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How Brazil Expanded the World Coffee Economy

Abstract: Coffee's growth in Brazil since 1727 is an excellent case study of the adaption of an external coffee frontier to an internal one. The expansive internal frontier started in the 18th and 19th centuries using an exotic plant, with Brazilian coffee farmers eventually adapting and advancing new cultivars and technologies to create an intensive frontier in domestic areas, some of which were formerly unfamiliar to coffee. Brazil's success revolutionized worldwide demand for coffee and eventually spread the crop throughout most of the tropics. It was in good part due to the Brazilian experience that coffee became one of the world's most valuable internationally traded agricultural commodities.

Key Words: Brazil, coffee, frontiers, immigrants, slavery, world economy

Introduction

Coffee's growth in Brazil is an excellent case study of the expansion of an external coffee frontier – which began in Yemen – to an internal one that emerged later in Brazil. An expansive internal frontier started in the Portuguese colony in the eighteenth and nineteenth centuries using an exotic plant, and over time Brazilian coffee farmers adapted and advanced new cultivars as well as the technologies of the first and second industrial revolutions to create an intensive frontier in domestic areas formerly unfamiliar to coffee. Brazil's success revolutionized the world market demand for coffee and eventually spread the crop throughout most of the tropics. It was in good part due to the Brazilian experience that coffee became one of the world's most valuable internationally traded agricultural commodities.

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Brazil has dominated the world coffee economy for so long that many people assume coffee is indigenous to the region, but in fact it is not. Agronomists and botanists agree that *Coffea arabica* originated naturally in and around Ethiopia hundreds, if not thousands of years ago. There, humans harvested and ate wild coffee cherries. Coffee trees and bushes were first domesticated across the Red Sea in Yemen in the fifteenth or sixteenth century; they were subsequently transported to Indian Ocean areas such as India, Java, and Ceylon, where they became a colonial crop. Brazil only received coffee in 1727, at least three hundred years after humans began drinking it.

In Yemen, coffee seedlings were planted in gardens alongside subsistence crops or on terraced hillsides. Almost everywhere else, coffee was a frontier crop, with farmers cutting down tropical forests to replace them at first with coffee seeds. In Brazil, *cafeicultura* experienced *extensive* frontiers through replacement of the indigenous tropical Atlantic Forest with arabica seeds and seedlings as well as intensification of the frontier with the introduction of new *Coffea* cultivars. The scale evolved from garden cultivation to larger fields, then to huge plantations cultivated using slave labor before returning to smaller landholdings worked by immigrant *colonos* and ultimately, in the twentieth century, shifting to freeholders of various sizes. Coffee agriculture developed from gardening to predatory slash-and-burn techniques taking advantage of “forest rent” and, towards the end of the nineteenth century, gradually adopted new industrial technologies. After the 1950s, farmers began applying the techniques of the “green revolution” by using chemical fertilizers, pesticides, and tractors. This article will concentrate on the era before the 1950s with a brief update at the end.

Brazil fundamentally reshaped the world coffee economy and the nature of its commodity chains beginning in the nineteenth century. Not only did Brazilians largely satisfy the growing world demand, they also stimulated and transformed the place of coffee on overseas tables. The dependency-focused view of agricultural producers as servants or providers of brute manpower, willingly serving up their produce to thirsty European buyers who were the masters of the trade, misrepresents the nature of the relationship. Brazilians – be they natives or immigrants of African, Portuguese, or Italian origin – developed new production techniques, discovered productive cultivars, established an elaborate domestic transportation network in a geographically unpromising setting, and developed market standards and financial instruments as well. They were able to out produce all the European colonial growers during the coffee boom in the Age of Imperialism and continue to dominate the global market even today. I will discuss why Brazil was a comparative latecomer to coffee cultivation, how outside forces caused it to spread into virgin parts of the colony to become the world’s leading producer, the effects of slavery and the Brazilian

transition to free labor, and finally the consequences of Brazilian actions on global coffee commodity chains.

Why Brazil?

Early research on coffee in Brazil attributed its success to nature and to luck: The subcontinent offered a suitable semi-tropical climate, substantial rainfall, fertile soil for *Coffea arabica* to thrive, and it was colonized by the Portuguese. The Portuguese explorers and traders who colonized Brazil had a history of moving cultivars across national and continental frontiers and then producing them for export. They had transplanted sugar from the Mediterranean to West Africa and Brazil, peanuts from the Americas to Africa and Europe, mangos and sweet potatoes from India to Africa and eventually to South America, and cacao as well as manioc from Brazil to West Africa. They were also major traders of enslaved Africans. In short, Brazil's climate and Portuguese heritage seemed to have preordained it to be the world's leading coffee cultivator.

Yet the story was not so simple. With their history of transplanting important agricultural crops across four continents, one might assume it was the Portuguese who brought coffee to Brazil. After all, they were the first Western Europeans to explore the birthplace of coffee in Ethiopia as early as 1490, and they did so again in 1520–1526 when a fleet was sent to assist the Abyssinians. As allies of the Christian Abyssinians, Portuguese troops and Jesuit missionaries came to protect the Ethiopian Christians against Muslim jihadists. In the 30 years (1603–1633) that the Jesuits were the Ethiopian king's preferred religion, they built churches – including some in the province of Kaffa, where coffee is thought to have originated.¹ The Jesuits' most successful missionary in Ethiopia, Pedro Paéz Jaramillo, is said to have tasted coffee in Mocha before arriving in Ethiopia. But despite being at the right place at the right time for pioneering coffee cultivation, none of the Portuguese missionaries to leave reports mention the plant or drink. Nor is there evidence of anyone drinking coffee in Ethiopia before the eighteenth century, much less cultivating it.²

The paradox becomes even more pronounced when we consider that the Portuguese were the first Europeans to introduce the other major stimulant – Chinese tea – into Europe, and that it was the Portuguese princess Catherine Braganza, the wife of Charles II, who helped turn the English into tea drinkers. It is therefore clear that the Portuguese at least thought about drinking the new fruits and leaves they encountered. Nonetheless, the first coffee to arrive in Brazil came much later – and it was introduced via the French, not the Portuguese.

Dutch and French mercantile companies brought coffee from the Indian Ocean to the Guianas and from there to Brazil a full two hundred years after a thriving Middle Eastern coffee economy based on Yemeni production had developed. These Western European powers pushed the coffee frontier westward because their subjects were slowly developing a taste for the beverage's psychoactive and medicinal properties through trade performed with the Middle East. The only exporting area, Yemen, could not meet the growing European demand, and as a result Dutch, British, and French merchant capitalists created East India companies and began encouraging locals in India, Java, and Sri Lanka (then Ceylon) to grow coffee. European settlers coerced native peoples and later enslaved Africans to cultivate coffee in the Americas. Though increasingly spread out geographically, worldwide coffee production in 1700 was still very small.

Brazilians were relative latecomers despite having the requisite natural resources, climate, location, and colonial heritage, and the fact that they were early modern pioneers in transatlantic commodity trade as well as biological adventurers cannot explain the present-day country's coffee dominance. In fact, after arabica seedlings arrived in northern Brazil via French Guiana in 1727, it took almost 80 years before the colony began exporting meaningful amounts – even though contemporaneous French and Dutch planters expanded overseas shipments much more quickly in the Circum-Caribbean. The Americas exported 80 percent of the world's coffee in 1800, but almost all of it was grown in the Circum-Caribbean, while Brazil at this point was exporting almost none.

Brazilian coffee exports lagged behind in the eighteenth century despite rapidly increasing European demand because the Portuguese colony was also the world's principal sugar grower and a significant tobacco supplier at the time. Since the international markets for sugar and tobacco grew earlier and were larger than the European demand for coffee, Brazilian growers initially concentrated on those better developed and more profitable markets rather than on coffee. Clearly, a commodity's global expansion depended not only on the appropriate setting, labor, demand, and transport. Its pace and location were also conditioned by the size of the world market, by competing crops within the respective colony or country, and by competitors abroad. For most of the eighteenth century, Brazilian coffee cultivation would remain overshadowed by sugar.

In fact, despite the emphasis of development and dependency theories on export production to explain the course of economic growth, coffee was not initially an export commodity in Brazil. For the first century of its cultivation in the area, it was grown along with other subsistence staples like maize, manioc, beans, and fruits as well as small quantities of crops that were mostly consumed at home, like tobacco, sugar, cotton, and indigo.³

Coffee only arrived in Rio de Janeiro, one of the two largest consumption entrepôts in Brazil, in the 1760s – two and a half centuries after Portuguese mariners first stepped onto Brazil's shores and three decades after *Coffea* seedlings were first planted in the northern soils. The Portuguese had arrived in a land of mostly self-sufficient indigenous peoples who were as much hunters and fishermen as they were agriculturalists, and who relied on barter rather than commodity exchange. When the native people did export to European markets, their products were harvested using predatory techniques rather than agricultural ones and shipped out by Portuguese and French merchants. Brazilwood, a dyewood cut in the forests, was the most important export.

