A History of the World in Seven Cheap Things

A Guide to Capitalism, Nature, and the Future of the Planet

RAJ PATEL
AND JASON W. MOORE

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University of California Press
Oakland, California

Library of Congress Cataloging-in-Publication Data

Names: Patel, Raj, author. | Moore, Jason W., author.
Title: A history of the world in seven cheap things : a guide to capitalism, nature, and the future of the planet / Raj Patel and Jason W. Moore.
Description: University of California Press : Oakland, California, [2017] | Includes bibliographical references and index. |
Identifiers: LCCN 2017013737 (print) | LCCN 2017020122 (ebook) | ISBN 9780520966376 (Epub) | ISBN 9780520293137 (cloth : alk. paper)
Subjects: LCSH: Human ecology—Economic aspects. | Capitalism.
Classification: LCC GF41 (ebook) | LCC GF41 .P36 2017 (print) | DDC 303.44—dc23
LC record available at https://lccn.loc.gov/2017013737

Manufactured in the United States of America

26 25 24 23 22 21 20 19 18 17
10 9 8 7 6 5 4 3 2 1

To Phil McMichael

Teacher, Mentor, Jester, Shark

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Map 1. Key locations in world-ecology, shown in the Gall-Peters projection, which distorts country shapes in order to preserve relative area sizes.


SWEDEN
UNITED KINGDOM
Amsterdam
London
FRANCE
Augsburg
PORTUGAL
Genoa
SPAIN
Madeira
RUSSIA
Beijing
JAPAN
CHINA
NORTH PACIFIC OCEAN
INDIA
Kolkata
Manila
PHILIPPINES
NIGERIA
SRI LANKA
SÃO TOME
INDIAN OCEAN
SOUTH ATLANTIC OCEAN
AUSTRALIA
SOUTH AFRICA

Introduction

> Lightning and thunder need time, the light of the stars needs time, deeds need time, even after they are done, to be seen and heard. This deed is as yet further from them than the furthest star, and yet they have done it!
>
> Friedrich Nietzsche, "The Madman," in *The Gay Science*

Settled agriculture, cities, nation-states, information technology, and every other facet of the modern world have unfolded within a long era of climatic good fortune.[1] Those days are gone. Sea levels are rising; climate is becoming less stable; average temperatures are increasing. Civilization emerged in a geological era known as the Holocene. Some have called our new climate era the Anthropocene. Future intelligent life will know we were here because some humans have filled the fossil record with such marvels as radiation from atomic bombs, plastics from the oil industry, and chicken bones.[2]

What happens next is unpredictable at one level and entirely predictable at another. Regardless of what humans decide to do, the twenty-first century will be a time of "abrupt and irreversible" changes in the web of life.[3] Earth system scientists have a

rather dry term for such a fundamental turning point in the life of a biospheric system: state shift. Unfortunately, the ecology from which this geological change has emerged has also produced humans who are ill equipped to receive news of this state shift. Nietzsche's madman announcing the death of god was met in a similar fashion: although industrial Europe had reduced divine influence to the semicompulsory Sunday-morning church attendance, nineteenth-century society couldn't imagine a world without god. The twenty-first century has an analogue: it's easier for most people to imagine the end of the planet than to imagine the end of capitalism.[4]

We need an intellectual state shift to accompany our new epoch.

The first task is one of linguistic rigor, to note a problem in naming our new geological epoch the Anthropocene. The root, *anthropos* (Greek for "human"), suggests that it's just humans being humans, in the way that kids will be kids or snakes will be snakes, that has caused climate change and the planet's sixth mass extinction. It's true that humans have been changing the planet since the end of the last ice age.[5] A hunting rate slightly higher than the replenishment rate over centuries, together with shifting climate and grasslands, spelled the end for the Columbian Plains mammoth in North America, the orangutan's overstuffed relative the *Gigantopithecus* in east Asia,[6] and the giant Irish elk *Megaloceros giganteus* in Europe.[7] Humans may even have been partly responsible for tempering a global cooling phase twelve thousand years ago through agriculture-related greenhouse gas emissions.[8]

Hunting large mammals to extinction is one thing, but the speed and scale of destruction today can't be extrapolated from the activities of our knuckle-dragging forebears. Today's human

activity isn't exterminating mammoths through centuries of overhunting. Some humans are currently killing everything, from megafauna to microbiota, at speeds one hundred times higher than the background rate.[9] We argue that what changed is capitalism, that modern history has, since the 1400s, unfolded in what is better termed the Capitalocene.[10] Using this name means taking capitalism seriously, understanding it not just as an economic system but as a way of organizing the relations between humans and the rest of nature.

In this book, we show how the modern world has been made through seven cheap things: nature, money, work, care, food, energy, and lives. Every word in that sentence is difficult. *Cheap* is the opposite of a bargain—cheapening is a set of strategies to control a wider web of life. "Things" become things through armies and clerics and accountants and print. Most centrally, humans and nature don't exist as giant seventeenth-century billiard balls crashing into each other. The pulse of life making is messy, contentious, and mutually sustaining. This book introduces a way to think about the complex relationships between humans and the web of life that helps make sense of the world we're in and suggests what it might become.

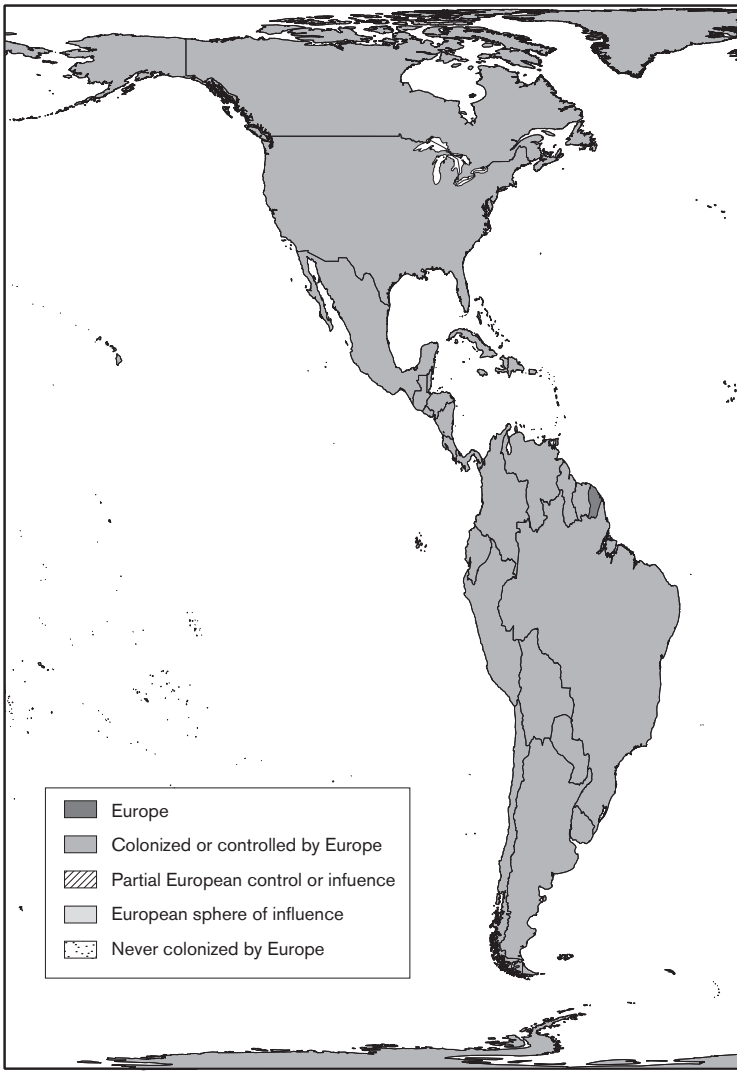
As a teaser, let's return to those chicken bones in the geological record, a capitalist trace of the relation between humans and the world's most common bird, *Gallus gallus domesticus*.[11] The chickens we eat today are very different from those consumed a century ago. Today's birds are the result of intensive post–World War II efforts drawing on genetic material sourced freely from Asian jungles, which humans decided to recombine to produce the most profitable fowl.[12] That bird can barely walk, reaches maturity in weeks, has an oversize breast, and is reared and slaughtered in geologically significant quantities (more than

sixty billion birds a year).[13] Think of this relationship as a sign of Cheap Nature. Already the most popular meat in the United States, chicken is projected to be the planet's most popular flesh for human consumption by 2020.[14] That will require a great deal of labor. Poultry workers are paid very little: in the United States, two cents for every dollar spent on a fast-food chicken goes to workers, and some chicken operators use prison labor, paid twenty-five cents per hour. Think of this as Cheap Work. In the US poultry industry, 86 percent of workers who cut wings are in pain because of the repetitive hacking and twisting on the line.[15] Some employers mock their workers for reporting injury, and the denial of injury claims is common. The result for workers is a 15 percent decline in income for the ten years after injury.[16] While recovering, workers will depend on their families and support networks, a factor outside the circuits of production but central to their continued participation in the workforce. Think of this as Cheap Care. The food produced by this industry ends up keeping bellies full and discontent down through low prices at the checkout and drive-through. That's a strategy of Cheap Food. Chickens themselves are relatively minor contributors to climate change—they've only one stomach each and don't burp out methane like cows do—but they're bred in large lots that use a great deal of fuel to keep warm. This is the biggest contributor to the US poultry industry's carbon footprint.[17] You can't have low-cost chicken without abundant propane: Cheap Energy. There is some risk in the commercial sale of these processed birds, but through franchising and subsidies, everything from easy financial and physical access to the land on which the soy feed for chickens is grown—mainly in China, Brazil, and the United States[18]—to small business loans, that risk is mitigated through public expense for private profit. This is one

