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THE SUGAR MASTERS: SLAVERY, ECONOMIC DEVELOPMENT, AND MODERNIZATION ON LOUISIANA SUGAR PLANTATIONS, 1820-1860
VOLUME I

A Dissertation

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy in
The Department of History

by
Richard J. Follett
B.A., University of Wales, 1990
M.A., University of London, 1991
December 1997
ACKNOWLEDGMENTS

Many people have helped me through my graduate training on this side of the Atlantic and I would like to take this opportunity to thank them for their assistance, patience, and in many cases kindness toward me over the past years.

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Every historian owes a great debt of gratitude to the librarians who assist in the research stage of every project. In my case, I wish to thank all the staff at the Hill Memorial Library of Louisiana State University for kindly and professionally attending to my every research need. Although I would like to thank every person who paged, re-paged, and placed on hold all the documents and books I used, there are a few people to whom I owe a special thanks. Most importantly, I wish to thank Judy Bolton, Faye Phillips, Linda Schneider, Christina Riquelmy, 

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PREFACE

With Union and Confederate troops massing in northern Virginia, William Howard Russell, an English war correspondent, hurried upstream after his brief sojourn in New Orleans. Booking passage on the steamer J.C. Cotton, Russell's ship pulled ashore at Andre Roman's sugar plantation, midway between New Orleans and the state capitol, Baton Rouge. Anxious to visit the plantations of the Louisiana sugar country, Russell promptly arrived at John Burnside's expansive sugar holdings in Ascension Parish. Climbing the bell tower on the roof of the plantation house, Russell's eyes cast over a vast agricultural kingdom that included 753 slaves and thousands of acres planted in sugar cane. Evidently surprised by what lay before him, Russell observed:

The view from the belvedere . . . was one of the most striking of its kind in the world. If an English agriculturist could see six thousand acres of the finest land in one field, unbroken by hedge or boundary, and covered with the most magnificent crops of tasseling Indian corn and sprouting sugar-cane as level as a billiard table, he would surely doubt his senses. But here is literally such a sight-six thousand acres, better tilled than the finest patch in all the Lothians, green as Meath pastures, which can be turned up for a hundred years to come.1

Amazed at the enormity of Houmas Plantation, Russell left Louisiana impressed by the impeccable workmanship, superior horticulture, and industrial productivity of the

late antebellum sugar estates. James Robertson, a fellow British traveler, similarly marveled at the "enterprise and energy" with which Louisianans committed themselves to improved methods of cultivation, machinery, and industry.⁴ Even the perennial critic Frederick Law Olmsted found the energy and industry of the Louisiana sugar masters remarkable. "I was satisfied," he noted, "upon examining [the] improvements . . . that intelligence, study, and enterprise had seldom better claims to reward."³

At the core of the sugar planter's success lay their commitment to both economic modernization and to the institution of racial slavery. Despite almost a century of historiographical debate, historians remain divided over the incompatibility of slavery with economic progress. Whether they look to Adam Smith or Karl Marx, most historians deem free labor a necessity for technology and growth. This, however, appears inaccurate as antebellum sugar planters confidently advocated improvement and saw no contradiction between economic modernization and slavery. In my dissertation, I suggest that the Louisiana sugar masters embraced the ethos of the market revolution and

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³Frederick Law Olmsted, A Journey in the Seaboard Slave States In the Years 1853-1854, With Remarks on Their Economy (reprint, New York: G.P. Putnam, 1904), 320.
rather than struggling to preserve a waning pre-bourgeois world, they turned their fields into factories and mill houses into industrial works where the frenetic pace of the steam engine set the tempo during the harvest or grinding season. Espousing economic rationality and efficiency, antebellum sugar planters clearly embraced the twin principles of slavery and progress. In part contributing to the vigorous historiographical debate over slavery and economic development, this dissertation documents the behavior of "profit conscious" slave-holders who carefully responded to the forces of economic demand by geographically advancing their cane crops, adopting modern technological improvements, and by shaping the ruthless nature of slavery in the Louisiana sugar parishes.

The first chapter places this study within its broad historiographical context and outlines the theoretical approach to my dissertation. In chapter two, I address the factors leading to the growth of the sugar industry from French colonial rule to the outbreak of the Civil War. Chapters three and four describe the dynamics of economic growth in the sugar industry on both a macro and microeconomic level. In particular, chapter three analyzes the rise of the sugar industry with reference to the growth of consumer demand in antebellum America and the emergence of a vigorous transportation system in south Louisiana. The following chapter discusses the quantitative and
qualitative expansion of sugar plantations in two representative cane growing regions. Having established that capital and labor underpinned the expansion of the industry, chapter five examines the slave rental market and the character of the interregional slave trade to the sugar country. Chapter six includes a discussion of how the planters sought to institute economies of scale, organize shift-labor that worked to the methodical beat of the steam age, and establish timed industrial discipline on their estates. The final chapter addresses both slave management and the way in which slaves apparently accepted the regimen of the industrializing sugar mill. Ever keen to advance their interests and the productivity of their estates, the sugar masters adapted to the booming demand for sugar by modernizing their estates, pursuing industrial discipline in the mill house, and by transforming the dynamics of slavery in southern Louisiana.
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ABSTRACT

In this dissertation, I contend that sugar planters in the antebellum South managed their estates progressively, efficiently, and with a capitalist political economy and ideology. By embracing slavery, technology, and a host of improvements, sugar planters strove to create integrated units producing, manufacturing, and marketing sugar on an agro-industrial scale.

Despite a century of historiographical debate, historians remain divided over the incompatibility of slavery with industrial and agricultural innovation. Whether they look to Adam Smith or Karl Marx, most historians deem free labor a necessity for technology and growth. This, however, appears inaccurate, as antebellum sugar planters confidently advocated improvement and saw no contradiction between capitalism and slavery. The quantitative and qualitative growth of the antebellum sugar industry remains testament to that fact.

In the past twenty years, a group of scholars challenged the notion that slavery and the antebellum South were pre-capitalist. Their work, while underpinning my own study, failed to satisfactorily prove that antebellum planters operated as entrepreneurial capitalists. My dissertation hopefully fills this void as few scholars have systematically analyzed the growth of a single planter class that was so reliant on the synchronization of agri-
culture and industry as the Louisiana sugar masters. These agricultural magnates responded to a burgeoning market for sugar by spatially expanding their cane crops, adopting modern agricultural techniques, embracing technological improvement, practicing innovative management and shaping the dynamics of slavery to maximize labor productivity. Progressive and entrepreneurial, the sugar planters brought south Louisiana into an age of capitalist modernity.

Southern progress, however, differed fundamentally from that of the North because the laborers who transformed the sugar industry and manned the steam engines were African-American slaves who materially advanced the process of modernization. By imposing order and discipline in the work-place, the planters hoped to transform their laborers into industrial workers who toiled at the mechanical pace of the steam age. To a large extent, they were successful, but to obtain the labor they required, the planters adopted both the lash and a complex system of rewards to motivate their workers during the harvest season.
CHAPTER 1

THE PRODIGAL SON: SLAVERY AND CAPITALISM IN THE ANTEBELLUM SOUTH—INTERPRETATIONS, MODELS, AND DEFINITIONS

Slavery is no scholar, no improver; it does not love the whistle of the railroad; it does not love the newspaper, the mail-bag, a college, a book or a preacher . . . it does not increase the white population; it does not improve the soil; everything goes to decay.¹

Ralph Waldo Emerson
Address on Emancipation in the British West Indies

In the second type of colony-plantations—where commercial speculations figure from the start and production is intended for the world market, the capitalist mode of production exists, although only in a formal sense, since the slavery of Negroes precludes free wage labor, which is the basis of capitalist production. But the business in which slaves are used is conducted by capitalists. The method of production which they introduce has not arisen out of slavery but is grafted onto it.²

Karl Marx
Theories of Surplus Value

But if great improvements are seldom to be expected from great proprietors, they are least of all to be expected when they employ slaves for their workmen. The experience of all ages and nations, I believe, demonstrates that the work done by slaves, though it appears to cost only their maintenance, is in the end the dearest of any. A person who can acquire no property, can have no other interest but to eat as much, and to labour as little as possible. Whatever work he does beyond what is sufficient to purchase his own maintenance, can be squeezed out of

¹Ralph Waldo Emerson, "Address Delivered in Concord on the Anniversary of the Emancipation of the Negroes in the British West Indies, August 1, 1844," in David Brion Davis, Slavery and Human Progress (New York, Oxford University Press, 1984), 110.

him by violence only, and not by any interest of his own.\textsuperscript{3}

Adam Smith

\textit{The Wealth of Nations}

In 1835, William H. Seward took a turn in the South. As his stage coach rattled over the Potomac bridge and deep into Virginia, Seward's critical eyes cast over a blighted economy and society cursed by the evils of slavery. Traveling further South, Seward carefully noted his views and impressions on both the economy and society of the Old Dominion. The "exhausted soil, old and decaying towns, wretchedly neglected roads and, in every respect, an absence of enterprise and improvement distinguish the region." Such dilapidation and collapse, Seward added, grew from the ruinous "effect of slavery." Eleven years later, Seward traveled to New Orleans, the great commercial entrepot of the West and heart of Southern cotton and sugar interests. "The city," Seward recorded in a letter to Thurlow Weed, "is secondary, and the state unimportant." Commerce, the New Yorker added, "can never permanently reside . . . in a community where slavery exists."\textsuperscript{4} Such a moral and economic indictment of New Orleans stands, of course, in great contrast to James DeBow's boosterism of


his adopted home. "Commerce is King," De Bow declared, and New Orleans quintessentially represented the modern commercial city.  

Most Northern visitors and some Southern social critics, however, proved less enthusiastic about the compatibility of slavery and southern economic growth than James DeBow. Hinton Rowan Helper, a white North Carolina farmer, skillfully articulated the definition of the anti-slavery economic argument when he declared that bonded labor served as the root cause of southern economic underdevelopment. "The causes which have impeded the progress and prosperity of the South, which have dwindled our commerce... into the most contemptible insignificance," Helper charged, "may all be traced to one common source, and there find solution in the most hateful and horrible word, that was ever incorporated into the vocabulary of human economy--Slavery!" Such views, while rarely espoused in the South, underpinned the economic critique of slavery as most Northerners could only perceive of economic success in a free-labor society. Writing on the economic rationale of slavery, Gavin Wright concluded


that Northern and European social and economic commentators not only associated economic success with free institutions but they ultimately defined economic success as free labor.\textsuperscript{7} Clearly widespread by the mid-eighteenth century, David Brion Davis contends that by the 1750s, slavery and slave societies acquired "the image of social and cultural wastelands blighted by an obsessive pursuit of private profit" that ultimately "drained the very springs of human progress."\textsuperscript{8} Stereotypical images of this type ultimately derived their origins from the classical economists who viewed slavery as antithetical to economic progress. Adam Smith, for instance, stood at the van of this movement and argued that the only source of wealth lay in the economic production of free labor. Arguing that the division of labor and the introduction of machine technology would increase production, Smith concluded that economic growth rested on free labor and the accumulation of capital by industrialists and consumers alike.

Smith's theory of economic development, however, rested on "laissez-faire," Quesnay's physiocratic doctrine that every worker should freely control their own income,


\textsuperscript{8}David Brion Davis, \textit{Slavery and Human Progress} (New York: Oxford University Press, 1984), 80.
savings, and wealth. Growth, Quesnay concluded, only occurred when all citizens managed their own income and invested it in a mutually reinforcing system that assured a circulation of money and continual economic progress. While free labor functioned as the absolute well spring of such growth, slavery stood as a polar opposite for slaves could own little property and consequently have "no other interest but to eat as much, and to labour as little as possible." Without the possibility of wealth accumulation, Smithians argued, slaves could not contribute to the economy, nor would they have the aspiration to "truck, barter, trade" and improve their economic condition. Ultimately, the classical economists believed that slavery choked economic progress because as an economic and social class, slaves could not contribute to the mutually reinforcing system of capital circulation and accumulation. Since slaves worked only under duress and beneath the fear of violence, Smith additionally concluded that chattel labor was ill-suited for efficiency, specialization, and the division of labor.\(^5\) To the classical economists,

wealth and progress under slavery hardly seemed credible for they systematically maintained that wealth expands in parallel with the skill and proficiency with which laborers work. Slavery, consequently, denoted economic stagnation and inefficiency.

While the Smithian model of capitalist development shaped the terms of economic discourse through the turn of the nineteenth century, few political economists until the Jacksonian era openly condemned slave holders as deviant men doomed to economic and social backwardness. The Smithian critique of slavery, however, implied the absence of "homo economicus" among the slaveholding class for no ideal "economic" or "rational" man would practice a labor system that appeared so retrograde and aberrant to economic and natural law. Facing increasing censure from northern anti-slavery critics, southern political economists attempted to defend slavery within the Smithian paradigm and demonstrate that chattel slavery prospered the national good. With perhaps the exception of Jacob Cardozo and James De Bow, these efforts proved wholly unsuccessful as southern political economists remained bound to Smithian and Ricardian economics, while blandly denying Smith's free labor ethic.¹⁰

¹⁰For analysis on American political economy during the antebellum era see Paul K. Conkin, Prophets of Prosperity: America's First Political Economists (Bloomington: Indiana University Press, 1980); Allen (continued...
The Smithian edifice that slavery and economic progress functioned as diametrically opposed values, consequently, remained unscathed through the antebellum decades. No southern political economist presented a solid intellectual and erudite argument that challenged Smith's precepts on the necessity of free labor for growth. Ultimately, the key problem lay in the fact that southern intellectuals could not divorce themselves from classical economic theory nor challenge the Smithian paradigm in full. However hard they tried, the guile of the Scotsman confounded them all.

Despite two centuries of intense debate, no political economist or historian has effectively superseded Smith's insights into the incompatibility of slavery and economic growth. In the historiographical debate over the development of American capitalism, the Smithian paradigm still exerts tremendous influence over emerging scholarship, but Smith, however, does not walk alone among the pantheon of economists in shaping the historical...

(...continued)
discourse of American slavery. "Where the capitalist outlook prevails, as on American plantations," Karl Marx expounded, "the entire surplus value [of slave labor] is regarded as profit . . . The price paid for a slave is nothing but the anticipated and capitalized surplus-value or profit to be wrung out of the slave." Marx could not have written a greater truism, for American slavery surely emerged as a capitalist institution and one that existed to turn a profit for the slave owner. With a capitalized labor force that he could buy, sell, or transport as he pleased, the slave-holder confidently expected to profit from the surplus value of his laborers. This margin of profit over repeated years ultimately made slavery a remunerative exercise for the capitalist planter. But, as Marx maintained, American plantations evolved as capitalist institutions solely in a formal sense as slaves received no wages nor income. Constrained by their inability to

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12 Marx used the concept of "surplus value" to describe how capitalists obtain profit from laborers. In Marxian terminology, labor produces goods and products whose value is greater than that of the labor power. In short, the value of the product is higher than the cost to the capitalist of the worker's wage, food, etc. This margin of difference is the "surplus value" or the profit margin made from each worker. See Karl Marx, Capital: A Critique of Political Economy, Vol. 3, The Process of Capitalist Production as a Whole (New York: The Modern Library, 1936), 342-353; Screpanti and Zamagni, History of Economic Thought, 131.
accumulate wealth, slaves remained economically dependent and had little realistic opportunity to support economic evolution and advancement.