This changed when sugar (an imported cultivar) and tobacco (indigenous to Brazil) began to be grown for export in the second half of the sixteenth century and gold and diamonds were mined in the eighteenth century.⁴ But coffee would have to wait until the nineteenth century to be exported, and even the domestic market remained small after arabica seedlings arrived in Rio in the mid-1700s. They had been brought to Pará from French Guyana in 1727 by Francisco de Melo Palheta, a Brazilian soldier and diplomat.⁵ Palheta transported roughly a thousand coffee seeds and five seedlings; he planted some on his own land and passed some on to the Pará municipal council, which was composed of rich and influential locals. Government officials distributed coffee plants in Maranhão and Ceará, sharing them with planters or other favorites.⁶ In 1731, only four years after de Palheta brought the first coffee plants to Brazil, the governor of Maranhão wrote that “in the farms surrounding this city and even in estates there will be much good coffee [...] in two or three years because the trees yield so much fruit. We will be sending excellent coffee to Portugal [...] by the arroba [a measure of 15 kilos].”⁷ While he was correct in that the first Brazilian coffee reached the Portuguese metropolis of Lisbon the next year, it was only a paltry quantity of seven pounds. In 1749, there were around 17,000 coffee plants in Brazil supplying 4,835 arrobas (over 70,000 pounds) to Lisbon.⁸ We do not have much information on these early coffee growers since research has largely focused on the export sector. It is safe to say, however, that their holdings were small, with multiple crops and few, if any, slaves working the fields.⁹

In Rio, the arabica was initially disseminated not by a mercantile company, as had been the case in earlier coffee exporting regions like Java, Reunion, and Surinam, nor by planters but instead by Portuguese officials and religious orders. Prominent among these were the Capuchins and the bishop of Rio de Janeiro. It would take decades before coffee exports became important, however. The report issued by Viceroy Lavradio in 1779 neglected to mention coffee altogether.¹⁰ According to Joseph Banks, the famous naturalist who accompanied Captain Cook to Rio in 1768, coffee was still being imported from Portugal (probably originating from Yemen).¹¹

By 1778, the Englishman John White reported that the coffee that had formerly come from Portugal “now grows so abundantly that it permits a considerable exportation,” although he lamented that there were no coffeehouses in Rio.¹² It was only when Western Europeans slowly began developing a taste for coffee that settler cultivators thought of sending it abroad. French and Dutch immigrants brought seeds and seedlings during the eighteenth and nineteenth centuries that had originally been procured in the Indian Ocean. They planted them in small orchards alongside other experimental crops such as ginger and pepper.¹³ The arabica beans were primarily for the limited local consumption; some colonial officials and traders hoped that they could be exported, though tea was much preferred to coffee in Portugal at the time.

What coffee did do in Brazil – unlike in any other Portuguese colony – was to drive the Europeanized and African populations into the colony’s interior while dislodging and eventually exterminating most of the native peoples. Coffee was a frontier crop that depended as much on destruction as on construction. Growers adopted the indigenous slash-and-burn method of clearing forest lands to replace them with cultivated plants until the soil wore out; they then moved on to clear new forest areas, creating what has become known as a “hollow frontier”.¹⁴ Only in the final three decades of the nineteenth century did production begin to integrate some of the technologies of the second industrial revolution.

Although the amounts grown during the colonial period before 1822 were still small, coffee had clearly been diffused throughout much of the country before Prince-Regent Dom João VI and some 19,000 members of the royal court arrived in 1808. Coffee beans and seedlings were probably brought to the interior of Brazil by traders and small-scale farmers. John Mawe, an English mineralogist who traveled through inner Brazil between 1807 and 1810, was served coffee in the southern province of Santa Catarina as well as in the southeastern provinces of Minas Gerais and Rio de Janeiro. And the morning meals Mawe enjoyed were already called *café da manhã* (morning coffee), even though breakfast was known in Portugal as *pequeno almoço*, meaning small lunch or dinner. It seems that coffee had already become something of a national custom in the late colonial era. *Coffea* could be grown in almost every region of Brazil, but internal transport was still primitive and slow, so the hospitality drink served to Mawe and other visitors must have been grown at home or locally. It was invisible to trade statistics.¹⁵ When describing the local food and drink, foreign travelers visiting Rio de Janeiro during the colonial period did not mention coffee – which at the time was grown locally by Europeans in gardens – before the 1780s.¹⁶ There was no discussion of coffee houses until the nineteenth century.¹⁷ It was only production for export to Western Europe and later the U.S. after Brazil’s independ-

ence that would eventually vastly increase the scale of cultivation and revolutionize the coffee commodity chain.

The Impact of Outside Forces

Coffee's intensified expansion in Brazil and its increasing export orientation were largely brought on by external events, in particular by the consequences of the French Revolution. Napoleon Bonaparte's forces invaded Portugal in 1807, forcing Prince-Regent Dom João VI to order the largest trans-oceanic migration of an imperial capital in history assisted by his English allies. With the Portuguese ports of Lisbon and Porto occupied by the French-Spanish allies, the prince-regent's first act upon reaching Brazil was to open its ports to non-Portuguese (and non-French) ships. British ship captains and merchants, blocked from their European continental markets by the French troops and navy, became particularly interested in the Brazil trade. At the same time, the aristocrats and Portuguese merchants newly arrived in Brazil who had been stripped of their traditional sources of income and customary purchases turned to local products. However, Dom João had tea – not coffee – planted by two hundred Chinese farmers imported from Macau in the Royal Botanical Garden he ordered built outside the urban center of Rio de Janeiro.¹⁸ But despite this royal preference, coffee would prove more successful. The state's direct role in stimulating the coffee economy was limited; it left entrepreneurship to the private sector until the twentieth century.

With the arrival of the prince-regent (who became king in 1816) and the instruments of Portuguese imperial governance under the protection of the British fleet, Brazil's place in the world economy was transformed. It went from being a colony to becoming an official co-kingdom in 1815. It should be emphasized that Brazil's sudden leap to global dominance in the coffee trade was not owed exclusively to the availability of the factors of production or the maneuvers of merchants and bankers. International politics served to force rapid change as well: Rather than continue its existence as a colonial appendage whose role was to supply surpluses to Lisbon through mercantilist unequal trade, Brazil became by law what it had de facto already been for decades: the center of the Portuguese Empire and, in 1822, a sovereign nation.

In 1810, two years after the Portuguese mercantilist system had been disbanded, the monarch signed a commercial treaty with England. British naval ships and traders were especially favored by this development, since they no longer had to deal with traders in Lisbon or Porto but instead could become masters of Brazilian com-

merce and involved in the Brazil-West Africa trade. Indeed, to repay British aid and insure commercial growth, British merchants were given a preferential tariff, and the pound sterling became the unofficial currency of trade in the Brazilian ports.¹⁹ The City of London became the banking headquarters for the Brazilian crown.²⁰ Brazilians were also successful in the nineteenth century thanks to British neo-colonialism in the form of inexpensive and reliable shipping and insurance, loans, infrastructure investments, and protection of sea routes.²¹ Thus while the British did not export or import much coffee from their own colonies at this time, they exported and re-exported large quantities from Brazil, which they considered a neo-colony. Most of these exports went to the two other fastest-industrializing areas in the world: the United States and the lands that became Germany.

The French Revolution not only spurred Napoleon's continental blockade, it also upended the global coffee market by inspiring freedmen and slaves in Saint-Domingue (today: Haiti) to revolt in 1791. By the time Haiti declared its independence and abolished slavery in 1804, its fields had been destroyed and its place as the world's greatest coffee exporter was lost. With European demand continuing to grow despite the drop in Haiti's exports, prices rose to dizzying heights. This captured the attention of Brazilian *fazendeiros* (planters), who increasingly transitioned from sugar to coffee in the provinces of Rio de Janeiro and Minas Gerais.

Their decision was of momentous importance for the social life of coffee. Falling prices and increasing availability transformed the drink from a limited indulgence of the urban elite to an ever more popular mass beverage in the nineteenth century.²² Brazil was not only responding to European and incipient North American demand, but in fact was itself a motor of the growing desire for coffee in the most dynamic and affluent centers of the world economy. It is certainly conceivable that if Brazilian planters and their African and Afro-Brazilian workers had not been able to create an unprecedented revolutionary boom in production, coffee might not have become so ubiquitously popular. The coffee-drinking habit and the associated commodity chain were not yet well established in Europe, and in England and the Middle East, coffee drinkers were later converted to tea drinkers. Other hot drinks like chocolate or even mate therefore might easily have taken the place of coffee instead. Chance and timing played key roles in the Brazilian success story.

Yet history proved that once coffee was grown for export, Brazilians were able to continue expanding their coffee cultivation at an unprecedented rate. The estimate for the largest export volume from Yemen during the first quarter of the eighteenth century, when the country still had a virtual monopoly on international coffee trade, was between 12,000 and 15,000 metric tons; by 1789, total world exports had more than quadrupled to around 60,000 metric tons.²³ But the real explosion of trade volumes was yet to come: It was only when Brazil began exporting in signifi-

cant amounts during the early nineteenth century that world production truly skyrocketed. By 1856–60, it had multiplied fivefold, reaching 325,000 metric tons; by the turn of the twentieth century, it had tripled again to around 1,000,000 metric tons. This vast expansion of production was centered in Brazil, which was responsible for almost half of the world coffee exports in 1850 and three-quarters in the period from 1901 to 1905.²⁴ Indeed, Brazil's exports jumped 75-fold between 1822, the year of its independence as a country, and 1899 as worldwide consumption grew more than 15-fold in the nineteenth century.²⁵ Most of the growth of the global coffee economy in the 1800s was due to Brazilian farmers and workers.

This meteoric rise in Brazil's coffee output occurred despite earlier British endeavors to end the Atlantic slave trade by demanding that eventual abolition be included in the 1826 and 1831 trade treaties with Brazil, and despite the efforts of Dom João's most important advisor, José Bonifácio, to expedite the abolishment of slavery.²⁶ The lure of profit convinced Brazilians and Portuguese to continue shipping human cargo – often surreptitiously – from Africa. This was evidenced by a sudden spurt in African slave imports; as many enslaved people were transported across the Atlantic between 1807, when the British Parliament outlawed the slave trade, and 1850, when it effectively ceased, as in the previous hundred years when sugar plantations and gold mines had demanded unfree African workers.²⁷ Most of the new arrivals in the post-independence era wound up being involved in some aspect of coffee production.

With the exception of Cuba and Puerto Rico, no other major coffee-growing area was able to import Africans during the nineteenth century when the coffee trade took off. Brazilian *fazendeiros* benefitted greatly from the spurt of captive Africans, since their free domestic population was reluctant to labor in the *cafezais* (coffee fields) under the harsh conditions slavers imposed. With enormous expanses of fertile land and the armed campaigns by farmers to drive the indigenous population ever further into the interior, poor free people cultivated their own subsistence plots rather than working for stern taskmasters. More prosperous men received land grants from the crown, purchased terrain from other owners, or simply occupied it and bought mostly imported people to work it.

