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De-naturalizing ecological disaster: colonialism, racism and the global Dust Bowl of the 1930s

Hannah Holleman

This paper reinterprets the Dust Bowl on the US Southern Plains as one dramatic regional manifestation of a global socio-ecological crisis generated by the realities of settler colonialism and imperialism. In so doing, it seeks to deepen historical-theoretical understandings of the racialized division of nature and humanity making possible the global problem of soil erosion by the 1930s and forming the heart of the ecological rift of capitalism. The framework developed here challenges prevalent conceptions of the Dust Bowl, in which colonial and racial-domination aspects of the crisis are invisible, and affirms the necessity of deeper conceptions of environmental (in)justice.

Keywords: Dust Bowl; ecological imperialism; desertification; ecological rift; unequal ecological exchange; environmental justice; colonialism; environmental racism

Introduction

There is a resurgence of scholarly and popular interest in the Dust Bowl era given both the contemporary confluence of economic and ecological crises, echoing the 1930s, and the projection that 'dust-bowlification' is an increasingly likely threat with the advance of global climate change (Romm 2011). However, the existing Dust Bowl literature is inadequate for understanding the social drivers, global context and unresolved consequences of the crisis, and therefore limited in how it may inform contemporary theoretical and practical debates regarding socio-ecological change, especially regarding questions of ecological (in)justice and the broader ecological crisis of capitalism. Because this period is so crucial to understand – not only as an analog to our own, as it is often treated, but as an antecedent to contemporary socio-ecological crises – this contribution seeks to provide an empirical and theoretical reinterpretation of what is frequently seen as an isolated historical-meteorological event, in order to address the wider social and ecological aspects of the crisis.

In contrast to predominant academic, official and popular depictions, the reinterpretation offered here re-embeds the Dust Bowl on the US Southern Plains within its broader historical and social context. In so doing, it becomes clear that the disaster was one dramatic regional manifestation of a global socio-ecological crisis of soil erosion generated by the conditions of economic expansion via the 'new imperialism' beginning in the 1870s and lasting through the early decades of the twentieth century. These include policies and practices, such as the accelerated seizure of indigenous lands, legitimated and spurred by a 'culture of conquest' rooted in white supremacy, 'the essential ideology of colonial projects' (Dunbar-Ortiz 2014, 37). Such conditions were outgrowths of the driving logic of

capitalist development in the late nineteenth and early twentieth centuries. Expansion of the global economy at this time 'was not merely *accompanied* by the worst excesses of colonialism; colonialism was not an accident. On the contrary, globalization *was* colonialism' (Milanovic 2003, 669, emphasis in original).

The reinterpretation offered here relies in part on research into overlooked and underutilized sources of commentary on the international problem of soil erosion, and the Dust Bowl in particular, as the crisis unfolded. By the 1930s there was a well-established body of scholarly literature, government reports, conference proceedings and periodical articles discussing the growing problem of soil erosion across the colonial world. These sources not only provide documentation of the scale of the issue in the absence of consistent data, they also show how this phenomenon was understood by many at the time as linked to white territorial and resource acquisition. The problem of soil erosion, and the international recognition of it, constituted what one historian referred to in passing as the 'first global environmental problem', described in the 1930s as another 'white man's burden' on a world scale (Anderson 1984, 327; Jacks and Whyte 1939, 249). The common experiences across colonial contexts allowed writers at the time, including journalists, scientists, policymakers and conservationists, to make sense of the Dust Bowl in these broader terms, which should be foregrounded once again in contemporary analyses.

Re-embedding the Dust Bowl within this broader context requires a new historical-theoretical understanding of the drivers, timing, consequences and persistent implications of the crisis. Therefore, this analysis draws upon, while contributing to, theoretical and historical literature on the new imperialism of the late 1800s and early 1900s and settler colonialism, as well as work on the relationship between economic expansion in this period and the globalization of the ecological rift of capitalism. Globalizing the ecological rift involved the racialized division of nature and labor on a planetary scale as a precondition for the development of the first global agricultural market and food regime. All of this shaped farming practices worldwide, including on the US Southern Plains, as areas were subject to an intensifying ecological imperialism and brought into the global market under conditions of unequal ecological exchange. Integrating work across these areas reveals the embeddedness of events in the US, including the dramatic apogee of the soil erosion crisis in the dust storms of the 1930s, within a broader pattern of ecological and social destruction associated with this era of capitalist development.

This reinterpretation is in sharp contrast to the preponderance of contemporary Dust Bowl literature, which frames the disaster as a regionally particular fate, mostly involving white ranchers and farmers, whether tenants, laborers or owners. In this literature, the settler colonial context from which the Dust Bowl emerged is ignored and the experience on the US Southern Plains region extracted from broader historical developments. In some instances, including an influential paper written by prominent NASA scientists, the Dust Bowl is treated even more narrowly as a primarily meteorological or natural event, void of social content (Schubert et al. 2004). Prevailing perspectives therefore make invisible the colonial and racial-domination aspects of the crisis and lead to the whitewashing of Dust Bowl narratives.

However, from the historical-theoretical vantage point outlined in this paper, the Dust Bowl period as a case reveals in new ways, and reaffirms, the inherent links between ecological degradation and social domination that together form the heart of the ecological rift of capitalism, taking us beyond more limited conceptions of environmental justice, which often focus on inequalities in terms of outcomes, rather than drivers, of environmental harm.

For all of these reasons, one goal of this work is to instigate further interest in the Dust Bowl, particularly amongst social scientists and activists. The sense that the Dust Bowl was

a mostly regional phenomenon without broader significance beyond the obvious lessons regarding the dangers of anthropogenic ecological degradation may explain why there has been a lack of attention to the subject in, for example, contemporary sociology, even as scholarly work in other disciplines has grown rapidly.[1]

A resurgence of attention

In the most-cited scholarly account of the Dust Bowl, historian Worster (1979) suggests that a valuable outcome of the disaster, and indeed of revisiting it as an important historical case study, is its potential to have an 'enlarging, critical effect' on our thinking by providing 'a model from which we can learn much about the ecological insensitivity of our culture' (4). Today, there is a revival of scholarly and popular interest in the subject as a case study and warning. In the past few years newspapers around the world have reported on, or asked if we are experiencing, the return of the Dust Bowl, referring to diverse crises, especially major droughts exacerbating problems with freshwater access and soil erosion.

The Dust Bowl attracts popular and scholarly attention both because it is viewed as extraordinary, while at the same time, 'dust-bowlification' is an increasingly likely and ordinary threat in the face of global climate change (Romm 2011). Romm argues for use of the term 'dust-bowlification', rather than 'desertification', because it better describes the phenomena projected. Deserts are high in biodiversity. They have their own fine-tuned ecology, an adapted web of life. Land degradation and increased aridification do not result in a transition to desert ecology in affected areas, but rather point to an enormous disruption and destruction of regional ecologies, more akin to the Dust Bowl of the 1930s. During this time on the US Southern Plains, the grasslands that evolved to hold the soil in place and sustain regional species were destroyed within just a few decades by the expansion of cash crop agriculture and ranching following the opening of the Plains to white settlement. When major drought hit, the loose, dried, exposed topsoil was lifted by winds from the land and accumulated in dust storms that wreaked havoc for years. The land could no longer support life as it had. So, projections indicating increased possibilities for Dust Bowl-like conditions signal a particular kind of extreme ecological *and* social change.

The severity and significance of such projections becomes even clearer when one understands how calamitous the Dust Bowl is perceived to be relative to other disasters. In the US the Dust Bowl is officially the 'drought of record' (National Drought Mitigation Center). Lockeretz (1978) writes, '[t]he dust storms of the 1930s were the worst man-made environmental problem the United States has ever seen, whether measured in physical terms or by their human and economic impact' (560). Worster (1979) describes the Dust Bowl as an 'event of national, even planetary significance' and refers to Georg Borgstrom's (1973) ranking of the Dust Bowl as one of the three worst ecological disasters in history, along with the 'deforestation of China's uplands about 3000 BC', and 'the destruction of Mediterranean vegetation by livestock' (4). He notes, however, that '[u]nlike either of those events … the Dust Bowl only took 50 years to accomplish' (4). Another author suggests the Dust Bowl serves as a cognitive 'anchor against which we compare the magnitude of other events' (Riebsame 1986, 127–28).

[1]A search in the Sociological Abstracts database for the phrase 'Dust Bowl' returns only 12 scholarly articles since 1952, the first year the database tracks. Results of April 2015 search.

Given the widely shared perception of the Dust Bowl as a disaster of record with lessons to teach successive generations, and the fact that Dust Bowl conditions are reappearing, reference to the Dust Bowl will only grow. An overview of the peer-reviewed literature by McLeman et al. (2014) highlights the growth of scholarly work on the subject, noting that 'the Dust Bowl is recent enough to provide a powerful learning analog' in the face of contemporary ecological and economic crises. In spite of the growth of interest, the authors suggest that 'researchers have only begun to plumb the Dust Bowl experience', and the era 'still has much to teach us about preparing for and responding to acute socio-environmental challenges that will continue to arise in our present era of anthropogenic climate change, food and water scarcity, and global economic uncertainty' (435).

Such reviews illustrate how existing literature, spanning a variety of disciplines, draws important lessons from the Dust Bowl on the US Southern Plains. And many more potential lessons are outlined, helping point the way forward for research. However, as a result of the narrow geographical and historical framing of the disaster by the majority of scholars and commentators, there are serious limitations to the ways in which this work, and the research trajectories suggested, may inform current theoretical and practical debates about socio-ecological change.

The most influential analyses of the Dust Bowl, as I illustrate in the following section, focus on the ecological and social disaster as a regional phenomenon, even if influenced by broader cultural and economic factors. Many accounts begin with the arrival of white settlers and the introduction of the 'plow that broke the Plains'. Some end with the triumph of the pioneer over the land, depicting 'a courageous people who were tough and determined to stay, even against the worst odds' (Fite 1983, 244; reference to Hurt 1981). Others focus on the 'Dust Bowl refugee' problem resulting from the displacement of farmers – whether owners, laborers or tenants – resulting from crop failures, market collapse and bank foreclosures, and the persistent hardship of those who remained to work the degraded land, even with the help of progressive government programs.