For both Marx and Smith, the ability of free individuals to accumulate wealth emerged as the leitmotif of the bourgeois capitalist economy. Stripped of this capacity for a great portion of its population, the slave South developed as a pre-capitalist economy with an anachronistic system of production for the modern world. The American slaveholder, consequently, arose as an exotic fusion of the bourgeoisie trapped within the confines of a pre-capitalist economy. Despite his commitment to the Smithian paradigm of economic growth, Marx had no doubts that "the business in which slaves are used is conducted by capitalists." Here he touched on a central point, as capitalists, who controlled the means of production, wielded vast economic power that enabled them to direct societal change to their own advantage. In sum, this power allowed the bourgeois capitalists to "create a world after its own image." The difficulty with Karl Marx as a critic of capitalism remains that he was, at root, more...


concerned with radically changing society than explaining it. The capitalist "mode of production" in the Marxian dialectic denotes, Roger Ransom argues, "a social arrangement, rather than . . . some set of techniques which organize production." By limiting their analyses and definitions of capitalist behavior, Marx and Marxian historians have overlooked the adaptability of capitalism. Instead of defining it in monolithic terms, as Smith and Marx did, capitalism remains a complex shifting order that yields diverse definitions.

Defining capitalism remains a task that continuously and conclusively baffles the historical community. Most scholars, of both liberal and socialist stripe, consistently struggle with the Marxian and Smithian paradigms and in both cases conclude that the presence of an unfree, and consequently non-capitalist labor system stymied Southern development. Progress, liberals and socialists concur, only occurs in free labor economies for by limiting savings and wealth accumulation for slaves and masters alike, slavery obstructed regional economic and social progress. Modernization, in short, emerged as a dead letter in the antebellum South.

Eugene Genovese epitomized these views in his presidential address to the Organization of American Historians when he remarked:

Roger Ransom, Coping with Capitalism, 18.
We confess to finding it absurd that Marxists should have to fight so hard to convince neoclassicists that the liberation of entrepreneurship historically accompanied the free market, especially the market in labor-power, and that entrepreneurship, like science, technology, education, and investment in "human capital" in general, arose as a function of freedom and everywhere suffered in the absence of freedom.  

Genovese, as the architect of the modern debate over southern capitalism, argues, like Marx, that plantation slavery failed to develop the social division of labor and home market that propelled Northern commerce, industry, and urban growth. In turn, Genovese continues, slavery handicapped southern economic growth. "Capitalism," Genovese contends, "largely directs its profits into an expansion of plant and equipment, not labor; that is, economic progress is qualitative. Slavery, for economic reasons as well as those of social prestige, directs its investments along the same lines as the original investment—in slaves and land; that is, economic progress is quantitative." Pre-capitalist and pre-bourgeois, the southern slave owners, Genovese maintains, symbiotically

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evolved as part of the capitalist world economy while struggling to maintain a pre-capitalist organic society and collective community. Torn by the capitalist world economy on one side and paternalistic or pre-bourgeois social relations on the other, the slave South emerged as a "hybrid during the epoch of capitalism's world conquest." In short, Genovese concludes, "the old South emerged as a bastard child of merchant capital and developed as a non-capitalist society increasingly antagonistic to, but inseparable from the bourgeois world that sired it."

In the latest Marxist salvo over the incompatibility of slavery with modern "capitalist" economic development, John Ashworth contends that although southern planters remained both conscious of and active within the marketplace, class struggle between slave-holders and their bondspeople ultimately stymied southern economic development. While Genovese maintains that slavery

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20Eugene D. Genovese, Fruits of Merchant Capital: Slavery and Bourgeois Property in the Rise and Expansion of Capitalism (New York: Oxford University Press, 1983), 5. For a similar though considerably less sophisticated Marxist interpretation of the slave South, see Raimondo Luraghi, The Rise and Fall of the Plantation South (New York: New Viewpoints, 1978). Luraghi believed the South was "backward" and "pre-capitalist" and heading toward an irrepressible and destructive war that would revolutionize, (continued...)
underpinned a pre-capitalist social structure that generated a patrician planter class who remained ideologically opposed to emerging bourgeois values, Robert Fogel, Stanley Engerman, and James Oakes contend that slavery proved wholly consistent with capitalism and that slave-holders espoused bourgeois market values.21

Bold and highly provocative, Oakes' *The Ruling Race* and Fogel and Engerman's *Time on the Cross* and *Without Consent or Contract* continue to enliven historical debate and form the intellectual and historical backdrop to this present study. Perhaps overly ambitious in some of their findings, Fogel and Engerman, while summarizing and extending a generation of econometric scholarship, transformed southern economic history by arguing that

(...continued)


slavery was not only efficient and profitable, but it drove a dynamic, robust, and vigorous economy. Far from

22The first modern historian who examined the profitability of slavery was Ulrich B. Phillips who in American Negro Slavery (New York: D. Appleton, 1918) and a host of other works concluded that slavery was an inefficient and un-profitable labor system that hindered southern development. Taylor and Davis concurred that "slaveholding was not generally profitable." See Rosser Howard Taylor, Slaveholding in North Carolina: An Economic View (Chapel Hill: University of North Carolina Press, 1926), 94-98; Charles S. Davis, The Cotton Kingdom in Alabama (Montgomery: Alabama State Department of Archives and History, 1939). Spearheading the revisionist attacks on Phillips was Lewis C. Gray who argued in History of Agriculture in the Southern United States to 1860 (2 vols., Washington: Carnegie Institution of Washington, 1933) that slavery was profitable and more efficient than free labor as the slaveholder had a guaranteed labor supply throughout the year. The finest revisionist work remains Kenneth M. Stampp's The Peculiar Institution: Slavery in the Antebellum South (New York: Vintage Books, 1956). While challenging Phillips on almost every point, Stampp concluded that slavery was both efficient and profitable to all save the most incompetent masters. The modern cliometric debate over the profitability of slavery dates from the publication of Alfred H. Conrad and John R. Meyer's seminal article "The Economics of Slavery in the Ante Bellum South," Journal of Political Economy 66 (April 1958): 95-123. They concluded that cotton plantations showed a profit of 4.5 to 8 per cent per annum. These figures compared well with other forms of investment. Since Municipal and Railroad Bonds yielded 5 & 7.9 percent per annum, Conrad and Meyer argued that profits from slavery were on a par with Northern industrial returns. Slavery, they concluded, did not hamper Southern economic growth as available capital could be more profitably used in agriculture than in industry. Conrad & Meyer's contribution was enormous for their work "implicitly rejects at the start any notion that slavery can be considered part of a different kind of economic system from that prevailing in the rest of the country. Instead, they consider slave-ownership as merely one of the many kinds of investment available to Americans in the early nineteenth century." See Harold D. Woodman, "Economics and Economic Theory: The New Economic History in America," Journal of Interdisciplinary History 3 (Autumn 1972): 330. Stimulated by Conrad and Meyer's econometric analysis, other economic (continued...)
backward or stagnant, the South, they continued, was
thriving and growing at rates comparable with those of most
developing European countries.  

(...continued)
historians sought to extend their estimation of slave
profits. See Yasukichi Yasuba, "The Profitability and
Viability of Plantation Slavery in the United States," 
Economic Studies Quarterly, 12 (1961): 60-67; James D.
Foust and Dale E. Swan, "Productivity and Profitability of
Farmer's Age: Agriculture, 1815-1860 (New York: Holt,
Rinehart, and Winston, 1960), 154-5; Fogel and Engerman, by
building upon this econometric base, similarly concluded
that slavery was highly profitable. See Robert Fogel and
Stanley Engerman, "The Economics of Slavery," in The
Reinterpretation of American Economic History, ed. R.W.
311-341 and Fogel and Engerman, Time on the Cross, 67-78.
David O. Whitten established the profitability of slavery
in the sugar industry in "Sugar Slavery: A Profitability
Model for Slave Investments in the Antebellum Louisiana
Sugar Industry," Louisiana Studies 12 (Summer 1973): 423-
442. The annual rate of profit was on average 8.6 percent
and 14.2 percent for large plantations. The profitability
debate, while now rather dated and stale, indicates that
slavery was profitable and that the slaveholders invested
as acquisitive capitalists who did not reject profit in
favor of power and patriarchy.

Fogel and Engerman, Time on the Cross, 250-251. For
a re-statement of Fogel's notion of a "thriving southern
economy" see Fogel, Without Consent and Contract, 84-89.
Central to Smith, Marx, and most analysts of the antebellum
South is the notion that slavery materially retarded
southern economic growth. The Conrad and Meyer
profitability study seriously challenged this concept.
Richard Easterlin extended their econometric work by
concluding that southern economic growth was not
substantially harmed by the South's reliance on slave
labor. See Richard A. Easterlin, "Regional Income Trends,
regional income, Diane Lindstrom contends, "remains the
single best summary statistic available to measure economic
performance." It is, Passell and Lee add "the standard for
efficiency." See Diane Lindstrom, "Macroeconomic Growth:
(continued...)

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The United States in the Nineteenth Century," *Journal of Interdisciplinary History* 13 (Spring 1983): 680; Susan Previant Lee and Peter Passell, *A New Economic View of American History* (New York: W.W. Norton, 1979), 180. In his seminal 1961 article, Easterlin used regional income trends to illustrate that per-capita income in the South was about two-thirds the level of per-capita income in the North. That southern income was lower than that of the North surprised few, but as Robert Gallman notes, "some scholars were surprised by the narrowness of the margin between the two regions and the fact that the South had kept pace with the North between 1840 and 1860". Richard Easterlin's data additionally established that the level and rate of change of per-capita Southern income were high "by the standards of the modern epoch". See Robert E. Gallman, "Slavery and Southern Economic Growth," *Southern Economic Journal* 45 (April 1979): 1009-1010. Stanley Engerman extended Easterlin's scholarship and argued that per-capita southern incomes were amongst the highest in the world and that the Southern rate of growth outstripped both the Northern and national economic performance. Far from stagnating or ossifying, the southern economy grew dynamically and vigorously through the antebellum era. See, Engerman, "Some Economic Factors in Southern Backwardness in the Nineteenth Century" in *Essays in Regional Economics*, ed. John F. Kain and John R. Meyer (Cambridge: Harvard University Press, 1971) and "A Reconsideration of Southern Economic Growth, 1770-1860," *Agricultural History* 49 (April 1975): 343-361; *Time on the Cross*, 247-257. Others have challenged Easterlin and Engerman's figures and suggest that both underestimate the Northern growth rate. See Roger Ransom and Richard Sutch, *One Kind of Freedom: The Economic Consequences of Emancipation* (Cambridge: Cambridge University Press, 177), 265-66. Harold Woodman maintains that regional income figures are a mis-leading guide to economic performance for southern expansion required little structural change while northern growth depended on vigorous industrialization and modernization. See Harold D. Woodman, "Economic History and Economic Theory: The New Economic History in America," *Journal of Interdisciplinary History* 3 (Autumn 1972): 323-350; "New Perspectives on Southern Economic Development," *Agricultural History* 49 (April 1975): 373-380. Gavin Wright, Roger Ransom, and Richard Sutch, more recently, maintain that since southern planters' portfolios consisted predominantly of slaves which were movable assets, slave-owners had little interest in soil conservation or transportation improvement. Slavery, they continue,

(continued...)
pre-capitalist values, Fogel and Engerman's planters emerged as economically rational men who strove for economies of scale and profit maximization.\(^2\) In their 

(...continued)


(continued...)
quest to achieve maximum profitability, antebellum farmers experimented with innovative technology, modern management techniques, and agricultural self-sufficiency. Slavery, they conclude, developed as "a flexible, highly developed form of capitalism" that remained the key to southern economic growth.\textsuperscript{25}

\textit{(...continued)}
concluded that efficient and coordinated work gangs, combined with rational "scientific" management and coercion yielded labor productivity that was 35 percent more efficient than free labor. See Fogel and Engerman, \textit{Time on the Cross}, 192-96, 203-4; Mark D. Schmitz, "Economies of Scale and Farm Size in the Antebellum Sugar Sector," \textit{Journal of Economic History} 37 (December 1977): 959-980 argues that economies of scale existed for the sugar sector and that they were supplemented by the introduction of steam milling; Mark D. Schmitz "Economic Analysis of Antebellum Sugar Plantations in Louisiana" (Ph.D. diss, University of North Carolina, 1974), 196-239. For alternative views see Roger Ransom and Richard Sutch, \textit{One Kind of Freedom}, 73-77 and Gavin Wright, \textit{The Political Economy of the Cotton South}, 74-87.

Despite censure from scores of historians, Fogel and Engerman's edifice remains largely intact. Viewed twenty years after the publication of *Time on the Cross*, the ramparts of Fogel's study appear battered and partly in ruin after wave upon wave of historiographical attack, but his underlying principles on the profitability of slavery, planter rationality, and the presence of qualitative and quantitative southern economic growth endure.\(^{26}\) While not

(...continued)


directly analyzing the mentalité of slave-holders, it is implicit in Fogel and Engerman's work that they regard the slaveholding class as fundamentally capitalist and deeply imbued with market values, acquisitive instincts, and profit-making impulses. To Fogel and Engerman, consequently, the southern slave-holder evolved as a mirror image of the Northern industrialist whose bourgeois, capitalist values marched to the beat of the global cotton market. While paternalism failed to inspire southern planters, Fogel's slave-holders found their motivation in profit, rational business success, and entrepreneurship.

James Oakes logically extended Fogel and Engerman's work by openly challenging Genovese's view of slaveholding society. In The Ruling Race, Oakes contests Genovese at every turn and concludes that southern planters remained acquisitive capitalists who wielded their entrepreneurial skills with energy and verve. Committed to material success, Oakes' slave-holders obsessively accumulated land and slaves and ultimately turned their fields into factories. Rather than adhering to paternalistic or pre-bourgeois values, the slave-holders charted a course through the ideological

(...continued)

mainstream of modern American economic culture. The essence of Oakes's argument follows in this description of the acquisitive slave-holder:

They actively embraced the capitalistic economy, arguing that sheer material interest, properly understood, would prove both economically profitable and socially stabilizing. But this intense devotion to the capitalist spirit of accumulation had done much to diminish the influence of paternalistic ideals within the slaveholding class.27

Bourgeois, capitalist, and entrepreneurial, "the invisible hand of the marketplace" guided the thoughts and actions of these dynamic and enterprising slave-holders.28 Although Oakes recently distanced himself from his earlier work, The Ruling Race remains a crucial work in shaping current interpretations of the slave south.29 Indeed, the debate among the planter class remains contentious and without resolve. William Dusinberre, the latest combatant within the historiographical fray over capitalism and


28Ibid., 25.

29Oakes dramatically re-shaped his views in Slavery and Freedom: An Interpretation of the Old South (New York; Alfred A. Knopf, 1990). Although he accepts that the South emerged as a child of capitalism, Oakes argues that slavery was not a capitalist labor force and that the master-slave relation was "at bottom, a non-market relationship." (pp. 54) Like Marx and Genovese, Oakes contends that the slave South combined a paradoxical pre-modern labor force with a capitalist economy. Like his scholastic antecedents, Oakes concludes that "slavery hindered technological innovation . . . [it] hampered the growth of a consumer market, reduced the flow of savings, and promoted soil exhaustion and demographic instability by dampening interest in long-term improvements on the land." (pp.37)
modernity in the antebellum South, maintains that antebellum rice plantations proved capitalistic and "resembled in complexity and uncertainty the most advanced operations of a Northern capitalist."\textsuperscript{30} Entrepreneurial and progressive, Dusinberre's planters mastered vast capitalist enterprises throughout the rice kingdom with drive and creativity.

