

SOCIAL AND ECONOMIC ASPECTS OF SUGAR PRODUCTION IN CUBA, 1880-1930*

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After the slaves were emancipated between 1880 and 1886, the planter class in Cuba underwent a transformation. Successful mill owners modernized their facilities, increased their cane-processing capabilities, and became planter-industrialists. Unsuccessful mill owners who lacked sufficient capital to modernize dismantled their outdated mills and became simply cane farmers. The social structure of the sugar mills was also transformed. Wage labor and tenancy arrangements replaced slave labor, and the industrial process of cane milling became separate from the agricultural processes of planting and harvesting sugarcane. As industrial units became fewer but larger, they could grind more sugarcane than that grown on the land directly under their ownership, and the larger mills therefore entered into arrangements with surrounding mill owners who were unable to make the transition to the new technological phase of sugar milling. Because the new mills centralized the grinding of cane previously carried out by many smaller units, they became known as *ingenios centrales* and eventually as simply *centrales*. Planters who gave up their obsolete milling operations and turned exclusively to cane farming were called *colonos*.¹

The Cuban sugar industry expanded rapidly after emancipation. In 1892, barely six years after freeing of the last *patrocinados* (apprentices during the transition from slavery to freedom), the Cuban sugar industry produced an unprecedented one million tons of sugar. Propelling expansion were rising demand for sugar in the United States and favorable tariff reductions enacted between 1891 and 1894.² The entire industry was restructured in the established regions of sugar culture as the planter

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1. Manuel Moreno Fraginals has argued that the name *central* derives from the French *des usines centrales*, a term found as early as 1844 in Martinique referring to sugar factories designed to centralize the cane milling of several ingenios. See Moreno Fraginals, "Plantaciones en el Caribe: el caso Cuba-Puerto Rico-Santo Domingo (1860-1940)," in *La historia como arma y otros ensayos sobre esclavos, ingenios y plantaciones* (Barcelona: Editorial Crítica, 1983), 58.

2. Oscar Zanetti, "En busca de la reciprocidad," *Santiago* (Universidad de Santiago de Cuba) 57 (1985):165-208.

class became differentiated into mill owners and colonos. Central mill owners and colonos also moved into unexploited regions and extended the zone of sugar cultivation under the innovative system of "division of labor" between industry and agriculture. New centrales were established in frontier regions, and the area planted in cane expanded as immigrant labor poured into Cuba. The sugar frontier moved eastward from its hub in Matanzas (the traditional locus of slave agriculture), and by the turn of the century, the province of Santa Clara had eclipsed Matanzas in sugar output.³

Freed slaves from the core area of the ingenio economy moved out to frontier regions in eastern Cuba, drifted into the cities, or stayed on the plantations as wage workers.⁴ The number of former slaves who moved east or to the cities is not known, but in the emerging central system, former slaves certainly did not become landowners and only rarely became mill tenants. In 1900 only 1 percent of the land planted in cane in Cuba had "colored owners," while "colored renters" occupied a mere 4 percent.⁵ Most likely, former slaves in the plantation zones became agricultural workers in the centrales and on the cane farms (*colonias*). For most Afro-Cubans in the western provinces, then, emancipation signified not a transition into smallholding but rather proletarianization. The difference in Cuba after emancipation was that white Cubans, white immigrants, and some Chinese worked as wage laborers alongside the former slaves. A pamphlet published in 1893 by "a colono from Las Villas" points out the racial composition of the *colonato*. Suggestively entitled *Los esclavos blancos*, the pamphlet called on colonos to organize to get better prices from the sugar mills for their cane.⁶

No complete statistical sources exist on the Cuban sugar industry between 1878 and 1900. Moreover, the devastation caused by the Second Cuban War of Independence (1895-1898) makes it difficult to use the

3. In the region of Remedios in the province of Santa Clara, massive immigration by Canary Islanders permitted sugar culture to expand during and after abolition. Julián Zulueta, one of the great barons of slavery in Cuban history, built Central Zaza and eventually a railroad to the port of Caibarién. As a frontier of sugar culture in the 1880s and 1890s, the Remedios region witnessed a concentration of production in fewer mills, which caused differentiation within the planter class: the number of sugar mills in the region declined from 40 in 1878 to 17 in 1894, while sugar production more than doubled. Frequent trips by the ships *Juan Forgas* and *Martín Sáenz* from Caibarién to the Canary Islands brought shipments of colonos who worked mainly with their families but also hired wage laborers during the *zafra* (harvest). See Hernán Venegas Delgado, "Acerca del proceso de concentración y centralización de la industria azucarera en la región remediana a fines del siglo xix," *Islas* (Universidad de Santa Clara, Cuba) 73 (1982):65-121.

4. See Rebecca Scott, *Slave Emancipation in Cuba: The Transition to Free Labor, 1860-1899* (Princeton, N.J.: Princeton University Press, 1985), 227-54.

5. U.S. War Department, *Report on the Census of Cuba, 1899* (Washington, D.C.: Government Printing Office, 1900), 558-59.

6. Un colono de Las Villas, *La esclavitud blanca* (Havana: Imprenta de A. Alvarez y Comp., 1893).

statistical sources of 1899 and 1900 to reconstruct an accurate image of the sugar industry between 1880 and 1900. In many ways, the figures on agricultural production around the turn of the century reflect more accurately the destruction caused by the war than the development occurring between the abolition of slavery and 1895.⁷ U.S. occupation in 1898 stimulated renewed expansion in Cuban sugar production and transformed the social structure of cane agriculture. Internal factors such as the destruction caused by the war combined with external factors such as increased foreign investment and preferential tariffs in the United States to reshape class relations and change patterns of uneven regional development in the Cuban sugar industry.

CUBAN SUGAR MILLS AT THE TURN OF THE CENTURY

By 1900 the Cuban sugar industry was in precarious shape. The recent Spanish-Cuban-American War had destroyed the plantation economy of western Cuba.⁸ When U.S. forces occupied the island in 1898, they found only one-fifth of the sugar mills functioning. Sugar output had dropped precipitously from 1,035,000 tons in 1894–1895 to 232,000 tons in 1896 and on down to 218,000 tons in 1897. In 1898 the industry recovered briefly as production rose to 315,000 tons.⁹ General Leonard Wood's report for 1900 lists Cuban sugar mills by province and indicates the levels of destruction during the war.¹⁰ Of the 570 sugar mills, only 102 were operating. A total of 205 were reported to have been destroyed during the war, while another 157 mills were categorized as *demolidos*, meaning that they had ceased to grind cane and had been dismantled.

Many mills stopped operating after abolition or became unprofit-

7. See the following works by Fe Iglesias García: "El censo cubano de 1877 y sus diferentes versiones," *Santiago* (Universidad de Santiago de Cuba), 34 (June 1979):167–214; "Changes in Cane Cultivation in Cuba, 1860–1900," *Social and Economic Studies* 37, nos. 1–2 (Mar.–June 1988):341–63; "Azúcar y crédito durante la segunda mitad del siglo xix en Cuba," *Santiago* 52 (1983):119–44; "Algunos aspectos de la distribución de la tierra en 1899," *Santiago* 40 (1980):119–78; and "El movimiento de pasajeros entre España y Cuba, 1882–1900," a manuscript made available by the author. See also Iván Santos Viqueiros and Hernán Venegas Delgado, "Un siglo de historia local: el barrio de Arango (1825–1933)," *Islas* (Universidad de Santa Clara, Cuba), 63 (1979):13–64; Rebecca Scott, "Class Relations in Sugar and Political Mobilization in Cuba, 1868–1899," *Cuban Studies* 15, no. 1 (Winter 1985):15–28; and Hernán Venegas Delgado, "Acerca del proceso de concentración," 65–121.

8. See Louis A. Pérez, Jr., *Cuba between Empires, 1878–1902* (Pittsburgh, Pa.: University of Pittsburgh Press, 1983); and Philip S. Foner, *The Spanish-Cuban-American War and the Birth of American Imperialism, 1895–1902*, 2 vols. (New York: Monthly Review Press, 1972).

9. Louis A. Pérez, Jr., "Insurrection, Intervention, and the Transformation of Land Tenure Systems in Cuba, 1895–1902," *Hispanic American Historical Review* 65, no. 2 (1985):229–54. On the destruction of the sugar industry of Matanzas, see Laird Bergad, *Cuban Rural Society in the Nineteenth Century: The Social and Economic History of Monoculture in Matanzas* (Princeton, N.J.: Princeton University Press, 1990), 305–34.

10. *Military Government of Cuba*, vol. 7 of *Civil Report of Major General Leonard Wood, Military Governor of Cuba, for the Period from December 20, 1899 to December 21, 1900* (Washington, D.C.: Government Printing Office, 1900).