What many scholarly analyses have in common is their focus on the plight of the land in the US Southern Plains region and poor whites, mirroring the emphases of the globally famous cultural depictions of the Dust Bowl in the cinematography of Pare Lorentz; John Steinbeck's National Book Award and Pulitzer Prize winning novel, *The Grapes of Wrath*; the music of Woody Guthrie; and the photography of Dorothea Lange. As a result, enduring popular and scholarly images of that period include billowing dust storms, desertscapes dotted with ruins of once-verdant cotton fields, and poor white folks in places like Oklahoma or Texas, sometimes on their way out west. These images are poignant and important reminders of the class dynamics and ecological rapaciousness of the ruling 'capitalist ethos' that brought 'Henry Fordism to the plains' in the form of industrial agriculture and an 'all-out dedication to cash' (Worster 1979, 96–97). However, they do not capture the broader context of the rapid expansion of colonialism and imperialism from which the international problem of soil erosion emerged, the Dust Bowl on the US Southern Plains being one regional, if dramatic, manifestation.

This mostly regional focus and inattention to the settler colonial context arises in part from truncated historical analyses. The following section explains what is typically meant when referring to the 'Dust Bowl' and provides a review of the most influential Dust Bowl literature. This review focuses on the spatial and temporal orientation of Dust Bowl research, which is particularly circumscribed by perspectives imposing blinders with respect to crucial characteristics of the period leading up the Dust Bowl, and its deeper, unresolved human and ecological consequences.

The Dust Bowl literature: spatial and temporal orientation

The official story

The Dust Bowl is a term used variously to refer to an historical period, a geographical region and an ecological disaster. Depending on the perspective, it is presented as a manmade disaster, a natural one or some balance of the two. The current official story, outlined in briefest form by a representative of the United States Department of Agriculture, is this:

> The Dust Bowl era was the period of drought from 1931 to 1939 that was coupled with severe wind-driven soil erosion of overgrazed rangeland and soil exposed by the use of farming practices not adapted to the semiarid US Great Plains. The eroding soil from once productive range and crop lands filled the air with billowing clouds of dust that subsequently buried farm equipment, buildings, and even barbed-wire fences; thus, making the living conditions of many Great Plains inhabitants unbearable. On the Great Plains wind is common and drought recurrent; therefore, farm implements and management methods were developed for producing crops under these conditions. Likewise, farmers have evolved into innovative practitioners of soil and water conservation techniques that rely on residue management practices and crop rotations with fallow periods to store precipitation in the soil for later crop use. (Baumhardt 2003, 187)

The 1936 Report of the Great Plains Drought Committee begins the official narrative described above, asserting that the basic cause of the disaster was the imposition of a system of agriculture suited for humid regions on a semi-arid region. However, this earlier report also implicates misguided land allotment practices under the Homestead Act (1862) and ignorance on the part of settlers who were misled by unsuitable government policies encouraging 'a system of agriculture which could not be both permanent and prosperous' (Great Plains Drought Committee Report 1936). The problem was intensified by mechanization and the highly speculative nature of wheat farming resulting from the combined forces of 'nature and the market', including fluctuations in prices during and after World War I.

As a result of all this, the 1936 report states:

> One primary source of the disaster has been the destruction of millions of acres of … natural cover, an act which in such a series of dry years as that through which we are now passing left the loose soil exposed to the winds. This destruction has been caused partly by over grazing, partly by excessive plowing. It has been an accompaniment of settlement, intensified in operation and effect since the World War. (Report of the Great Plains Drought Committee 1936)

A cascade of other government publications highlights specific issues related to particular areas in the Plains. But this summary captures the general understanding of what became known as the Dust Bowl, after a journalist coined the term in 1935. Geographically, the Dust Bowl tends to refer to the region at the heart of the disaster of soil erosion and drought in the US, including 'considerable portions of Texas, New Mexico, Colorado, Oklahoma, and Kansas' (Lockeretz 1978, 560). However, some include the Great Plains as a whole and parts of the Southwest.

Most scientists and scholars writing about the Dust Bowl accept, more or less, the general narrative outlined above. They may disagree on many specifics, but this official story is the starting point for nearly all analyses. The main divergence from this view arises from those few defenders of the settlers and boosters for the region who posit the

Dust Bowl as a purely natural disaster, overcome by human spirit and ingenuity – we might call them Dust Bowl deniers. But they are in the minority.

The scholarly literature: geographical scope and scale

In the canon of Dust Bowl literature, especially the most cited works – the bulk of which have appeared since the 1970s when intense droughts and increasingly widespread ecological concerns sparked renewed interest in the events of the 1930s across multiple disciplines – scholars consider the Dust Bowl only in national-regional terms; however, it is defined and located in terms of its boundaries, or explained. This is in keeping with the official story outlined above and is true of work emanating from the fields of history, soil science, geography, economics, atmospheric science, agronomy, geophysics and, rarely, sociology.[2]

This leads to debates and concerns over the precise boundaries of the Dust Bowl on the Plains (e.g. McDean 1986; Porter and Finchum 2009) and the specific cultural, economic, soil and climatological characteristics shaping the region during the period leading up to, and including, the 1930s drought (e.g. Bonnifield 1979; Lockeretz 1978; McDean 1986; Schubert et al. 2004). Some scholars discuss character attributes of the local people, specifically the 'generally optimistic plainsmen' (Hurt 1986, 99). And now, increasingly sophisticated methodological and technological approaches are used to explore the crisis in ever-finer detail. As a result, much of the literature focuses on proximate causes rather than broader social drivers.

Historians have used geographic information system (GIS) software that integrates census, soil and climate data to 'test' Worster's (1979) thesis that 'Jefferson's outward-moving democracy and … the shaping of American agriculture by an evolving capitalism' (96) drove the plains to despair.[3] Triangulating the results of elegant climate models, demographic data and GIS analyses to determine just how bad soil erosion was at the county, and even the individual farm, level, scholars ask if government intervention was really necessary. Contemporary environmental politics are evident in recent efforts to challenge Worster's interpretation by questioning the severity of the crisis and reconsidering the sustainability of the settlers' historical and current agricultural practices (e.g. Cunfer 2005).

While Worster's (1979) famous environmental history, discussed at length below, is by far the most cited and significant scholarly account of the Dust Bowl, the most-cited work written this century is an article published in 2004 by NASA (National Aeronautics and Space Administration) scientists titled 'On the cause of the 1930s Dust Bowl'. This study employs a 'NASA Seasonal-to-Interannual Prediction Project (NSIPP) atmospheric general circulation model', building on the work of other studies 'using state-of-the-art atmospheric general circulation models (AGCMS)', and finds 'the drought was caused by anomalous tropical sea surface temperatures during that decade and that interactions

[2]For examples from history see Bonnifield (1979); Cronon (1992); Cunfer (2005); Egan (2006); Gregory (1989); Hurt (1981); Riebsame (1986); Worster (1979). For soil science see Baveye et al. (2011). In geography see Borchert (1971); McLeman et al. (2014). From economics see Hansen and Libecap (2003); Hornbeck (2012). In atmospheric science see Schubert et al. (2004). In environmental science see Lockeretz (1978). In geophysics see Brönnimann et al. (2009); Cook, Miller, and Seager (2009). And, in sociology, see Sanderson and Frey (2014).

[3]The complexity of race relations resulting from colonial occupation and war, and the desperate economic circumstances that always aid military recruitment, are illustrated by the fact that the Rough Riders included white, black and Indigenous peoples recruited from Indian Territory.

between the atmosphere and land surface increased its severity' (Schubert et al. 2004). Despite the title of the article, social factors never enter into the discussion of the 'cause' of the Dust Bowl, which the authors refer to simply as a major drought.

All of this tends to take one further away from any broader social analysis. Fortunately, there are major exceptions within the Dust Bowl literature. In fact, Worster's *Dust Bowl: the Southern Plains in the 1930s* (1979) has been the most influential work on the subject and stands out in placing at the center of analysis the systemic problems and extra-regional factors that made the Dust Bowl 'an extension of, not an exception to, the rest of America' in terms of the maltreatment of the land (196). Such maltreatment of the land, Worster writes, was the result of the ruling 'capitalist ethos', which provided 'the cultural impetus that drove Americans into the grassland and determined the way they would use it' (96–97). This ethos, or '[t]he attitude of capitalism – industrial and pre-industrial – toward the earth was imperial and commercial; none of its ruling values taught environmental humility, reverence, or restraint' (97). As a result, 'the culture they [i.e. settlers] had brought to the plains – the culture that had brought them there – was ecologically among the most unadaptive ever devised. That was the message written in the darkened skies, shifting dunes of sand, and defeated faces' (97).

Unlike other scholars who focus on the particularity of the region, Worster identifies the larger crisis of agriculture in the United States. Referring to images of other regions published at the time, he remarks: 'Those photographs make a convincing argument that the dust storms were neither a trivial matter nor an isolated phenomenon, that everywhere in America the land was in a bankrupt state' (1979, 63). Rather than attributing to the Plainsmen a peculiar culture, Worster highlights that they, '[l]ike American agriculturalists elsewhere … increasingly came to view farming and ranching as businesses, the objects of which were not simply to make a living, but to make money' (6). The Dust Bowl came about then, 'because the expansionary energy of the United States had finally encountered a volatile, marginal land, destroying the delicate balance that evolved there' (5).

Going beyond most, Worster (1979) refers to social factors, to a systemic push behind the destruction. But the analysis remains expressed in regional and national terms, emphasizing the lives and hardships of white settlers. These issues are related to the fact that the focus of the study is a United States conspicuously extricated from the broader history of colonialism and imperialism, including its own, which marked the era of economic expansion giving rise to the massive problem of soil erosion. Discussions of international developments in Worster all refer to later dates, with problems resulting from the fact that 'American agriculture has been powerfully persuasive in the world' (7). It is impossible, from this perspective, to link US frontier and Anglo-European colonial policies and by so doing perceive the truly systemic, global patterns present even earlier than the 1900s, much less their scale and persistent unequal ecological and social consequences in the US and elsewhere.

