

# Visuality and Slave Management in the Brazilian and Cuban Coffee and Sugar Plantations, c. 1840–1880

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## ABSTRACTS

Dieser Beitrag folgt der Frage, wie die neuen Mechanismen der Sklavenverwaltung, die in den kubanischen und brasilianischen Zucker- und Kaffeeanbaugebieten während des 19. Jahrhunderts entwickelt wurden, mit einer neuen Visualität der Sklaverei verbunden waren. Es kann ein Komplex neuer Strategien identifiziert werden, die darauf abzielten, aus den Sklaven in den Kaffee- und Zuckerrohrplantagen Brasiliens und Kubas mehr Arbeitskraft herauszuziehen. Diese waren nicht nur eine Reaktion auf die große Reorganisation der Weltwirtschaft, die mit dem Aufstieg des Industriekapitalismus verbunden war, sondern auch eine Reaktion auf neue Muster des Sklavenwiderstands. Die untersuchten Strategien können als Teil eines neuen visuellen Regimes der Sklaverei in der Neuen Welt aufgefasst werden.

The aim of the article is to understand how the new mechanisms of slave management developed in the Cuban and Brazilian sugar and coffee frontiers during the nineteenth century were connected to a new visuality of slavery. The argument is that it is possible to identify a cluster of new strategies aimed at extracting more labour from slaves in the coffee and sugar cane plantations of Brazil and Cuba, which was not only a response to the great reorganization of the world economy under industrial capitalism, but also to new patterns of slave resistance. These strategies can be understood as part of a new visual regime of New World slavery.

## I.

Following the *visual turn* in the social sciences, the visual culture of African slavery in the Americas has become a subject that has generated significant scholarship in the last two decades. In fact, today we have a considerable number of studies on the multiple

forms of visual representation of New World slavery. Based on different approaches and theoretical perspectives, these works have helped to illuminate the ways in which black slavery was visually perceived in the social and political struggles starting in the late eighteenth century regarding its legitimacy; the ways how the visual culture of slavery was linked to the birth of the consumer society and the culture of refinement; the ways how the rural- and urban-built environments in which enslaved subjects lived were represented in different medias; and the implications of the visual archive inherited from slavery to the present-day politics of memory.<sup>1</sup>

These publications have contributed to understanding the ways in which black slavery was represented at different times and spaces. In some studies, historians have been able to combine an examination of visual representations with analyses of the effects they had on the social world to which they belonged.<sup>2</sup> These studies, however, have not tried to scrutinize how the vast visual repertoire of slavery was specifically connected to the exploitation of slave labour.<sup>3</sup>

This article tries to fill this gap by examining two crucial zones of the nineteenth-century New World slavery: Western Cuba – the world's biggest sugar-producing zone in that period – and the valley of the Paraíba do Sul River (Paraíba Valley) in Brazil – the greatest coffee-producing zone of the world economy.

- 1 On the visual turn in the social sciences and its focus on the key role of the visual dimension in social life, see, among others, M. Jay, *That Visual Turn*, in: *The Journal of Visual Culture* 1 (2002), pp. 87–92. For the other themes, see M. Wood, *Blind Memory. Visual Representations of Slavery in England and America, 1780–1865*, Manchester 2000; M. Wood, *Black Milk. Imagining Slavery in the Visual Cultures of Brazil and America*, Oxford 2013; G. Quilley/K. D. Kriz (eds.), *An Economy of Colour. Visual Culture and the Atlantic World, 1660–1830*, Manchester 2003; K. D. Kriz, *Slavery, Sugar, and the Culture of Refinement. Picturing the British West Indies, 1700–1840*, New Haven 2008; J. M. Vlach, *The Planter's Prospect. Privilege and Slavery in Plantation Paintings*, Chapel Hill 2002; M. Dresser/A. Hann (eds.), *Slavery and the British Country House*, Swindon 2013; J. de Cauna, *Vestiges of the Built Landscape of Pre-Revolutionary Saint-Domingue*, in: D. P. Geggus/N. Fiering (eds.), *The World of the Haitian Revolution*, Bloomington 2009, pp. 21–48; S. Gikandi, *Slavery and the Culture of Taste*, Princeton 2011; C. Ellis/R. Ginsburg (eds.), *Architecture and Landscapes of North American Slavery*, New Haven 2010; R. W. Slenes, *African Abrahams, Lucretias and Men of Sorrows: Allegory and Allusion in the Brazilian Anti-Slavery Lithographs (1827–1835)* of Johann Moritz Rugendasm, in: *Slavery and Abolition* 23 (2002), pp. 147–168; V. Lima/J.-B. Debret, *Historiador e Pintor. A Viagem Pitoresca e Histórica ao Brasil (1816–1839)*, Campinas 2007; E. M. M. Sela, *Modos de ser, modos de ver. Viajantes europeus e escravos africanos no Rio de Janeiro (1808–1850)*, Campinas 2008; S. S. M. Koutsoukos, *Negros no Estúdio do Fotógrafo. Brasil, segunda metade do século XIX*, Campinas 2010; F. Beltramin, *Sujeitos Iluminados. A reconstituição das experiências vividas no estúdio de Christiano Jr., São Paulo 2013*; A. L. Araújo, *Public Memory of Slavery: Victims and Perpetrators in the South Atlantic*, Amherst 2010; A. L. Araújo, *Shadows of the Slave Past: Memory, Heritage, and Slavery*, New York 2014.
- 2 See the excellent books by M. D. McNis, *The Politics of Taste in Antebellum Charleston*, Chapel Hill 2005; *Slaves Waiting for Sale. Abolitionist Art and the American Slave Trade*, Chicago 2012.
- 3 One of the few exceptions is the “counterhistory of visibility”, written by one of the leading exponents in the field of visual culture: N. Mirzoeff, *The Right to Look. A Counterhistory of Visibility*, Durham 2011, pp. 48–76. This book, however, contains serious problems, starting with its ahistorical and abstract definition of what “visibility” or “countervisibility” means. This framework leads to an equally ahistorical – and very simplifying – treatment of the visual organization of the slave plantation in the French Caribbean. In an article published almost ten years before Mirzoeff's book, I examined the same visual material treated by him but reached very different results. See R. de B. Marquese, *Açúcar, representação visual e poder: a iconografia sobre a produção caribenha de açúcar nos séculos XVII e XVIII*, in: *Revista USP* 55 (2002), pp. 152–184.

Notwithstanding their own peculiarities, the making of both spaces can be conceptualized as part of the unified process that Dale Tomich and other historians have called the “second slavery” of the Atlantic world. This concept highlights how a set of historical events and trends between the late eighteenth and early nineteenth century, most notably the advent of the Industrial Revolution and the consolidation of British hegemony over the world economy and the interstate system, led to profound reconfigurations of Atlantic slavery. The growing imbalance in international prices of industrial and agricultural goods, the increase in the consumption of tropical commodities such as coffee and sugar (demanded by the growing population of workers and middle classes in the urban centres of the North Atlantic), and the search for new raw materials, like cotton, led to the decline of slavery in the British and French Caribbean. These changes, in turn, acquired a different meaning in other slaveholding areas such as the US South, Cuba, and Brazil. These regions, which had been relatively marginal or declining in the Atlantic economy of the eighteenth century, became the dynamic centres of a massive expansion of slavery to meet the growing global demand for cotton, coffee, and sugar. New World slavery was re-created through an unprecedented political and economic configuration, with a radical transformation of its character and systemic nature. These emerging slave zones found themselves increasingly integrated to and driven by industrial production in the world market.<sup>4</sup>

In a previous book, I have examined ideas on slave management in Brazil, Cuba, and the United States in the nineteenth century, contrasting it with Caribbean ideas on slave management in the seventeenth and eighteenth centuries. In a different study, co-authored with Dale Tomich, Reinaldo Funes, and Carlos Venegas, we investigated the built environments of plantation spaces in the new slave zones of the nineteenth century. Using a wide range of visual sources, we analysed the relationship between material, social, and symbolic elements in the constitution of cotton, sugar, and coffee plantation landscapes.<sup>5</sup> My goal now is to return to these visual materials in order to understand how the new mechanisms of slave management designed in the Cuban and Brazilian sugar and coffee frontiers became connected to a new visuality of slavery.