The first profitable private coffee exporters in Brazil seem to have been Dutch and French, with some of the latter originating from Saint-Domingue, who had experience with slave workers. They began planting vigorously on the hills just outside Rio's city limits immediately after the arrival of the royal court and the opening of the port to international trade in 1808. The hills were too steep for sugar cultivation and had thus remained forested; they were well suited to coffee growing, however, since the land drained well. An estimated 80 percent of all coffee exported in the 322-year-long colonial period was shipped between 1810 and Brazil's independ-

ence in 1822²⁸ – after which the pace picked up even more. Growers spread out past the hills surrounding Rio to the nearby mountains of the Serra do Mar, where the change was dramatic. An observer in the nascent district of Vassouras, which would become a center of *cafeicultura*, noted in 1835 that a few decades earlier, settlers in the area had lived miserably without slaves, eking out a subsistence living. He wondered at the fact that coffee, a product not even mentioned in Rio's commercial circles forty years earlier, had so quickly become the province's main export. From the nearby mountains, planters expanded coffee cultivation along the Paraíba Valley and toward the neighboring provinces of Minas Gerais and, by the 1850s, São Paulo.²⁹ These provinces would dominate coffee cultivation until the 1950s, when cultivators moved into the Southern state of Paraná. Coffee plants and workers were itinerant, demolishing the native forest.

Coffee as an export product not only arrived in Brazil late in its international history, it also initially expanded relatively slowly. As F. B. Thurber has pointed out, whereas Haiti reached a yearly export total of 80 million pounds after 75 years of cultivation, Brazil was only exporting 14 million pounds in 1830, some ninety years after the introduction of coffee growing. In that same year of 1820, Cuba was exporting some 25 million pounds.³⁰ During its first century in Brazil, coffee was largely limited to home consumption, and it only overtook sugar as the chief export product in 1832, ten years after Brazil's independence, when production for the international market was still low and concentrated in Rio's hinterland.

Slavery

Although coffee was not really a colonial product in Brazil, its slavocratic production system was a colonial heritage. Together with the contour of the land, the inherited form of labor was far more important in leading to large-scale production than the economic or botanical exigencies of coffee growing. Brazilians did not invent the use of enslaved workers in coffee production. The first use of slaves to grow *Coffea* began in 1715 in the French colony of Reunion in the Indian Ocean as well as in Dutch Surinam.³¹ French colonists in Martinique and Saint-Domingue turned to African imported labor at the same time as Brazilians.

In all of these cases, the purchase of humans to work in coffee fields was modeled on sugar plantations, which had been using slaves for at least seven centuries beginning in the Mediterranean. The use of slaves was not inherent to coffee cultivation, since even in areas such as Ethiopia where slavery was widespread, slaves were not used for growing Arabica in appreciable numbers until the nineteenth century, and other coffee-growing areas like Yemen did not use enslaved workers for culti-

vation at all. While the Dutch brought in slaves to work in export crops like sugar in the Dutch East Indies (today Indonesia), this was not the case for the production of coffee, where semi-free peasants dominated. But in the West Indies, e.g. in Surinam, which featured sparser and less complex indigenous populations, Hollanders bought thousands of enslaved Africans.

Brazil received more bound Africans than any place outside of Africa, some 4.5 to 5 million in total.³² They were only employed in the cultivation of coffee on a major scale in the nineteenth century, when Brazil's sugar growers lost their dominance to Caribbean and later to European producers. Once Brazil turned to coffee exports after its ports opened to the world in 1808, slave imports intensified. In fact, the influx of (mostly male) Africans in the period from 1820 to 1850 was the largest in the history of the transatlantic slave trade.

Brazil Changes the World Coffee Economy

Coffee was treated differently than sugar and rubber in the nineteenth-century Age of Imperialism because its low technological demands meant that Brazil could begin producing on an unprecedented scale. Cheap fertile virgin land and abundant and relatively inexpensive slave labor due to the proximity of Africa allowed Brazil and several other former colonies to cause world coffee prices to plummet after 1820 and remain low until the last quarter of the century, creating supply-induced demand.³³

Brazil's success was not simply owed to European colonial know-how or natural resource endowment. After all, as we have seen, coffee had been introduced into Brazil when it was a Portuguese colony early in the eighteenth century, but the drink enjoyed little success for the better part of a century. Instead, Brazil emerged as the world's major coffee exporter partly because of its independence in 1822. Even more important for Brazil's rise to dominance were exogenous changes in the world market: the collapse of Haitian production as a result of its revolution, the continuing slave trade and later massive immigration, the growing European and later U.S. urban markets, and a revolution in finance and transport brought on by industrialization and the spread of capitalism. Brazil's bountiful exports financed a "hollow state" that guaranteed property (especially in slaves until 1888), gave a free hand to plantation owners, kept the roads relatively free of bandits, and maintained a fragile social peace. The oligarchic coffee state was able to survive regional and international wars.³⁴

Even with Brazil along with Ceylon and Java greatly expanding global production in the first half of the nineteenth century, the essential nature of the coffee commodity chain remained unchanged. All of the exported coffee was still green arabica sent

overseas by consignment merchants who shipped a wide array of products. They were represented by factors in Brazil who in turn provided planters with the working capital to bring their crops to port. Larger plantations set the standards for cultivation, though smaller-scale slave-worked holdings were also able to compete successfully. Most Brazilian *fazendas* were relatively large. Even *fazendoles* and *sítios*, which were considered small holdings, had 25 to 30 hectares, a quite substantial spread compared to farms in the Caribbean, Colombia, or Central America.³⁵ Unscheduled sailing ships carried coffee packed in leather pouches or cotton and jute bags to major markets, where it was often sold at auction to wholesalers. Roasting, grinding and brewing still occurred in the home or at the coffee house. The commodity chain was a hybrid, partly driven by producers – since most of the improvements for expanding cultivation were financed with reinvested planters' profits – and partly driven by international traders who cultivated ever more foreign consumers.

The creation of the liberal export economy in the Americas, which contrasted with and complemented the expanding European colonialism in Africa, Asia, and Oceania, transformed the nature of the demand for coffee. It went from a noble beverage to a bourgeois one before 1800, and eventually became a drink for the masses in the last part of the century. The slaves of Brazil slaked the thirst of the factory workers in the urbanizing industrial countries – particularly in the United States, the German-speaking realms, and the Netherlands.

How did this happen? Brazil's remarkable expansion of the worldwide coffee economy and the increase in the commodity chain's length and complexity resulted from a unique confluence of internal and external factors. Brazil's natural internal endowment combined with externalities like the availability of foreign laborers in Africa until the Atlantic slave trade was abolished in 1850, and Southern European immigrants after slavery was outlawed in Brazil in 1888. Revolutionary advances in transportation and communication technology and vast transformations in the coffee business in the United States and Western Europe were also crucial.

The unprecedented explosion of demand for coffee in the United States was not due to an anti-colonial distaste for the English habit of drinking tea, as has often been averred. After all, North American tea consumption continued to grow rapidly after its colonial independence. But people in the U.S. drank substantially *more* coffee because the 1831 abolition of import duties on coffee lowered prices at the same time at which massive immigration occurred from Northern European countries, where coffee drinking was fashionable but prices were high.³⁶ Combined with its railroad boom, which created the world's best internal transportation network by the mid-1800s, North America became the largest market for coffee in the world.

The explosion of coffee cultivation in the first half of the nineteenth century in Brazil, on the other hand, was not brought about by new production methods.

Renowned authority V. D. Wickizer noted (though only partially correctly) in 1951 that “it is sometimes said that no important changes have been made in the coffee production methods in the last 150 years.”³⁷ It is certainly true that until the last quarter of the century, cultivation, harvesting, and processing continued to be done manually by the same sort of slave labor Brazilian planters had previously used for sugar, and French coffee planters on the African island of Réunion and on a larger scale in Haiti and Martinique. Indeed, it was known at the time as the “West Indian” cultivation method. But the vastness of some Brazilian plantations and industrial-scale picking of coffee beans, which lowered both the cost and quality of the product, were new.

Still, slave labor has been given too much credit for the coffee export boom. Although contemporary coffee experts assumed the end of slavery would also end Brazil’s dominance within the global coffee economy, the abolition effected in Brazil in 1888 would ultimately not diminish Brazil’s position in the market. In fact, coffee exports expanded at an even more rapid rate in the first decade of free immigrant workers than they had before with the use of coerced labor.

Brazil as the *Fazenda* Writ Large

Brazilian production has been associated with large plantations viewed as a colonial or neocolonial institution that, especially with the use of slave labor, brought dependence, inequality, and backwards routine production processes. Certainly, the *fazendeiros* (planters) in Brazil were convinced that successful coffee production required large landholdings and slaves of African origin. “O Brasil é o café e o café é o Negro,” said one often-quoted prominent imperial senator. History would prove him wrong, however: Brazilian producers were able to transition from slave labor to free labor while continuing to grow their estates. This seems, in retrospect, inevitable to most scholars of the Brazilian economy. Yet in the years before slavery was abolished, many of the most learned coffee experts in Brazil argued that *grande lavoura* (large-scale agriculture) could not proceed without slaves and large amounts of coffee could not be grown on small holdings. They expected emancipation to destroy the production system and either dramatically reduce worldwide coffee exports or transfer coffee’s global leadership to Java or to growers in Spanish America.

We now know in hindsight that the transition was rather smooth. When looking at a graph of Brazil’s export statistics, one would not be able to recognize when slavery ended. Indeed, seen from our perspective of 131 years later, it seems to have been fairly unproblematic. Were the well-informed contemporary analysts merely foolish Cassandras? I will argue that the experts were in fact correct and the emanci-

pation of slaves *did* provoke a profound transformation of *cafeicultura*. While slave-run *fazendas* in some ways ironically resembled factories in the field, the free plantations after 1888 were more similar to peasant villages – and for the most part, they were not worked as plantations. The move away from slavery did not initially create more capitalist relations in agricultural labor.

The Origins of the *Fazenda*

Until the last decades of the twentieth century, coffee received relatively little attention in Brazilian historical studies. The general notion was that coffee meant plantations and slavery. Focusing on their own history rather than comparing the development of the Brazilian coffee complex with other American systems in which medium and even small plots often predominated, Brazilians concluded that coffee required bigness. But even Brazil's own history belies this conclusion.