More recently, an excellent article by sociologists Sanderson and Frey (2014), one of the few contemporary sociological analyses that looks at the drivers of the crisis, goes further than perhaps all the literature since Worster (1979) in analyzing the context giving rise to the Dust Bowl and linking the ongoing problem of unsustainable farming on the Plains to 'deeper, socio-structural problems in the human-environment nexus' (519). A more sophisticated understanding of the relationship between the state and private capital than is presented elsewhere in the literature helps make sense of the persistent barriers to the development of a sustainable relationship with the land in the Plains.

Sanderson and Frey (2014) explain the inequality and financial ties between the Plains region and the wealthier areas of the country where capital and political power are

concentrated, and how this shapes developments in the region. This analysis, like Worster's, does not provide a sense of the global problem of soil erosion in the Dust Bowl era. However, perhaps more than any other to date, as a result of the analytical framework, Sanderson and Frey make it possible to link the problems on the Plains to global phenomena of unequal exchange and the ecological rift. As a result, insights provided by this helpful work on the 'metabolic rift in the High Plains aquifer' help provide an important way forward, especially when articulated with the more global perspective offered here.

The scholarly literature: temporal delineation

Along with the limited geographical focus in the Dust Bowl literature is the pervasive temporal dimension of all Dust Bowl narratives in which 'the plot … commences at the moment that Euroamerican settlers began to occupy the grasslands' (Cronon 1992, 1356–57). In an influential article, environmental historian William Cronon, who also focuses on the Dust Bowl as a regional problem, notes that there is 'no explicit *backward* extension of the time frame. The precontact history of the Indians is not part of this story' (1357, emphasis in original).

Indeed, existing scholarship generally ignores the intensive, violent confrontation between settlers, the US government, and private organizations on the one hand, and the tribes on the other. Another oft-cited account of the Dust Bowl is illustrative of this trend. Environmental scientist Lockeretz (1978) wrote,

> Throughout its history of about a century, Plains agriculture has followed a boom-or-bust pattern. Before the arrival of the first settlers – the cattlemen – the undisturbed ecosystem changed in response to variations in weather, but the far-reaching alterations that accompanied each wave of settlement greatly magnified the impact of subsequent weather cycles. (564)

In this account, the first arrivals to the Plains were white cattlemen who found an 'undisturbed ecosystem'. If there are any human costs to settlement of the region they were to the cattlemen and farmers subject to, among other scourges, bad government policy, speculative capital 'from as far away as Europe', market and weather fluctuations, and an undue optimism 'founded on a mixture of science, pseudoscience, and hucksterism' (564–65).

The intensely regional focus and periodization beginning with white arrival to the 'empty' Plains *en masse* have had significant consequences for both scholarly and popular understandings of the Dust Bowl. Worster's *Dust Bowl* illustrates that even when broader, system- or society-level, including cultural, factors are taken into account, left out of the analysis are the global drive for white territorial control and associated legitimating ideologies that are linked to but distinct from the profit motive, or 'ruling capitalist ethos' as he calls it, like white supremacy, in shaping the course of events and their outcomes. Treating the experience of the pioneers removed from the global context hides the colonial nature of the problems on the Plains. Focusing on 'Jefferson's outward-moving democracy and … the shaping of American agriculture by an evolving capitalism' (Worster 1979, 96) ignores the reality of racialized social domination inherent in capitalist development and hidden by the rhetoric of democracy.

Even further, Worster suggests that emphasizing issues of race and ethnicity, as well as 'questions of social justice', are a distraction in trying to understand the ecological impact of capitalist development. In an afterword to the 25th anniversary edition of *The Dust Bowl*, he writes:

> [F]ocusing over much on racial and cultural matters can distract from the larger vision of environmental history. We must never again lose sight of the land itself, of its moral and material significance, its agency and influence; the land must stand at the core of the new history. Nor should we overlook or dismiss the truth claims of the natural sciences, out of misguided deconstructionism or multiculturalism that makes nature whatever any group says it is; for science is our indispensable ally in understanding the past in a fuller and more authoritative light. Nor, in writing the cultural history of ideas about nature, should we obscure the age-old dialogue between ecology and economy. I put that dialogue front and center in this book, for without it there is no new perspective on history – there is only an old history of human ideas, perceptions, and values colliding with other ideas. (247)

Just before making this point, Worster discusses that he is aware that different communities were impacted by the Dust Bowl in distinct ways, but even this elides an important point, all too often ignored even today, especially within mainstream environmentalism, that decimation of the land requires as a precondition, and an ongoing requirement, the domination of peoples. The consequences are much deeper than the unjust distribution of environmental harms once a problem arises.

Toward an alternative view

The following sections point to an alternative framing of the Dust Bowl. First, I show that, in contrast to depictions ubiquitous today, and the canon of contemporary literature, Dust Bowl-era observers situated the crisis in the US within a broader historical and geographical context. By the 1930s there was a well-established, international body of scholarly literature, government reports, conference proceedings and periodical articles discussing the growing problem of soil erosion across the colonial world. This literature goes back decades before the Dust Bowl in multiple languages, especially as the early conservation movement developed in response to the acceleration of ecological degradation associated with Anglo-European and US colonialism and domestic economic activities (Brechin 1996; Grove 1995; Murphy 2009). So, when the dust storms on the Plains made headlines around the world, they were not viewed as an isolated event, but in light of these historical developments.

Here I draw on examples of commentary published before and during the Dust Bowl period, as well as the work of historians on the earlier colonial era, to summarize international conditions and illustrate how common experiences across colonial contexts allowed writers then, and us now, to understand the dust storms in the US in broader terms. In so resituating the Dust Bowl, it is then possible to make sense of the drivers of the socio-ecological changes taking place on the Plains and around the world by drawing on theoretical and historical work on the period in which the crisis develops. This was the era of rapid economic expansion via the 'new imperialism' of the late 1800s and early 1900s, which violently transformed societies and the land, entrenching the ecological rift of capitalism on a global scale and related patterns of unequal ecological exchange that persist to this day.

'Dust Bowls of the empire'

Colonialism and soil degradation: the first global environmental problem

The relationship between the spread of colonial agriculture and soil erosion was understood centuries before the Dust Bowl occurred, as historian Grove (1995) documents in his classic work, *Green imperialism*. In early colonial contexts, planters attempted to implement soil

conservation measures that could never keep pace with the expansion of land degradation and soil loss. While soil degradation, including erosion, also accompanied the expansion of cash-crop agriculture in Europe and Britain, the rapaciousness of colonial destruction was unprecedented in its social and ecological violence. By the mid-seventeenth century,

> the hard reality of the destructive impact of metropolitan capitalism on the tropical island at the European periphery served to demonstrate the contradictions between capitalist development and the preservation of the paradisal vision. It was in the context of this contradiction and of the realisation of it that colonial conservationism began to develop. (Grove 1995, 71–72)

Cultivation always promotes soil erosion to varying degrees. However, in all of human history, as environmental historians McNeill and Winiwarter (2004) trace, there are only three waves of significant growth of soil erosion. The first wave was associated with the 'expansion of early river-basin civilizations, mainly in the second millennium BCE' (1627). For another 3000 years, 'farmers in Eurasia, Africa, and the Americas gradually converted a modest proportion of the world's forests into farmland or pasture and thereby increased rates of soil erosion, but the fertile soils of the world's grasslands were little affected' (1627). That changed in the era of capitalist expansion via colonialism. Beginning in the sixteenth century, and accelerating sharply in the nineteenth, the second great wave of growth of soil erosion spread across the land as

> stronger and sharper plowshares helped break the sod of the Eurasian steppe, the North American prairies, and the South American pampas. The exodus of Europeans to the Americas, Australia, and Siberia, South Africa, Algeria, and elsewhere brought new lands under the plow. (1627).

However, it wasn't simply that new lands came under the plow; as historian Kwashirai (2006) explains, colonial states 'sought to orient farmers towards the production of export crops … [and] the perennial cultivation of the same crop on the same field' (541). Depending on the region, cotton, tobacco, sugar, tea, coffee, corn and wheat, of varieties demanded in industrial centers, replaced diverse local crops. Once linked to the global market, economic pressures on farmers mounted to increase production of export crops in the short term under increasingly unsustainable conditions, regardless of whether the crops or techniques employed to raise them were suited to local conditions or not.

Persistent environmental crises in colonies and frontier regions transformed to produce crops and raw materials for export to the growing urban market led to the development of international environmental concern by the mid-eighteenth century. Soil erosion was central to the emerging 'global environmentalism' (Grove 1995). At the same time, colonial concern with expanding production, and territorial control also facilitated the integration of official and informal knowledge-sharing networks amongst colonial powers and capitalists worldwide (Beckert 2014). Newspapers in the metropolitan centers and colonies regularly reported on global events, including the growing crisis of soil erosion leading up to the Dust Bowl period.

Conservation literature also became popular by the nineteenth century, and warned of the growing crisis. For example, George Perkins Marsh wrote in *Man and nature* that clearing land for cultivation left '[t]he soil bared of its covering of leaves, broken and loosened by the plough, deprived of fibrous rootlets which held it together, dried and pulverized by sun and wind, and at last exhausted by new combinations'. As a result, '[t]he face of the earth is no longer a sponge, but a dust heap … ' subject to erosion (Marsh [1864] 1965, 186–87). Within a decade of its publication in 1864, *Man and nature* already 'was a

classic of international repute' (Lowenthal 1965). In the US, 'Marsh's profoundly important book on the devastation that humanity had already inflicted on the planet had deeply impressed itself upon the American imagination' (Miller 2001, 55).