The article is divided into three parts. In the first part, I briefly present the making of the new sugar- and coffee-producing zones of Cuba and Brazil in connection to the world market, as well as the emergence of new production units in these regions during the 1830s and 1840s, units based on productive plants that were very different from the previous patterns of the Atlantic world. In the second and third parts, I analyse the new

4 D. W. Tomich, *Through the Prism of Slavery. Labor, Capital, and World Economy*, Boulder 2004, pp. 56–71. For a recent critical historiographical overview, with chapters written by Robin Blackburn, Dale Tomich, Rafael Marquese, Ricardo Salles, José Antonio Piqueras, and Edward E. Baptist, see R. Marquese/R. Salles (eds.), *Escravidão e capitalismo histórico no século XIX: Brasil, Cuba e Estados Unidos*, Rio de Janeiro 2016.

5 For the first research, see R. de B. Marquese, *Feitores do corpo, missionários da mente. Senhores, letrados e o controle dos escravos nas Américas, 1660–1860*, São Paulo 2004. The collective project was developed between 2005 and 2009 with the support of the Getty Foundation, and its results are going to appear in a forthcoming book: D. Tomich et al., *Reconstructing the Landscapes of Slavery: A Visual History of the Plantation in the Nineteenth-Century World*, Chapel Hill 2021.

visual mechanisms employed for the exploitation of slave labour and natural resources in these new sugar and coffee plantations. The argument I want to make is that, after the 1840s, it is possible to identify a cluster of new strategies to extract more labour from slaves in the coffee and sugar cane fields of Brazil and Cuba, which were a response not only to the major reorganization of the world economy under industrial capitalism but also to new patterns of slave resistance. These strategies can be conceived as part of a new visual regime of New World slavery.

## II.

The first Brazilian and Cuban sugar plantations were founded in the first century of European exploration of the New World. Before the second half of the seventeenth century, however, Cuba, with its few and small-scale units concentrated around Havana, did not have a significant position in the world market. Pernambuco and Bahia stood out as major producers already at the turn of the seventeenth century, but between 1660 and 1760, the two main sugar captaincies of Portuguese America lost their positions in the world market to the powerful sugar industry of the British and the French Antilles. As a result of improvement policies promoted by Iberian Enlightened reforms, there was a marked increase in sugar exports starting in the 1770s from Brazil (which now, besides the exports from Pernambuco and Bahia, also included the exports from the captaincies of Rio de Janeiro and São Paulo) and Western Cuba – a movement that received new impetus with the outbreak of the slave revolt in the French colony of Saint-Domingue. As for coffee, before the 1790s the Cuban and Brazilian exports were virtually non-existent. Only the French, Dutch, and, to a lesser extent, British colonies produced coffee, with the leading position occupied by Saint-Domingue, which accounted for almost 50 per cent of the world's coffee supply in 1790, with a total volume of 34,650 tons.<sup>6</sup>

Starting in the 1790s, sugar and coffee production in Brazil and Cuba became closely intertwined. The beginning of the Haitian Revolution in 1791 stimulated the rapid advancement of sugar production, based on a booming transatlantic slave trade. Between 1790 and 1820, the combined sugar exports of Portuguese America grew from 13,000 to 35,000 tons; the decennial arrival of enslaved Africans jumped from about 190,000 individuals in the 1780s to 451,000 in the 1810s (it is worth noting that the Brazilian colonial economy went through a great diversification in its exports – cotton as the second main crop after sugar). In Cuba, the boom was even more impressive: from the 1780s to the 1810s, tons of sugar exported grew from 15,000 to 55,000 and total slaves imported increased from 15,000 to 115,000. In coffee production, the growth was simi-

6 J. A. Piqueras, *Islas de azúcar y de esclavos*, in: J. A. Piqueras (ed.), *Historia Comparada de las Antillas*, Madrid 2014, pp. 97–144; S. B. Schwartz, *Segredos Internos. Engenhos e escravos na sociedade colonial (1550–1835)* (transl.), São Paulo 1988, pp. 144–176, 337–355; R. de B. Marquese, *Capitalismo, Escravidão e a Economia Cafeeira do Brasil no longo século XIX*, in: *Saeculum (Brasil)* 29 (2013), pp. 296–297; M. Zeuske, *Kaffee statt Zucker: Die globale commodity Kaffee und die Sklaverei auf Kuba (ca. 1790–1870)*, in: *Saeculum (Germany)* 67 (2017) 2, pp. 273–301.

lar: starting from virtually zero in 1790, Brazil and Cuba exported, respectively, 13,500 and 10,000 tons of coffee in 1821.<sup>7</sup>

After 1820, Cuba and Brazil managed to establish themselves as the world's largest sugar and coffee producers through their involvement in a massive transatlantic slave trade – between 1821 and 1860, the two spaces together would import more than 1.77 million enslaved Africans. With the independence of Haiti, the French sugar- and coffee-producing colonies were drastically reduced. Trapped in a political setting marked by a strong metropolitan anti-slavery movement that successfully banned the transatlantic slave trade in 1807, with the redirection of British imperial interests to the East Indies, the British West Indies quickly lost competitive edge to its rivals in Cuba and Brazil. But, even more interesting is how the reorganization of the world market after the 1820s led to increasing specialization in sugar production in Cuba and coffee production in Brazil as part of a unified movement of reciprocal determination. Consider, for instance, the trajectory of these two products in these two spaces (see table 1).

Table 1. Five-year averages of sugar and coffee exports, 1821–1860 (metric tons)<sup>8</sup>

	Sugar		Coffee	
	Brazil	Cuba	Brazil	Cuba
1821–1825	41,400	63,100	14,060	10,900
1826–1830	54,800	84,130	25,680	19,340
1831–1835	69,600	101,400	53,320	22,400
1836–1840	81,600	129,800	71,020	21,180
1841–1845	88,600	170,400	88,260	15,020
1846–1850	117,800	253,400	12,900	8,680
1851–1855	123,800	389,600	153,800	6,180
1856–1860	105,800	435,200	168,500	4,200

If the quantities of sugar and coffee sold by Brazil and Cuba in the world market were relatively equivalent at the beginning of this period, the discrepancy was evident at the end of it. In the period 1856–1860, the volume of Cuban sugar exports amounted to 25

7 Slave trade data: [www.slavevoyages.org](http://www.slavevoyages.org). Sugar data: M. M. Friginals, *O engenho: complexo sócio-econômico açucareiro cubano* (transl.) São Paulo 1989, vol. 2, p. 355; J. J. de A. Arruda, *A produção econômica*, in: M. B. N. da Silva (ed.), *Nova História da Expansão Portuguesa. O Império Luso-Brasileiro (1750–1822)*, Lisbon 1986, p. 234. Coffee data: Marquese, *Capitalismo, Escravidão e a Economia Cafeeira*, pp. 297–298.