Seventeen years ago, Eugene Genovese criticized "those economic interpretations that assume that the slave-holders lived, thought, and acted as ordinary bourgeois assume everything they must prove."\textsuperscript{31} To a great extent, Genovese's astute observation remains pertinent, for as Gavin Wright openly concedes, most economic scholarship assumes that bourgeois profit maximization was "the principle governing the behavior of firms and farms in history."\textsuperscript{32} By applying often rigid economic tests to historical data, cliometric scholarship frequently appears one sided and somewhat categorical in its conclusions, largely due to historical oversight on the behalf of cliometricians who frequently under-estimate the range and


\textsuperscript{32}Gavin Wright, Political Economy of the Cotton South, 3.
multi-faceted reality of human behavior and individual action. Arguably, this problem remains endemic to cliometric study where cliometricians neglect manuscripts and traditional literary sources in favor of a generalized overview of human behavior that leaves little room for intangibles such as independent action, private conduct, and community pressure. The "proof" of bourgeois behavior, that Genovese demands, lies not only in the generalized picture of "homo economicus" but in detailed studies of planter behavior and economic action. These studies should combine the judicious use of manuscript records with economic study to gauge the dynamics of planter behavior and economic rationality. By combining established quantitative research with analytical qualitative scholarship, economic historians can move beyond assumption of profit maximization to proof of economic rationality. Ultimately, the central difficulty with cliometric scholarship lies in the fact that in a faceless world of statistics and computational analysis, human agency and decision making frequently receive scant attention. My study attempts to correct this historiographical imbalance by recasting established economic history within a framework of extensive manuscript and literary research. Almost two decades after Genovese's ringing attack on the historical community, "proof" of antebellum economic rationality remains elusive and without satisfactory
resolution. Nowhere are these flaws more clearly perceived than in the economic history of the Louisiana sugar industry where dated scholarship combined with narrow research continues to dominate the literature.\(^{33}\)

\(^{33}\) J. Carlyle Sitterson's *Sugar Country* remains the benchmark study of the industry. Through massive archival research, Sitterson described all aspects of sugar culture. Rich in detail though not in historiographical debate, *Sugar Country* and a host of other sugar-related articles were written during the 1940s and 1950s, a period of rather stale scholarship preceding the historiographical boom that followed in the wake of Stampp's *Peculiar Institution* and Conrad and Meyer's profitability study. Sitterson like Lewis C. Gray argued that sugar planters were at the fore of commercialism and that they innovated to compete favorably with stiff Cuban competition. See Gray, *History of Agriculture in the Southern United States*, II: 739-751. Several dissertations completed during the 1970s form the bedrock of the modern cliometric analysis of the cane industry. David Whitten's "Antebellum Sugar and Rice Plantations, Louisiana and South Carolina: A Profitability Study" (Ph.D. diss., Tulane University, 1970) established in a rather brief study that sugar planters imported slave labor until the 1840s but with lower tariffs and increased costs, the planters sold slaves to maintain profits by the 1850s. Whitten extended Conrad and Meyer's methodology to determine returns earned in sugar and rice. He concluded that sugar was a marginal crop for small farmers though returns dramatically improved for the middling and especially for the large planter. Whitten restated his conclusions and methodology in "Sugar Slavery: A Profitability Model for Slave Investments in the Antebellum Louisiana Sugar Industry," *Louisiana Studies* 12 (Summer 1973): 423-442, and in "Tariff and Profit in the Antebellum Louisiana Sugar Industry," *Business History Review* 44 (Summer 1970): 226-233. Mark Schmitz in "The Economic Analysis of Antebellum Sugar Plantations in Louisiana," (Ph.D. diss, University of North Carolina, 1974) utilized data on 255 farms between 1850 and 1860. By adopting two cliometric methodologies, Schmitz concludes that constant returns to scale existed though increasing returns were unlikely. Sugar farmers, additionally, acted in profit-maximizing ways by expanding their farms in light of market conditions and the evolution of processing machinery. With rising slave prices, the sugar planters adopted a more "land intensive form of production". (continued...)
Finally, agricultural self-sufficiency within the sugar region assured further profit maximization. Schmitz ultimately concludes that the sugar planters were economically rational men. Unfortunately, Schmitz never published his economics dissertation in its entirety, but some of his conclusions are repeated in his "Economies of Scale and Farm Size in the Antebellum Sugar Sector," Journal of Economic History 37 (December 1977): 959-980 and "Farm Interdependence in the Antebellum Sugar Sector", Agricultural History 53 (January 1979): 254-269. While surely contributing and extending historiographical debate, Schmitz and Whitten's work bear the familiar stamp of cliometric research with its commitment to quantifiable data sets and application of economic models. Both economists discuss planter rationality though, in each case, the concept is aloof and distant as neither utilizes manuscript records to illustrate specific cases of planter rationality or profit-maximization. A similar dearth of plantation materials impairs Philip Shea's analysis of the economic geography of cane production. In "The Spatial Impact of Government Decisions on the Production and Distribution of Louisiana Sugar Cane, 1751-1972," (Ph.D. diss., Michigan State University, 1974) geographer Philip Shea argues for the centrality of federal tariff support to the profitability of the Louisiana cane industry. Facing a fluctuating tariff rate and economic instability, sugar planters acted rationally to maximize their profits by diversifying between cotton and sugar depending on commodity prices and tariff protection. To compete with Caribbean sugar estates, Louisiana planters utilized steam powered mills and adopted the hardier ribbon cane. Economic rationality, John Heitmann argues in The Modernization of the Louisiana Sugar Industry, 1830-1910 (Baton Rouge: Louisiana State University Press, 1987), likewise dictated the planters' response to improving technology. The sugar planters, Heitmann continues, were "proto-capitalist with an international vision" and a thirst for technological improvement. They openly embraced and adopted basic steam technology and milling, but they failed to adopt advanced steam technology because of the absence of sustained interest in scientific improvement and the influence of tariff support which blunted the cutthroat drive of market competition. Since Heitmann's interest focuses primarily on the post-bellum sugar industry, his coverage of the pre-war years is brief, cursory, and based predominantly on government reports and technical publications. Although progress and modernization is the thrust of his book, Heitmann carefully avoids the thicket (continued...)
Ultimately, my work seeks to fill this historiographical void by reevaluating the mentalité and economic role of the sugar planters in the Louisiana cane industry.\(^3\)

Recent scholarship by John Hebron Moore, Carville Earle, and William Dusinberre illustrates that southern cotton and rice planters proved to be economically rational and acquisitive entrepreneurs who modernized and improved the efficiency of their estates throughout the antebellum decades.\(^3\) Arguing that they invested in new machinery, (...continued)

of historiographical debate over ante-bellum economic growth. Implicit in his analysis, however, is that sugar planters were economically rational men who sought long term profit maximization.

\(^3\)No-one, since Sitterson, has attempted a conclusive analysis of the sugar planters based on traditional literary sources. While Whitten and Schmitz relied on quantitative data sets, Heitmann found technical publications and government documents most productive. These are signal contributions but they do not conclusively show how individual planters adapted to and profited from the expanding market revolution of the mid-nineteenth century. Although two limited studies have shown individual planter behavior in the cane country, there is, as yet, no thorough or conclusive discussion of the sugar planters to match Sitterson's dated work. This goal, in short, is the focus of my dissertation. For studies on individual planters see, Michael G. Wade, *Sugar Dynasty: M.A. Patout & Son, Ltd. 1791-1993* (Lafayette, La.: University of Southwestern Louisiana, 1995); David O. Whitten, *Andrew Durnford: A Black Sugar Planter in Antebellum Louisiana* (Natchitoches, La.: Northwestern State University Press, 1981).


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experimented with new agronomic techniques, and innovative management strategies, Carville Earle argues that southern planters evolved as "technically precocious, creative, and receptive to innovation." Modern scholarship, of this type, refreshes the historiography of slavery by directly challenging the concept of a backward looking South while finally resolving Genovese's injunction to prove rather than assume economic rationality. In this study, the focus shifts away from cotton and rice toward sugar cane, and the planters who turned their fields into factories by mastering, modernizing, and ordering their estates.

A central problem in the historiographic debate over capitalism in the old South lies in definition. The core difficulty extends to the fact that not even Marx or Smith could really resolve slavery's place in economic innovation as few economists, William Dusinberre adds, "convincingly thought through the subject of slavery." This confusion obscures, Dusinberre continues, "the parallel between planter capitalism and free labor capitalism." By holding to either Marxian or Smithian interpretations of economic development, most scholars cannot accept the South

(...continued)


37Dusinberre, Them Dark Days, 6.
as capitalist or modernizing because the *sine qua non* of capitalist development rests on free labor. Such unwavering commitment to free labor capitalism, obfuscates the historical reality and overlooks the similarities between planter and free-labor capitalism. Edward Pessen concurs and argues that in political structure and in economic organization, the antebellum North and South "were far more alike than the conventional scholarly wisdom has led us to believe." Both Northerners and Southerners, Pessen concludes, practiced entrepreneurialism though neither conformed "to a textbook definition of pure capitalism." Capitalism, however, does not possess a fixed structure that has rigid rules and clear definitions. This ambiguity explains why such distinguished historians and political economists as Fernand Braudel, Immanuel Wallerstein, and Maurice Dobb should differ so stridently over the nature of plantation capitalism.\(^\text{38}\) Philip

\(^\text{38}\)Edward Pessen, "How Different from Each Other Were the Antebellum North and South?" *American Historical Review* 85 (December 1980): 1147.

\(^\text{39}\)Braudel argues that plantations "were capitalist creations par excellence." See Fernand Braudel, *Civilization and Capitalism, 15th-18th Century, Vol II.*, *The Wheels of Commerce* (Berkeley: University of California Press, 1992), 272. Immanuel Wallerstein maintains that plantation agriculture, allows the planter to control enough yield to "adjust" to the world market. Through size, economic power, and division of labor, planters, Wallerstein maintains, were firmly incorporated within the capitalist world order. See Immanuel Wallerstein, *The Modern World System II: Mercantilism and the Consolidation of the European World Economy, 1600-1750* (New York: (continued...)

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McMichael accurately concludes that those who limit their definitions of capitalism to the social relations of production, lose a sense of the "ongoing transformation" of capitalist development . . . within a world market context, [where] plantation slavery was integral to this process.\(^5\) Rather than emerging as the "bastard child of merchant capital," as Genovese maintains, the South developed as its prodigal son.\(^6\)

Diverse definitions of capitalism complicate the search for a consensus interpretation of southern economic development. So complex and diffuse are these debates that American economic historians, Allan Kulikoff notes, prefer

\(^{(...continued)}\)


to ignore the term capitalist and "call the United States an entrepreneurial, commercial, or business society."^42 All of these, the American South surely endeavored to be, but to define capitalist or bourgeois behavior, we must establish a definition of capitalism with which to test the actions and thoughts of the sugar masters. This definition moves beyond the Smithian-Marxian paradigm and posits that modernization and capitalism can occur in a slave based economy and society.

Just a year after the October Revolution, Valdimir Ilrich Lenin announced that the "free farmer working on free lands" paved the American route to capitalist agriculture. According to Lenin, the Prussian road to capitalism proved a gradualist path where the Junker ruling class only gradually adapted traditional feudal relations to capitalist forms. Despite such piecemeal change, feudalism and capitalism, Lenin argued, synchronously emerged on the Prussian plains. The South, very clearly, did not follow the "American" route to capitalism where free labor girded economic change, but like Prussia, Southerners combined unfree labor with capitalist

development. Ironically, the master of Soviet communism turned the key on historical reality and saw that capitalism and unfree labor did not stand as incomprehensible polar opposites. In the American South, where the perennial requirements of staple agriculture fashioned the emerging labor systems, rational agrarians and planters found slavery not only efficient but more profitable than a competitive free labor system. If economic rationality functions as the linchpin of capitalist behavior, as Max Weber argues, then slavery served agrarian capital well, for slavery remained not only profitable, but ultimately cheaper than competing free labor. Instead of slowing capitalist development and progress, slave labor proved central to the modernization and economic transformation of Southern staple producing regions.


Although historians often use capitalism in a very broad sense, several features distinguish a capitalist economy. Primarily, capitalism emerges as a system of exchange where individuals buy, sell, produce, and invest private goods or capital within a market. Having sold or exchanged their capital or commodity, capitalists purchase goods or services from other producers at market prices. Capitalistic production, consequently, requires a commercial economy where supply proves plentiful enough to prevent a reversion to self-sufficiency. A capitalist economy, however, is not simply based on exchange, for capitalists methodically maximize profits and accumulate wealth for investment within a relatively free though highly competitive market economy. Size, complexity, specialization, and above all profit-maximization consequently distinguish capitalist from non-capitalist production. To seek maximum profit, capitalists systematically operate their businesses rationally and deliberately adjust their "economic means to the attainment of . . . pecuniary profit." Economic rationality, diligent book-keeping, and profit maximization,


subsequently, mark the capitalist form of production. Profit maximization and economic rationality, nevertheless, coexist in the capitalist economy with security-seeking risk reduction. The choice between maximizing profit or seeking security lies in a rational economic decision that capitalists make after evaluating profit and investment opportunities, market conditions, and subsequent to appraising future prospects. Frequently, risk reduction and profit maximization coincide when opportunities prove limited or when instability dictates the market place.

A commercial or market economy can be defined as capitalistic when there are "some buyers in its markets who are making purchases, not for their own consumption, but with the intention of reselling what they have bought or of using it in a process of production of which they will sell the product." Although these purchases signify the investment of capital, Frederic Lane contends that

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"In his General Economic History, Max Weber argued that rationality characterizes the nature of modern capitalism. The key distinguishing feature of entrepreneurial capitalism, he continues, is capital accounting, "an establishment which ascertains its income-yielding assets, profits and costs by calculation according to the methods of modern book-keeping." Rational capital accounting, Weber maintains, requires freedom of the market, rational technology, calculable law, use of commercial instruments, and free labor. With the exception of this last element of economic rationality, antebellum sugar planters behaved and performed in a rational or capitalist manner. See, Max Weber on Capitalism, Bureaucracy and Religion: A Selection of Texts, ed. Stansilav Andreski (London: George, Allen & Unwin, 1983), 109-110."
conditions "must be such that these investors of capital accumulate wealth, i.e., that their purchases and sales bring them increases in capital for further investment." Slave labor appears perfectly consistent with this view of capitalism, as planters purchased slaves with the primary intention of using them "in a process of production of which they will sell the product." Evidently, an expansion in the labor force yields more sugar, cotton, or tobacco which the planter sells and accumulates wealth for reinvestment in further slaves, land, or machinery. The forced sale of excess slaves similarly generates wealth that the slaveholder might invest in other forms of capital.

In the traditional Smithian model, entrepreneurs invest capital in machinery and technological advancement. These capital investments improve productive capacity and bind the capitalist ever further to the market economy. Such a strict definition of "capital," however, appears inappropriate as sugar planters invested their resources in land improvements, enslaved labor, and classical "capital"


50Ibid., 6.
assets such as machinery. Instead of paying wage laborers by the hour or the week, slave labor represented a "capitalized" investment as chattel purchases required massive expenditure that a planter could only expect a return on after numerous years of service. In this sense, slavery remained a "fixed cost" or "capitalized" labor system that required a considerable capital outlay rather than a "fluid cost" labor system where weekly or monthly wages predominate.