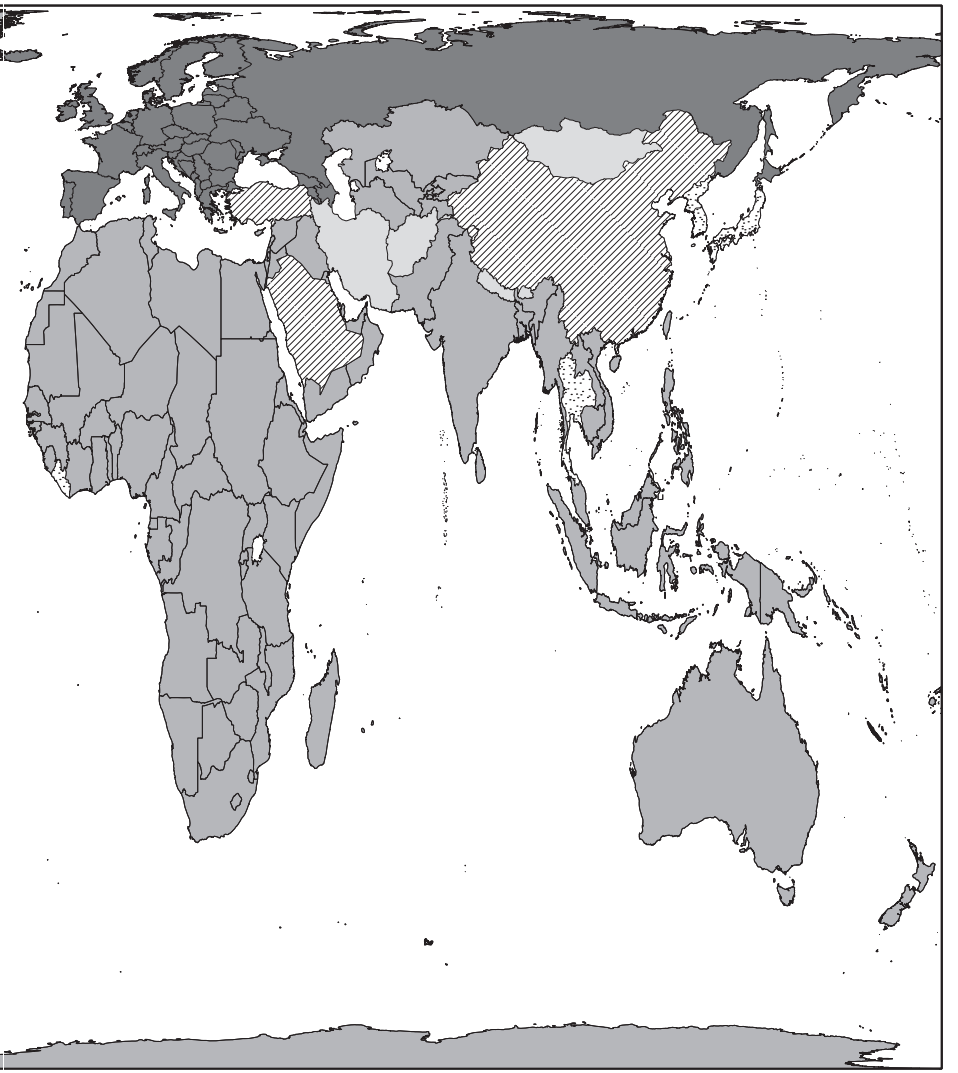
aspect of Cheap Money. Finally, persistent and frequent acts of chauvinism against categories of animal and human life—such as women, the colonized, the poor, people of color, and immigrants—have made each of these six cheap things possible. Fixing this ecology in place requires a final element—the rule of Cheap Lives. Yet at every step of this process, humans resist—from the Indigenous Peoples[19] whose flocks provide the source of genetic material for breeding through poultry and care workers demanding recognition and relief to those fighting against climate change and Wall Street. The social struggles over nature, money, work, care, food, energy, and lives that attend the Capitalocene's poultry bones amount to a case for why the most iconic symbol of the modern era isn't the automobile or the smartphone but the Chicken McNugget.

All this is forgotten in the act of dipping the chicken-and-soy product into a plastic pot of barbeque sauce. Yet the fossilized trace of a trillion birds will outlast—and mark the passage of—the humans who made them. That's why we present the story of humans, nature, and the system that changed the planet as a short history of the modern world: as an antidote to forgetting. This short book isn't, however, a history of the whole world. It's the history of processes that can explain why the world looks the way it does today. The story of these seven cheap things illustrates how capitalism expanded to yield maps like the one below, showing how small a portion of the earth has lain outside the scope of European colonial power.

We'll explain precisely what we mean by *cheap* below. First we need to make the case that it's not just some natural human behavior but rather a specific interaction between humans and the biological and physical world that has brought us to this point.



Map 2. Parts of the world colonized by Europe.



A BRIEF GUIDE TO HUMANS AND NATURE BEFORE CAPITALISM

Lamenting how poorly humans treat the natural world is ancient sport. Plato did it in the *Critias,* describing a time nine thousand years before his, when the area around Athens was forested and tended by a noble people who held property in common and loved nature more than Plato's contemporaries. As he told it, his peers had dishonored nature and allowed the hills to be stripped bare.[20] Plato's is a romanticized—and almost certainly false—history of periurban Athens.[21] Our analysis points not to a deficit of honor but to what happened, by accident, when a marginal tributary of West Asian civilization experienced a crisis of climate, disease, and society. We begin our story a few centuries before the dawn of capitalism, in a place with aspirations to the riches and civilizations of Central and East Asia but poorer by far,[22] in a time made by weather. We begin in feudal Europe.

The Medieval Warm Period was a climate anomaly that ran from about 950 to 1250 in the North Atlantic.[23] Winters were mild and growing seasons were long. Cultivation spread northward and upward: vineyards sprouted in southern Norway, and grain farms climbed mountains and highlands from the Alps to Scotland.[24] Human numbers in Europe swelled, nearly tripling—to seventy million—in the five centuries after 800.[25] England's population peaked around 1300 and wouldn't reach that level again until the end of the seventeenth century.[26] The agricultural surplus grew even faster. Towns sprang up everywhere, and by 1300 a growing share of the population—perhaps a fifth—worked outside agriculture. Such relative prosperity also fueled expansionary appetites. The Crusades are an example: highly commercialized and militarized operations that tar-

geted the wealth of the eastern Mediterranean, beginning in 1095. They were accompanied by other movements of conquest, two of which loomed large in the shaping of the modern world four centuries later. The first was the Christian Reconquista of Iberia, in what are today Portugal and Spain. The Castilians and Aragonese began to roll back Islamic power on the peninsula through the first wave of Crusades—and the Crusaders made conquest pay through tribute, in what would become a characteristic of colonial capitalism. The second movement was subtler and more powerful. Feudalism's most important feature was its capacity to sustain massive and ongoing settler expansion without centralized authority. To do this, it relied on cultivation—the greatest conqueror of all. By the fourteenth century, agriculture took up a third of all European land use, a radical, sixfold increase over the previous five centuries, much of it realized at the expense of forests.[27]

Feudal Europe rode the Medieval Warm Period until its peak around 1250, when the climate turned colder—and wetter. After centuries of relative food security, famine returned, and with a force all the greater for smashing against a civilization used to altogether different weather. In May 1315, massive rains struck across Europe, possibly as a result of the eruption of New Zealand's Mount Kaharoa.[28] They did not relent until August, when the deluge ended with an early cold snap. Harvests had been weak in previous years, but 1315's was disastrous—and so was the next year's. Europe's population contracted by up to 20 percent over the next few years.[29] The continent did not escape from the Great Famine—as historians call it—until 1322.[30]

Although contemporaries did not know it, they had entered the Little Ice Age, a period that would end only in the nineteenth century. The Little Ice Age laid bare feudalism's vulnerabilities.

Its food system, for instance, worked well only while the climate remained clement. This was chiefly because that system ran through a particular class arrangement, in which lords enjoyed formal control over the land and peasants cultivated it. Lords oversaw a rising peasant population, which was able to generate a rising surplus, with a tendency toward diminishing returns. Soil fertility was slowly exhausted over the centuries, a decline partially concealed by a rising population of peasants wringing the last out of fixed areas of land. When the climate turned, it created a cascade of failures, propagated through a class system that enforced soil exhaustion and starvation, killing millions.