8 Sources: M. M. Friginals, *O engenho: complexo sócio-econômico açucareiro cubano* (transl.) São Paulo 1989, vol. 2, pp. 355–357; *Estatísticas Históricas do Brasil*, Rio de Janeiro 1987, p. 342; M. Samper/R. Fernando, *Historical statistics of coffee production and trade from 1700 to 1960* in: W. G. Clarence-Smith/S. Topik (eds.), *The Global Coffee Economy in Africa, Asia, and Latin America, 1500–1980*, Cambridge 2003, pp. 428–433. Approximate numbers.

per cent of world production (cane and beet sugar added); in that same period, Brazilian coffee exports accounted for 52 per cent of the world market supply. What stands out, however, is the tendency of stagnation of Brazilian sugar exports in the period 1840–1860, when Cuban exports of sugar more than tripled. Something similar, but in an opposite way, occurred with coffee: the volume of Brazilian exports more than doubled between 1840 and 1860, whereas Cuban exports shrunk (in 1860, Cuban coffee exports were less than half of what they were in 1820).

One important question is whether these movements were interrelated – indeed, they were. In an international regime of free competition, the capacity of Cuban planters to face the adverse conditions of the world market by offering a product at a lower cost changed the operating conditions of its rivals. Despite growing between 1820 and 1860, Brazilian sugar production was unable to keep pace with that of Cuba. Without the aid of the transatlantic slave trade, which finally came to an end in 1850, Brazilian sugar production decreased; old sugar-producing areas such as the west of São Paulo witnessed the spread of coffee production. The other side of the coin was that the advance of coffee production in Brazil became a key factor in the crisis of coffee production in Cuba. In 1830, coffee and sugar plantations in Cuba employed an equivalent number of slaves: approximately 50,000 in each sector. Owing to the inefficiency of Cuban coffee production compared to the productivity of its Brazilian counterpart, there was a massive movement of slaves in Cuba from the coffee plantations to the cane fields in the 1830s and 1840s – a movement that was important for the sugar boom on the island and, consequently, to the stagnation of sugar production in Brazil.<sup>9</sup>

One of the reasons for the divergent, but mutually conditioned, paths of Brazil and Cuba concerns the geographic and ecological conditions for production, that is to say the different altitudes, climates, and soils that made each area more suitable for coffee or sugar. However, before Western Cuba and the Paraíba Valley fully realized their respective potential for coffee or sugar production, a considerable period of experimentation was necessary – an experimentation that led to a spatial reconfiguration of their slave plantations. In other words, the rise of Brazilian and Cuban coffee and sugar production was largely dependent on the new production plant that only appeared by the 1830s and 1840s. Supported by the massive importation of enslaved Africans and the opening of hitherto uninhabited – or occupied by squatters and smallholders whose traditional ways of life were swept away by the strength of capital – commodity frontier areas, this new plant for coffee and sugar production clearly departed from the previously prevailing standards in the British and French Caribbean.<sup>10</sup>

9 R. Marquese/D. Tomich, *O Vale do Paraíba escravista e a formação do mercado mundial do café no século XIX* in: K. Grinberg/R. Salles (eds.), *O Brasil Imperial*, vol. II: 1831–1870, Rio de Janeiro 2009, pp. 339–383.

10 R. Funes/D. Tomich, *Naturaleza, tecnología y esclavitud en Cuba: Frontera azucarera y Revolución industrial, 1815–1870* in: J. A. Piqueras (ed.), *Trabajo libre y trabajo coactivo en sociedades de plantación*, Madrid 2009, pp. 75–117; J. A. Piqueras, *Reordenando el universo azucarero. Del emporio de Saint-Domingue a la segunda esclavitud*, in: J. A. Piqueras (ed.), *Historia Comparada de las Antillas*, Madrid: 2014, pp. 171–186; R. de B. Marquese, *Espacio y poder en la caficultura esclavista de las Américas: el Valle del Paraíba en perspectiva comparada*,

Being much larger and employing more capital and slaves per unit, the Paraíba Valley's *fazendas de café* (coffee plantations) and Western Cuba's *ingenios de azúcar* (sugar plantations) promoted a substantial concentration of slave ownership and land tenure. The spatial configuration of these new plantations was developed in the new context of struggles not only between masters and slaves but also between slavery and anti-slavery forces at the local and global levels. Facing strong diplomatic pressure from Britain, the massive introduction of enslaved Africans in Cuba and Brazil took place in an environment of lawlessness considering that the transatlantic slave trade had been formally prohibited in both countries since 1820 and 1831, respectively. The profound changes in the demographics of the Cuban countryside put the Spanish colony under the constant risk of slave revolts on a large scale. Western Cuba saw multiple collective slave activities of resistance between 1825 and 1844. Although not with the same intensity, Brazilian slave owners dealt with a similar problem in the 1830s and 1840s.<sup>11</sup>

Therefore, slave resistance should be considered a structural element of the formation of these two new slave zones and their respective production units. The question arose how to increase the exploitation of slave labour in *ingenios de azúcar* and *fazendas de café* in an unprecedented scale without putting at risk the whole structure of the Cuban and Brazilian slave societies? The remainder of this article will argue that part of the answer can be found in the new mechanisms of the slave master's eye – the new visibility of slavery.

### III.

Between March 1855 and February 1857, the Havana-based publisher Louis Marquier (a French émigré who had been residing for ten years in Cuba) published what is certainly the most amazing series of lithographs on the slave plantations of the New World. Prepared by Eduardo Laplante (another Frenchman who had moved to Cuba in the late 1840s as a representative of the sugar machinery firm Derosne & Cail and who shortly afterwards began working also as a lithographer for the local tobacco industry), with detailed explanatory texts written by Justo Cantero (a powerful planter from Trinidad, a town on the south coast of the island, who got his physician's degree in the United States), this series was composed of 28 prints in colour, each of them lithographed; 4 architectural plans of sugar plantations; and 4 plans of mills, boilers, and centrifuges machinery. For the production of this material, Laplante and Cantero visited 25 *ingenios* in Western Cuba, most of them situated in the plains of the Matanzas-Cárdenas-Colón zone. The selection followed a specific criterion: with one or two exceptions, these slave plantations were the most advanced at that time, allowing the reader to get a sense of the

17501850, in: Piqueras (ed.), *Trabajo libre y trabajo coactivo*, pp. 215–252.

11 R. Marqueses/T. Parron/M. Berbel, *Slavery and Politics. Brazil and Cuba, c.1790–1850* (transl.) Albuquerque 2016; M. B. Paz, *Seeds of Insurrection: Domination and Resistance in Western Cuban Plantations, 1808–1848*, Baton Rouge 2008; K. Grinberg/M. F. Borges/R. Salles, *Rebeliões escravas antes da extinção do tráfico*, in: K. Grinberg/R. Salles, *O Brasil Imperial*, vol. I: 1808–1831, Rio de Janeiro 2009, pp. 235–270.

diversity of technical solutions adopted by Cuban sugar mills. Designed as a vehicle for the construction of the class identity of the Cuban sugar masters in the critical conjuncture of the 1850s, this expensive editorial project represented the slave economy of the island at its highest point of productive and technological development.<sup>12</sup>

One of the sugar plantations visited by Laplante and Cantero was Purísima Concepción, located at Banaguises, north of Colón (see figure 1).