TABLE 1 Status of Sugar Mills in Cuba as of 1900

Province	"Demo- lidos" ^a	De- stroyed	In Pro- duction	In Recon- struction	Not De- stroyed	Other Crops	Recon- structed	Row Total
Pinar del Río	3	23	7	8	0	5	0	46
Havana	24	45	0	0	10	0	6	85
Matanzas	121	68	0	3	20	0	59	271
Santa Clara	6	70	0	0	48	0	34	158
Puerto Príncipe	3	1	0	0	6	0	0	10
Santiago ^b	—	—	—	—	—	—	—	—
All Cuba	157 (28%)	207 (36%)	7 (1%)	11 (2%)	84 (15%)	5 (1%)	99 (17%)	570 (100%)

Source: *Military Government of Cuba*, vol. 7 of *Civil Report of Major General Leonard Wood, Military Governor of Cuba, 1900*.

^a A term meaning that the estate had ceased to grind cane. Many of these estates continued to plant cane and became colonias.

^b Statistics for the province of Santiago (Oriente) were unavailable at the time of publication of Wood's Report.

able when they were unable to modernize and keep up with technological advances. The lands belonging to these mills usually became sugar colonias that produced cane for neighboring centrales. Obsolete mills that had ceased grinding cane as well as those destroyed in the war also became colonias. Thus the destruction caused by the war of 1895 merely accelerated differentiation that had already started after abolition (see table 1).

Transformation of the sugar industry entailed shifts in distribution of productive enterprises throughout Cuba. The sugar frontier continued to move eastward after abolition. Of the six provinces, Matanzas produced the most sugar in 1878, with Santa Clara ranking second. But by 1900 under the new central system, Santa Clara had become the premier producer. After abolition, the central system expanded not only in the old areas of sugar culture, where it had to overcome the established fragmentation of land, but also in virgin areas, where new centrales could be built without such obstacles. In 1900, 49 mills in Santa Clara were producing 943,000 sacks of sugar, compared with 665,000 sacks produced by the 37 mills operating in Matanzas.¹¹ Mills that survived the war or resumed operations soon after tended to be larger than the norm. The average Cuban mill in 1900 spanned 64 *caballerías* (at 33 acres per *caballería*), but the mills functioning in 1900 averaged 93 (see table 2). This difference

11. Cuban sugar output was typically measured in sacks (of 325 pounds) or in tons (2,000 pounds). Cane production was measured per *arroba* (25 pounds) and land areas per *caballería* (33.6 acres).

SUGAR PRODUCTION IN CUBA

TABLE 2 *Sugar Production by Centrales in Cuba in 1900*

<i>Province</i>	<i>Number of Mills</i>	<i>Area^a</i>	<i>Average Mill Area^a</i>	<i>Mills in Production</i>	<i>Area of Mills in Production^a</i>	<i>Average Area of Production^a</i>	<i>Average Mill Production (in tons)</i>
Pinar del Río	46	3,018	66	7 (15%)	574	82	690
Havana	85	4,746	56	10 (12%)	985	99	982
Matanzas	271	14,346	53	37 (14%)	3,182	86	2,920
Santa Clara	158	13,885	88	49 (31%)	4,805	98	3,128
Puerto Príncipe	10	568	57	2 (20%)	180	90	3,686
Santiago ^b	—	—	—	—	—	—	—
Cuba	570	36,563	64	105 (18%)	9,726	93	2,698

Source: *Military Government of Cuba*, vol. 7 of *Civil Report of Major General Leonard Wood, Military Governor of Cuba, 1900*.

^a All areas are expressed in caballerías (1 caballería equals 33.6 acres of land). This table includes mills that reported the amount of sugar produced in 1899–1900, an approach that generates slight discrepancies in the total number of mills in production.

^b Statistics for the province of Santiago (Oriente) were unavailable at the time of publication of Wood's Report.

may reflect the ability of larger mills to buy protection during the war or readier access to sources of capital for restoring production sooner when the hostilities ended.

CENTRALES IN NEOCOLONIAL CUBA, 1898–1913

After the war, incorporation of Cuba into the U.S. tariff system on preferential terms favored rapid expansion of the sugar industry. In 1903 the United States granted a 20 percent reduction on import duties on Cuban sugar. But in order to end the military occupation, Cubans had to accede to all kinds of conditions, ranging from grants of land for U.S. military bases to the “right” of the United States to call troops into Cuba. Under the Platt Amendment, the Cuban Republic born in 1902 became what Cubans derisively called a “neo-Republic.” The free flow of U.S. capital into the island and increasing economic integration further fostered economic expansion in the sugar sector.¹² On the eve of World War I, Cuban sugar production stood at 2,765,000 tons. The number of functioning sugar mills had increased to 172, and average output per mill had increased sevenfold, from 2,400 tons in 1900 to 16,000 tons in 1913 (see table 3). Averages conceal the degree of economic concentration, however. The Cuban landscape now featured new mills that could produce more

12. An excellent history of Cuba between 1898 and the revolution of 1933 is Louis A. Pérez, Jr., *Cuba under the Platt Amendment* (Pittsburgh, Pa.: University of Pittsburgh Press, 1986).

than 50,000 tons per year. These mills were owned by native Cubans and by U.S. corporations and business owners.¹³

The sources available do not allow estimation of the extent of the polarization of the planter class between 1886 and 1900. It is possible, however, to get an adequate impression of the process by contrasting the production figures for Matanzas in 1878 and 1913. In 1878, 426 mills ground the cane production of 9,281 caballerías of land in Matanzas. By 1913, the area cultivated had increased slightly (by 10 percent), yet all the cane in the province was being ground by only 39 centrales. Thus an average ingenio in 1878 processed cane produced by 22 caballerías of land, whereas the average ingenio central of 1913 ground cane grown on 262 caballerías. This remarkable leap in the scale of operations of the sugar mills was attributable to a rapidly shrinking number of enterprises. Between 1877 and 1913, nine out of ten mills disappeared as industrial units, as former owners and their descendants became colonos.¹⁴

Because centrales utilized cane from colonos as well as cane produced under the management of the mill, a distinction emerged between *tierras de administración* (run by the mill) and *tierras de colonos*. In the latter, the cane was delivered to the mill and colonos were paid according to its sucrose content. Usually they received a price equal to about half of the

13. My analysis is based on Secretaría de Agricultura, Comercio y Trabajo de Cuba, *Portfolio azucarero: industria azucarera de Cuba, 1912-1914* (Havana: La Moderna Poesía, 1914). The *Portfolio* contains descriptions, histories of ownership, photographs of the 172 centrales operating in Cuba during the harvest of 1912-1913, and an appendix containing mill-by-mill agricultural and industrial statistics. I have processed these figures utilizing SPSS (Statistical Package for the Social Sciences). The *Portfolio* contains information on each sugar mill in two major categories, agricultural data and factory data. The broad heading of agricultural data contains information according to twenty-five kinds of data: area planted with cane by estate or financed colonos; area planted with cane by independent farmers; total area planted; area of land not cultivated for cane; predominant type of soil; number of Cuban colonos; number of foreign colonos; cane yields in arrobas per caballería, tons per hectare, and tons per acre; sugar yields obtained by the factory in arrobas per caballería, tons per hectare, and tons per acre; distance of planting in varas, meters, and feet; dominant variety of cane cultivated; fertilizers and irrigation employed; railway lines, standard gauge and narrow gauge, in kilometers; number of sugar and cane cars; number of locomotives; Public Railway Service; and average wages of fieldworkers. Factory data is presented in twenty-six categories: average wages of factory workers; cane ground per diem in arrobas and in tons; total grinding capacity in tons; percentage of capacity actually used; total cane ground during the season, in arrobas and in tons; mill extraction; percentage of sugar in the cane; percentage of sugar in the juice; average purity of juice; total sacks of sugar produced; tons of sugar produced; percentage of extraction in the first sugar produced and in the second sugar; percentage of extraction in the total sugar produced; polariscope tests of first sugar and second sugar; gallons of molasses; horsepower capacity of the boiler plant; tons of coal and wood burned; cost of sugar transportation per bag and per ton; and number of Cuban and foreign chemists employed. In addition, the *Portfolio* indicates the founding date and name and nationality of the founder for many mills. I would like to thank Zoila Lapique of the Biblioteca Nacional José Martí in Havana for directing me to this invaluable source.

14. For 1978, the number of mills and land areas are taken from Bergad, *Cuban Rural Society*, 158; for 1913, the figures are from Secretaría de Agricultura, Comercio y Trabajo de Cuba, *Portfolio azucarero*.

SUGAR PRODUCTION IN CUBA

TABLE 3 Cuban Sugar Mills and Production in 1900 and 1913

Province	Number of Mills		Percentage Change	Sugar Produced (tons)		Percentage Change
	1900	1913		1900	1913	
Pinar del Río	7	7	0%	4,393	57,801	1216%
Havana	10	19	90%	8,931	330,149	3597%
Matanzas	37	39	5%	98,217	633,000	544%
Santa Clara	49	69	41%	139,319	906,879	551%
Puerto Príncipe ^a	2	7	250%	6,704	225,863	3269%
Santiago ^b	—	31	—	—	611,785	—
Cuba	105	172	64%	257,564	2,765,477	974%

Sources: *Military Government of Cuba*, vol. 7 of *Civil Report of Major General Leonard Wood, Military Governor of Cuba, 1900*; and Secretaría de Agricultura, Comercio y Trabajo de Cuba, *Portafolio azucarero* (Havana: La Moderna Poesía, 1914).

