inhabitants of the New World.\(^9\)

Further, Amartya Sen has argued that severe food shortages and famines are triggered by either a rise in the price of food and/or a fall in the ‘exchange entitlements’—namely, the food that one could normally obtain by any combination of buying or growing food, or receiving it as payment for rent, interest or wages.\(^{10}\) These crises should be examined in tandem with the large-scale interruptions of subsistence caused by typhoons, floods and drought, to highlight the fact that they have an economic basis in the process of production. The political and economic institutions—the structure, organisation and methods—imposed by the Spanish

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\(^7\) Mintz, ‘Food’.


colonial government radically changed the ‘primitive economy’ and livelihood systems, as well as indigenous hazard management, in the sixteenth and seventeenth centuries.11

The Spanish crown asserted its right to tribute, and the right of the colonists to maximise profits. The collection of tribute payments through the *encomienda*, the exploitation of labour under the *polos* system, and the compulsory sale and requisitioning of local products like rice, under quotas set by the *vandala*, placed enormous strains on the traditional subsistence economies of the pacified *barangays*. During the reign of Philip II, this system of requisitioning, compulsory sales and fixed quotas caused severe economic hardship and food shortages as the rural worlds of Luzon and the Visayas became tied to the consumption-oriented mercantile economy of the Spanish Empire.12 In 1592, the Spanish waged total war by ‘fire and sword’ by destroying crops around Pampanga. According to an official letter sent to Philip II, many died in the famine that followed because of the forced deliveries of rice taken away from the villages of Pampanga and use of scorched-earth tactics.13

Two centuries later, the Spanish faced the nineteenth-century challenge of integration with competitive globalised markets, and increasingly diverted farming from diversified production to monocrop economies. When the galleon trade ended in 1815, Spain was determined to develop agricultural productivity by pushing farming into export-oriented cash-crop production. The Spanish government opened Philippine ports to international markets and trade creating new wealth, as well as severe poverty and hunger.

The nature of Filipino peasant societies and the weather factor

Mike Davis, in *Late Victorian Holocausets*, has noted that the vulnerability of tropical agriculturalists like Filipino peasants to climate variability and extreme weather events was exacerbated by their integration into regional production systems and world commodity markets.14 Beginning in the nineteenth century, the incorporation of Filipino peasants and smallholder producers into commodity and financial circuits controlled from overseas tended to undermine rural subsistence and traditional food security in households and villages throughout the Philippines. Ecological

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poverty, defined as the loss of entitlement to the natural resource base of traditional agriculture, constituted part of a causal triangle with increasing household poverty and state decapitation: the nature of this triangle, according to Davis, helps explain both the emergence of a ‘third world’ situation in the Philippines, and its increasing vulnerability to typhoons and drought-induced food shortages and famines.\textsuperscript{15}

Pitirim Sorokin, in a systematic and objective analysis of the impacts of famine and pestilence on social life, claims that calamity is often a constant factor in most societies or regions of the world.\textsuperscript{16} In the Philippines, food scarcity, pestilence and trauma, sometimes following or proceeding typhoons and drought that seem to have occurred in cycles of intensity, were prevalent in the early Spanish period in certain parts of the archipelago.\textsuperscript{17} Northern Luzon has suffered most, but also areas of southern Luzon and Samar have been historically vulnerable.\textsuperscript{18}

Sorokin noted that natural calamities affected different persons, different cultures and different segments of the same culture in varying ways.\textsuperscript{19} Unsurprisingly, when famine struck, the symptoms of malnutrition and financial ruin were first evident among the poor.\textsuperscript{20} Serious food shortages and famine were frequent in Luzon and the eastern Visayas. Even in better times, rural people were still at risk, their afflictions typically a shrinking agricultural base in a subsistence economy, endemic poverty and a growing proportion of their population malnourished. A shortage of arable land had led to overuse, soil degradation and tenant farming. Historically, the combination of these important factors and extreme weather has led to hunger. For example, the poor harvests of the late 1790s and the late 1990s meant the vulnerable on Luzon, the Visayas and Mindanao became desperate and displaced as famine loomed. In remote corners, the chronic hunger soon led to starvation. Exhausted, skeletal people, more often children and the elderly, were first to die. The concentration of wealth and power in the hands of a few in these regions led, as early as the seventeenth century, to a series of rural crises, with severe food shortages and local famine.

These subsistence crises were not just due to a natural hazard, but rather were also the result of social, economic and political factors that in fact turned any natural disaster into a sociopolitical disaster. While there undoubtedly exist some moral economy and resilience embedded in kinship structures and core spiritual values in the Philippines, the reality of famine threatens ‘moral and social collapse’.\textsuperscript{21}

\textsuperscript{15} Davis, \textit{Late Victorian Holocausts}, 310.
\textsuperscript{17} See Newsom, \textit{Conquest and Pestilence}, 24–52, 251–64.
\textsuperscript{18} Charles H. Forster, ‘Relief problems of the 7,083 Philippine Islands’, in the \textit{Red Cross Courier}, 1 January 1927, 13–15.
\textsuperscript{19} Sorokin, \textit{Man and Society in Calamity}, 14–15, 158–64.
\textsuperscript{20} ibid., 14–15, 158–64.
\textsuperscript{21} Arnold, \textit{Famine, Social Crisis and Historical Change}, 82.
The progressive development of the locus of famine in typhoon-prone regions is linked directly to Western colonial penetration and the advent of integrated international circuits of capital, markets and commodity flows in the Philippines. Emergent, vulnerable subsistence-based populations in Pampanga, Bikol and Samar began to participate in a global economy over which they exercised no control. In such an environment, control of the means of production and distribution of food meant power under colonial rule, and those powerful individuals—officials, clergy, rice merchants and landlords—could manipulate and profit from regional and class-based famines. Inequality of access to food is historically evident in typhoon or drought-prone regions, because of early monopoly practices and later laissez-faire economics and development within the Philippines and with Spain and the United States.

To understand the causes of hunger and explain the unequal effects of severe famine in historical perspective for certain areas of the Philippines, it is necessary to explore the way rice (the staple food) is central to the process.

**Rice**

Rice, or *palay*, was/is the staple food and principal source of sustenance for the majority of Filipinos. More than 120 varieties of this grain exist, which are always eaten with fish or some type of meat.\(^{22}\) Rain-fed lowland rice is grown in 14 regions of the Philippines, and constitutes about 44 per cent of the total rice area and 81 per cent of the total rain-fed key rice-producing areas.\(^{23}\) Paradoxically, the very success of rice as a quintessential staple to feed a rising population from the late eighteenth century in the Philippines also meant that a growing proportion of the society depended upon the consumption of this singular food to a very large extent for food security.\(^{24}\)

It was possible for the Filipino peasant to harvest twice within a year on a small plot of ground because of the exceptional fertility of the soil and favourable climate. At the same time, root crops, including taro (*Colocasia esculenta*) and the *camote* (sweet potato) were already cultivated on a widespread basis in the Visayas by the

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late 1660s. When typhoon damage and drought created severe food shortages for those who grew rice, these root crops became, in the words of Ignacio Francisco Alcina SJ, the ‘refuge of the poor’.

Pampanga and Pangasinan over the centuries became known as the rice bowl of the Philippines. Indeed, rice grown in the central plain of Luzon and in the south-east part of the island helped feed the expanding populations of the Chinese Empire and the colonial Philippines, and by the second half of the nineteenth century the archipelago became one of Asia’s largest rice exporters. But, as the nineteenth century progressed, the rice paddy infrastructure was increasingly degraded or neglected as farmers were encouraged to plant cash crops of abaca, copra, tobacco and sugar, and were often forced to sell rice below market prices.

Throughout the Spanish period, the majority of Filipinos embraced palay, or hulled rice, as their key dietary staple. But by the early twentieth century, the Philippines exported her rice primarily to the China coast, and her poor lived almost exclusively on imported rice, tubers and corn. By 1912, the control of the price and supplies of rice became a major concern to the United States Government. In the previous decade, marked by war and upheaval and the transition to American rule, the production of rice could not meet Filipino needs and the archipelago became alarmingly dependent on a foreign supply of rice. In 1912, 5,656,636 cavanes (339,338,160 kg) of rice were produced, but more than four-and-a-half times that tonnage, 26,017,012 cavanes (1,561,020,720 kg), had to be imported during the unprecedented drought of 1911–12.

This trend has continued since the Second World War because the large rural sector, which has remained essentially traditional in outlook, has struggled to increase agricultural output as the post-war population has increased. The problem of demand for rice exceeding supply that applied at the start of the twentieth century still applies into the twenty-first century. The Philippines may now be one of the world’s largest importers of rice, buying to feed a population above 102 million with one of the world’s fastest annual demographic growth rates.

25 Scott, Barangay, 39.
26 Francisco Alcina SJ, cited in Scott, Barangay, 43.
Vulnerable regions: Cash crops and food shortages

Just one destructive typhoon each year in the cash-crop producing regions of the Philippines could make the lives and prospects of the inhabitants of several provinces extremely grim for months, if not years. It takes several months for palay to ripen, up to eight to 10 months for abaca to be ready for harvesting, and between seven and 10 years for a coconut tree to bear fruit. Consequently, over several centuries, subsistence farmers, who increasingly chose to cultivate cash crops, counting on a better standard of living, often found they had no visible means of sustaining themselves, because of the ‘economic predicament’ triggered by typhoons. Famine could not be averted.

Some dependent communities living along the typhoon belt developed common ideals and a sense of self-reliance in the midst of such calamity, but there were many others who depended on the crops for their daily sustenance—particularly in the seventeenth and eighteenth centuries. They succumbed to the fatalism arising from their inability to recover their economic losses. This situation was often far worse on the eastern side of the Philippines, in the so-called ‘typhoon belt’.

There were areas of Luzon, the Visayas and Mindanao that were to be sorely tested by the recurrence of typhoons. Economic and ecological meltdown became a fact of life with the drift from a diversified to a monocrop economy. In the southern typhoon areas of the Visayas where copra and hemp were grown for export, farmlands no longer produced enough food for local consumption. Farmers purchased food from the profits of their cash crops. But when typhoon damage deprived them of their coconut and hemp harvests for at least two years, they faced the stark reality of food shortages, hunger and possible mass starvation. Without aid from a government calamity fund, cash-crop farmers were exposed to the hunger and health problems that accompany malnutrition. The same circumstances applied in the Cagayan Valley where tobacco was grown for export from the late eighteenth century.

The social costs of recurrent typhoons and drought-related famines in cash-crop regions, notably the Cagayan Valley and Samar, were high. Not surprisingly, people living in this difficult environment had made the least progress of any area of the Philippines at the start of the twentieth century. Large segments of the population were undernourished, and education and public works lagged behind the rest of the country. The people of the Cagayan Valley and Samar, situated at opposite ends of the archipelago, have found it more difficult to ride out the typhoon disasters and severe food shortages that have struck in tandem with such regularity.

During the early Spanish period, Jesuit letters mention crop failures due to typhoons, as in 1610, when famine struck the island of Bohol:

This year we established a hospital to which we brought many who had fallen sick because during the recent famine they ate wild fruit and the leaves of trees, and whatever they could lay their hands on. We shared whatever food we had in the house with them and with many others lying about in the streets and houses.³²

The Jesuits had learned early that typhoons could readily turn large areas of the Visayas into places of appalling stress, fear, starvation and death. Fr Juan Delgado, writing about the ‘religious conditions of the islands’, wrote that various religious orders had made strong protestations to the Crown to regulate the price of rice on behalf of the Visayans:

Five or six years ago, on account of the representations made to the supreme government by the superiors of the religious orders, of the extreme poverty that the Indians were suffering because of the severe baguios and tempests—which had ruined their houses, fields and cocoa plantations, and even the churches and houses of the ministers—an order was issued by the said supreme government for rice, to be received in the Visayas at the price of three reals per fanega, which is the lowest among the natives.³³

Despite this edict, the severe food shortages continued well into the next decade. A 1644 account revealed the bleak situation, noting the widespread scarcity of rice in the Visayas, as a ganta (equal to about 30 mL or 20 g) of wheat rose from 2 to 20 reales.³⁴

The November 1835 typhoon in Samar and Leyte caused famine, and in the process scattered people throughout the islands. In some ways the history of severe food shortage and famine on Samar is part of the inextricable history of typhoon- and drought-related disasters, and the failure of local colonial authorities and the populace either to respond to or recover from such disasters. Fr Domingo Cabrejas describes the deplorable state of his mission due to a typhoon in November 1885, the flood, the ensuing misery and hunger, and requests for food aid and exemption from payment of tribute on behalf of his starving flock: they had ‘been unable to eat for days at a time, and [were] living off small scraps and tubers’. The flood had left his mission in a state of ‘total desolation’ without rice or any other food.³⁵

³⁴ Dery, Pestilence in the Philippines, 24.
Just two years later, the military–political governor of the Visayas lodged a 59-page report on the consequences of a famine in the town of Gandara in Samar. The governor of Samar had distributed 27 cavanes of rice as emergency relief. Gandara was where expansion of trade and increasing agricultural exports, primarily abaca, had led to a decline in food production. Trade and exchange ties between coast and interior dwellers were strengthened, as the Samareños responded enthusiastically to the circulation of increased cash and credit by cultivating more abaca. However, the world demand for abaca fibre had an adverse effect on local food production in Gandara and elsewhere. Farmers in Gandara now looked after only their cash crops, especially abaca and fruit trees, neglecting to maintain their cultivation of rice and other sources of food. Consequently, rice yields began to steadily decline, sacrificed to the prospect of obtaining increased cash and credit derived from the monocrop economy. The endemic hunger, and indeed the famine, were direct consequences of the cumulative loss of the previous harvests, including the 1885 one, due to this neglect of their traditional livelihoods and the combined impacts of typhoons, floods and rat and locust plagues.

The governor of Samar commented with ironic concern that at least 80 per cent of the arable land on the island remained uncultivated at this time by the ‘little people’—tenants and itinerant labourers. Clearly, the entangled nature of crop requirements, especially abaca for export versus rice cultivation, and developing consumption patterns, both at the local and global level, helped sow the seeds of hunger in late nineteenth-century Samar.

Typhoons and severe food shortage: Personal stories

The eastern side of the Philippines was regularly hit by typhoons and tropical storms that strengthened over the warm waters of the Pacific before striking Cagayan, Isabella, Camarines Norte and Sur, Tayabas, Bikol, Leyte, Samar and northern Mindanao. Charles H. Forster, relying on the up-to-date meteorological research of the Manila Observatory, noted that typhoons seemed to occur in cycles of intensity. Consequently, typhoon-induced famine and pestilence were cyclical and targeted particular areas. Systematic data on the percentage and distribution of typhoons by province and the consequent effects of food shortages and famine are not available from earlier centuries, but some generalisations may be made. Using colonial and post-independence sources, it is possible to reconstruct the

38 Forster, ‘Relief problems of the 7,083 Philippine Islands’, 13.
devastation wrought by typhoons and drought upon these provinces. For me, this also becomes a wider inquiry into the relationship between the ‘anatomy of disasters’ and subsistence crises.

In February 1790, the alcalde mayor of Cagayan, Don Gregorio Ruano, opened a file to receive representations about the extreme food shortage, severe famine and high death toll that gripped his province in the years 1789–90. This compilation of evidence about the worst storm-related floods and consequent famine and epidemic to grip Ruano’s province in decades was meant to bolster his urgent appeal for prompt aid. Several Dominican priests on the front line of the famine came before him and attested to the rapidly worsening state of affairs covering the entire province. Fr Thomas Figuerola, interim Provincial Vicar of the province, stated that the incessant typhoons and devastating floods that had occurred had destroyed not only the valuable cocoa crop, but also the people’s palay and corn harvests, the ‘usual sustenance of these natives’.  

Most of his congregation had abandoned their fields and fled to the mountains in search of food and shelter, in order to survive, ‘since these days the province is in a deplorable state’. In informing the royal officials of the utter state of misery of his province, the alcalde mayor highlighted the continuous nature of the typhoons that had occurred in recent years, totally wiping out the cocoa and corn crops. Four successive baguios had occurred, followed by destructive floods and the outbreak of famine, cholera and diarrhoeal diseases because of contaminated drinking water. Starving people by the hundreds were driven to the mountains, but the uplands became a killing ground. Ruano stated: ‘They die within five or six days of eating grass and roots’ and on such a scale ‘that the mountain sides are littered with cadavers [sic] who died there of hunger’.

Ruano made no apologies to the Crown for the graphic manner of expression in his report. He felt compelled to relate how his days and nights started and finished with the door of his Casa Real being filled with hordes of desperate women with their children, begging for alms in a state of utter starvation and helplessness, because ‘not only do they have nothing to eat, but rather they also have nothing with which to purchase food’. His strongly worded heartfelt plea for famine relief did not fall on deaf ears. Some rice from the king’s stores in the provinces of Pangasinan and Llocos—7–8,000 baskets—was sent by sailing ship and entrusted to the alcalde to distribute to the worst-affected towns on a proportional basis. However, this food aid had to be paid for at cost and repaid within two years once the famine ended and

39 Don Gregorio Ruano to Governor Captain General Don Feliz Berenguer de Marguina, 6 April 1790, Ereccion de Pueblos – Cagayan 1751–1847. F. 167–196. PNA.
40 ibid.
41 ibid.
42 ibid.
the inhabitants of Cagayan were able to harvest some crops. Payment would have to be made with either silver or in goods characteristic for payment of tribute in the province, such as cacao, corn or wax.43

In a different example, Fr Joseph Gaona, Dominican priest of the town of Tumaneños, and Fr Joseph de Santo Domingo Rodriguez of Nasiping wrote that the power of successive typhoons ‘had ruined and uprooted everything that had been planted by these natives’, noting how his parishioners kept themselves alive initially by eating the roots and stems of their fruit trees, but then went in search of similar trees and roots in the mountains. However, the time came when there were no more to be found. After that was when a ‘fatal epidemic’ spread across the entire province due to so many people rapidly dying from hunger and disease.

He recounted to his superior having witnessed starving people eating the bloated rotting carcasses of dead horses and the worn leather ripped off chairs and saddles. Rodriguez gave away his canopy and bed linen, three tunics and one set of his clothes so that the ‘most miserable’ amongst the starving, particularly the women, could cover up their naked, emaciated bodies. The worst aspect was that the few remaining able-bodied men had fled, abandoning their wives and children and allowing their houses and plots of land to be reduced to ruins because their cabeza de barangay had whipped them without mercy to collect taxes they were unable to pay.

From various civil and ecclesiastical documents we also learn that in 1802 typhoons once again wreaked havoc in the Cagayan Valley, leaving residents without water and food, and many without houses after the typhoon caused the Rio Grande to overflow its banks and carry them away. The great river inundated the rice fields and destroyed the harvest. A month later, a second rain-bearing typhoon swept away the little remaining palay. Fr Francisco Munoz OP testified on 30 October 1802, in Lal Lo, that the successive storms and floods of 15 September and 10 October had caused so much destruction to the fields that farmers could not give the missionaries their stipend of rice, nor could they, as a consequence, send grain for the maintenance of the troops in the capital of Lal Lo, let alone feed themselves.

Floods often hampered the efforts of Spanish military personnel to reach the worst-affected areas, with roads and tracks either washed away or cut off by rising waters and debris.44 More than a century later, such flood-prone conditions still had not changed—except that the approaching storm was reliably forecast and the residents along the river were warned via the telegraph by the Weather Bureau in Manila. Nevertheless, when the cyclonic storm tore through the communities of Isabella and surrounding smaller areas on 3 December 1936, it left a trail of destruction as

43 ibid.
extreme as the typhoon and floods of 1802. The indirect destruction due to flooding caused by the storm was greater than its direct impact because of the slow-moving winds swirling around the eye wall, which dumped heavy rains over the sources of the Cagayan River, before moving into the China Sea. Intense suffering and hunger were reported everywhere along the river for months.45

In July 1972, a series of terrible weather events affected Pampanga and neighbouring provinces. The typhoon-induced catastrophes, from which Pampanga, Tarlac, Quezon, Camarines Norte and Bulacan were still reeling many months later, dwarfed any similar disasters in recent times. Successive extreme typhoons, Eding and Gloring, triggered massive floods that damaged crops and left tens of thousands of marooned families exposed to starvation and disease.46 Relief missions could not reach Bulacan.47 Those who were able to make it to relief centres received food, some of them getting more than their emergency needs, to the prejudice of other starving flood victims. Massive problems faced the people of central Luzon as relief goods, intended for more distant areas, were virtually waylaid. In the towns of Pampanga and Bulacan closest to Manila, angry mobs of hungry people demanded rice be unloaded from trucks to alleviate the suffering. In the neighbouring province of Pangasinan, 250,000 people in 45 towns and two cities had been rendered homeless.48 More than 50,000 families were close to starvation in Pangasinan, while thousands came down with influenza in Pampanga, and various other respiratory and intestinal diseases were reported.49

Such scenes, a grim reminder of earlier centuries, provide a graphic illustration of the powerful forces of nature combining to demonstrate just how severe poverty is for people who lack sustenance in late twentieth-century central Luzon. A Marcos-led government, accustomed to seeing frequent suffering and disaster, had quickly recognised the enormous scale of the 1972 catastrophe for the entire Luzon region and began relief efforts to stave off severe food shortages. But it did not attempt to directly resolve the basic problem of reforming the human institutions responsible for famine and starvation, because the government itself was part of the problem. As in the seventeenth century, inhabitants of the central Luzon flood plain in 1972 had to grapple with the realities of recent extreme weather as well as the social impacts of the wealth disparity.

49 ibid.
Famine and the global economy

Norman Owen, in his book about how the abaca crop drew the people of Bikol into the global economy, lists nine major typhoons and one drought (1804) between 1796 and 1845 that culminated with the typhoon and famine of 1845. Starvation followed in the wake of the typhoon and floods that hit Camarines Sur and Albay at the start of November 1845. Roads, houses, public buildings, livestock and crops were destroyed on an unprecedented scale. The reports of the military–political governor and alcalde mayor of Camarines Sur and Albay respectively, after touring areas ravaged by the typhoon and floods, likened the devastation to that seen in a war zone.

