KING SUGAR & THE COMPOSTS OF EMPIRE: LAND, LABOR AND THE ORIGINS OF CHEAP NATURE ON *ILHA DA MADEIRA*

In times of transition, tiny places can loom as large as continents. So it is with Madeira. Lying some 560 kilometers west of north Africa, in the fifteenth- and sixteenth-centuries Madeira became home to the modern world's first cash crop boom, a sugar revolution. Planetary life – and power – would never be the same.

Humans have experimented with sugarcane for a very long time. By 6,000 BCE, it began to spread from New Guinea. It swept across southeast Asia, soon reaching India and China. It reached Mesopotamia by 600, and then the Mediterranean. By the twelfth century, the Crusades, bankrolled by precociously commercial states like Venice and Genoa, developed a new agricultural model on islands like Crete. This was a synthesis of lucrative sugar, slavery, and large-scale monoculture. It was not yet the modern plantation, but it was on the way.

For the next few centuries, commercial sugar planting carried on much as it had for millennia. Compared to early modern standards, production was relatively small-scale and, while lucrative, coexisted with a diversity of crops. From Cyprus to the Algarve, sugar was prized – and rare. In 1226, when the English king Henry III requested sugar from the Mayor of Winchester, it was for three pounds: "if so much could be had at one time from the merchants at the great Winchester fair."

In the Middle Ages, sugar was more spice than food. That would change in the 1470s, and the epicenter of that revolutionary change was Madeira. The *Ilha da Madeira* – literally, "island of wood" – had been colonized in the 1430s by settlers financed by the Portuguese Crown. Their remit was cultivating wheat, not sugar, for the chronically grain-deficient kingdom. Within two decades, however, something changed.

A peculiar agreement captures that something. It was a contract signed in 1452 between Henry the Navigator (1394-1460) and one of his *escuderos* ("squires"), Diogo de Teive. Henry granted Diogo the right to build a water-powered mill (*engenho*) to process raw sugarcane, which some settlers had begun to cultivate on a modest scale around Funchal. Diogo was to operate at full capacity, and the Prince would license additional mills as needed. Henry would receive a third of the milled sugar. Like many elements of Portuguese expansion, the agreement was prefigurative, with barely a hint of feudal form. Diogo, and sugar cultivators, were committed to raising output and advancing productivity; failure to do so would result in their replacement with someone who could do the job. It was a very modern arrangement. The 1452 contract was capitalist agriculture's birth certificate.

The stage was set for King Sugar's coronation. By 1454, Madeira's *engenhos* produced a whopping 84 tons of sugar. Just after the turn of the century, output was twenty times higher. Those numbers were tiny compared to the sugar exports of Brazil and the West Indies, but they were huge compared to Sicily and Cyprus. Sugar transformed from a drug to a food, and from a luxury item to a *mass commodity:* one of those epochal commercial products, like oil and automobiles in the twentieth century, that shaped capitalist civilization. Its gravitational pull influenced not just economics, but cultural, political power, and the webs of life in which they were all entangled.

The sugar revolution did not happen overnight. It was at once the product and producer of a vast legal, economic and geographical infrastructure. These remade Madeira's ecology through webs of relations knitting together Lisbon's Court, the great mercantile firms of Flanders and Italy, and frontiers of enslavement. It's more than a footnote to the story that Columbus knew the Madeiras well, plied the sugar trade, and even married the daughter of Porto Santo's governor. Without the Madeiras, there's no Columbus.

King Sugar is a thirsty crop. It's sugar that gives the island its most distinctive human-made feature. The first irrigation canals, called *levadas*, were built in the 1430s and 1440s. The term derives from the Portuguese verb *levar* – appropriately, "to bring." Today the *levadas* extend 2.100 kilometers on an island that runs just 50 km east-to-west and occupies 756 km² . The first great burst of levada construction was fueled by the modest sugar boom of the 1450s. But capacity was limited, and disputes soon arose. A robust construction campaign commenced. Labor however remained scarce. Not until the 1470s was the problem solved – initially by a modest, but rising, flow Canarians and others captured in Iberian "just wars." Nineteenth-century photographs offer some understanding of how arduous – and deadly – was the work on the *levadas.* Madeira's dramatically vertical topography meant these narrow canals had to be carved from the mountainsides by men precariously suspended. It was dangerous work, another compost of King Sugar that would endure across the centuries. As workers perished, water flowed; water flowed, and workers perished. In the midst of it all, sugar's boom became a revolution.