One explanation for this civilizational crisis lines up well with the warning in Robert Malthus's *Essay on the Principles of Population:* there were too many people and not enough food. To use more modern language, climate change affected Europe's carrying capacity, reducing the number of people who could be sustained on the degraded land under feudalism. But carrying capacities swell or shrink depending on who rules. The issue—then as now—was really one of power. In fact, Malthus has less to offer this story than Karl Marx. Feudal lords wanted cash or grain, which could be easily stored and marketed, and they overwhelmingly consumed the modest surpluses wrung from the soil, leaving precious little to reinvest in agriculture.[31] Absent the lords' power and demands, peasants might have shifted to crop mixes that included garden produce alongside grains, perhaps solving the food problem. As for the number of people, family formation and population growth are not determined by an eternal procreational drive but rather shaped by a host of historical conditions turning on culture, class, and land availability. As Guy Bois notes in his classic study of Norman feudalism, a transition to different ways of working land, with

more peasant autonomy and power over what and how to grow, would have allowed medieval Europe to feed up to three times as many people.[32] But that transition never happened, and feudal arrangements staggered on until receiving a final coup de grace in 1347: the Black Death.[33]

Europe emerged from the Medieval Warm Period in poor shape. The structures that had produced sufficient food to nourish peasants and cities from the beginning of the second millennium weren't able to cope with the changing climate, casting a growing layer of the population into malnutrition.[34] Eleventh-century bodies exhumed from English cemeteries show better health than those from the thirteenth century.[35] The food shortages at the end of the Medieval Warm Period made European bodies more vulnerable to disease, and the Black Death turned this vulnerability into an apocalypse. Wiping out between one-third and one-half of Europe's population, it took advantage of the medieval world's version of globalization. Nearly everywhere, urbanization and commercialization were bringing more people into cities and more cities into trade networks. Arteries of trade that carried goods and money from Shanghai to Sicily also unified Asia and Europe into a supercontinental "disease pool."[36]

Once the Black Death reached Europe—Sicily by October 1347 and Genoa just three months later—feudalism unraveled. That unraveling can tell us something important about how great crises occur and how they entangle dynamics such as climate and population with power and economy. Feudalism, like many agrarian civilizations, tended to exhaust its agroecological relations. As population increased under feudal class arrangements, farming became more labor intensive, with more people working the land, reducing predation and weeds, nurturing

crops with more care. Throwing people into fields didn't address feudalism's class structure—it merely managed its decline. In England, signs of feudalism's exhaustion were evident from 1270. In the half century before the Great Famine, peasant diets, already exceedingly modest, sharply deteriorated. Grain yields fell, and per capita consumption of grain—the mainstay of the peasant diet—declined by 14 percent.[37]

Civilizations don't collapse simply because people starve. (Since 1970, the number of malnourished people has remained above eight hundred million, yet few talk of the end of civilization.)[38] Great historical transitions occur because "business as usual" no longer works. The powerful have a way of sticking to time-honored strategies even when the reality is radically changing. So it was with feudal Europe. The Black Death was not simply a demographic catastrophe. It also tilted the balance of forces in European society.

Feudalism depended on a growing population, not only to produce food but also to reproduce lordly power. The aristocracy wanted a relatively high peasant population, to maintain its bargaining position: many peasants competing for land was better than many lords competing for peasants. But with the onset of the Black Death, webs of commerce and exchange didn't just transmit disease—they became vectors of mass insurrection. Almost overnight, peasant revolts ceased being local affairs and became large-scale threats to the feudal order. After 1347 these uprisings were synchronized—they were system-wide responses to an epochal crisis, a fundamental breakdown in feudalism's logic of power, production, and nature.[39]

The Black Death precipitated an unbearable strain on a system already stretched to the breaking point. Europe after the plague was a place of unrelenting class war, from the Baltics to

Iberia, London to Florence.[40] Peasant demands for tax relief and the restoration of customary rights were calls that feudalism's rulers could not tolerate. If Europe's crowns, banks, and aristocracies could not suffer such demands, neither could they restore the *status quo ante,* despite their best efforts. Repressive legislation to keep labor cheap, through wage controls or outright reenserfment, came in reaction to the Black Death. Among the earliest was England's Ordinance and Statute of Labourers, enacted in the teeth of the plague's first onslaught (1349–51). The equivalent today would be to respond to an Ebola epidemic by making unionization harder. The labor effects of climate change were abundantly clear to Europe's aristocrats, who exhausted themselves trying to keep business very much as usual. They failed almost entirely. Nowhere in western or central Europe was serfdom reestablished. Wages and living standards for peasants and urban workers improved substantially, enough to compensate for a decline in the overall size of the economy. Although this was a boon for most people, Europe's 1 percent found their share of the economic surplus contracting. The old order was broken and could not be fixed.

Capitalism emerged from this broken state of affairs. Ruling classes tried not just to restore the surplus but to expand it. East Asia was wealthier, so although its rulers also experienced socioecological tribulations, they found ways to accommodate upheaval, deforestation, and resource shortages in their own tributary terms.[41] One solution that reinvented humans' relation to the web of life was stumbled upon by the Iberian aristocracy—in Portugal and Castile above all. By the end of the fifteenth century, these kingdoms and their societies had made war through the Reconquista, the centuries-long conflict with Muslim powers on the peninsula, and were so deeply dependent on Italian

financiers to fund their military campaigns that Portugal and Castile had in turn been remade by war and debt. The mix of war debt and the promise of wealth through conquest spurred the earliest invasions of the Atlantic—in the Canary Islands and Madeira. The solution to war debt was more war, with the payoff being colonial profit on new, great frontiers.[42]

THE EARLIEST FRONTIERS

Early modern colonialism used frontiers in an entirely new way. Always before, rising population density in the heartlands had led to the expansion of settlement, followed by commerce. This pattern turned inside out in the two centuries after 1492. Frontiers were to become an organizing principle of metropolitan wealth. The demographic and geographical logic of the resulting civilization would radically invert patterns established millennia earlier. Financial wealth—as we will see in chapter 2—made these conquests possible. And it was in an experiment on an early Portuguese colonial outpost that many of the features of the modern world were first convened, in the manufacture of one of the first capitalist products: sugar.

One of the earliest flares of the modern world was lit on a small northern African island, where in the 1460s a new system for producing and distributing food took shape. In 1419, Portuguese sailors first sighted an island less than four hundred miles (644 kilometers) west of Casablanca, which they called Ilha da Madeira, "Island of wood."[43] The Venetian traveler and slaver Alvise da Ca' da Mosto (Cadamosto) reported in 1455 that "there was not a foot of ground that was not entirely covered with great trees."[44] By the 1530s it was hard to find any wood on the island at all. There were two phases in the clear-cutting of Madeira. Ini-

tially, the trees had been profitable as lumber for shipbuilding and construction. The denuded forest became acreage for wheat to be sent back to Portugal starting in the 1430s. The second, more dramatic deforestation was driven by the use of wood as fuel in sugar production.

Humans, primates, and most mammals love the taste of sugar.[45] Since the discovery of sugarcane in New Guinea in 6000 BCE, humans have understood the biological necessities of its treatment.[46] There is a peak time to harvest the cane, when it is turgid with sweet juice—but then the grass is thick and difficult to cut. Once chopped, the cane can be coaxed to yield its greatest quantity of sugar for only forty-eight hours.[47] After that, the plant starts to rot.

The botany of sugarcane thus calls for speedy production, which for millennia made it hard to produce in large amounts. This is why Sidney Mintz reports that "in 1226, Henry III requested the Mayor of Winchester to get him three pounds [1.4 kilograms] of Alexandrine sugar if so much could be had at one time from the merchants at the great Winchester Fair."[48] Increasing the amount that "could be had at one time" was not easy. One had to surmount the limits of what a single family might produce. One had to invest in new techniques and technology. Persians and North Africans in the great Muslim civilizations had, for instance, discovered that potash (potassium carbonate) could produce clearer sugar crystals: the best sugar was from Alexandria in Egypt, hence Henry III's specific hankering for it.[49] But it took new experiments in work, nature, and commerce to invent ways to produce far, far more.

Sugar had arrived in Iberia by the fourteenth century, brought by King Jaume II of Aragón (1267–1327), who also brought a Muslim slave expert in the art of sugar production. By 1420 it was being grown commercially, funded by German banking houses

like the Ravensburger Handelsgesellschaft and cultivated on rented plots near Valencia by a mixture of slaves and free workers.[50] But sugar remained rare—and there was a ready market for it. In the 1460s and 1470s, farmers on Madeira stopped growing wheat and started growing sugar exclusively. A lot more sugar. The sugar frontier quickly spread, at first to other islands in the Atlantic, then on a massive scale to the New World.[51] Like palm and soy monocultures today, it cleared forests, exhausted soils, and encouraged pests at breakneck speed.[52]

To reach such speeds, production had to be reorganized, broken into smaller, component activities performed by different workers. It simply isn't possible to get good returns from workers who are exhausted from cutting cane and then spend the night refining it. New management and technologies helped move sugar manufacture from edge runner mills (big pestle-and-mortar machines) and small holdings to two-roller mills and large-scale slave production in São Tomé.[53] Centuries before Adam Smith could marvel at the division of labor across a supply chain that made a pin, the relationship between humans, plants, and capital had forged the core ideas of modern manufacturing—in cane fields. The plantation was the original factory. And every time the sugar plantation found a new frontier, as in Brazil after São Tomé and the Caribbean after that, that factory was reinvented—with new machines and new combinations of plantation and sugar mill. The only thing missing from this story, of course, is the humans who did the work. In Madeira, they were Indigenous People from the Canary Islands, North African slaves, and—in some cases—paid plantation laborers from mainland Europe.