While the scientific study of soils was well developed by the nineteenth century, by the early twentieth century national and international conferences were devoted to this and related topics. In the United States, if any policy-maker or politician, or anyone who read the country's major newspapers, managed to remain ignorant of the risks of soil erosion by the turn of the century, the Governor's Conference of 1908, and the widely disseminated reports thereof, made ongoing ignorance impossible. In May of 1908, US President Theodore Roosevelt hosted the Conference of Governors on the topic of the Conservation of Natural Resources. In the President's opening address, one of the key topics covered was soil erosion. Roosevelt said, 'we began with soils of unexampled fertility, and we have so impoverished them by injudicious use and by failing to check erosion that their crop-producing power is diminishing instead of increasing' (Roosevelt 1908, 8).

The President asked the assembled to consider seriously

> what will happen when our forests are gone, when the coal, the iron, the oil and the gas are exhausted, when the soils shall have been still further impoverished and washing into the streams, polluting the rivers, denuding the fields, and obstructing navigation. (Roosevelt 1908, 8)

He noted that the attitude of the American settler was always that

> When he exhausted the soil of his farm, he felt that his son could go West and take up another … . When the soil-wash from the farmer's field choked the neighboring river, the only thought was to use the railway rather than the boats to move produce and supplies. That was so up to the generation that preceded ours. (9)

The problem of soil erosion associated with cultivation came up in numerous presentations, from that given by the governor of Texas to the oration of the railroad industrialist and conservationist James J. Hill. In the end, as the governors summarized their common commitments in a final declaration, it was agreed among other items 'that the land should so be used that erosion and soil-wash shall cease' (USDA 1908, 193).

The first International Conference of Agrogeology was held a year later in Budapest in 1909. In 1927, building on such previous meetings, the first World Congress of Soil Science was held in Washington, DC. Over a thousand people attended the 1927 meetings. There were representatives from every European country and Australia, as well as colonial representatives from many countries in South and Central America, Africa and Asia. Soil scientists, government officials, agronomists, industrialists, etc. were all in attendance. Papers were presented and collated in dozens of languages. The proceedings from this conference represent incredible documentation of the role of science in the colonial project and the state of the land during this period, including the problem of soil erosion. Dr. O.E. Baker's presentation lamented the problem on the plains. He referred to settlement and changes in land use spreading 'like an advancing army', and stated that the new soils 'should have never been plowed' (Baker 1927, 91–93). The fact that farmers over-plowed he attributed to the prioritization of peace and protection 'from the natives' over soil fertility.

In this context of a global community focused on colonial agricultural issues, reports from other countries circulated widely in the news and via other means. This was due to the reality of shared challenges and the fact that, more than ever, the fates of regions around the world were intertwined. Given this widespread awareness, by the time dust

storms hit the US Southern Plains, many observers understood why and how they were related to global trends.

The rape of the earth and the white man's burden

On the front page of the *Springfield Republican* (Massachusetts), on 25 May 1939, a column appeared under the title 'Erosion a world problem'. It reported on the ongoing battle against soil erosion in the US and around the world. From Canada to Uganda, and Ceylon to Australia, soil erosion had rapidly increased 'due to abuse of the soil'. The author wrote, '[t]he unskilled farmer has been destroying the soil for many centuries, and Greece, Calabria, Palestine and other regions have been terribly impoverished by this decay'. However, the current period marked a break with historical trends:

> The work of destruction has been speeded up in our time by the use of farm machinery by men who 'were rarely farmers in any real sense of the word; they were simply miners of whatever fertility had accumulated through the ages in the virgin soil'. In some cases industries not connected with agriculture have wreaked havoc. The defilement of rivers by waste from factories can be made good by removal of the cause, but a case is cited where fumes from a copper-smelting plant, by destroying vegetation, have 'brought about the gullying of an area many square miles in extent until it is impassable by man or beast'.

The column cites a study published earlier the same year in *The Round Table*, Britain's oldest journal of international affairs, titled 'Dust Bowls of the Empire' (1939, author unnamed). This paper provides an important overview and diagnosis of the expansive anthropogenic destruction of soils throughout the British colonies and in the United States by the 1930s. The paper also reminds readers how extensively recognized the problem of erosion was, even years before the 'spectacular accounts of the dust storms which enveloped in darkness great areas of the middle and eastern United States during the summers of 1934 and 1935' would move 'the popular imagination' (338).

The dramatic dust storms of the 1930s were traced to the expansion of cash-crop agriculture, among other pressures, which changed the relationship of those working the land to the land itself. As a result,

> the men whose conquest of the prairies of the middle west of North America, of the pampas of South America, of the wheat-belt of Australia, let loose that flood of wheat and other food which enabled the population of the world to take its unprecedented upward leap in the nineteenth century, were rarely farmers in any real sense of the word. They were simply miners of whatever fertility had accumulated through the ages in the virgin soils. ('Dust Bowls of the Empire', 1939, 340)

The author explains that within the colonial context, while '[e]rosion takes various forms in the different African colonies … it is to be noticed that much of the pressure upon the land has arisen through the introduction of crops for sale' (349). Also, 'Ceylon and the island colonies nearly all report serious cases of erosion … of the same character', arising 'from shifting cultivation, deforestation and overgrazing' (346).

These activities left scars on the land across continents to feed a growing global market for food and other resources, servicing those who could pay. However, for locals, 'the increase of such money crops, even maize' resulted 'in the neglect of the food crops for the family and in a deterioration in the native dietary' ('Dust Bowls of the Empire', 1939, 249–250). It was clear that 'the erosion menace' was 'threatening certain tribes'

(348). Indeed, the writer here refers to all-too-common outcomes of the new imperialism of the late nineteenth and early twentieth centuries, which involved a massive colonial land and resource grab and the restructuring of global food systems along capitalist lines. Mike Davis collectively refers to the severe manmade famines imposed on indigenous peoples during this period, when food was exported to the international market and elites implemented policy ensuring local starvation, as *Late Victorian holocausts* (2002).

Moreover, the social and ecological problems arising with colonial expansion, including the causes and consequences of soil erosion associated with cash-crop agriculture, were well understood even as conditions worsened. The author writes, 'some years before these events', the 'evidence accumulated' in numerous reports, which 'all showed how rapid was becoming the decline in the productive capacity of much of the land in Africa', drew the attention of governments across the continent ('Dust Bowls of the Empire', 1939, 339). As early as 1914, '[t]here was a select committee on erosion' in South Africa (347). The spread of experience and information meant that 'from one source or another there sprang up a general consciousness of the gravity of the problems presented by soil erosion in almost every country where recent settlement or the growth of the population had led to an intensification of agriculture' (339). Indeed,

> Specialists had often reported on particular cases, but their warnings carried little weight with Governments, who are occupied more with the political aspects of agriculture than with the fate of the land. At last, however, Governments have been forced to realize that matters cannot be allowed to drift, even though the measures that must be adopted in order to preserve the land as a means of production involve actions of a kind to which all Governments are most averse, namely, interference with traditional methods of farming and the right of man to do what he likes with his own land. (339)

Nevertheless, the stripping of the soil continued.

Other publications in this period also lament ignored warnings and document the nature of the crisis internationally. Tempany, Roddan, and Lord (1944) write that in the British colonies alone, soil erosion transformed eastern Africa, South Africa and the West Indies (142). It was also a serious issue in what were then called by the colonial administration the Northern Territories of the Gold Coast in western Africa, as well as in Palestine, Cyprus, Ceylon, Malaya, Hong Kong, Trinidad and Tobago, and the Falkland Islands (143).

Of everything written during the Dust Bowl era, Jacks' and Whyte's *The rape of the Earth: a world survey of soil erosion* (1939) is one of the most thorough. It covers every continent, tracing the expansion of soil erosion along with the 'rapid development of the New World'. It explicitly links soil erosion to ecological imperialism and conditions of unequal ecological exchange. The authors write that '[t]he main economic cause of recent accelerated erosion has been the transfer of capital across regional or political boundaries and its repayment with soil fertility' in the form of food imported to wealthier regions (211). They refer to erosion as 'a disease to which any civilization founded on the European model seems liable when it attempts to grow outside Europe' and 'a warning that Nature is in full revolt against the sudden incursion of an exotic civilization into her ordered domains' (20, 26).

In placing the US case within this overarching framework, they explain:

> The history of erosion in the United States is bound up with the pioneer phase in the nation's development, through the stages of deforestation for agricultural land, timber, fuel, and potash in the east, the development of the monoculture system of agriculture for maize in the Corn Belt and cotton to the south, overstocking and ploughing of the natural grassland areas of the

> Great Plains, gross overstocking and maltreatment of the range country, overgrazing and over-cultivation on the Pacific coast, and deforestation in the Pacific north-west. (Jacks and Whyte 1939, 48)

The dust storms on the Plains, then, 'were not freaks of Nature' (36), but the result of bringing land to an 'almost desert state by over-cultivation of the original semi-arid grasslands, much of which should not have been ploughed in the first place' (173). In so summarizing the US condition, these writers recognize what seems to have escaped many contemporary writers on the Dust Bowl, namely that '[i]n the Great Plains States, depression and drought have only accentuated a situation which has long been developing' (54).

Moreover, *The rape of the Earth* contains an extensive comparative overview providing suggestions regarding how, moving forward, the colonial powers might address the linked problems of the 'native', the poor white, the ongoing drive for economic expansion and territorial acquisition, and soil erosion. This is because one preoccupation at the time was addressing soil erosion in order to retain white territorial control (Anderson 1984). Jacks and Whyte (1939) suggest 'jettisoning the promising experiment of Indirect Rule' though 'everywhere it would mean denying the natives some of the liberty and opportunity for material advancement to which their labours should entitle them'. However, it would 'enable the people who have been the prime cause of erosion and who have the means and ability to control it to assume responsibility for the soil' (262).

They write,

> at present humanitarian consideration for the natives prevent[s] Europeans from winning the position of dominance over the soil. Humanity may perhaps be the higher ideal, but the soil demands a dominant, and if white men will not and black men cannot assume the position, the vegetation will do so, by the process of erosion finally squeeze out the whites. (Jacks and Whyte 1939, 262).