In order to countenance the enormous capital expense of slave labor, antebellum credit instruments facilitated the large slave investments that proved so central to capital accumulation and investment in the old South. Michael Tadman contends in Speculators and Slaves, that while western slave buyers "capitalized" their labor system, upper South slave vendors similarly viewed their slaves as saleable "capital" that could generate or maximize profits. The economic "capitalization" of labor through large capital investment in "fixed" slave labor marked the antebellum planter as a significant capitalist who maintained his assets in human chattel, rather than in

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5: See Dusinberre, Them Dark Days, 6-7. Dusinberre maintains that rice planters poured their capital into machinery, land improvements, and slave labor. These latter two were the central elements in the rice planters "capitalist enterprise."

land or machinery. In *Old South, New South*, Gavin Wright alludes to the "capitalization" of labor when he describes the southern planter as a "labor lord" who maintained the majority of his capital in slaves. Richard Kilbourne expands on Wright's conclusions by concluding that an investment in slaves proved "a rational choice, given the alternatives for storing savings in the middle of the last century." Through the accumulation of his capital in labor, the southern plantation owner evidently differed considerably from his entrepreneurial brethren in the North who invested their capital in machinery and plant equipment.

Implicit in this definition of capitalism lies the assumption that capitalists are rational economic men and women who prove ready to innovate in economic production,

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53 *Old South, New South*, see chapter 2.

54 Richard Kilbourne argues in *Debt, Investment, Slaves: Credit Relations in East Feliciana Parish, Louisiana, 1825-1885* (Tuscaloosa: University of Alabama Press, 1995) that complex and highly sophisticated antebellum credit instruments collateralized slaves and facilitated capital accumulation. Slave mortgages formed an important part of local and regional credit markets and underpinned plantation investment and debt. Slavery, in short, was capitalized and "represented a huge store of highly liquid wealth that ensured the financial stability and viability of planting operations . . . slave property clearly collateralized a variety of credit instruments and was by far the most liquid asset in most planter portfolios." Kilbourne's contention that slave labor was the most rational choice for storing "savings" flatly contradicts Harold Woodman who argues that savings were only protected in gold, cash, or cash equivalents. See, *Debt, Investment, Slaves*, 1-74, quotations on pp.5.
management, and marketing. This "capitalist" spirit contrasts with conservative "traditionalism" present in pre-modern economic cultures. As Joseph Schumpeter argues, capitalists remain in constant search for profitable innovations that yield market success. By pursuing technical and managerial improvements, Schumpeter maintains, entrepreneurs destroy old methods of production and steer the economy toward progress and greater productivity. The visible hand of technology and entrepreneurial leadership, consequently, united to innovate, modernize, and transform labor, markets, and economic systems of production.\(^\text{55}\)

Among the sugar fields of south Louisiana, capitalist and rational Schumpeterian entrepreneurs transformed the rural landscape from traditionalism to modernism in the course of the fifty years prior to the outbreak of civil war in 1861. Like their acquisitive brethren in the agrarian North, the slave-holding capitalists who transformed the cane country marched to the beat of modernization and the capitalist market ethos.\(^\text{56}\)


\(^{56}\)For an overview of the literature on early American capitalism see, Allan Kulikoff, "The Transition to Capitalism in Rural America," *William and Mary Quarterly* 3rd Ser., 46 (January 1989): 120-144. Unfortunately, most of the debate on the evolution of agrarian capitalism and the economic transformation of the countryside focuses on the rural North and the Southern backcountry. Two schools (continued...
Sociologists, economists, and historians find in modernization theory a pertinent way to explain the economic and social transformations of the industrial age. Modernization theories, Joyce Appleby argues, "account for (...continued)
the totality of changes involved in the creation of a modern nation. This holistic approach serves as "a synthetic framework for organizing and understanding American development." To analyze the economic and social history of the antebellum South, the concept of modernization works admirably well, as it enlivens a turgid empirical debate over profitability, regional incomes, and agricultural self-sufficiency. Modernization theory allows the historian to place the dynamic of capitalism and human action within a larger picture of regional growth and modernization. Furthermore, modernization theory provides a theoretical framework for comparative analyses of regional economic development while, additionally serving as a rigorous test for measuring the modernity of an economy and a people. This dissertation attempts to place the sugar masters and their culture under such scrutiny. Their passing grade confirms that antebellum sugar planters emerged as modern, rational economic men who thought and acted as progressive, market-conscious agrarian capitalists. The economic and social transformation that they wrought in the cane country strongly indicates that


the dynamics of modern growth flourished in the midst of a slave based economy and society.

Modernization encapsulates the principles of economic development measured by greater economic efficiency and by socio-political change toward rational, complex, and integrated structures. These changes fashioned an integrated modern economy, based on rationalized production and specialization of economic function. Social change brought national integration and a movement toward the creation of one large society with a common modern personality within it. These changes prove both natural and typical of a society that evolves from the confines of traditionalism.\textsuperscript{55}

Traditional societies, modernization theorists argue, remain characteristically stable entities where change rarely occurs from generation to generation. Seasonal day length measures the working day, not the order and uniformity of the ticking clock. With little interest in changing the economy or society, little innovation occurs in the traditional economy while word-of-mouth and face-to-face communications operate as the sole means of information dispersal within small tightly knit settlements. With communication so restricted, localism prevails while village conservatism views innovation with suspicion and misgiving. Deference and ascriptive

\textsuperscript{55}Ibid., 201.
hierarchical relations further distinguish a traditional or patriarchal social structure and political organization. Richard Brown concludes that:

the prevailing outlook of people in traditional society, is one of acceptance or resignation toward life as it is. Since stability is normal and is valued, there is neither the aspiration nor the expectation of spiritual or material improvement... The ideal, moreover, is seen in the repetition of past ways, rather than through original achievements. 

Modernization, however, radically transforms both society and economy into a vigorous, progressive civilization that appears "culturally dynamic and oriented to change and innovation." In essence, modernization closely follows Ferdinand Tönnies concept of the transformation of a natural, organic community (Gemeinschaft) to a complex, rational, and mechanical society (Gesellschaft). Like Max Weber, Tönnies viewed rationalism as the key to modernization and the spirit of capitalism. While Gemeinschaft und Gesellschaft shaped the intellectual antecedents of modernization theory, it remained to Karl Deutsch, S.N. Eisenstadt, and Talcott Parsons to establish and refine the present modernization

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theory. Modernization, Karl Deutsch argues, rests on the process of social mobilization "in which . . . old social, economic and psychological commitments are eroded or broken and people become available for new patterns of socialization and behavior."^6^3

Creating profound change in societal diversity, egalitarianism, and democracy, modernization transformed the stability and conservatism of the traditional economy to the dynamism and rapidity of modern commercial relations. As societies evolve through the various stages of modernization, Brown argues, the desire "to manipulate the environment through the use of technology becomes a prevalent goal, since change (for the better) is viewed as a real possibility." Time consciousness pervades the workplace and "to a significant degree[,] life becomes a race against death for achievement." In their quest for modernization, progressive farmers and industrialists experiment and tinker with technological improvements, voraciously read improvement literature, and purchase widely and conspicuously from the market. With an ever

expanding communication and marketing network, cosmopolitanism replaces localism as the guiding ideology of modern market-orientated societies. Above all, self-conscious rationalism defines both modern men and women as acquisitive and expansive thought, based on rational analysis, resides at the core of modern mentality.64 Alex Inkeles adds that the modern man differs from his predecessor in being open to innovation and change, concerned with national or global affairs, ready to accept fixed work hours and time schedules, devoted to planning and organization, committed to mastering his environment in order to advance his own interests, is confident that other people and institutions will meet their responsibilities, and has faith in science, technology, and innovation.65

Modernization exemplifies the transition of an economy and society from a simple, organic subsistence stage to a technologically advanced, industrialized economy.66 These

64Richard D. Brown, Modernization, 12-15.


66In this respect, modernization theory bears strong resemblance to W.W. Rostow's The Stages of Economic Growth: A Non-Communist Manifesto (Cambridge: Cambridge University Press, 1961). Rostow argued that economies evolve through five stages: the traditional society, the preconditions for takeoff, the takeoff, the drive to maturity, and the age of high consumption. These explanatory stages are absent in modernization theory though they tend to obfuscate reality where elements of traditionalism co-exist with modernity. For an excellent critique of the commercialization (continued...)

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changes destroyed social-communalism and ushered in a world built on impersonality, order, and big business.®

Although Richard Brown accepts that the antebellum North embraced the central components of modernization, he found the old South an ambiguous paradox as Southern ideology sanctioned "a quasi-aristocratic, hierarchical social structure" that rejected bourgeois modernity in favor of localism, deference, and manorialism. Trapped by the arresting influence of slavery, modernization, Brown concluded, could advance only half way in the antebellum South.® My work challenges these conclusions and argues

(...continued)

® Placed in this context, corporate organizational growth is the logical outcome of modernization. Although most historians date these structural changes to the 1870s, I contend that sugar planters by the late 1850s utilized crude though nevertheless modern business practices and managerial techniques. While technology was surely an important factor, the institution of slavery, I suggest, both compelled and enabled planters to diversify operations and develop managerial hierarchies. The sugar planters were not the robber barons, but they had taken the first steps toward corporate capitalism. See, Robert H. Wiebe, The Search for Order, 1877-1920 (New York: Hill & Wang, 1967); Alfred D. Chandler, Jr., The Visible Hand: The Managerial Revolution in American Business (Cambridge: Harvard University Press, 1977).

that Louisiana sugar planters emerged as rational and modern economic men who embraced the market ethos and modernized both their plantations and the cane country in which they lived.

The distinguished economist, Israel M. Kirzner, wrote an absolute truism when he remarked: "Capitalism, it is evident, resides in the eye of the beholder. What for some appears as institutionalized exploitation, or fraud, or chaos . . . is seen by others as a well-oiled, efficient social engine working smoothly and flawlessly to achieve spectacular growth, prosperity, and economic justice."®

Historians, like their brethren in economics, appear prone to this scholastic weakness and despite the multiplicity of sources cited:

(...continued)


econometric scholarship, there is no true consensus on what constitutes market capitalism. It remains, as ever, in the eye of the beholder.

Market capitalism, Israel Kirzner contends, evolves as a product of "the interacting decisions of consumers, entrepreneur-producers, and resource owners." Maintaining that since capitalism is an entrepreneurial process where individuals strive for profit maximization within an often unstable market-place, Kirzner elucidates how entrepreneurial capitalists rationally analyze the stability of the market and potential profits before investing their capital in expansion and growth. Although capitalists view progress as healthy and good, entrepreneurs often rationally choose security and risk-reduction over expansion and profit-maximization. The key determinants in this decision frequently rest on the price of the saleable commodity, the state of the market, the instability of governmental support for business, and the quality of the crop or product. Rational economic analysis, consequently, determines the behavior of the capitalist-entrepreneur.

Like Northern entrepreneurs, Louisiana sugar planters similarly made rational economic decisions in favor of profit maximization during good years and security or risk-

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risk-reduction in poorer seasons. These activities, distinguish the sugar masters as entrepreneurs and capitalists who adjusted their individual actions to meet variable market conditions. As enterprising capitalists, the Louisiana planter class modernized their estates by introducing order, discipline, and technology to the economy of rural Louisiana. This dissertation underscores the behavior and mentalité of the sugar masters as they expanded their operations and fashioned an economic system, that, for all its apparent distinctions, remained analogous and complementary to entrepreneurial operations in the capitalist North. Eschewing the traditionalism of the pre-capitalist world, the sugar masters emerged as an aggressive and assertive class of capitalists who strove for materialism and the fruits of modernity. Confusion over the nature of capitalism, consequently, obfuscates the historical reality that slavery and southern economic growth marched solidly together throughout the antebellum decades. My work, by focusing on the evolution and development of the Louisiana sugar cane industry, shows that capitalism, slavery, and modernization ultimately developed in parallel and harmony throughout the sugar country. The sugar masters did not eschew the market nor battle the forces of economic change in the mid-nineteenth century and rather than emerging, then, as the "bastard
children of merchant capital," the sugar masters evolved as capitalism's prodigal sons.
CHAPTER 2
CANAAN'S LAND: THE GROWTH OF THE LOUISIANA SUGAR INDUSTRY, 1795-1860

Deep in the holds of the Spanish caravels that approached the shore of Hispaniola in 1493 lay several branches of sugar cane freshly brought from the Canary Islands. At the vanguard of this fleet stood Christopher Columbus, the Genoan explorer and profiteer who remained ever keen to tap the resources of the lush tropical islands. Anxious to succeed and placate his Castilian patrons, Columbus's experiences in the Caribbean a year earlier had surely alerted him to the possibility of introducing sugar cane to the New World. Married to a Madeiran sugar planter's daughter, Columbus quickly realized that the long frost free winters and moist tropical climate made the Caribbean a perfect ecological setting for the cultivation of sugar. With knowledge gleaned from his father-in-law's estates, Columbus, characteristically, eyed both profit and success in New World sugar.

Quickly experimenting with the seedlings, Columbus's first experiments failed though by the second decade of the sixteenth century, Santo Dominican land-holders oversaw a plantation system where enslaved Africans labored in the cane fields to satiate the savory European palate. In the establishment of a New World precedent and a model of American development that persisted for almost four hundred
years, these early Caribbean planters and Spanish land magnates found an alternative to Peruvian gold by combining sugar, slavery, and a burgeoning export market. Present at the birthing of this New World industry lay the dynamism of colonial development, for just as sugar and slavery became intertwined on the Caribbean plantations, so did the forces of American and European capitalism.

Following in Columbus's footsteps, a generation of Spanish settlers sought to extend and enlarge the Genoan's first experiments with Caribbean sugar.¹ Ferdinand and Isabella, the reigning Spanish monarchs, remained particularly keen that the colony of Hispaniola would satisfy the Habsburg thirst for sugar. Eager to profit from forced labor and sugar cane, the conquistadors transformed the infant industry into a flourishing trade by the mid-sixteenth century.² Slavery and colonial monoculture in Hispaniola, consequently, established a pattern of economic development that dominated the agronomy of the American continent from the early sixteenth century to the 1880s.


Enthusiastic to enjoy the spoils of tropical agriculture, European monarchs and settlers flocked to the New World to claim colonies as their own. The English, French, Dutch, and Portuguese rushed into the Caribbean and quickly transformed it into a colonial export zone that supplied the sugar bowls of Europe with the saccharine they craved. Sidney Mintz accurately concludes that the dramatic increase in the consumption of sugar constituted a revolutionary and irreversible change in European diet. Initially expensive, the price of sugar gradually dropped during the eighteenth century allowing a growing number of middle and working class Europeans to purchase the product.\(^3\) This increasing and voracious demand for sugar ultimately defined the dynamics of cane production and the rapid development of the sugar industry throughout the Americas.