The plantations were irrigated by *levadas,* water channels forged of trees, mud, sweat, and blood. Today, thirteen hundred miles

(twenty-one hundred kilometers) of levadas remain on an island thirty-seven miles (sixty kilometers) across at its widest point. Hydraulic engineers deployed slaves, sometimes dangling on ropes, to carve small canals through rock faces to channel streams to the cane fields.[54] Many workers died in rockslides and dam breaches, but the engineers transformed flows of water in Madeira so effectively that Afonso de Albuquerque, the first duke of Goa and the second governor of Portuguese India, asked that Madeirans be sent "to change the course of the River Nile."[55] Financed by Flemish and Italian capitalists, masters from Portugal oversaw cane's planting, watering, harvest, and transformation into crystalized sugar. Turning cane stalks into sugar used prodigious amounts of fuel. At least fifty pounds (twenty-three kilograms) of wood was needed to boil and distill enough sugarcane juice to return a single pound (0.45 kilograms) of sugar. To turn the cane, heavy with water, into molasses and loaves of sugar, mills were built around Madeira's capital, Funchal, to which slaves transported the cane. At its zenith, Madeira's industry used five hundred hectares (1,236 acres) of forest each year to feed the boilers that kept the tributes of sugar flowing to Europe's courts. Yet after the boom, the bust. Output peaked in the first decade of the sixteenth century, and the furnaces sputtered out by the 1530s, the trees having been stripped from the island. Production crashed, and investors found greater returns from large-scale slave-planted sugar whose processing was fueled by forests in the New World.[56] Europe's wealthy ate the sugar, and sugar ate the island.

Capitalism didn't leave Madeira—it reinvented itself.[57] With no affordable fuel (the island's only remaining trees were in the interior highland, too inaccessible to be efficiently felled), new strategies emerged to wring profit from the devastated land. After sugar came wine, grown in the ashes of the cane industry.

Grapes demand less labor, water, and fuel than cane. But wine needs casks, so for centuries the wood for Madeira barrels was brought from the most economical source: the cheap forests of the New World. Commodities flowed the other way too, as Madeira was a conduit for the Atlantic slave trade until the eighteenth century.[58] In a more recent act of reinvention, the island today uses that grim history as a source of revenue through tourism.[59] Yet as the sugar frontier closed in Madeira, new frontiers opened elsewhere, and forces less obvious than a craving for sweetness shaped the island, and soon the planet.[60]

FRONTIERS AND CHEAPNESS

This sketch of a colonial frontier gives us a glimpse of how capitalism was to work beyond Madeira. Before analyzing the story of sugar and the island more thoroughly, we need to explain why we think it's important to analyze frontiers. Often in visualizations of the spread of capitalism, the image that offers itself is an asteroid impact or the spread of a disease, which starts at ground or patient zero and metastasizes across the planet. Capitalist frontiers require a more sophisticated science fiction. If capitalism is a disease, then it's one that eats your flesh—and then profits from selling your bones for fertilizer, and then invests that profit to reap the cane harvest, and then sells that harvest to tourists who pay to visit your headstone.[61] But even this description isn't adequate. The frontier works only through connection, fixing its failures by siphoning life from elsewhere. A frontier is a site where crises encourage new strategies for profit. Frontiers are frontiers because they are the encounter zones between capital and all kinds of nature—humans included. They are always, then, about reducing

the costs of doing business. Capitalism not only *has* frontiers; it exists only *through* frontiers, expanding from one place to the next, transforming socioecological relations, producing more and more kinds of goods and services that circulate through an expanding series of exchanges. But more important, frontiers are sites where power is exercised—and not just economic power. Through frontiers, states and empires use violence, culture, and knowledge to mobilize natures at low cost. It's this cheapening that makes frontiers so central to modern history and that makes possible capitalism's expansive markets. This gives us a precious clue to how productivity is understood and practiced. While much has been made of its gory and oppressive history, one fact is often overlooked: capitalism has thrived not because it is violent and destructive (it is) but because it is productive in a particular way.[62] Capitalism thrives not by destroying natures but by putting natures to work—as cheaply as possible.

Through its frontiers, capitalism taps and controls a wider set of relations of life-making than appear in an accountant's balance of profit and loss. There isn't a word in English for the process of making life, though such words are found in a range of other languages. The Anishinaabeg, whose original lands extended widely across northeastern North America, have *minobimaatisiiwin,* which means "the good life" but also "a continuous rebirth" of reciprocal and cyclical relations between humans and other life.[63] Southern African Bantu languages have *ubuntu,* human fulfillment through togetherness, and the Shona language has the further idea of *ukama,* a "relatedness to the entire cosmos," including the biophysical world.[64] Similar interpretations exist of the Chinese *shi-shi wu-ai* and the Maori *mauri.*[65] Absent a decent term in English, we use the idea of *oikeios. Oikeios* names the creative and multilayered pulse of life making through which all human

activity flows, shaped at every turn by natures that consistently elude human efforts at control. It is through the oikeios that particular forms of life emerge, that species make environments and environments make species. Likewise, the pulse of human civilization does not simply occupy environments but produces them—and in the process is produced by them.[66]

Everything that humans make is coproduced with the rest of nature: food, clothing, homes and workplaces, roads and railways and airports, even phones and apps. It's relatively easy to understand how something like farming mixes the work of humans and soils, and also mixes all sorts of physical processes with human knowledge. When the processes are larger in scale, it becomes easier to think about "social" and "natural" processes as if they were independent of each other. It is somehow easier to grasp the immediate relationship to soil and work of a farmers' market than a global financial market. But Wall Street is just as much coproduced through nature as that farmers' market. Indeed, Wall Street's global financial operations involve it in a web of planetary ecological relationships unimaginable in any previous civilization. History is made not through the separation of humans from nature but through their evolving, diverse configurations. The "human" relations of power and difference, production and reproduction, not only produce nature; they are products of nature. There is, for example, a variety of mosquito (*Culex pipiens*) that has made its home in the London Underground and adapted to the dark world of the British commuter to such an extent that it can no longer interbreed with its topside counterparts—hence the new species *Culex pipiens molestus*.[67] This new species, made through human activity, is a small karmic counterbalance to those species destroyed by the work done in the City of London (Britain's Wall Street) by these commuters, off whose blood the mosquito feeds.

The relationship between the wider web of life and capitalism is the subject of this book. Capitalism's frontiers always lie firmly within a far larger world of life making. For capitalism, what matters is that the figures entered into ledgers—to pay workers, to supply adequate food to workers, to purchase energy and raw materials—are as low as possible. Capitalism values only what it can count, and it can count only dollars. Every capitalist wants to invest as little and profit as much as possible. For capitalism, this means that the whole system thrives when powerful states and capitalists can reorganize global nature, invest as little as they can, and receive as much food, work, energy, and raw materials with as little disruption as possible.

Economists might at this point mutter "Externalities" and wonder why we haven't read the original scholars of externalities, Arthur Cecil Pigou or James Meade.[68] We have, which is why we're writing this book. In economics, an externality is a cost or a benefit, private or social, that doesn't appear in the calculus of production. We're arguing that the modern world emerged from systematic attempts to fix crises at the frontier, crises that resulted from human and extrahuman life inserting itself into that calculus. The modern world happened because externalities struck back.[69]

Capitalism is not a system where cash is everywhere but rather one in which islands of cash exchange exist within oceans of cheap—or potentially cheap—natures. Reproducing life within the cash nexus is expensive, and it grows more expensive over time. Workers' wages can be frozen, even rolled back, but in the end inequality precipitates crises of the kind we've recently seen bring about populist protests in the United States and the United Kingdom. Workers demand dignity, and their labor becomes expensive. Production processes burn through an island, and

energy is no longer cheap. The climate changes, and crops can no longer grow as abundantly as they once did. Frontiers are so important in these processes because they offer places where the new cheap things can be seized—and the cheap work of humans and other natures can be coerced.

We come, then, to what we mean by *cheapness:* it's a set of strategies to manage relations between capitalism and the web of life by temporarily fixing capitalism's crises. Cheap is not the same as low cost—though that's part of it. Cheap is a strategy, a practice, a violence that mobilizes all kinds of work—human and animal, botanical and geological—with as little compensation as possible. We use *cheap* to talk about the process through which capitalism transmutes these undenominated relationships of life making into circuits of production and consumption, in which these relations come to have as low a price as possible. Cheapening marks the transition from uncounted relations of life making to the lowest possible dollar value. It's always a short-term strategy. And cheapness has always been a battleground. Looking at these seven cheap things helps us see the horizon of what is possible. It helps us grasp the stakes in social conflicts today and the reparations that need to be made for solidarity to be meaningful. In examining money, work, care, energy, food, lives, and above all nature, we argue for a new way to understand what we call capitalism's ecology, the blend of relations that explains how the modern world works. Why these seven? We couldn't do fewer, and while there might be more, each of them was present at the dawn of capitalism's ecology. They're a useful start to the project of both interpreting and changing the world—and it's now time to explore how each of them mattered in Madeira.