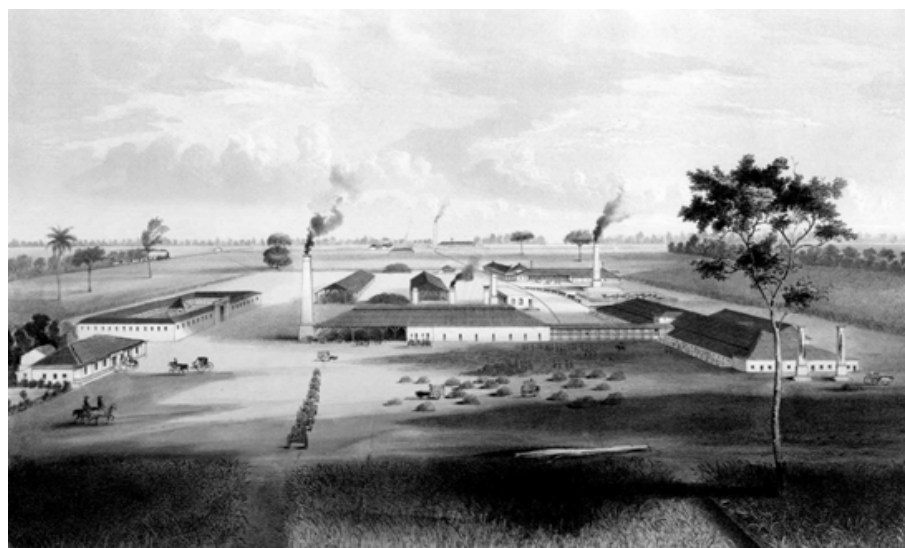


Fig. 1. *Ingenio Purísima Concepción* (a) Echeverría, G. Cantero (texto), E. Laplante (láminas dibujadas del natural y litografiadas), Los Ingenios. Colección de vistas de los principales ingenios de azúcar de la Isla de Cuba, ed. L. M. García Mora and A. Santamaría García, Madrid 2006, p. 236.

Founded in 1847, this sugar plantation entered began full operation after 1851. When this lithography was prepared, the plantation's total dimensions were 91 caballerías of land (3,017 acres) – of which 40 (1,326 acres) had sugar cane planted. In 1855, 362 slaves and 50 Asian indentured workers were living on the plantation. The estimated crop was 117,000 arrobas (1 arroba equals 11.52 kilogrammes) of sugar. The sugar factory had six Jamaican trains and their corresponding clarifiers; therefore, it was a semi-mechanized unit combining steam mills for crushing the cane with open boilers. One of the most innovative elements of this plantation was its integration through internal rails with another sugar unit, San Martín.

12 There is an excellent critical edition: J. G. Cantero (texto), E. Laplante (láminas dibujadas del natural y litografiadas), Los Ingenios. Colección de vistas de los principales ingenios de azúcar de la Isla de Cuba, ed. L. M. García Mora and A. Santamaría García, Madrid 2006.



In the lithography, this second sugar plantation is at the vanishing point of the visual composition; at the centre of the image are the tracks that connected the grinding mill/boiler house of Purísima Concepción with the *batey* of its sister unit (*batey* is a term for the plantation headquarters in Cuban *ingenios*, with all production facilities and housing for enslaved workers). The plan of San Martín's *batey* prepared by Laplante (see figure 2) shows how the tracks directly connected the two plants (the extension to the right connected the mill to the extension of the railway linking Banagüises to the Bay of Cárdenas; this is in the same railroad represented to the left of the Purísima Concepción lithograph). The scale of San Martín was imposing: fully mechanized, that is to say with steam iron mills for crushing the cane, vacuum pans and centrifuges, a labour force comprised of 452 enslaved workers and 125 "Asian" labourers, and of a total area of 222 caballerías (7,358 acres), 55 caballerías (1,823 acres) planted with cane. The crop for 1855 would be 273,000 arrobas of sugar.

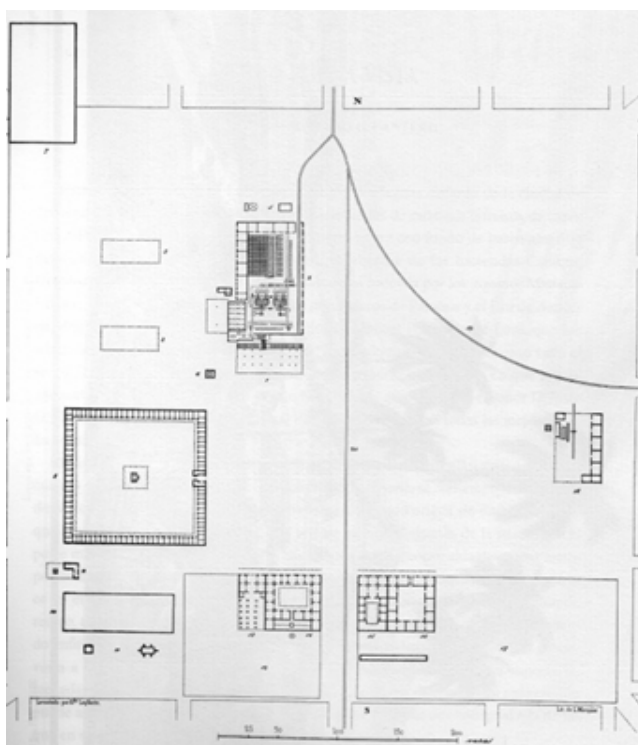


Fig. 2. Eduardo Laplante (lit.), detail of the *Plano de las fábricas del ingenio San Martín*, G. Cantero (texto), E. Laplante (láminas dibujadas del natural y litografiadas), Los Ingenios. Colección de vistas de los principales ingenios de azúcar de la Isla de Cuba, ed. L. M. García Mora and A. Santamaría García, Madrid 2006, p. 199.

Therefore, the complex, composed of the two units, accounted for a total of 100 caballerías (3,316 acres) planted with sugar cane and 989 workers capable of producing 390,000 arrobas of sugar. A quick comparison of the relation of the area planted with sugar cane to the amount of labourers or an evaluation of the sugar output per slave shows how Cuba had departed from the previously existing patterns of the Caribbean. In Jamaica and Saint-Domingue at the turn of the nineteenth century, the proportion of acres planted with sugar cane per resident worker on the plantation was around 1:20 to 1:50; in the 25 units visited by Laplante and Cantero, this proportion was 3:85. As for the production of sugar by slaves, the rate in Cuba in the 1850s was three times that of its Caribbean rivals in the 1790s.<sup>13</sup> The merging of two plantations with the respective sizes of Purísima Concepción and San Martín into a unified complex, linked by internal rails, was still unusual in the 1850s. Fully mechanized sugar plantations – such as San Martín – were neither the rule: in 1860, they were only 4.86 per cent of the sugar units of Cuba, responsible for 14.80 per cent of the total sugar production of the island that same year. The dominant profile of the Cuban sugar plantation was closer to Purísima Concepción, with semi-mechanized units encompassing 67.45 per cent of the island's plantations and accounting for 76.62 per cent of the total sugar production in 1860.<sup>14</sup> A basic question arises from these data: considering the human and spatial scale of Cuban sugar plantations, how could they be managed effectively? The demands of the labour and production processes of New World sugar plantations placed them at the forefront of management practices of the capitalist world economy.<sup>15</sup> However, the new size of Cuban sugar plantations – with their hundreds of slaves (mostly African), forced to comply with an unprecedented workload in a situation of growing conflicts not only between slaves and masters but also between Spain and its imperial rivals – called for new management solutions.