NOTE: This table includes mills that reported the amount of sugar produced in 1899–1900, an approach that generates slight discrepancies in the total number of mills in production.

^a The name of this province was changed to Camagüey in the twentieth century.

^b The name of this province was changed to Oriente in the twentieth century.

sugar contained in the cane. Dependent colonos were sometimes mill tenants and in other cases owned land mortgaged to the mills. In either case, the terms of delivery of sugarcane were more favorable to the mill. This type of cane farmer has been variously called "*colono de administración*," "*colono financiado*," or "*colono controlado*."¹⁵

The twentieth-century sugar mill was a complex entity involving heterogeneous social relations of production in the agricultural phase: wage labor, landlord-tenant relations, and relations between independent or dependent farmers and the mill. The larger area of land serviced by the sugar mill complex also contained fallow land, grazing land, and sometimes forest land. In 1913 the aggregate area of Cuban sugar mill complexes totaled 88,000 caballerías. Of these, about 40,000 caballerías were planted in cane, 18,000 by colonos and 22,000 by the mills and their tenants. The mill group planted and harvested 55 percent of the cane land, while independent colonos produced the remaining 45 percent.

Centrales differed in their origins: some units emerged from the conversion of ingenios into centrales, while others were established on virgin land. In the case of conversion, when a large ingenio was modern-

15. See César Ayala, "Industrial Oligopoly and Vertical Integration: The Origins of the American Sugar Kingdom in the Caribbean, 1881–1921," Ph.D. diss., State University of New York at Binghamton, 1990, 297–382. The *Portafolio azucarero* utilizes the term "*colono financiado*" while Ramiro Guerra y Sánchez refers to "*colonos controlados*." See his *La industria azucarera de Cuba* (Havana: Editorial Cultural, 1940).

ized, surrounding ingenios were transformed into colonias. This type of mill, surrounded by a belt of cane farms owned by colonos (many of them former mill owners), relied extensively on independent farmers (*colonos independientes*) to provide cane. It was almost impossible for a central to expand landownership without running into the existing partition of land typical of the slave era, which did not lend itself to easy consolidation. Converted ingenios therefore had to operate under the constraints created by a plantation system in which mills were smaller and existing properties were smaller than the areas required by the scale of operations of the centrales.

Thus it can be seen that the colono system represented an attempt to preserve the plantation system by establishing a "division of labor" between agriculture and industry. In this sense, the colono system was responding to the scarcity of capital and labor in Cuba after emancipation. Tracts of land already fragmented by the ingenio system were refashioned for the purposes of the centrales. Hence polarization of the planter class into industrialists and landowners was accompanied by redivision of the landowners' properties for parceling out to smaller colonos.

Land utilization varied according to the age of the sugar mill in question (see table 4). The *Portfolio azucarero* of 1914 identified the date of foundation of 80 mills. The 54 mills founded before 1880 used proportionately more cane from colonos than the newer mills, indicating that the transformation from ingenio to central produced a quiltlike pattern of landownership in which centrales were surrounded by independent landowners. About half of the cane land surrounding the mills founded before 1880 was controlled by independent colonos. For the 12 centrales founded between 1880 and 1898, the equivalent figure is 35 percent, a decline in the share of the land owned by independent cane farmers. For the 14 sugar mills built after 1898, the corresponding figure is a mere 14 percent. Thus the evolution of technical processes in sugar making was accompanied by modifications in the social structure of the properties surrounding the mill. At the same time, agricultural yields were lower in the land surrounding the older mills, probably due to soil exhaustion.

Mills established after 1898 utilized land differently from those predating the outbreak of the War of Independence in 1895. Ownership of larger amounts of land permitted newer mills to avoid dealing with the independent farmers typical of the older regions of sugar culture. Typically, the newest mills built by U.S. corporations were established on land previously untouched by plantation agriculture. These precursors of modern agribusiness were usually able to buy all the land in their immediate periphery. All parcels of land were considered *tierras de administración*, including those leased to dependent colonos. The *Portfolio azucarero* also classified the areas planted by tenants of the mill as *tierras de administración*. Consequently, it is not possible to determine what portion of the

SUGAR PRODUCTION IN CUBA

TABLE 4 *Land Use in Cuban Sugar Mills according to Date of Foundation, through 1913*

	<i>Founded before 1880 (N = 54)</i>	<i>Founded 1880-1898 (N = 12)</i>	<i>Founded 1899-1913 (N = 14)</i>
Area planted in cane by estates ^a	6,044 (46%)	1,547 (65%)	5,347 (86%)
Area planted in cane by independent colonos	7,184 (54%)	849 (35%)	862 (14%)
Total area planted in cane	13,228	2,396	6,209
Average area planted in cane by estates	112	129	382
Average area planted in cane by independent colonos	133	71	62
Area not planted in cane	11,252 (46%)	3,860 (62%)	14,792 (70%)
Average tons of sugar produced by mill	15,900	14,403	38,452
Cane yield (arrobas per caballería) ^b	48,575	50,676	63,022

Source: Secretaría de Agricultura, Comercio y Trabajo de Cuba, *Portfolio azucarero* (Havana: La Moderna Poesía, 1914).

NOTE: All areas are expressed in caballerías (1 caballería equals 33.6 acres).

^aIncludes land owned by mill but planted by tenants (dependent colonos).

^bOne arroba equals twenty-five pounds.

land owned by the mills was actually planted by the mill and what portion by dependent colonos.

In the U.S.-owned mills established after 1898, independent cane farmers were much less significant. The distinction between the older area of sugar culture in Cuba and the newer area of sugar culture can be drawn along an east-west axis. Matanzas in the west was the heartland of the ingenio economy until abolition. The renamed provinces of Camagüey (formerly Puerto Príncipe) and Oriente (formerly Santiago) in the east were now sites of the newest U.S.-owned corporate mills. The changes observed point to the decline of independent cane farmers but not necessarily to the decline of cane farmers who were dependent on the mill, whether they were called "financiados," "controlados," or "de administración." In sum, as modern U.S. corporations took hold on Cuban soil, they eliminated the independent colonato.

By 1913, 10 mills were grinding cane exclusively from colono tracts,

51 mills from *tierras de administración*, and 111 mills from both kinds of land. The mills using the *colono* system exclusively were located in traditional areas of sugar culture: one in the province of Havana, three in Matanzas, and six in Santa Clara. The mills that utilized exclusively administration cane were located in every province but Pinar del Río: seven in Havana, three in Matanzas, nineteen in Santa Clara, six in Camagüey, and sixteen in Oriente. In Camagüey (a region having few plantations in the nineteenth century), the mills were new and were owned mainly by U.S. corporations. Overall, the largest mills ground cane exclusively from *tierras de administración* because corporate mills were typically established on frontier land, had access to investment capital and links with the railroads, and were often integrated vertically with the U.S. sugar-refining industry.¹⁶

In 1860 a Cuban ingenio produced an average of 391 tons of sugar, and a unit producing 2,000 tons was considered very large.¹⁷ By 1913 the Chaparra, Delicias, Preston, Boston, and Stewart mills together were producing more than 300,000 tons of sugar, as much as the entire island of Cuba produced in 1900 and more than that in the neighboring Dominican Republic in 1913. These impressive levels of output were achieved without the participation of any independent colonos.

AGRICULTURAL AND INDUSTRIAL PRODUCTIVITY

Although organization of the agricultural end of sugar production evolved considerably after abolition, agricultural productivity did not improve. Comparison of the 1913 data with nineteenth-century Cuban ingenio data confirms that industrial yields increased but agricultural yields declined. Yet the improvement of industrial yields was so great that it compensated for the decline in agricultural yields. The increase in industrial yields arose from three fundamental changes: technological improvements in crushing cane and extracting juice, similar improvements in making sugar out of cane juice, and new varieties of cane that produced more sugar per unit of cane weight.

But at the agricultural end, yields of cane in arrobas per *caballería* were no higher than in the days of slavery and were often lower. Laird Bergad has noted in comparing agricultural yields in the 1830s with those at the turn of the twentieth century that the transformation of the social organization of cane agriculture was not matched by changes in productivity.¹⁸ The data presented here suggest that agricultural yields actually

16. Many of these large mills were owned directly or indirectly (through holding companies) by U.S. sugar refiners. Their boards of directors interlocked heavily with the oligopolistic sugar-refining industry. See Ayala, "Industrial Oligopoly," 189-288.