Nature

When settlers landed on Madeira, they brought along invasive species. On one of the smaller islands, Porto Santo (whose first lord was Columbus's father-in-law), rabbits quickly escaped captivity and devoured local flora. Other invasions followed. A snail indigenous to Madeira, *Caseolus bowdichianus,* was extinct within a century of colonization. But the record suggests that the majority of the extinctions on Madeira happened over the past two centuries—not under the initial colonial onslaught but later, as successive waves of foreign species and agrarian capitalism snuffed out millions of years of evolution.[70]

The trees, water, soil, fauna, and flora on Madeira and the sea around the island were treated as "free gifts," transformed into a series of inputs or hindrances to production.[71] In a seminal paper on overfishing, "Reefs since Columbus," Jeremy Jackson notes how humans have extinguished life from the time that young Columbus arrived on Madeira.[72] Humans under capitalism abuse the ecosystems of which we are part—and on which we depend. Capitalists are, for instance, happy to view the ocean as both storage facility for the seafood we have yet to catch and sinkhole for the detritus we produce on land. The balance of food and trash will soon tip. By 2050, two years after the last commercial fish catch is projected to land, there will be more plastic in the sea than fish.[73] The intellectually slack explanation here is that humans bring destruction in their wake. But nature is more than a resource pool or rubbish bin.[74] A central reason for beginning our story at the frontier of the Portuguese empire is that Madeira so clearly demonstrates what happens when the metabolism of humans in the web of life becomes governed by the demand for profit.

If profit was to govern life, a significant intellectual state shift had to occur: a conceptual split between Nature and Society. This was a momentous shift but usually pales alongside the birth of the world market, the conquest of the Americas, and the dispossession of peasants. No less important, however, was the transformation in how some humans understood, and acted upon, nature as a whole. It's important to be clear that this was always the work of *some* humans—those in charge of conquering and commercializing a world that counts only dollars. We may all be in the same boat when it comes to climate change, but most of us are in steerage. Our qualification here is important for two big reasons. First, it helps us place responsibility and look to those classes and relationships that profit from this separation. Second and more significant, the human "separation from nature" took shape around a truly massive exclusion. The rise of capitalism gave us the idea not only that society was relatively independent of the web of life but also that most women, Indigenous Peoples, slaves, and colonized peoples everywhere were not fully human and thus not full members of society. These were people who were not—or were only barely—human. They were part of Nature, treated as social outcasts—they were *cheapened*.

The cleaving of Nature from Society, of savage from civilized, set the stage for the creation of our other cheap things, as we argue in chapter 1. Nature was remade, reinvented, and rethought many times over the next five centuries. Capitalism's practices of cheap nature would define whose lives and whose work mattered—and whose did not. Its dominant ideas Nature and Society (in uppercase because of their mythic and bloody power) would determine whose work was valued and whose work—care for young and old, for the sick and those with special needs, agricultural work, and the work of extrahuman natures (animals, soils, forests, fuels)—

was rendered largely invisible. It achieved all this through the circulation of money, whose price in turn depended on global conquest and subjugation. Successive eras saw the control of food to sustain workers and of energy to make them more productive. Cheap things are thus not really things at all—but rather strategies adopted by capitalism to survive and manage crises, gambits made to appear as real and independent entities by the original sin of cheap nature.[75]

Money

Money is the medium through which capitalism operates, a source of power for those able to control it. That control isn't just about people and wealth. It's about how such control entwines with nature. Consider how tightly linked are American dollars and barrels of Saudi Arabian oil or, in an earlier era, Dutch rix-dollars and New World ingots of silver. If modernity is an ecology of power, money binds the ecosystem, and that ecosystem shapes money. Money depends on culture and force to become capital. It divides and connects worker and capitalist, rich and poor regions—the Global North and the Global South in today's lexicon. It fosters nation-states and empires; it disciplines and depends upon them. To look at history this way moves away from seeing the modern world as a collection of states and toward seeing it as a world-system of capital, power, and nature. And it compels us to consider these processes over the span of centuries—not decades.[76]

Elements of this approach were initially offered in the 1970s by Immanuel Wallerstein, who showed how capitalism emerged through a cascading series of political and economic transformations in which a new, and grossly unequal, division of labor was

forged. Among his chief insights were two with special relevance to this book. First, global inequality is a class process made possible by political as well as market forces. Second, production and accumulation have been remade through a radical remaking of nature.[77] If subsequent scholars dropped Wallerstein's insistence on capitalism as an ecology, we build on his thinking to show how work and power unfold within planetary nature—in wholesale transformations that constitute an ecology. And because we're interested in the forces that condition socioecological relationships over distance, it should be clear why money matters so much.

With a world-historical eye, trivial historical details become vital. One example: the relationship between fifteenth-century Genoese banking, Madeira's ecology, and today's planetary crisis. Humans like the taste of sugar. Sugar needs water. Irrigation on Madeira needed work, which needed to be funded. Slaves weren't cheap to buy, transport, or maintain, and it took a full season for the water to feed the cane and the cane to be harvested, processed into sugar, and sold in mainland Europe, exchanged for silver that then bought spices from Asia. In between all these were credit and debt and the flow of money into commodities, in which the Italian city-state of Genoa was central.

Money isn't capital. *Capital* is journalism's shorthand for money or, worse, a stock of something that can be transformed into something else. If you've ever heard or used the terms *natural capital* or *social capital,* you've been part of a grand obfuscation.[78] Capital isn't the dead stock of uncut trees or unused skill. For Marx and for us, capital happens only in the live transformation of money into commodities and back again. Money tucked under a mattress is as dead to capitalism as the mattress itself. It is through the live circulation of this money, and in the relations around it, that capitalism happens.

The processes of exchange and circulation turn money into capital. At the heart of Marx's *Capital* is a simple, powerful model: in production and exchange, capitalists combine labor power, machines, and raw material. The resulting commodities are then sold for money. If all goes well, there is a profit, which needs then to be reinvested into yet more labor power, machines, and raw materials. Neither commodities nor money is capital. This circuit *becomes* capital when money is sunk into commodity production, in an ever-expanding cycle. Capital is a process in which money flows through nature. The trouble here is that capital supposes infinite expansion within a finite web of life. Marx chides economists who believe that their profession explains markets through supply and demand, when those are precisely what need to be explained. To understand those forces requires an examination of markets through the "organic whole" of production and exchange.[79] That organic whole robs life from the worker just as it exhausts the soil of the capitalist farmer.[80]

This cycle of money into commodities and then back into money isn't just a way of looking at capital. It is an optic through which to see far longer rhythms in the rise and fall of empires and superpowers, the span of the *longue durée*.[81] Remember that after making a commodity and selling it, capitalists ideally have a profit. The permanent demands of profit making require those profits to themselves generate profitable returns. That causes a problem, because the amount of capital tends to grow faster than the opportunities to invest it advantageously. That's why financial bubbles—episodes when large sums of capital flow into a particular economic sector, like home mortgages before the 2008 crisis—recur throughout the history of the modern world. Empires help fix this problem. Over the long run, empires open new frontiers. Over the short run, when profitability slows they

go to war—and borrow to do it. Bankers are happy to lend because other opportunities for profit making are relatively slight and states are typically good credit risks. They also have armies ready to go to war, at the state's expense, to defend a safe and valuable currency. The relations between bankers and governments lead in the short term to reinvestment, in the medium term to the concentration of wealth and returns in the financial sector, and in the long term to the rise and fall of commercial power centered on a city, state, or international regime.[82]

In that arc, some people benefit a great deal, while others merely get by—or worse. Thomas Piketty's ideas on how investment return has outstripped GDP growth in the Global North have generated much interest recently, but they belong to an older class of insights about how finance relates to the rest of capitalism's ecology under successive state regimes.[83] Capitalism is not just the sum of "economic" transactions that turn money into commodities and back again; it's inseparable from the modern state and from governments' dominions and transformations of natures, human and otherwise. Financial capital's paroxysms of expansion and collapse are central to understanding how capitalism has developed, as we discuss in chapter 2. Through the advance of financiers, who have aimed to shape and profit from their investments, capitalism's ecology now affects every tendril of the planet's ecology.[84] The story of how money came to rule not just humans but a good chunk of planetary life begins with the invasion of the New World's wealth. The unholy alliance of European empires, conquerors, and banks would turn New World natures into commodities and capital. Centrally, capitalism's ecology needed new ways of managing humans, their bodies and the resources they required to survive. Because money doesn't just turn into commodities by itself: for that you need labor.

Work

Initially, the Portuguese, Genoese, and Flemish sugar plantation owners on Madeira brought Guanches, people indigenous to the Canary Islands, to work their land. A few fifteenth-century wills show that owners bequeathed Guanches to their heirs.[85] Indigenous workers succumbed to European disease and brutality. They were supplemented and replaced with a mix of wageworkers and North African slaves, humans whose recent ancestors had made a living in subsistence agriculture but who themselves arrived in Madeira as a consequence of either enslavement or exclusion from the land they once worked. Madeira was a field site for experiments in the limits of human endurance and strength but also for the trial of new technologies of order, process, and specialization that—centuries later—would be used in England's industrial factories. We don't know nearly enough about the ways that workers on Madeira—slaves and freedmen alike—resisted their masters and employers. There's little recorded about how they fought the regime that both worked them to death and exhausted the soil on which they labored.[86] But we do know that they resisted and that their attempts to combat the conditions of their exploitation generated crises sufficient for authorities to forbid slaves from living alone or with freedmen in 1473.[87]

The story of cheap things and the crises that follow their cheapening is not one of inevitability. Humans can and do fight back. Capitalists then try to address that resistance with a range of cheap fixes. These too inevitably generate their own crises and, in turn, more and more sophisticated mechanisms of control and order.[88] This class struggle is a vital engine of change in capitalist ecology. Although we know little about slave rebellion

in Madeira, we do know that by the end of the sugar boom, the technologies of slavery and plantation had been refined and were being exported across the Atlantic, first to São Tomé, where runaway slaves called Angolares scorched the island's sugar mills and besieged its capital for two weeks in 1596.[89] We also know, as we discuss in chapter 3, that it is in workers' opposition to their exploitation that some of the most potent challenges to capitalism can be found.