The large plantations operated in Brazil in the nineteenth century did not develop out of natural economies of scale. As we have seen, coffee could be cultivated perfectly well on small plots, and in fact it was mostly grown in gardens during its first century in Brazil. Although coffee was not really a colonial product, its latifundist and slavocratic production system were a colonial heritage. After all, the Portuguese had been the first Europeans to sail down Africa's Atlantic coast to engage in the slave trade. They proceeded to put large numbers of slaves to work in sugar plantations in Portugal, then in São Tomé, and finally in Brazil. This heritage, together with the contour of the land and the ease of shipping to Europe, was far more crucial in leading to large-scale production than the economic or botanical exigencies of coffee growing. Given the sparse free population and the abundant open land that protected the independence of indigenous and immigrant peoples, planters looked abroad for workers. Even when slavery was on its deathbed, nobody thought that the *caboclo* (free) population could provide sufficient labor for a successful coffee economy. But Brazil had slave market mechanisms in place along with international credit, relative civil peace, and domestically accumulated capital. When international coffee prices shot up in the wake of the Haitian revolution (1791–1804), large-scale slave imports could be arranged, unlike in Spanish America. Slave ownership was also entrenched as a social system conferring status upon owners and as a foundation of the financial system, since slaves provided the main collateral for loans.

This explains slavery, but what allowed the large scale? Slave-run coffee *fincas* in Haiti, Martinique, and Réunion had not been particularly expansive. In Haiti, coffee was considered a middle-class crop using poorer lands in the mountains, since the rich would establish large sugar plantations on the plains. In fact, a substantial num-

ber of Haitian coffee growers were mixed-race *gens de couleur*.³⁸ In Brazil, a 30-hectare orchard was initially considered large – which meant that coffee could be grown profitably on a small scale in Brazil using slaves.

Large-scale *fazendas* came to predominate because of the nature of the colonial society, not because of demands inherent in coffee cultivation. Brazil was different from earlier coffee-growing lands because of its amply available, inexpensive fertile land and because competition from Caribbean colonial cane and later from European beet sugar meant that by the 1830s, coffee was far more promising in Brazil's southeast for the wealthy than sugar. But planters needed either capital or credit to make sufficient purchases of slaves, and Brazil's financial system was underfunded, rudimentary, and poorly institutionalized. Property rights were ill-defined and poorly policed. Combined with the clan-based and personalistic nature of Brazilian society, this lacking institutionalization of credit and property caused personal contacts and force rather than some abstract concept of entrepreneurship to form the basis for acquiring the factors of production. It also dictated that in the early stages of development of an industry, only a limited number of people would enjoy much access: These were precisely the individuals who had the advantages of government acquiescence to their boundary lines, private force (*capangas*) to protect and expand their lands and insure that their slaves would not flee or revolt, and personal relationships with the merchants in the ports and bankers who extended credit. These advantages grew as the planter's holdings and reputation grew³⁹ – and success was thus a self-fulfilling prophecy, at least for a few generations.

Although planters introduced few technical or agronomic innovations besides hulling machines in the early boom years before 1860, their ability to move into adjoining “virgin lands” (meaning areas no resident had title or the physical ability to hold on to) with their much greater natural productivity vastly increased their chances of success. Once the railroads snaked their way into the interior in the 1860s and 1870s, plantations enjoyed the added advantage of lower transport costs. In the nineteenth century, the only other producer with a rail system for delivering coffee to port was comparatively small Costa Rica. Important planters were often large stockholders in Brazil's coffee railroads and enjoyed the political influence to ensure that their railway received government monopoly concessions. They were thus able to ensure that a line passed through or near their properties as well as inhibiting access to the rail system for competitors. This allowed the *fazendeiros* to build private lines to bring their crop to the train station. Since the cost of transport to Rio or Santos – even using the railroads – often exceeded the cost of harvesting, economies here could greatly increase profits.⁴⁰ Summarily, the Brazilian coffee *latifundia* resulted much more from political influence, family prestige, and the use of coercion – that is, from primitive accumulation – than from capitalist entrepreneurship,

and their profits should therefore be construed more as monopoly rents than as surplus value.

The Prussian agronomist Franz Dafert, who as the first head of the Campinas agricultural station in São Paulo probably knew *fazendeiro* practices as well as anyone, came to the deprecatory conclusion regarding São Paulo that “nature does everything she can for coffee – and man does as little as possible.”⁴¹ He called Brazilian coffee cultivation “Raubbau” (overexploitation). Given the eighty-hour weeks forced upon coffee slaves at harvest time, Dafert was clearly referring to the lack of planter innovation, not the indolence of workers.

Was the slave plantation a “factory in the field”? Sidney Mintz argues that slave-based sugar plantations, which preceded textile factories by more than a century, were the first truly industrial establishments in the world. Their large, specialized, integrated, and disciplined labor force was combined with technologically sophisticated and capital-intensive refining mills. In other words, they were factories even though they used slave labor – in fact, it was precisely because of their unfree status that the workers were disciplined, regimented, and centrally controlled.⁴² Robin Blackburn takes this counter-intuitive notion even further by arguing convincingly not only that “the enterprises that batted on slave labor and produce embodied [...] apparently advanced forms of technical and economic modernization” but also that slavery’s “development was associated with several of those processes which have been held to define modernity.”⁴³

The same concept has been applied to Brazilian coffee planters. The fathers of *grande lavoura* are sometimes seen as similar rural agro-industrialists, although more often they have been likened to feudal lords who oversaw the production by their bound serfs. At different times, both views made sense. Until the end of slavery neared in the late 1870s, production was labor-intensive with little use of machines. Planters financed expansion out of their own profits to a considerable extent, and slaves were by far their largest expense. Unlike in the United States, the enslaved population could not biologically reproduce fast enough to maintain itself, much less expand its numbers.⁴⁴

Coffee production on the *fazenda*, unlike sugar plantation cultivation, still occurred largely in peasant fashion. Clearing the soil, preparing the ground, planting and raising seedlings, pruning, weeding, and even harvesting were all done by hand by individuals or small groups. Because of the enormity of the virgin and fertile frontier, land was cheap and readily accessible. As distinguished Brazilian historian Sergio Buarque de Holanda put it: “Era uma lavoura não somente extensiva como dissipadora – antes mineração do que agricultura.”⁴⁵ The planters acted more as land speculators and merchants than as farmers or agro-industrialists, with their major capital investments being housing, drying grounds and, most of all, hulling

and washing machinery. But even the latter were relatively small expenditures in Brazil. Warren Dean noted that the productive system for coffee in the São Paulo region “lacked the capacity to experiment and incorporate new techniques. The miraculous expansion of Paulista coffee seems to have depended almost entirely on natural comparative advantage and very little on the skill of planters.”⁴⁶

Quantity and productivity of coffee processing were valued over quality. Brazilians used the “dry” method of treating the cherries, which required far less machinery than the “wet” method. The dry method allowed all cherries on a branch to be harvested and processed at the same time, regardless of their different stages of ripeness. This was a labor-intensive solution that reduced the machinery and labor costs of the harvest and processing.⁴⁷ It also lowered the quality of the finished product, but thereby stimulated the growth of popular demand abroad by creating abundant quantities of relatively cheap coffee. There were some economies of scale if the planter built a sophisticated hulling plant, but this apparently did not much improve the coffee’s quality. The imperative of a large supply of raw material to feed the voracious machines, as Morena Fragnals explains was the case with the sugar central, certainly did not exist on the coffee *fazendas*.⁴⁸ Until the railroad reached into the Paraíba Valley in the 1860s, and eventually to other regions decades later, transportation occurred by mule, again lessening the economic advantages of large estates. In fact, the terrain and lack of economies of scale meant that *fazendas* in the Paraíba Valley were not particularly large compared to sugar plantations.

Big farmers generally owned numerous relatively self-sufficient parcels of land rather than a centralized plantation. Brazil’s largest coffee planter, the Viscount of Novo Friburgo, owned nine different *fazendas*. The average *fazenda* spanned 800 to 1,100 hectares, but over two-thirds of this area was not planted with coffee, with much of it remaining virgin forest. This was, of course, still very large by coffee standards – but not by sugar standards. Even the largest *fazenda* had fewer than 200 slaves working its fields.

Until the last decade and a half of slavery, *fazendas* were quite self-sufficient, creating what has been termed a “peasant breach” or “proto-peasantry”. Slaves often had free time and their own plots to grow provisions for themselves. They were even often allowed to sell their surplus. Aside from the harvest, much of the work was done in small groups.⁴⁹ C. F. van Delden Laërne from the Netherlands observed that “a plantation slave in central Brazil [...] has actually the sole charge of a plantation covering in the Rio zone 3 hectares and in the Santos zone 2 and three-quarters.”⁵⁰

Although Laërne also stated that there were no peasants outside the *fazenda*, in fact there was also a smallholding group even under *grande lavoura*.⁵¹ In the coffee growing *município* of Rio Bonito in Rio de Janeiro state, for instance, holdings of under 400 hectares represented 98 percent of all holdings and 79 percent of the land

in 1854–55.⁵² Small holdings in neighboring *municípios* constituted 46 to 65 percent of the respective totals.⁵³ In the province of Minas Gerais, smaller coffee holdings were also the rule. These numbers overstate the concentration of land, however, because much of the terrain was left for future use and planters often rented out, for money or for shares, parts of their estates for use by landless freemen. These individuals frequently grew their own subsistence crops as well as coffee.⁵⁴

A Revolution in the Fields

A fact that has been little recognized by historians of slavery so far is that the nature of the slave coffee economy was transformed markedly during its last two decades, when it did begin to resemble factories in the field. The end of the Atlantic slave trade in 1850, the 1871 Law of the Free Womb, and the 1885 Sexagenarian Law ultimately contributed to the demise of slavery – but in the short run, they raised the price of slaves and drove planters to mechanization to save on costly slave labor. As Laërne reported, “At the present time, fortunes are being spent for drying fields, water-pipes, and machinery.”⁵⁵ Mechanical modernization was a means of continuing slavery rather than replacing it, but its implications were significant. Planters who had previously self-financed now had to take out substantial loans. The planters’ *comissarios* (factors) went from being the agents of agriculturalists to becoming their bankers.⁵⁶

To repay them, *fazendeiros* intensified their labor demands on coffee production rather than continuing the previous more diversified subsistence production. Wage labor was increasingly used for peripheral tasks. Specialization emerged in the countryside as subsistence farmers sold to the planters, who now had to purchase staples with money.⁵⁷ Endowment with land as a means of attracting free laborers or inducing them to work part-time on the *fazenda* became more common as well. While slave labor had previously been the main ingredient for success, land titles and winning disputes now became more important.⁵⁸ The final years of slavery saw a movement towards capitalism as loans, monetary payments, and mechanization became widespread and agricultural specialization, exploitation, and the employment of free labor in subsidiary tasks intensified. Slaves were treated as industrial machinery as their labor power was concentrated on coffee.