17. Manuel Moreno Fraguinals, *El ingenio*, 3 vols. (Havana: Editorial de Ciencias Sociales, 1977-1978), 1:173.

18. Bergad, *Cuban Rural Society*, 328.

declined.¹⁹ In 1913 agricultural yields ranged from 83,000 arrobas per caballería on the first-rate land of Central Manatí in the province of Oriente to 27,000 arrobas per caballería on Central Nuestra Señora de Regla in Santa Clara. The mills of Camagüey, the frontier of sugar cultivation, reported consistently high yields.²⁰

The overall contrast with the period of Cuban cane agriculture before emancipation is striking. Exact comparisons cannot be drawn between yields of cane per unit of mill land in 1913 and those of pre-emancipation Cuba at the aggregate level because the range of yields in the nineteenth century was broader than in the twentieth. The larger, highly capitalized plantations of the nineteenth century have been better studied than the small marginal *trapiches*. Nineteenth-century ingenios were unitary enterprises where mill owners operated both cane land and grinding units and cane was not weighed. Centrales, in contrast, had to keep exact accounts of the weight of the cane brought in by each colono in order to determine payment. Hence figures on cane production per unit of land are much more reliable in the twentieth century than in the nineteenth. But even with the uncertainties about earlier agricultural yields, the existing information indicates that the most developed plantations of the nineteenth century recorded higher yields per unit of land than their counterparts in the twentieth. In the 1850s, the most productive mills in Banagüises were producing more than 100,000 arrobas per caballería and 75,000 to 80,000 in the mid-1880s.²¹ On the ingenio Las Cañas of Juan Poey, some sugar fields recorded yields of more than 120,000 arrobas per caballería in the 1877-1878 season.²² By comparison, the highest yield recorded in 1913 (at Central Manatí) totaled only 84,000 arrobas per caballería. Thus it appears that the decline in agricultural yields after abolition was not an isolated phenomenon but a trend occurring throughout Cuban cane agriculture.

Within the overall decline in agricultural productivity, differences can be found between small and large mills. The mills with larger grinding capacity had higher agricultural yields, although they too varied from region to region (see table 5). Mills in the eastern provinces of Camagüey and Oriente produced higher average agricultural yields than mills on the western side. The lower yields in the western provinces indicate soil exhaustion of land where sugar had been cultivated for longer periods. The pattern is similar for mills whose dates of foundation are known.

19. The decline in agricultural yields may be related to a reduction in the intensity of work after emancipation. The data presented here measure only yields of cane per unit of land, not cane per worker or cane per unit of labor input.

20. Central Jatibonico reported 75,000 arrobas per caballería; Central Francisco, 74,000; Central Jagüeyal, 75,000; Central Senado, 70,000; and Central Morón, 70,000.

21. Bergad, *Cuban Rural Society*, 328.

22. Moreno Fragnals, *El ingenio*, 1:190-91. His figures may be overestimations.

TABLE 5 Agricultural Yield of Cuban Sugar Mills as of 1913

Yearly Mill Output of Sugar	Number of Mills	Average Yield (arrobas per caballería ^a)
0-5,000 tons	21	44,497
5,000 to 10,000 tons	44	48,664
10,000 to 20,000 tons	60	49,988
20,000 to 40,000 tons	34	53,591
Over 40,000 tons	13	57,450
All Cuban mills	172	50,255

Source: Secretaría de Agricultura, Comercio y Trabajo de Cuba, *Portfolio azucarero* (Havana: La Moderna Poesía, 1914).

^a One arroba equals 25 pounds; 1 caballería equals 33.6 acres.

Mills founded before 1880 had an average agricultural yield of 49,000 arrobas per caballería; mills founded between 1880 and 1898 yielded 51,000; and mills founded after 1898 had an average yield of 63,000.

The decline in agricultural yields must be considered in the context of increasing industrial yields, which more than doubled between 1860 and 1913. No data are available on industrial yields for the 1870s and 1880s, but in the 1860s, the most mechanized and capital-intensive mills in Cuba reported sugar and cane yields ranging from 4.5 to 5.5 percent of cane weight.²³ In the 1880s and 1890s, industrial yields reached 8 percent in some mills.²⁴ In 1913, by contrast, mills averaged yields of 11 to 13 percent. In this way, the increase in industrial yields (the weight of sugar as a percentage of the weight of cane) more than compensated for the decline in agricultural yields (the weight of cane in proportion to the land area).

The combination of increasing industrial yields and decreasing agricultural yields led to a net increase in the amount of sugar produced per unit of land. For instance, one caballería of land producing 80,000 arrobas of cane (1,000 tons) would yield 55 tons of sugar in a mill with an

23. Bergad, *Cuban Rural Society*, 327.

24. José Curbelo offered the following estimates: "Una caballería de buen terreno sembrada de caña produce, término medio, mil carretadas de 100 @ [arrobas] cada una, o sean 100,000 @. Esta caña rinde con los aparatos perfeccionados 8% de azúcar de guarapo, 2% azúcar de miel y 1 ¾% de miel para aguardiente." See Curbelo, *Proyecto para fomentar y poner en estado de producción seis ingenios centrales de 1,000,000 arrobas cada uno, con Alambique, para trabajar las mieles que resultan de la elaboración* (Havana: La Propaganda Literaria, 1882), 11. Rafael Montoro mentions in passing: "De sobra se reconoce la superioridad natural de nuestra planta sacarina. Pero ¿acaso se obtendrán ahora estímulos mayores que otras veces para lograr siquiera un rendimiento igual al que han obtenido de la remolacha sus cultivadores de Alemania, Austria y Francia? Extraña ilusión sería el creerlo, cuando no se pasa aquí todavía de 7 a 8 % de rendimiento, con una planta que podría elevar su riqueza absoluta hasta el 18 o el 20, mientras la remolacha rinde ya, con pasmo de todos, muy cerca del 13." See Montoro, *Discursos políticos y parlamentarios* (Philadelphia, Pa.: Compañía Lévy-type, Impresores y Grabadores, 1894), 292.

industrial yield of 5.5 percent. But a *caballería* of land yielding 50,000 arrobas of cane (625 tons) would produce 75 tons of sugar in a mill with an industrial yield of 12 percent (the yield in Cuba in 1913). Making the generous assumption of agricultural yields of 80,000 arrobas per *caballería* and industrial yields of 5.5 percent for Cuban sugar agriculture as a whole during slavery, the combination of declining agricultural yields and increasing industrial yields resulted in a net increase after abolition of 36 percent in the amount of sugar obtained per *caballería*.

FOREIGN OWNERSHIP

Transformation of the sugar industry also entailed changes in the structure of ownership (see table 6). In 1913 the 39 U.S.-owned mills in Cuba represented 23 percent of the grinding units of the island. Cubans owned the largest number of mills but were responsible for a smaller share of the sugar produced than U.S. owners: Cubans owned 67 mills, Spaniards owned 41, and U.S. citizens owned 39.²⁵ In terms of output, the U.S. mills produced the most sugar (1,033,000 tons, or 37 percent), followed by Cuban mills (918,000 tons, or 33 percent), and Spanish mills (510,000 tons, or 18 percent). Of the three groups, the U.S.-owned mills had the highest agricultural productivity (57,461 arrobas of cane per *caballería*), probably indicating that many were newly built and therefore located in regions new to sugar cultivation.

As noted, Cuba's neocolonial status favored the inflow of U.S. capital. While some Cuban mills were U.S.-owned before the Spanish-Cuban-American War, they were not the dominant force in the sugar industry. Within a short time after U.S. occupation of the island, U.S. citizens owned a larger share of the sugar industry than either Cubans or Spaniards. U.S. corporate capital investment in the industry also soared shortly after the occupation. Two of the major owners of giant mills were the National Sugar Refining Company and the United Fruit Company.²⁶

25. One mill owned by joint Anglo-American interests was counted as U.S.-owned, and four mills of Cuban-Spanish joint ownership were counted as Spanish.

26. James H. Post, president of the National Sugar Refining Company of New Jersey, was a director of the National City Bank of New York and also of the American Colonial Bank of Porto Rico. Post was vice president of the Cuban American Sugar Company, which owned the Chaparra-Delicias complex in Puerto Padre as well as Mercedita, Tinguaro, Unidad, and San Manuel sugar mills. Post also held numerous other positions in the Cuban sugar industry, including president of the New Niquero Sugar Company, president of the Guantánamo Sugar Company, director of the Chaparra Railroad Company, director of the West India Sugar Finance Corporation (which owned twelve sugar mills in the Dominican Republic), and director of the Aguirre and Fajardo Sugar companies in Puerto Rico. See Ayala, "Industrial Oligopoly," 189-288; also Oscar Pino Santos, *La oligarquía yanqui en Cuba* (Mexico City: Nuestro Tiempo, 1975); and Jorge Ibarra, "Los mecanismos económicos del capital financiero obstaculizan la formación de la burguesía doméstica cubana, 1898-1930," *Islas* 79 (Sept.-Dec. 1984):71-92.

TABLE 6 Land Use in Sugar Mills in Cuba according to Nationality of Ownership, 1913

	Cuban	British	French
Number of mills	67 (39%)	7 (4%)	5 (3%)
Area planted in cane by estates ^b	7305 (52%)	884 (55%)	833 (79%)
Average area planted in cane by estates ^b	109	126	166
Area planted in cane by independent colonos	6,805 (48%)	713 (45%)	222 (21%)
Average area planted in cane by independent colonos	102	102	44
Total area planted in cane	14,110	1,597	1,055
Area not planted in cane	15,557 (52%)	560 (26%)	1,417 (57%)
Aggregate tons of sugar produced	918,342 (33%)	106,133 (4%)	66,852 (2%)
Average tons of sugar produced per mill	13,706	15,162	13,370
Cane yield in arrobas per caballería	48,949	47,687	47,800

Source: Secretaría de Agricultura, Comercio y Trabajo de Cuba, *Portfolio azucarero* (Havana: La Moderna Poesía, 1914).