The subsequent flood damage to the rice crop had led to the rapid destitution and death of Bikolaños. Having never experienced scarcity quite like this before, many became ill and died from eating rotten taro, which, under normal circumstances, they would have ignored. Some desperate survivors died after drinking contaminated water and eating the decaying meat of drowned farm animals; victims probably of gastroenteritis. The deadly state of affairs in the provinces of Albay and Camarines and the escalating effects of this calamity on the rapidly rising price of palay compelled the Manila authorities to dispatch rice shipments at the expense of the caja de comunidad, to alleviate the food shortage and stave off famine.

I now want to fast forward to ‘Black Tuesday’, 13 October 1970, when Typhoon Sening completely destroyed Kabikolan. The typhoon generated landslides, floods, flash floods and 15-foot waves that caused terrified coastal dwellers to flee inland. When Sening finally moved on to pound Camarines Norte and Quezon, Kabikolan lay prostrate. As in 1845, the flattened province remained cut off and isolated from the rest of the country because electric lines, post office booster antennas and communication towers had toppled in the driving rain and wind. The prices of basic commodities skyrocketed and thousands of miserable and starving people sheltered in makeshift hovels along the major highway and roads. Thousands of families had been either displaced or rendered destitute and hungry in less than 24 hours. In Naga, there were justifiable fears of an epidemic outbreak abetted by starvation.

In the 1980s and 1990s, southern Luzon continued to experience widespread havoc wreaked by typhoons and floods—disasters, natural and man-made—demonstrating why this part of Luzon and the island of Samar are sometimes called

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50 Owen, Prosperity without Progress, 73, 80, 109, 111, 178, 190; Owen, ‘A subsistence crisis in the provincial Philippines 1845–1846’.
51 No. 943, El Gobierno Militar y Politico de la Provincia de Camarines Sur a Senor Gobernador y Capitan General de Filipinas, 6 November 1845. Calamidades Publicas 1845–1845, fol. 19–21, PNA.
53 ibid.
the unlucky provinces. In January and February 1994, five successive typhoons that hit the archipelago affected vast areas of southern Luzon, the Bikol region, the whole of the Visayas and north-eastern Mindanao. More than 3.7 million people were affected, 600,000 of whom were rendered homeless, living in evacuation centres or makeshift shanties built from the debris of destroyed homes. Typhoon damage to agricultural crops was enormous. Some 100,000 were left starving. The World Food Programme supplied food in Mindoro Oriental, Marinduque, Camarines Norte, Camarines Sur, Catanduanes and Iloilo, as part of a massive rescue and relief effort launched by the government of the Philippines.

But hunger continued to stalk various parts of the country. The following November, the Philippine Government stated that 75 per cent of the country had been declared in ‘a state of calamity’ because of the national fears of escalating food shortages and soaring inflation. Another series of natural disasters, including Super Typhoon Angela, saw the doubling of rice prices after major relief mishaps, including poor distribution. The spectre of starvation loomed once again the following year in the worst affected regions of southern Luzon. Village heads and rescue workers reported how high winds and columns of water had swept away people, livestock, houses and ready-to-harvest crops. Tens of thousands were left homeless and hungry, their houses flooded or flattened, as Super Typhoon Angela destroyed rice and coconut crops worth millions of dollars. The government was forced to import more than 200,000 tons of rice in the aftermath of the super typhoon to avert a major famine.

**Food scarcity, rural unrest and migration**

Food scarcity and epidemics exacerbated societal group inequality, causing pillage, plundering and social unrest at a time anti-colonial resistance movements came into being. Across the centuries, it was the Visayas, particularly Samar and Leyte, that appear to have experienced small-scale wars with the recurring passage of typhoons. In October and November 1601, a strong typhoon struck the Jesuits’ Leyte Mission and destroyed the town, churches and fields, along with crops, fruit trees and other sources of food. A *babaylan*, a female shaman, attempted to influence the victims’ minds about the spiritual meaning of the alleged link between the storm, the outbreak of the famine and the presence of the ‘black robes’, or Jesuits, in their midst. In response to the spate of disasters, the *babaylan* preached to her people that

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55 ibid.
the *diwata* (the native god) was angry at what the Jesuit fathers were teaching and consequently it inflicted punishments of death, destruction and famine upon them by sending the typhoon.58

Samar and Leyte suffered unmercifully in the Philippine–American War as the new century dawned. Low-intensity warfare was waged on both islands, villages and fields were routinely torched, and an infamous order was issued to kill all the inhabitants of Samar who were over 10 years of age.59 War worked in combination with typhoons and drought to ravage Samar and Leyte in the first decade of the twentieth century. Thousands went hungry.

Eastern Samar was one of the poorest regions of the Philippines, constantly beset by turmoil and disaster. From the vantage point of late nineteenth-century Manila, this part of the eastern Visayas required careful control, both by the Spanish and later the American administrations. In 1884, Spanish armed forces crushed a millennial rebellion triggered by widespread hunger and the outbreak of a severe cholera epidemic near Gandara.60 Two years later, in 1886, a new hills-based movement called Dios Dios, spawned by the same miserable conditions, held power in Samar for more than 20 years. The Dios Dios came to be called *pulahanes*, from their wearing red garments. Although their power waxed and waned, widespread famine and a cholera epidemic in the 1880s boosted the *pulahanes*’ ranks, representing the Samareños’ deprivation and disempowerment. The *pulahanes*’ appeal to supernatural means was accepted as part of their armed struggle armoury. The tensions existing between the Samareños and the Spanish Government became even more acute under American rule. Both sides were on the defensive, waiting for each other to strike pre-emptively, as Samar was to play a central role in the Philippine–American War of 1899–1902.

The typhoon of 25 September 1907 destroyed 5,000 homes and ruined the hemp crop, raising prospects of another famine. The governor-general in Manila acknowledged in 1928 that 20 years after American forces had turned Samar into a ‘howling wilderness’, farmers there were still having to spend more on food than they were earning from the export of their cash crops of abaca and coconuts. The governor-general wanted more resources put directly in the Samareños’ hands to combat typhoons and famines. Guaranteeing better nutritional standards and access to local and regional markets for farmers was a more secure and sustainable

60 Cruikshank, *Samar 1768–1898*, 201.
way of alleviating famine and eradicating poverty in Samar. In 1928, the governor-general noted that Samar stood out as one of the most appalling areas, where typhoons aggravated an already difficult situation:

and it is probably due to this fact that the inhabitants have never been able to pull themselves out of a very low standard of physical welfare. In many districts the people are habitually undernourished, and they constantly lack the vigor and initiative necessary to meet such catastrophes. Therefore, it is of vital importance not only to relieve the suffering caused by this typhoon, but, if possible, to do it in a way which will help to render the suffering provinces better able to take care of themselves in the future.61

By the late 1880s, as well as spawning millennial movements in Samar, drought-related food shortages and famines produced a resurgence of folk messianism throughout the Visayas and forced thousands of peasants and tribal peoples to move into the mountainous interiors of Panay, Negros, Samar and Leyte.62 Babaylan-inspired flight became a form of risk-spreading mechanism designed to overcome food shortages resulting from consecutive bad harvests and global price shocks. Hungry, indebted Visayan farmers simply settled on land in the rugged interior, well beyond the reach of Spanish or later American authority. These farmers believed anyone had the right to settle on virgin land, particularly in the Visayas, where a traditional manner of coping with famine and drought has been to move on. These moves were sometimes voluntary, and at other times involuntary, depending on the character of drought-related, life-threatening situations. The migration of starving peasant populations signified a turn towards autonomy and self-determination.

Prospects remained grim in the aftermath of the famines in 1878–79 and 1902–03. Drought-stricken Visayan peasants refused to risk staying at home, where they would inevitably starve. When the drought burden in the Visayas grew unsupportable, a more mobile peasantry joined with autonomous, armed insurgents and folk-messianic movements that challenged the power of both Spanish and American colonial administrators.63 Seen from a colonial standpoint, the changes wrought among former debt-bonded wage labourers and immigrant sharecroppers looked irreversible and foreboding. After the great famines of 1878–79 and 1885, colonial policies had failed to prioritise food security, choosing to concentrate on trade

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liberalisation and commerce at a time when people in the Visayas and Luzon were starving. There were no policy structures to adequately sustain rural livelihoods or access to resources and markets and concomitant entitlements and incomes.

The peasants and cultivators who moved to the interior of islands like Panay, Negros or Samar took new lands into their own control. Without that unbridled access to interior lands there was no lasting solution to hunger. However, they soon came under different pressures, with outbreaks of localised fighting and sporadic American military actions. Thousands of these squatters were again reduced to begging for food or eating roots and grass.

**Conclusion**

Throughout the course of this paper, I have presented the causes and consequences of food shortages and famines and the relationship between climatic and weather factors, especially in relation to typhoons, floods and drought, and food supply. I have provided a definition of famine and then shown how monocrop agriculture, globalisation and political corruption can exacerbate an already hazardous situation. In examining famines over time, I have pointed out the structural links between food shortages, the nature of Filipino peasant societies and the weather factor by discussing the importance of rice to the Filipino diet. I have introduced personal stories from people who were in geographical areas directly affected by repeated typhoons, famine and corruption, and the societal group inequality and loss of entitlements that resulted. In digging deeper into the impact of food scarcity in particular geographical areas, I have highlighted the way rural unrest and revolutionary and millennial movements grew from such untenable situations.

Poor Filipino farmers have been doing it tough for the past several decades because of extreme weather, and there are no signs of it abating. In central and southern Luzon, and the central and eastern Visayas, there has been a constant struggle, with the forces of nature and global capital, to balance escalating production costs and tenancy arrangements against diminishing incomes and livelihoods, and conditions are worsening. That the weather and climate should turn against these agriculturalists with such venom is a blow from which many have found it increasingly difficult to recover, as they face growing uncertainty about their future on the land. Agriculture has reached a lamentable state in various parts of the country and if these conditions of deprivation and social inequality continue to persist in certain areas of southern Luzon, Negros and northern Mindanao there will be periodic starvation, if not famine.
MALAYA’S GREATEST MENACE? SLOW-ONSET DISASTER AND THE MUDDY POLITICS OF BRITISH MALAYA, C. 1900–50

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Abstract

In 1948, a chilling statement from British Malaya’s Director of Agriculture, F. Burnett, made headline news. According to Burnett, unchecked soil erosion across hillside Malaya would soon render the country’s precious agricultural land infertile. Erosion had worsened considerably after the 1880s due to widespread, indiscriminate agricultural and industrial clearing. By the 1920s, it had become a sizeable socioeconomic and environmental issue, thought also to contribute to the scale and intensity of flooding and the likelihood of dangerous landslips. The British Government raised a series of empire-wide inquiries across the first half of the twentieth century, tied to an emerging global scientific interest in, and concern about, soil degradation, food security and economic productivity. The colonial British Government of Malaya—whilst acknowledging the part played by commercial agriculture—also tended to place blame on traditional shifting cultivators and farmers, especially the Chinese. This article discusses the problem of soil erosion in British Malaya as a primarily slow-onset disaster while also acknowledging erosion’s contributing role in more sudden hazards, such as landslips. It also explores how erosion was linked with an evolving blame culture in Malaya, involving discrimination against different social groups at different times. The narratives surrounding soil erosion thus offer a lens into the interplay of environment, colonialism and politics in British Malaya.

Keywords: soil erosion, denudation, floods, British Malaya, slow-onset disaster, blame

Introduction: Narratives of fear in an evolving global problem

[A]griculture in fertile valley bottoms allowed populations to grow to the point where they came to rely on farming sloping land. Geologically rapid erosion of hillslope soils followed when vegetation clearing and sustained tilling exposed bare soil to rainfall and runoff. During subsequent centuries, nutrient depletion or soil...
loss from increasingly intensive farming stressed local populations as crop yields declined and new land was unavailable. Eventually, soil degradation translated into inadequate agricultural capacity to support a burgeoning population, predisposing whole civilisations to failure.¹

David Montgomery’s bleak summation reminds us of the critical importance of good soil management to the survival of empires and nations. By the early twentieth century, erosion in many parts of the world, including America, China, Africa, Australia and India, had reached a scale whereby many feared the worst. Resulting in diminished agricultural productivity, desertification, landslips and the intensification of floods and droughts, erosion was considered an incubating and active disaster. In the dominions and colonies of Britain’s Far Eastern empire, colonial authorities had largely desisted from addressing the problem throughout the rapid land use changes of the nineteenth century. Ill-prepared to meet the challenges set by the geological and climatic features of the tropics, heat and high rainfall combined with degradation wrought by intensive plantation agriculture and industrial mining. Sheet and gulley erosion were common features of upland slopes where forests had made way for commercial crops.

It was commonly thought at the time that deforestation affected localised climates (desiccation) and contributed to an increase in flooding.² Jungle and vegetation clearances near rivers and streams increased surface water run-off, channelling rains through the deep gullies to bloat streams and rivers. Man-made flood prevention schemes often made the situation worse. The desire to protect prime agricultural land and settlements in river valleys had led to an increase in levees and embankments, which confined flood waters and, in some cases, exacerbated and prolonged flooding. Left in its natural state, a river in flood would deposit nutrient-rich silt across its floodplain.³ With embanking, soil particles drop to the bottom of the riverbed as the levee decreases normal water velocity.⁴ This created a catch-22 situation whereby

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² For an excellent introduction to these themes historically, see Richard Grove, *Ecology, Climate and Empire: Colonialism and Global Environmental History, 1400–1940* (Cambridge: White Horse Press, 1997).
levees were increased as the riverbed rose year-on-year, which, as Elspeth Huxley wryly noted, was ‘a game that nature … is likely to win’.\textsuperscript{5} In extreme cases of slope denudation, landslips became more likely.\textsuperscript{6}

From the arid regions of Africa to the moist humidity of the tropics, by the early twentieth century the prevailing assessment of state-led and indigenous forest, mining and soil management practices had created an ‘alarmist discourse on environmental degradation’ and a sense of an unfolding environmental crisis.\textsuperscript{7} Inspired by their experiences in colonial Asia and Africa, geographers and scientists, including Ellsworth Huntington and Charles Brooks, wrote influential texts on man-induced environmental degradation and climate change.\textsuperscript{8} The former of course was renowned for his strong (and increasingly unpopular) opinions on climatic determinism. The publication of \textit{Vanishing Lands} in 1939 by G. V. Jacks and R. O. Whyte stimulated thinking about man-made soil erosion as a global catastrophe subsequent to the ‘twin disasters’ of wind and water erosion that had led to the American Dust Bowl of the 1920s and 1930s.\textsuperscript{9} This tragedy alone had presaged an unprecedented political, popular and scientific interest in soil erosion.\textsuperscript{10} A press report from the 1938 Conference of Colonial Directors of Agriculture held in London reveals the new anxieties in the discourse quite explicitly:

\begin{quote}
Soil erosion and nutrition are the two most important subjects to be discussed … speaking on the dangers of soil erosion, Lord Dufferin said it was only during the past few years that the importance of soil conservation had been fully realised, largely as result of the accounts of the position in the United States.\textsuperscript{11}
\end{quote}

The Commission of Forestry Research in Africa reports of the early 1940s are likewise revealing of the shift in tone and in thinking. Accounts from Mauritania, Chad and the Belgian Congo styled erosion as ‘a serious threat to the whole of mankind’. In the African context, the diminution of rainfall, the drying up of water


\textsuperscript{11} ‘Colonial Office Parley on Soil Erosion’, \textit{The China Mail}, 26 July 1938.
courses and desertification were described as ongoing and ever-increasing disasters of extreme proportions. The prolific author and researcher of colonial forestry Edward Stebbing argued that a government-sponsored study of the ‘direct or indirect action of erosion on water courses and on atmospheric rainfall’ was absolutely essential, warning of the dire consequences of desiccation and desertification. At the same time, A. H. W. Weir, the recently retired Chief Conservator of Forests for Nigeria, noted how, across the empire, ‘cash crops’, including rubber, ‘were in jeopardy’. The African reports (known collectively as the Stebbing Report) were condemned by many however, partly because of their lack of global focus.

In Malaya, official and public awareness of the dangers of soil erosion followed a similar trajectory. Though denudation and desiccation had been topics of scientific interest since the 1840s, it was only after 1910 that erosion began appearing in the everyday press with any regularity. In 1911, for example, an inquiry examining ‘the denudation of the soil owing to the destruction of the forests’, originally published in the Indian Forester, was reprinted in The Straits Times, the Malayan daily paper. Within 30 years, the pitch of such reports had acquired new levels, with warnings issued in the same paper over the course of 1948 that ‘Malaya is Being Washed Away!’ and ‘Stop Erosion—Or Die!’ Comments such as that from long-time plantation manager Jacques Le Doux shed some light on the types of knowledge that were circulating. Writing to his old friend Henry Ridley from his Johore estate in 1949, Le Doux explained how he had been anxiously reading about the global problem in an article. Drawing parallels between the African experience and the Malayan one, especially with regard to ‘an incipient development of climatic extremes of wet and dry seasons’ whereby erosion would be exacerbated, he went on to note that the ‘terrible winter of 1946–7, followed by equally terrible floods, is [in Malaya such] an instance’.

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14 Soil Erosion. Unfoliated. Note to Dr Tempany on the Report of the Commission of Research on Deforestation in Africa and other tropical countries, unsigned, n.d., 1941. CO 852/394/14. TNA. The ‘Stebbing Commission’ report was not well received in Britain. It was criticised by several leading experts, and the Colonial Office even refused the money to have it printed.
15 ‘Forests and Rainfall’, The Straits Times, 10 June 1911.
This article draws on several important ideas and approaches in recent environmental history. It pays particular attention to two trajectories of thought. First, the discussion understands erosion as being linked to a range of global and local concerns, many drawing on colonial contexts. As J. R. McNeill describes it in his overview of erosion history, the period from roughly 1840 to 1940 witnessed the transplantation of unsuitable European agricultural methods into Asia and Africa on an unprecedented scale. Imperial expansion came with political and cultural trappings that alienated or removed traditional systems of land tenure and farming rights, in many cases endangering and irrevocably altering time-honoured—often less environmentally disruptive—forms of farming. Richard Grove’s ground-breaking work has also been instrumental in understanding the place of European colonialism in destructive land use, as have various studies of colonial ecology across Africa and India.

The period also witnessed shifts in environmental thought, many of which had a clear relationship to colonial politics. Piers Blaikie and Harold Brookfield argued in the mid-1980s that soil politics was a fundamental part of pre-capitalist, colonial and post-colonial societies. Certainly this can be seen in Jeyamalar Kathirithamby-Wells’ seminal study of Malaya’s environmental history, in which soil emerged as a fundamental component in that country’s linked environmental, social and political landscape. Gregory Barton explored the newly emergent forms of environmental consciousness in the context of imperial forestry, arguing that the period witnessed an increasingly holistic association of climate, soil, water, flora, fauna, and human and environmental health. J. M. Powell’s exploration of five British Empire forestry conferences (1920 to 1947) explained how these theories were put into practice. Worried about the potential exhaustion of food and timber supplies due to successive international political and environmental crises following 1914, pioneers of the new holistic view of the environment stressed the importance of joined-up

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solutions that treated forest, water and soil in parallel. The Malthusian economics popular in America and Britain across the late nineteenth and early twentieth centuries infused political and environmental narratives with fear over food and resource security in the face of a rising population. The first half of the twentieth century saw an amalgamation of extreme circumstances that worsened the situation. The First World War starkly highlighted the empire’s inability to maintain its own internal timber supply, despite having a considerable proportion of the world’s forests at its disposal. Between the wars, the floods and droughts that affected several regions of the world during the mid-1920s and the American Dust Bowl had an incredible impact on the contemporary mindset globally, striking fear into politicians’ hearts over how environmental degradation—especially soil erosion and deforestation—was threatening international economic and agricultural stability. Certainly, many modern studies have echoed the views of the past, arguing ‘how profoundly soil fertility and soil erosion shaped the course of history’. Likewise, the story of soil and soil science fits well with the observation that the ‘prediction that the whole global system was falling into degradation was co-determined with the very discovery of that system’.

Second, this article understands the narrative surrounding soil erosion in Malaya as a largely constructed phenomenon. As Le Doux alerts us in his letter, his fearful knowledge about the crisis derived largely from the global literature and the situation overseas, not his experience on the ground in Malaya. There, although the situation was one of great concern, the most intense anxieties were being voiced in respect to the potentiality for disaster, partly in response to a constructed narrative. The construction of an erosion narrative in Malaya derived from three main interlinked sources—first, global scientific dialogue; second, colonial interests and assumptions; and, third, political concerns on the ground. This narrative became a part of the reality. Its entrenchment within colonial ecology also complicated the capacity for solutions by bearing on, or being part of, the particular sets of sociocultural assumptions of that time and place. Thus erosion operated as an active background that influenced, or derived from, dominant political narratives and, at times, was also appropriated as a political tool by different individuals or groups. The rhetoric of 1948 for example, that immediate action was critical to prevent Malaya’s lands

from becoming barren, was intimately connected to the anti-Japanese propaganda of the immediate post-war regeneration government. In profiling this slow-onset disaster therefore, this article aims to tease out some of the wider social and political matters extant in the Malayan context, especially the connection of the soil problem with the scapegoating of marginal communities, or vilified peoples, which differed over time as mainstream politics shifted. In so doing, it explores the interplay of environment with complex, evolving ideas on peoples, cultures and politics.

