The last chapter shows how the 1960s and 1970s rehabilitation plan for the Laguna region was a short-term success. It consisted of another major social and environmental engineering project in which government officials transferred *ejidatarios* from their original collective *ejidos* to 'compacted' and radically reduced irrigated lands. In one fascinating sketch from the time, we see how, to raise water-use efficiency, engineers reduced 17 Tlahualilo collective *ejidos* covering 22,000 hectares to a compacted area of 5,700 hectares. This relocation scheme was temporarily successful in raising agricultural production and incomes on *ejidos*, but based as it was on ecologically unsustainable technology – including building a second dam and lining the canals with concrete – it ultimately depleted the aquifers. The collective *ejido* deteriorated not only because of diminishing water supplies, but also because of reduced credit, demographic growth, poor governance, and state policies favouring the La Laguna agro-industrial group that concentrated scarce groundwater supplies for cattle-raising.

The book ends with a short evaluation of Mexico's current water crisis, showing that government debates in the 2000s were not unlike those in the 1920s and 1930s in terms of their disregard for environmental sustainability. The result of this long history of environmental mismanagement has been greater frequency and duration of severe droughts in the region. This impressive work of scholarship is, therefore, also a most timely example of how exactly anthropogenic climate change occurs.

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Robert W. Wilcox, *Cattle in the Backlands: Mato Grosso and the Evolution of Ranching in the Brazilian Tropics* (Austin, TX: University of Texas Press, 2017), pp. xviii + 323, $45.00; £39.00, hb

Ranching in Latin American is understudied, so Robert Wilcox's *Cattle in the Backlands* is a welcome, and important, contribution. Wilcox focuses on Mato Grosso, in southwestern Brazil, between the mid-nineteenth and mid-twentieth centuries. Although this region of tropical savannas is not very well known, he writes, 'there is no better place to observe the development of this important sector' (p. 235). In fact, 'much of what characterizes recent endeavors in ranching modernization, particularly in the Amazon Basin', got its start here (p. 227). Yet his story is one of innovation meeting tradition rather than dramatic transformation. Unlike more familiar tales from rainforest regions, in Mato Grosso the environment shaped ranching more than ranchers degraded local ecosystems. The slow nature of progress also generated frustration. Two epigrams (from 1887 and 1974) by presidents of Mato Grosso bracket the text and epitomise long-standing complaints about backwards ranchers and the 'waste of the potential of the land' (p. 223). Wilcox pushes back against this perspective, also typical of Latin American agrarian studies: 'geographical, ecological, and economic restraints', he suggests, not the lack of will or capacity, determined the 'gradual and erratic' pace of change (p. 223). Nonetheless, change did occur and 'Mato Grosso became a proving ground for much of the technology used in Brazilian tropical and semitropical cattle ranching' (p. 8).

The structure of *Cattle in the Backlands* is partly chronological, partly thematic. Wilcox, an environmental historian, begins with a detailed description of the three ecosystems that comprise Mato Grosso: the Pantanal floodplains, the fertile grasslands of *campo limpo*, and the savanna-scrubland of the *cerrado*. The following two chapters

outline the economic history of the region with the boom in demand for cattle products during World War I marking a watershed by accelerating the pace of settlement and integration into wider circuits of capital. The next three chapters discuss the underlying dynamics of ranching: the centrality of land, the organisation of labour, and the 'mundane' practices of raising cattle. Wilcox then broadens his scope to examine the controversial, yet consequential, introduction of zebu to Brazil. He concludes by bringing his story full circle to highlight how developments prior to the 1950s laid the groundwork for the 'revolution in tropical ranching' (and ecological degradation) unleashed by zebu, exotic grasses, fiscal incentives and modern management techniques that coalesced in the 1970s.

Scant and incomplete documentation makes research on ranching frontiers notoriously difficult. So the wealth of information that Wilcox musters – from cattle censuses and land-holding patterns to data on productivity, profitability and settler–indigenous relations – is remarkable. Yet he avoids getting bogged down in minutiae and his narrative flows well, focusing on how the opportunities and limits of tropical ranching shaped the settlement and incorporation of a frontier region.