NOTE: All areas are expressed in caballerías (1 caballería equals 33.6 acres).

^a All other unidentified foreign-owned mills.

^b Includes land owned by the mill but planted by tenants (dependent colonos).

As Louis Pérez has observed, "the beneficiaries of North American rule were North Americans."²⁷

The *Portfolio azucarero* contains information on the nationality of the owners when the mills were founded and in 1913. Although information

27. Louis A. Pérez, Jr., *Cuba: Between Reform and Revolution* (New York: Oxford University Press, 1988), 195.

SUGAR PRODUCTION IN CUBA

<i>Spanish</i>	<i>U.S.</i>	<i>Foreign^a</i>	<i>Unknown</i>	<i>All Mills</i>
41 (24%)	39 (23%)	2 (1%)	11 (6%)	172 (100%)
3,988 (47%)	8,109 (64%)	30 (13%)	977 (49%)	22,126 (55%)
97	208	15	89	129
4,476 (53%)	4,581 (36%)	195 (87%)	1,034 (51%)	18,026 (45%)
109	117	97	94	105
8,464	12,690	225	2,011	40,152
6,195 (42%)	21,559 (63%)	188 (46%)	1,922 (49%)	47,398 (54%)
510,357 (18%)	1,013,265 (37%)	11,338 (0%)	139,205 (5%)	2,765,492 (100%)
12,447	25,981	5,669	12,655	16,078
47,461	57,461	41,350	47,444	50,255

is not available on all mills, the nationality of the founder and the owner in 1913 are known for 82 of them. As of 1913, Cubans had founded 26 mills and owned 35; British citizens had founded 1 mill and owned 4; French entrepreneurs had founded 8 mills but owned only 3; Spaniards had established 33 mills but owned only 17; and U.S. owners had founded 14 mills and owned 23. Overall, while British, Cuban, and U.S. owners prospered under the Cuban Republic, French and Spanish ownership declined.

EXPANSION OF WORLD WAR I AND ITS EFFECT
ON UNEVEN REGIONAL DEVELOPMENT

World War I destroyed European beet crops, an outcome that prompted a marked rise in sugar prices and a sugar boom in Cuba. Between 1914 and 1919, so much U.S. capital flowed into Cuba that some observers concluded that "Wall Street" acquired definitive control over the Cuban economy during World War I.²⁸ One pamphlet published by National City Bank cited James Blaine's description of Cuba during the war as "the most valuable piece of agricultural real estate on the globe." According to this euphoric pamphlet, "The actual production has increased over 50% during the war period, and Cuba now produces about 25% of the world's sugar as against an average of about 11% in the decade preceding the war." Predicting that the European sugar industry would be slow to recover due to the Bolshevik Revolution and the breakdown of Austria-Hungary, the pamphlet predicted, "the enlarged demands upon Cuba will continue indefinitely." Accordingly, in 1919 National City Bank opened local branches in fifteen Cuban locations, claiming that U.S. citizens owned "between 40% and 50% of the approximately \$600,000,000 worth of sugar mills, plantations and other appurtenances of sugar production in Cuba."²⁹ During the war years, the sugar-producing provinces of Cuba indeed experienced a frenzied increase in production everywhere except in Pinar del Río, a tobacco-growing province.³⁰

During the boom period of World War I, accelerated mill construction renewed the sugar economy and displaced its center of gravity further eastward. The Punta Alegre Sugar Company, the American Sugar Refining Company, Manuel Rionda and a group of associated investors, and the Hershey Corporation all built sugar mills in Cuba during this period. In the early 1920s, National City Bank acquired a group of mills. In this manner, five corporations owning multiple mills augmented Cuban sugar production in sixteen huge centrales that were producing nearly a million tons of sugar by the end of the 1920s. Most of these mills were located in the provinces of Camagüey and Oriente, on land untouched by sugar monoculture in the nineteenth century. The average production of sugar per mill came to slightly more than 57,000 tons of sugar, well above the average of 26,000 tons for Cuban mills in 1913.

The "invasion" of U.S. capital during World War I was not aimed initially at constructing mills. Before the new mills were built, U.S.

28. Leland H. Jenks, *Our Cuban Colony: A Study in Sugar* (New York: Vanguard, 1928), 176-77.

29. National City Bank of New York, *Cuba: Review of Commercial, Industrial, and Economic Conditions in 1919* (New York: National City Bank of New York, 1919), 3-5.

30. Between 1914 and 1918, production increased in Havana (by 31 percent), Matanzas (37 percent), Santa Clara (37 percent), Camagüey (106 percent), and Oriente (49 percent). The average increase in Cuba for these years was 48 percent.

investors took advantage of the imminent rise in sugar prices by purchasing existing mills. For instance, the Cuba Cane Corporation was established in New York in late 1915, with capital resources from the House of Morgan and allied banks. Prominent in the corporation were Manuel Rionda of Czarnikov Rionda, J. W. Seligman Brothers, Alfred Jaretsky, and Charles Sabin of Guaranty Trust Company. In January of 1916, Rionda went to Cuba with financial resources drawn from J. W. Seligman Brothers and purchased seventeen plantations at a cost of forty-eight million dollars.³¹ The sheer size of the enterprise and its creation by bankers to purchase existing mills (rather than by industrialists seeking to build them) is one reason why the World War I boom has been characterized as the period when the Cuban economy was "taken over by Wall Street." For example, in expectation of rising prices for sugar as a result of World War I, the House of Morgan decided to establish its own means of producing raw sugar in Cuba.³² Raw sugar sold at around 3 cents per pound from 1898 to 1914.³³ By March 1916, however, raw sugar was selling in New York at 5.75 cents per pound. In 1920, raw sugar prices soared to an unprecedented 20 cents a pound, and Cuba experienced a boom dubbed "*la danza de los millones*." The reasons for establishing the Cuba Cane Corporation in late 1915 thus proved to have been well founded.³⁴

Expansion of Cuba Cane is of interest because, unlike other concerns established during the war that were typically new mills in frontier regions, this banker-financed corporation bought mills in western Cuba. By the end of the war, Cuba Cane management had discovered the disparity of conditions in the sugar mills in the older region of sugar culture in the West and those in the virgin regions of the East. In the West, the corporation ran into two kinds of problems: difficulties in buying and

31. "Report by George W. Goethals and Company, Inc., on the Cuba Cane Sugar Corporation, July 11, 1919," p. 2. University of Florida Archives, Gainesville, Braga Brothers Collection (henceforth cited as BBC), Series 127.

32. See Manuel Rionda to Lagemann, 27 Dec. 1915, BBC, Record Group 1, ser. 2; Ayala, "Industrial Oligopoly," 210-12; and Muriel McAvoy-Weissman, "Manuel Rionda and the Formation," 5.

33. John Edward Dalton, *Sugar: A Case Study of Government Control* (New York: Macmillan, 1937), 28.

34. The U.S. sugar-refining industry became horizontally integrated in the 1890s, culminating in the formation of what was known at the time as the "Sugar Trust." The large refiners of sugar became involved in producing raw sugar in the Caribbean after 1898 and began to integrate vertically. On the history of the "Sugar Trust," see Paul S. Vogt, *The Sugar Refining Industry of the United States: Its Development and Present Condition* (Philadelphia, Pa.: Publications of the University of Pennsylvania, 1908); Alfred S. Eichner, *The Emergence of Oligopoly: Sugar Refining as a Case Study* (Baltimore, Md.: Johns Hopkins University Press, 1969); Jack Simpson Mullins, "The Sugar Trust: Henry O. Havemeyer and the American Sugar Refining Company," Ph.D. diss., University of South Carolina, 1964; and Richard Zerbe, "The American Sugar Refinery Company: The Story of a Monopoly," *Journal of Law and Economics* (Oct. 1969):339-75.

consolidating land areas from multiple owners, and the power of the already established independent colonos.³⁵

The corporation purchased the mills' land and attempted to buy surrounding land wherever possible, leasing land where necessary. But with Central San Ignacio, Ingenio Feliz, Central Mercedes, Central Lugareño, and Central Socorro, the corporation encountered problems with land consolidation arising from land fragmentation after abolition. These western sugar mills were all ringed by independent cane farmers, which made land consolidation difficult. Thus although Cuba Cane Corporation wanted to purchase mills and sufficient land to produce all the cane that the now modernized mills might need, it encountered a formidable obstacle in the entrenched class of independent colonos.