Slavery remains, as does resistance to it. There are more humans in forced labor in the twenty-first century than were transported by the Atlantic slave trade.[90] The International Labor Organization found than there were nearly 21 million people in forced labor in 2012, of whom 2.2 million were in labor forced upon them by the state (prison work) or rebel military groups. Of the remaining 18.7 million, 4.5 million were involved in commercial sexual exploitation and 14.2 million in forced economic exploitation.[91] For comparison, 12.5 million Africans were enslaved and transported through the Middle Passage.

Slavery didn't begin in Madeira, but *modern* slavery did. The modern difference lies in slaves' being put to work in agricultural mass production and in their expulsion from the mythic domain of Society. Although slaves had always been at the bottom of the social order, in the centuries after Madeira's boom and bust they were kicked outside that order, stripped of anything that resembled citizenship. For Indigenous and African slaves, modernity meant not only actual death but also "social death."[92] Treating slaves as part of Nature rather than Society was a successful move for investors. For that success to multiply, more workers needed to be found, their broken bodies cared for, and their communities supported by work that was forever unpaid. In other words, capitalists needed more labor and needed it to be edu-

cated and maintained as cheaply as possible. From this imperative emerged an entire regime of cheap care, one so vital to capitalism's ecology that its history has been all but erased.

Care

The part of Madeira's early history about which the least is known, yet without which it would have been impossible, is the work of what social scientists call social reproduction.[93] The work of care, for young and old, infirm and sick, learning and recovering, makes capitalism possible. Where else do humans come from but from other humans? How else are they socialized than through communities? How else are they cared for and nurtured than through networks of support? The demands for this care to be performed cheaply helped to refashion older patriarchies and produced modern categories of sex and gender difference in capitalism's ecology.

We know that by the time the Brazilian sugar industry was trading in slaves, women were 20 percent cheaper than men.[94] In Europe, a generalized wage cut in the sixteenth and seventeenth centuries affected all workers but women especially, who received just a third of the already "reduced male wage."[95] They were also still expected to tend to labor at home, and indeed the domestic sphere was a conscious invention of early capitalism.[96] Burdens of work, care work, and community support fell increasingly on women, whose social position came to be policed, just as work in the cane fields was.[97] The burning of witches was a form of discipline for those women who resisted their confinement in this domestic sphere, as we discuss in chapter 4. Patriarchy isn't a mere by-product of capitalism's ecology—it's fundamental to it. So crucial was "women's work" to the rise

of capitalism that by 1700 it had been radically redefined. Women's labor became "non-work"[98]—rendered largely invisible, the better to cheapen it.

In 1995, researchers hazarded a dollar value for women's unpaid work. A United Nations team suggested that all unpaid reproductive labor, if compensated, would be valued at sixteen trillion dollars. Of that, eleven trillion represented women's unpaid work.[99] This was about a third of the world's total economic activity—a figure that would have been higher had banking not already taken a larger and larger share of the world's economy. In the United Kingdom, more recent studies have suggested that reproductive labor is worth more than the taxes from London's mighty financial services sector.[100] Still others have argued that the UN estimate was too low and that "household nonmarket activity" is the equivalent of 80 percent of the gross world product: nearly sixty trillion dollars in 2015.[101]

Duties of care are poorly waged, if paid at all, and social reproduction needs more than labor to be effective. As the planet's workers moved from rural to urban areas, one thing came to matter above all in the new cash nexus: the ability to secure sufficient nutrition on one day in order to labor on the next. Hence the emergence of a regime of cheap food.

Food

In the story of Madeira, the cheap food isn't sugar. Sugar was still a luxury in fifteenth-century Europe. The food that needed to be cheap was what the slaves ate. Cane workers then, as now, will have stolen the odd stalk of ripe cane to chew, its watery, sweet juice providing a few extra calories and little nutrition. Brazilian slavers sometimes gave their sick slaves meat and eggs

so that their property would recover and go back to work, though the food was strictly accounted, a debit in the ledger of profit and loss.[102] There are few records of the diets of slaves under Portuguese rule in Madeira, though it is likely that they brought with them the rice, millet, and sorghum that they had cultivated in Africa, and which their descendants would pocket in their violent passage to the New World.[103] No matter the menu, a constant of capitalism is that food needs to be available, cheaply, for workers to consume—for both profits and social order to be maintained, as we show in chapter 5.[104]

There's a long tradition of rulers recognizing that one of the best routes to securing the consent of workers and the poor is through their stomachs. The Roman philosopher and landowner Cicero saw his house attacked by a hungry crowd, and a century later the emperor Claudius was pelted by stale bread crusts in another food rebellion.[105] Cheap food has been central to the maintenance of order for millennia. In capitalism's ecology, that order has been maintained by tamping down workers' costs of feeding themselves and their families. This may seem trivial today, when transportation and housing account for larger shares of household income than the cost of food. But the relative unimportance of food is historically novel—it is cheap because it has been made so. From 1453 to 1913, the percentage of English builders' wages spent on food fell from 80 to 77.5 percent.[106] It is a far more recent phenomenon for British food consumption to have fallen to 8.6 percent of household expenditure (as of 2014; in the United States it was 6.6 percent, in Italy 14.2 percent, in China 25.5 percent, and in Nigeria 56.6 percent).[107] These numbers are kept low through strategies that, in the United States, for instance, foster dollar burgers and the buckets of cheap chicken with which we began.

The irony of our Madeira example is that sugar has since become a cheap commodity crop precisely through the relations pioneered there. From being an occasional treat, English sugar consumption rose fourfold toward the end of the seventeenth century and doubled again in the eighteenth, closing that century at around 13 pounds per person. Today, sweetener consumption in the United States is 76 pounds per person per year—of which 41 pounds is refined sugar and 25 pounds is high-fructose corn syrup.[108] From 2005 to 2010, the average daily calorie intake from added sugars was 355 for men and 239 for women in the United States, about 13 percent of total daily calories (recent research suggests an intake of more than 2–3 percent will have negative health effects).[109] Sugar isn't, however, humans' only energy source. The other commodity whose price has been kept low in order for the US working class to survive is the second greatest expenditure for English builders over seven centuries: fuel.

Energy

The subtropical laurel forests on Madeira, the "Island of wood," weren't fuel to start off with. Initially they were used as timber—the material out of which the Portuguese fleet was hewn, the stuff for construction projects in metropolitan Lisbon.[110] But wood stops being the thing that keeps out the water when it becomes more valuable as the thing you burn to fire the boilers that make sugar.[111] These trees weren't naturally a fuel—they became so under specific conditions.

Almost every other civilization has harnessed fire and found material that can sustain flame. But on Madeira the arc of boom to bust, which happened in just seventy years, was limited by the number of trees on the island. In other words, the speed

and scale of consumption of fuel under capitalism are unusual. Wood's cheapness in Madeira was cause and consequence of the rise and fall of the sugar industry there, the crisis precipitated by the depletion of a finite combustible stock. Fuel does triple duty under capitalism. It is not only its own industry and force for scaling production in other industries but also provides a substitute for labor power and serves to keep that labor power affordable—and *productive*. Cheap fuel is both an antagonist for workers put out of jobs by wood-, coal-, oil-, and other-energy-powered machines and a necessary input for the work of cheap care, central to the maintenance of order, as we show in chapter 6.

We are—need it be said?—living with the consequences of a civilization built on cheap energy, a reality verified by climate change. The global political economy of cheap fuel has not only wrought immense human suffering in its extraction but also, of course, remade planetary ecology. Climate change's effects have not, however, been distributed evenly. There is a calculus that allows us to map where the bodies most affected by past climate change are buried and where future casualties are likely to be. To see that map, we need first to understand a final strategy in capitalism's ecology: cheap lives.

Lives

Christopher Columbus was born in Genoa in 1451. He was for a time a resident of Porto Santo, off the main island of Madeira. He first arrived there in 1476 and in 1478 was commissioned to trade sugar back to Genoa for Ludovico Centurione, a scion of Genoese capital.[112] When Columbus arrived in Madeira, he saw slaves and learned how the law treated them. Slaves were legally different from other humans. In court, they could never be

witnesses or victims—they were only allowed to be defendants, standing accused of crimes but never able to see or suffer one.[113] This jurisprudence informed Columbus's colonial apprenticeship. Between his departure from Madeira in 1478 to serve the Spanish crown and his return to Funchal for six days in 1498 as the viceroy of the Indies, Columbus inaugurated a genocide in the Caribbean that would see the death of many of the humans—and civilizations—living there.[114]

A century after Columbus's birth, the scale of the extermination, under the flag of the Spanish royal family and the Catholic cross, troubled some of its executors to such an extent that they went to the trouble of giving the enslavement and brutalization of other humans firm intellectual foundations. The 1550 "Valladolid Controversy" was where the boundary between the civilized and the savage was prosecuted. Over the course of a few weeks in Valladolid, Spain, two sides debated the treatment of humans across the Atlantic. On one side sat Bartolomé de Las Casas, the Dominican friar whose 1542 treatise *A Short Account of the Destruction of the Indies* testified to the violence he'd witnessed in the New World. On the other was Juan Ginés de Sepúlveda, an orthodox defender of Spain's right to conquest. In Valladolid, the two argued over whether natives were people or beasts. At stake was the encomienda system, the technology of colonial landownership that apportioned groups of Indigenous People among landowners, who "kept them in deposit" for the duration of two lifetimes: that of the deposited native and that of their children. Landlords agreed to care for these depositees by providing them with Spanish classes and schooling in Catholicism, and to pay a tax to the state for the right to have this labor pool.[115] At the end of the debate, after Las Casas had appealed to universal humanism and Sepúlveda had cited Aristotle in defense of

the idea that Indians were "slaves by nature, uncivilized, barbarian and inhuman,"[116] both sides claimed victory. But while encomiendas were governed by slightly stricter laws afterward, conquest continued and Indian lives continued to be devalued. Sepúlveda's practices carried the day.