Unwilling to fall too far behind their continental competitors in both staple production and colonial development, the British emerged as the foremost architects of the sugar revolution in the eighteenth century. While Englishmen proved initially modest in their demand for sugar, rising wages assured greater disbursable income and by the mid 1700s, Britons increasingly prized the sweet condiment and embraced sugar as a national habit. Like

tea, Sidney Mintz concludes, "sugar came to define English 'character'" by the seventeenth and eighteenth centuries.¹

With the onset of the Thirty Years War in 1618, the primary colonial powers faced a long and destructive conflict that ultimately humbled the vast Spanish empire by mid-century. Not oblivious to European political developments and the exhaustive nature of the Habsburg struggle, the Stuart monarchs sponsored English territorial expansionism throughout the Spanish dominated West Indies.² Avaricious in his pursuit of both sugar and wealth, Charles I launched an attack against Barbados in 1627 and by 1640, English settlers had transformed it into a leading sugar producing island. The same fate waited for Jamaica, and in 1655, a British squadron overwhelmed the small Spanish garrison at Kingstown. Invasion and island conquest throughout the Antilles, historian Richard Dunn remarks, served as "a demonstration of the aggressive self-confidence of the nouveau riche sugar planters who wanted additional Caribbean acreage to expand their production."³ Although other Europeans seized their own Caribbean booty, the English lead the way in creating a plantation economy

¹Ibid., 39.


based on sugar and slavery and within just half a decade, England dramatically expanded Caribbean sugar production and vied with Portugal to supply both the domestic and burgeoning European market. One year after the Glorious Revolution in 1688, the English had largely achieved their goals and, as one London pamphleteer proudly remarked: "heretofore we had all our sugars from Portugal and it is computed that they cost us yearly about 400,000 [pounds sterling]. Now that great leak is stopped; and we hardly buy any Portugal or Brazil sugars." Earnest in their desire to obtain a sturdy grip over the supply and demand of cane sugar to the European continent, the British ultimately shaped Anglo-Caribbean expansion and the development of plantation agriculture to feed their growing necessity for the sweet tropical condiment.

A thousand miles to the North, newly arrived British settlers proved similarly anxious to profit from New World staples, and by chopping down forests and clearing land in the Chesapeake, early Virginians sought to benefit from the growing demand for luxury commodities in the London market.

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Unperturbed by the cold and harsh winters along the James river, Governor Yeardley's administration experimented with sugar cultivation on a few plots surrounding their fledgling settlement. Since most botanists knew that the genus *Saccharum* grows natively in the tropics and requires abundant heat and water for its cultivation, the few sugar canes that the settlers optimistically planted at Jamestown unsurprisingly withered and died in the first cold weather. Although the complete failure of Virginia sugar appears rather insignificant as an agricultural experiment, it nonetheless stands as the first attempt to grow sugar in North America. Like their profit and market conscious brethren in the Caribbean, early Virginia colonists, understandably, strove to tap the expanding European demand for New World and tropical staples. Finding sugar a disappointment, the Virginians concentrated on tobacco, a similarly prized American commodity that merchants in Bristol, London, and Plymouth bought in expanding quantities throughout the seventeenth and eighteenth centuries.

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The Virginians, however, did not possess a monopoly on sugar cultivation in North America, for when Pierre Lemoyne d'Iberville first established the Louisiana colony, he brought with him from Santo Domingo a number of sugar cane specimens. On a wooded bluff overlooking the Mississippi river and lying fifty miles north of the first French settlement at Fort Maurepas, Iberville established a frontier post where he proceeded to plant the sugar cane. Unfortunately, Iberville's enthusiasm for sugar cultivation remained short-lived, as the plants proved sickly and were easily washed away in a flood that destroyed not only Iberville's nascent sugar estate but, additionally, all hopes of cane cultivation in Louisiana.\(^\text{10}\) The prospects for sugar farming appeared so negative that the French administration warned Jean Baptiste LeMoyne, Sieur de Bienville that "sugar cane growing is not practicable. The trials made give no hope that it will ever meet with any success." Evidently firm in their advice against the cultivation of sugar, colonial intendants cautioned Bienville to refrain from this enterprise and that "you must no longer think about it."\(^\text{11}\)


\(^{11}\)Delanglez, *French Jesuits*, 389.
The lure of the Parisian market, however, remained too strong to arrest the ambitions of the new settlers who emigrated to French Louisiana in the 1720s and 1730s. Initially disappointed with sugar, they turned to indigo production and established a significant colonial export industry. Smaller producers, who could not compete with the indigo magnates in New Orleans, specialized in growing tobacco for the expanding European market and in supplying local settlers with corn. Marching forward with the institution of chattel slavery, Louisiana's planters found that expansive agriculture and human bondage served as the key to the region's economic and agrarian fortune. By 1745, for example, the economy and society of Pointe Coupee flourished on the basis of tobacco and slavery. The population of this rather remote settlement over one hundred miles upstream from New Orleans contained by the mid-eighteenth century the key demographic ingredients for economic expansion in eighteenth century America. While 260 whites resided at Pointe Coupee, their numbers dwindled in comparison with the 426 African-Americans slaves who served as the primary labor force in the region. Of the sixty-one white households, 75 percent owned at least one

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12 Charles Gayarré, *History of Louisiana* (5 vols., New Orleans: F.F. Hansell, 1903), II: 27-29. Gayarré cites the French census of 1744 that enumerates the white male population of South Louisiana as 1100 with 930 African-Americans of both sexes. The number of white women and children is unknown.
slave who worked primarily on tobacco, corn, and bean cultivation. With a clear slave majority, Pointe Coupee planters expanded their tobacco operations during the early 1750s and established the colony as a mature plantation district with a political economy based firmly on slavery, tobacco, and the international export trade.

Into this potent mix, Claude-Joseph Dubreuil de Villars established that sugar cane could become a potentially profitable crop in the lower Mississippi valley. On the 17th of April 1751, two hundred fresh troops departed from France on the long ocean voyage to New Orleans. The transports, J.B. Avequin noted, briefly called at Port-au-Prince, on the booming French sugar colony of St. Domingue, where Jesuit priests sent on board a supply of cane for the missionaries in New Orleans.

Nurtured and protected by the Jesuit priests, the cane plants survived the winter of 1751 and surprisingly sprouted the following year. As the Jesuits labored successfully in their experiments, a growing interest in

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14De Bow's Review 22 (June 1857): 616.
sugar emerged throughout the colony, and by the early 1750s, Jean Bernard Bossu remarked that a number of south Louisiana farmers cultivated sugar cane. Their progress, nevertheless, remained dismally slow and no real advance occurred in cane farming until Dubreuil pioneered and extended Louisiana sugar cultivation during the mid 1750s.

Enterprising and innovative, Dubreuil clearly recognized the difficulty of harvesting the immature crop before the first winter freeze, though by storing and protecting his freshly cut cane, Dubreuil emerged as the first sugar planter to overcome Louisiana's climatic and ecological limits to cane cultivation. Despite the cost of erecting a simple sugar mill, Dubreuil unfortunately never managed to granulate more than a little sugar, and on his death in 1757 the Chevalier de Mazan purchased the estate in its entirety. Dubreuil's achievements, however, remained seminal to the growth of Louisiana sugar as the French colonist proved that by applying science and initiative to sugar production, cane cultivation was possible even during the cool Louisiana winters.

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While Dubreuil's notable accomplishments piqued local interest in sugar, progress continued apace under Mazan, who, like his predecessor, persevered in his experiments with cane cultivation. By 1764, Governor D'Abbadie notified the Duke of Choiseul that Mazan's crop compared favorably with those of St. Domingo.\(^{17}\) Perhaps a little over-enthusiastic, the Governor praised the infant sugar industry too hastily as the cane crops frequently disappointed, and despite some efforts with improved horticultural techniques, the plants often died during the cold winters and the cane juice only periodically granulated. Instability in early cultivation and production, consequently, guaranteed that Louisiana sugar remained only an experimental crop in the lower Mississippi valley. Geographer to the United States, Thomas Hutchinson, reflected on the lack of confidence in the crop when he astutely remarked that "no dependence can be had on this article, as some years the winters are too cold, and kill the canes in the ground." Captain Philip Pittman similarly concurred that sugar remained an unreliable and inconsistent crop. The New Orleans chemist, J.B. Avequin, added that the quality of Louisiana sugar consistently disappointed the optimistic planters, and that in many

\(^{17}\)Ibid., 7.
occasions, the sugar looked more like marmalade or guava jelly than sugar.\(^8\)

Despite the innovative efforts of Dubreuil, the Louisiana sugar planters remained systematically incapable of overcoming the ecological obstacles to cultivation. In despair, most farmers abandoned their cane fields and returned to indigo and tobacco. Those who persevered with sugar found their market limited to bottling a small volume of syrup for sale in New Orleans.

By 1762, the cultivation of sugar evidently failed as a tropical staple in colonial Louisiana and by the 1780s, intendant Martin de Navarro noted that Louisiana's products included "furs, indigo, tobacco, timber, cotton, pitch, tar, rice, maize, and all kinds of vegetables." Sugar, however, remained conspicuous by its absence.\(^9\) The prospects for sugar cultivation remained so disappointing that by the 1780s only Joseph Solis continued to diligently cultivate and manufacture sugar. Nevertheless, like all


who tried before him, Solis struggled with the crop and consistently failed to granulate his cane juice. Incapable of producing even the lowest grade of dark brown sugar, Solis manufactured a little rum and tafia, a thin runny syrup rich in molasses.20

The absence of a viable sugar industry lasted but a few years, for in the 1790s several factors conspired to reshape Louisiana agriculture and the place of sugar within it. One of the most important elements in the economic rise of the sugar industry lay in the disappointing returns Louisiana planters received for their indigo. Suffering in competition with the finer crops produced in Guatemala, Venezuela, and Mexico, Louisiana indigo farmers found their market access limited within the Spanish empire, and after the 1794 insect blight, the interest in commercial indigo production declined significantly.21 Colonial Louisiana's second crop, tobacco, similarly struggled under Spanish rule for in 1791, Madrilian officials notified the colonial administration that they would dramatically reduce the royal purchasing of tobacco. With serious economic difficulties compounded by their relatively weak position within the Spanish empire, Louisiana planters desperately


looked for a reliable, stable, and profitable crop that would generate consistent returns.

In the early 1790s, two additional events profoundly shaped the economic development of Louisiana and the centrality of staple agriculture and slavery to the region's future. The first of these changes came at the hands of Eli Whitney, the New England inventor who in 1794 received a patent for his revolutionary cotton gin. This invention proved highly successful at separating the lint from the cotton seed and in the space of ten years, Whitney's gin transformed southern agriculture and ultimately the place of cotton within the world market. Cognizant of the revolutionary implications of Whitney's gin, some Louisiana planters began to experiment with cotton on their alluvial estates. However, in 1794 on the island of St. Domingue, a second event occurred which profoundly shaped the development of the Louisiana sugar industry and the dynamics of the international sugar market. That event was, of course, the Haitian revolution of the 1790s.

On the eve of the French Revolution in 1789, St. Domingue dominated global sugar production. With over 650 sugar plantations and almost 2000 coffee estates, St. Domingue alone produced in 1787 over 131 million pounds of

\[\text{footnote}{22} \text{Tomas O. Ott, The Haitian Revolution, 1789-1804 (Knoxville: University of Tennessee Press, 1973), 6.}\]
sugar. Rich and prosperous, the French colony, Moreau de Saint-Méry wrote, "takes on an air of opulence that dazzles Europeans." Such affluence and luxury, however, collapsed in a violent civil war and slave insurrection that destroyed the opulence of French plantation life and with it the island's sugar industry. Once producing over 78,000 tons of sugar, by 1823 Haitian farmers manufactured just a single ton. This economic collapse presented a tremendous market opportunity for those who could seize the occasion and extensively produce sugar for both the expanding global and domestic market. In the nineteenth century, Louisiana, Cuba, Puerto Rico, and Brazil expanded their sugar operations and filled the void that Haiti left in the wake of her revolution. Table 2.1 illustrates this point, for as Haitian production crashed in the early nineteenth century, Cuba, Louisiana, and Brazil increased their sugar yields and in turn the percentage of their respective market shares.

Figure 2.1 graphs the data and illustrates the dramatic shift in global sugar production as Haiti and

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Jamaica declined while Louisiana and Cuba materially expanded their share of global sugar production.

Table 2.1. Global Sugar Production in Selected Regions. (Mean production per annum, measured in long tons)

<table>
<thead>
<tr>
<th>Decade</th>
<th>Louisiana</th>
<th>Cuba</th>
<th>Jamaica</th>
<th>Haiti</th>
<th>Brazil</th>
<th>Puerto Rico</th>
</tr>
</thead>
<tbody>
<tr>
<td>1760-1769</td>
<td>2600</td>
<td>32849</td>
<td>62640</td>
<td>34000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1770-1779</td>
<td>10000</td>
<td>39161</td>
<td>62594</td>
<td>20400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1780-1789</td>
<td>13142</td>
<td>54162</td>
<td>56753</td>
<td>21000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1790-1799</td>
<td>21133</td>
<td>55460</td>
<td>78696</td>
<td>21000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1800-1809</td>
<td>35710</td>
<td>84400</td>
<td>8937</td>
<td>14700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1810-1819</td>
<td>40615</td>
<td>76138</td>
<td>2227</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1820-1829</td>
<td>24943</td>
<td>54186</td>
<td>72047</td>
<td>231</td>
<td>85500</td>
<td>9810</td>
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<tr>
<td>1830-1839</td>
<td>37751</td>
<td>147361</td>
<td>58841</td>
<td>4</td>
<td>82500</td>
<td>25455</td>
</tr>
<tr>
<td>1840-1849</td>
<td>83798</td>
<td>161658</td>
<td>32157</td>
<td>82000</td>
<td>39829</td>
<td></td>
</tr>
<tr>
<td>1850-1859</td>
<td>137713</td>
<td>345075</td>
<td>23446</td>
<td>104428</td>
<td>91000</td>
<td></td>
</tr>
</tbody>
</table>

25The data for Table and Figure 2.1 come from Noel Deerr, *The History of Sugar* (London: Chapman and Hall, 1949), I: 112, 126, 131, 198-99, 240, 250. The data set is incomplete so consequently I have taken the annual mean for each decade where the data is extant. In the cases of Louisiana, Jamaica, and Cuba, the data is exact for most years. This is not, however, the case with either Haiti or Brazil. There, I have had to rely on single figures to compute a decennial mean. The above figures represent the mean annual production per decade. They are computed as long tons (2240 lbs or 1.016 metric tons).
Requiring an immense labor input and intensive cultivation, sugar production in the nineteenth century boomed under the institution of slavery and dwindled in all areas without it. However morally reprehensible slavery appears to the twentieth century observer, the grim economic reality is that slavery underpinned the success of sugar cultivation throughout the Caribbean Basin, and as Figure 2.1 indicates, commercial sugar production failed in all areas where the abolition of slavery occurred.