But the *fazendeiros* were in a bind. Heavily indebted to their *comissarios* or to the Banco do Brasil, they could not easily afford the increased monetary demands of the new capitalistic practices. Their main problem was the *falta de brazos* (lack of manpower). When Laërne told planters about technical agricultural systems in Java, “they listened with obvious indifference” – but when he discussed the plentiful free

but coerced labor on the Southeast Asian island, “very often the fazendeiros were in raptures and could hardly restrain an impulse of natural jealousy.”⁵⁹ They continued to believe that coffee cultivation demanded large undertakings and feared that *grande lavoura* could not proceed without slaves.

This fear echoed through the halls of the 1878 Congresso Agrícola, the only occasion on which that planters voiced their fears jointly and directly. Expert foreign students of the Brazilian *cafeicultura* such as the Frenchman Louis Couty or the Dutchman Laërne were convinced that the end of slavery would necessitate a revolution in rural land tenure. Believing the native population to be too “indolent” and intractable to work the *cafezais*, they felt that only Chinese coolies or European immigrants could save coffee. The former were dismissed by Brazilian planters as a “vice-ridden” race owing to the mistaken belief that they were all addicted to opium. This left the Europeans who, it was believed, would only work on small plots on their own accounts, thus ending *grande lavoura*. Earlier efforts to bring in European immigrants and regiment them for large-scale agriculture had failed, even leading to revolt.⁶⁰ Yet we know that after its emancipation, Brazil continued to have some *latifundia* while attracting millions of immigrants to the fields. Does this imply that the foreign experts were wrong about abolition undercutting large landholdings? I will argue that they were in fact correct. Although land ownership continued to be concentrated in the most prosperous coffee areas, the coffee fields were no longer worked as large enterprises. Instead, the immigrant-worked *fazenda* more resembled a peasant village than a modern factory in the field.

Brazilian Coffee after Slavery

The abolition of slavery in 1888 brought about one of the most abrupt and thorough transformations of a labor system in history – particularly in the state of São Paulo, which by this time was the world’s foremost coffee producer. Rather than employing the local freedmen and attracting other free Brazilians as was done in other post-slavery societies, Paulistas instead recruited almost a million Italian, Portuguese, and Spanish immigrants to their *fazendas* by 1914.⁶¹ This was the only time in history when massive numbers of Europeans crossed the Atlantic to work on semi-tropical plantations. The transformation was so rapid that the end of slavery ultimately did not harm the coffee economy at all – a strikingly different result from that of Haiti’s forced abolition, which dramatically reduced Haitian coffee exports for decades.⁶² Brazilian coffee exports, on the other hand, grew fivefold in the two decades after the so-called Golden Law of Abolition was passed. It turned out that coffee did not need slaves after all.

Having become a mass consumption good in the nineteenth century once people in the United States began drinking almost half the crop, coffee required cheap labor to continue to expand its markets. International conditions meant that European immigrants could provide low-cost workers at this particular moment in history. In the late 1880s, several Mediterranean economies were suffering land crises that encouraged many of their citizens to look across the Atlantic. At the same time, the United States and Argentina were mired in recession, and coffee prices in Brazil were nearing all-time highs. With ample fertile land, the end of labor competition by slaves, and government-subsidized ship passage, Brazil was able to enlist many European fortune-seekers to expand the coffee frontier.

But the decision to rely on immigrants also derived from internal struggles within Brazil. Resistance by Brazilian freedmen, who refused to work the long hours customary under slavery conditions voluntarily and refused to allow their wives and children into the fields, as well as by other peasants who preferred to cultivate their own plots rather than working for *fazendeiros*, necessitated the more costly immigration solution. The planters' racism, which convinced them that former slaves would work well only under the threat of the lash but not voluntarily according to the incentives of the market, also contributed to the transition to European field hands.⁶³

The heroic version of the Paulista success story goes something like this: In the western part of the state of São Paulo, slavery was not yet entrenched. When emancipation became inevitable, planters turned to immigrant labor. The coffee *fazendeiro* became an agro-industrialist on a scale previously unknown in coffee cultivation, with the Paulistas establishing some of the largest plantations ever built anywhere. The Cambuhy estate covered 250,000 acres, on which it grew almost three million trees (reaching six million in the 1940s), tied together by sixty kilometers of private railroad track and three hundred kilometers of roads.⁶⁴ Many other plantations spread across tens of thousands of acres. The planter invested some of his agricultural capital not only into urban real estate, public works, and government bonds, but also into railroads, banks, and even factories. Moreover, unlike their Paraíba Valley counterparts, Paulista agriculturalists were not dependent on urban coffee factors and their parasitic merchant mentality. Many Paulistas liked to believe that the *fazendeiro* had been transformed from rentier to capitalist, from coffee baron to entrepreneur. Prominent coffee families such as the Prados diversified into industry, banking, and transportation once their capital was no longer tied up in slaves. They became the leading partners in what is generally acknowledged as the most progressive national bourgeoisie in Latin America, and indeed one of the most entrepreneurial in the entire Third World. They industrialized São Paulo.⁶⁵

Despite this rousing story, evidence shows that most post-abolition *fazendeiros* were actually not heroic capitalists. Indeed, since they no longer needed to use money or credit to purchase labor in advance as they had often been forced to under slavery, and because most were indebted from their late flurry of slave purchases, planters may have become less dependent on capital in agriculture for some years after 1888. Financially strapped after emancipation and a dramatic decline in coffee prices in 1896, most planters invested little in tools, machinery, warehouses, or irrigation. An informed estimate in 1897 attributed 80 percent of the cost of establishing a plantation to purchasing the land and replacing the native forests with coffee orchards. Payments in money were minimized. *Fazendeiros* were still loath to study agronomy, sending their children off to become lawyers and politicians instead. They attacked the land with predatory savageness, eschewing contour plowing, shade trees, and fertilizers.⁶⁶ Franz Dafert, the Prussian agronomist hired by São Paulo's state government to increase productivity, complained that the "indolent" growers "accustomed to the easy and unworried life of the rich domain of torrid lands have not the least idea of the hard work of the great European crops."⁶⁷

Planters were effectively alchemists in reverse, turning fertile forests into deserts within three or four decades. Indeed, Brazilian *fazendeiros* were more akin to miners rapaciously hauling wealth out of the soil than to agronomists with reverence for the land. They left in their wake denuded hills and a "hollow frontier." These were not men of the likes of fictitious advertising character Juan Valdez, working the same land in Colombia and in Central America generation after generation, carefully maintaining its fertility. Nor did Brazilian planters act in a particularly bourgeois fashion: Their robber mentality led them to fight against the surveying of land, the setting of boundaries, and the registration of titles, and they also opposed mortgage registries and legal foreclosures. In short, the *fazendeiros* inhibited both land and financial markets, aiming to invest as little as necessary, pay as few taxes as possible, and move on. They acted more as land speculators and merchants than as farmers or agro-industrialists, with their commercial advantage stemming from access to capital and the ability to coerce cheap labor rather than from mastery of technology and agronomy or from ownership of land.

The Cambuhy estate, which later under British ownership would become the largest coffee *fazenda* in the world, exemplifies the trajectory of *cafeicultura* in the aftermath of abolition. An enormous plot granted originally as a colonial *sesmaria*, it had been barely used under slavery. When coffee cultivation commenced in the 1890s, the estate was fragmented by multiple renters on the land. As George Little, who studied the estate, observed: "Small plantations grew, flourished and were abandoned here and there over the estate. There was no over-all policy except that of getting profits where possible."⁶⁸ By 1911, there were seven different *fazendas* on the

estate and numerous different labor relations. One hundred and forty-seven families lived on the land as *colonos* (explained below), 89 were sharecroppers, and 40 lived for free as *agregados*. In addition to coffee, they grew 5,000 sacks of beans and 22,000 sacks of corn per year, and raised 4,500 pigs.

The *Colono* Labor System

The extent to which Paulista *fazendeiros* were capitalists, even after the end of slavery, is disputable. The *colono* system that replaced slavery in São Paulo with European immigrants was a heterogeneous form that included aspects of peasant production and of wage labor. The central work unit was the family, with planters reluctant to take on single immigrants. Social reproduction costs were borne by the individual household, which grew and cooked food, made clothes, and raised the children. Under slavery, the responsibility for supplying basic provisions had generally fallen on the master. Now, only the head of the *colono* household received money payments although the entire family worked. For most of the year, he was occupied with caring for around 2,000 to 2,500 trees; a family might tend 5,000 trees (about fifteen acres).⁶⁹ There was little specialization or integration. Tending the planter's trees provided the *colono* with about 40 percent of his monetary income (which was often paid in scrip only redeemable at the overpriced *fazenda* store.) During harvest season and occasionally at other times, he was paid for day work, which contributed around one-fourth of his monetary earnings. But most of this total income was earned as a peasant, not as a coffee worker. By the 1890s, *colonos* received free housing, subsistence lots, and pasturage privileges. According to an estimate by Holloway, subsistence may have constituted roughly 70 percent of the *colono's* total income. In addition, he usually sold some of his own corn, beans, and livestock, which yielded one-third to forty percent of his earnings.⁷⁰ Taken together, this means that about 80 percent of a *colono's* total income did not come from his work in the coffee groves.⁷¹ Indeed, coffee was an evil put up with in order to gain access to cornfields. For the *colono*, says Holloway, "coffee was dependence, subservience, the source of justified but disagreeable conflicts, mistrust and disciplinary measures; corn was freedom of action and economic autonomy."⁷² This is how Brazilian planters obtained sufficient labor to grow coffee, even while paying very little for coffee work: Paulista *fazenda* production more closely resembled a collection of peasants than a factory in the fields.