It is for this reason, they conclude, '[t]he white man's burden in the future will be to come to terms with the soil and plant world, and for many reasons it promises to be a heavier burden than coming to terms with the natives' (249). This sentiment was echoed in the *Springfield Republican* of Massachusetts, which commented in reporting on soil erosion worldwide that the 'white man's burden grows heavier year by year' (Springfield Republican 1939).

These examples make clear that the Dust Bowl was one spectacular instance of a global problem of soil erosion associated with colonial expansion. While the official interpretation suggests agriculture suited for a humid region was imported to an arid region, precipitating the crisis, these examples illustrate how much larger the crisis was, tied up with specific social and economic developments imposing new socio-ecological relations upon peoples of the world and the land.

So, the question of what caused the Dust Bowl is ultimately answered by understanding the social and economic developments driving the changing relations of humans to one another and to the land globally in the period immediately preceding it.

The new imperialism and the culture of conquest

Sociologist Max Weber visited the Southern Plains region in 1904, just after it was opened fully, by force, for white settlement. Based on his observations in what was then still nominally Indian Territory, he wrote, 'with almost lightning speed everything that stands in the way of capitalistic culture is being crushed' (Weber [1904] 1988, 134–35). He was referring

to both the rapid destruction of the regional environment and the dispossession of tribal communities, especially through the violently imposed privatization and allotment of communal land (Foster and Holleman 2012, 1654–67). Weber wrote at a time when the US Southern Plains, like much of the world, was subject to 'lightning speed' transformation associated with capitalist development via the 'new imperialism', and was under all the pressures associated with integration into the global market. These developments, dating from the 1870s, transformed global land use by the 1930s.

A distinguishing feature of the new imperialism beginning in the 1870s was the marked speed-up in the rate of territorial acquisition by Europe, the United States and England to three times the rate of the previous period. As economist Magdoff (1978) explains, by 1914, 'as a consequence of this new expansion and conquest on top of that of preceding centuries, the colonial powers, their colonies, and their former colonies extended over approximately 85 percent of the earth's surface' (34). Other means of control in addition to direct colonial rule meant 'economic and political control by leading powers reached almost the entire globe' (34).

The 'essential ideology of colonial projects', white supremacy, was part of the 'culture of conquest' that legitimated and spurred these developments (Dunbar-Ortiz 2014, 37). W.E.B. DuBois wrote, '[w]ith the dog-in-the-manger theory of trade, with the determination to reap inordinate profits and to exploit the weakest to the utmost there came a new imperialism' (DuBois [1920] 2003, 55). And,

> as to the darkest and weakest peoples there was but one unanimity in Europe – that which Herr Dernberg of the German Colonial Office called the agreement with England to maintain white 'prestige' in Africa – the doctrine of the divine right of white people to steal. (55)

The gospel of the new imperialism, a 'vast quest of the dark world's wealth and toil', was that 'whiteness is the ownership of the earth forever and ever, Amen!' (54, 45).

Such ideology was extolled in international exhibitions hosted by England, the US and Europe between 1851 and 1940. They were 'designed to celebrate progress, technology, and colonialism' (Page and Sonnenberg 2003, 199–200). In so doing they kidnapped, confined and put on display Indigenous peoples from US, British and European colonies and occupied territories around the globe. Nancy Egan estimates that '25,000 indigenous people were brought to fairs around the world between 1880 and 1930' in what were essentially 'human zoos' (Shahriari 2011).

US imperialism, including wars against the Plains tribes and colonial expansion west of the Mississippi, was lauded in this era as contributing to white control of the world's people and resources. This is the period in which the US also seized Hawai'i, Alaska, Puerto Rico, Guam, American Samoa, the Marshall Islands and Northern Mariana (Dunbar-Ortiz 2014, 163). Through justification of such processes, 'the myth of regeneration through violence' became the 'structuring metaphor of the American experience' (Slotkin 1973). As Nobel prize-winning poet Rudyard Kipling urged – in the face of a growing anti-imperialism represented in mutinies, plantation rebellions and anti-colonial revolts, as well as in the writings and activism of thinkers in the US like Mark Twain and sociologists and activists W.E.B. DuBois and Jane Addams – the US took up the White Man's Burden on an ever-increasing scale by the dawn of the twentieth century (Foster 2006).

This expansionary thrust was driven by the 'second industrial revolution', which stimulated the rise of monopoly capital, generating 'a voracious appetite for raw materials' such that 'food for the swelling urban populations was now also sought in the far corners of the world' (37 and 108). Manufacturers also wanted new markets for their increased industrial

output, and an end to competition from indigenous industries. 'Heavy advances in industrial production, a novelty in human history, demanded a constant supply of land, labor, and money' (Beckert 2014, 250). New developments in technology and finance made capital available for overseas ventures on a greater scale and made feasible the transport of bulk materials and food over long distances, while also enhancing the military capabilities of the colonial powers, including the United States, to hold territory. The uneven abolition of slavery, viewed by many capitalists and statesmen as a crisis throughout this period, led to a push for new sources of cheap labor that could be compelled through economically and legally coercive means, as well as 'a staggering degree of violence', to abandon their traditional occupations and cultivate crops for export to global markets (Beckert 2014, 255 and 308–309). As a result, 'the pressures and opportunities of the later decades of the nineteenth century' meant 'more and more of the world was drawn upon as primary producers for the industrialized nations' (Magdoff 1978, 37). During this era of gunboat globalization, '[s]elf-contained economic regions dissolved into a world economy, involving an international division of labor whereby the leading industrial nations made and sold manufactured products and the rest of the world supplied them with raw materials and food' (37).

Globalizing the ecological rift of capitalism

Also motivating the search for new sources of agricultural inputs and products was the degradation of land in Europe, England and the eastern United States as a result of the transformation of agriculture along capitalist lines prior to the 1870s. By the mid-nineteenth century, European scientists were sounding the alarm with respect to 'the loss of soil nutrients – such as nitrogen, phosphorus, and potassium – through the transfer of food and fiber to the cities' (Foster, Clark, and York 2010, 350). In place of the soil nutrient cycling associated with traditional farming, the commodification of agriculture meant that, increasingly, 'essential nutrients were shipped hundreds, even thousands, of miles and ended up as waste polluting cities' (350). Nineteenth-century scientists viewed this disruption of the soil nutrient cycle, associated with cash-crop production under pressure of an increasingly urban and international market, as a system of robbery. Karl Marx saw this transformation of agriculture under the aegis of capital as an original source of the rift in the metabolism between man and nature, or the 'ecological rift' of capitalism.

The ecological rift was generalized at the global level as the colonial powers sought to compensate for the environmental overdraft of the metropole, and feed the growing urban market, by combing the earth for new inputs to replace lost soil nutrients at home and bring under production new agricultural land. The violent and ecologically destructive guano trade was one exemplary result of this push; the expansion of tropical plantation agriculture and the development of export-oriented agriculture in the expanding white settler colonies of this period was another. As a result, '[t]he transfer of nutrients was tied to the accumulation process and increasingly took place on national and international levels' (Foster, Clark, and York 2010, 351). Marx observed that globalized capitalist agriculture benefits the 'main industrial countries, as it converts one part of the globe into a chiefly agricultural field of production for supplying the other part, which remains a pre-eminently industrial field', (Marx [1867] 1990, 579–80).

White territorial control and the development of global agriculture

The transformation of one part of the globe into a 'chiefly agricultural field of production' was predicated upon the worldwide trend toward 'renewed seizure of indigenous peoples'

lands' associated with the new imperialism (Weaver 2003, 329–30). In the post-abolition era, this meant encouragement of the expansion of white settlement by governments and private capital and the development of new forms of coercive labor divided along racial lines throughout the colonial world.

These were the conditions of capitalist expansion and reorganization of global agriculture and labor, involving what historian Melillo (2012) refers to as the 'first green revolution' and the industrial division of nature and labor on a planetary scale (Foster, Clark, and York 2010, 350). Through these processes, the first global food regime came into existence (Friedmann 2005). The new global food regime, dated by sociologists from 1870–1930,

> combined tropical imports to Europe with basic grains and livestock imports from settler colonies, provisioning emerging European industrial classes, and underwriting the British 'workshop of the world'. Complementing mono-cultural agricultures imposed in colonies of occupation (compromising their food systems and ecological resources), nineteenth-century Britain outsourced its staple food production to colonies of settlement (over-exploiting virgin soil frontiers in the New World). Here, the establishment of national agricultural sectors within the emerging settler states (notably USA, Canada, and Australia), *modeled* twentieth-century 'development' as an articulated dynamic between national agricultural and industrial sectors. (McMichael 2009, 141, emphasis in original)

This is the context from which the global problem of soil erosion emerges by the turn of the century, associated with the vigorous seizure of native lands and displacement of peoples, the imposition of racist land tenure policies, and the spread of cash-crop, and continuation of plantation-style, agriculture to both sustain colonies and supply the global market (Beckford 1972).

The introduction of colonial agriculture required the destruction of regional ways of life and 'rested ideologically on the naturalizing of certain historically specific ways of organizing production, and was thus enabled by economic, social, cultural, and even racial hierarchies it had helped produce' (Beckert 2014, 309). This means local and indigenous knowledge and ways of provisioning, including cultivating crops, were treated as backward or irrational, even in places where colonists survived only by adopting local methods (Merchant 1989). Local knowledge often was appropriated to serve the ends of colonial occupiers even as they demeaned it to justify the expropriation of its bearers.

While scholars must emphasize the 'capitalist ethos', this cannot be disentangled from the white supremacist logic driving and legitimizing the domination of peoples that was the necessary prerequisite for the exploitation of the land. The combined result was unprecedented expansion of the global economy, white territorial control, social dislocation and ecological degradation. Putting events on the US Southern Plains in this context helps explain both the timing of the Dust Bowl and how the problem of soil erosion developed on a global scale with such rapidity at the end of the nineteenth and beginning of the twentieth centuries.