While the collapse of St. Domingue surely brought fears of slave revolt to planters and slave-holders from the Chesapeake to Bahia, the economic dislocation of the island provided the crucial market opportunity for experimentation and expansion in sugar cane. After the disappointment of poor tobacco and indigo crops during the early 1790s, Louisiana farmers bent their attention once again to mastering the sugar cane and profiting from the collapse of the colonial French industry. Emerging as the progeny of the Haitian revolution, Louisiana profoundly benefitted from emigre and refugee planters who arrived in New Orleans from St. Domingue during the 1790s primed with technical knowledge and impatient for sugar expansion themselves.26 Antoine Morin, one of the most prominent of

Figure 2.1. Global Sugar Production, 1760-1859.
these emigres, joined Antonio Méndez's plantation at Terre-aux-Boeufs as a sugar maker. Frustrated in their initial inability to mass produce sugar, Méndez and Morin materially advanced cane cultivation by planting and granulating a little sugar. Working at the same plantation on which Joseph Solis produced rum, Méndez made the crucial breakthrough and produced "a few small loaves of white sugar, one of which was about enough to sweeten two cups of coffee." 27 Joseph Delfau de Pontalba records that while Méndez pioneered sugar granulation in Louisiana, the Cuban native born of Galician parentage chose "to take advantage of the desire that several inhabitants have to try out this crop, and he accordingly sold them all his cane for planting." 28 Nonetheless, Méndez's contribution proved considerable for his crops indicated that sugar would granulate in Louisiana and that the enterprise appeared rewarding enough to attract others to the industry. Particularly prominent among these planters was Etienne

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Boré, the hero of this "bourgeois epic" and the "savior of Louisiana."  

Buying some cane from Méndez, Boré began planting on his estate some six miles up river from New Orleans in 1794. Exciting some initial interest, Boré received several visitations throughout the year by travelers and planters fascinated by his estate. Given the relative lack of success in past experiments, few appeared optimistic that Boré would succeed in granulating his sugar.

Confident and enthusiastic that he would, Boré engaged the services of Antoine Morin as his sugar maker. Morin, an alumni of distinguished Parisian colleges, proved an excellent chemist and botanist who enjoyed considerable fame in New Orleans as the premier sugar maker in the colony. Commissioned by Boré to lay out a mill and factory along the lines of those in St. Domingue, Morin spent two years planting cane and extending the sugar works, and by the third year, Boré's sugar fields yielded lush canes

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31 François-Xavier Martin, The History of Louisiana, 264.
Charles Gayarré, Bôre's grandson, described in unmatchable purple prose the suspense and intensity of Bôre's initial crop and the moment the first batch of sugar granulated before Morin's eyes.

On the day when the grinding of the cane was to begin, a large number of the most respectable inhabitants had gathered in and about the sugar-house, to be present at the failure or success of the experiment. Would the syrup granulate? Would it be converted into sugar? The crowd waited with eager impatience for the moment when the man who watches the coction of the juice of the cane, determines whether it is ready to granulate. When that moment arrived, the stillness of death came among them, each one holding his breath, and feeling that it was a matter of ruin or prosperity for them all. Suddenly the sugar-maker cried out with exultation: "It granulates!" and the crowd repeated: "It granulates!" Inside and outside of the building one could have heard the wonderful tidings, flying from mouth to mouth, and dying in the distance, as if a hundred glad echoes were telling it to one another. Each one of the bystanders pressed on, to ascertain the fact on the evidence of his own senses, and, when it could no longer be doubted, there came a shout of joy, and all flocked around Etienne Bôre, overwhelming him with congratulations, and almost hugging the man whom they called their saviour—the saviour of Louisiana.

Those who visited Bôre's plantation marvelled at the high quality of his sugar and the impressive operations that the sugar master possessed on his estate. Georges Collot noted that although the sugar contained a "thick watery matter," they seemed "good, crystallize well, and have a rich grain." Some of the sugar seemed so appealing

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that the Frenchman declared, "this perfection is a proof of the extreme fertility of the soil, and of its necessary properties for the nourishment of the plant."\textsuperscript{34} James Pitot similarly lauded Boré's efforts, recording that his plantation produced in 1796 over 100,000 pounds of raw sugar. Having resided on a sugar plantation in St. Domingue for a decade, Pitot affirmed "that one can make fine and good sugar in this colony."\textsuperscript{35} While many applauded Boré as the savior of Louisiana, the first of the sugar masters struggled with the ecological constraints to cane cultivation by experimenting with novel methods in cultivation and irrigation. Collot, for instance, observed that Boré's dense planting differed considerably from that practiced in the Antilles, where cane plants were spaciously sown.\textsuperscript{36} Boré's enterprise extended to irrigation, where he developed a complex drainage system with gates and sluices that prevented waterlogging and kept the soil moist though not overly saturated throughout the year.\textsuperscript{37} Consequently, innovation and enterprise in

\begin{itemize}
  \item \textsuperscript{34}Georges-Henri-Victor Collot, \textit{A Journey in North America, containing a survey of the countries watered by the Mississippi, Ohio, Missouri, and other affluing rivers . . .} (reprint, Florence: O. Lange, 1924), 170.
  
  \item \textsuperscript{35}James Pitot, \textit{Observations on the Colony of Louisiana from 1796 to 1802}, trans. Henry C. Pitot (Baton Rouge: Louisiana State University, 1979), 73-74.
  
  \item \textsuperscript{36}Dense planting minimizes the risk of frost damage.
  
  \item \textsuperscript{37}Collot, \textit{Journey in North America}, 169, 173.
\end{itemize}
cultivation and ecological control marked the activities of the early sugar masters.

Boré's success stimulated others to experiment with cane cultivation and to attempt its granulation. Evidently, the adoption of sugar as south Louisiana's staple crop occurred rapidly, as Collot reports that while touring the lower Mississippi, he observed the large sugar plantations of "the great colonial capitalists." So rapid was the expansion of the sugar zone, that by 1797 approximately, fifty planters cultivated sugar along the Mississippi River. The transformation from indigo and tobacco to sugar, however, proved highly expensive as horse drawn mills cost between $2000 to $3000 and labor costs remained extraordinarily high. Skilled sugar makers, for instance, could demand at least $1000 to $1500 per annum and the absence of these mechanics ultimately slowed the pace of economic growth in the sugar industry. A similar deficiency in the availability of slave labor structurally damaged economic progress, for the ban on the importation of slaves in 1796 brought rising slave prices that few save the very wealthy could afford. Claude Robin remarked that "the fear caused by the insurrection in St. Domingo has made the importation of this merchandise [slaves] extremely

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38Ibid., 93.

39James Pitot, Observations on the Colony of Louisiana, 74.
difficult, and there is so much land to cultivate that
nobody has enough." Exasperated, Robin concluded that
while slave prices in New Orleans surpassed all other
colonies, even slave hiring costs doubled those of
Martinique. Although labor and capital costs remained
high, a number of early planters invested in sugar estates
and materially contributed to Louisiana's expanding export
economy.

Experimentation in cultivation continued apace in the
1790s and early 1800s. One visitor to Ormond Plantation in
November 1803 found the creole slaveholder d'Estrehan "the
most active and enterprising sugar planter of the colony"
experimenting with new strains of sugar cane and novel
harvesting techniques. Keen to replace wood as the
principal fuel beneath the sugar kettles, d'Estrehan
pioneered the use of bagasse as an efficient and cheap fuel
for use below the sugar kettles. D'Estrehan's plantation
management proved similarly innovative as he divided his
plantation workers into "three-quarter watches" where each
slave worked six hour shifts at the mill during harvest

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46 C.C. Robin, Voyages Dans L'Intérieur de la Louisiane
de la Floride Occidentale, et dans les isles de la
Martinique et de Saint-Domingue, pendant les années 1802,
1803, 1804, 1805 et 1806 (Voyage to Louisiana, 1803-1805),
53.

41 After crushing and extracting all sugar at the mill,
the remaining cane stalk, or bagasse, can be dried and used
as a replacement fuel.
time. Pierre Clément de Laussat remarked that "by a wise distribution of hours, M. d'Estrehan doubled the work of forty to fifty workers without overworking any of them." 42 By introducing the order and regimentation of modern clock time, d'Estrehan established an innovative, modern, and apparently highly efficient labor system that later sugar masters adopted and emulated.

While d'Estrehan investigated novel labor practices, Boré and others significantly extended their operations and experimented with various cane types. Laussat records that Boré cultivated the faster growing Tahitian cane on his plantation, while others experimented with the Otaheitan variety.43 A climate of growth, experimentation, and improvement, consequently, characterized the early Louisiana cane industry. On his tour of the colony in 1803, Laussat observed that as he proceeded downstream from sugar mill to sugar mill, "it was really interesting and picturesque to see so many furnaces, one after another, belching clouds of curling black smoke that were ablaze at times." Later in the evening, the Frenchman visited Louis Habiné and remarked that as he stood upon the plantation house gallery, he could see at night "on the river bank[.]


43Ibid., 52; De Bow's Review 22 (June 1857): 618.
the smoking furnaces of the d'Estrehans, Esnes, Labranches, and seven or eight others in all directions." Blanketed with cane fields, the lower Mississippi valley increasingly emerged as the haven of the sugar master and his burgeoning slave crews. By 1802, the expansion of the sugar industry grew so rapidly that Berquin-Duvallon counted over seventy sugar plantations upstream from New Orleans. Each estate, the Frenchman continued, produced 120,000 pounds of raw brown sugar from approximately 100 arpents of cane land and with a slave crew of forty. If Berquin-Duvallon proved correct in his calculations, the lower Mississippi valley sugar crop amounted to approximately nine million pounds of sugar in 1802 and a similar quantity of molasses. Sitterson estimates that at the 1801 prices of eight cents a pound for sugar and fifteen cents a gallon for molasses, each plantation crop yielded a return of $11,400 or $285 per hand and $114 per arpent. With a staple crop valued at $855,000, the Louisiana cane industry emerged as a small though dynamic business that produced impressive profits.

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"Laussat, Memoirs of My Life, 70.

5Berquin Duvallon, Travels in Louisiana and the Floridas in the Year 1802, Giving A Correct Picture of Those Countries, trans. John Davis (New York: I. Riley, 1806), 129.

for those who could afford the relatively high capital costs involved with establishing a sugar estate. The testament to the rapid growth of the industry lay in the annual trade data collected in New Orleans. Less than a decade after Boré first granulated sugar on his estate in Audubon Park in New Orleans, over 2.5 million pounds of Louisiana sugar valued at over $300,000 passed through the mouth of the Mississippi and on to northern markets.\textsuperscript{47} With such a burgeoning market opportunity before them, Louisiana farmers and planters turned away from indigo and increasingly embraced sugar as their primary staple.

The key to expansion, however, lay in labor supply and in 1805, the newly established American government opened Louisiana to the domestic inter-regional slave trade.\textsuperscript{48} The availability of adult male labor in the New Orleans slave marts proved a central factor in the expansion of the industry, for as Michael Tadman eloquently shows, the sugar region relied extensively on the slave trade to meet their escalating labor demands.\textsuperscript{49} Table 2.2 and Figure 2.2

\textsuperscript{47} Whitaker, \textit{The Mississippi Question}, 131; Martin, \textit{History of Louisiana}, 315.


\textsuperscript{49} Michael Tadman, \textit{Speculators and Slave's: Masters, Traders, and Slaves in the Old South} (Madison: University of Wisconsin Press, 1989), 23, 64-70. For a detailed account of this topic, see Chapter 5 of this dissertation.
illustrate the phenomenal growth of the slave population in selected parishes throughout the antebellum decades.

Table 2.2. Increase in Slave Population: Louisiana and Select Parishes, 1810-1860.\textsuperscript{50}

<table>
<thead>
<tr>
<th>Year</th>
<th>Ascension</th>
<th>Assumption</th>
<th>Iberville</th>
<th>Plaquemine</th>
<th>Pt.Coupee</th>
<th>St.James</th>
</tr>
</thead>
<tbody>
<tr>
<td>1810</td>
<td>1031</td>
<td>547</td>
<td>1205</td>
<td>753</td>
<td>3187</td>
<td>1952</td>
</tr>
<tr>
<td>1820</td>
<td>2129</td>
<td>1149</td>
<td>2279</td>
<td>1506</td>
<td>3660</td>
<td>3086</td>
</tr>
<tr>
<td>1830</td>
<td>3567</td>
<td>1881</td>
<td>4508</td>
<td>3188</td>
<td>4210</td>
<td>5029</td>
</tr>
<tr>
<td>1840</td>
<td>4553</td>
<td>2988</td>
<td>5887</td>
<td>3385</td>
<td>5430</td>
<td>5711</td>
</tr>
<tr>
<td>1850</td>
<td>7266</td>
<td>5341</td>
<td>8606</td>
<td>4779</td>
<td>7811</td>
<td>7751</td>
</tr>
<tr>
<td>1860</td>
<td>7376</td>
<td>8096</td>
<td>10680</td>
<td>5385</td>
<td>12903</td>
<td>8090</td>
</tr>
</tbody>
</table>

The Caribbean immigrants who came to Louisiana in the aftermath of the Haitian revolution similarly served as an important catalyst in the growth of the early cane industry. Perhaps a little over-stated, Sitterson maintains that their contribution to the growth of the sugar industry equalled in importance the opening of the slave trade.\textsuperscript{51} Having fled St. Domingue in the early 1790s, the Haitian refugees first migrated to Cuba before finally settling in Louisiana. With a wealth of practical experience in sugar farming, these settlers readily

\textsuperscript{50}Data from U.S. Bureau of the Census, Third, Fourth, Fifth, Sixth, Seventh, Eighth Census of the United States (Washington, D.C.: 1811-66).

\textsuperscript{51}Sitterson, Sugar Country, 11.
Figure 2.2. Growth in Slave Population, 1810-1860.
integrated themselves into the creole population and contributed significantly to the early cane industry.\textsuperscript{52}

Although the creole settlers proved invaluable for regional economic development, the American settlers who came in increasing numbers during the first two decades of the nineteenth century provided the real stimuli for change. Thomas Jefferson's remarkable Louisiana Purchase in 1803, while geographically securing Louisiana for the United States, fundamentally reshaped and redirected the Louisiana cane industry. Prior to Jefferson's purchase, for instance, Louisiana remained, at best, a rather insignificant colony in the vast French and Spanish empires. Staple production persisted at a low level and the infant sugar industry proved no match to the Caribbean powers. Indeed, so insignificant seemed the sugar industry that Spanish colonial trade policy broke with the prevalent mercantalist economic philosophy and sanctioned the sale of Louisiana sugar to the Americans.\textsuperscript{53} In 1800 and 1802, for instance, over 1.5 million pounds of sugar passed through New Orleans bound for the thriving US market.\textsuperscript{54}


\textsuperscript{53}Clark, New Orleans, 241-246.

\textsuperscript{54}An Account of Louisiana being An Abstract of Documents in the Offices of the Departments of State and of the Treasury (Philadelphia: John Conrad & Co., 1803), 32; (continued...)
Unpredictable in their trade privileges, however, the Spaniards restricted and checked American shipping in 1800. Such instability vanished in 1803, as Jefferson's Louisiana Purchase unlocked the vast market opportunities of duty-free trade with the rest of the United States. With a small though firmly established colonial trade in sugar, Louisianans eagerly expanded to meet the growing US demand. Economic historian John G. Clark perceptively remarked that the United States "came into possession of Louisiana at a most propitious time," for the sugar estates underpinned a growing and dynamic economy and society.55

Three years after the Louisiana purchase, Governor W.C.C. Claiborne wrote his president describing the rapidity of growth in the Louisiana sugar industry. "The facility with which the sugar planters amass wealth is almost incredible," Claiborne observed, "they are now generally free of debt, and many have added considerably to their fortunes." Continuing in glowing terms, the new Governor noted that with just twenty working hands, a sugar planter makes from ten to fourteen thousand dollars per annum. Enthusiastic for the future of Louisiana sugar, Claiborne concluded that the sugar estates "have increased

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(...continued)


55Clark, New Orleans, 250.
in value one hundred . . . percent, since the Province was
Ceded to the United States; and it is not probable that
they have reached their true value." Berquin Duval lion
shared Claiborne's optimism and noted in his travel account
that Louisiana sugar "cannot fail of succeeding there." This optimism proved well founded, as Pitot remarked that
sugar estates were quickly covering the landscape from New
Orleans downstream to English Turn. These developments,
Henry Brackenridge noted during his sojourn in Louisiana,
came at the expense of the small farmers whom larger
planters gradually forced off prime sugar lands. By 1811,
Brackenridge recorded that "there are but few of the petits
habitants, the lands being engrossed by the wealthy
planters: this is continually progressing downwards, and
the disproportion of the whites to the blacks of course
increasing." While sugar planting grew rapidly in the
lower Mississippi valley, expansion also occurred on higher
lands north of Baton Rouge and in Pointe Coupee Parish.