Pay was low. According to one estimate, a worker could harvest 100 pounds of coffee cherries a day, which yielded 20 pounds of coffee beans. Since the average Santos FOB price during the 1900–1930 period was 7 or 8 cents a pound, and har-

vest costs were calculated at 15 to 18 percent of the cost of delivering beans to Santos, their coffee work likely earned workers in the vicinity of 1 cent per pound, or 20 cents a day.⁷³ Verena Stolcke has estimated that no more than 8 percent of the first generation of *colonos* to arrive in the *cafezais* were able to save enough money to buy their own land by 1910. Holloway, Dean, and Mauricio Font are more sanguine concerning immigrant opportunities, which probably did improve appreciably after World War I when coffee prices increased and urban opportunities improved.⁷⁴

By hiring families, planters reduced their direct control over individual workers, relying instead on the patriarchal power of the heads of households. This won the allegiance of the relatively empowered men of the house and lowered planter costs for overseeing workers. In return, the *fazendeiro* obtained a flexible labor force that could be tapped during the harvest season when more hands were needed.⁷⁵ Where coffee cultivation under slavery had broken up families and depended primarily on male workers (far more men than women were imported from Africa), the family was the backbone of the *colono* system.

By deciding to appeal to European immigrants, who after all had a choice whether or not to come to Brazil, planters had to make work conditions sufficiently attractive. Consequently, unlike in many other coffee economies, extra-economic state coercion was limited. Earlier experiments during the era of slavery had failed due to excessive planter repression.⁷⁶ Indeed, the Italian government had forbidden immigration at the time because of the bad treatment meted out to immigrants. Planters seemed to have learned their lesson, however. The state did not play a large role in keeping *colonos* on the *fazenda*, nor was debt peonage generally applied. There was an active labor market. Verena Stolcke notes the contradictory nature of the system: While it is true that *fazendeiros* used coercion and violence to keep workers on the plantations and extract profit, they largely came to treat the problem of reducing labor costs by increasing the supply of workers. Extra-economic coercion, which was sometimes considerable, served essentially to improve the bargaining position of *fazendeiros* in the labor market.⁷⁷

Colonos could and did move about, which drove the expansive growth of the coffee frontier. A French visitor, Pierre Denis, complained that “not being property owners, Italian colonos are imperfectly tied to the soil [...] they only work when they are offered attractive conditions. Colonos are passionate about their independence and refuse all contracts of over one year.”⁷⁸ It has been estimated that 40 to 60 percent of all *colonos* switched plantations every year, seeking better lands for their subsistence crops as well as better treatment. Workers also frequently used the weapon of the strike: Between 1913 and 1930, there were more than one hundred strikes – albeit usually of limited scope – in São Paulo’s coffee groves alone.⁷⁹ And of course they had the ultimate choice of leaving Brazil altogether. Between 1902 and 1913, 65

percent of Italian immigrants did so – though this reflected not only their relative freedom of movement but also the low cost of ship fares to Italy: The contemporary Brazilian and Argentinean export booms stimulated vast fleets of low-cost ships – so low that Argentina’s *golondrinos* could afford to commute yearly from Italy to Argentina’s wheat fields. Reports of harsh treatment in the coffee fields also slowed down Italian immigration to Brazil. In response, the government of São Paulo created the Patronato Agícola in 1911 to “defend the rights and interests of agricultural workers.”⁸⁰ This government protection would prove paltry, but it did demonstrate some concern with rural workers.

Rather than state aid, it was the *colonos*’ relative freedom of movement, their ability to organize strikes, and their work/land options that made many of them better off than smallholders in Spanish America, where property rights often forced peasants to eke out an existence on marginal lands. When viewed from the perspective of the smallholder or *colono*, the *colono* system and the Colombian or Central American smallholding system actually exhibited remarkable similarities. In both Brazil and Colombia, the family was the main unit of labor and only the head of the household was usually paid, receiving most of his remuneration in usufruct. The Brazilian *colono* received housing as well as use of land for growing his own family’s food and sometimes for raising livestock. He sold surplus food and occasionally coffee to the market. For most of the year, he tended the planter’s coffee trees, but he was also paid for day work, especially during harvest season. The Colombian *campesino* likewise grew his own food and worked his own plot with his family. He and his family members often found employment as day laborers for larger holdings to supplement their income.⁸¹ The planter in Brazil and the large merchant in Colombia fulfilled the same role: They lent or sold land to the *colonos* or *campesinos*, they provided credit, they processed and sold the harvested coffee, they employed the peasant families as day laborers, they invested in transportation, and they were influential in the local government.⁸²

Over time, the similarity between the two systems grew as *colonos* in Brazil actually became smallholders, buying land to increase their independence. By 1930, landownership had become less concentrated as immigrant urban dwellers and field workers purchased plots. Slavery was long gone, but even sharecropping declined; it was replaced by wage labor and family production. As aged coffee trees lost productivity, planters sold them off to smallholders. This trend became particularly noticeable after World War I, when the booming economy offered *fazendeiros* many lucrative alternatives to landholding. It occurred in the dynamic zones of São Paulo as well as in the less promising coffee states. Indeed, Mussolini instructed the Italian government to buy up the Cambuhy estate and divide it among Italian *colonos*. The plan failed because the asking price was too high, but many neighboring *fazendas*

were in fact divided up into smallholdings after World War I.⁸³ By 1934, foreigners – primarily immigrants – owned almost half of the rural holdings in São Paulo.⁸⁴ By 1927, 74 percent of holdings were smaller than 62 acres and 94 percent were smaller than 312 acres (although the largest 6 percent produced almost half of all the coffee, indicating that they had kept the best land for themselves).⁸⁵

In other coffee states, the scale of production had always been smaller. Broken terrain had prevented Minas Gerais and Rio de Janeiro from establishing large *cafezais* in the nineteenth century, while lack of capital had inhibited Espírito Santo. Paraná, which only began producing on a large scale after 1930, was divided into small holdings by land companies. These states also did not attract much European immigration, instead tapping the labor of the native population through sharecropping, renting, and casual labor arrangements usually applied on relatively small plots by Brazilian standards. Some of the laborers were “nomadic” in Nancy Naro’s words, and in some areas such as Capivary, Rio de Janeiro, there was a *caipirização* of former tenants of large estates.⁸⁶ Though their productivity was nowhere near as high as São Paulo’s, these states were nevertheless able competitors in the world market.

There is a tendency to think of Brazil as São Paulo writ large. But the other coffee states continued to be important even after São Paulo rose to prominence in the 1890s. If Brazil had split into twenty independent countries in 1906, São Paulo would have continued to be the world’s greatest coffee exporter – but Minas Gerais would have been second, Rio de Janeiro third, and even Espírito Santo exported almost as much as fourth-place Colombia.

Brazilian growers not only dominated the international coffee market by producing most of the world’s coffee until World War II, but they also institutionalized government coffee price supports beginning in 1906 and created state financing, warehousing, and transport institutions. Other Latin American coffee exporters followed Brazil’s lead in the twentieth century, extending coffee frontiers and enlarging the role of state institutions. The world coffee market grew eightfold in the hundred years after 1856, with Brazilian exports dominating and other Latin American cultivators rapidly increasing their output by the early twentieth century.⁸⁷ This eventually led to the founding of the International Coffee Organization in 1961 as the frontiers of coffee extended almost around the whole world for producers and/or consumers.

Postscript

Brazil continued to dominate the world coffee economy in the years after 1930, but this apparent continuity masks a marked transformation. After having moved

southward from the Paraíba Valley to western São Paulo, coffee trees arrived in the southern state of Paraná. Paraná's "black frost" of 1975 proved that the crop had reached the southern limits of its range, and farmers thus returned north to the tropics. However, they were now able to plant in regions previously not usable for coffee, in part thanks to the advances in agronomy being taught by new agricultural universities. Today, coffee flourishes in the *Cerrado* area of Minas Gerais as well as in western Bahia, in Espírito Santo, and in the Amazonian state of Rondônia. Brazil remains the world's leading coffee producer and exporter by a large margin, having exported 37 percent of the global volume in 2017/18 – almost twice as much as the second largest exporter.⁸⁸

But coffee is no longer as important for Brazil as it was in the nineteenth and the first half of the twentieth century. Its share in the national economy has shrunk dramatically. Today, coffee contributes only two percent of the country's exports and 0.3 percent of its GDP, and it employs 0.6 percent of the workforce. It is also not a major source of federal revenue. Thanks to the development of new high-yield cultivars like Catuaí and Novo Mundo, Brazilian production has become much more intensive; output has grown 50 percent since 1990, while land usage has actually declined.⁸⁹ Coffee cultivation has created an intensive internal frontier, but *caféicultura* no longer depends on forest rent or spreading out into virgin areas. Agronomists have discovered how to grow it in Minas Gerais' *Cerrado* savanna area and in western Bahia, a region that previously sustained little agriculture. Coffee is no longer the dominant crop there either, however: Soy grown on vast mechanized holdings overshadows *Coffea* in these reclaimed lands.

Even as Brazil's population has tripled since 1960, it has become a developed country with the ninth largest economy in the world (even after years of terrible recession), and 85 percent of the population now live in cities. As a result, Brazilians are currently the world's second largest consumers of coffee, and they no longer only grow Arabica cultivars. With rising domestic demand for instant coffee – first made commercially popular in the 1940s by an agreement between the Brazilian government and the Swiss Nestlé company – Brazil has become one of the world's foremost Robusta cultivators and largest producers of instant coffee, almost all of which is for domestic use. Cultivation has changed markedly, adopting the techniques of the green revolution like chemical fertilizers and pesticides, irrigation, a dense network of paved roads, and advanced telecommunications. Present-day agricultural workers are native, mobile and relatively well paid.

The Brazilian case is fundamental to understanding the trajectory of the commoditization and expansion of coffee, still one of the world's most valuable internationally traded agricultural products. But Brazil's agricultural expansion is also exceptional: The vast natural resources, rapid population and urban growth, and

intensification of capitalist relations of production seen there occurred nowhere else in the coffee growing world. Nor have other coffee cultivators become as enthusiastic coffee consumers as the Brazilians. Globalization is a complicated, dynamic, inconsistent, and sometimes contradictory process. Nature and humans, technology and natural responses like droughts, floods, pests, disease, and mutations are locked in an unpredictable struggle to control the commodities' botanical and social lives.