Underpinning the entire discussion is the conception of soil erosion in British Malaya as a slow-onset, embryonic disaster. Building on recent work by disaster historians who have argued that the range of what is considered disastrous should encompass not only the exceptional ‘once in a century’ grand-scale events, it envisages erosion as ongoing, ‘persistent risk’ events that shaped everyday lives and cultures. As Rebecca Jones reminds us in her recent monograph on drought culture in Australia, ongoing ‘slow catastrophes’ should be conceived of as ‘a lived experience’. Nevertheless, as Mark Baker argues in his essay within this special issue, it ought not be forgotten that disasters rarely operate within one temporality. Whilst lacking the sensationalism of other nature-induced disasters, erosion can contribute to more dramatic problems, including sudden landslips and more intense floods, some of which will be explored here.

The direction of this article is threefold. First, whilst it cannot be doubted that soil erosion was deemed a menace throughout the ’20s and ’30s globally, it seeks to explore how far the fear of an impending disaster was justified in British Malaya. Shock headlines and alarmist descriptions often stand in contrast to some contemporary reports from district officers (DOs) stationed around the country, or

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29 Statement by Federation Director of Agriculture F. Burnett, as reported to the staff correspondent, *The Straits Times*, 8 April 1948, 10.
33 The role erosion was thought to play in exacerbating floods was a factor in many governmental initiatives to alienate hillside forests globally. For more, see Deborah Sutton, ‘Redeeming Wood by Destroying the Forest: Shola, Plantations, and Colonial Conservancy on the Nilgiris in the Nineteenth Century’, in *The British Empire and the Natural World: Environmental Encounters in South Asia*, ed. Deepak Kumar, Vinita Damodaran and Rohan D’Souza (Oxford: Oxford University Press, 2011), 91.
official reports by contemporary experts who, by the late ’40s, were able to argue that the situation in Malaya was largely under control (as compared to elsewhere in the empire). Second, this paper explores how the menace was thought manifest in localised disasters, contributing to river siltation and thus exacerbating the scale of subsequent floods, for instance, or in contributing to landslips. Today, the connection of deforestation, erosion and flooding is subject to some debate, but it is not the intention of this article to argue the case one way or the other. There is little doubt, however, that the erosion–flood linkage dominated and informed field research and policy at the time; therefore, this article will work within this strand of scientific thought. Finally, it draws attention to how the subject of historical soil erosion can be employed as a lens on contemporary relationships between government and people and the dominant political and cultural narratives of the day.

Moving toward disaster: Changing land practices in Malaya

British Malaya was once covered with montane ericaceous, oak-laurel and dipterocarp forests, peat lands, mangrove and freshwater swamps. The lowland dipterocarp and coastal mangrove forests were increasingly cleared to support urbanisation, mining and plantation agriculture throughout the nineteenth century, although traditional small-scale and subsistence farming, especially shifting cultivation, continued to be practised. Chinese and Malay farmers had been practising plantation-style farming for gambier and rice long before the British arrived in Malaya. The Malays cultivated rice in upland areas, their methods described in detail by Thomas John Newbold, soldier, amateur geologist, orientalist and Royal Society Fellow, in the 1830s:

Marking out land for clearance during late spring (dry season), an extended family would clear the ground in two stages. The first (tebbas, menebbas) consisted of cutting smaller brushwood and vegetation before felling trees (tebbang menebbang) with small tools known as prang and bilhong. This process is achieved in one of two ways, either by erecting a stage by which to remove the top parts of the tree until the whole is weakened sufficiently to pull it down, or to cut a number of trees in one area half through on one side and, choosing a large tree to push it down so that it knocks the remaining weakened trees as it falls. The wasting of timber in this process is

not considered problematic as it is not considered of value in such small quantities. When dried, the timber and brushwood are burned and the ground is effectively cleared. The ash is then used to fertilise the soil.\textsuperscript{37}

With European investment in plantation farming, wealthier Chinese and Malay farmers competed accordingly, enabled by legal changes.\textsuperscript{38} A system of short-term land leases aimed at encouraging smallholders was the norm (especially in Singapore) until the 1830s. But it was deeply unpopular and, in 1836, the Malayan Agricultural and Horticultural Society petitioned that, although ‘the soil … was suited to the cultivation of cotton, sugar, pepper, and nutmegs’, commercial investment was unlikely until ‘a more liberal system of sale or leasing of land was adopted’.\textsuperscript{39} The controversy led to the appointment of an independent commissioner from India, Mr Young, to make a report on the existing system. Young concurred that the system was actively discouraging long-term investment and argued vociferously that the only means of utilising the land at a profit currently was to extract timber and burn charcoal, or to plant wasteful and ‘exhausting’ crops such as gambier (the gambier planter was, in his opinion, ‘the locust of cultivation’).\textsuperscript{40} Over the course of the century the law was gradually changed to privilege the commercial plantation owner. By the early 1900s, rubber and pineapple had become the crops of choice, stimulated by the new automobile industry and the development of canning technologies.\textsuperscript{41} The Chinese were early investors in rubber as, increasingly, were Malays and Indians, but it was the joint-stock holding companies that owned the largest plantations.\textsuperscript{42} Land enactments in 1897, 1903 and 1911 and the establishment of a Malayan Agricultural Department in 1905 helped incentivise investors.\textsuperscript{43}

Of course, the transition from small-scale farming to large-scale commercial agriculture had a significant impact on the environment. The connection of man-made environmental degradation with erosion, changes in soil quality, local climate and the increased potentiality for disaster had been made early on in Malaya. In 1826, Captain James Low, military officer to the English East India Company, had noted how important it was to bolster the soil with compost. Discussing Penang Island (the first British settlement in Malaya), he argued that its upland soils were predominantly ‘decomposed granite’ so ‘disintegration proceeds, in some

\begin{footnotes}
40 ibid., 308.
43 ibid., 60.
\end{footnotes}
places, with a rapidity that would not be suspected by a person unacquainted with
the nature of that rock'.

Two decades later, James Richardson Logan, editor of the
Journal of the Indian Archipelago and Eastern Asia
and advocate of desiccation theory, argued:

the whole eastern front (of a mountain range in Penang) has within a few years
been denuded of its forest … in all probability after the fecundity of the fresh soil,
enriched by the ashes of the trees, has been exhausted, it will be abandoned by the
Chinese squatters.

The idea of the soil as a dynamic system had gained traction in the mid to late
1800s. The pioneering geologist James Hutton had proposed almost 100 years
earlier that the earth went through continual cycles of erosion, deposition and
sedimentation that helped to constantly renew and recreate the landscape.
His work was built on by scholars, including Charles Darwin, whose pioneering (if
somewhat misunderstood) research on the role of earthworms in soil production
was a significant step in understanding the delicate balance of soil dynamics.

In Malaya, Logan supported the theory that the ‘mountain forests’ played a large role
‘in attracting and condensing clouds, diminishing local temperature, and increasing
humidity’. Without them, the ‘mountain soil, a natural reservoir, would be baked
dry in the harsh sun’, contributing ‘to the severity and longevity of droughts’.
Although drought is not something commonly associated with the tropics, the
possibility of drought in Malaya was real. In the mid-1860s, for example, A. C.
Maingay, Assistant Residency Surgeon for Malacca, argued that value of the forests
lay not only in relation to their economic function but also in their ‘climatic
influence’. He drew attention to what he termed flaws in the current system of land
use. Squatters had the right to fell or burn timber for tapioca cultivation, but the
tapioca, he claimed, exhausted the soil in two to three years. This forced the squatters
to leave and establish a new site by clearing more forest. The old site would regrow,
but with ‘brush and thin timber’ instead of the dipterocarp trees of the original
virgin jungle. The resultant ‘ruin of the forest’ caused a ‘diminution of the rain fall

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44 James Low, A Dissertation on the Soil and Agriculture of the British Settlement of Penang… (Singapore: Singapore Free Press, 1836), 3.
and a general average elevation of the temperature’, ultimately ‘increasing the prevalence of long droughts’. Such reports had resonance in the evolving global discourse of denudation, desiccation and erosion, especially studies of drought and desertification in northern China and Africa.

Toward preventative measures? Attitudes toward erosion, c. 1920–40

Despite the availability of expert knowledge in Malaya, it was the 1930s before erosion began to be tackled for its own sake. Thus it was that William Ormsby-Gore, Under-Secretary of State for the Colonies, compared Malaya unfavourably with Ceylon in 1928, stating that ‘you can go through miles and miles of country … [in Malaya] and see the soil being washed away, pure earth wasted and steady deterioration going on’. Headlines throughout the ’30s proclaimed Malaya to have ‘Less Soil Each Year’ and warned of ‘Soil Erosion Danger’, yet strongly advised that ‘Food Production in Colonies Needs to be Increased’. The Malayan Department of Agriculture’s solution was three-pronged: to penalise those farmers who continued to practise corrosive agricultural methods; to raise awareness of preferred agricultural methods through educating farmers; and to initiate more joined-up working between departments. They issued an advisory pamphlet in English—translated into Malay and Chinese in 1930—which explained to farmers how contour terracing and drainage works would alleviate erosion. In 1939, the Agricultural Officer of Province Wellesley and Penang—where erosion was a significant problem—embarked on a major educational campaign. A pamphlet was prepared in Chinese, English and Malay to ‘show owners and cultivators of land … how they can assist themselves and the community as a whole by taking steps to prevent further erosion’. Coterminal with this effort were an exhibition (reportedly attended by 3,000 hill cultivators), posters and a public lecture delivered in the predominant local Chinese dialect (Hakka) by a newly appointed Chinese Agricultural Officer, Tan Ah King. The department also organised a travelling lecture caravan to reach more remote spots. These labours were critical to reaching

53 ‘Warning of Soil Erosion on Penang Hill’, Malaya Tribune, 10 July 1939, 12.
secluded, non–English speaking audiences.\textsuperscript{54} By the late ’30s, new land leases were approved only on the basis that farmers agreed to implement preventative measures, including terracing and establishing cover crops.\textsuperscript{55}

At the same time, the various different departments responsible for lands, forests, mines, agriculture and floods were brought together formally to work on the issue. This reveals a significant change in attitude from the pre-war period. As Conservator of Forests for the Punjab and editor of \textit{Scottish Forestry}, Robert Maclagan Gorrie (credited as the Scottish ‘father of forestry’) pointed out in 1938 nothing less than a drastic, extensive multidisciplinary program was needed to fight erosion, one that covered all aspects of plant, soil and animal conservation alongside engineering and agricultural solutions.\textsuperscript{56} That same year, the High Commissioner’s office in London had issued a circular asking that erosion be brought under the colonial government’s control as a question of policy, as opposed to remaining a specialist concern of a few departments.\textsuperscript{57} This was a critical step toward connecting silos and strategic guidance at the top levels. In Malaya, work undertaken by the various ad hoc soil committees was formalised at the start of 1939 by the creation of a standing central committee to investigate erosion. The committee comprised 10 members: the Advisor on Agriculture; Commissioner of Lands, Straits Settlements; Deputy Commissioner of Lands, Federated Malay States (FMS); Advisor, Drainage and Irrigation; Advisor on Forestry; Director, Rubber Research Institute; Chief Inspector of Mines; a nominee of the FMS Chamber of Mines; and two nominees of the United Planting Association of Malaya.\textsuperscript{58} The committee’s composition reveals the enhanced emphasis on creating cross-departmental solutions.

This very much reflected a global change in mindset in the ’20s and ’30s. The scientists and researchers of this period were able to draw on their personal experiences as international actors, stationed in and travelling across different parts of Asia, Africa and Australia. People like Huxley and Maclagan Gorrie had first-hand experience of erosion and its social impacts. Others, like Hugh Hammond Bennett, had global vision. Hammond Bennett was a pioneer in promoting soil conservation, often in the face of very vocal detraction. A key figure in early twentieth-century
environmentalism, he drew attention to man’s role in endangering the fragile interface of soil, land productivity, climate and flooding, partly in response to the Great Mississippi River Flood of 1927 and the Dust Bowl years of the 1930s. Hammond Bennett’s genius came in being able to summarise and promote the problem of erosion across scientific and popular audiences, and to raise governmental awareness and support. While Hammond Bennett was writing largely about the situation in America, his studies had worldwide resonance. Maclagan Gorrie credited the efforts of American agricultural and forestry experts, especially the Soil Conservation Service, with bringing much-needed research and publicity to the problem. He particularly noted their efforts in effecting change in the idea that soil erosion was a ‘local’ problem and easily dealt with, to being considered as a global problem that required global solutions. In Malaya, colonial officers looked overseas for guidance in policy and conservation techniques. It was ‘most desirable’, argued the Director of Agriculture and Director of Forestry in 1930, that ‘Malaya should so far as possible profit from the mistakes that have been made in the past in other places’. In particular, he introduced regulations relating to the lease of Crown land then extant in Ceylon, the result of a major governmental report undertaken for that region. This banned clearing vegetation on hills steeper than 45° (later changed to 40°) and enhanced extant measures designed to prevent clearing on major ridges.

Mirroring innovations or regulations used overseas was as problematic as it was useful. The Malayan Land Office, when asked to respond to the 45° recommendation noted above, responded that ‘45° is a slope very rarely to be found in Malaya’. A. T. Newboult, DO at Kuala Selangor, further argued that the topographical maps (for his region at least) were not accurate; thus, he was unable to identify whether a slope was 45° or more. Nevertheless, Newboult still looked abroad for the answer, remarking that ‘the promised report from Ceylon will doubtless show how this is dealt with there’.

With hindsight, Harold Tempany, Agricultural Advisor to the Secretary of State for the Colonies (previously Director of Agriculture for the Straits Settlements and Malaya States), was to acknowledge how over-reliance on imported techniques and

61 Prevention of the Erosion of Soil in Lands Alienated for Cultivation in the Highland Regions of Malaya, 3 November 1930, 1. SEL:SEC.G 2271/1930, NAM.
62 Land Office to the Resident Selangor, 10 November 1930. SEL:SEC.G. 2271/1930, 3. NAM.
63 District Officer, Kuala Selangor, to the Resident, Selangor, 14 November 1930, 1. NAM, SEL:SEC.G. 2271/1930, 4. NAM.
64 District Officer, Kuala Selangor, to the Resident, Selangor, 14 November 1930, 1.
methods had made a bad situation worse. The focus on transplanting ‘northern’
techniques of land and soil management, he noted in 1950, with ‘little appreciation
of the peculiarities and dangers inherent in the tropical environment’ had in fact
exacerbated erosion.

An ongoing disaster, or a problem resolved?

In 1939, Governor Sir Shenton Thomas responded to Secretary of State for the
Colonies Malcolm MacDonald’s request for a progress report on the soil erosion
situation in Malaya. Calling on various advisors, Thomas concluded his report
with his view that ‘the … evidence so far collected serve[s] to confirm the opinion
expressed by the late Advisor on Agriculture (Mr O. T. Falkner) … that “on the
whole, the soil of Malaya is nowadays not being washed away on as large a scale nor
with as great rapidity as from many countries”’. The 1939 Malayan report divided
progress into two distinct periods, before and after 1920. Since 1920, it was stated,
increased attention to the issue had paid dividends, in particular the adoption
of new regulations on hill clearing, in combination with educating smallholders
about proper drainage and terracing. Three years later, Tempany offered the same
opinion about the global situation. In spite of the war, he argued in 1941, progress
on erosion in a majority of dependencies was considered ‘satisfactory’. Despite claims to success in Malaya, problem areas persisted. The most challenging
were steep slopes where pineapple, banana and tapioca crops were grown, especially
in Negri Sembilan, the Cameron Highlands and Penang Hill. The Jelebu district
of Negri Sembilan, for example, was famous for its rubber and banana plantations,
extensive tin mining and erosion. Situated in the southernmost section of the
Titiwangsa mountain range, the area was also well known for landslips. In 1915,
a slip had occurred at Bukit Tangga near an old mining site after heavy monsoonal
rains caused large sections of the road toward Titi in the adjacent valley to collapse.

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65 Tempany was later to write The Practice of Soil Conservation in the British Colonial Empire (Harpenden, Herts: Commonwealth Bureau of Soil Science, 1949) based on his own experiences of government programs across
different regions, especially Mauritius, the Leeward Islands and Malaya.
of Arts 98, no. 4821 (1950): 553.
67 Draft Dispatch to Secretary of State in reply to the S. S. Dispatch & M. S. Dispatch from the Secretary
of State, dated 22 August 1939. Kelantan: 332/1938, 7a &7c, 2. NAM.
68 ibid.
69 Report on Soil Erosion in the Colonial Empire in 1941. CO 852/394/6, f. 37. TNA.
70 Draft Dispatch to Secretary of State in reply to the S. S. Dispatch & M. S. Dispatch from the Secretary
of State, dated 22 August 1939, 2.
71 ibid.
72 ‘Rubber Forestry’, The Straits Times, 29 August 1933, 6.
This was only a month after a nearby Port Dickson line railway bridge had been washed out.\textsuperscript{73} Just over 20 years later, a forest officer stationed at Kuala Pilah, Jelebu, told how:

erosion has taken place in the most obvious possible manner, producing a scene to be expected rather in the Tennessee valley than in Malaya and offering a grim warning of what may happen if the land is abused too far. The area in question forms part of a small rubber estate on a northern spur of Bukit Senaling … when the land was alienated in 1915 it was covered with thick jungle. After alienation the jungle was felled and burned and the land planted with rubber … the plantation was evidently clean-weeded after the prevailing fashion … from that time erosion proceeded apace … on the steep slope, erosion has reached its extreme. Top soil and humus are entirely lost and the rubber trees have died and disappeared except for a few sickly stumps standing gaunt and precarious with their roots undermined and exposed. … Gully formation is well under way … a deep chasm has been torn in the soil exposing the hard un-weathered subsoil below while elsewhere incipient gullies are to be found … the proprietor has lost his land as an economic asset … [and] the wash down of sand has ruined the padi for the farmers below.\textsuperscript{74}

At Penang Hill, erosion, flooding and landslips were similarly grave. The hill overshadowed historic Georgetown and Ayer Hitam, the latter village the source of Georgetown’s freshwater supplies. A Hill Lands Ordinance enacted in 1937 had enabled the appointment of a Hill Lands Officer in 1938 and, importantly, a Chinese Agricultural Assistant (Hill Lands) in 1939.\textsuperscript{75} Drastic action was necessary, as despite the ‘thousands of dollars … being spent annually to clear rivers and streams of silt, soil erosion continues’.\textsuperscript{76} The ordinance targeted Chinese vegetable farmers, whose hillside cultivation practices were blamed for generating soil wash onto padi farms and for polluting the urban water supply.\textsuperscript{77} Under the provisions of the ordinance and the new team, a significant effort was made toward educating local smallholders and farmers as to the ‘proper’ methods of cultivation that would avoid exacerbating erosion. The ordinance also enabled firmer legislative and regulatory measures to be put in place. Under its terms, around 200 Chinese farmers were required to discontinue planting on the hill slopes of Bukit Gambier and Paya Terubong, close to Ayer Hitam. This scheme resettled those farmers on land allotted them by the government. The farmers objected, arguing that they would be impoverished if they moved. The original scheme had not provided a clause for compensation and,

\begin{itemize}
\item \textsuperscript{73} ‘Public Works in The F.M.S.’, \textit{Malaya Tribune}, 20 July 1916, 11.
\item \textsuperscript{74} ‘Padi Land Ruined By A Planter’, \textit{The Straits Times}, 21 August 1936, 19.
\item \textsuperscript{75} Draft Dispatch to Secretary of State in reply to the S. S. Dispatch & M. S. Dispatch from the Secretary of State, dated 22 August 1939, 5.
\item \textsuperscript{76} ‘Fighting Menace Of Soil Erosion In Penang’, \textit{The Straits Times}, 12 July 1939, 18.
\item \textsuperscript{77} Kathirithamby-Wells, \textit{Nature and Nation}, 175.
\end{itemize}
facing demands from the farmers, the government reluctantly agreed that $40–80 reparation (proportionate to household size) be awarded along with the month’s notice to leave.  

Riverine flooding—thought to be exacerbated by bankside clearance and cultivation and soil erosion—was also considered to be increasing in frequency and severity after 1920. Riverine flooding was also considered to be increasing in frequency and severity. In Pahang and Kelantan, two states that suffered especially from heavy monsoonal rains, and at Kuala Kubu and Fraser’s Hill in northeast Selangor, excessive mining, land clearances and changes to natural watercourses were wreaking havoc. In Kelantan, for instance, a 1938 Agricultural Department report noted how landslips were contributing to river siltation and, whilst arguing that the practice of clean weeding had never become the ‘fetish that it [had] in many of the West Coast Estates’, the slips were in large part due to gully erosion caused by Chinese rubber planters’ clean-weeding practices. The combined reports of the Lands and Mines, and Drainage and Irrigation Departments a year later similarly highlighted the severity of matters in that state.  