56 W.C.C. Claiborne to Thomas Jefferson. 10 July 1806
in Official Letter Books of W.C.C. Claiborne, 1801-1816,
ed. Dunbar Rowland (6 vols., Jackson, Miss.: State
Department of Archives and History, 1917), III: 363.

57 Berquin-Duval lion, Travels in Louisiana and the
Floridas in the Year 1802, 131.

58 Pitot, Observations on the Colony of Louisiana, 100.
English Turn lies some ten miles downstream on the
Mississippi from New Orleans.

59 Henry Marie Brackenridge, Views of Louisiana:
Together With a Journal of a Voyage Up the Missouri River
Noting as early as 1805 that large sugar planters monopolized most river land north to Pointe Coupee, Claude Robin and other travelers marveled at the rich alluvial soils and thick network of waterways that could transport sugar from western and northern cane fields. Similarly impressed, Henry Brackenridge remarked that the sugar plantations between New Orleans and Baton Rouge proved "what may be done by the art and industry of man . . . It affords one of the strongest arguments in favor of civilization." One optimistic observer calculated that if only one-quarter of the sugar lands were cultivated along the Mississippi river, the annual Louisiana crop would constitute 25,000 hogshead of sugar. By 1818, the Louisiana crop surpassed this figure and continued to increase fifteen fold by the close of the antebellum era. Nowhere was the "enterprising spirit" of the United States more clearly seen than in the Anglo-American invasion of the cane country. Laussat recalls that the "strictness of their laws and exactness of their customs" profoundly

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61 Brackenridge, Views of Louisiana, 173.


shaped Louisiana's development for the Americans, he continues, "were swarming in from the northern states," each one with a "little plan of speculation." They were, he concludes, "invading Louisiana as the holy tribes invaded the land of Canaan."^64

Published in New York, William Darby's *Emigrant's Guide To The Western and Southeastern States* portrayed Louisiana as a veritable Garden of Eden waiting for the enterprising planter to pick her tropical fruits. Darby, effusive with praise over the Attakapas district of southwest Louisiana, announced that "at this epoch it is difficult to conceive of any lands being superior to those of the Teche; and however farmed, they richly repay their cultivators." Promising success on alluvial and prairie lands alike, Darby counseled the emigrant to experiment with sugar for "every landholder grasps with avidity at a prospect of changing his cotton into sugar lands."^65 Geographer Sam Hilliard similarly noted that the apparently gilt edged prospects of sugar farming "lured thousands of settlers into the state during the early nineteenth century." With federal protection behind the tariff, sugar planters received between six to eight cents a pound for

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domestic Louisiana sugar from 1820 to 1830. Since production costs ranged from four to four and a half cents per pound, Louisiana cane farmers clearly enjoyed a significant profit margin. This margin, however, depended almost entirely on the federal duty of two and a half cents a pound levied on foreign competition. "The duty," Louisiana Senator Johnson pressed upon Secretary Samuel D. Ingham, "afforded . . . some protection from foreign competition, and secured the benefit of the home market, which was then of considerable extent, and rapidly increasing. This induced them . . . to turn their attention to the production of sugar." Henry Clay, while visiting New Orleans in winter 1831, forewarned that any alteration in federal tariff support "would be almost as fatal . . . as if Congress were to order the dykes to be razed from Pointe Coupee to the Balize." Protected and nurtured from the dangers of free trade, the Louisiana cane industry grew from infancy to adolescence during the

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67J.S. Johnston, Letter of Mr. Johnston, of Louisiana. To the Secretary of the Treasury, In Reply To His Circular of the 1st July, 1830, Relative to the Culture of the Sugar Cane (Washington, D.C.: Gales and Seaton, 1831), 3.

The role of federal protection proved to be central to this growth, for without the shelter of tariff support, Caribbean competition would have destroyed the nascent industry.

Figure 2.3 graphically portrays the expansion of the antebellum sugar industry in terms of both total yield and value of the crop. Despite annual fluctuations due to freezes and other environmental impediments, the Louisiana cane industry expanded gradually during the 1820s and 1830s though moved to the "take-off" stage during the 1840s. In spite of the disastrous effect of the 1856 hurricane, the industry matured in the 1850s. A number of factors explain the growth in production. During the 1820s, planters began cultivating the tougher and more resistant ribbon cane which lessened the risk of freeze damage to the maturing cane plants. introduced by Jacques Coiron in 1825, ribbon or purple cane matured a month earlier than Creole or Otaheite cane and with its thick and tough bark, ribbon cane was less likely to collapse after heavy winds. Coiron initially planted the cold-resistant ribbon cane on his St. Sophie plantation though it quickly flourished in Louisiana.

and gave the planters an extra month to mature their canes and raise the saccharine content.  

The cultivation of ribbon cane, however, demanded technological improvements for the tougher bark was difficult to crush with animal powered mills. The introduction of steam powered mills in 1822 and the improvement in their grinding capacity largely resolved this technological difficulty. Of the 725 sugar estates in 1830, only 100 possessed steam engines and mills. By 1841, steam powered 361 of the 668 Louisiana sugar estates and by 1850, steam engines were operating in over 900 plantations. By the end of the antebellum era, almost 80

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70 F.S. Earle, The Sugar Cane and Its Culture (New York: J.S. Wiley, 1928), 86-88; Noël Deerr, Cane Sugar: A Textbook on the Agriculture of the Sugar Cane, and the Manufacture of Cane-Sugar, and the Analysis of Sugar-House Products (London: Norman Rodger, 1921), 49; William C. Stubbs, Sugar Cane, I: 8-9; Lewis Cecil Gray, History of Agriculture in the Southern United States to 1860, I: 740. The Dutch introduced Ribbon or Purple cane, also known as Java Yellow Violet or White Transparent, to Surinam in 1780. In the following forty years, planters across the Caribbean experimented with ribbon cane before its final exportation to Louisiana in 1825. Deerr dates the entry of ribbon cane to Louisiana as 1825, Stubbs claims Coiron first planted ribbon in 1820, while Gray maintains that 1817 is the most accurate date.

Figure 2.3. Louisiana Sugar Production and Value of Crop, 1822-1860.
percent of all sugar houses possessed steam engines and mills that could crush and grind ribbon cane with increasing efficiency. Steam innovation proved crucially important for after the productive capacity of the mills increased, sugar planters could boost cultivation, confident that their machinery could grind the crop before the first hard freeze struck.

Sustained by the 1816 and 1828 tariffs, federal protectionism and depressed cotton prices through the 1820s combined to attract hundreds of planters into sugar cultivation. Table 2.3 exhibits the decline in prime New Orleans cotton prices from 1818 to 1840. Although sugar prices were lower in the 1820s and 1830s than they were in the 1810s, sugar consistently yielded a profit for the planter.

Low cotton prices, however, proved unprofitable and consequently, cotton farmers found the stability of sugar more attractive. Boosted by federal tariffs and low cotton prices, the sugar industry continued to expand briskly through the 1820s. In 1824 for instance, only 193 estates operated in south Louisiana. By 1827, this figure climbed to 308 and increased to 691 by 1830. Remaining steady through the 1830s, the number of sugar estates did not significantly increase until the mid 1840s but by 1845, P.A. Champomier reported that 1240 sugar houses operated from the Gulf Coast to Catahoula Parish in the midst of
central Louisiana. This latter increase emerged as a direct response to the Whig tariff of 1842 that restored the 2 and a half cent per pound import rate on all foreign sugars.

Table 2.3. Cotton and Sugar Prices, 1816-1840.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>PRIME COTTON PRICE (cents per lb.)</th>
<th>PRIME SUGAR PRICE (cents per lb.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1818</td>
<td>31.0</td>
<td>13.6</td>
</tr>
<tr>
<td>1820</td>
<td>17.1</td>
<td>11.1</td>
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<tr>
<td>1822</td>
<td>18.4</td>
<td>10.6</td>
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<tr>
<td>1824</td>
<td>16.6</td>
<td>8.8</td>
</tr>
<tr>
<td>1826</td>
<td>12.1</td>
<td>8.3</td>
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<tr>
<td>1828</td>
<td>11.3</td>
<td>8.5</td>
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<tr>
<td>1830</td>
<td>10.2</td>
<td>7.5</td>
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<td>1832</td>
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<tr>
<td>1834</td>
<td>13.1</td>
<td>6.4</td>
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<tr>
<td>1836</td>
<td>18.0</td>
<td>9.1</td>
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<tr>
<td>1838</td>
<td>12.2</td>
<td>7.0</td>
</tr>
<tr>
<td>1840</td>
<td>10.3</td>
<td>5.6</td>
</tr>
</tbody>
</table>


With these stimuli, domestic sugar prices advanced from a dismal four cents to a more profitable five to six cents per pound. Buoyed by increasing prices, the sugar industry advanced after a period of relative inertia during the late 1830s. Quantitatively and qualitatively improved, the sugar estates intensified their performance and production throughout the antebellum era. In 1830, for example, the average estate produced 108 hogsheads of sugar, yet by 1844, this figure increased to 269 hogsheads, and in the bumper 1853 crop, each estate averaged over 310 hogsheads. While Figure 2.3 charts the expansion of sugar production from 1822 to 1860, Figure 2.4 amplifies these findings by analyzing the respective growth of six leading antebellum sugar parishes. Although these parishes represent fifty percent of total Louisiana sugar production in 1860, they illustrate the development of the industry along the Mississippi and Atchafalaya rivers and along Bayous Teche and Lafourche. Progress continued at a rapid pace until the mid 1850s when the industry struggled with massive ecological damage in the shape of the 1855

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spring drought and the 1856 freeze and hurricane. Making landfall at Last Island, the 1856 hurricane destroyed the cane crop in the coastal parishes. This appears visibly in Figure 2.4 where inland Ascension and Assumption were lightly affected by the hurricane while Terrebonne, Lafourche, and St. Mary along the coast suffered badly. Champomier, in his annual report for that year, noted that "the hurricane was most severe and the destruction most complete in the Parish of St. Mary, but wherever it passed (and it took a wide sweep) it forced the cane nearly to the ground in one direction and then, by a change of its course, raised and bent it in the other direction." St. Mary Parish alone experienced a six fold decrease in sugar production. Ecological damage aside, Figures 2.3 and 2.4 exhibit a pattern of overall growth for the sugar industry.77

Expansion, however, did not advance uniformly, as throughout the antebellum era, large planters expanded and consolidated their estates by purchasing the lands of smaller neighbors who could not afford the hefty capital investments in both machinery and slaves that large scale


77Data for Figure 2.4 drawn from P.A. Champomier, Statements of Sugar Production in Louisiana, 1844-1861.
Figure 2.4. Sugar Production by Parish, 1844-1860.
sugar production required.\textsuperscript{78} Overall production, consequently, increased even while the actual number of sugar estates declined in the late antebellum era. This appears particularly noticeable during the 1850s, as in 1849 over 1500 estates produced sugar, while a decade later, this number fell to just 1308.\textsuperscript{79} Having experienced low cotton prices through the 1840s, modest planters similarly returned in increasing numbers to the stability and assuredness of cotton production in the 1850s. Lower investment costs attracted many farmers to cotton since sugar production retained its reputation as being an industry for the wealthy and larger planter.\textsuperscript{80} As the sugar masters obtained an increasingly tight grip over the industry, production intensified as the planters invested both capital and labor in improved cultivation and machinery. This process of land consolidation ultimately

\textsuperscript{78}Roger W. Shugg, Origins of Class Struggle in Louisiana: A Social History of White Farmers and Laborers During Slavery and After, 1840-1875 (Baton Rouge: Louisiana State University, 1939), 86-100.


\textsuperscript{80}As early as 1831, a steam engine, mill, and kettles cost on average $6000. See American Farmer 13 (January 1832): 270. A further index of the increasing costs of sugar production is total capital invested. In 1827-28, total capital invested in sugar production was $34 million. By 1843-44, this figure increased to $60 million. See, De Bow's Review 8 (January 1850): 36.
assured that while the total number of plantations decreased, the actual production per farm increased. In Lafourche Parish, for instance, 98 sugar houses produced slightly over 11,000 hogsheads of sugar in 1845. Fourteen years later, however, the number of estates dwindled to 77 though production increased to over 13,000 hogsheads. During those years, sugar estates clearly changed hands at a rapid pace, as only 34 of the 98 planters listed in Champomier's report for 1845 were active and producing sugar in 1859. Of those who left the Lafourche sugar industry, 32 of them were small farmers who produced less than 30,000 pounds of sugar. Struggling and uncompetitive in an increasingly capital-intensive industry, many small planters chose to sell their estates or diversify their farm operations. However, those surviving the fourteen year period clearly emerged as significant operators who averaged in 1845 over 130,000 pounds per plantation. By 1859, this group of 34 planters produced, on average, over 155,000 lbs of sugar per annum. Increasingly, the domain of the large planter, the Lafourche sugar industry in 1859, yielded a mean of 172 hogsheads per sugar house, an increase of over 60,000 lbs from the 1845 average.\[^{81}\]

Just as sugar production increased quantitatively, it similarly expanded spatially throughout the antebellum decades. Initially located near New Orleans, the sugar industry dramatically expanded with the immigration of Anglo-American settlers after the War of 1812. Attracted primarily by cheap public lands along the lower reaches of the Teche and among the backlands of Bayou Lafourche, Anglo-American settlers, William Darby noted, swarmed into western Louisiana and in particular onto the Attakapas lands, "the superior excellence of which, and the climate, give them a decided preference over any other body of land...west of the Mississippi."

Henry Johnson, an early settler in western Louisiana, noted in 1819 that, although sugar cane lands extended a hundred miles up the Mississippi, the Attakapas possessed "a climate . . . more favorable for the sugar cane, than that of any other part of the state and I am of opinion that a farm there . . . for the cultivation of the sugar cane or of cotton, can be carried on with more success than on the Mississippi."