Laplante's images help us understand the solution found by Cuban enslavers, starting with the pattern of slave housing. In the landscape of the *ingenio* Purísima Concepción, to the left of the grinding mill/boiler house, there is a large rectangular building with one entrance and small barred windows. The architectural set-up of this building is more evident if we look at its equivalent at San Martín: the large square building to the left, the largest one in the *batey*, again with a single entry, with all its hundred cubicles facing the internal, enclosed courtyard. This is the infamous *barracón* – a model of slave quarters that was designed in the mid-1820s as a response of the Cuban slaveholding powers to the slave uprisings that dotted the western part of the island at the time. The *barracón*

13 Data on areas/slaves: B. W. Higman, *Slave Populations of the British Caribbean, 1807–1834*, Mona 1995, p. 163; N. Bonnet, *L'organisation du travail servile sur la sucrerie dominicaine au XVIII<sup>e</sup> siècle*, in: P. Hrodes (ed.), *L'esclave et les plantations de l'établissement de la servitude à son abolition. Hommage à Pierre Pluchon*, Rennes 2008, p. 127; L. M. García Mora/A. Santamaría García, *Donde cristaliza la esperanza: lectura de Los Ingenios*, in: Cantero (texto), Laplante (láminas dibujadas del natural y litografiadas), *Los Ingenios*, p. 44. Data on sugar output/slave: Piqueras, *Reordenando el universo azucarero*, p. 179, fig. 5.

14 Piqueras, *Reordenando el universo azucarero*, p. 180, Cuadro 5.

15 Marquese, *Feitores do Corpo, Missionários da Mente*, pp. 71–80, 162–165, 377–379.

became very popular in large semi-mechanized sugar plantations in the early 1840s in the immediate context of repressing the wide slave uprising plot involving several plantations in the area of Matanzas-Cardenas-Colón – what was called the “Conspiracy of the La Escalera”.<sup>16</sup>

The immediate goal of the *barracón* was to ensure the strict confinement of slaves at night, thus preventing them from contacting their enslaved partners in the neighbouring plantations. Besides the purpose of spatial control (due to the need for permanent observation of the slaves), another aim was implementing the production process of the Cuban sugar plantations. As is well known, the production of sugar requires close coordination between the agricultural and manufacture spheres: after being cut, the cane must be crushed within 24 hours, or its juice will not crystallize. The more productive the manufacture is and the larger the planted area is, the greater the problems become regarding the coordination of the two spheres – and therefore the coordination of collective labour.

The *barracón*, with its prison-like and militarized character, was an important instrument to closely control workers, combined with visibility protocols that brutally restricted slave autonomy, their break time, and the regimentation of labour gangs for the different tasks of the production cycle.<sup>17</sup> The need for control also helps explain the division of the complex Purísima Concepción/San Martín into two separate but interlinked units. Internal rails allowed the quick transfer of raw material (the sugar cane before the crushing process, the sugar to be purged, etc.) from one unit to another, thus accelerating the output of the production process. Integrating them into a single *batey* would result in great problems for controlling the labour (e.g. the confinement of a thousand slaves or the coordination of slave gangs) and for the production processes (e.g. the excessive time it took for slaves to move from the *barracones* to the cane fields or the very large volume of raw material to be processed).

This brings us back to the problem regarding the scale of the sugar plantations. The dimensions of the cane-growing area were determined by the processing capacity of the manufacture. The increasing mechanization of Cuban sugar mills required expanding cultivated fields, with the consequent expansion of the labour force (the new machinery freed up labour, thus allowing the relocation of more slaves to the field, which was nonetheless not enough). Semi-mechanized and fully mechanized mills thus had to deal with the challenge of managing increasingly vast sugar cane fields and, in particular, the acceleration of the cutting pace to keep the new machinery at optimum levels of operation.<sup>18</sup> This sense of continuous movement was in fact part of the visual organization of Laplante’s lithography: the movement of the cane carts and the trains, both of them

16 R. de B. Marquese, Moradia escrava na era do tráfico ilegal: senzalas rurais no Brasil e em Cuba, c. 1830–1860 in: Anais do Museu Paulista. História e Cultura Material 13 (2005) 2, pp. 165–188.

17 Marquese, Feitores do Corpo, pp. 314–327; D. W. Tomich, The Invention of the Cuban Sugar Mill: Space, Time, and Labour Management, in: M. D. González-Ripoll/I. Á. Cuartero (eds.), Francisco Arango y la Invención de la Cuba Azucarera, Salamanca 2009, pp. 133–150.

18 Tomich, The Invention of the Cuban Sugar Mill, pp. 136–138.

modulated by the diagonal axis of the image's vanishing point; the movement of mills and boilers (noted by the operation of the chimneys of the steam engines); and the movement of slaves providing wood for the furnaces.

Moreover, it is also in this sense of movement that we can find another feature of the new visuality of slave management. Historically, slave labour in sugar production was organized according to the so-called gang system, in which teams of slaves worked collectively under the unified command of an overseer.<sup>19</sup> In Cuba, a system of work gangs, known as *cuadrillas*, was used. With the demands resulting from the new spatial scale of the Cuban *ingenios*, however, some modifications were required to be made to the system previously employed in English and French sugar plantations. In the lithography of the *ingenio* Santa Teresa – a completely mechanized unit founded in the late 1840s in Colón, with 60 caballerías (1989 acres) in cane and a total labour force of 380 slaves – Laplante shows what was the new Cuban standard for organizing *cuadrillas* (see figure 3). The French artist expresses here the close connection between the *cuadros* (plots) of sugar cane, the *guardarrayas* (the paths to the ox-carts, which also separate the *cuadros* of cane), and the *carretones* (ox-carts). On the right side, we see a *cuadrilla* with 25 slaves cutting cane under the *contramayoral* (slave driver) on a horse – possibly accompanied by a *mayoral* (overseer), also on a horse. The *guardarrayas* are on the diagonal axis on the left that connects the field to the *batey*. A closer look at the *carretones* (and at the seven carts that can be seen entering the *batey* of Purísima Concepción) shows the uniformity of these vehicles, which were constructed to carry 100 arrobas of cane each.<sup>20</sup>



Fig. 3. Eduardo Laplante (lit.), detail of the *Ingenio Santa Teresa* (a) Agüica, G. Cantero (texto), E. Laplante (láminas dibujadas del natural y litografiadas), *Los Ingenios. Colección de vistas de los principales ingenios de azúcar de la Isla de Cuba*, ed. L. M. García Mora and A. Santamaría García, Madrid 2006, p.129.

The flat topography of the Matanzas-Cárdenas-Colón zone facilitated the implementation of a new pattern of labour to the *cuadrilla* system, with the establishment of a strict

19 P.D. Morgan, *Task and Gang Systems. The Organization of Labor on New World Plantations*, in: S. Innes (ed.), *Work and Labor in Early America*, Chapel Hill 1988, pp. 189–220; Marquese, *Feitores do Corpo*, pp. 71–75.