Historian and professor of Native American, women's, and ethnic studies, Roxanne Dunbar-Ortiz has written extensively about the settlement of the area identified in the US as the Dust Bowl region, and colonialism and imperialism more broadly. Recently, she noted that 'US policies and actions related to Indigenous peoples, though often termed "racist" or "discriminatory", are rarely depicted as what they are: classic cases of imperialism and a particular form of colonialism – settler colonialism' (2014, 2). Because depictions of the Dust Bowl focus on the experience of white settlers, typically

without referring to them as such, the whole story is removed from the broader history of US and Anglo-European colonial expansion. However, the following attempts to sketch in brief the policies and practices on the US Plains giving rise to the Dust Bowl and linking that region to global developments.

A deeper Dust Bowl history in global perspective

The inherent instability of slavery, marked by constant revolt and rebellion, and the growing global movement for abolition, was an international concern of merchants and manufacturers well before the US Civil War. Whether individual capitalists and statesmen supported its expansion or abhorred the institution, the wealth of nations hinged on it. Indeed, the incredible growth and global integration of Anglo-European capitalism was completely dependent on the vast accumulation of capital made possible by the brutal extraction of slave labor and further methods of what historian Beckert (2014) refers to as 'war capitalism', otherwise known as 'primitive accumulation' (Marx [1867] 1990, 873–940). And everyone knew it. As Beckert notes, 'Marx's argument that "bourgeois civilization" and "barbarity" were joined at the hip … was simply common sense in elite circles' (Beckert 2014, 244).

Further industrial development was widely understood as requiring increasing, and increasingly stable, sources of raw materials and crops. There was a growing demand for cheap food and other agricultural products, especially cotton. The prospect of diminishing, unpredictable or more costly supplies in a post-slavery context, as well as other pressures and concerns discussed in the previous sections, sent capitalist states scouring the globe for new sources of labor and territory to bring under direct colonial control and cultivation. This search became more frantic as civil war in the United States, one of the most important suppliers of cotton and other crops to the industrial centers of the world, appeared inevitable. In the US, industrialists argued that the nation would prosper by expanding the regime of wage labor, through which they could effectively mobilize and discipline large numbers of workers in lieu of enslavement, as they experienced in their factories (Beckert 2014, 240). They agitated for increased national agricultural development and access to other resources via the expansion of United States territory. This, they argued, required that the state extend infrastructure, especially the railroad and irrigation, remove native peoples, privatize the land and introduce a working settler class to the West (350–53).

Marking the initiation of an escalation of US political economic policies and practices leading up to the period of rapid imperialist expansion globally, Abraham Lincoln, in his presidential campaign, promised free acreage in the West, including the Plains region, to settlers. As President he signed the Homestead Act in 1862, which required the military removal of the peoples living in the Plains and elsewhere to allot land. Even before his election, the US Army had six of its seven departments 'stationed west of the Mississippi, a colonial army fighting the Indigenous occupants of the land' (Dunbar-Ortiz 2014, 133). As the Civil War broke out, Lincoln recalled federal troops to fight in the East. In their stead, assembled volunteers from the Western states and territories carried on 'military campaigns against Indigenous nations', constituting 'foreign wars fought during the US Civil War, but the end of the Civil War did not end them' (139).

After the Civil War,

> the US Army hardly missed a beat before the war 'to win the West' began in full force. As a far more advanced killing machine and with seasoned troops, the army began the slaughter of people, buffalo, and the land itself, destroying natural tall grasses of the Plains and planting

> short grasses for cattle, eventually leading to the loss of topsoil four decades later. (Dunbar-Ortiz 2014, 144)

With the 1871 Dawes Act, the US government formally ceased to recognize tribal sovereignty. During this same period Sherman, who replaced Grant as the commander of the US Army, 'sent an army commission to England to study English colonial campaigns worldwide, looking to employ successful English tactics for the US wars against the Indigenous peoples' (145). By the 1890s, while military attacks still took place, as did armed acts of resistance, 'most surviving Indigenous refugees were confined to reservations, their children transported to boarding schools' (153). However, in what would become the Dust Bowl region and beyond, this was not enough for political and economic elites supporting westward expansion.

Massachusetts Senator Henry Dawes, representing some of the most powerful manufacturers in the Northeast and having his own financial interest in industries that would benefit from further Westward expansion, argued that the reservation system and all holdings of communal land were too socialist. He insisted, as colonial administrators did around the world during this time using various rationales, that privatization and allotment of land to individual tribal members was necessary – leaving the remainder for settlement by US citizens and paving the way for a massive land grab by the railroads and private capital more broadly. Dawes reported on his trip to Indian Territory and the Cherokee Nation to eastern reformers who made up the Board of Indian Commissioners:

> The head chief told us that there was not a family in the whole nation that had not a home of its own. There is not a pauper in that nation, and the nation does not owe a dollar. It built its own capitol, in which we had this examination, and built its schools and hospitals. Yet the defect of the system was apparent. They have got as far as they can go, because they hold their land in common. It is [the socialist writer] Henry George's system, and under that there is no enterprise to make your home any better than that of your neighbors. There is no selfishness, which is at the bottom of civilization. Till these people will consent to give up their lands, and divide them among their citizens so that each can own the land he cultivates, they will not make much progress. (Dawes 1885; reprinted in Malcolmson 2000, 15)

Property ownership, for Dawes, was necessary to instill 'selfishness, which is at the bottom of civilization'. And, importantly for Dawes's economic and political position, it satisfied the interests of private capital, especially the railroads, manufacturers seeking cheap raw materials, extractive industries, bankers and land speculators, among others.

The 'Five Civilized Tribes' removed from the south by Andrew Jackson's army via the Trail of Tears in the 1830s initially were exempt from the Dawes Severalty (Allotment) Act (1887), along with a few other nations and areas, because their territories were sovereign by law (Royster 1995). However, in the end, the federal government overcame a fierce movement resisting allotment and violently imposed division of much the remaining tribal lands held in common across what eventually became, through such processes, the contiguous United States (Chang 2010). In Oklahoma, the 'unassigned lands', left over after allotment, were opened for settlement, making possible developments contributing to the Dust Bowl within a very short amount of time. Three fourths of the 'Indigenous land base that still existed after decades of army attacks and wanton land grabs' was taken during this period (Dunbar-Ortiz 2014, 159). At the same time, part of the vast capital accumulated under the 'war capitalism' of Britain, the US and Europe 'poured into the West' (LaFeber [1963] 1998).

Just after the Dawes Act was passed, South Africa passed the Glen Grey Act under the administration of Cecil Rhodes to accomplish the same task with its own local flavor (Thompson and Nicholls 1993). New Zealand took a similar approach, as did other settler colonies. The installment of new private property regimes favoring the colonial powers thus required the destruction of communities and local land rights. British, Japanese and European overlords often sought to coerce rural cultivators to labor on the very lands just expropriated from them – lands which had provided for their industry and subsistence – and promoted a new wave of settlement and colonial occupation to help manage this coercion. However, Beckert (2014) writes, '[n]o colonial ruler followed the example of the United States' in expanding cultivation 'by removing the native peoples who had dwelled on those lands for centuries' (359).

On the US Southern Plains the settlers, reliant upon government support, including military backing, cheap land, agricultural assistance and the development of water supplies, were the greedy bankers, landowners and poor whites later depicted in Dust Bowl scholarly and popular literature. Many of the settlers in the Plains region were themselves capital's dispossessed and dislocated from Europe, the former slave states in the South, or from the US northeast (Friedmann 2005). However, many were also aware they were part of a broader colonial project, glorified in racial terms at the time by politicians and academics, in school textbooks, and in popular and 'high' culture. So, when the US invaded Cuba in 1898, 'a third of Teddy Roosevelt's Rough Riders … were recruited from Oklahoma Territory' (Dunbar-Ortiz 2002) (see note 3).

White supremacy and racial division under capitalism have long been tools of ruling class elites for 'neutralizing the class antagonisms of the landless against the landed' (Dunbar-Ortiz 2014). Seizing native land for settlers served, among other purposes, as a political safety release valve for Europe, the US and England, with new masses of the economically dispossessed (Alexander 2010, 25). Settlers on the US Southern Plains were caught up in relations of unequal exchange and, as the first systematic federal report on the Dust Bowl stated, 'a system of agriculture which could not be both permanent and prosperous' (Great Plains Drought Committee Report 1936). The Plains was integrated into the global economy as a cash crop-producing region. The expansion of settlement and cash-crop agriculture was pushed and made possible by the US government and private capital (Sanderson and Frey 2014). It served at least three elite objectives. The point was not to feed the masses of the world. But, rather, as Friedmann (2005) notes, '[w]heat was the substance that gave railways income from freight, expanding states a way to hold territory against the dispossessed, and diasporic Europeans a way to make an income' (231–32).

Cash-crop agriculture is very different in its social and ecological consequences than subsistence agriculture, or even farming by locals to supply local markets. It is volatile, subject to global market fluctuations. And there is an insatiable quality to it, as long as there is money to make; or, because of the role of finance in agriculture and taxes, there are debts to pay. As a consequence, fields are planted when they should rest, herds are expanded when they should be culled and so on, leading under the economic pressures of the new global market to the rapid degradation of the land. This happened on the Plains in spite of the fact that there were many advance warnings, going back to the late 1800s, that the plains region couldn't handle this kind of agricultural development and that the problem of soil erosion was becoming intractable. However, it also happened around the world with the global commodification of nature, at a then-unprecedented rate. Whether the region was tropical or arid, everywhere capital put boots on the ground

was subject to social and ecological violence. The global problem of soil erosion was one result.