In Province Wellesley, the government granted an extra $30,000 on top of normal grants to deal with ‘some serious flooding’ in 1925. The stated cause was ‘the clearing of land and cultivation within the catchment area, together with the construction of dams by various cultivators for the purpose of protecting their lands from flooding’. Erosion there had caused ‘thousands of tons of precious topsoil … [to be] … washed into ravines and rivers’ to an extent that ‘cannot be calculated’, claimed one horrified commentator. While there was legislation in place to reserve river banks—50 yards on either side of the river in Pahang and 12 yards in the Cameron Highlands, for example—it was not always observed. By 1927, the problem was so critical that a special investigative committee was convened. One year later, the committee presented their first formal report. ‘While a variety of factors have contributed towards the deterioration of the rivers in Malaya’, the report observed:

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78 ‘Farmers’ Dispute with Govt. Ends’, Malaya Tribune, 23 August 1940, 3.
79 Draft Dispatch to Secretary of State in reply to the S. S. Dispatch & M. S. Dispatch from the Secretary of State, dated 22 August 1939, 5–6. For an historical precedent, see Forest Reserve Commission to Government, 16 January 1878. British Library, India Office Collections; Proceedings of the Madras Board of Revenue, 27 August 1878, no. 2400. British Library, India Office Collections: ‘[A]ny extensive denudation near the sources or along the course of streams must of necessity be followed by destructive floods’. Quoted from Sutton, ‘Redeeming Wood’, 103.
81 Memorandum by the Legal Advisor Kelantan, 4 May 1939. Kelantan 413/1939, 3. NAM.
82 Motion by the Colonial Engineer for a special vote of $30,000 (£3,500) to meet expenses in connection with a scheme to deal with some serious flooding in the vicinity of Sempang Amap, Southern District, Province Wellesley, RM I.E/59, 1925, Appendix B161. National Archives of Singapore (NAS).
84 Draft Dispatch to Secretary of State in reply to the S. S. Dispatch & M. S. Dispatch from the Secretary of State, dated 22 August 1939. Kelantan: 332/1938, 7a & 7c, 5–6. NAM.
there is no one factor which has played a more important part than the presence of large quantities of sand, resulting from mining operations, in the beds of a number of the rivers and their tributaries … Landslides on our mountain sides are not infrequent, and erosion at the head waters of every river is continuous … Every fall of rain washes surface soil from thousands of acres of tilled and cultivated lands towards our river courses … [and] Vast areas of land have been, and are being, denuded of their forests.85

Flooding was so severe that the American consul in Malaya felt it warranted a special report to Washington in 1928. Noticing that although floods were not a new issue:

[their] seriousness is increasing with the industrial development … Yearly, the many streams in Malaya have … overflowed their banks causing serious damage to property and life … At times entire villages have been completely wiped out, rubber estates have been destroyed and other damages following flood seasons have been apparent.86

It was quite apparent to the officers working in Malaya that ‘soil erosion and flood control are closely connected’; thus, preventative solutions had by necessity to be threefold: the afforestation of steep slopes and the safeguarding of agricultural lands, in combination with engineering works to provide flood control.87

### Soil narratives: The muddy waters of blame

Some contemporary commentators believed that erosion had ushered in an era of ‘starvation’, as opposed to the ‘prosperity’ that the empire ought to have delivered for many.88 While acknowledging that government, plantation owners, developers and small-scale subsistence farmers all had some share of the blame, there was a tendency to blame the ‘junglier [sic] and more ignorant occupants of undeveloped and backward tracts’ for worsening the problem by denuding slopes and catchment areas.89 Such rhetoric was nothing new. Discussions during the first and second British Empire Forestry Conferences held in 1920 and 1923 raised how shifting cultivation (normally taken to be traditional/native practices) had destroyed thousands of acres of forest land across the empire.90 Such language finds resonance in

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86  Report sent from the American Consulate at Singapore to the Secretary of State, Washington, 30 August 1928. M712/15, ff. 173–4. NAS.
89  ibid., 912.
the words employed by Tempany’s successor in Malaya, O. T. Faulkner. Faulkner’s claim that the farmer of alienated land ‘can if he likes, whether through ignorance or because his occupation is temporary, ruin his land unless the District Officer takes action’ strongly suggests that he fully expected such behaviour from smallholders. His statement reveals the framing of smallholder and DO in binary opposition in his mind, representing uneducated and educated respectively. The idiom was not uncommon. Echoed by Sir Daniel Hall, Director of the British John Innes Horticultural Institution, he judged it the difficult task of the imperial authorities to dissuade people accustomed to performing age-old agricultural procedures from their folly. Hall’s sentiment was iterated more vehemently by Sir Reginald Glancy (then a retired member of the Council of India and an advisor to the Secretary of State for India) in 1938. Glancy was certain that, a generation earlier, firm legal orders and the employment of forced labour would have managed the task at hand. Today, he opined, the government’s softly-softly approach to the masses had rendered that impossible.

The situation was appreciably more complicated than the dichotomy suggests. It was clear to many actively involved in the field that ‘civilisation’—i.e. the structures of life imposed by colonising Europeans—was a principal factor in generating the conditions that had amplified and perpetuated land degradation. Indeed, G. T. Stanley Clarke, retired District Commissioner to Basutoland, claimed in 1942 that the only way to understand the contemporary situation was through history. While acknowledging the role of changing climatic conditions in causing erosion, for the most part he blamed the actions of avaricious Europeans. The European had exhausted the soil ‘to a greater extent than nature intended’, he said, going far beyond the smaller-scale farming practices of indigenous cultures. Tempany also convincingly advocated this view. He viewed colonisation as the element that had tipped the delicate balance from a natural/small-scale process of attrition to a man-made disaster. ‘The indigenous inhabitants of erosion-prone lands are invariably aware of the dangers’—he argued in a lecture given in 1950—‘were this not so they could not have survived, as they have done, for thousands of years’. But the ‘penetration of erosion-prone lands by northern races [which] has been going on with unparalleled

91 Faulkner served in this post from 1936 until 1938, when he left to take up the position of Principal of the Imperial College of Tropical Agriculture, Trinidad. ‘Former Malayan Official At Trinidad’, The Straits Times, 13 April 1940, 14. He was previously Director of Agriculture in Nigeria, 1921–36: ‘Dr Tempany’s successor’, The Straits Times, 17 April 1936, 12.
92 O. T. Faulkner, Director of Agriculture (Straits Settlements), to the Colonial Secretary, 31 March 1938. Kelantan 817/1938 1 Appendix, 2. NAM.
94 ‘Sir Reginald Glancy’, The Straits Times, 10 December 1939, 1.
97 Soil Erosion (Part 1), 20–1. CO 852/394/14. TNA.
rapidity’ introduced methods that surpassed ‘the traditional shifting cultivation of primitive peoples [that had in] unmodified form provide[d] safeguards’. As Huxley had also argued, the ‘white man’ had modified ‘the cycles of nature’. Nevertheless, nobody proposed a return to a pre-colonial state as a solution. In fact, erosion was increasingly used as an argument against self-governance. Maclagan Gorrie’s perspective was that only a well-intentioned autocracy had the means to push through the complex and comprehensive legislation necessary to combat erosion. A democratic government elected by the uneducated masses would not have the requisite skills or authority to manage such a pervasive and deep-rooted problem. Such a government would be possible only after many years of investment by the British in widespread educational initiatives. Huxley also argued in 1937 that colonial governments had a duty to be more hands-on, even so far as intervening in ‘tribal habits and customs’ if they were considered damaging. Official reticence to interfere in customary land management practices, she claimed, stemmed from ‘an acute fear of criticism’ made real in the regular dismissal of colonial officers who were considered too heavy-handed. The culture of caution was at odds with the level of intervention required. An effective solution could be achieved only by a resolute government who were prepared to use force, if necessary.

In January 1942, everything was to change. British Malaya capitulated to Japanese invading forces and was occupied until September 1945. When British rule resumed in 1945 under the emergency British Military Administration (BMA) Government, a series of investigations was commissioned to evaluate the extent of damage to forests, plantations and agricultural land across the peninsula. The commanding Chief Royal Engineer warned of the ‘possibility of a major catastrophe resulting from the irresponsible clearing of land unsuited for intensive cultivation’. The Japanese, it was claimed, ‘had destructively exploited all accessible forests in the country without regard to the great danger of soil erosion’; had encouraged dangerous ladang (shifting cultivation); discontinued the pre-war policy of preventing extensive jungle clearances on steep hillsides; and felled thousands of acres of rubber trees peninsula-wide. These practices had had the knock-on effect of causing ‘extensive damage to anti-malarial and other engineering works … the silting up of … water suppl[ies], irrigational channels and padi field[s]’ and it was feared that

103 ‘Repairing Jap Damage T o Malayan Forests’, The Straits Times, 19 August 1946, 3.
106 W. A. Goode, Chief Secretary, to the Secretariat, Malayan Union, 26 June 1946. R. C. 336/1946. NAM.
more ‘silting and flooding, and consequent damage to crops’ would be the result.\textsuperscript{107} The BMA’s difficulties were surmounted by the loss of many records during the war. This included legislation to check erosion and curtail shifting cultivation practices drafted in the very active period of 1937–40.\textsuperscript{108}

 Whilst the official correspondence lambasted Japanese land management practices, there is some sense that the damaging effects of occupation were exaggerated. An interesting column written by the journalist Dickson Brown in 1945 suggests another side to the story. Fully prepared to see the ravages of war and occupation on Malayan rubber estates in the anti-Japanese hype of 1945, Brown undertook a tour of the southern peninsula. He was surprised to note that ‘not once during that journey did I see a single rubber tree that had been tapped during the past three years’. Interviewing the returning plantation owners, he found that not only had the Japanese not tapped the rubber—preferring to rely on imports from Indo-China—the majority of estates were in better condition than before the war. This was because neglect had resulted in a ‘luxuriant growth of cover plants or weeds’ that protected the plantations from erosion.\textsuperscript{109} Brown’s investigative journalism had focused only on rubber, but the findings of his 700-mile round trip and interviews with people in the field ought not to be dismissed. Indeed, they contribute to evidence of a narrative of blame that the British were all too eager to develop to deflect from their own policy failures.

 After the Second World War, erosion worsened in many parts of Malaya. Stretched resources, a result of the post-war rehabilitation, prolonged disruption to normal economic activities, and a severe food shortage put pressure on the land. Many areas previously given over to recreation, or that had lain fallow, were forced into agricultural use both during and immediately after the war. The ‘Grow More Food’ campaign and the ‘Short Term Food Production’ campaign initiated by the BMA in 1946 opened the floodgates for farmers to cultivate more areas than ever before under Temporary Occupation Licences (TOLs), the latter described as little more than ‘vandalism’ by the historian Tim Harper.\textsuperscript{110} When the government rescinded these rights in 1948, they were left with an ecological, and social, disaster. The combination of temporary licences and a post-war increase in illegal farming brought erosion back up to levels not seen since the aftermath of the Great War.\textsuperscript{111} In Batu Arang, Selangor, for instance, the Assistant Civil Affairs Officer noted how squatters

\textsuperscript{107} Soil Erosion: Forest and Estate Areas felled by Japanese, 30 October 1945. SEL:SEC 282/1945, 3. NAM.
\textsuperscript{108} T empany, ‘Soil Erosion and Conservation’, 555.
\textsuperscript{109} Dickson Brown, ‘700 Mile Tour Of Malayan Rubber Areas’, The Straits Times, 23 September 1945, 4.
\textsuperscript{110} Tim Harper, The End of Empire and the Making of Malaya (Cambridge: Cambridge University Press, 1999), 102. Copy of minutes from a meeting on the subject of soil conservation in short term food production, held 23 September 1946. SEL: SEC. 282/1945, 68–86a. NAM.
\textsuperscript{111} Soil Erosion: Forest and Estate Areas felled by Japanese, 30 October 1945. SEL: SEC 282/1945, 4b. NAM.
had cleared 1,000 acres of jungle to plant food crops.\textsuperscript{112} The intense pressure to produce enough food to meet needs demanded that reserved land be made over to food production.\textsuperscript{113} Thus legal, as well as illegal, clearances increased significantly over the late ’40s.

Near Kuala Lumpur, this compounded river siltation and contributed to flooding in an area already well known as a trouble spot.\textsuperscript{114} The situation was especially bad at Beranang, Rinching, Semenyih and Ulu Langkat, where considerable quantities of soil were washed down from the Negri Sembilan hills.\textsuperscript{115} The deluge of concerned reports from DOs from across the same area, testifying to illegal clearing, damage and fears that floods would only intensify as a result, articulate a deep sense of unease. At Sungai Buloh, for instance, the problem was especially acute. District Commissioner A. B. Ramsey and the Director of Drainage and Irrigation, W. Grantham, noted in 1946 how the Short Term Food Production area at Ulu Buloh and Endau was causing serious sheet erosion and siltation in Sungai Buloh and Sungai Damansara, with heavy washing into Sungai Kembit.\textsuperscript{116}

Government strategies toward the Chinese vacillated between tough and conciliatory. Penang Hill is a case in point. An area highlighted as severely eroded before the war, the situation had only worsened. Frightening reports in 1947 claimed that within just six months Chinese cultivators on Penang Hill had caused six inches of topsoil to wash into padi downhill.\textsuperscript{117} The Collector of Land Revenue, V. E. Dawson, issued the dire warning that the area was in danger of becoming a ‘bare, forbidding rock’.\textsuperscript{118} British policy at Penang from the late ’30s until the end of 1941 had been to resettle Chinese farmers then cultivating the hill slopes. In 1947, the BMA discovered that at least 400 of those ordered to leave in 1941 had, in fact, remained. Rather than evicting the farmers outright, Dawson explained that 250 permits had been issued in March 1947, a number that had increased to 460 by June, the majority of which related to holdings on the Paya Terubong and Relau sides of Penang Hill. The permits were issued ‘on condition that holders take all necessary anti-erosion measures to protect padi and other food areas in the lowlands and to check any threat to the hill itself’.\textsuperscript{119}

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\textsuperscript{113} Series of letters and memos on soil erosion and emergency food production in Selangor, 30 July 1946 – 21 July 1947. SEL: SEC 282/1945, 58–94. NAM.
\textsuperscript{115} Soil Erosion in the Beranang Catchment Area, 23 August 1946. SEL: SEC 282/1945, 63. NAM.
\textsuperscript{116} Director, Drainage and Irrigation, to the Chief Secretary, Kuala Lumpur, 24 May 1946; District Commissioner (Coast) to the Resident Commissioner Selangor, 10 July 1946. SEL: SEC 282/1945, 22, 46. NAM.
\textsuperscript{118} ‘Erosion Threat to Penang Hill’, \textit{The Straits Times}, 10 June 1947, 4.
\textsuperscript{119} ibid.
\end{flushleft}
An oft-repeated attitude of post-war government officials was that the erosion problem would be solved only if the affected areas were ‘rid’ of the Chinese cultivators.120 This was not considered an ‘easy matter as the Chinese concerned are both numerous and inclined to be stubborn’.121 In the immediate aftermath of the war, nothing short of military assistance was deemed necessary to force the Chinese cultivators, due to their resistance and, in some cases, even violence.122 Removing the legally authorised farmers after their TOL had expired was also challenging:

it should be realised that the Chinese, admirable as they are in certain forms of agriculture, have a very bad record when it comes to Temporary Occupation Licences on undulating or steep land. The exploited lands of Malacca, Southern Negri Sembilan, Johore and Singapore Island, the result of uncontrolled gambier and tapioca planting in the past[,] are known to all of us. The more recent rape of parts of Jelebu District by Chinese planting bananas is less well known. They are now out to repeat this in the Genting Sempadan area if their efforts are not controlled in time.123

While there is no doubt that the occupation had left a momentous task of ecological reconstruction, the perpetuation of a blame culture toward the Japanese within the soil erosion narrative was a convenient way to deflect from any perceived failings of British Government environmental policy after 1946. With the intensification of a ‘striking interim assertion of imperialism’ amidst renewed calls for independence and increasing conflict with the Malay elite, more traditionally supportive of British rule, a Japanese scapegoat was a canny political weapon.124 The balance of blame tipped between Japanese and Chinese from late 1945 to 1946, steadily increasing over the late ’40s. Although Chinese farmers had been held responsible before the war, this time the narrative had undergone a disturbing shift. Unlike the more measured way they had been dealt with previously, with educational programs and compensated resettlement, now they were more often likely to be forcibly resettled or prosecuted. This shift represented the different scales of the problem before and after the war, but also the British Government’s changing attitude toward the Chinese. The declaration of a State of Emergency in 1948 had the ironic and probably unintended consequence of enabling the government to remove squatters practising shifting cultivation in a way and to an extent that could not have been imagined.

120 Letter on Soil Erosion from the Forest Office, Kuala Lumpur to the Chief Secretary, HQ, BMA, 1 November 1945. SEL: SEC 282/1945, 4b. NAM.
121 State Agricultural Officer, Pahang, to the Resident Commissioner of Pahang, 24 March 1947. MU 1963/46, 45b. NAM.
122 Memo to the Chief Secretary, HQ, BMA Kuala Lumpur from Lt. Col. J. P. Mead, Officer-in-Charge, Forests, 16 November 1945; S.C.A.C. Works to the Chief Secretary, HQ, BMA, Kuala Lumpur on Prevention and Cure of Damage by indiscriminate felling in Jungle areas, 11 January 1946; Copy of a minute by Col. M. C. Hay in R.C. Johore, 12 April 1946. MU 1963/45, 5b, 8, 20a. NAM.
123 State Agricultural Officer, Pahang, to the Resident Commissioner of Pahang, 24 March 1947. MU 1963/46, 45b. NAM.
124 Martin Thomas, Bob Moore and L. J. Butler, Crises of Empire: Decolonisation and Europe’s Imperial States (London: Bloomsbury Academic, 2015), 42.
before the war. This involved the forcible removal of rural farmers and squatters (the majority of them Chinese) to ‘new villages’—essentially guarded camps—legally under the terms of the Emergency.

Conclusions

In 1950, Tempany had claimed that great progress had been made in curtailing erosion globally, especially in Malaya where ‘erosion on estates, at one time serious, has been largely checked’. Tempany’s statement might have been a little premature. In 1952, an official statement from the Department of Agriculture pointed out that ‘the danger of erosion is very real’.¹²⁵ The situation at Pahang and Negri Sembilan was still worrying local officials, especially in Negri Sembilan where ‘defiant’ cultivators were preventing real progress.¹²⁶ Erosion also persisted in Selangor, especially around Sungai Buloh, Sungai Damansara and the Klang River catchment, as before.¹²⁷ Whilst Tempany may have painted an overly rosy picture of Malaya’s situation, he realised that much more was necessary to combat the problem across the colonial empires. More research was needed on basic soil science, climate and vegetation, he argued, alongside education for the native populations. Last, but not least, he criticised the over-reliance on data from the United States, as opposed to learning from experiential practices in Africa and Asia, especially the disinclination to link land strategies with the ‘social … side’ of native and local cultures.¹²⁸ In these statements, Tempany had hit the nail on the head in understanding that preventing erosion was a far more complicated matter than a simple top-down imposed land management policy could tackle.

The understanding of the causes of soil erosion tied in with wider progress in the science and understanding of the soil, and the connections between agricultural practices and erosion. In most cases, interpretations of erosion in Malaya were objective, rational and scientific. But it is hard to avoid noticing how allocating blame for the problem changed, largely corresponding with the political scapegoats of the time. Before the war, it had been the shifting cultivators, Malay or Chinese, whose supposed ignorance of ‘proper’ land management techniques had contributed to erosion, alongside a wider narrative of European colonial failure. During and immediately after the war, the Japanese were culpable. After 1945–46, the Chinese

¹²⁵ Letter on behalf of the Member for Agriculture and Forestry, Federation of Malaya, to the State Secretary, Selangor, 4 March 1952. 357/1949/22. NAM.
¹²⁶ Soil Erosion: Present Position in the respective states, summarized from reports from State Agricultural Officers, 1947. MU 1963/46, 46. NAM.
¹²⁷ District Officer, Ulu Selangor, to the State Secretary Selangor, 2 September 1949; District Office, Kuala Lumpur, to the State Secretary Selangor, 12 September 1949. SEL: SEC 359/1949, 12, 13. NAM.
were increasingly targeted, a situation that intensified as we move toward the Emergency of 1948. The deflection of responsibility to different parties could thus be considered part of a wider political narrative.

This article has largely concentrated on the situation from the top down and the attitudes of the British officials engaged in forestry, land management and governance. This perspective represents just the tip of the iceberg. While undertaking research for this article, the records revealed tantalising glimpses of ordinary people's responses to governmental interference in their agricultural activities, many of which were integral to long-held cultural beliefs and practices, or simply their survival. While it may have been an inconvenience to government to resettle smallholders, the ‘inconvenience’ to the farmers who had to start afresh must have been intense. At the same time, however, the impact of soil erosion would have been felt in declining harvests or, more dramatically, in landslips or soil wash onto crops, would have had a severe effect on livelihoods. These stories, and the stories of resistance and accommodation, whilst outside of the scope of this present article, demand to be told.
Hankow was notorious throughout China as a tinderbox. Indeed, to many its name was synonymous with fire.

William Rowe¹

It may even be said that the injury done to China by Kerosene is more grave than that done by opium, for although opium is indeed a poison, its action is slow, whereas with Kerosene, which is found everywhere, if it once catches fire, it spreads the more you try to put it out.

Zhang Zhidong²

Introduction

One winter evening in 1849 the Yangzi River caught fire. The conflagration broke out on a sampan moored between Hankou, Wuchang and Hanyang, the three sister cities known today as Wuhan.³ Here, the harbours were so crowded that observers often described how a ‘forest of masts’ seemed to stretch out to the horizon.⁴ This forest was now ablaze. The poet Ye Diaoyuan immortalised the disastrous scenes, describing a cacophony of gongs beaten to warn of the oncoming inferno, ash floating into the air, and water turning red in the flickering light of the flames. The fire consumed all vessels in its path, from humble cargo sampans to ornate flower boats (huachuan)—a euphemism for floating brothels. Those aboard were trapped ‘like fish swimming in a cauldron’, yet if they jumped into the river they faced the very probable risk of drowning. So many chose this latter option that Ye remarked

² *North China Herald*, 24 February 1888, 211.
³ I follow Rowe by focusing mostly on Hankou—or Hankow as he wrote it at the time—but we will occasionally follow fires across the rivers to Wuchang and Hanyang.
ruefully that although the ‘fire god’ (huoshen) had committed the evil act, it was the ‘water god’ (shuishen) who derived the benefits. Before long the merchant guilds that owned many of the burning boats sent for their private fire brigades, who dragged a number of hand-drawn fire engines to the riverside. The conflagration was now raging with such intensity that they could do little more than wait until it had burnt itself out. The economic elite of one of the greatest commercial cities in the Qing Empire stood back and watched half a million tons of precious cargo go up in smoke.5

Conflagrations such as this were not unusual in nineteenth-century Hankou. In his masterful two-volume study of the city during this period, William Rowe described how cramped neighbourhoods built from flammable materials suffered frequent fire disasters.6 Being one of the first historians to look beyond the European or American context, Rowe’s pioneering analysis gained significant influence in the historiography of fire. Extrapolating from his observations, Lionel Frost drew on game theory to suggest that the citizens of Hankou were locked in the prisoners’ dilemma—individuals defected from the collective responsibility to build a fireproof community, as they calculated that it was more financially expedient to replace individual buildings lost to flames. This collective deficit was exacerbated by the government, which failed to promote the necessary civic responsibility to tackle the problem.7 Frost’s analysis expanded upon earlier research conducted with Eric Jones, which had suggested that nineteenth-century cities in the United States and Europe had become substantially less fire-prone due to increases in lot sizes and the development of fire-retardant architecture—a process sometimes described as brickification. Meanwhile, the cities of ‘Asia and the Islamic World’ remained cramped and flammable, and thus prone to devastating conflagrations.8 This vision of global urban history was, as Cornel Zwierlein has observed, ‘untroubled by postcolonial reflections’.9 Instead, it posited a universalist trajectory towards urban modernity—a kind of stage theory of hazard reduction, in which European and American standards became the global aspirational ideal, and the non-West was trapped in an earlier epoch of fire.