Sugar's unquenchable thirst was only in part agro-ecological. It was also industrial. The 1452 contract authorized Diogo de Tieve to construct a mill. It was surely not the first, as sometimes reckoned. But it may have been the island's first *hydraulic* mill. The qualification is crucial. The levadas were too narrow to supply water power to the mills; this could only come from locating a mill next to a river, almost certainly the Ribeira dos Socorridos near Funchal. The hydraulic amplifier was decisive to sugar's profitability. Sugarcane is a grass. Its thick reeds must be pressed to extract the cane juice. This extraction must occur almost immediately after harvest – absolutely within 48 hours – lest the cane desiccate. With freshly-cut cane, the greater the pressure applied, the tighter the window between harvest and milling, the more juice; the more juice, the greater the sugar output – and potential profit. *Engenhos* could – and often were – powered by animals, even humans. But hydraulic mills were preferable, and King Sugar reached escape velocity only when their numbers reached critical mass. Hence the significance of the 1452 contract.

Sugar's environmental history was therefore as much legal and technological as it was agro-ecological. The productive – and yet also destructive – combination of law, technology and commerce with webs of life was a definitive rupture with pre-modern social ecologies. Indeed one can trace the lineages of today's planetary crisis to the Madeiras. Where many see the steam engine as the key machine of ecological crisis, a much stronger candidate is found in King Sugar's *engenhos* – without which, centuries later, there would have been neither the capital nor the infrastructure to launch "the" Industrial Revolution.

Sugar's ecological revolution was enabled through an audacious series of biophysical transformations. Madeira was rapidly deforested, its ashes feeding the soil, its trees fueling the great boilers that turned cane juice into crystal sugar. Like all subsequent cash-crop revolutions, it was, in successive turns, self-sustaining and self-defeating. By the dawn of the sixteenth century, more than 10,000 hectares were planted in sugar. In the first two decades of the new century, King Sugar consumed hundreds of hectares of forest every year. Here was an entirely new rhythm of environmental history. By 1510, 160 km² of forest, nearly one-quarter of the island and over half its accessible forest, had been cleared. This obviously could not – and did not – sustain.

Sugar plantations in the medieval Mediterranean had taken their toll on woodlands. But what occurred on Madeira was unprecedented. In medieval Europe, forests retreated at a steady, almost leisurely, pace. After the 1470s, changes that once took centuries to achieve occurred in mere decades. Every new decade brought startling landscape transformations, from the Saxon Erzgebirge to southern Norway to England's iron smelting districts. But nowhere did this profit-driven conquest of life manifest more forcefully than in the new sugar commodity frontiers, beginning on Madeira. Organized through the precocious agencies of the Portuguese – and later the Dutch and British – empires, across the next three centuries a new sugar revolution would be launched every half-century or so. Each revolution would be organized in a new frontier zone, where Cheap Natures could be managed rapidly – and profitably. São Tomé would replace Madeira in the 1550s; thence, the rise of Pernambuco and then Bahia in northeastern Brazil, followed by Barbados, Jamaica, and then Saint Domingue and Cuba.

Those frontiers of Cheap Nature encompassed not only land and water but labor. The compost of empire and its cash crops is an afterlife of this mixing of the work performed by humans – and the rest of life – enmeshed in these ecological revolutions. Modern sugar not only devoured forests and exhausted soils—it was an apparatus of mass killing in the form of African slavery. Madeira was never a slave society. Nevertheless, modern slave societies could not have been organized without this first sugar revolution.

Madeira's planters came to depend on coerced labor. That dependence increased as agricultural productivity stagnated, definitively in the 1510s. The island's slave imports increased even as sugar output began to fall. Planters applied more slave labor as fuel supplies dwindled and soil fertility declined. By 1500 Madeira outproduced its closest competitor by a factor of 6:1. The boom was short-lived. Sugar production peaked in that decade. By 1530, output collapsed, barely 10 percent of what it was at the height of the sugar boom. This extraordinary acceleration of ecohistorical change distinguishes Madeira – and all subsequent cash crop revolutions – from its medieval forerunners.

When the sugar plantations reached São Tomé a few decades later, deforestation again proceeded at a furious pace. It was profitable. But the sheer scale of new plantations – giant mill-plantation complexes, each with hundreds of slaves – worked against the masters. Slaves escaped to the island's interior and organized fierce resistance, laying siege to the island's capital for two weeks in 1596. The Portuguese quickly relocated production to northeastern Brazil. But here again, deforestation, war, and the brutality of the labour regime – the hallmarks of Cheap Nature – undermined profitability.