20 A. de Zayas, *Observaciones sobre los ingenios de esta isla*, in: *Memorias de la Real Sociedad Patriótica de la Habana* 12 (1836) 3, pp. 174–183; Moreno Friginals, *O Engenho*, vol. 1, p. 244, n. 27.

regulation of cane fields, roads, and carts in a geometrized landscape. Sugar processing in the factory required a precise control of the amount of raw material: hence the importance of the standardization of the carts and the amount of cane in each one. But, without an exact visual representation of the field, there would be no use for this regulation. The composition of maps became central to the operations of sugar plantations while Cuban agronomic manuals presented models for their preparation.<sup>21</sup>

We have a good example of this cartographic practice in the map of the *ingenio* Merced, drawn in 1863 (see figure 4). This semi-mechanized sugar plantation was founded in 1856 in the Colón region. In 1860, only 22 of its 50 caballerías were planted with cane; according to the agricultural census of 1877, its dimensions were then expanded to a total of 70 caballerías, of which 40 were planted with cane, with a labour force of 283 slaves and 83 “Asians”.<sup>22</sup> As can be seen in its material and visual display, the map was clearly composed in order to better control the labour process. Inserted into a ledger, it allowed a quick visualization of the entire space of the sugar plantation (*batey*, *guardarrayas*, *cuadros*, pastures, etc.) The plan of the *ingenio* closely follows the recommendations that can be found in contemporary agronomic literature concerning symmetry, with the *batey* located exactly at the centre of the property.<sup>23</sup>

The novelty of the Cuban system of *cuadrillas* is inscribed in the spatial arrangement represented by this map. Unlike sugar plantations in the British and French Caribbean, where slave gangs were organized according to the strength of the labourers, the Cuban *cuadrillas* were structured around the *carretones*: time and movement were the key elements of this new system of teamwork.<sup>24</sup> Each *cuadrilla* was composed of a given ratio of *macheteros* (cane cutters), strong men; *alzadores* (cane carriers), usually women; and the *carreteros* (drivers of the *carretones*). If the cane *cuadros* (the numbered rectangular plots that can be seen in the Merced map) were close to the *batey*, the ratio of cutters to carriers would be 2:2 for each driver; 2 *cuadrillas* (each one with approximately 35 labourers and 7 carts) would be enough to cut and transport the cane to the mills.

21 See in particular the model presented in the anonymous *Cartilla Practica del Manejo de Ingenios ó Fincas Destinadas á Producir Azúcar*, escrita por un Montuno, Irún, Spain 1862.

22 See, respectively, Apéndice I, 314; Apéndice II, 380, in: *Estados relativos a la producción azucarera de la isla de Cuba*, formados competentemente y con autorización de la Intendencia de Ejército y Hacienda, por Carlos Rebello, Habana, Octubre, 1860; *Noticia de los ingenios o fincas azucareras que en estado de producción existen actualmente en toda la isla*, (...) por la Dirección General de Hacienda de la Isla de Cuba, La Habana, 1877, in: Cantero/Laplante, *Los Ingenios*.

23 See, e.g., the prescription of the *Cartilla Practica del Manejo de Ingenios*, p. 18: “The sugar plantation *batey* should be placed in the centre of 49 acres of land that have been designed from the outset to cane fields, unless you had an accident that prevented it, in order to shorten as much as possible the distances, a matter of great importance to make the cane to circulate with the easily possible brevity and economy.” The *ingenio* Merced appears to have closely followed the proportions recommended in this manual: 40 caballerías of cane (4 more to *guardarrayas/batey*, and 5 for the production of foodstuff), labour force with about 320 workers, steam milling with 5 Jamaican trains, capable of producing 117,300 arrobas of sugar.

24 Here I follow the interpretation of Tomich, *The Invention of the Cuban Sugar Mill*, pp. 142–146.



Fig. 4. *Plano del batey y cañaverales del ingenio Merced*. Fondo Serafín Sánchez Govín, Fundación Antonio Núñez Jiménez de la Naturaleza y el Hombre, Habana, Cuba.

For distant *cuadros*, which required more carts, the ratio of cutters to carriers to drivers would be 20:20:14 drivers, thus modifying the numerical composition of the *cuadrillas* and the amount of vehicles employed in the task. These proportions, however, were not fixed because they varied according to the area of each *cuadro*, its distance from the *batey*, and the development of the crop season. It was expected that the daily average per cutter would be 500 arrobas of cane, or 5 cartloads.<sup>25</sup>

The lithography of Purísima Concepción (see figure 1) represents a *cuadrilla* of carts comprising seven units entering the plantation *batey*; another *cuadrilla* can be found on the path to the fields. With this management system, which was able to extract a huge workload from the slaves through a close coordination of collective labour in time and space, the Cuban sugar masters managed to enlarge the acreage of cane at an astonishing rate. However, without a precise knowledge of the space of the sugar plantation, made possible by the exact visualization of it, such a scheme for the exploitation of slave labour would not work.

This was the main goal behind the creation of maps such as that of Merced. With the numbering of the *cuadros* of cane (118 in total, each equivalent to one cutting day), the map allowed accurate calculations of the quantity of cane to be cut and, therefore, of slave management in the sugar production process. The map's relationship with the labour and production processes was straightforward. The mathematical proportional-

25 A. de Landa, *El administrador del ingenio*, Habana 1866, p. 48.

ity of manufacture was projected upon the field, ordering the progress of the collective labour of slaves. A careful calculation of the amount of cane to be taken to the mills was added to the map; based on the daily reports of the *capataz de las carretas* (ox-cart overseer), the general manager would be in charge of the weekly quantification of such data.<sup>26</sup> After visiting the *ingenio* Unión, a fully mechanized sugar plantation with 498 slaves, Cantero wrote:

*45 is the total number of cultivated caballerías, with the distinction that all cuadros are perfectly regular forming cuadrilongos of a third of a caballería, an equality that greatly facilitates operations. This fact alone, sufficient in itself to demonstrate the intelligence of the owners, coincides with another that we cannot fail to mention fulfilling a duty to do justice. They showed us a book in which they plot with scrupulous accuracy each harvest, the total figure of land cultivated with corresponding subdivisions of caballerías, the number of carts of cane each one produce, how much sugar they produce, the time which one was planted, all of that distinguished from others by the numbering, etc. With the help of such a well-organized and helpful plan at just one glance, it is possible to be aware of the comparative products of the years of existence of the plantation, and always have before our eyes the state in which it is at present.*<sup>27</sup>

With the map in a ledger and with “just one glance”, the sugar master would know everything that was happening in his sugar plantation: this is a clear expression of the visual regime of the second slavery, a key variable for the success of Cuban sugar production in the nineteenth-century world economy.

#### IV.

Between the 1870s and the first half of the 1880s, the Italian artist Nicolau Antonio Facchinetti, resident at the court of Rio de Janeiro since 1849, was asked by some planter families of the Paraíba Valley to paint landscapes of their properties. Completed in April 1875, the oil on wood of the *fazenda* Flores do Paraíso, located in the county of Valença, Rio de Janeiro (present-day Rio das Flores), is perhaps the best result of this series (see figure 5). The painting was commissioned by Domingos Custódio Guimarães Filho. Having received the title of second baron of Rio Preto in 1874 and having inherited a coffee plantation from his mother a year earlier, Domingos Filho wanted to have a painting on the wall of his residence (in the capital of the Brazilian Empire) from the brush of one of the most acclaimed artists of the time, showing the property that brought fame to his family.<sup>28</sup>

26 See the control models provided by Landa, *El administrador*, pp. 60–61.

27 J. Cantero, *Ingenio Unión*, in: Cantero/Laplante, *Los Ingenios*, p. 184.

28 R. de B. Marquese, *A paisagem da cafeicultura na crise da escravidão: as pinturas de Nicolau Facchinetti e Georg Grimm*, in: *Revista do Instituto de Estudos Brasileiros* 44 (2007), pp. 55–76.