6 William T. Rowe, Hankow: Commerce and Society in a Chinese City, 1796–1889 (Stanford, CA: Stanford University Press, 1984); Rowe, Hankow: Conflict. Fires had been a major problem since the city was founded in the Ming Dynasty: see Yan Changhong, ‘Dahuo shao bujin, jie hou you fuxing—Ming Qing shidai Hankou da huozi’, in Wuhan zhanggu, ed. Xiao Zhuhua and Yan Changhong (Wuhan: Wuhan chubanshe, 1994).
The temporal framework that underpins this theory—in which fire serves as an index to gauge societal advancement—draws upon assumptions dating back at least to the nineteenth century. Cathy Frierson has described how fire was perceived as ‘stigmata of backwardness’ for late imperial Russia, which seemed locked in a form of rural stagnation that Western Europe had consigned to history.\textsuperscript{10} The representation of fire as a developmental deficit assumed particular potency within colonial and treaty-port cities, where radically different urban forms butted against one another. Since the eighteenth century, foreign merchants in Canton had seen the fires that ravaged the adjoining Chinese city as a pathological feature of the local culture—ignited by a ‘fatalistic’ population with little regard for safety and a passion for fireworks.\textsuperscript{11} Later such assumptions were codified into European insurance practices, with foreign companies refusing to issue policies for native buildings in Hong Kong and Shanghai.\textsuperscript{12} Ironically, as Zwierlein has observed, fire-loss ratios in these cities were actually lower than those found in Europe and America. Similar prejudice surrounded the issuing of fire insurance in Istanbul, despite the fact that Muslim and European buildings actually burned in similar proportions.\textsuperscript{13} In other instances, a clash of architectural styles that seemed to demonstrate the superior safety of Western styles actually represented contending adaptations to differing risks. Greg Bankoff has described how Spanish colonists in Manila built stone houses that offered excellent protection from fire, yet during earthquakes risked crushing their occupants to death. Meanwhile their indigenous counterparts lived in fire-prone bamboo and palm huts, which would inflict relatively little damage during earthquakes.\textsuperscript{14}

Such examples demonstrate that the temporality of fire disasters is far more complex than is often assumed. They suggest that Asian cities were not necessarily behind Europe and America in an inexorable march towards urban rationalisation, and reveal, instead, that varying patterns of urban development generated varying risks. This more nuanced picture is reinforced when we realise that, although there may have been a statistical decline in the incidence of urban fire in the West during the nineteenth century, the conflagrations that did occur often reached startling new magnitudes. This was due to a process we might describe as the \textit{industrialisation}.
of fire disasters. As inexperienced city dwellers found themselves awash with volatile chemicals and unfamiliar technologies were woven into the fabric of older neighbourhoods, a tremendous number of novel fire hazards were unleashed. Stephen Pyne was certainly not wrong when he described how industrialisation would eventually help to reduce urban conflagrations, creating cities in which fire was almost entirely ‘embedded in machines or dispersed to power plants [and] absorbed into electrical or gas appliances that eliminated the need for open flame’. Yet, before this advanced domestication could be achieved, industrialising cities first had to pass through what Scott Knowles has described as a ‘conflagration era’, in which their neighbourhoods burned ‘with a ferocity that challenged the notion of modernity itself as a sustainable urban condition’. In this temporal framework, frequent fires were not so much an embarrassing sign of urban immaturity, more an awkward phase experienced by cities progressing to a new material form.

This article describes what happened as Hankou entered its own conflagration era. During the early twentieth century, the cramped alleyways of the city centre gave way to spacious boulevards, meaning that before long it was quite unrecognisable from the wooden metropolis described by Rowe. Despite these changes, Hankou continued to suffer regular catastrophic fires. At first it might appear that this was a problem of local governance, with politicians failing to drag their citizens into a modern world of rational planning. This article presents an alternative explanation, arguing that local attempts at reform struggled to keep pace with a continuously evolving hazard. In this respect, the situation in Hankou closely resembled that described by Christine Meisner Rosen in Chicago, Boston and Baltimore; cities that continued to suffer the scourge of fire because ‘adaptations lagged significantly behind the need for adaption’. Yet Hankou faced considerably greater political and economic setbacks than these American counterparts, as its period of modernisation was accompanied by frequent wars and revolutions that caused near-complete societal collapse. Meanwhile, increased integration into global markets exposed Hankou to an array of new incendiary products. Wooden alleyways were doused with kerosene and petroleum, while their inhabitants struck friction matches to light machine-rolled cigarettes.

The story of fire in modern Hankou is not one that can be understood by dissecting parochial foibles of town planning—it was part of a broader global narrative. Whilst conflagrations thrived in cramped wooden neighbourhoods, they were sparked by phosphorus dug from distant mines and fuelled by oil shipped across the ocean.

16 ibid., 111.
Ironically, the profits from such incendiary products would help to lay the economic foundations for the fireproof cities of Europe and America. This dynamic was replicated in microcosm in Hankou, where matchstick merchants and kerosene barons helped to improve fire safety by modernising the city, even as the products they peddled were causing horrific conflagrations. By examining the turbulent history of one fire-prone city, this article aims a broader critique at the tendency to treat places like Hankou as laggards on the march to rationalisation. It is not sufficient to castigate particular patterns of urban morphology for turning cities into kindling without also asking how global markets ignited and accelerated the flames. True, the fires that struck Hankou were local problems caused by overcrowding and flammable architecture. Yet the flames were also fuelled by interactions with novel commodities, markets and weapons. Stated simply, Hankou did not burn because it was failing to be modern—modernisation burned Hankou.

A city of fire and water

Fire and water have been two of nature's greatest urban planners. Each in its own way has helped to forge the contours of cities, punishing those that ignored basic environmental constraints with conflagrations or inundations. While many urban populations have had to contend with one these hazards in their histories, few have suffered both with such regularity as those living in Hankou. Though both problems may seem to stem from a common problem of poor municipal governance, in reality the dialectical relationship between fire and water was considerably more complicated. Counter-intuitive as it may seem, an abundance of water actually made Hankou more fire-prone. As a thin strip of land bordered by rivers and wetlands on all sides, the city was unable to sprawl and consequently became one of the most densely populated areas in the Qing Empire. Local building techniques compounded the problem of overcrowding, as the houses of Hankou were constructed mostly from timber, bamboo and reed. Rowe explains that this architectural choice was the result of the city's thriving timber market, yet Frost speculates that it may also have represented the triumph of individuated cost-cutting over considerations of collective well-being. A further explanation is that these styles represented a rational response to the problem of flooding—timber and bamboo could be replaced with relative ease if damaged by water, while reed huts (maowu or maopeng) could be relocated to high ground when rivers rose. Like those living in earthquake-prone Manila, the residents of Hankou were forced to contend with a hierarchy of hazards; by ameliorating the dominant threat of flooding they generated a secondary risk of fire.

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19 Rowe, *Hankow: Commerce*.
20 Rowe, *Hankow: Conflict*, 159; Frost, ‘Coping in Their Own Way’.
The relationship between fire and water was locked into the annual rhythm of advancing and retreating rivers. Although summer posed a number of fire hazards, including lightning, it was winter that was the season of fire, being relatively dry and windy, meaning sparks would be whipped up into flames. Winter also marked the lull in the agricultural year, when tens of thousands of rural migrants would travel to Hankou looking for casual work. Such economic nomads built huts from wild-land grasses and urban detritus, filling in the gaps in the urban landscape to create an unbroken chain of combustible material. Meanwhile, shrinking rivers left waterways so clogged with wooden vessels that they ceased to function as firebreaks and instead became conduits for flame. Conflagrations spreading from boat to boat or sparks drifting on the wind allowed fire to jump the rivers, spreading across the not inconsiderable distance between the three Wuhan cities. The season of fire finally began to abate with the coming of the spring rains. Yet, rather than heralding a period of stability, the precipitation presaged the coming of the summer floods. Thus, disasters had a distinct temporality, alternating between two seasons of risk.

Hankou residents were not passive in the face of fire. Rowe detailed the considerable efforts expended by the local elite during the course of the nineteenth century to stop the city burning. Unfortunately, the bright light of reform soon lost its lustre, as zoning practices and building codes were ignored and fire lanes became congested. Frost was certainly correct to assert that an absence of governmental action exacerbated these problems. This was less a general problem than a specific issue arising in the mid-nineteenth century. It is worth recalling that during this era the Qing Empire was beset by an array of domestic and international pressures. In this context, it is amazing that any form of fire prevention evolved. Yet evolve it did, the clearest example being guild-sponsored fire brigades, which replaced the military-run brigades of the eighteenth century. Private firefighting was not unusual at this time. It could be found in such diverse corners of the early modern world as the bustling Japanese city of Edo and the logging camps of the American West. The lithograph reproduced as Figure 1 gives some sense of how private brigades operated in the Wuhan cities. It depicts a conflagration in 1884, which destroyed the Yellow Crane Tower (Huanghe Lou) in Wuchang. Though no doubt embellished by artistic imagination, the key aspects of this image are consistent with contemporary descriptions of fires.

22 Rowe, Hankow: Conflict, 159.
23 Ibid. See description of the 1849 fire above. There is also a report of fire jumping the river in The Straits Times, 23 September 1887.
24 Rowe, Hankow: Conflict, 158–68.
We can gain a clear sense of the firefighting techniques and technologies available in the 1880s. In the bottom right, a figure beats a gong, which was in part a siren, announcing the passage of a fire engine, and in part an alarm system for the local population, evoking a similar note of panic to the clanging of European church bells. The centre is dominated by several fire brigades, each competing to tackle the blaze. Firefighters throughout the world have tended to employ two methods—using demolition to create firebreaks and water to douse flames. Early Qing firefighters used both strategies, employing fire hooks to pull down houses and

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26 Dianshizhai Huabao, ji ji, yi (Shanghai, 1884–89) 6: 43. Bayerische Staatsbibliothek, Munich, daten.digitale-sammlungen.de/bsb00075644/image_154, accessed 1 June 2018. *Dianshizhai Huabao* was a popular Shanghai pictorial. For a discussion of this particular image see also Li Qingnan, ‘Jiushi Wuhan huozai yu minjian zijiu’, *Wuhan wenshi ziliao* 2 (2015).

27 See, for example, ‘Hankou huozai’, *Shenbao*, 22 January 1891; ‘Hankou huozai’, *Shenbao*, 24 September 1895.

throwing water from buckets. In the late eighteenth century, firefighters began to employ hand-drawn fire engines known as ‘water dragons’ (shuilong), which were large tanks on wheels from which jets of water were shot using hand-operated piston pumps. Later, many fire brigades began importing lighter American models, which perhaps explains why one of the engines depicted in Figure 1 has a banner reading ‘foreign dragon’ (yanglong). Though a valuable addition to the firefighting arsenal, fire dragons were poorly suited to the narrow alleyways of Hankou, especially when numerous private brigades were vying to be first on the scene of the fire.29

Figure 1 also gives us a sense of the institutional approach to fire in the 1880s. On the left we can see that, in addition to firefighters, a number of soldiers have been posted brandishing spears, no doubt as a precautionary measure against looting, while on the right we see a group of notables sporting distinctive hats. The centre of the lithograph is dominated by firefighting crews, each with a prominent banner revealing their name and institutional affiliation. We can see, for example, that the Praying for Peace (Qiu Xi) brigade was sent from the God of Literature Pavilion (Wenchang Ge), while the Great King Temple (Dawang Miao) had sent the Peaceful Water Dragon (Ping’an Shuilong).30 Such banners, and the accompanying characters that adorned the clothing of brigade members, helped firefighters to identify their institution amidst the confused scenes of a disaster. The missionary W. Arthur Cornaby, who witnessed similar scenes in Hanyang two decades later, suggested that these banners had a religious as well as a practical function. They were designed to ‘label the merit’ of the particular benevolent institution that had sponsored the brigade, to ensure that the good deed of extinguishing a fire was not ‘reckoned to the wrong account in the world of the unseen’.31 Though the text accompanying Figure 1 is silent on this particular religious issue, it does describe how locals trawling through the ashes of the Yellow Crane Tower fire were astonished to discover that several shrines had remained intact. They attributed this miraculous survival to the spiritual efficacy of their protective deities (shenling), such as the carpenter god Lu Ban.

Fire was not merely a practical problem, it would seem, but also a spiritual one.32 The alleyways of Hankou teemed with a vast array of numinous forces, including hungry ghosts (e’gui) and firebirds (huoniao), which could either prevent or cause

29  Rowe, Hankow: Conflict, 164. These various techniques can be observed on display in a permanent exhibition ‘Chengshi daohuozhe’, Shanghai Xiaofang Bowuguan, Shanghai. I am grateful to Isobel Courtney for drawing my attention to the British comparison.
30  Benevolent halls and temples offered numerous forms of support to fire brigades, their deities providing spiritual protection, their patrons offering financial support, and their buildings serving as rallying points and storage facilities. Shuk-wah Poon, Negotiating Religion in Modern China: State and Common People in Guangzhou, 1900–1937 (Hong Kong: Chinese University of Hong Kong, 2011), 22–3.
32  I would like to thank Desmond Sham who was generous with his time discussing various ideas in this article and who helped to illuminate Chinese religious ideas about fire in particular.
The tinderbox city

disasters.\textsuperscript{33} If one wanted to survive, placating these forces was every bit as important as having a functioning fire service. Probably the most important incendiary spirit was the Fire God (\textit{huoshen}). Anxiety about this potentially malevolent figure was so potent that some would refuse to admit people who had recently suffered a fire into their homes in case his influence still lingered.\textsuperscript{34} This fear inspired citizens of Hankou to erect a special Fire God Temple (\textit{Huoshen Miao}), which was, ironically, consumed by flames in the late eighteenth century. Temples were large wooden buildings stuffed with people burning candles and incense and setting off fireworks, and so were amongst the most fire-prone buildings in Hankou. Nevertheless, the fate of the Fire God Temple proved sufficiently ignominious to dissuade locals from its reconstruction.\textsuperscript{35}

In addition to praying to the deities, urban citizens also employed \textit{fengshui} to determine the geomantic causes of fire. One famous example occurred in the eighteenth century, when a theory arose suggesting that excessive quarrying of a mountain to the north of Hankou had exposed a ‘deposit of fire’ (\textit{huoku}), which was now flowing directly into the city, causing frequent conflagrations.\textsuperscript{36} \textit{Fengshui} seems to have fallen out of favour with the educated elite by the early twentieth century, as a local history written by the garrison commander Xu Huandou in the 1910s ridiculed those who believed that fires could be caused by the cutting of ‘energy pulses’ (\textit{qimai}) in the landscape.\textsuperscript{37} For others, however, geomancy and religion continued to provide a meaningful explanation for conflagrations, even as new materials and markets were changing the very nature of fire.

Foreign fire

The Qing Empire lost the Second Opium War in 1860. Soon after, the British sent one of the era’s most notorious arsonists to open Hankou as a treaty port. Having burned the Summer Palace in Beijing, Lord Elgin had dealt the Qing Government a humiliating blow, which remains seared in popular memory in China to this day. On his arrival in middle Yangzi, he discovered the Wuhan cities in ashes. On this occasion, the authors of destruction were the retreating forces of the Taiping Heavenly Kingdom, which had been engaged in repeated waves of invasion

\begin{thebibliography}{9}
\bibitem{Cornaby_1895} W. Arthur Cornaby, \textit{A String of Chinese Peach-Stones} (London: C. H. Kelly, 1895), 333.
\bibitem{Cornaby_1822} Dating from the seventeenth century, this seems to have later morphed into the Temple of the Four Officials (\textit{Si Guan Dian}). Liu Fudao. \textit{Tianxia diyi jie: Wuhan Hanzheng jie} (Wuhan: Chongwen shu ju, 2007), 180; Ye, \textit{Hankou zhusheji}, 42.
\bibitem{Xu_1915} Xu Huandou, \textit{Hankou xiaozhi} (Wuhan: Aiguo tushu gongsi, 1915).
\end{thebibliography}
and counter-invasion against the Qing forces in the city since the early 1850s. It was in this vastly depleted port city that the British concession was established in the early 1860s, followed in 1895 by German, Russian, French and Japanese concessions. Having long dreamed of exploiting this legendary inland entrepôt, the foreigners who made their homes in these concessions were, for the first few decades at least, frustrated by their inability to break into the Hankou market. Where foreign merchants failed, however, foreign merchandise thrived. The arrival of novel products would revolutionise life in Hankou, and also transform the way the city burned.

The first great incendiary import was kerosene. The burning of mineral oils was not new to China, where people had used natural deposits for at least 3,000 years. Yet this new industrially produced hydrocarbon fuel, first refined from coal oil by the Canadian geologist Abraham Gesner in 1846, burned with less smoke and was several times brighter than vegetable oils used for illumination. It was improved even further when petroleum replaced coal as the base material over the next decade. Nowadays, we tend to think of electricity as the great illumination technology of the modern world, yet the spectacular rise of kerosene was equally revolutionary. Despite some thwarted attempts to create a native oil industry, with foreign companies prospecting in Shaanxi for example, until 1949 almost all kerosene and petroleum was imported, mostly from the United States. Standard Oil enjoyed a virtual monopoly on the trade until the 1890s, thanks in large part to the canny marketing of Ye Chengzhong, a distributor who used an empire-wide network of Ningbo merchants. The monopoly was finally broken when rival companies undercut Standard by developing cheaper bulk distribution. Still, the profits that the corporation derived from their Chinese enterprise remained phenomenal. They exported 830,000 gallons of kerosene to the Qing Empire in 1874; by 1920, their annual exports had reached 188,800,000 gallons. Little wonder that locals described kerosene as ‘foreign oil’ (yangyou).

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39 Isabella Bird, The Yangtze Valley and Beyond (New York: G. P. Putnam, 1900); Rowe, Hankow: Commerce.
The inexorable rise of kerosene was bolstered by the near-simultaneous arrival of another great innovation—the friction match. Again, this product was not entirely novel, as 1,000 years earlier people had impregnated pinewood sticks with sulphur to create ‘light-bringing slaves’ (yin guang nu). Despite this pioneering invention, flint and steel remained the dominant form of ignition until the nineteenth century, when the friction match, invented by the British chemist John Walker, arrived in the Qing Empire. Once again, Ye Chengzhong’s Ningbo network played a crucial role in disseminating this new technology, establishing a string of match factories in large cities. The Hankou branch opened in 1897, under the management of Song Weichen. By 1908, it was producing half a million boxes every day. The poet Luo Han described how this ‘foreign fire’ (yanghuo) had led Hankou residents to abandon the ancient practice of passing embers from one stove to another. Convenience came at a heavy cost. Match factories employed women and children in horrifying conditions for little pay. Unlike much of the world, which converted to safer red phosphorus by the early twentieth century, Chinese match manufacturers continued to use cheaper white phosphorus, a chemical that caused poisoning and was liable to spontaneously combust. Cost-cutting helped to make merchant-industrialists such as Ye and Song vast fortunes, whilst transforming matches into ‘the one artefact so cheap that people might freely ask a stranger for one’, as Stephen Pyne has observed. Most people were either unaware of or unconcerned about the inherent abuses of the match industry, as foreign fire and foreign oil were allowing them to illuminate their homes better than ever before.

The price for light was fire. In last two decades of the late nineteenth century, kerosene became the major culprit for conflagrations in Hankou. It was not the first flammable product that locals had encountered. Products such as tung oil, raw cotton and gunpowder were known to cause dreadful infernos, yet few people kept large quantities of these materials in their homes. Strong alcohol was more widespread, and could cause fires, particularly when stockpiled in wine shops.

49 For an example of a gunpowder fire, see ‘Huoyao feizai’, *Dianshizhai Huabao* 14, no. 88 (Shanghai, 1898). On the dangers of raw cotton, see ‘Bye-Laws of the Special District of Hankow, 1925’. FO 228/3187. The National Archives (TNA), London.
50 See, for example, ‘Pojiu michuo’, *Dianshizhai Huabao* 21, no. 19 (Shanghai, 1898).
Yet even the strongest of spirits was hardly as volatile as kerosene, which combined flammability with ubiquity. Worse still, kerosene was burned in lamps that were often faulty and, even if not, could easily be spilled. Due to this incendiary mix, from the 1880s kerosene features more than any other product in reports of fires in Hankou. Though most involved lamps being knocked over, some had more colourful origins. In the summer of 1890, a devout Buddhist set fire to her mosquito net while trying to expel lice from her bed and ended up burning her house down.51 In another instance, two apprentices in a medicine shop knocked over a lamp while fighting, causing an inferno that destroyed five or six of the adjacent buildings.52 One of the worst accidents occurred in 1887 when an impatient chef poured kerosene onto his cooking fire, causing a blaze that would eventually burn 2,000 sampans and kill thousands.53 The oil fire problem was not limited to Hankou or even the Qing Empire. The Great Chicago Fire of 1871, an infamous disaster that burned $125,000 worth of property every minute for 27 hours, was rumoured to have been started by a cow kicking over a kerosene lamp.54 In the United Kingdom, the problem with kerosene—or paraffin as it is known locally—became so acute that parliament debated how best to regulate the fuel. The oil industry responded with a pamphlet entitled The Moloch of Paraffin, which sought to lay the blame on faulty lamps.55 Far and wide, it would seem, the revolutionary fuel that had lit the world, had also lit the world on fire.