The global Dust Bowl: takeaway points

Against the official story of ecological triumph, reflexivity

At a 2001 conference devoted to 'Breaking the Links Between Land Degradation, Food Insecurity, and Water Scarcity', a representative of the US federal government shared remarks explaining the US decision to become a Party to the United Nations Convention to Combat Desertification (UNCCD):

> One important reason the United States is committed to combating desertification is that we have been there. Farmers moving onto the fragile Plains persisted in using agriculture methods that were inappropriate for that environment. As a result, when a series of droughts hit, their land literally dried up and blew away. Conditions were so terrible that, it is claimed, farmers could actually hear the ground cracking as it dried. So, one reason I am here today is that the United States created one of the most famous examples of desertification ever.
>
> But the other side of that is the fact that the United States eventually managed to recover from this disaster. The US response to this crisis was a successful community-based soil and water conservation program that is still fighting the ever-present threat of desertification in the American West. Through research on soil conservation measures, technology transfer to farmers, and education and training of farmers, ranchers, and local communities – this should sound familiar to all of you knowledgeable about the CCD – the Dust Bowl was eventually mitigated and the affected lands returned to productivity.[4]

These brief remarks summarize the dominant view within the US and other wealthy countries of their own experience with ecological degradation, their role in solving global ecological crises, the often-simplistic diagnoses of environmental problems via proximate causes, and the favoring of technical approaches.

From this perspective the problem on the Plains in the 1930s, and the problems today associated with land degradation, are a lack of money and know-how brought to bear through good policy on local ignorance, perhaps updating previous well-intentioned, if misguided, policy. This assessment positions the wealthy countries as benevolent overseers of positive ecological change. Within countries it also situates those attempting to make a living on marginal and degraded lands, for historical reasons that are rarely discussed, as the ignorant and poor in need of proper shepherding and financing down the path of ecological righteousness and modern sustainable development.

Inherent in these remarks is the environmental version of the 'modernist master narrative of progressive phases' (Ferguson 1999, 48), which conceals issues of social domination, including the legacies of colonialism and imperialism. In sociology, this narrative is best represented in the work of scholars from within the ecological modernization school of thought, which assumes an ecologically 'reflexive modernity', drawing on the work of writers like Ulrich Beck (van Koppen, Mol, and van Tatenhove 2010, 750). From such a perspective, disasters represent another opportunity to learn from our mistakes, make

[4]The acting Assistant Secretary of the US Bureau of Oceans and International Environmental and Scientific Affairs, Kenneth C. Brill, was referring to the Dust Bowl, which he explained this way: 'Farmers moving onto the fragile Plains persisted in using agricultural methods that were inappropriate for the environment' (U.S. Department of State 2001).

corrections and continue the cumulative process, however uneven, of greening capitalism. As one author representing this perspective wrote of the current period: 'we have entered a new industrial revolution, one of radical restructuring of production, consumption, state practices and political discourses along ecological lines' (Sonnenfeld 2009, 372).

However, this perspective relies on a view of modernity that is not at all historicized, and therefore broader claims about systemic restructuring along ecological lines are based on assumptions that bear little resemblance to the reality of capitalism, historically, in the face of global ecological crises. In the case of the Dust Bowl, and the global crisis of soil erosion, the primary goal of elites was to maintain the newly reconfigured social order, and ecological priorities were discussed in these terms. Environmental policies and assistance to those dependent on the land were racially based and technological in nature, maintaining the social status quo, even though more radical options were on the table and pressed both by movements and radical thinkers within and outside government administrations in the US and globally.

At the end of the day, the responses implemented, by not challenging the social status quo, also did not solve any ecological problems in the long run, as can be seen in the ongoing and intensifying problem, globally, with climate change, soil erosion, desertification and land degradation more generally.

Currently, old approaches to capitalist environmental management are dressed up in new clothes like 'climate-smart agriculture', or CSA, co-opting the acronym long used to refer to 'community-supported agriculture'. Promoted in the name of 'climate change resilience' by the Food and Agricultural Organization of the United Nations, governments and corporations around the world, the emphasis remains the old familiar goal of recasting and modernizing local agriculture, rather than dismantling the domination of the countryside by agribusiness, as can be seen in the glossy online guide, 'Climate-Smart Agriculture 101' (https://csa.guide/). This is in spite of the fact that the modern era's technologically advanced, but socially and ecologically destructive, farming for profit continues to generate massive global problems, including the subjection of 90 percent of global agricultural land to erosion, with 80 percent affected by erosion classified as moderate to severe (Pimentel 2006).

It is clear that while some adjustments can be made within the current social system, without broader changes the trend toward ever-greater ecological degradation continues and issues of domination and injustice remain unaddressed.

The necessity of a deeper conception of environmental history, justice and solidarity

Beinhardt and Coates (1995) write in *Environment and history: the taming of nature in the USA and South Africa* that:

> Much American frontier history has suffered from an exaggerated sense of exceptionalism, yet beneath the euphemistic veneer of 'settlement', the American frontier struggle against indigenous people and the natural world was essentially no different from the white imperialist in southern Africa. The European conquests of our regions were but two aspects of the global expansion of capitalism whose tentacles fingered the globe's farthest recesses in the wake of Columbus and de Gama. (8)

The Dust Bowl, and the way it is almost universally depicted in mainstream environmental discourse, including the academic literature, against the backdrop of frontier history, illustrates the persistence of American exceptionalism. Moreover, memories of Westward expansion, including the Dust Bowl, like memories of the trek in South Africa, are

'whitened' so that the links between the ongoing legacies of colonialism and ecological degradation are mostly ignored (59).

All of this is related to problems in US environmentalism and the academic environmental literature with the conceptualization of environmental crises and environmental justice. Many focus on environmental injustice as the unequal distribution of outcomes of environmental harm. Colonized peoples are homogenized and described as 'stakeholders' in environmental conflicts (e.g. Colby, Thorson, and Britton 2005). Mainstream environmental organizations, those on the privileged side of the segregated environmental movement globally, and more linked to power, are encouraged to diversify their staff and memberships and pay attention to issues of 'justice' (see Taylor 2014 on segregation in the environmental movement and Park 2009 on the implications for movement efficacy). However, the deeper aspects of social domination required to maintain the economic, social and environmental status quo often are denied, minimized or simply ignored.

Wider recognition of the 'ongoing structure' (Glenn 2015) of settler colonialism and imperialism would be a great advance in the mainstream environmental movement, the environmental social sciences and also Dust Bowl historiography. It would keep alive the recognition of the original and ongoing injustices done and their continuing effects. For example, the continued loss of indigenous knowledge – with 50–90 percent of global languages expected to go extinct by the end of this century alone – is most catastrophic for the communities this knowledge keeps intact (Nuwer 2014). However, it is also a loss for everyone who realizes another world is necessary, but lacks the knowledge and experience to know other worlds are possible, that there are completely different ways of relating to each other and the rest of nature.

Addressing these issues requires moving beyond superficial approaches to historical changes associated with imperialism and capitalist development that have allowed environmentalists and scholars too often 'to safely put aside present responsibility for continued harm done by that past and questions of reparations, restitution, and reordering society', when discussing current, interrelated environmental and social problems and environmental justice (Dunbar-Ortiz 2014, 5).[5] Superficial approaches to addressing racism, indigenous oppression and other forms of social domination preclude the possibility of a deeper solidarity across historical social divisions. However, this kind of solidarity is exactly what we need to build an environmental movement capable of challenging the status quo and making lasting change that is socially and ecologically restorative and just.

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[5]Dunbar-Ortiz (2014) explains the predominant simplistic and ahistorical understandings of race as the result of a dehistoricized 'multiculturalism', acting as 'an insidious smoke screen meant to obscure the fact that the very existence of the country is a result of the looting of an entire continent and its resources' (5). With such multiculturalism, Dunbar-Ortiz writes, 'manifest destiny won the day'.

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References

Alexander, M. 2010. *The new Jim Crow: Mass incarceration in the age of colorblindness.* New York: The New Press.

Anderson, D. 1984. Depression, demography, and drought: The colonial state and soil conservation in East Africa during the 1930s. *African Affairs* 332, no. 83: 321–43.

Baker, O.E. 1927. Address. Presented at the World Congress of Soil Science, Washington DC, 1927.

Baumhardt, R.L. 2003. Dust Bowl era. In *Encyclopedia of water science*, eds. Bobby A. Stewart and Terry Howell, 187–191. New York: Marcel Dekker.

Baveye, P.C., D. Rangel, A.R. Jacobson, M. Laba, C. Darnault, W. Otten, R. Radulovich, F.A.O. Camargo. 2011. From Dust Bowl to Dust Bowl: Soils still very much a rrontier of science. *Soil Science Society of America Journal* 75: 2037–48.

Beckert, S. 2014. *Empire of cotton: A global history*. New York: Knopf.

Beckford, G.L. 1972. *Persistent poverty; Underdevelopment in plantation economies of the Third World*. New York: Oxford University Press.

Beinhardt, W. and P. Coates. 1995. *Environment and history: the taming of nature in the USA and South Africa*. London: Routledge.

Bonnifield, P. 1979. *The Dust Bowl: Men, dirt, and depression*. Albuquerque: University of New Mexico Press.

Borchert, J.R. 1971. The Dust Bowl in the 1970s. *Annals of the American Association of Geographers* 61, no. 1: 1–22.

Borgstrom, G. 1973. *World food resources*. New York: Intext Educational Publishers.

Brechin, G. 1996. Conserving the race: Natural aristrocracies, eugenics, and the US conservation movement. *Antipode* 28, no. 3: 229–45.

Brönnimann, S., A. Stickler, T. Griesser, T. Ewen, A.N. Grant, A.M. Fischer, M. Schraner, T. Peter, E. Rozanov, and T. Ross. 2009. Exceptional atmospheric circulation during the 'Dust Bowl'. *Geophysical Research Letters* 36, no. 8. doi:10.1029/2009GL037612.

Chang, D.A. 2010. *The Color of the land: Race, nation, and the politics of land ownership in Oklahoma, 1832–1929*. Chapel Hill: University of North Carolina Press.

Colby, B.G., J.E. Thorson, and S. Britton. 2005. *Negotiating tribal water rights: Fulfilling promises in the arid West*. Tucson, AZ: University of Arizona Press.

Consultative Group on International Research's (CGIAR) Research Program on Climate Change, Agriculture and Food Security (CCAFS). 'Climate smart agriculture 101.' Accessed May 1, 2016. https://csa.guide/.