Fig. 5. Nicolau Antonio Facchinetti, *Fazenda Flores do Paraíso*, 1875, óleo sobre madeira, Coleção Particular, in: C. Martins/V. Piccoli (eds.), *Facchinetti*, Rio de Janeiro 2004, p. 16.

The land of the plantation had been acquired in 1843 by his father, Custódio Guimarães, the first baron (1854) and later (1867) viscount of Rio Preto. In the second half of the 1840s, Domingos's father invested heavily in the acquisition of African slaves (purchased in the illegal transatlantic slave trade), in planting coffee trees, and in the construction of a luxurious big house for his plantation. In 1868 (the year Domingos's father died), Flores do Paraíso became the centre of a complex of proprieties that encompassed six other large and contiguous plantations and had more than a thousand slaves. The *fazenda* Flores do Paraíso stood out both for its architectural arrangement (a two-story big house in neoclassical style and a headquarters in the shape of a U, as prescribed by the established model of the Palladian villa) and, in particular, for its technical advances. During the early 1860s, the plantation was one of the first in the Paraíba Valley to replace the old *engenho de pilões* (a mechanism used since the late 1820s to separate the parchment and the pulp from the bean, inspired by mills originally used in the processing of rice) with the modern Lidgerwood machinery for coffee processing.<sup>29</sup>

Unlike sugar production, coffee production is economically viable in both small and large properties. Given the great variation in the structure of slave ownership and in the size of plantation lands, it is impossible to describe the "typical" production unit of the Paraíba Valley. In this region, there were indeed a substantial number of properties (with or without slaves) that operated on a small scale. The bulk of its coffee production, however, came from plantations that had large tracts of land and a great number of slaves. According to studies on the counties of Vassouras (Rio de Janeiro) and Bananal

29 Inventário – Visconde do Rio Preto, 1869, Cartório do 1º Ofício de Valença, Museu da Justiça do Estado do Rio de Janeiro (RJ).



(São Paulo), about half of their slaves lived on plantations, with more than 100 enslaved labourers each, in units that comprised from 100 alqueires (1,195 acres) to 300 alqueires (3,585 acres) of land.<sup>30</sup>

Flores do Paraíso was similar to the great coffee plantations that dominated the Paraíba Valley landscape. When Facchinetti created his oil, it had 316 alqueires (3,776 acres), of which 130 alqueires (1,553 acres) was planted with 601,000 coffee trees, and a total labour force of 454 slaves.<sup>31</sup> The geomorphology of the region and the agronomic practices employed, however, precluded the implementation of a regular geometry of the coffee fields, as had been the case in the cane fields of Cuba. As noted in Facchinetti's oil, the Paraíba Valley landscape was characterized by extremely irregular fields, starting with the topography of the so-called seas of hills. On the slopes of the *morros de meia-laranja* (half-orange hills), coffee trees of different ages and levels of productivity intermingled with depleted lands, pastures, livestock, and virgin forests. Given the extensive patterns of coffee cultivation, which is deeply wasteful of natural resources, this landscape went through big changes in relatively short periods of time, thus making the use of cartography for plantation management completely pointless.<sup>32</sup> In other words, contrary to what happened in Cuba, maps were never used to control slave labour in the Paraíba Valley. However, the visualization mechanisms used for the management of slaves in both spaces act as important points of contact, starting with the slave quarters.



Fig. 6. Detail of figure 5.

In this detail of Facchinetti's oil (see figure 6), we can see a large quadrangular building on the left of the headquarters complex, connected to the two yards for drying coffee beans (the first with compacted earth, and the second covered with macadam) by a construction that has a small steeple on the second floor, with a bell clock on it; on

30 R. Salles, *E o Vale era o Escravo*, Vassouras, século XIX. Senhores e escravos no coração do Império, Rio de Janeiro 2008; R. de O. Ribas, *Tropeirismo e escravidão: um estudo das tropas de café das lavours de Vassouras, 1840–1888*, Dissertação de Mestrado em História. Curitiba, UFPR 1989, pp. 49–50; B. Moreno, *Demografia e trabalho escravo nas propriedades rurais cafezeiras de Bananal, 1830–1860*, Dissertação de Mestrado em História Social, São Paulo, USP 2013, pp. 180–207.

31 Inventário – Barão do Rio Preto, 1876, Cartório do 1º Ofício de Valença, Museu da Justiça do Estado do Rio de Janeiro (RJ).

32 R. Marquese, *African Diaspora, Slavery, and the Paraíba Valley Coffee Plantation Landscape: Nineteenth Century Brazil*, in: *Review 31* (2008) 2, pp. 195–216.

the ground level, there is a passage (separated by a gate) of the inner courtyard of the square building to the coffee yards. This is the *senzala em quadra*, a housing arrangement remarkably similar to the Cuban *barracón* with a single entrance, all cubicles facing an internal courtyard, and the absence of external windows. In the case of the *fazenda* Flores do Paraíso slave quarters, the external windows seen in Facchinetti's painting were false. It was a trompe l'oeil feature painted onto the very building that sought to give visual and stylistic uniformity to the architecture of the plantation headquarters.<sup>33</sup> The origins of this housing arrangement was also similar to the Cuban *barracaones* – that is to say, within the context of examining the Brazilian slave order in the 1830s and 1840s, precisely when big coffee plantations were expanding based on the massive importations of illegally enslaved Africans. Even if they were not built of masonry (and usually attached to the body of the monumental villa house), the slave quarters in the Paraíba Valley followed the same dictates of slave control of Cuban *barracaones*, based as they were on strict confinement procedures. And, as in Cuban sugar plantations, these ordinances of space control explain why mega coffee planters such as the Custódio Guimarães family assembled multiple contiguous plantations instead of merging them into a single unit.<sup>34</sup> Although the processing of coffee beans does not demand an integration of field and factory as in the case of sugar, the *senzala em quadra* model for the slave quarters played an important role in the coordination of slave labour in time and space. The remarkable series of photographs taken by Marc Ferrez in the last decade of slavery in Brazil makes this very clear. Seeking to reach the foreign public that visited Brazil and that were eager for souvenir photos of the tropical world, Ferrez recorded multiple situations between 1880 and 1885 that portrayed slave labour in the Paraíba Valley coffee plantations, a world that all contemporaries – including the coffee planters – knew was doomed to disappear in the medium or short term. As a historian of this series has recently noted, Ferrez's visual intention was clearly influenced by the goal of making slavery “monumentalized” by equating “human power to the built environment”.<sup>35</sup>

33 The parietal painting technique in trompe l'oeil of the external façade of the slave quarters can still be seen today in a former coffee plantation nearby Flores do Paraíso, *fazenda Santa Clara* (Santa Rita do Jacutinga, Minas Gerais). For its images, see Marquese, *Feitores do Corpo*, images 11 to 13.

34 Marquese, *Moradia escrava na era do tráfico ilegal*, pp. 175–185.

35 M. Muaze, *Violência apaziguada: escravidão e cultivo do café nas fotografias de Marc Ferrez (1882–1885)*, in: *Revista Brasileira de História* 74 (2017), pp. 1–20.



Fig. 7. Marc Ferrez, *Départ pour la cuillette du café*, 1880. Acervo do Museu Afro-Brasil, São Paulo/SP.