Notes

- 1 Francisco Alvares, *Prester John of the Indies, a True Relation of the Lands of Prester John, Being the Narrative of the Portuguese Embassy to Ethiopia in 1520*, Cambridge 1961, 52, 96, 101, 108; Jerome Lobo, *A Voyage to Abyssinia*. (Trans. Samuel Johnson), London 1789 [reprinted 1978], 72.
- 2 There is early evidence of people eating coffee cherries in fried coffee cakes, however.
- 3 Stanley Stein, *Vassouras: A Brazilian Coffee Country 1850–1890*, New York 1970, 4–26.
- 4 See Fernando Novais, *Portugal e Brasil na Crise do Antigo Sistema Colonial (1777–1808)*, São Paulo 1978; Jobson Arruda, *O Brasil no Comércio Colonial*. São Paulo 1980; Roquinaldo Ferreira, *Cross-Cultural Exchange in the Atlantic World: Angola and Brazil during the Era of the Slave Trade*, Cambridge 2014; Kenneth Maxwell, *Naked Tropics: Essays on Empire and Other Rogues*, New York 2003; Joseph Miller, *Way of Death: Merchant Capitalism and the Angolan Slave Trade 1730–1830*, Madison 1988. These works re-centered Brazil in the Portuguese empire.
- 5 Warren Dean, *With Broadax and Firebrand: The Destruction of the Brazilian Atlantic Forest*, Berkeley 1995, 179, suggests that coffee may have arrived in Brazil as early as the late 1600s, but offers no proof for this early date.
- 6 Basílio de Magalhães, *O Café: Na História, no Folclore e nas Belas-Artes*, São Paulo 1939, 79–87.
- 7 *Ibid.*, 83.
- 8 *Ibid.*, 84.
- 9 The idea of using slaves to cultivate coffee was imported from the French and Dutch in the neighboring Guianas. Palheta certainly had slave labor in mind when he petitioned to lead an armed “bandeira” into the interior to capture and impress indigenous peoples. He needed them because his coffee plants were slow to replicate. But the slave trade initially concentrated on importing Africans to work sugar fields along the coastal plains in the northeast. See Magalhães, *O Café*, 1939, 9–87.
- 10 Dean, *With Broadax*, 1995, 179.
- 11 Joseph Banks, *A primeira viagem de circunavegação de Capitão James Cook*, in: Jean Marcel Carvalho França (ed.), *Visões do Rio de Janeiro Colonial: Anthologia de Textos 1531–1800*, Rio de Janeiro 1999, 136.
- 12 Os fundadores da Austrália, in: Carvalho França, *Visões do Rio de Janeiro Colonial*, 1999, 189–190.
- 13 Affonso de E. Taunay, *História do Café no Brasil*, vol. 2, Rio de Janeiro 1939, discusses coffee in the colonial era.
- 14 The best discussion of this process is offered by Dean, *With Broadax*, 1995.
- 15 Traveling around Brazil between 1816 and 1822, Auguste de Saint-Hilaire received coffee in the remote interior province of Goiás, Auguste de Saint-Hilaire, *Viagem as Nascentes de Rio São Francisco*, Belo Horizonte 1975, 181.
- 16 Carvalho França, *Visões do Rio de Janeiro Colonial*, 1999, *passim*.
- 17 Maria Graham mentions coffee as a home-drunk beverage in her diary *The Captain's Wife: The South American Journals of Maria Graham, 1821–1823*, London 1993, 38, 53, 54, 64.
- 18 Lilia M. Schwarcz/Heloisa M. Starling, *Brazil: A Biography*, New York 2018, 195.
- 19 Previously, the U.S. dollar had been more common. Watkin Tench, an English naval officer who visited Rio in 1787, wrote that “all of the English silver coins do not enjoy much prestige here since the

- dollar is the foreign money most easily encountered” in: Os fundadores da Austrália, in: Carvalho França, *Visões do Rio de Janeiro Colonial*, 1999, 192.
- 20 Until 1854, Latin America received a much greater share of British foreign investment than did the British Empire itself according to A. G. Kenwood/A. L. Lougheed, *The Growth of the International Economy 1820–1960*, London 1971, 43. See also Rory Miller, *Britain and Latin America in the Nineteenth and Twentieth Centuries*, London 1993, 32; Alan K. Manchester, *British Preeminence in Brazil: Its Rise and Decline*, New York 1972.
 - 21 Manchester, *British Preeminence in Brazil*, 220; Peter J. Cain/Anthony G. Hopkins, *British Imperialism: Innovation and Expansion 1688–1914*, New York 1993, 298–306; Richard Graham, *Sepoys and Imperialists: Techniques of British Power in Nineteenth Century Brazil*, in: *Inter-American Economic Affairs* 23 (1969), 23–37.
 - 22 See Steven Topik, *Coffee as a Social Drug*, in: *Cultural Critique* 71/1 (2009), 81–106.
 - 23 Michel Tuchscherer, *Coffee in the Red Sea from the Sixteenth to the Nineteenth Century*, in: William Gervase Clarence-Smith/Steven Topik (eds.), *The Global Coffee Economy in Africa, Asia, and Latin America, 1500–1989*, New York 2003, 50–66, 55; Spenser Buckingham St. John, *Hayti*, London 1884, 321.
 - 24 Calculated from Mario Samper/Radin Fernando, *Historical Statistics of Coffee Production and Trade from 1700 to 1960*, in: Clarence-Smith/Topik, *The Global Coffee Economy*, 2003, 412–415.
 - 25 Calculated from Edmar Bacha/Robert Greenhill/Marcellino Martins/E. Johnston, *150 Anos em Café, Rio de Janeiro 1992*, 308; Brazil, I.B.G.E. *Séries Estatísticas Retrospectivas*, vol. 1, Rio de Janeiro 1986, 84.
 - 26 Joseph Smith, *A History of Brazil*, London 2002, 58; Leslie Bethell, *The Abolition of the Brazilian Slave Trade: Britain, Brazil and the Slave Question 1807–1869*, Cambridge 1970.
 - 27 Calculated from Herbert S. Klein/Francisco Vidal Luna, *Slavery in Brazil*, Cambridge 2010, 77.
 - 28 N. P. Macdonald, *The Making of Brazil: Portuguese Roots, 1500–1822*, Sussex 1996, 358.
 - 29 Stein, *Vassouras*, 1970, 4–14.
 - 30 Francis Beatty Thurber, *Coffee from Plantation to Cup*, New York 1881, 125.
 - 31 Slaves only became widely used in coffee cultivation in Ethiopia during the second half of the nineteenth century following the model created in the Caribbean by Dutch, French, and English planters and in Reunion by Frenchmen.
 - 32 Klein/Luna, *Slavery in Brazil*, 2010, 155.
 - 33 Mario Samper/Radin Fernando, *Historical Statistics of Coffee Production and Trade from 1700 to 1960*, in: Clarence-Smith/Topik, *The Global Coffee Economy*, 412–415 and passim; Nicolaas W. Posthumus, *Inquiry into the History of Prices in Holland*, vol. 1, Leiden 1946.
 - 34 Steven Topik, *The Hollow State: The Effect of the World Market on State Building in Brazil*, in: James Dunkerley (ed.), *Studies in the Formation of the Nation State in Latin America*, London 2002, 112–132; Richard Graham, *Patronage and Politics in Nineteenth Century Brazil*, Stanford 1990; Roderick Barman, *Brazil: The Forging of a Nation, 1798–1852*, Stanford 1988.
 - 35 C. F. Van Delden Laërne, *Brazil and Java: Report on Coffee-Culture in America, Asia and Africa*, London 1885, 15.
 - 36 Import duties on coffee were high in Western Europe at the time.
 - 37 Vernon. D. Wickizer, *Coffee, Tea and Cocoa*, Stanford 1951, 36.
 - 38 Michel-Rolph Trouillot, *Motion in the System: Coffee, Color, and Slavery in Eighteenth-Century Saint-Domingue*, in: *Review (Fernand Braudel Center)* 5/3 (1982), 331–388; Laurent Dubois, *Avengers of the New World*, Cambridge 2004.
 - 39 Stein, *Vassouras*, 1970, 233–237, describes the routine and lack of technological improvements in the Paraíba Valley. Dean, *With Broadax*, 1995, as well as Hal Langfur, *The Forbidden Lands: Colonial Identity, Frontier Violence and the Persistence of Brazil’s Eastern Indians, 1750–1830*, Stanford 2006, have shown that many of the lands were not actually “virgin” in the sense of being untouched by humans. “Settling” referred more to military campaigns against indigenous peoples than to clearing virgin vegetation.
 - 40 In *Filha branca da mãe preta*, a *Companhia da Estrada de Ferro Dom Pedro II, 1855–1865*, Petrópolis 1980, Almir Chaiban El-Kareh asserts that the *Estrada de Ferro Dom Pedro II* intensified and rationalized slavery on the *fazendas* rather than provoking bourgeois relations.