So why the debate? The philosophical disagreement over the humanity of Indigenous People was both about their place in a world cleaved between Nature and Society and about how they might be governed. It was a debate, in other words, about *cheap lives,* a term we use to refer to how the order of other cheap things—labor and care in particular—is policed and maintained through force and ideology. This is, we admit, a slightly different use of *cheap* than that in other chapters. We argue for its necessity in chapter 7, because without the power to decide whose lives matter and whose do not, it would not have been possible to suppress Indigenous Peoples or members of rival religions and states and appropriate their knowledge, resources, and labor power.

Modern equivalents abound in current debates around such topics as security, the status of immigrants and refugees, states' insistence on order while licensing the extraction of the natural resources on top of which so many Indigenous Peoples inconveniently live, oil wars, and the "existential threats" of modern terrorism.[117] Again, that humans should need to find safety and shelter from threats is not new. But since capitalism grows through its frontiers, the domestic and international deployments of force through nature to secure money, work, care, food, and fuel are accompanied by ideologies of race and state and nation, together with the appropriations and devaluations that these deployments involve. Cheap lives are made through the apparatus of the modern social order. They're absolutely necessary to capitalism's

ecology. The power of these narratives of human community and exclusion has a particular salience today, as the tilts of Donald Trump's America, Vladimir Putin's Russia, Recep Tayyip Erdoğan's Turkey, and Narendra Modi's India suggest.

INTRODUCING WORLD-ECOLOGY

Our views of capitalism, life making, and the seven cheap things are part of a perspective that we call world-ecology.[118] World-ecology has emerged in recent years as a way to think through human history in the web of life. Rather than begin with the separation of humans from the web of life, we will ask questions about how humans—and human arrangements of power and violence, work, and inequality—fit *within* nature. Capitalism is not just part of an ecology but *is* an ecology—a set of relationships integrating power, capital, and nature. So when we write—and hyphenate—*world-ecology,* we draw on older traditions of "world-systems" to say that capitalism creates an ecology that expands over the planet through its frontiers, driven by forces of endless accumulation. To say *world-ecology* is not, therefore, to invoke the "ecology of the world" but to suggest an analysis that shows how relations of power, production, and reproduction work through the web of life. The idea of world-ecology allows us to see how the modern world's violent and exploitative relationships are rooted in five centuries of capitalism and also how these unequal arrangements—even those that appear timeless and necessary today—are contingent and in the midst of unprecedented crisis.

World-ecology, then, offers something more than a different view of capitalism, nature, and possible futures. It offers a way of seeing how humans make environments and environments make humans through the long sweep of modern history. This opens

space for us to reconsider how the ways that we have been schooled to think of change—ecological, economic, and all the rest—are themselves implicated in today's crises. That space is crucial if we are to understand the relationship between naming and acting on the world. Movements for social justice have long insisted on "naming the system" because the relationships among thought, language, and emancipation are intimate and fundamental to power. World-ecology allows us to see how concepts we take for granted—like Nature and Society—are problems not just because they obscure actual life and history but because they emerged out of the violence of colonial and capitalist practice. Modern concepts of Nature and Society, as we shall see in chapter 1, were born in Europe in the sixteenth century. These master concepts were not only formed in close relation to the dispossession of peasants in the colonies and in Europe but also themselves used as instruments of dispossession and genocide. The Nature/Society split was fundamental to a new, modern cosmology in which space was flat, time was linear, and nature was external. That we are usually unaware of this bloody history—one that includes the early modern expulsions of most women, Indigenous Peoples, and Africans from humanity—is testimony to modernity's extraordinary capacity to make us forget.

World-ecology therefore commits not only to rethinking but to remembering. Too often we attribute capitalism's devastation of life and environments to economic rapaciousness alone, when much of capitalism cannot be reduced to economics. Contrary to neoliberal claptrap, businesses and markets are ineffective at doing most of what makes capitalism run. Cultures, states, and scientific complexes must work to keep humans obedient to norms of gender, race, and class. New resource geographies need to be mapped and secured, mounting debts repaid, coin

defended. World-ecology offers a way to recognize this, to remember—and see anew—the lives and labors of humans and other natures in the web of life.

THE AFTERLIVES OF CHEAP THINGS

There is hope in world-ecology. To recognize the webs of life making on which capitalism depends is also to find new conceptual tools with which to face the Capitalocene. As justice movements develop strategies for confronting planetary crisis—and alternatives to our present way of organizing nature—we need to think about the creative and expanded reproduction of democratic forms of life. That's why we conclude this introduction, and this book, with ideas that can help us navigate the state shift that lies ahead.

A wan environmentalism is unlikely to make change if its principal theory rests on the historically bankrupt idea of immutable human separation from nature. Unfortunately, many of today's politics take as given the transformation of the world into cheap things. Recall the last financial crisis, made possible by the tearing down of the boundary between retail and commercial banking in the United States. The Great Depression's Glass-Steagall Act put that barrier in place to prevent future dealing of the kind that was understood to have knocked the global economy into a tailspin in the 1930s. American socialists and communists had been agitating for bank nationalization, and Franklin Roosevelt's New Dealers offered the act as a compromise safeguard.[119] When twenty-first-century liberal protestors demanded the return of Glass-Steagall, they were asking for a compromise, not for what had been surrendered to cheap finance: housing.

Similarly, when unions demand fifteen dollars an hour for work in the United States, a demand we have supported, a grand vision for the future of work is absent. Why should the future of care and food-service workers be to receive an incremental salary increase, barely enough on which to subsist? Why, indeed, ought ideas of human dignity be linked to hard work? Might there not be space to demand not just drudgery from work but the chance to contribute to making the world better?[120]

Although the welfare state has expanded, becoming the fastest-growing share of household income in the United States and accounting for 20 percent of household income by 2000,[121] its transfers haven't ended the burden of women's work. Surely the political demand that household work be reduced, rewarded, and redistributed is the ultimate goal?

We see the need to dream for more radical change than contemporary politics offers. Consider, to take another example, that cheap fossil fuel has its advocates among right-wing think tanks from India to the United States. While liberals propose a photovoltaic future, they can too easily forget the suffering involved in the mineral infrastructure on which their alternative depends. The food movement has remained hospitable to those who would either raise the price of food while ignoring poverty or engineer alternatives to food that will allow poverty to persist, albeit with added vitamins.[122] And, of course, the persistence of the politics of cheap lives can be found in the return to supremacism—from Russia and South Africa to the United States and China—in the name of "protecting the nation." We aren't sanguine about the future either, given polling data from the National Opinion Research Center at the University of Chicago which found that 35 percent of baby boomers feel blacks are lazier/less hardworking than whites and that 31 percent of millennials feel the same way.[123]

While maintaining a healthy pessimism of the intellect, we find optimism of the will through the work of organizations that see far more mutability in social relations. Many of these groups are already tackling cheap things. Unions want higher wages. Climate change activists want to revalue our relationship to energy, and those who've read Naomi Klein's work will recognize that much more must change too.[124] Food campaigners want to change what we eat and how we grow it so that everyone eats well. Domestic-worker organizers want society to recognize the work done in homes and care facilities. The Occupy movement wants debt to be canceled and those threatened with foreclosure and exclusion allowed to remain in their homes. Radical ecologists want to change the way we think about all life on earth. The Movement for Black Lives, Indigenous groups, and immigrant-rights activists want equality and reparation for historical injustice.

Each of these movements might provoke a moment of crisis. Capitalism has always been shaped by resistance—from slave uprisings to mass strikes, from anticolonial revolts through abolition to the organization for women's and Indigenous Peoples' rights—and has always managed to survive. Yet all of today's movements are connected, and together they offer an antidote to pessimism. World-ecology can help connect the dots.

We do not offer solutions that return to the past. We agree with Alice Walker that "activism is the rent I pay for living on the planet"[125] and that if there is to be life after capitalism, it will come through the struggles of people on the ground for which they fight. We don't deny that if politics are to transform, they must begin where people currently find themselves. But we cannot end with the same abstractions that capitalism has made, of nature, society, and economy. We must find the language and politics for new civilizations, find ways of living through the

state shift that capitalism's ecology has wrought. This is why in our conclusion we offer a series of ideas that help us recognize and orient humans' place in nature through the forensics of reparation. Weighing the injustices of centuries of exploitation can resacralize human relations within the web of life. Redistributing care, land, and work so that everyone has a chance to contribute to the improvement of their lives and to that of the ecology around them can undo the violence of abstraction that capitalism makes us perform every day. We term this vision "reparation ecology"[126] and offer it as a way to see history as well as the future, a practice and a commitment to equality and reimagined relations for humans in the web of life.

Notes

INTRODUCTION

Epigraph. Nietzsche 2001, §125, 120.