The sharp increase in fires prompted the great Qing statesman Zhang Zhidong, then serving as governor of Guangdong and Guangxi, to offer the scathing denunciation of kerosene that is quoted as one of the epigrams for this article.56 The suggestion that this foreign oil might be more dangerous than opium was more than a little hyperbolic—and almost certainly designed for political effect. Yet Zhang cited substantial evidence to corroborate his claim, including a fire in a Shantou paper shop, which had left 400 families homeless, and a steamship fire caused by an exploding lamp, which had left the Pearl River choking with corpses. During the winter of 1887, he claimed, not a single day had passed without a fire in Guangdong, 90 per cent being attributable to kerosene. Zhang had an ulterior motive, as he wanted to protect the native trade in illuminating oils made from peanuts, rapeseed and soybeans.57 He was also using America’s most lucrative export as leverage to reassert Qing sovereignty over trade. Drawing a comparison with the 1881 Chinese Exclusion Act, he reasoned that if the United States was able to limit Chinese immigration to protect its own population, then surely the Qing Empire

51 ‘Hankou huozai’, Shenbao, 11 June 1890.
52 ‘Hankou huozai’, Shenbao, 27 December 1888.
53 North China Herald, 17 November 1887, 303.
54 Rosen, The Limits of Power, 92.
56 Zhang’s memorial was co-authored with the governor of Guangzhou and reproduced in the North China Herald, 24 February 1888, 211.
57 On traditional lamp oils, see Needham, Science and Civilisation, 6: 8.
had the right to limit harmful imports, concluding that 'the law that nations have a right to protect their own interests and prevent injury being done their people applies to both countries, alike, if there is any justice'.\(^{58}\) Zhang never achieved the justice he sought, as kerosene imports and kerosene fires continued unabated.

Zhang was not the only official who sought to ban kerosene, with municipal governors in Shanghai and Hankou both petitioning for similar measures.\(^{59}\) Governors objected to the fuel not simply because it was a foreign competitor that caused accidental fires, but also because it had become a favoured weapon of arsonists. There was nothing novel about the misuse of fire. People had been burning down buildings for as long as there had been buildings. Yet novel incendiary products took the skill out of arson. Accelerants such as kerosene and petroleum increased the speed with which devastating fires could be set, while friction matches meant that it was no longer necessary to fumble with flint or carry a flame conspicuously through the streets. Even an inept novice could now light a devastating fire in an instant. This, perhaps, goes some way to explain why a wave of incendiarism swept through Hankou from the 1880s. The unstable political environment provided the motivation, yet the industrialisation of arson provided the means. There were several different kinds of arson during this period. The criminal fraternity—described in contemporary sources as ‘hooligans’ (liumang) and ‘brigands’ (feitu)—started fires to create chaos, so they could loot property and even kidnap people.\(^{60}\) Meanwhile, the apocalyptic religious groups that thrived in late nineteenth-century Hankou used arson in order to further their sectarian agendas.\(^{61}\) One such group was reported to have been behind a spate of incendiarism that swept through Hankou in 1898, culminating in the worst conflagration since the Taiping Civil War. Several square miles of residential housing burned, and thousands were killed, including some desperate victims who drowned in mud trying to escape.\(^{62}\) Though nobody was brought to justice in this instance, shortly afterwards two religious arsonists were apprehended carrying spirit money doused in kerosene. Whether spirit money was chosen for convenience or for its ritual significance is unclear. The choice of kerosene was no mystery at all, as there were few fuels that could burn a city better.

\(^{58}\) ibid.


\(^{60}\) See, for example, ‘Fei ren zong huo’, *Shenbao*, 30 October 1890; ‘Hankou huozi’, *Shenbao*, 22 January 1891; ‘Friday Night’s Fires’, *Hankow Daily News*, 27 November 1911.


\(^{62}\) The majority of reports attribute the fire to bandit sects: ‘Hankou huozi hui zhi’, *Shenbao*, 28 October 1898; ‘Jiao fu yi yin’, *Shenbao*, 16 November 1898; *North China Herald*, 31 October 1898, 814. One suggests it was an accidental kerosene fire: *North China Herald*, 10 October 1898, 664. There was a rumour that the foreign community had started the fire to expand their concession, vigorously denied in the *North China Herald*, 31 October 1898, 814. Charles Beresford claimed the fire was started by protesters who believed the *lijin* tax was being diverted to foreigners. Charles William Beresford, *The Break-Up of China* (London: Harper, 1899), 142–3.
A final category of arsonist comprised urban developers who used fire to evict unwanted tenants. One of the most infamous instances of this occurred in 1909, when 3,000 thatched huts burned to the ground around Back Lake (Hou Hu) in northern Hankou, killing at least 10 occupants. This highly impoverished area was no stranger to fire, having suffered at least two in the 1890s. In this instance, many suspected that the landowner Liu Xinsheng had ordered the fire to clear the settlement. Known as the ‘king of landlords’ (dipi dawang), Liu was one of the richest men in Hankou. At the time of the disaster, he was hoping to construct a grand new neighbourhood in the north of the city. Few seemed to doubt that he would use fire to hasten this process. Before long, an angry crowd had marched to Liu’s house, where they attempted to break down the door. In the ensuing chaos, a Chinese constable from the police force of the British concession was killed. While Liu never admitted culpability for the fire, he did pay compensation to the family of this policeman, and also to those who had lost their homes in the fire. When hard cash failed to quell the disquiet, five persistent rumour-mongers were arrested and subjected to the humiliation of being displayed in wooden cages outside the gates of Liu’s opulent garden. This draconian treatment seems to have done the trick. When another mysterious fire tore through the Back Lake area just a few months later, no one pointed their finger at Liu. Fortunately, on this occasion there were no fatalities, yet 400 huts were destroyed, almost half of which appear to have been brothels.

Having worked his way up from the squalid hide markets of Hankou, Liu was a hard-nosed businessman, not burdened by the scruples that had informed the behaviour of earlier generations of local merchants. In this respect, he typified a new breed of entrepreneurial industrialist whose uncompromising approach was galvanised by the fractious political and economic environment. Ultimately, Liu would make a far more enduring contribution to the fire safety of Hankou than his well-intentioned predecessors, who had sponsored fire brigades and tried in vain to institute moderate reforms. The spacious boulevards he built, which were lined with brick-built shopping malls and residential neighbourhoods, were far less flammable than the dense alleyways of wooden shophouses that they replaced. The centrepiece of his new development was Xinsheng Road, a grand boulevard that remains the heart of the city to this day, now renamed Jianghan Road.

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63 ‘Hankou huozaizi’, Shenbao, 27 October 1893; ‘Hankou huozaizi’, Shenbao, 7 March 1894.
65 ‘Chengbao da nao zujie anfan’, Shenbao, 24 February 1910. These gardens are now Zhongshan Park.
66 ‘Ku zai Hankou huozaizi’, Shenbao, 9 September 1910.
The irony is that it seems that Liu may have purchased his modern flame-retardant city with fire, burning out the impoverished communities that had stood in his way. Though few were so directly culpable, the hands of other great reformers of this era were similarly blackened by fire. In 1908, the matchbox king Song Weichen constructed a large water tower, which not only made a significant contribution to public sanitation but also freed fire brigades from the arduous labour of lugging water from wells and rivers. While Song is feted today for having constructed this great public utility, few remember how the oceans of kerosene his Ningbo network imported fuelled the flames that burned the city, with his matches igniting the spark. This selective remembrance is not peculiar to the local history of Hankou. It can be traced all the way up the food chain to Standard Oil, a company that funded the Rockefeller Foundation to conduct medical and health campaigns in China, with profits derived from selling cheap kerosene and petroleum. The point is not to castigate particular companies or merchants for moral culpability—they were not individually responsible for the structural transition to an industrialised city. Yet recognising the paradoxical role that dangerous technologies played in improving urban safety does help to complicate teleological narratives of urban rationalisation, especially when we realise that regions that enjoyed improving safety were financially linked to those that were suffering declining standards.

**Incendiary politics**

Of all the fires that raged in modern Hankou, none had more momentous consequences than that ignited on 9 October 1911. It was on this date that revolutionary bomb makers caused an accidental explosion in their clandestine base in the Russian concession. Little did these conspirators realise, as they dragged their unconscious comrades from the rubble, that they had ignited the spark of an accidental revolution that would soon bring down the once-mighty Qing Empire.68 As government troops investigated the fire, nervous revolutionaries in Wuchang decided to launch the famous mutiny, the opening salvo of the Xinhai Revolution. Though celebrated today as a moment of national awakening, the immediate fallout of the Wuchang Uprising had a dreadful impact upon Hankou, as the Qing forces fought fire with fire, unleashing a wave of incendiary weapons on the city.69 Since the last time that Hankou had been destroyed by weaponised fire during the Taiping Civil War, durable building materials and broadened streets had made much of the city centre far less flammable. Unfortunately, the nature of war had also evolved,

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69 For a discussion of the importance of war in Chinese fire history, see Zhong Maohua, ‘Zhongguo huozai shi jianxi (Qin Chao-1949 nian)’, *Zhongguo anquan kexue xuebao* 14, no. 5 (2004).
as the Qing Empire had imported a range of deadly incendiary weapons. Hence, when loyalist troops advanced upon the Wuhan cities, they were able to rain down shells manufactured by the German company Krupp. One of the most spectacular blazes occurred when one of these shells struck the Standard Oil depot, causing an explosion that engulfed the surrounding area with fire and plumes of black smoke. Amidst the chaos of war, looters also set fires to distract the authorities. Soon the streets were festooned with the decapitated heads of arsonists, hung up by their queues as a gruesome warning to others.

In histories of the Xinhai Revolution, if the burning of Hankou is mentioned at all, then it is usually as a backdrop to the broader narrative of war and revolution—much like the flames that frame the battle pictured in Figure 2. When divorced from the grand narrative of national politics, however, this conflagration reveals much about the micro-politics of life in modern Hankou. Amongst the most striking features was the fact that a fire that reduced the Chinese city to ashes left the foreign concessions virtually unscathed. Though the inferno seemed to blaze with untameable ferocity, it would appear, therefore, that there was an element of control.

The proximate cause of this astonishing burn pattern was the desire to maintain diplomatic relations, which ensured that both loyalists and revolutionaries avoided firing upon foreign concessions. The deeper cause was the racial apartheid that foreigners had imposed upon Hankou since the 1860s, which had caused a single city to bifurcate into two distinct fire regimes. The concessions boasted spacious streets lined with large houses constructed from brick and stone, from which all but a select few Chinese residents were excluded by walls and barbed wire. Though often glossed as Western, the style of housing in this area was an architectural hybrid, created as foreign blueprints were redrawn to accommodate local materials, and later were reworked in the hands of local craftspeople. By the early 1900s, treaty port architecture had begun to creep out of the concessions into the Chinese city, thanks to developers such as Liu Xinsheng.

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74 The authors of a recent edited volume define the fire regime as ‘the nexus of environmental conditions, including climate, topography, and natural resources, with the political system that organizes and sustains concentrated settlement’. Flammable Cities, ed. Bankoff, Lübken and Sand, 8.
Though the modernisation of Chinese Hankou diminished the divides separating urban forms, foreigners still retained a distinct advantage. The racial apartheid they imposed upon the city allowed them to be far more selective in how they accommodated a rapidly growing urban population. Though foreign businesses relied upon a cheap pool of migrant labour, low-waged workers were consigned to live in congested alleyways outside the concession walls. These quotidian exclusions were amplified during the 1911 fire, when the British posted soldiers to bar the concession gates, sending thousands of refugees back into the heart of the inferno.

For the British journalist Edwin Dingle, the burning of Hankou seemed indicative of the callous nature of a cruel race: ‘When China burns,’ he inveighed, ‘when she does anything that people who call themselves civilised shrink from dreaming of, she shows the world that she is the past mistress in all things that we call savage.’

Dingle does not seem to have reflected upon the savagery of his own compatriots, who barred escape routes to their fellow citizens in order to safeguard property. Instead, his sympathies were reserved for the bluejacket guards, whose ‘hearts bled for the pitiful people’, yet were duty-bound to prevent the menace of looting.

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77 Ibid., 85.
As the new republic dawned, Hankou found itself once again in ashes. On this occasion, the disaster was of such a magnitude that it finally catalysed meaningful urban renewal. In the absence of a strong central state, once again it fell to the local business elite. Though the 1911 fire had destroyed much of Liu Xinsheng’s earlier efforts, it had also provided him with a blank canvas upon which to redraw the city. The historians Sun Zhuqing and Tan Gangyi liken the post-revolutionary renaissance of Hankou to the grand rebuilding scheme in London in the wake of the 1666 fire. Another comparison might be made with Chicago, reborn like a phoenix in the wake of its 1871 conflagration. With its bustling streets and vibrant trade, early twentieth-century Hankou was often described as the Chicago of the East. Like its great Western counterpart, it rose from its great fire stronger than before. Merchant shophouses gave way to malls, while clustered wooden neighbourhoods were replaced by terraced alleyways of brick and timber homes, built in the popular shikumen style, similar to those pictured in Figure 3. People still live in these alleyways today,

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80 Cronon, *Nature’s Metropolis*.
which have been regenerated and extended numerous times in the intervening years. They are now recognised as a form of heritage architecture—a discomfiting end for an urban form once considered the height of modernity. With their creative blend of Western and Chinese architectural elements, these neighbourhoods were not only attractive but also relatively safe, having been built in a style that was, as the British concession firefighter C. O. Nicholson put it, ‘in accordance with modern ideas … [and thus] of greater fire-resisting value’.81

Hankou had not solved its problem with fire. Multi-building conflagrations continued to occur over the next few decades, albeit less regularly than before. One of the major reasons was that the early republic remained plagued by political instability, which frequently manifested itself in fire. In 1911, Wang Zhanyuan had been one of the military arsonists who had burned Hankou while attempting to suppress the Xinhai Revolution. Within a few years, he had risen to become one of the leading warlords in the region. When his much-beleaguered and habitually underpaid troops learned that they were to be disbanded in 1921, they ran amok in Wuchang, burning and looting. The provincial bank and at least 40 shops were reduced to ashes, while the mutinous soldiers escaped by train. They did not have long to enjoy their spoils, as Wang diverted their carriages into a siding and riddled them with machine-gun fire.82 In addition to the flames of war, residents of Hankou were still desperately vulnerable to accidental fires. The urban renewal of the 1910s had had patchy results. In a sense, it had merely redrawn the fire map, making economic as well as ethnic distinctions key markers of vulnerability. The relatively wealthy residents of the city centre now enjoyed a level of protection once reserved for the concessions, yet detailed maps drawn by the British War Office in 1927 reveal that large sections of Hankou were still ‘thickly populated by Chinese living mostly in huts’.83 The uneven nature of urban development reflected a city rebuilt by private interests rather under the direction of a public planning authority.

It was not until the late 1920s, when the new Nanjing Government appointed Liu Wendao as mayor, that Hankou would benefit from a program of scientific city planning. His was a technocratic administration, with a penchant for collecting statistical data. Though the governance periodicals this government published were too short-lived to provide evidence of long-term trends, they do offer an insight into

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81 ‘British Municipal Council, Hankow, Report for the Year 1925’, FO 228/3187. TNA.
the nature of fire during the late 1920s and early 1930s.\textsuperscript{84} We can see that perennial
hazards, including heating stoves, cooking fires and altar candles, were still causing
accidents, as were familiar modern culprits such kerosene and matches. The practice
of bulk distribution, which importers had initiated to cut costs, meant that in addition
to house fires, kerosene and petrol now caused explosive infernos at repositories
and canning depots.\textsuperscript{85} By this stage, cigarettes had also become a common cause
of fires. Though tobacco had been grown in China since the seventeenth century,
the machine-rolled cigarettes that arrived in the late nineteenth century proved far
more dangerous than traditional pipes, as the ash was not contained and they had
a disposable burning tip. With 80 billion cigarettes being sold in China annually by
the 1930s, there were 80 billion potential fires.\textsuperscript{86} Dozens occurred in Hankou during
this period. Electricity was another novel source of fire. With the exceptions of the
foreign concessions, which had received a private supply of electricity somewhat
earlier, Hankou owed its electrification to a company established by the matchstick
king Song Weichen in 1906.\textsuperscript{87} It is difficult to determine what impact electrification
had on fire in Hankou. While the records indicate that there were a number of
electrical fires during this era, we cannot discern how many kerosene fires were
avoided as a result of this new technology. What is clear is that electricity did not
come without risks.

Novel technologies may have brought new fire risks, but they also provided new
methods of firefighting. In the eighteenth century, shops were required to own buckets
to throw water over fires. By the 1920s, they could purchase fire extinguishers that
used the most up-to-date chemical methods to stop flames.\textsuperscript{88} They could also call
on the services of a more centralised firefighting institution, as Hankou’s citywide
fire brigade (Xiaofang Hui) had been established in 1910 to replace the older
private brigades.\textsuperscript{89} Authority for fire prevention was not yet in government hands,
and remained fractured, as foreigners insisted upon running their own volunteer
brigades, bolstered by Chinese employees. Records from 1925 give some impression
of the advances that had been made since the late Qing era. Hand-drawn fire dragons
had been replaced by automobiles equipped with 30-metre extendable ladders, and
rubber hoses that could be attached to the city’s new fire hydrants. The very fact that
these motorised engines could negotiate the streets of Hankou revealed the extent

\textsuperscript{84} Numerous articles including statistical and analytical information of fire can be found in two local governance
periodicals. The analysis here is based on ‘Wuhan shi san yuefen huozai tongji biao’ \textit{Wuhan shi gongbao}, 1, no. 5
(1929) and the ‘Huozai baogao biao’ section of \textit{Xin Hankou}, 1, no. 5 (1929); 2, no. 1 (1930); 2, no. 5 (1930); 2, no.
6 (1930); 2, no. 8 (1931); 2, no. 10 (1931).

\textsuperscript{85} See the description of the Texaco fire below. There was also a fire in a Japanese oil godown in 1925: ‘British

\textsuperscript{86} Carol Benedict, \textit{Golden-Silk Smoke: A History of Tobacco in China, 1550–2010} (Berkeley, CA: University

\textsuperscript{87} See section on the Hankow British Fire Brigade in ‘British Municipal Council, Hankow, Report’.

\textsuperscript{88} Rowe, \textit{Hankow: Conflict}, 164; Xin Hankou 2, no. 5 (1930).

\textsuperscript{89} Rowe, \textit{Hankow: Conflict}, 167; Sun and Tan, ‘Danhuo fen cheng yu neipan chongsheng’. 
to which urban planning had transformed the local fire regime. Though gongs were still beaten to raise the alarm in local communities, the concession brigade used a lingering whistle to alert the public. Meanwhile, citizens who wished to summon the fire brigade could do so by telephone. Professional firefighting techniques were accompanied by strict municipal by-laws, which stipulated the kinds of building materials that could be used, the correct manner to store inflammable materials, and prohibitions on flammable products such as fireworks and firecrackers. If Hankou had continued to develop as it had in the 1920s then it might have overcome its problem with fire. Unfortunately, over the next two decades it would suffer a number of blows that would inhibit its development.

The first of these occurred in 1931, when Hankou experienced a catastrophic flood, the likes of which it had not witnessed for a century. As water rushed into the streets, a number of long-banished fire hazards returned. By midsummer, hundreds of thousands of rural refugees had merged with the urban homeless in camps. These overcrowded settlements built from bamboo and thatch resembled the most fire-prone neighbourhoods of the nineteenth-century city. When one camp caught fire, a group of physicians working amongst the refugees lost everything they owned and had to tend to their patients without shoes. As well as resuscitating old risks, the flood also created new ones. Abundant water had always made Hankou more fire-prone, yet river water now flowed into a city filled with flammable chemicals, causing industrial fires in warehouses and paint shops. The most spectacular occurred when a junk crashed into a Texaco oil repository, spilling a kerosene lamp that ignited an explosive fire. Soon, barrels of oil and petroleum were seen flying several metres into the air. During the 1849 conflagration, which was described at the outset of this article, congested wooden ships seemed to set the Yangzi ablaze; in 1931, burning oil and petroleum spewing out into the river set the surface of the water on fire. Though these two infernos occurred in approximately the same area, in the intervening years the nature of fire had changed, together with the material epoch of the city.