- 41 Franz Wilhelm Dafert, *Über die gegenwärtige Lage des Kaffeebaus in Brasilien*, Amsterdam 1898, 54.
- 42 Sidney Mintz, *Sweetness and Power. The Place of Sugar in Modern History*, Baltimore 1986.
- 43 Robin Blackburn, *The Making of New World Slavery: From the Baroque to the Modern, 1492–1800*, New York 1997, 3, 4.
- 44 In one of the most thorough reports on nineteenth-century Brazilian coffee, Laërne, *Brazil and Java*, 1885, 332, notes for nine fazendas for which he found data that slaves constituted 63 percent of their value – twice the value of land and machinery combined.
- 45 “It was cultivation that was not only extensive, but wasteful, more mining than agriculture.” Sérgio Buarque de Holanda in the introduction to Thomas Davatz, *Memorias de um colono no Brasil* (1850), São Paulo 1980, 16.
- 46 Warren Dean, *The Green Wave of Coffee: The Beginnings of Tropical Agricultural Research in Brazil, (1885–1900)*, in: *Hispanic American Historical Review* 69/1 (1989), 91–115, 114, 115.
- 47 To ensure higher quality and prices for coffee, workers in Colombia passed through coffee fields four or five times, picking only the ripe cherries. Less discerning Brazilian workers – both slaves and free laborers – passed through only once to create a less expensive and lower-quality crop.
- 48 Manuel Moreno Fraginals, *El Ingeniería: complejo económico social cubano del azúcar*, La Habana 1978.
- 49 Ciro Flamarion S. Cardoso, *Agricultura, escravidão e capitalism*, Petropolis 1979, 111–132; Sidney Mintz, *Caribbean Transformations*, Chicago 1974, 151–152.
- 50 Laërne, *Brazil and Java*, 1885, 369.
- 51 “peasant-planting does not exist in Brazil”, *ibid.*, 372
- 52 Nancy Naro, *Customary Rightholders and Legal Claimants to Land in Rio de Janeiro, Brazil, 1870–1890*, in: *The Americas* 48/4 (1992), 485–517, 498. In the more successful *município* of Vassouras, holdings of fewer than 400 hectares made up only one-fifth to one-fourth of the total.
- 53 Laërne, *Brazil and Java*, 1885, 332, shows that machinery and buildings constituted only fifteen percent of the value of the nine fazendas with buildings costing substantially more than machines.
- 54 Nancy Naro, *Revision and Persistence: Recent Historiography on the Transition from Slave to Free Labour in Rural Brazil*, in: *Slavery & Abolition* 13/2 (1992), 68–85.
- 55 Laërne, *Brazil and Java*, 1885, 317.
- 56 Laërne, *Brazil and Java*, 1885, 21, notes that “very few fazendeiros are free from debt at present” (in 1885) and that the Banco do Brasil and the Banco de Credito Real had extended mortgages worth L11.5 million in total to 1,032 *fazendas*. Stanley Stein notes the decline in Stein, *Vassouras*, 1970, 246–249.
- 57 Laërne, *Brazil and Java*, 1885, 291.
- 58 Naro, *Customary Rightholders*, (1992), 485–517; Hebe Maria Mattos de Castro, *Ao Sul da história*, São Paulo 1987, 156, 157, 164.
- 59 Laërne, *Brazil and Java*, 1885, 273.
- 60 *Ibid.*, 339, Laërne reports that Brazil’s largest *fazendeiro*, the Visconde de Novo Friburgo, lamented the imminent end of coffee and on p. 348 notes planter disdain for native labor, free and freedman. On the need to divide latifundia, see Congresso Agrícola, (1878), (reprint Rio de Janeiro 1988), *passim*; Couty, *0 Brasil em 1884*, 144–146. For the only autobiographical account of a colono under slavery, see Thomaz Davatz, *Memorias de um colono no Brasil* (1850), São Paulo 1980 [reprint].
- 61 See Rebecca Scott, *Defining the Boundaries of Freedom in the World of Cane: Cuba, Brazil and Louisiana after Emancipation*, in: *American Historical Review* 99/1 (1994), 70–102.
- 62 Buckingham St. John, *Hayti*, 1884, 321, shows that Haitian coffee exports fell by three-quarters between 1788 and 1818.
- 63 On the bias against freedmen, see George Reid Andrews, *Blacks and Whites in São Paulo, Brazil, 1888–1988*. Madison 1991; Thomas Holloway, *Immigrants on the Land*, Chapel Hill 1980, is the best study on immigration to São Paulo.
- 64 Wileman’s *Brazilian Review*, November 19, 1924, 1550.
- 65 Zélia Maria Cardoso de Mello, *0 Metamôrfose da Riqueza: São Paulo, 1845–1890*, São Paulo 1985, 150; Darrel Levy, *The Prados of Brazil*, Athens, GA 1987, 83; Eul-Soo Pang, *In Pursuit of Honor and Power*, Tuscaloosa 1988, 120, 250; Sergio Silva, *Expansão Cafeeira e Origens da Indústria no Brasil*, São Paulo 1981; Wilson Cano, *Raizes da Concentração Industrial em São Paulo*, São Paulo 1977; João

- Manuel Cardoso de Mello, *O Capitalismo Tardio: Contribuição a Revisão Crítica de Formação e do Desenvolvimento da Economia Brasileira*, São Paulo 1982; Warren Dean, *The Industrialization of São Paulo*, Austin 1969.
- 66 Dafert, *Lage des Kaffeebaus in Brasilien*, 1898, 49. In fairness to Brazilian growers, irrigation was unnecessary, and mechanization was difficult. According to Randal G. Stewart, *Coffee: The Political Economy of an Export Industry in Papua New Guinea*, Boulder 1992, 47, 48, fully modern Australian capitalist planters in the 1960s were unable to mechanize coffee production appreciably in Papua New Guinea; they could not outcompete the local subsistence farmers who grew a few hundred coffee trees each.
- 67 Franz Wilhelm Dafert, *Principes de culture rationnelle du café au Brésil: Etude sur les engrais à employer*, Paris 1900, 41.
- 68 George F. G. Little, *Fazenda Cambuhy*, PhD thesis, University of Florida 1961, 34.
- 69 Verena Stolcke, *Cafeicultura: homens, mulheres e capital (1850–1980)*, São Paulo 1986, 35. This number is for the period after 1890. For earlier times, Davatz, *Memorias de um Colono*, 1980, 111, reports that his family initially oversaw 5,400 trees. When one of his children left because of marriage, they tended 3,400 trees. Holloway, *Immigrants on the Land*, 1980, 84, cites a report by the São Paulo Secretary of Agriculture, which calculated 5,000 trees as the average for a *colono* family.
- 70 Calculated from Holloway, *Immigrants on the Land*, 1980, 80, 85, 86.
- 71 Max Leclerc, *Cartas do Brasil (1891)*, São Paulo 1942 [reprint], 83–86, noted that fifty-two of the eighty families working on the Paulista Santa Veredean plantation he visited in 1889 were kept on the plantation by the debt they owed the company store.
- 72 Holloway, *Immigrants on the Land*, 1980, 89.
- 73 Calculated from Brasil, *Censo Industrial*, 1907 vol. 2, 90; Dafert, *Lage des Kaffeebaus in Brasilien*, 1898, 49; Wickizer, *Coffee, Tea and Cocoa*, 1951, 49. Victor Bulmer-Thomas, *The Political Economy of Central America since 1920*, Cambridge 1987, 60, cites 30 cents a day as an average wage when subsistence also was supplied. Laërne, *Brazil and Java*, 1885, 304, estimates that the average slave harvested 45 to 54 kilograms a day, or 100 to 119 pounds. That slaves worked fourteen- to eighteen-hour days explains their greater yield at harvest.
- 74 Stolcke, *Cafeicultura*, 1986, 81; Warren Dean, *Rio Claro: A Brazilian Plantation System, 1820–1920*, Stanford 1976, 105–107; Holloway, *Immigrants on the Land*, 1980, 150–156. Mauricio Font, *Coffee and Transformation in São Paulo, Brazil*, Lanham 2010, 11–34.
- 75 Little, *Fazenda Cambuhy*, 1961, 115 notes that for seven months of the year, the *colono* was completely left alone. He only felt like an employee during the harvest season.
- 76 Davatz, *Memorias de um colono*, 1980, passim; Michael Hall, *The Origins of Mass Immigration in Brazil, 1871–1914*, PhD thesis, Columbia University 1969.
- 77 Stolcke, *Cafeicultura*, 1986, 43.
- 78 Pierre Dennis, *Brazil*, London 1911, 217.
- 79 Stolcke, *Cafeicultura*, 1986, 72, 75.
- 80 Quoted in Cliff Welch, *The Seed was Planted: The São Paulo Roots of Brazil's Rural Labor Movement, 1924–1964*, University Park, PA 1999, 30.
- 81 Marco Palacios, *Coffee in Colombia, 1850–1970: An Economic, Political, and Social History*, Cambridge 1980, is the classic study. See also José Antonio Ocampo/María Mercedes Botero, *Coffee and the Origins of Modern Economic Development in Colombia*, in: Enrique Cárdenas/José Antonio Ocampo/Rosemary Thorp (eds.), *The Export Age: The Latin American Economies in the Late Nineteenth and Early Twentieth Centuries*, vol. 1, New York 2000, 55–84. A study of present day Colombia showing the persistence of the family farm in coffee cultivation is Jaime Forrero Álvarez, *Estrategias adaptativas de la caficultura colombiana*, in: Mario Samper/Steven Topik (eds.), *Crisis y transformaciones del mundo del café, Dinámicas locales y estrategias nacionales en un periodo de adversidad e incertidumbre*, Bogotá 2012, 37–84.
- 82 Mario Samper has shown that in Costa Rica, the coffee processors came to occupy the role of lender and exporter.
- 83 Little, *Fazenda Cambuhy*, 1961, 96, 97.

- 84 According to Richard Lucier, *The Political Economy of Coffee*, New York 1988, 29, Brazil's coffee lands had become so well distributed by the 1980s that the average farm had nine hectares and large producers were responsible for less than 3 percent of the total production. Brazil's coffee economy has restructured since the end of the International Coffee Agreement in 1989, but the average farm remains small. See Manoel Correia de Lago/Steven Topik, *La respuesta de Brasil a la suspensión de las cláusulas económicas de los convenios internacionales del café, 1989–2009*, in: Samper/Topik, *Crisis y transformaciones*, 2012, 137–156.
- 85 Mircea Buescu, *Evolução econômica do Brasil*, Rio de Janeiro 1974, 126; Maurício Font, *Coffee Planters, Politics and Development in Brazil*, in: *Latin American Research Review* 22/3 (1987), 69–90.
- 86 Naro, *Revision and Persistence*, 1992; Hebe Maria Mattos de Castro, *Ao sul da história*, 1987, 166–188.
- 87 Calculated from Mario Samper/Radin Fernando, *Historical Statistics of Coffee Production and Trade from 1700 to 1960*, in: Clarence-Smith/Topik, *The Global Coffee Economy*, 2003, 417, 422, and Topik, *The Political Economy of the Brazilian State*, Austin 1987, chapter 3.
- 88 International Coffee Organization statistics, <http://www.ico.org/prices/ml-exports.pdf>, (6 March 2020). Vietnam, relatively new to large-scale coffee exports, is currently the world's second largest exporter.
- 89 Since 1963, coffee production in Brazil has grown by 163 percent while the area used for coffee farming has shrunk by 1.4 million hectares. Calculated from Agência IBGE Notícias, 24 May 2018 <http://agenciadenoticias.ibge.gov.br/agencia-noticias/2012-agencia-de-noticias/noticias/21283-tradicao-e-modernidade-no-cafezinho-dia-dia-a-dia> (6 March 2020) and *A Brief History of Global Coffee Production as We Know It (1963-2013)*, in: *Daily Coffee News*, 17 July 2014, <http://dailycoffeenews.com/> (6 March 2020).