Elsewhere the corporation met with a different obstacle to acquiring land. In one atypical instance, the deed to Central Lequeito had not yet been executed in 1919. Half of the Lequeito estate was situated on land known as *haciendas comuneras*, a form of land title under Spanish colonial rule that had been utilized in cattle-ranching regions. These deeds of grant were circular and stipulated ownership of land up to a specified radius around a central point. Thus the *haciendas comuneras* constituted a "corporate" or "communal" kind of landownership prevalent in sparsely populated regions. In some instances, this kind of title led to considerable litigation over the boundaries of estates. Expansion of sugar estates in the eastern provinces proceeded largely according to the conversion of *haciendas comuneras* into delimited private property allotments. In 1914 Cuban land expert Benito Celorio published a book complaining about the scandal of transfers of *hacienda comunera* land in the eastern part of Cuba to "*intereses geófagos*" ("land-eating interests") in the service of U.S. corporations.³⁶ Although more prevalent in Camagüey and Oriente, *haciendas comuneras* also existed in the provinces of Sancti Spiritus and Santa Clara (where Central Lequeito was located). Although this type of land title hindered Cuba Cane's attempts to obtain Central Lequeito, the existence of *haciendas comuneras* generally permitted expansion by immense corporate sugar mills in eastern Cuba at minimal prices.

At its western mills, Cuba Cane soon discovered that it could not control the price of the cane delivered. A 1919 audit report complained that "nearly all the cane used by the Cuba Cane Corporation is Colono cane." The reason was that thirteen of the corporation's seventeen mills were located in the western part of the island,³⁷ where the strength of the

35. "Report of Frank Feuille on the Landed Properties of the Cuba Cane Sugar Corporation (New York: May 15, 1919)," BBC, Series 127.

36. Benito Celorio, *Las haciendas comuneras* (Havana: Imprenta Rambla-Bouza, 1914).

37. The following Cuba Cane mills were located in the western part of the island: Julia, Jobo, Conchita, Feliz, Socorro, San Ignacio, Soledad, Santa Gertrudis, Alava, Mercedes,

independent colonato was formidable. According to a 1919 report by George Goethals, "Many colonos grow cane on land not under the control of the central, and where favorably located with respect to a number of centrals, they are able, through competition, to receive higher prices than the general average in the locality. The control by centrals of sufficient cane to work the mills to full capacity is, therefore, an important factor."³⁸ Alan Dye's recent study found that colono ownership of land and the ability to renegotiate cane contracts were inversely correlated with expansion of the grinding capacity of the mills.³⁹ In 1919 an independent audit of the operations of Cuba Cane questioned the wisdom of purchasing mills in the western part of the island, indicating once again that the new prototype of U.S.-style central was based not on scarcities of capital and labor and the consequent need to divide the industrial and agricultural operations but on an abundance of capital and a desire to control the land surrounding the sugar mills through ownership if possible. Goethals continued, "The cane situation for the Corporation's western centrals is not so favorable. The number of independent colonos is greater and there is a larger number of mills, so that in some localities the competition is very keen."⁴⁰ During the war, high sugar prices attenuated the impact of the independent colonato on the sugar mills of Cuba Cane. Because of the acute shortage created by the collapse of beet sugar crops, it was possible to make sugar at almost any cost and still register a profit. The auditors of Cuba Cane nevertheless questioned whether the western mills could continue production at profitable rates once world competition resumed at the end of the war: "Considerable doubt has been expressed by those familiar with the Cuba situation whether the mills in the west will be able to make any profit after the resumption of world competition, unless the price of cane is materially reduced. It may compel centrals to consider seriously the growing of more administration cane by the most scientific and efficient methods."⁴¹ This concern reflected the meticulous calculations of management, which found that the corporation was earning \$2.10 per bag of sugar (325 pounds) in its eastern centrals but only \$1.17 per bag in the western mills. It is therefore not surprising that U.S. corporate interests pursued the unitary type of enterprise in which mill and cane land were owned by the same entity.

The "division of labor" system had been a useful expedient in the sugar industry in the context of abolition, scarcity of labor and capital,

Marie Victoria, Perseverancia, and Lequeito. The Lugareño, Morón, Jagüeyal, and Stewart mills were located in the eastern region.

38. "Report by George W. Goethals," 8.

39. Alan Dye, "Cane Contracting and Renegotiation: A Fixed-Effects Analysis of the Adoption of New Technologies in the Cuban Sugar Industry, 1899-1929," manuscript made available by the author, forthcoming in the journal *Explorations in Economic History*.

40. "Report by George W. Goethals," 8.

41. "Report by George W. Goethals," 28.

TABLE 7 *Areas Planted in Cane by Cuban Mills and Independent Colonos in 1913, in Caballerías*

<i>Province</i>	<i>Area Planted by Mills and Dependent Colonos</i>	<i>Area Planted by Independent Colonos</i>	<i>Percentage of Area Planted by Independent Colonos</i>
Pinar del Río	433	536	55%
Havana	2,670	1,662	38%
Matanzas	4,253	5,769	58%
Santa Clara	6,510	8,084	55%
Camagüey	2,266	209	8%
Oriente	5,994	1,766	23%
All Cuba	22,126	18,026	45%

Source: Secretaría de Agricultura, Comercio y Trabajo de Cuba, *Portfolio azucarero* (Havana: La Moderna Poesía, 1914).

NOTE: One caballería equals 33.6 acres.

and the conversion of ingenios to centrales. But the social system of the eastern centrales developed after 1898, particularly after 1914, differed in that it did not rely on independent colonos. Hence arose the sharp distinction between the social system of the plantations of the Cuban eastern provinces and that of the western provinces. As the locus of plantation agriculture in the nineteenth century, western Cuba (Pinar del Río, Havana, Matanzas, and Santa Clara) was the region where independent cane farmers controlled a major share of sugar production. In the east, the newest mills established themselves by purchasing vast land areas in relatively remote zones that became accessible via railway only in the twentieth century. In this region, cane farmers were welcome only as mill tenants, and it fell to the farmers to attract and hire wage labor for cultivating and harvesting sugar. The movement eastward across the Cuban landscape paralleled the social trend transforming smaller sugar mills and independent cane farmers into larger centrales and tenant cane farmers. In the west, polarization of the planter class following abolition produced the patchwork of mills that depended on independent farmers for about half their supply of cane. In the east, corporate capital purchased vast tracts of land and leased it to farmers who delivered cane to the mills (see table 7).

The contrast between the eastern and western regions of Cuba continued into the twentieth century and took on new forms. Construction of new mills in Camagüey and Oriente during World War I altered the productive balance between the regions (see table 8). In 1923 the eastern provinces of Camagüey and Oriente surpassed the western region in sugar production, and the eastern region finally became the center of twentieth-century sugar monoculture. The process can be traced in the

TABLE 8 *Production of Cuban Sugar Mills by Province, in Tons and as a Percentage of Cuban Output*

Province	1901-1902			1913-1914			1923-1924		
	Mills	Tons	(%)	Mills	Tons	(%)	Mills	Tons	(%)
Pinar del Río	8	26,264	(3%)	7	57,818	(2%)	10	149,469	(3%)
Havana	17	96,675	(11%)	19	330,147	(12%)	18	375,046	(8%)
Matanzas	56	331,648	(38%)	39	633,000	(23%)	32	562,438	(12%)
Santa Clara	46	300,786	(34%)	69	906,879	(33%)	61	998,194	(22%)
Camagüey	2	22,541	(3%)	7	225,863	(8%)	26	1,250,279	(28%)
Oriente	16	101,785	(12%)	31	611,785	(22%)	47	1,199,727	(26%)
All Cuba	145	879,699	(101%)	172	2,765,492	(100%)	194	4,535,153	(99%)

Sources: José Huguet y Balanzo, *Ingenios que han hecho zafra en el año de 1901 a 1902 en cada una de las provincias de que se compone la isla de Cuba* (Havana: Imprenta Mercantil, 1902); and Secretaría de Agricultura, Comercio y Trabajo de Cuba, *Portfolio azucarero: industria azucarera de Cuba, 1912-1914* (Havana: La Moderna Poesía, 1915).

NOTE: Deviations in percentage totals are due to rounding.

figures for Oriente: the province produced 12 percent of the island's sugar in 1902, 22 percent in 1914, and 26 percent in 1924. Expansion of sugar production in Camagüey was even more marked, increasing from 2 percent of Cuban output in 1902 to 8 percent in 1914 and 28 percent in 1924. Thus Camagüey rose from the smallest share of sugar production in 1902 to the largest share in 1924. Camagüey and Oriente combined produced 54 percent of all Cuban sugar in 1924.

LABOR

Paradoxically, labor was both more abundant and more expensive in the West, reflecting the competition for labor among centrales at a time of fabulous prices for sugar. In some of the eastern mills, low population densities and difficult access created shortages of labor.⁴² To assure a steady supply of labor, the eastern mills began to organize immigration from other regions of the Caribbean. The flow of seasonal workers started in 1912, intensified during World War I, and continued into the 1920s. The Cuban American Sugar Company's records of arrivals and departures indicate Jamaicans, Haitians, and workers from the eastern Caribbean.⁴³ Company records show the shipments and

42. Compare Pérez, *Cuba under the Platt Amendment*, 80.

43. For example, on 15 August 1924, the steamship *Vedette* carried 112 Grenadians, 233 Barbadians, and 162 St. Vincentians on a return voyage from Puerto Padre after the conclusion of the zafra. On 2 September on a trip to the eastern Caribbean, the Dutch ship *Nueva Altigracia* transported 11 workers to Anguilla, 36 to Antigua, 97 to Dominica, 37 to Montserrat, 18 to St. Kitts, 10 to St. Thomas, and 34 to St. Martin.

destinations of workers after the *zafra* (harvest) as well as their gender and age.⁴⁴

The management of the Cuba Cane Corporation even considered importing Chinese contract workers during World War I. Plans were made to import 2,000 Chinese from Hong Kong under a five-year contract. The workers were to be paid fifty dollars per month for a workweek of seven ten-hour days, and the importing company (headed by Guy Morrison Walker) was to receive one hundred dollars for each Chinese worker delivered to the port of Havana.⁴⁵ Difficulties of coordination, however, between the U.S. Food Administration (which regulated sugar importing and refining firms during the war), the Cuban government, the importing firm, Cuba Cane, and the Chinese exporters caused suspension of this project.