Despite early forays, Mato Grosso remained sparsely populated through the first half of the nineteenth century. The natural grasslands were an enticement, but their remoteness meant that markets were local and limited. Settlement picked up as trade connections developed and land pressure elsewhere pushed people to the frontier. Shipments of live cattle began in the 1850s as the coffee economy boosted demand around Rio and later São Paulo. World War I provided an additional boost as the development of a beef export industry required additional cattle to satisfy domestic demand. Two- to three-month trail drives connected Mato Grosso with distant markets, but they were expensive and the steer needed six to 12 months of pasturage to regain lost weight. It was the availability of land, perhaps 10–20 times cheaper than in more centrally-located districts, that allowed Mato Grosso to supply São Paulo slaughterhouses with cattle. Cheap land and low stocking rates meant that properties tended to be large: a small rancher might raise 500 to 1,000 head on 2,500 hectares, and quite a few had over 100,000 hectares. Still, low profitability meant that many ranchers lived a quasi-subsistence existence. Low-cost land and cattle also made possible the export of jerky and beef bouillon via the Paraguay River and attracted foreign investors: nine foreign companies owned over 4.8 million hectares by the 1930s.

American railroad magnate Percival Farquhar, whose Brazilian Land, Cattle and Packing Company was the largest landowner, tried to modernise tropical stock-raising, with mixed results. His attempt to upgrade local cattle by crossbreeding with Herefords was an 'abysmal failure' (p. 205), while few ranchers adopted the exotic grasses and wire fences that he introduced until landholdings began to fragment in the 1930s. The one innovation that Mato Grosso ranchers adopted quickly was the zebu, which became the breed of choice by World War I. Not all Brazilians favoured this 'Asiatic plague' (p. 209), and the zebu debate that Wilcox reconstructs is a fascinating tale that interweaves nationalist discourses, shifting bases of scientific authority and struggles to control breeding markets. Ultimately, however, the rapid diffusion of zebu, facilitated by the importation of over 5,000 breeding animals by 1921, 'led a revolution in tropical ranching … in which Mato Grosso played a significant role' (p. 12).

Cattle in the Backlands is one of the best studies of the historic development of ranching in the American tropics. Students of Latin American environmental and

agrarian history will find it especially rewarding. Some readers might take issue with Wilcox's treatment of labour relations as 'amicable' (p. 226) and his suggestion that the availability of land 'tempered' social conflict (p. 230). But his story is compelling and we should take his analysis seriously. Some of Mato Grosso's exceptionalism – floodplain ranching and divisions between cowboys and ranch hands – were also common in Colombia. More significantly, Wilcox's claim that Mato Grosso has been central to the intensification of Brazilian ranching since the 1970s is provocative but hard to demonstrate in a story that ends around 1950. For expediency, Wilcox also sidelines the politics of ranching. The connections between cattle and the 'agrarian question', however, remain important. Traditional studies of the Latin American countryside assumed that hidebound ranchers were an obstacle to national development. But if we accept Wilcox's proposition that ranchers were constrained by environmental and economic factors rather than simply backward, how does this (re)shape our understanding of the history and politics of agrarian change?

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Eve E. Buckley, *Technocrats and the Politics of Drought and Development in Twentieth-Century Brazil* (Chapel Hill, NC: University of North Carolina Press, 2017), pp. xiv + 298, $29.95, pb

Eve E. Buckley's study of drought and development in northeast Brazil offers fascinating new terrain for the history of modernity, regionalism and science – the latter as both ideology and political practice. Buckley explores government initiatives from 1904 to 1964 seeking to alleviate the problems of drought in the semi-arid *sertão* region, whose inhabitants (known as *sertanejos*) have traditionally stood as symbols of backwardness in the Brazilian national imaginary. The perceived backwardness of the *sertão* and its populations serves as a central theme of the book, as the author explores the shortcomings of development projects to 'transform' *sertanejos* into modern (and thus valid) members of the polity. That these attempts not only failed, but probably exacerbated poverty in the *sertão*, shows a form of technocratic hubris and the limitations of scientists as agents for social change.

The book traces four cohorts of Brazilian technocrats. This included public health workers in the first decades of the century, who set the precedent for framing scientific approaches to solve the nation's problems; civil engineers through the 1930s, who oversaw the building of dams and roads as a means to improve infrastructure without upending the social order; agronomists in the 1930s, 1940s and 1950s, who articulated the *sertanejos*' vulnerability to drought as a problem of insufficient education and culture; and finally, development economists, who, in the middle decades of the century, sought to reorganise the region's economy with an emphasis on industrialisation and food security. Each of these cohorts is given its own chapter in the book, with a full chronicle of the respective government agencies and their technocrats.

By presenting a dual narrative of climate and structural inequality, Buckley makes two interwoven arguments. First, she contends that the history of *sertanejo* marginalisation is itself an environmental history. The periodic droughts in the *sertão* led to waves of *retirantes* (drought migrants) abandoning their hinterland farms and seeking refuge in cities, where the concentration of impoverished, starved – and ethnically mixed – people helped create and perpetuate notions of *sertanejos* as destitute