King Sugar's restlessness was renewed. The sugar frontier surged, this time towards the Caribbean, producing one biological wasteland after another in the century after 1650. The profits from these sugar and slaving revolutions would finance British-led industrialization at the end of the eighteenth century. Here we find an intimate geohistorical connection: between Madeira's sugar revolution and the twenty-first century's climate crisis. Coal flowed through a world-ecology created by sugar and slavery. Coal's steam engine emerged within the sinews of sugar's *engenho.*

While sugar moved to the frontier, capitalist cash-cropping stayed. Madeira remained a crucial node in capitalism's far-flung ecologies. The composts of Cheap Nature are not static; they accumulate and reinvent over the *longue durée.* When sugar collapsed, vines advanced. In the Anglosphere, most knew Madeira for wine, not sugar. The vineyards consumed much less fuel, labor and water than sugar. Indeed, quality construction timber was in such limited domestic supply that Madeira's booming vineyards assembled casks from white oak barrel staves shipped from New England, another great cash-cropping frontier. For centuries, Madeira would serve as a strategic resupply node for commercial and imperial power, and Funchal as an active port in the trans-Atlantic slave trade. Sugar's demise was not the end, but the beginning, of a new era of power, profit and life.

Jason W. Moore

Further reading: Jason W. Moore, "Madeira, Sugar, & the Conquest of Nature in the 'First' Sixteenth Century, Part I: From 'Island of Timber' to Sugar Revolution, 1420-1506," *Review* 32(4, 2010), 345-390; "Madeira, Sugar, & the Conquest of Nature in the 'First' Sixteenth Century, Part II: From Local Crisis to Commodity Frontier, 1506-1530," *Review* 33(1, 2011), 1-24.

DESECRATION OF THE EMPIRE, 2023
Compost pile: bagasse, molasses, and crushed sugar cane; dryland cereals, straw and hay, logs, twigs, chips, sawdust, and sawdust from wood; stalks, pruning remains, and vine stalks; slide projector; sound.
Variable dimensions.

LANDRA

Sara Rodrigues (Porto, 1990) and Rodrigo B. Camacho (Funchal, 1990) met in London and since 2015 have been working together. Their projects manifest through video and audiovisual composition, performance, installation and public space intervention. They are interested in creating systems that organically continue in time; that are flexible and responsive to constant change. In addition to their artistic Background, they studied permaculture and microbiology, researching and practically applying this knowledge. Landra is the name given to the land and to Sara and Rodrigo's practice, paying homage to acorns, called "landras" in the Iberian Northwest. The duo sees in them a culture of autonomy, sovereignty and self-sufficiency that they seek to recover, aligning themselves with a practice of living and doing in tune with natural rhythms and cycles

www.landra.pt

JASON W. MOORE

Jason W. Moore is an environmental historian and historical geographer at Binghamton University, where he is professor of sociology and leads the World-Ecology Research Collective. He is author or editor, most recently, of *Capitalism in the Web of Life* (Verso, 2015), *Capitalocene o Antropocene?* (Ombre Corte, 2017), *Anthropocene or Capitalocene? Nature, History, and the Crisis of Capitalism* (PM Press, 2016), and, with Raj Patel, *A History of the World in Seven Cheap Things* (University of California Press, 2017). His books and essays on environmental history, capitalism, and social theory have been widely recognized, including the Alice Hamilton Prize of the American Society for Environmental History (2003), the Distinguished Scholarship Award of the Section on the Political Economy of the World-System (American Sociological Association, 2002 for articles, and 2015 for *Web of Life*), and the Byres and Bernstein Prize in Agrarian Change (2011). He coordinates the World-Ecology Research Network.

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THE GREAT SUCCESSION

25.05.2023 (7PM)
COMMENTED CONCERT

From the exhibition "Desecration of Empire", Landra presents "The Great Succession", a commented concert, which tells the story of how all of earth's biomes aspire to millennial forests. Observing the decomposition of organic matter piled up inside the chapel of Boa Viagem, Landra provides sounds and images to invisible and inaudible phenomena, translating into music the processes that transform deserts into resilient and biodiverse environments. This concert is a co-production with Aleste music festival, taking place between May 25th and 27th at Barreirinha Beach.

Co-production with Aleste — www.aleste.pt

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FREE ADMISSION Monday to Friday 9.30am – 5pm
Closed on bank holidays

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DESECRATION OF THE EMPIRE

22.05 — 12.07.2023
CAPELA DA BOA VIAGEM
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