Labor shortages were perennial on Central Francisco, which had been established in southern Camagüey in 1899 and began production in 1901. The corporation was set up by sugar refiners of the McCahan refinery in Philadelphia in conjunction with Manuel Rionda via the purchase of some 45,000 acres of land in southern Camagüey, about midway between Santa Cruz and Manzanillo. The title to the property included the land under the town of Guayabal, which at the time of foundation of Central Francisco included 60 "common Cuban country houses and 400 inhabitants."⁴⁶ Located in a remote and sparsely populated region along the southern coast of Camagüey, Francisco could be reached only by the

44. Workers were almost always male, although a few female workers appear in the records. "Christophina Hinds and her daughter Anita" are listed in the records of a ship returning to St. Thomas. "Frances Quailey and 2 children" returned to St. Kitts in the same voyage. A voyage of the ship *Angelita* to the eastern Caribbean featured an all-male cargo of 42 workers ages 16 to 20, 105 workers ages 21 to 25, 64 workers ages 26 to 30, 10 workers age 31 to 35, and 11 workers ages 36 or older. See Dr. Eugenio Molinet (Chaparra Sugar Company) to Secretario de Agricultura, Comercio y Trabajo de Cuba, 12 Nov. 1924, Archivo Nacional de Cuba, Havana (henceforth ANC), Secretaría de Agricultura, Industria y Comercio, fondo 302, leg. 4, exp. 45.

45. The Chinese workers were to be housed in "barracks as good as the best now furnished to native Cuban labor of like kind." The contract stipulated that "said laborers shall receive no wages while sick or for holidays or for any other days in which they voluntarily abstain from working and that except when sick and unable to work the said laborers shall have charged against their allowance for rations the sum of thirty cents (30 c.) gold for each day that they so abstain from working." Provisions were made to handle "any Chinese laborer imported under this agreement [who] shall prove to be a troublemaker or otherwise undesirable." A committee made up of a representative of the Cuba Cane Corporation, a representative of the importing firm, and (in case of disagreement) a third member appointed by the American Consul, would decide on the case of troublemakers: "If the cause of complaint shall not be found to be well founded the laborer shall continue in his contract, but if the complaint against said laborer shall be found to be supported by fact he shall be deported and the Sugar Company shall be no longer liable for or on account of said laborer." The plans included provision for Chinese national holidays and stipulated that the workers "may worship their own gods in their own manner." See Guy Morrison Walker to Manuel Rionda, 8 Feb. 1919; and Manuel Rionda to Guy Morrison Walker, 14 Mar. 1919, BBC, Series 10 A.

46. "Minute Book of the Francisco Sugar Company," 14 Feb. 1900, p. 14, BBC, ser. 90, box 1.

small steamships that visited the mill's pier weekly. The central owned all the land surrounding the sugar mill and enticed colonos to settle as tenants of the mill. Scarce labor was accommodated in barracks around the batey (mill yard).

To secure the necessary labor in former years, permission was given to parties to erect Huts or Houses in our lands at Batey. This has proven troublesome and its correction was decided on. Thirty-six of the structures have been bought and rented to the laborers by the Company. Nineteen new and better houses have been built; a new and combined stable and dwellings; New Barracks for Rural Guards; and four (4) large buildings (know as Baracons) each capable of accommodating sixty (60) laborers were built one at our Wharf and one at each of our three cane divisions.⁴⁷

In 1906 a revolt in Cuba led to complaints by the management of labor shortages. U.S. intervention from 1906 to 1909 brought great improvements to Central Francisco but also apprehension: "The United States being again in control of the Island, it is hoped that disorder and marauding will be at an end, but we fear that a greater scarcity of labor to harvest the coming crop will result from the recent outbreak."⁴⁸ As it turned out, the U.S. intervention of 1906 was extremely beneficial to the Francisco Sugar Company because it resulted in a rail line being constructed from Francisco to Martí at government expense.

The Cuban revolt during the summer of 1906 made clear to the American Provisional Government our rather isolated situation in case of needed protection, and the visiting members of our Executive Committee, together with the President and our Manager called on Governor Magoon at Havana last Spring and submitted to him very full our situation and desires for suitable action. Governor Magoon has since placed officially on the program of roads to be built by the State a road from our Wharf to Martí, a station of the Cuban railroad, a length of about 30 miles and includes culverts and bridges (to be a steel bridge over the Sevilla River), the expense of the entire work to be paid by the Cuban Government, which it is estimated will cost \$400,000 to \$650,000.⁴⁹

After the Magoon government built a railroad line to Martí connecting with the main line to Havana, access to Francisco became much easier. But the labor shortages had other causes: the availability of land for subsistence farming in the sparsely populated east, the existence of haciendas comuneras, and low population densities. These conditions made subsistence farming an alternative and therefore blocked the formation of a permanent rural proletariat. Instead of planting the land under the management of the corporation, the cane areas were leased to colonos who took charge of hiring workers. This subdivision of administration land to dependent colonos prevented the centralization of all labor under one management and the consequent danger of unionization. In

47. "Minute Book of the Francisco Sugar Company," 30 June 1906, p. 127.

48. "Minute Book of the Francisco Sugar Company," 30 June 1906, p. 128.

49. "Minute Book of the Francisco Sugar Company," 30 June 1907, p. 143.

1912 Central Francisco replaced a colono who had been complaining about the price of the cane delivered at the mill. The land was then leased to another colono, "it not being advisable under the present labor conditions in Cuba for the company to increase its own plantings." During World War I, Francisco began to import West Indian workers at company expense. Wage workers were allotted by the central management to the dependent colonos who hired them. In their drive to avoid the independent colonato, the eastern mills encountered the new problem of labor shortages typical of regions with low population densities and available land for subsistence. This situation in turn generated an organized drive to recruit immigrant labor for the harvest from regions of the Caribbean where less abundant or available land had led to a landless rural proletariat.

Wages varied considerably according to region and mill size. In 1913 field wages were lowest in Pinar del Río at 92 cents per day and highest in Camagüey at \$1.17. Pay was higher for mill workers, with a different set of regional variations. Mill wages were highest in Havana at \$1.27 per day and lowest in Matanzas at \$1.15. Wages also varied according to the size of the mill. In the smallest mills (producing up to 5,000 tons of sugar yearly), field wages averaged 89 cents a day, while the largest, most productive mills paid the highest field wages, averaging \$1.23 per day.⁵⁰

THE SUGAR CRASH

Postwar recovery of European beet crops caused a sugar crash in Cuba in 1920 and 1921, as prices collapsed. Mill owners and colonos began to find it hard to meet payments on debts acquired during the period of fabulous prices. Banks were unable to collect debts and began to withhold payments. The government declared a moratorium on all bank payments. National City Bank of New York was sliding toward bankruptcy due to its overexposure from sugar loans that could not be collected. After James Stillman resigned, however, the bank was rescued from bankruptcy by a consortium of bankers.⁵¹

The drop in sugar prices triggered a Cuban banking crisis. In October of 1920, one million tons of unsold sugar from the previous *zafra* were still sitting in Cuban warehouses. Prices fell to 5.25 cents in October and to 4.5 cents in November. Although these were good prices by prewar standards, the massive indebtedness of sugar producers in Cuba had been taken on during the "sugar fever" in expectation of much higher prices. Producers who had not yet recovered all their expenses from the previous crop faced an approaching *zafra* without the necessary working capital to pay wages and set the entire plantation

50. Secretaría de Agricultura, Comercio y Trabajo de Cuba, *Portfolio azucarero*.

51. Harold V. Cleveland and Thomas F. Huertas, *Citibank, 1812-1970* (Cambridge, Mass.: Harvard University Press, 1985), 107.

economy in motion. On Sunday, 10 October 1920, an extra edition of Cuba's *Gaceta Oficial* announced Presidential Decree no. 1583, which placed a moratorium on all bank payments until 1 December of the same year.⁵²

Cuban businesses faced imminent bankruptcy and normal business activity nearly came to a halt as goods stopped flowing through the port of Havana. Frightened by the prospect of generalized insolvency, Cubans ran to the banks to withdraw their deposits. The shortage of funds caused by depositor panic forced the banks to import hard currency. During October 1920, the Bank of Nova Scotia received more than four million dollars from abroad. Between November 14 and 30, the Havana branch of the National City Bank received more than sixteen million from abroad; the Royal Bank of Canada in Havana received close to eighteen million; the Banco Español de la Isla de Cuba received two million; the Banco Mercantil Americano de Cuba almost three million; and Pedro Gómez Mena, two million. As of 3 November 1920, banks in Cuba had called on their main branches or banks abroad for hard currency totaling almost fifty million dollars.⁵³

In the countryside, the situation became bleak: mills lacked the resources to prepare for the new grinding season, and mill owners and colonos owed more than they could pay. The banks, buried under a massive debt run up by sugar mills and colonos, started to withhold payments, and short-term credit to lubricate the wheels of commerce became scarce. Workers were idle and rural shopkeepers went bankrupt. Prominent Cuban planter José Gómez Mena wrote President Menocal, "The storekeepers in the countryside cannot buy except with cash, which is running out, but the agricultural worker cannot pay and is not paid, and the continuation of this lack of obligations will bring misery primarily in the countryside. It also prevents a decrease in the cost of living so necessary for reducing wages and lowering production costs."⁵⁴ Mortgage rates shot up and speculation in short-term credit generated usurious interest rates of 5 percent per month.⁵⁵ In the same year, mill owners were also confronted with the dreadful prospect of social unrest. Because of the misery in the countryside, social tensions were building. Gómez Mena feared that "disturbances in public order

52. *Gaceta Oficial, Edición Extraordinaria No. 43, Decreto 1583* (10 Oct. 1920), ANC, Secretaría de la Presidencia, leg. 12, no. 1.