**Fire from the skies**

We conclude our journey through the fiery history of modern Hankou by examining possibly the worst conflagration in the city’s history, which also happens to be one of the most poorly documented. It occurred in the midst of the Second Sino-Japanese War (1937–45). In 1938, Wuhan, now unified as a single city, had served as the provisional capital of unoccupied China, in the period between the Nationalist retreat from Nanjing and the final evacuation to the wartime capital of

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90 ‘Bye-Laws of the Special District of Hankow’.
91 On fires during the 1931 flood, see Courtney, *Nature of Disaster*, 121–2, 138–9.
Chongqing.\textsuperscript{92} During this period, Hankou suffered sustained aerial bombardment from the Japanese, as it was catapulted into the front line of the global fight against fascism. Yet the devastation caused by this well-known assault paled in comparison to that wrought by the much less publicised American bombing of Wuhan in 1944. By this stage, the city had passed into the hands of the collaborationist regime headed by Wang Jingwei. It had become an important staging post for the Japanese military. Having failed to make a dent in the local defences with six months of high-altitude bombing, Major General Claire Chennault was finally given permission to launch a low-altitude incendiary bombing mission. On 18 December, 96 American Superfortress bombers dropped 511 tons of incendiaries on Hankou.\textsuperscript{93} Amidst the cocktail of destructive weapons deployed, this was one of the first ever uses of napalm, a terrifying new form of industrialised fire, made from a number of familiar ingredients. The base of napalm was petroleum, which was mixed with various powders to form a sticky gel that adhered to surfaces, including brick and skin. This hydrocarbon fuel, like kerosene before it, was dug from American wells and shipped in bulk to China. The detonator was made from white phosphorus, which ignites when exposed to oxygen, the same chemical reaction that is the basis of friction matches. It had taken the brightest minds of Harvard University to work out how to mix napalm in 1942, yet the actual bombs were designed by a company well-versed in the trade in fire—Standard Oil.\textsuperscript{94}

Before long the bombers flying over Hankou could barely see the city they were destroying as the incendiaries they were dropping had obscured it with smoke. This was of little concern. The Hankou raid marked a significant shift in the approach the United States took to aerial warfare. Other belligerents, both Axis and Allied, had been employing indiscriminate area bombing since early in the war. Britain had created the first firestorm in the world by dropping magnesium bombs on Hamburg in July 1943, raising the city’s temperature to 1,500°F (816°C).\textsuperscript{95} Before Hankou, however, the United States had remained steadfastly committed to precision bombing, a tactic designed to minimise civilian casualties. Now they decided to forego this moral stance, unleashing the same kind of indiscriminate incendiary bombing on the city that would soon devastate the urban population of Japan. Quite why the citizens of Wuhan, a city under foreign occupation, were granted

\textsuperscript{92} See MacKinnon, \textit{Wuhan}.


\textsuperscript{94} Neer, \textit{Napalm}.

\textsuperscript{95} ibid., 62.
less consideration than those living in Nazi Germany is not clear.\textsuperscript{96} There is much about this chapter of the war that remains mysterious, including the death toll of the raid, which some Chinese historians have claimed may have been as high as 20,000. If true, then it would mean that the Wuhan raid killed almost as many people as the infamous allied bombing of Dresden, which is now believed to have been responsible for approximately 25,000 casualties.\textsuperscript{97}

The amnesia that surrounds the raid is perhaps the product of the strict censorship in place at the time, which ensured that there is little documentary evidence. More likely, it is because this episode does not fit comfortably with anyone’s war narrative—neither Chinese, Japanese nor American. This most devastating of fires does, however, offer a fitting denouement for our exploration of conflagrations in modern Hankou, exemplifying as it does many of the processes that had helped to burn the city over the past century. It was ignited by a lethal mixture of industrial fuels and incendiary politics, as most fires had been since the mid-nineteenth century. It burned its way through the collective labour and capital investments of thousands of local citizens, who had attempted to build a fireproof city, only to discover that the nature of fire had evolved faster than their capacity to resist it. Finally, those who pumped the oil and mined the phosphorus at a distance were not aware of the consequences of their actions, whilst those who lit the flames seemed to forget what they had done almost instantaneously. This erasure ensured that later generations remained unaware of a shared global history of markets, materials and politics that had manifested itself in localised flames. Instead, they were left to ponder why an exotic foreign city seemed to lag so far behind the modern world when it came to fire safety. Meanwhile, the people of Hankou brushed off the ash and rebuilt their homes once again.


Abstract

This article argues that famines have rapid as well as slow temporalities. Using newspapers, contemporary eyewitness accounts and subsequent memoirs, it uncovers the mixed temporalities of causation and experience in the 1942–43 famine in Henan Province, north-central China. It begins by exploring how the slow elements of famine played out in Henan: endemic poverty and malnutrition, years of war in the province, and the drawn-out experience of drought and starvation in 1942–43. More importantly, though, it then demonstrates that it was rapid processes that tipped much of Henan into what one observer called a ‘blitz famine’: hailstorms, price spikes and the violence of military requisitioning. The experience of famine, too, had fast temporalities, including snap decisions about flight, individual or collective acts of violence, and the sudden bodily collapse that often followed the slow process of starvation. But if all famines have mixed temporalities, this article closes by showing that these elements of time are not politically neutral. Comparing 1942–43 with Henan’s other major twentieth-century famines (1920–21, 1928–30 and 1958–61), I argue that the growing role of the state in causing famine led to faster temporalities of disaster.

Keywords: China, Henan Province, famine, violence, disaster, temporality, Second World War, drought

Introduction

On the face of it, famines are the quintessential slow disasters, firmly in the ‘gradual’ category of disaster typologies.¹ The inability of people to obtain sufficient food for survival results in the slow emergence of starvation, culminating in social breakdown

¹ For a categorisation of disasters by time, see Allen H. Barton, ‘Disaster and Collective Stress’, in What is a Disaster? New Answers to Old Questions, ed. Ronald Perry and E. L. Quarantelli (La Vergne, TN: International Research Committee on Disaster, 2005), 125–52, esp. 129.
and widespread malnutrition-related deaths. Behind most famines lie even slower social and environmental processes, which result in chronic food insecurity and vulnerability to hazards—long temporalities that were once neglected by disaster researchers but which are beginning to command more attention.\(^2\)

The famine which struck the north-central Chinese province of Henan in 1942–43 seems to fit this image of a slow disaster. Following drought in the spring and summer of 1942, food production in this war-torn province fell by around half compared with previous years.\(^3\) Between the calamitous autumn harvest of 1942 and the much-improved spring harvest of 1943, millions of people in Henan faced what the visiting American journalist Theodore White called 'the slow, winter-long agony of starvation'. Across Nationalist, Japanese and Communist-held territory in this divided province, around 1 million people suffered starvation-related deaths and perhaps a further 3 million fled their homes.\(^4\)

Taking an even longer temporal view, the horrors of 1942–43 were just one part of a long four decades of endemic and epidemic malnutrition in Henan. Many inhabitants of the province faced a decades-long struggle to obtain sufficient nutrition, against a backdrop of rising population, dependence on unreliable seasonal rainfall, and the centuries-long processes of soil erosion and loss of fertility on much of the North China Plain. According to Xia Mingfang’s calculations on disasters across the century before the founding of the People’s Republic, Henan was the most disaster-hit province in all of China. In both 1920–21 and 1928–30, Henan suffered drought–famines, and in 1959–61 was one of the worst-affected provinces in the appalling famine following China’s Great Leap Forward. The provincial death toll for these four famines is hard to estimate with any precision, but amounts to a total of at least 5 million (not including fertility loss). In the intervals between these four epidemics of malnutrition, Henan suffered periodic localised starvation events as well as the inadequate diets, high infant mortality and annual pre-harvest dearth that indicate endemic malnutrition and food insecurity.\(^5\)


\(^3\) Amounting to 48.5 per cent of the 1938–41 average (by weight). See Xu Daofu 許道夫, *Zhongguo jindai nongye shengchan ji maoyi tongji ziliao* 中国近代农业生产及贸易统计资料 (Shanghai: Shanghai renmin chubanshe, 1983), 19–22. This is following Anthony Garnaut’s assumption that the fall harvest amounted to 60 per cent of annual production by weight. See Anthony Garnaut, ‘A Quantitative Description of the Henan Famine of 1942’, *Modern Asian Studies* 47, no. 6 (2013): 2007–45, 2022–3.

\(^4\) Theodore White, 'The Desperate Urgency of Flight’, *Time* 40, no. 17 (October 1942). This death toll is a slightly more pessimistic reading of Garnaut’s estimate of a little less than 1 million. Garnaut, ‘A Quantitative Description’, 2032–6. This estimate is much lower than the commonly referenced figure of 3 million. See, for instance, Song Zhixin 宋致新, 1942: *Henan dajihuang* 河南大饥荒 (Wuhan: Hubei renmin chubanshe, 2012), 2–3.

Yet this article uses the example of 1942–43 to suggest that some aspects of Henan’s famines—in both causation and experience—operated on a much faster temporal scale. Ernest Wampler, provincial field supervisor for United States–based United China Relief, was struck by the sheer speed of famine in 1942–43: ‘old, experienced relief workers, representing both the government and the church, hardly got started until the need was so stupendous that some felt nothing could be done to cope with it’.9 As well as the slow-developing drought, the famine was also caused by more abrupt changes to the ability of residents to obtain and retain food: locusts, hail and wind, as well as price spikes and the sometimes violent requisitioning demands and grain seizures of both Chinese Nationalist and occupying Japanese forces.

So were Henan’s twentieth-century famines ‘quick’ or ‘slow’ disasters? The answer, of course, is both: famines, just as other disasters, are best understood in the multiple temporal modes called for by Eric Hsu.7 Just as Christopher Courtney (in this issue) explores the longer temporalities of urban fires—emblematic ‘fast’ disasters—so this article challenges readers to think differently about famine by showing the rapid temporalities of the 1942–43 disaster. It begins by uncovering slow and quick rhythms of disaster in a range of sources new to the growing body of English-language work on the famine, including dispatches from the affected region by the journalist Li Rui 李蕤, the unpublished diary of the photojournalist Harrison Forman, and scattered sources from the little-understood experience of famine in Japanese-occupied territory.8

After discussing both ‘slow’ and ‘quick’ aspects of the 1942–43 famine, this article proposes two ways of moving beyond simply identifying mixed temporalities towards analysing the implications of such a perspective: first, that disasters are best understood using what William Sewell calls an ‘eventful’ or ‘lumpy’ conception of time rather than the smooth sense of process that often underpins disaster sociology.9 Second, that it is often the ‘fast’ elements of famine that are the most destructive. This was particularly true in relation to the role of the state in Henan’s famines. Over the course of four twentieth-century famines, increasing state culpability led to the growing severity and ever-faster temporality of these starvation epidemics.

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6 Ernest Wampler, China Suffers: Or, My Six Years of Work During the Incident (Elgin, IL.: Brethren Publishing, 1945), 229.
7 Hsu, ‘Must Disasters be Rapidly Occurring?’, esp. 12.
Slow temporality in causation and experience

In discussing ‘slow’ aspects of famine, I refer to elements of causation and experience which emerge over months, years and decades. Indeed, as Xia Mingfang points out, the environmental and sociopolitical changes leading to Henan’s famine vulnerability in the twentieth century date back centuries. Beginning in the early twelfth century, the centre of gravity of the Chinese state and economy shifted away from these ‘Central Plains’ (Zhongyuan). Successive Yellow River floods brought environmental instability, political peripheralisation and damage to hydraulic networks. Over the course of the late imperial period, the intensively cultivated North China Plain suffered a fitful but appreciable centuries-long decline in land-to-labour ratios.10

Henan’s vulnerability to famine became starkly apparent following the drought that struck north-central China in the 1870s. Lack of rainfall over three years (1876–78) combined with the decades-long decline in state aid apparatus to cause the starvation-related deaths of perhaps 2 million people in Henan and up to 13 million in total across North China.11 But after a relative respite of two generations, worse was to come in the twentieth century. With four famines in as many decades, it is tempting to see the whole half-century from 1920 to the early 1960s as one long, slow disaster in Henan, a province described by one visitor as a ‘wide, wheat plain where famine, flood, drought, banditry, and poverty are the constant companions of the people’.12

The ‘slow’ causation of the 1942–43 famine operated on a timescale of months and years as well as decades and centuries. As Micah Muscolino has shown, Henan’s ecology and economy had been devastated by the effects of Japanese invasion, with the long war of attrition since 1938 in this front-line province draining energy from its metabolic systems. The years-long loss of grain, farmland, labour and equipment for military purposes had exacerbated underlying food insecurity.13 Delegates from unoccupied and occupied Henan had lodged protests in the limited representative institutions in Nationalist Chongqing and occupied Beijing respectively, arguing that the long war was placing unsustainable burdens on Henan’s society and

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10 Xia, Minguo shiqi ziran zaihai, 5. For the beginning of this story, see Christian Lamouroux, ‘From the Yellow River to the Huai: New Representations of a River Network and the Hydraulic Crisis of 1128’, in Sediments of Time: Environment and Society in Chinese History, ed. Mark Elvin and Liu Ts’ui-jung (Cambridge: Cambridge University Press, 1998), 545–84; for later difficulties, see also Randall Dodgen, Controlling the Dragon: Confucian Engineers and the Yellow River in Late Imperial China (Honolulu, HI: University of Hawai’i Press, 2001) and, for a slightly different part of the North China Plain, see Lillian Li, Fighting Famine in North China: State, Market, and Environmental Decline, 1690–1990 (Stanford, CA: Stanford University Press, 2007). For a comparable discussion of long-run famine causes in a different setting, see James Warren’s article in this issue.

11 On the 1876–79 famine, see Kathryn Edgerton-Tarpley, Tears from Iron: Cultural Responses to Famine in Nineteenth-Century China (Berkeley, CA: University of California Press, 2008). The estimate of 2 million deaths in Henan is from Su, Minguo shiqi Henan shui huan zaihai, 115.

12 Agnes Smedley, Battle Hymn of China (London: Victor Gollancz, 1943), 374.

13 See Muscolino, Ecology of War, esp. 87–90, 95–101.
environment.\textsuperscript{14} There was little assistance from outside the province, leaving Henan facing a disproportionate burden: ‘as everyone knows,’ wrote Li Rui, ‘Henan ranks first in military recruitment, compulsory grain purchase and land tax in kind’, with the battered rural sector struggling to provide for Nationalist armies numbering over 700,000 men.\textsuperscript{15} Across the front line in the two-fifths of the province under occupation, combined Japanese and collaborationist forces (numbering somewhat over 100,000 troops) were fed by coercive compulsory purchase systems in tightly occupied areas and sporadic grain raids in zones of semi-occupation.\textsuperscript{16}

These years-long effects of war were exacerbated in the spring and summer of 1942 by a months-long drought. In association with the tail end of the 1939–42 El Niño event, little or no rainfall fell in more than 90 per cent of Henan’s counties between the lunar New Year of 1942 (in mid-February) and late October.\textsuperscript{17} Such a shortfall would hardly register in the scale of long Australian droughts explored by Rebecca Jones in this issue, but in Henan the failure of the vital spring and summer rains devastated two successive harvests. Data from the Farmers’ Bank of China suggest that, per unit of sown area, yields for the spring wheat harvest were at just 60 per cent of the average of previous years (1938–41). At just 33.7 per cent of the 1938–41 average, the autumn harvest—maize, sorghum, maize, beans, tubers—was even worse.\textsuperscript{18}

Henan’s drought of 1942 connects the slow causality of famine with the long, drawn-out experience of famine victims. As Paul Cohen notes of another dry spell on the North China Plain, ‘the suffering occasioned by drought is not sudden and dramatic … but slow-moving, incremental, and of indeterminate duration’.\textsuperscript{19} With the gradual emergence of the summer drought, hopes for the autumn crops faded. Henan’s residents were left trapped, in Li Rui’s memorable phrase, ‘like ants in a cauldron’.\textsuperscript{20} It is hard to reconstruct the experience of those who were starving, but Li’s reports give us a glimpse of famine in his ancestral village in Sishui County. Time seemed to slow down: ‘there was a complete dearth of food in the house … as time stretched out, my belly started rumbling, and the longer it went on the harder

\textsuperscript{14} For appeals in Chongqing prior to the famine see Song, 1942: Henan dajihuang, 8; on occupied territory, see Zeng Yeying 曾業英, ‘Riwei tongzhixia de Huabei nongcun jingji’ 日伪统治下的华北农村经济, Jindaishi Yanjiu 近代史研究, no. 3 (1998): 84–144, 135.

\textsuperscript{15} Qianfengbao 前鋒報, 6 April 1943. The figure of more than 700,000 men under arms comes from the famine memoir of the Guomindang official Yang Quesu 杨却俗, ‘Guanyu “Henan Haojie” De Hua’ 閩於《河南浩劫》的話, Chunqiu 春秋 12, no. 4 (April 1970), reproduced in Song, 1942: Henan dajihuang, 307.


\textsuperscript{17} Xia Minguo shiqi ziran zaihai, 371–84; for more on the effects of El Niño in North China, see Muscolino, Ecology of War, 92–3.

\textsuperscript{18} See Xu, Zhongguo jindai nongye, 19–22.


\textsuperscript{20} Qianfengbao, 20 February 1943.
it became to deal with’. Li’s extended family had experienced a gradual slide down the calorific scale of food, and by the time he arrived in late March or early April they had not seen any ‘real’ food for over a week. His aunt offered him her best remaining supplies, but ‘Heaven knows what kind of food it was: elm bark, grain chaff, the leaves of bean plants dried in the sun last year, and some lily roots that they’d recently pulled up. I tried to eat several mouthfuls, but in truth I just couldn’t swallow it’. Many such foodstuffs (particularly bark) would cause digestive problems for famine victims for years to come, part of the long tail of the biological effects of disaster.21

Famine victims in Henan during the long winter of 1942–43 faced a series of anxious waits. In Theodore White’s accounts from the famine zone, the most important wait was for the ripening of the promising-looking spring wheat, which would be ready to harvest from late May or early June. Even before that, as Harrison Forman notes, there was an anxious wait for the growth of spring grasses and leaves, famine survival foods that would come in profusion a month or so before the harvest.22 Other famine survival strategies also involved the slow passage of time. As Li Rui describes it, many families gradually sold everything they had over a period of months—tools, furniture, firewood—until there was nothing left with any exchange value for food. At the busy bazaar on the edge of Sishui, such families slowly realised that they had been marginalised from the market: ‘it’s not only that there’s nobody to buy their things, people don’t even look at them, but still they sit there in a disciplined manner at the market for days’.23

Those who fled the famine zone also faced a slow experience of flight. It is true that the Longhai railway, running westwards from Luoyang out of the famine zone, accelerated the escape of some famine victims. But the operation of the railway was fitful and subject to enemy interference, leaving tens of thousands of people stranded, waiting for weeks on open ground outside the Luoyang station.24 Descriptions of flight along Henan’s roads leave the impression not of speed but of slow, plodding movement; when movement slowed down still further, or became erratic, bodily collapse was not far off. On the road outside Luoyang, Li Rui encountered a woman who was ‘staggering along, swaying from side to side, taking small slow steps, walking for a bit, then stopping, then walking, then stopping; sometimes veering to the right of the road, and sometimes veering to the left’.25

22  Theodore White, ‘Until the Harvest is Reaped’, *Time* 41, no. 12 (March 1943); Forman, *Diary*, 42 (unpaginated; numbers refer to the pdf file at collections.lib.uwm.edu/cdm/ref/collection/forman/id/50).
23  *Qianfengbao*, 15 April 1943.
24  *Qianfengbao*, 19 February 1943.
25  *Qianfengbao*, 8 April 1943.
But for some famine victims, the waiting of the 1942–43 winter was not so much a wait for the spring harvest as a wait for death. The relative (if not total) absence of epidemics during the 1942–43 winter may have helped limit the death toll, but made the final decline of famine victims a more protracted affair than in many disease-hit famine zones around the world. The Methodist missionary Edwin Ashcraft told of a trip to the countryside around Zhengzhou in January 1943: ‘in many homes we came across people already unconscious and whose lives were ebbing out, due to starvation’.26 Fear of a long, agonizing death from starvation was pervasive among Henan residents: ‘When I dream,’ one farmer told the Dagongbao newspaper, ‘I do not think of cooked food, for it really is better to die early’.27

**A blitz famine? Fast temporality in causation and experience**

But was the 1942–43 famine only a slow disaster? Does the famine look different if we think of its temporality—in terms of both causation and experience—not in terms of years and months, but weeks, days, hours and even split seconds? What stands out in first-hand accounts from 1942–43 is not so much the drawn-out elements of the famine as its speed. The missionary Ernest Wampler certainly thought so, as he watched much of Henan tip over into famine over a few short weeks in the summer of 1942: ‘the famine came on very suddenly, and was really a famine blitz’.28 Li Rui’s imagery from the famine zone in spring 1943 carries a similar sense of speed: ‘a serious famine is like a hurricane that crosses oceans and disturbs everything, it transforms the regular course of life. The flames of starvation burn up the good essence of humanity. It really is a terrible thing!’29

On closer inspection, this sense of speed in our sources is not so surprising. The complex factors causing famine in Henan included rapid elements as well as the slow emergence of drought: state requisitioning, grain raids and price rises all occurred in much shorter time frames. Even the environmental causes of famine could be fast-acting. The winter wheat plants of 1942 had appeared fairly promising, only to be damaged in many areas by unusually strong spring gales and/or hailstorms.30 When Zhang Li张励, sent by the Nationalist central government to investigate conditions in Henan, asked the provincial governor Li Peiji李培基 why he had promised

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28 Wampler, *China Suffers*, 229.
30 *Henan Minbao 河南民報*, 25 June 1942.
Chongqing a decent harvest, Li replied, ‘at first the wheat harvest looked good … who knew that there could be such a wind as to damage it in a single night?’ It was a similarly swift story in late summer 1942, when in some areas locusts attacked autumn crops already withered by drought: ‘half an hour after they lighted the crops had been eaten to the ground’, noted the missionary Mary Geneva Sayre from occupied Qi County. On the Nationalist side, one provincial official caustically remarked that ‘all the weaponry of Germany and the Soviets couldn’t defeat Henan’s locusts’. The autumn brought a final speedy threat: in much of western Henan, the buckwheat crop—the last hope for many residents—was devastated by a sudden frost just before the harvest.