1. Roberts 1989; Hansen and Sato 2012.

2. Carrington 2016; Working Group on the 'Anthropocene' 2016. Here we refer to the Anthropocene as a field of geological inquiry: the Geological Anthropocene. It is distinct from its widely circulated sibling, the Popular Anthropocene, which encompasses a broad discussion of the origins of ecological crisis. See Moore 2016, 2017a, 2017b.

3. Barnosky et al. 2012, 52.

4. See, e.g., the excellent N. Klein 2014.

5. Barnosky et al. 2004.

6. Louys, Curnoe, and Tong 2007.

7. Humans in Africa, it is hypothesized, managed to force megafauna to adapt—hence almost no evidence for extinction there. See, e.g., the simulations of Channell and Lomolino 2000.

8. Ruddiman et al. 2016.

9. Ceballos et al. 2015.

10. Moore 2016, 78–115; 2017a; 2017b.

11. Bunge 2015.

12. Liu et al. 2006.

13. Evans 2014.

14. Bunge 2015.

15. Oxfam America 2015.

16. Seabury et al. 2014.

17. Dunkley 2014.

18. McMichael 1998; Kaimowitz and Smith 2001; Gale, Lohmar, and Tuan 2005.

19. We capitalize here because Indigenous Peoples' movements themselves choose to do so.

20. Jowett 1914, 383–85. See also Glacken's (1967) read on the long history of human questions about nature: Was it made for humans? Has its physical geography changed humans? And have humans changed it from its original state?

21. Chew 2001.

22. Mielants 2002, 2008.

23. Lamb 2002; Fagan 2008; Büntgen et al. 2011.

24. Fagan 2008, 12, 20–21.

25. Hoffmann 2014, 116.

26. B. Campbell 2010; Mayhew 2013.

27. M. Williams 2003, 93. See also Wickham 1994.

28. Nairn et al. 2004; Dribe, Olsson, and Svensson 2015.

29. Ruiz 1994.

30. Jordan 1997; Fagan 2008; B. Campbell 2010.

31. Hilton 1951.

32. Bois 1984, 264. This echoes twentieth and twentieth-first-century calls for agroecological farming from, e.g., Altieri 1999; Rosset and Martínez-Torres 2012.

33. Ziegler 2013, 40. The literature on the Black Death is large. See, e.g., McNeill 1976; Cantor 2002; Ruddiman 2005; DeWitte 2015.

34. L. White 1962, 75; Moore 2003b.

35. DeWitte 2015.

36. McNeill 1976.

37. Calculated from Broadberry, Campbell, and van Leeuwen 2011. See also Lappé et al. 2013; on declining arable productivity, Broadberry et al. 2010, 36.

38. Levine 2001, 325–400; Hilton 2003, esp. 95–133; Cohn 2007b.

39. Elvin 2004.

40. Cohn 2006, ch. 2.

41. China's fifteenth-century fleet was larger and more powerful than that of the Portuguese. The Chinese navy wasn't, however, tasked with urgently supplementing returns to the crown; Portugal's was. It needn't have been this way. The history of the modern world is rife with contingency, with strategies to fix crises tried and failed, and with paths not taken.

42. Moore 2009.

43. Cadamosto (1455) 1937, 9.

44. Verlinden 1970, 216–17.

45. Cats distinguish themselves by not giving a damn about sweetness (Li et al. 2005), but they've always been an odd lot.

46. Van Dillewijn 1952.

47. Schwartz 2004.

48. Mintz 1985, 82.

49. W. Phillips 2004, 29.

50. Ibid., 33.

51. Mintz 1985.

52. Moore 2007.

53. Moore 2010e.

54. Ramsey 1920.

55. Afonso de Albuquerque, quoted in Vieira 2004, 45.

56. Madeira crashed in the 1520s and was overtaken by São Tomé in the 1550s, which crashed and was overtaken by Pernambuco in the 1590s, which crashed and was overtaken by Bahia in the 1630s, which crashed and was overtaken by Barbados in the 1680s, which crashed and was overtaken by Jamaica and Haiti in the 1720s–1750s.

57. Bulbeck et al. 1998.

58. Thomas 1997.

59. Dann and Seaton 2001; Spínola et al. 2002.

60. The seminal work on how sugar has transformed the planet is Mintz 1985.

61. Dann and Seaton 2001.

62. This is the unspoken assumption behind Schumpeter's (1976) description of capitalism's creative destruction.

63. LaDuke 1994.

64. Le Grange 2012.

65. Barnhill 2005; L. Williams 2012, 95.

66. Levins and Lewontin 1985; Moore 2015.

67. Bull and Maron 2016.

68. Pigou 1920; J.E. Meade 1952.

69. E.g., Martinez-Alier 2014.

70. Goodfriend, Cameron, and Cook 1994.

71. Capitalism has often viewed the work of nature as a "free gift"—a term that appears in Engels's editing of Marx (1967a, 745). The reality is that the work of nature—including human nature—is neither "free" nor "gifted" to capital.

72. J. Jackson 1997.

73. Worm et al. 2006; World Economic Forum 2016.

74. Moore 2014.

75. Abulafia 2008.

76. Wallerstein 1974, 347; Abu-Lughod 1989; McMichael 2000.

77. Wallerstein 1974, 44. See also Moore 2003a.

78. See, e.g., Fine (2001) skewer the nonsense of "social capital" theory.

79. Marx 1973b, 33.

80. Marx 1976, 376.

81. Arrighi and Moore 2001.

82. Arrighi 1994.

83. Piketty 2014; using payroll instead of tax records, Galbraith and Hale 2014; with a different technique but allied findings, Veblen (1899) 1973.

84. Arrighi and Moore 2001.

85. Vieira 1996.

86. Moore 2003a. The simultaneous exploitation of labor and nature and the alienation of nature integral to capitalism's ecology is known in the literature as "the metabolic rift." See Foster 1999; Wittman 2009; Schneider and McMichael 2010; Moore 2011.

87. Vieira 1996.

88. This, incidentally, is why *The Communist Manifesto* says that all history is the history of class struggle—because of the back-and-forth, the dialectic, between worker resistance and bourgeois compulsion.

89. Disney 2009, 114.

90. Bales, Trodd, and Williamson 2009.

91. Belser 2005.

92. O. Patterson 1982.

93. After the initial journeys of first contact, captains on colonial ships traveled with their wives, families, and retinue (Boxer 1975). The written record is almost completely silent about these women, save the occasional surviving will in which wealthier women's wishes about what to do with their property—slaves, furniture, clothes—are recorded. It is clear, however, that women's reproductive work was policed. Slaves who slept with white free women were executed (Vieira 1996).

94. H. Klein 2004, 225.

95. Federici 2004, 77.

96. For a discussion of women's work in early modern and modern Europe, see Honeyman and Goodman 1991; Frader 2004; Wiesner-Hanks 2008. See also the broader and excellent discussions in Meade and Wiesner 2004; Delle, Mrozowski, and Paynter 2000.

97. As Federici (2004) notes, the witch and Caliban—who represent, respectively, the women and people of color who did not know their place in the new order—are simultaneous capitalist phenomena.

98. Ibid., 92.

99. UNDP 1995.

100. City of London 2016; Payne 2016.

101. Safri and Graham 2010, 111.

102. Schwartz 1985.

103. Carney 2001.

104. Patel 2013; Patel and McMichael 2009.

105. Holt-Giménez and Patel 2009; Aldrete 2013. See generally De Ste. Croix 1981.

106. De Vries 1993; Brown and Hopkins 1956.

107. USDA 2017a, "Percent of Consumer Expenditures Spent on Food, Alcoholic Beverages, and Tobacco That Were Consumed at Home, by Selected Countries, 2015."

108. USDA 2017b, tables 51–53.

109. Ervin and Ogden 2013; Sheiham and James 2014. See also the work of the World Public Health Nutrition Association more generally.

110. Verlinden 1970.

111. This wood is thus an example of one of the earliest "flex crops" (Borras et al. 2014).

112. Boyle 2008, 57.

113. Vieira 1996.

114. Dussel 2008.

115. Parise 2008.

116. Dussel 2008, 12.

117. Buzan, Wæver, and Wilde 1998.

118. Moore 2015. See also Moore 2016; Moore et al. 2017; C. Campbell and Niblett 2016. A growing literature on world-ecology can be found at www.academia.edu/Documents/in/World-Ecology.

119. Edwards 2009.

120. Timmermann and Félix 2015.

121. Livingston 2016.

122. Patel et al. 2014.

123. See the General Social Survey conducted by NORC, at http://gss.norc.org/.

124. N. Klein 2014.

125. Garrett and Jackson 2015, 288, quoting Walker in *Alice Walker: Beauty in Truth* (directed by Pratibha Parmar, 2013).

126. Drawing, with gratitude, on Watts 1983; Peet and Watts 2004.

1. CHEAP NATURE

1. Behar 1987, 127.

2. *The Oxford English Dictionary* (Simpson and Weiner 1989) uses, for example, this instance: "c1330 *Arthour & Merlin* (Auch.) (1973) l. 8270 Þe v was Dedinet þe saueage."

3. A later example given in Simpson and Weiner 1989 to demonstrate this use comes from John Locke's 1690 *Essay on Human Understanding:* "The more than Brutality of some savage and barbarous Nations."

4. R. Williams 1976, 292.

5. Foucault 2003.