53. "República de Cuba, Secretaría de Hacienda, Sección de Acuñación de Monedas, Havana, noviembre 3 de 1920—Numerario recibido de los Estados Unidos desde el día 12 de Octubre por los bancos y compañías que se expresan," ANC, Secretaría de la Presidencia, box 12, no. 1, f. 35.

54. See José Gómez Mena to Mario Menocal, President of the Republic of Cuba, 22 Nov. 1920, ANC, Secretaría de la Presidencia, leg. 12, no. 2.

55. Banco Nacional de Comercio, "La situación económica de Cuba y su posible solución," 22 Nov. 1920, ANC, Secretaría de la Presidencia, leg. 12, no. 2.

would increase the malaise and endanger our public resources and perhaps our institutions."⁵⁶

The boom and prosperity owed to World War I ended as quickly as they had started, as the more unpleasant realities of plantation economy came to the fore. Monocultural dependence on the price of one crop produced wide fluctuations in the pace of economic activity in Cuba and hurt the poorest sectors of the population most during the depression.

President Menocal was communicating directly with the president of the Cuban American Sugar Company in New York, Robert Hawley. Through Hawley, Menocal requested funds to set the coming 1921 harvest in motion. On 22 November 1920, Hawley cabled Menocal that National City Bank had agreed to help stave off the crisis. The bank was willing to advance ten million dollars to assist "bona fide mill owners" with preparations for the coming zafra. Thus the gigantic U.S. concerns negotiated directly with the Cuban president, and he turned to them for help in addressing the island's public financial needs. After securing the loan for Cuba, Hawley requested from Menocal "some word of expression" to the bank. President Menocal's abject response can be understood only in the context of the extreme economic dependence on foreign capital that had developed in neocolonial Cuba's plantation economy: "I shall appreciate it if you will be good enough to convey to the Board of Directors of the National City Bank my personal appreciation of their attitude and to assure them that such disinterested and friendly action will not soon be forgotten."⁵⁷

Failure of the Banco Nacional and the Banco Español along with the great indebtedness of Cuban producers created widespread inability to meet payments, bankruptcies, and transfers of ownership. In some cases, the transfers were overt, as with National City Bank's acquisition of several mills via foreclosure and their reorganization as the General Sugars Company. In other instances, the transfers of properties, particularly to U.S. owners, were less obvious.

The case of Central Confluente offers an interesting example. The Confluente Sugar Company could not meet its payments to the Cuban Banco Nacional after the harvest of 1921-1922. The Banco itself was bankrupt, and a liquidating commission had been placed in charge of collecting its loans. According to one company letter, "The economic situation of Ingenio Confluente becomes more difficult each day, to such an extreme that in the past zafra of 1921 to 1922, despite the good intentions of the Company, it has been materially impossible to make payments to the

56. See José Gómez Mena to Mario Menocal, President of the Republic of Cuba, 22 Nov. 1920, ANC, Secretaría de la Presidencia, leg. 12, no. 2.

57. Mario Menocal to Hawley-Cubanaco, 22 Nov. 1920, ANC, Secretaría de la Presidencia, leg. 12, no. 2.

creditors."⁵⁸ Although the Confluyente Sugar Company postponed payment of its loans for three years in an attempt to survive as an independent entity, by 1925 the mill was totally ruined.

The cane plantings have been lost totally; the little cane available belongs to colonos to whom the mill owes money. The premiums for insurance of the equipment building and other wooden buildings are in a ruinous state. Taxes are overdue. The oxcarts, cane carts for the railroad, and all wooden tools are unusable after three years of disuse. The ancient cane fields and grazing lands are so full of weeds that they could not be used except at a greatly increased cost. In order to feed the employees, the mill has had to sell tools, animals, and objects of all kinds that were not covered by the mortgages. In this sad situation, we must confess the most complete bankruptcy. . . .⁵⁹

The Guaranty Trust Company of New York intervened, seizing control of Confluyente in the same interesting transaction in which it collected its debt from the Cuban Banco Nacional. Several years earlier, following the crash in 1921, the Banco Nacional had defaulted on a loan of more than four hundred thousand dollars made by Guaranty Trust Company, which had not succeeded in collecting this debt from the Banco's liquidating commission. In 1925, after admitting complete bankruptcy, the management of the Confluyente Sugar Company negotiated with the liquidating commission the cancellation of all its debt by paying sixty thousand dollars in cash and delivering the note that the Guaranty Trust Company had been unable to collect from the Banco Nacional. Evidently, the Guaranty Trust Company took over Confluyente and paid its debts with the notes for the outstanding loan to the Banco Nacional. In a single transaction, Confluyente was no longer in debt to the liquidating commission of the Banco Nacional, which was no longer in debt to Guaranty Trust, which was now in control of Confluyente. Because these arrangements were carried out by the Confluyente management (which remained in place), no formal transfer of ownership was made. In attempting to persuade Confluyente creditors to accept the note from Guaranty Trust as payment, the company president reminded them of "the sacrifice that the acquisition of the credit note of the Guaranty Trust Company represents to this Company."⁶⁰

The aftermath of the crash included a substantial increase in the share of Cuban sugar being produced by U.S.-owned or -controlled companies. In the *zafra* of 1919-1920, these companies produced more than twelve million sacks of sugar (48 percent of Cuba's total production). The figure climbed to nearly fifteen million sacks in 1920-1921 (54 percent)

58. See "Confluyente Sugar Company to Srs. de la Comisión de Liquidación Bancaria," 27 June 1922, ANC, Donativos y Remisiones, leg. 449, no. 5.

59. R. Egaña, Confluyente Sugar Company, to Presidente de la Junta Liquidadora del Banco Nacional, 25 Feb. 1925, ANC, Donativos y Remisiones, leg. 449, no. 5.

60. R. Egaña, Confluyente Sugar Company, to Presidente de la Junta Liquidadora del Banco Nacional, 25 Feb. 1925, ANC, Donativos y Remisiones, leg. 449, no. 5.

and sixteen million sacks in 1921-1922 (59 percent). The sixteen million sacks of sugar produced by U.S.-owned or -controlled companies in 1924 represented 64 percent of total Cuban production. Thus in the four years after the sugar crash, U.S. companies acquired another 15 percent of Cuba's foremost export industry, thereby increasing the U.S. share from 48 to 63 percent.⁶¹

CONCLUSION

Expansion in the sugar industry of Cuba between 1900 and 1930 shows elements of continuity with the plantation system in place when the United States occupied the island in 1898. These continuities are notable mainly in the western provinces of Cuba that were home to an established class of independent cane farmers, a product of the polarization of the Cuban planter class after abolition in the 1880s. In the war fought from 1895 to 1898, many Cuban plantations were destroyed or had to stop grinding cane. After 1898 the sugar plantations renovated and expanded their production under the *colono* system. Mill ownership gradually changed as they were transferred from Spanish to U.S. and Cuban hands and as U.S. investors built new mills in virgin regions of the island.

The most drastic expansion of the sugar industry took place during World War I. Responding to increased demand in the world market and the consequent increase in prices, U.S. investors poured huge sums into building new sugar mills in the eastern provinces of Cuba. Typically, these new mills bought vast tracts of land that they leased to cane farmers. This approach differed from the traditional division of labor between sugar mills and independent *colonos* in that the cane farmers depended on the mills for their land and financing and were bound by lease contracts stipulating the price at which the cane had to be delivered to the mill. This system of leasing land to dependent *colonos* became more important as the two eastern provinces increased their share of total Cuban sugar output. By 1924-1925, the eastern provinces of Camagüey and Oriente operating under the new system were producing half of all Cuban sugar, and U.S. investors were controlling two-thirds of the island's sugar production.

61. Farr and Company, *Manual of Sugar Companies, 1924* (New York: Farr and Company, 1924), 18.

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