Cook, B.I., R.L. Miller, and R. Seager. 2009. Amplification of the North American 'Dust Bowl' drought through human-induced land degradation. *PNAS* 106, no. 13: 4997–5001.

Cronon, W. 1992. A place for stories: Nature, history, and narrative. *The Journal of American History* 78, no. 4: 1347–76.

Cunfer, G. 2005. *On the great plains*. College Station, TX: Texas A&M University Press.

Davis, M. 2002. *Late Victorian holocausts: El Niño famines and the making of the Third World*. London: Verso.

DuBois, W.E.B. (1920) 2003. The souls of White Folk. *Monthly Review* 55, no. 6: 44–58.

Dunbar-Ortiz, R. 2002. One or two things I know about us: Rethinking the image and role of the Okies. *Monthly Review* 54, no. 3. Accessed October 15, 2015. http://monthlyreview.org/2002/07/01/one-or-two-things-i-know-about-us/.

Dunbar-Ortiz, R. 2014. *An Indigenous people's history of the United States*. Boston: Beacon Press.

'*Dust Bowls of the empire*'. 1939. *The Round Table* 29, no. 114: 346–50.

Egan, T. 2006. *The worst hard time*. New York: Houghton Mifflin Harcourt Publishing Company.

Ferguson, J. 1999. *Expectations of modernity: Myths and meanings of urban life on the Zambian Copperbelt*. Berkeley, CA: University of California Press.
Fite, G.C. 1983. Review of *The Dust Bowl: An agricultural and social history* by R. D. Hurt. *The Great Plains Quarterly* 3, no. 4: 243–44.
Foster, J.B. 2006. *Naked imperialism: The US pursuit of global dominance*. New York: Monthly Review Press.
Foster, J.B., B. Clark, and R. York. 2010. *The ecological rift: Capitalism's war on the earth.* New York: Monthly Review Press.
Foster, J.B., and H. Holleman. 2012. Weber and the environment: Classical foundations for a postexemptionalist sociology. *American Journal of Sociology* 117, no. 6: 1625–73.
Friedmann, H. 2005. From colonialism to green capitalism: Social movements and emergence of food regimes. In *New directions in the sociology of global development (research in rural sociology and development, volume 11)*, eds. F.H. Buttel and P. McMichael, 227–264. Amsterdam, London: Elsevier Ltd.
Glenn, E.N. 2015. Settler colonialism as structure: A framework for comparative studies of US race and gender formation. *Sociology of Race and Ethnicity* 1, no. 1: 54–74.
Great Plains Drought Area Committee. 1936. *Report of the great plains drought area committee*. Washington, DC: US Government.
Gregory, J.N. 1989. *American exodus: The Dust Bowl migration and Okie culture in California*. New York: Oxford University Press.
Grove, R.H. 1995. *Green imperialism*. Cambridge: University of Cambridge Press.
Hansen, Z.K., and G.D. Libecap. 2003. Small farms, externalities, and the Dust Bowl of the 1930s. *NBER Working Paper* No. 10055. http://www.nber.org/papers/w10055.
Hornbeck, R. 2012. The enduring impact of the American Dust Bowl: Short- and long-run adjustments to environmental catastrophe. *American Economic Review* 102, no. 4: 1477–1507.
Hurt, R.D. 1981. *The Dust Bowl: Agricultural and social history*. Chicago: Nelson-Hall.
Hurt, R.D. 1986. Federal land reclamation in the Dust Bowl. *Great Plains Quarterly* 6: 94–106.
Jacks, G.V., and R.O. Whyte. 1939. *The rape of the earth: A world survey of soil erosion*. London: Faber and Faber Ltd.
van Koppen, C.S.A., A.P.J. Mol, and J.P.M. van Tatenhove. 2010. Coping with extreme climate events: Institutional flocking. *Futures* 42: 749–58.
Kwashirai, V.C. 2006. Dilemmas in conservationism in colonial Zimbabwe, 1890–1930. *Conservation and Society* 4, no. 4: 541–561.
LaFeber, W. (1963) 1998. *The new empire: An interpretation of American expansion 1860–1898*. Ithaca: Cornell University Press.
Lockeretz, W. 1978. The lessons of the Dust Bowl. *American Scientist* 66, no. 5: 560–69.
Lowenthal, D. 1965. Introduction to George Perkins Marsh. (1864) 1965. In *Man and nature*. Cambridge, MA: Harvard University Press.
Magdoff, H. 1978. *Imperialism: From the colonial age to the present*. New York: Monthly Review Press.
Malcolmson, S.L. 2000. *One drop of blood: The American misadventure of race*. New York: Farrar, Straus, and Giroux.
Marsh, G.P. (1864) 1965. *Man and nature*. Cambridge, MA: Harvard University Press.
Marx, K. (1867) 1990. *Capital volume I*. London: Penguin Books.
McDean, H.C. 1986. Dust Bowl historiography. *Great Plains Quarterly* 6: 117–26.
McLeman, R.A., J. Dupre, L.B. Ford, J. Ford, K. Gajewski, and G. Marchildon. 2014. What we learned from the Dust Bowl: Lessons in science, policy, and adaptation. *Population and Environment* 35: 417–40.
McMichael, P. 2009. A food regime genealogy. *The Journal of Peasant Studies* 36, no. 1: 139–69.
McNeill, J.R., and V. Winiwarter. 2004. Breaking the sod: Humankind, history, and soil. *Science* 304: 1627–1629.
Melillo, E.D. 2012. The first green revolution: Debt peonage and the making of the nitrogen fertilizer trade, 1840–1930. *American History Review* 117, no. 4: 1028–60.
Merchant, C. 1989. *Ecological revolutions: Nature, gender, and science in New England*. Chapel Hill: University of North Carolina Press.
Milanovic, B. 2003. The two faces of globalization: Against globalization as we know it. *World Development* 31, no. 4: 667–83.

Miller, C. 2001. *Gifford Pinchot and the making of modern environmentalism*. Washington, DC: Island Press.
Murphy, J. 2009. *Environment and imperialism: Why colonialism still matters*. SRI Papers, No. 20. Leeds, UK: Sustainability Research Institute.
National Drought Mitigation Center. http://drought.unl.edu/DroughtBasics/DustBowl.aspx
Nuwer, R. 2014. Languages: Why we must save dying tongues. *BBC News*, June 6. Accessed May 5, 2016. http://www.bbc.com/future/story/20140606-why-we-must-save-dying-languages.
Page, M.E., and P.M. Sonnenberg, eds. 2003. *Colonialism: An international social, cultural, and political encyclopedia, volume 1*. Oxford: ABC-CLIO.
Park, A. 2009. *Everybody's movement: Environmental justice and climate change*. Washington, DC: Environmental Support Center.
Pimentel, D. 2006. Soil erosion: A food and environmental threat. *Environment, Development and Sustainability* 8, no. 1 (February): 119–137.
Porter, J.C., and G.A. Finchum. 2009. Redefining the Dust Bowl region via popular perception and geotechnology. *Great Plains Research* 19: 201–14.
Riebsame, W.E. 1986. The Dust Bowl: Historical image, psychological anchor, and ecological taboo. *Great Plains Quarterly* 6, no. 2: 127–136.
Romm, J. 2011. Desertification: The next Dust Bowl. *Nature* 478, no. 7370: 450–51.
Roosevelt, T. 1908. Opening remarks. Presented at the Governors' Conference on the Conservation of Natural Resources, Washington, D.C., May 13–15, 1908.
Royster, J. 1995. The legacy of allotment. *Arizona State Law Journal* 27, no. 1: 1–78.
Sanderson, M.R., and R.S. Frey. 2014. From desert to breadbasket … to desert again? A metabolic rift in the high plains aquifer. *Journal of Political Ecology* 21: 516–32.
Schubert, S.D., M.J. Suarez, P.J. Pegion, R.D. Koster, J.T. Bacmeister. 2004. On the cause of the 1930s Dust Bowl. *Science* 303, no. 5665: 1855–59.
Shahriari, S. 2011. Human zoo: For centuries, Indigenous peoples were displayed as novelties. An Interview with Nancy Egan. *Indian Country*. Accessed January 15, 2016. http://indiancountrytodaymedianetwork.com/2011/08/30/human-zoo-centuries-indigenous-peoples-were-displayed-novelties-48239.
Slotkin, R. 1973. *Regeneration through violence*. Norman, OK: University of Oklahoma Press.
Sonnenfeld, D.A. 2009. Contradictions of ecological modernisation: Pulp and paper manufacturing in Southeast Asia. In *The ecological modernisation reader*, eds. A.P.J. Mol, D.A. Sonnenfeld, and G. Spaargaren, 372–93. London, England: Routledge.
Springfield Republican. 1939. Erosion a world problem. Front Page, May 25th.
Taylor, D.E. 2014. *The state of diversity in environmental organizations*. Washington, DC: Green 2.0 Working Group.
Tempany, H.A., G.M. Roddan, and L. Lord. 1944. Soil erosion and soil conservation in the colonial empire. *Empire Forestry Journal* 23, no. 2: 142–59.
Thompson, R.J., and B.M. Nicholls. 1993. The Glen Grey act: Forgotten dimensions in an old theme. *South African Journal of Economic History* 8, no. 2: 58–70.
U.S. Department of State. 2001. Remarks by Kenneth Brill prepared for presentation to the conference 'Breaking the links between land degradation, food insecurity, and water scarcity.' Washington, DC. http://2001-2009.state.gov/g/oes/rls/rm/4005.htm.
USDA. 1908. Final declaration of the Governors' Conference on the Conservation of Natural Resources, Washington, DC, May 13–15, 1908. Farmer's Bulletin 340. Issued December 6, 1908. Washington: US Government Printing Office.
Weaver, J.C. 2003. *The great land rush and the making of the modern world, 1650–1900*. Montreal: McGill-Queen's University Press.
Weber, M. (1904) 1988. A letter from Indian territory. *Free Inquiry in Creative Sociology* 16, no. 2: 133–36.
Worster, D.E. (1979) 2004. *Dust Bowl: The southern plains in the 1930s*. New York: Oxford University Press.

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