If environmental factors could act as swift, exogenous forces damaging the ability of residents to access food, the same was also true of state requisitioning. Whether by tax in kind, compulsory purchase or outright grain raiding, Nationalist and occupation–collaborationist authorities alike entered villages and removed grain stores in a matter of hours. In Nationalist-held territory, the 1941 shift in the land tax from cash payment to collection in kind mandated county and sub-county grain officials to enter villages and seize part of the harvest. On top of that, the Nationalist authorities imposed heavy compulsory purchase orders; in some cases, it was said, households had to sell assets just to meet state demands. Over the summer of 1942, even as the long drought shrivelled the autumn crops, at least a sixth—and perhaps much more—of the disaster-hit wheat harvest was extracted from the village economy. Across Henan as a whole, this was a months-long process, but was experienced by each village as a rapid, exogenous removal of grain. As provincial official Zhang Zhonglu 張仲魯 later recalled in his memoirs of the famine, speed was of the essence in meeting military requirements and satisfying central

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33 Yang, ‘Guanyu “Henan Haojie”’, 306.
34 *Dagongbao*, 1 February 1943. In the interests of balance, we should note that brief events could also be favourable. The sudden arrival of a little rain to break the drought over a few days in late October 1942 was vital, saving some of the last part of the fall harvest—the sweet potato crop—and enabling planting of the spring wheat. See Xu, *Zhongguo jindai nongye*, 22. On the crucial planting for the following spring, see also Jiang Pei 江沛, ‘Aiming siye tongzaili: 1942–1943 年的河南旱灾述论’, *Henan daxue xuebao* 河南大学学报 54, no. 3 (May 2014): 45.
35 See Forman, *Diary*, 36. Cultivators were paid for compulsory purchase grain, but in practice the authorities were paying only 25 per cent of official grain prices (and market prices were in reality rather higher). See Arthur Young, *China’s Wartime Finance and Inflation, 1937–1945* (Cambridge, MA: Harvard University Press, 1965), 389, doi.org/10.4159/harvard.9780674434875.
36 It is hard to know how much was eventually collected: officially, 3.74 million shidan 市担 (3.12 million shida 市石 by volume) of wheat was requisitioned by land tax and compulsory purchase. See Henan sheng zhengfu tongji chu 河南省政府統計處, ed., *Henan sheng tongji nianjian: minguo sanshiwu nian* 河南省統計年鑑: 民國三十五年 (Kaifeng, 1947), 142–4. Estimates of the wheat harvest vary, but would have amounted to about a sixth of the crop. With the addition of local levies, total requisitioning was almost certainly rather more than this, although Garnaut’s suggestion that the Nationalist authorities took half the wheat crop seems too high: see Garnaut, ‘Quantitative Description’, 2025.
government targets, with governor Li Peiji pushing for faster tax collection. While overseen by the civil administrators, another Nationalist official later remembered that in some places local defence militias (ziweituan 自衛團) were also involved in collection, and there is some suggestion that pressure from military units was applied in recalcitrant villages. In many areas sporadic exactions continued, even after the completion of the main requisitioning payments and the advent of some tax relief in September. Particularly in counties close to the front line, residents were subject to further periodic levies (tanpai 擴派), facing rapid-fire demands for straw, grasses, animal feed, firewood—vital resources for famine survival—even at the height of the famine in spring 1943.39

In occupied or semi-occupied territory, the seizure of grain was even faster and more sudden. In theory, the collaborationist civil authorities operated a regularised system of grain purchase and distribution; in practice, as Odoric Wou and Zeng Yeying have shown, grain policy had in large part become little more than military raids from urban strongpoints into rural areas. In Qi County, Sayre witnessed the Japanese garrison seize a walled town just before the harvest as a launch pad for sudden grain raids in the surrounding villages. Although local residents developed a variety of tactics to conceal grain, they could lose their access to food in a matter of minutes. This rapid-fire seizure of grain was part of a wider shift in occupation policy to short-term goals, focusing on the immediate seizure of resources rather than the fostering of productive capacity. As the Henan collaborationist Xing Hansan刑漢三later put it, while in earlier years local people had been ‘raising chickens’ (yangji 养鸡) and occupiers ‘taking the eggs’ (quluan 取卵), with the advent of the Pacific War by 1942 the occupation was simply ‘eating the eggs and starving the chickens’ in the interests of its own short-term survival.42

As well as fast weather events and grain requisitioning, the third prong of rapid famine causality in Henan was the dramatic price increases of 1942–43. This is not, of course, to suggest—as Sugata Bose once erroneously claimed—that the Henan famine was simply an inflation-led exchange entitlement famine on the lines identified by Amartya Sen. But it was rapid price rises that ensured that many

38 Yang Quesu 楊卻俗, ‘Yi Minguo sanshinian Henan de yici haojie’ 惰民国三十年河南的一次浩劫, Chunqiu 春秋 12, no. 2 (February 1970), reproduced in Song, 1942: Henan dajihuang, 297; see also Chen Chuanhai 陳傳海 and Xu Youli 徐有禮, eds, Henan xiandaishi 河南现代史 (Kaifeng: Henan daxue chubanshe, 1992), 249–51.
41 Sayre, Missionary Triumphs, 111.
42 Xing Hansan 刑漢三, Riwei tongzhi Henan jianwenlu 日伪統治河南見聞錄 (Kaifeng: Henan daxue chubanshe, 1986), 183.
residents—having already lost their direct, production-based entitlement—faced what Sen describes, in his brief discussion of famine time, as ‘sudden collapse of the command of a group over food’. Indeed, food prices in Henan if anything rose faster than the inflation of Sen’s exchange entitlement studies. At the heart of the famine zone in Zhengzhou, grain prices saw a 20-fold increase. In Japanese-occupied territory, the price of millet rose by some 250 per cent in less than four months, but both skilled and unskilled wages remained unchanged.

It is impossible to calculate the relative importance of raw shortages, grain speculation or increased demand in causing these extraordinarily rapid price increases. What is clear is that many residents of Henan fell quickly below exchange entitlement thresholds. With many residents selling landholdings for food, the value of land in terms of grain fell to one-twentieth or one-thirtieth of its pre-famine level.

Li Rui saw this worsening exchange entitlement in action during his visit to Sishui, where ‘the prices that things were being sold for were truly so low as to be astounding’: families selling prized furniture and women selling dowry goods to feed their children for just a single day; whole sets of old books being exchanged for half a jin (250 g) of flour. Some items that would once have been desirable had no market value at all.

The ‘triple whammy’ of weather, requisitioning and price spikes could plunge individual households into serious dearth in the space of a few weeks. But it was not only famine causation that included fast temporalities; the experience of starvation and adaptation also featured rapid processes and short-term events. This fast temporality of experience operated in several dimensions. First, households and individuals faced snap decisions: whether to sell property, flee the village, kill...
livestock, and sell or give away children.\textsuperscript{49} Such decisions may have involved a longer preparation, but the event itself marked a sharp rupture in the famine experience. Taking flight as an example, in most cases the more mobile members of the household left after the October 1942 planting of the winter wheat, returning just before the harvest.\textsuperscript{50} Although in poorer parts of the province there was an existing annual pattern of mobility for survival during the winter dearth, the 1942–43 winter saw this movement performed earlier and on a much larger and distant scale than usual.\textsuperscript{51} Famine destinations included the provinces of Hubei, Shanxi or, for those stuck in occupied territory, Jiangsu, but the most common route of flight was the Longhai railway west into Shaanxi. Almost a million people experienced the hope and frustration of the wartime Longhai line, its sporadic temporality that involved long periods of waiting followed by sudden bursts of movement.\textsuperscript{52}

A second dimension of speed in the famine experience was rapid moments of violence. This could be against humans or property, with numerous reports of small-scale acts to seize food. In the absence of large-scale acts of collective resistance—not that we should expect such things in situations of mass starvation—these petty acts of theft were often directed against other famine victims, for whom the result could be death.\textsuperscript{53} As with so many famines in China, contemporary reports of cannibalism are common but hard to substantiate. Cases where famine victims ate those who were already dead are rather better attested than the rumours of murder for cannibalistic purposes.\textsuperscript{54} More common, judging by the numerous government reports Li Rui found in Zhengzhou, were swift acts of violence against the self, with a spate of suicides sweeping the region during the 1942–43 winter.\textsuperscript{55}

As Li Rui discovered, the famine period also saw rapid acts of violence against the local ecosystems. People had stripped trees of bark and killed animals and insects wherever they could be found. When in spring 1943 Li saw local people moving across the countryside with baskets, they walked slowly to conserve energy but were swiftly (at least in ecological time) pursuing anything of calorific value:

\begin{quote}
  on the trees that had already been stripped bare last autumn, as soon as the first shoots of leaves appear, they are immediately cut off by people. Willow leaves, poplar leaves, apricot leaves, pear tree leaves, jasmine leaves, they were all resources hunted by people. There was not a single tree that had any trace of spring left on it.
\end{quote}

\textsuperscript{49} On killing animals, see \textit{Qianfengbao}, 6 April 1943. On suicides, cannibalism and other violence, see Li Rui’s report on the basis of information from the authorities in Zhengzhou: \textit{Qianfengbao}, 21 April 1943.  
\textsuperscript{50} Forman, \textit{Diary}, 21.  
\textsuperscript{51} \textit{Xinhua Ribao 新華日報}, 22 February 1943.  
\textsuperscript{52} Some 800,000 people had fled to Shaanxi by April 1943. See \textit{Xinhua Ribao 新華日報}, 9 April 1943. For Li Rui’s description of Luoyang station during the famine, see \textit{Qianfengbao}, 19 February 1943.  
\textsuperscript{54} On reports of cannibalism, see Forman, \textit{Diary}, 38; \textit{Qianfengbao}, 21 April 1943.  
\textsuperscript{55} \textit{Qianfengbao}, 21 April 1943.
There was also a sense of speed in the consumption of certain grains—including other people’s crops—before they were fully ripe and, in the case of beans, simply eating the plants out of desperation long before the crop was ready. 56

Though starvation was a slow biological process, death itself could come quickly. When disease came—and there were localised cholera outbreaks in the famine zone—it could kill weakened bodies in a matter of hours; even for those unaffected by epidemics, starvation could end in a sudden bodily collapse and loss of consciousness. 57 The woman staggering slowly along the road out of Luoyang caused Li Rui to reflect on this abrupt collapse: ‘who can say if in a few minutes or in a few seconds she will fall down and never get up again’. 58 For the most desperate, the quicker death came the better, whether for themselves or family members—witness Li Rui’s story of a woman from Luokou market town wishing the end of suffering for her adolescent son, cursing ‘die soon, why haven’t you died quickly?’ 59

Taken in the aggregate, these mounting deaths created an impression of accelerating famine severity. In Zhengzhou, the local committee of United China Relief told Harrison Forman that ‘700–800 die daily’ in the county; in the city alone, Li Rui was told in April, more than 1,000 people had died in the space of two weeks. 60 But once spring grasses appeared in profusion from early May, Henan’s epidemic of starvation did have—compared to some disasters—a rapid end. By mid-May, Governor Li Peiji could declare that ‘the famine aid work is now in its last five minutes’, with food prices falling sharply on both sides of the front line. Though not as bountiful as originally hoped, the 1943 wheat harvest enabled the vast majority of Henan residents to obtain sufficient nutrition for survival—even if they were advised to increase their intake only gradually. 61

These quicker temporalities help us to rethink the 1942–43 disaster—and, perhaps, famines as a whole—in two ways. First, famine can emerge more quickly than its usual categorisation as a ‘slow-onset’ disaster might suggest. Particularly against a backdrop of chronic food insecurity, a sudden change in circumstances can rapidly tip communities into famine situations. The importance of ‘fast’ factors is underlined by two examples of drought in Henan. In 1936–37, drought brought

57 Wampler, China Suffers, 249.
58 Qianfengbao, 8 April 1943.
59 Qianfengbao, 14 April 1943.
60 Forman, Diary, 43; Qianfengbao, 6 April 1943.
61 Li Peiji, ‘Jiuzai gongzuo zhi zong jiantao’ 救災工作之總檢討, reproduced in Henan Minbao, 11 May 1943. Wheat prices in Zhengzhou fell to less than a quarter of their peak by early June, after a few weeks of harvest. See ‘Gedi jingji shikuang: Zhengzhou’各地經濟實況: 郑州, Jingji Huibao, no. 6 (1943): 83. Wholesale grain prices in occupied Kaifeng also dropped back before the end of May. See Xin Henan Ribao, 26 May 1943. On advice on raising food intake, see Henan Minbao, 6 May 1943.
two consecutive failed harvests and produced a decline in per-capita 12-month food availability comparable to 1942–43, but while there were pockets of serious difficulty, the province avoided mass starvation. By contrast, in the summer of 1942 the twin ‘fast’ elements of military requisitioning and price rises turned weather-induced scarcity into widespread famine in the space of a few weeks.62

Second, a focus on the ‘slow’ aspects of famine processes tends to shift attention away from the political aspects of famine. We should be suspicious of straightforward stories of slow, natural causation and biological experience, not least because this is the kind of story that the Republican authorities told about 1942–43—and, indeed, that the People’s Republic has tried to tell about 1959–61.63

Third, these fast temporalities help us to think of famine as an acceleration and/or a deepening of existing processes. In the chronic poverty of much of the province, the pre-harvest dearth and its associated price rises were an annual phenomenon; but in the winter of 1942–43 arrived much more quickly and hit higher social strata than in previous years. In a similar way, rural Henan saw annual struggles over the crop between producer, landlord, state and merchant; this competition happened in a more rapid and intense way following the poor wheat harvest of spring 1942. This sense of acceleration can therefore help us separate famines (understood as epidemics of starvation) from endemic circumstances of malnutrition and its associated mortality. In other words, famines are not only quantitatively different from chronic food insecurity, they are also phenomena with a very different temporal rhythm.64

**Twin temporalities: Henan famines and the role of the state**

But this sense of speed does not obviate the slow aspects of famine causation and experience. Taken together, how can we use these dual perspectives on famine, the slow and the quick? Are they just different temporal lenses, little more than interchangeable heuristic devices? Or does this heterogenous temporality tell us something about ‘disaster time’ in general, and famine in particular? In these closing

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62 The 1936 fall harvest was much better than that of 1942 (some 80 per cent of the 1933–35 average for millet, sorghum and maize, and 57 per cent for sweet potato), but the 1937 wheat harvest was rather worse (49.6 per cent of the 1933–36 average). Xu, *Zhongguo jindai nongye*, 20–2. On areas of dearth in 1937, see Su, *Minguo shiqi Henan shui han zaihai*, 39–40.

63 The Nationalist official press was on the whole quiet on the famine, but for a statement emphasising ‘natural’ disaster, see *Zhongyang Ribao* 中央日報, 4 February 1943.

observations, I propose two answers to these questions: the first, an historian’s observation on ‘famine time’; and the second, a more particular, political way of understanding temporal trends in Henan’s modern famines.

The first proposal is to use these mixed temporalities to build a more complex—and more realistic—conception of ‘disaster time’. As Mike Michael recently pointed out, social-scientific explorations of disaster have tended to assume smooth, monotemporal processes. Yet where Michael seems altogether to reject the temporal analytic in favour of a more flexible ‘topological’ framework, a careful historical approach is able to incorporate a heterogeneous understanding of time. As William Sewell points out, where social scientists often take a view of time that is all too seamless, ‘historians … assume that time is heterogenous’—in other words, that things happen and are experienced at multiple, different speeds.

This seems especially true in the case of famine, where periods of waiting, immobility and apparent stasis are interspersed with moments of rapid change, movement and energy—mixed temporalities that may help explain the severity of famine’s psychological consequences. As we have seen, Henan’s months-long famine was interspersed with what Sewell calls the ‘lumpy’ or ‘eventful’ accelerations of heterogenous time: moments of rapid exchange, violence or loss. Rather than the search for a root analytic or process that seems to stalk much scholarly work on famine, this sense of mixed historical temporalities can help us to unpick the layers of experience and of time that make up the famine event. To paraphrase Sewell’s discussion of capitalism, this is not to say that famines have no underlying logics or processes of their own, but that these proceed in a messy, fitful, mixed temporality.

This solution may bring us closer to historical ‘disaster time’, but does not on its own help us draw explanatory or interpretive patterns—witness Michael’s injunction to think about ‘the sort of politics to which these [temporalities] point’. Nor, given that all disasters—from Courtney’s urban fires in this issue to the ‘500-year earthquake’ Anthony Oliver-Smith identified in Peru—operate on multiple temporal scales, does it reveal much that is specific to the dynamics of Henan’s twentieth-century famines. The second solution, then, connects the temporalities

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of famine to their politics by proposing the following: the greater the role of the state in famine causation, the more significant the ‘fast’ elements of temporality. Each of Henan’s four twentieth-century famines (1920–21, 1928–30, 1942–43, 1959–61) contained elements of chronic, gradual and sudden temporaliaple, but with each successive disaster the authorities were more culpable and faster processes more significant.71

The long drought of 1920 brought two consecutive failed harvests and famine conditions to much of Henan during the 1920–21 winter. But although the drought was in some ways similar to 1942–43, the ‘fast’ elements of the later disaster—rapid weather events, price spikes and seizure of grain—were altogether less in evidence. As for the role of the state, although state-led famine relief was less efficient than at the height of China’s late imperial granary system, local ‘warlord’ authorities did help facilitate the impressive private aid effort. The death toll in Henan is unclear, but across North China as a whole, famine-related mortality was estimated at 500,000, less than half that of Henan in 1942–43.72

Local authorities were rather more culpable in the famine of 1928–30. Slow meteorological factors were of course present—indeed, almost all of Henan’s counties were hit by low rainfall in three successive years—but it was fast-action depredations of war and banditry that damaged the operation of markets, civilian access to grain and efforts at famine relief.73 Feng Yuxiang’s administration of Henan (beginning in June 1927) lacked the governing penetration to extract resources as intensively as the Nationalist state had during the 1942 drought, but heavy grain levies pushed parts of western Henan from mere dearth to outright famine. Conflict between Feng and the Nanjing Government during 1929–30 worsened the disruption. Although Li Yucai has recently shown that Feng organised some limited famine aid, his short-term strategic decisions in blocking and seizing relief resources and sabotaging railway lines exacerbated a slow, drought-induced shortage and helped create a devastating famine that brought premature death to millions across western Henan and especially Shaanxi and Gansu.74

71 On the three-fold typology of chronic, gradual and sudden tempora-
73 For reporting of the drought by year, see Su, Minguo shiqi Henan shui han zaihai, 28–9.
74 See Zhang Xiaobo 張小波, ‘1928–1930 nian Henan hanhuang yu Zhengzheng Guan xian tanjiu’ 1928–1930年河南旱荒与政局关系探究, Luoyang shifan xuebao 热阳师范学报, 35, no. 3 (2016); for a slightly more favourable view of Feng Yuxiang’s role, see Li Yucai 李玉才, ‘Feng Yuxiang yu minguo nianjian Yu Shan Gan dazhenzai’ 1928–1930年河
南旱荒与政局关系探究, Zhongguo nongshi 中国农史, no. 1 (2006). There is little in
As we have seen, elements of fast famine causality and the culpability of Henan’s competing authorities were still more serious in 1942–43. But these trends of faster famine temporalities and more active state culpability only reached their peak during the catastrophic Great Leap Forward Famine of 1959–61. In both cases, famine was rooted in the desynchronisation of time, in the mobilisation of an impoverished ‘advanced organic’ agrarian economy for the short-term exigencies of modern state crises. In the wartime famine, rural producers were forced to feed a modern industrial war; in the Great Leap Forward, the Maoist regime tried to use the agrarian economy to fuel modern industrial growth. In each case, the disjunctions of time and power relations brought an epidemic of malnutrition and death to the civilians of rural Henan.75

Speed lay at the heart of the Great Leap. While theorists of modernity have consistently pointed to acceleration at the heart of capitalism, it was a fast Communism that drove the Great Leap, pushing for the immediate transformation of rural society and the rapid creation of an industrial system.76 The root of acute food insecurity in 1959–61 lay not in the protracted experience of drought but in collectivisation and state requisitioning, an active, offensive violence that was both deeper and faster than the reactive, defensive Nationalist requisitioning during the 1942–43 famine. Victims of the Great Leap Famine still endured protracted periods of slow waiting and suffering, but the underlying fast causation of this violent famine led to sudden local nutritional crises, which, taken together, killed at least 2 million and perhaps up to 3 million people across the province.77 This logic of fast famine reached its endpoint in the now famous Xinyang ‘Incident’ in the south of the province, where the acceleration of extreme hunger, grain struggle and violence led to the deaths of a million residents in the space of a few short weeks in late 1959 and early 1960.78 The trend of growing state causation and quickening disaster in Henan’s twentieth-century famines had reached its zenith.


78 For more on the Xinyang Incident, see Yang, *Tombstone*, 23–86; on the timing of events and efforts to expose them, see Jia Yanmin 賈艷敏 and Xu Tao 許濤, ‘“Dayuqūn” shiqi Henan dajihuang de baolu guocheng’ 大跃进时期河南大饥荒的暴露过程, *Jiangsu daxue xuebao* 江苏大学学报 14, no. 3 (May 2012): 61–7.
The mixed temporalities of Henan’s modern famines were not, therefore, simply a random conjunction of the quick and the slow. Nor was the succession of famines in Henan between the 1920s and the 1960s simply a cycle, a recurrent playing out of chronic environmental vulnerability. Instead, a political logic of faster famines ran from the slow drought–famine of a chaotic warlord government (1920–21) and the faster desperate late warlord politics of 1928–30, down to the 1942–43 urgencies of national sacrifice and the deadly breakneck collectivisation of the Great Leap. In continuing requisitioning for so long and on a nationwide scale, the Great Leap Forward Famine marks a qualitative and quantitative shift, but along an existing trajectory of faster, state-driven famine.

Acknowledgements

Funding for this research was provided by the Council on East Asian Studies and the MacMillan Center at Yale University, and the Henry Luce Foundation/ACLS Program in China Studies. The author also wishes to thank Kathryn Edgerton-Tarpley, Yiwen Li, Nicholas Santascoy, Faizah Zakaria and the editors of this issue.