It is exactly this “monumental” character of Ferrez’s visual project that makes it particularly useful to the argument presented here. In this picture (see figure 7), for example, his goal was to represent the close connection between the courtyard of the slave quarters and the coffee-drying yard, both comprising one single space and determining a pattern of labour that was strictly ordered in time and space. The place of residence of the enslaved labourers was also the main location for the processing of coffee: the yards for drying coffee, the buildings with the machinery for the separation of the pulp and the parchment from the beans, and the *tulhas* (storehouse) for the processed beans were all distributed around the slave quarters – or attached to it. As I have pointed out elsewhere, the enclosed slave quarters met both the objective of controlling the mobility of slaves at night and directing their collective labour. The architectonic programme of the *senzala em quadra* facilitated the coordination of numerous groups of slaves with the daily repetition of spatial procedures, one of which we can see in Ferrez’s picture: the grouping of slaves in the courtyard of the slave quarters shortly after sunrise for the inspection and distribution of the tasks of the day and then the repetitive job of rotating coffee beans for drying in the sun at this same place.<sup>36</sup>

36 R. Marquese, O Vale do Paraíba cafeeiro e o regime visual da segunda escravidão: o caso da fazenda Resgate, in: Anais do Museu Paulista. História e Cultura Material 18 (2010), pp. 83–128.

In the agricultural sphere, the Brazilian coffee economy surpassed its rivals in the Caribbean (Jamaica and Cuba) and in the Indian Ocean (Java and Ceylon) by increasing the rate of exploitation of slaves, measured by the proportion of coffee trees allocated to each enslaved adult labourer. In nineteenth-century records, much qualitative evidence can be found regarding this point. More recently, the dissertation by Breno Moreno quantitatively demonstrates this trend by examining a large series of post-mortem inventories from Bananal between the 1830s and 1860.

How was it possible to impose this growing number of coffee trees upon the slaves? Once again, the new visual mechanisms of slave labour control help us to understand the issue. The coffee trees are capital goods: once in full production (which takes five years to occur after the initial planting), they produce fruits for another twenty years, demanding only two to three annual prunings as agronomic tradition. In the Brazilian coffee economy, this activity was organized with the classic gang system, that is to say collective labour under the unified command of the overseer: each slave was responsible for a row between two vertical lines of coffee trees, and all the gang – supervised by an overseer or foreman – should work in unison following the fastest slaves, who were placed at the extreme tips of the horizontal axis.

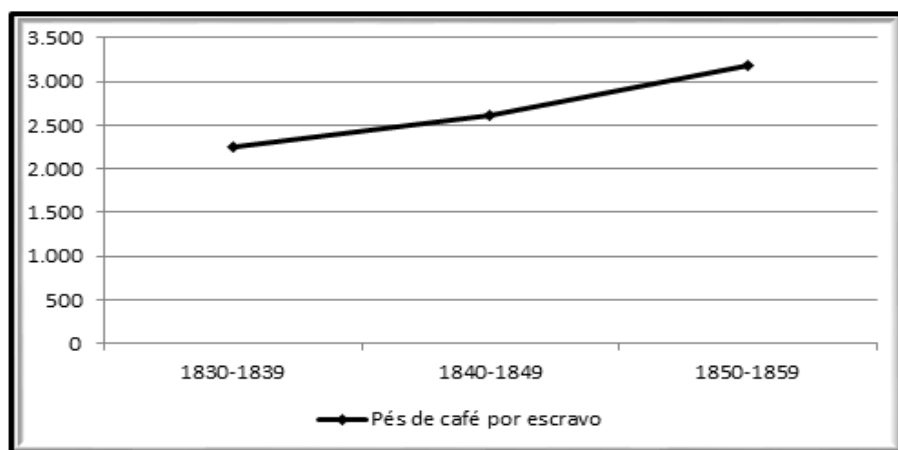


Fig. 8. Evolution of Labour Exploitation (Coffee Trees per Adult Slave), Bananal, 1830–1859<sup>37</sup>

The novelty of the Brazilian system was the arrangement of the coffee trees, with its row planting from the base to the top of the *morros de meia-laranja* and the large spacing between the rows. In this planting system, there was a much smaller amount of coffee plants

37 Source: B. Moreno, *Demografia e trabalho escravo nas propriedades rurais cafeeiras de Bananal, 1830–1860*, Dissertação de Mestrado em História Social, São Paulo 2013, p. 223.

per area than, for example, in the Caribbean. The consequent waste of land in Brazil was compensated by the fact that the overseer, with this system, could more easily watch the gangs of slaves from the bottom of the hill and, consequently, distribute a greater number of coffee trees per worker.<sup>38</sup>

The lens of Ferrez beautifully captures this technique. In the photo below (see figure 9), the slaves are concentrated in a few lines for reasons of photographic composition, but what we see is a group of labourers in a typical coffee field in the Paraíba Valley, a field that is open enough to allow its immediate observation by those who were not at the *morros de meia-laranja*.



Fig. 9. Marc Ferrez, *Escravos na colheita de café*, 1882 (Acervo Instituto Moreira Salles)

The activity in which the slaves were involved at the time they were photographed by Ferrez was not pruning but harvesting: the leafless coffee trees show it well. Here I come

38 Marquese, *African Diaspora*, pp. 199–203; Id., *O Vale do Paraíba cafeeiro*, pp. 104–109.

to the final point of my analysis. More coffee trees per worker meant more beans to be harvested by slaves during harvest time – the Brazilian coffee plantations incidentally also stood out for their higher productivity. However, due to the biannual variation of crops in Brazil (something common when the trees are planted in full sun without shading), it was impossible for the plantation management to have prior knowledge of the volume to be harvested. In bad years, the labour force available on the plantation could easily accomplish the harvest, but in good years, the pressure on enslaved workers increased. The solution adopted in the Paraíba Valley was very similar to the practices in the US South, that is to say a system of individualized quotas that varied according to the evaluation of the progress of the harvest and the ability of each labourer as well as that compelled them to reap the greatest possible amount of product at the risk of being punished physically if he/she did not fulfil the minimum quota stipulated for the day – eventually receiving rewards for extra amounts when he/she exceeded it.<sup>39</sup>

What all this meant in terms of overwork for slaves was well noted by the British journalist G. A. Crüwell, who came to Brazil in the 1870s at the behest of Ceylon planters in order to discover the secrets of the enormous efficiency of the Brazilian production. According to him,

*[t]he work demanded and performed by the slaves is enormous. It is beyond the utmost of what human beings are capable of performing without derangement to the physical resources of the individual. In Brazil a slave is made to pick twelve bushels of coffee a day, in crop season, when in Ceylon two bushels is the coolie's task while for anything beyond extra pay is given, and although he may bring in one or two bushels more, and the picking of only the ripe berries be a more difficult labour in Ceylon, than a sweeping off the ground, including earth and stones, and an indiscriminate picking of the berries in Brazil plantations, four bushels in Ceylon is what an able coolie or coolly woman can do and no more, and to do this the whole time.*<sup>40</sup>

In other words, it was impossible for Ceylon coolies to compete with the amount of labour extracted from slaves in Brazil, which was obtained by a management system based on the strict visualization of slaves in the fields, in the headquarters, and in the yards. And, as in Cuba, this new visuality is crucial for understanding the dominant role that the Paraíba Valley had played in the world coffee market during the era of the second slavery.

39 The best coeval description of this system is in E. de Andrade, *O Vale do Paraíba*, Rio de Janeiro 1989, pp. 108–111. On the Cotton South, see E. B. Baptist, *The Half Has Never Been Told. Slavery and the Making of American Capitalism*, New York 2014, pp. 111–144.

40 G. A. Crüwell/A. Scott Blacklaw, *Brazil as a Coffee Growing Country: its Capabilities, the Mode of Cultivation, and Prospects of Extension*, Described in a Series of Letters, Colombo 1876, pp. 18–19.