Resident in the Attakapas for three years, Johnson remarked that land prices, while not as high as on the Mississippi, "have risen in value considerably." Testament to this fact is that Johnson's own estate of 200 acres sold for $15,000 or $7.50 per acre, a figure six times larger than public

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Land cost in 1826. Levin Wailes, remained similarly optimistic about the economic potential of the Attakapas. In a letter to the Federal Land Office in Opelousas, Wailes described the early sugar industry in the Teche country. Unlike the highly capital intensive estates on the Mississippi, sugar plantations in western Louisiana, Wailes recounted, were simple operations that any pioneer might establish. One early settler along Bayou Teche produced a remarkable crop of 2800 pounds per acre with primitive sugar milling facilities. These successes, Wailes noted, proved "that small capitals may be more profitably employed in the culture of cane than in any other crop which our soil is capable of producing." Hailing from Virginia, this small planter, Wailes continued, invested only $200 in his sugar producing facilities which he housed in a simple log cabin. Clearly, innovative in his farming techniques, the Virginian rejected conventional wisdom that iron cylinders were necessary to grind cane by experimenting with live oak rollers that admirably crushed the cane stalks. "This economical example," Wailes remarked, "has been followed by as many as five or six persons of small capital, who I understand have succeeded without a single exception." With little mechanical or technical knowledge, this small planter succeeded in building sugar processing facilities.

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that manufactured at least three hogsheads of sugar per week. Experimentation and progressive farming, then, stood at the vanguard of a small but successful western sugar cane industry in the early 1810s.84

After the War of 1812, a flood of Anglo-Americans joined the Virginians in emigrating to the cane country. Francis Richardson, a planter on Bayou Teche remembered that by the 1830s, Anglo-American planters were "rushing to the sugar gold fields, each with his own idea of working them to their best advantage."85 With both capital and an enterprising desire to achieve, the Anglo-American planters transformed the Attakapas into a leading sugar producing area. Geographer John Rehder concludes that, while the Anglo planters surely borrowed from French cultivation techniques, they frequently settled "on the extremities of the distributional pattern."86 Arriving somewhat later to the cane country, Anglo-Americans found much of the prime land along the Mississippi lands already in the hands of French and Spanish planters. Keen to experiment with cane cultivation, however, many Anglo farmers settled in the Attakapas, the western extremity of cane cultivation, along

84Levin Wailes Letter, LSU.

85F.D. Richardson, "The Teche Country Fifty Years Ago," The Southern Bivouac 4 (March 1886): 593.

Bayou Lafourche in the south, and on the higher lands north of Baton Rouge. Commenting on the ethnic imbalance on Mississippi river sugar plantation, Thomas Nuttall noted that "these planters are nearly all of French or Spanish extraction, and, as yet, there are among them but few Americans." In contrast, W.W. Pugh recalled that by spring 1835, Americans predominated along Bayou Lafourche and through Iberville and Lafourche parishes. Glenn Conrad's analysis of the St. Mary Parish tax rolls similarly indicates that the number of Anglo-Americans in the Attakapas increased dramatically after the Louisiana Purchase. Western and southwestern Louisiana, consequently, evolved as the culture hearth or core region of Anglo-American sugar production. By 1828, the flourishing Attakapas sugar industry quantitatively expanded with three hundred new sugar houses while qualitatively improving through the use of ribbon cane. "It is larger," James McCoy observed on the new ribbon cane, "and makes from three to four hogsheads per acre,

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87 Thomas Nuttall, A Journey of Travels into the Arkansas Territory, during the year 1819. With occasional observations on the manners of the Aborigines. (Philadelphia: Thomas H. Palmer, 1821), 238.


grows further north, and matures at least one month earlier." Geographically expanding along the Teche, Lafourche, and Vermillion, cane farmers in the Attakapas evidently innovated and improved their cultivation as they advanced. The central problem with westward expansion lay in the fact that lands west of Bayou Teche were not part of the Louisiana Purchase. Additionally, with its hard soils and poor humus content, southwest Louisiana proved unsuitable for sugarcane cultivation. These political and geographical limitations assured that sugar cultivation in the Attakapas and southwest remained limited to the alluvial soils located within a mile of the major waterways. The sparsity of suitable land forced land prices to increase which in turn encouraged intensive and innovative farming and experimentation. The Franklin Planter's Banner celebrated Attakapas progress in 1848 by announcing that "the rich lands of the Teche . . . finally attracted to St. Mary, a vigorous, intelligent, enterprising Anglo-Saxon population who soon converted her waste lands into verdant fields and reaped . . . stores of gold and silver from the glebe they turned up."92

Spatial and geographical expansion occurred to the west though by 1806, sugar plantations stretched north into

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90Southern Agriculturist 1 (April 1828): 179.
52Planter's Banner (Franklin), 16 March 1848.
Pointe Coupee Parish, while eight years later cane grew as far north as the Red River. Experimentation with northern cultivation continued apace and in 1819, D.B. Warden recorded that Messrs. Bossier and Davenport cultivated cane near Natchitoches in central Louisiana.

Thwarted by cold winters, most early attempts at northern cultivation failed. Two key factors, however, stimulated geographical expansion in the late 1840s. The first major change was that the introduction and popularization of efficient steam engines and mills radically transformed the sugar industry as new machinery enabled farmers to harvest and grind their crops at greater speed. This technological break-through proved particularly important for northern sugar planters who farmed geographically marginal land that weathered the first killing frosts at least a month before plantations near the Gulf of Mexico.

With improved machinery, sugar planters could cultivate their crops well into November, confident that they

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93 Darby, Geographical Description of the State of Louisiana, 158-160.


96 De Bow's Review 5 (February 1848): 137.
possessed the machinery to grind the crop quickly and efﬁciently before frost damage irrevocably harmed the cane. An equally important factor lay in the condition of the cotton market, and after 1842, in the steep decline in the price of "middling cotton" on the New Orleans market. While cotton prices remained depressed during the late 1840s, a recovery occurred in 1850 when the average price returned to a proﬁtable 12 cents a pound.97 The decline in cotton prices coincided with a relative boom in sugar, for the 1842 tariff assured high sugar prices and stimulated cane farmers to produce more. The Franklin Planter's Banner aptly concluded that while cotton prices remained extremely uncertain, the planter begins to "grow weary of the prospect of repeated disappointments."98 With discouraging returns, it appears unsurprising that many cotton farmers, especially residing on marginal northern land, turned to sugar production in the 1840s.99

By 1846, De Bow's Review received so many requests from the Red River country for reprints of Judah Benjamin's article on sugar cultivation that De Bow enthusiastically reported in his December edition that "our copies are


98Planter's Banner (Franklin), 30 March 1848.

99Northern sugar parishes include Rapides, Avoyelles, Concordia, and parts of West and East Feliciana which were predominantly cotton parishes.
nearly exhausted . . . [but] we have some thought of re-publishing them next year for gratuitous distribution."

Delighted by the expansion of the sugar region, De Bow eagerly reported that "the Red river country is all excited on the subject of sugar and the largest preparations are being made for its introduction."\(^{100}\) The Alexandria Democrat proudly trumpeted: "We have the soil, climate, wealth, and energy for the successful prosecution of this new branch of industry and the day is not far distant when Rapides will take rank at the head of the Sugar Parishes."\(^{101}\) Avoyelles Parish similarly declared their superiority in cane cultivation warning older sugar parishes to the south that "no portion of our great Republic is superior to Avoyelles."\(^{102}\) R.L. Allen reporting for De Bow's Review noted that "the extension of cane cultivation is undoubtedly advancing more rapidly at the present moment than at any former period. Each succeeding year witnesses the extension over new territory."\(^{103}\) So impressive was the increase in sugar cultivation to the north that the American Agriculturist announced:

\(^{100}\)De Bow's Review 2 (December 1846): 442.

\(^{101}\)Alexandria Democrat reprinted in Planter's Banner (Franklin), 13 January 1848.

\(^{102}\)New Orleans National reprinted in Planter's Banner (Franklin), 30 September 1847.

\(^{103}\)De Bow's Review 3 (May 1847): 414.
Baton Rouge, instead of being far above all the sugar plantations, is becoming a central point. The march of the cane has passed her many miles and leaving. . . the Mississippi, has taken position far back among the hills. . . Such has been the success of the last two years, that many new mills are being erected, and vast quantities of land brought into cultivation in places where it would have been thought madness to talk of making sugar ten years ago.  

The locus of this growth lay in Pointe Coupee, Rapides, and Avoyelles Parish. Table 2.4 indicates the pace of growth among these northern sugar parishes. Evidently, growth proved particularly rapid in the latter half of the 1840s, although this pattern changes dramatically in 1850 with the recovery of cotton prices.

Table 2.4. Sugar Houses and Number of Hogsheads Produced (in brackets) in Pointe Coupee, Rapides, Avoyelles Parish, 1844-1851.  

<table>
<thead>
<tr>
<th></th>
<th>1844</th>
<th>1845-46</th>
<th>1849-50</th>
<th>1850-51</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pointe Coupee</td>
<td>5 (888)</td>
<td>40 (1206)</td>
<td>72 (7797)</td>
<td>65 (5584)</td>
</tr>
<tr>
<td>Rapides</td>
<td>0 (0)</td>
<td>18 (0)</td>
<td>55 (7928)</td>
<td>46 (7820)</td>
</tr>
<tr>
<td>Avoyelles</td>
<td>0 (0)</td>
<td>7 (0)</td>
<td>39 (3874)</td>
<td>31 (3242)</td>
</tr>
</tbody>
</table>

Quite why so many returned to cotton remains an open question, but surely the recovery in cotton and the decline of sugar prices played a significant role in shaping the planter's decisions. Perhaps the enormous cost and

104 American Agriculturist 9 (November 1850): 351.

instability of sugar similarly effected the planter's choice over crop selection. Moses Liddell, partner to F.D. Richardson on a Attakapas sugar plantation, warned his son in central Louisiana that "some very large fortunes have been realized at sugar planting but with an immense exertion and capital to commence with, or a strong mind and over laborious perseverance." Precarious and highly expensive, Liddell urged his son toward prudence and the cultivation of cotton. "Your income," he added, "would be small but certain and subject to no great losses." Unperturbed, John Liddell experimented with sugar in 1847 on his Black River plantation near Trinity in Catahoula Parish. Evidently successful in his venture, Liddell produced sugar in 1849 that caused his usually woeful father to remark optimistically: "I begin to fancy that the Black River land is really better for sugar than the Teche." While John Liddell evidently remained satisfied with his dual crops, his dilemma over crop selection reflects many of the problems that other Red River or northern sugar producers experienced as they decided on a year to year basis whether to produce cotton, sugar, or

106 Moses Liddell to John R. Liddell, 28 July 1845, Liddell (Moses, St. John., and Family) Papers, LSU.

107 Moses Liddell to John Liddell, 23 August 1847, Liddell Papers, LSU.

108 Moses Liddell to John Liddell, 19 August 1849, Liddell Papers, LSU.
both. Equipped to cultivate both, men like Liddell
smoothly relocated their interests and resources depending
on crop prices and climatic conditions. Ultimately, the
middle course that John Liddell followed included a good
deal of risk reduction, for by planting both staples,
Liddell freed himself from the ties to a single market.

Expansion on the Red River grew rapidly, but it was
not the only cotton producing area that experimented with
sugar. In both East and West Feliciana, established cotton
plantations converted to sugar in the 1840s. Bennett
Barrow, for instance, on Highland Plantation near Bayou
Sara in West Feliciana Parish, experimented with sugar cane
in 1838. Cultivating and producing primarily for home
consumption, Barrow expanded his operations in January 1843
when he planted four acres of Creole and Ribbon Cane.¹⁰⁹
Harvesting the crop in November, Barrow continued to plant
the following year, but he did not completely change to
sugar until the early 1850s. Two years after his death in
1854, Barrow's sons utilized expensive vacuum pans to
produce 260 hogsheads of sugar and by 1858, the Barrow's
produced 430 hogsheads, a crop only surpassed by the 650

¹⁰⁹Edwin Adams Davis, Plantation Life in the Florida
Parishes of Louisiana, 1836-1846, As Reflected in the Diary
of Benet H. Barrow (New York: Columbia University Press,
1943), 30, 280.
hogsheads of sugar produced on Highland Plantation in 1862.¹⁰

Barrow was not alone in his experimentation, as in late 1848, the editors of the *New Orleans Delta* visited the Felicianas and noted that sugar cane flourished on old worn out cotton lands. Deeply impressed, the editors remarked that "a luxuriant growth of cane," covered the Feliciana hill lands, "that will compare with any that can be found in the rich alluvion of the Mississippi . . . It is not to be disguised," they continued, "that the coast will have a formidable competitor for the production of sugar in the whole inland cotton-raising portion of Louisiana."¹¹ Solon Robinson in his agricultural reports for *American Agriculturist* similarly remarked that sugar cane thrived on the hill lands between Woodville, Mississippi and Bayou Sara. Poor cotton crops and low prices, combined with the relative success of sugar cultivation, created noticeable "excitement about making sugar in a region that it would have been considered only a few years since madness to talk about." With little risk of flooding, hill farming produced quality sugars at a rate of two hogsheads to the acre. "Although the present low price of sugar," Robinson


¹¹*New Orleans Delta* reprinted in *Southern Cultivator* 7 (January 1849): 5.
remarked, "does not offer a golden harvest equal to California 'placers,' . . . it is an ascertained fact that brown sugars, at three cents, produce a better result than cotton at six." With such inducements, Robinson eagerly expected sugar cultivation to migrate north to the Natchez district within a decade.\(^2\)

Table 2.5 indicates that the number of sugar houses operating in the Felicianas peaked during the cotton slump in the late 1840s and early 1850s, though as cotton recovered, the Feliciana sugar industry gradually waned. By the late 1850s, those planters who remained as sugar producers in West Feliciana were clearly large operators who produced 328 hogsheads per plantation. This figure bettered all sugar parishes save Rapides, where each sugar house produced a mean crop of 357 hogsheads in 1859.

While a number of planters experimented with sugar in the northern parishes, it appears clear that by the late 1850s, those planters who continued to cultivate cane were large operators who invested considerable capital in sugar machinery. In 1859, for instance, 94 percent of Rapides sugar farmers and 100 percent of West Feliciana cane planters operated steam powered sugar houses. These figures on plantation mechanization prove extremely competitive with leading south Louisiana sugar parishes such as Iberville and Ascension, where 91 and 93 percent of

\(^2\)American Agriculturist 8 (April 1849): 117.
their respective sugar houses utilized steam power. Even
the rich sugar lands of Lafourche and Terrebonne Parish
fared worse than the Felicianas with only 70 and 76 percent
of their respective sugar houses possessing steam engines.
A geographical zone of initial experimentation, the
northern sugar parishes evolved into mature sugar
plantation districts controlled by a small cadre of
economically dominant sugar masters.

Table 2.5. Sugar Houses and Number of Hogsheads Produced
(in brackets) in West and East Feliciana Parish, 1845-
1860.113

<table>
<thead>
<tr>
<th>Year</th>
<th>West Feliciana</th>
<th>East Feliciana</th>
</tr>
</thead>
<tbody>
<tr>
<td>1845-46</td>
<td>(0) 2</td>
<td>(0) 0</td>
</tr>
<tr>
<td>1849-50</td>
<td>(4601) 22</td>
<td>(971) 12</td>
</tr>
<tr>
<td>1851-52</td>
<td>(5894) 20</td>
<td>(1645) 14</td>
</tr>
<tr>
<td>1853-54</td>
<td>(8551) 19</td>
<td>(3549) 13</td>
</tr>
<tr>
<td>1855-56</td>
<td>(2948) 17</td>
<td>(951) 12</td>
</tr>
<tr>
<td>1857-58</td>
<td>(4289) 15</td>
<td>(631) 7</td>
</tr>
<tr>
<td>1859-60</td>
<td>(4933) 15</td>
<td>(812) 6</td>
</tr>
</tbody>
</table>

The pace of expansion in the sugar industry grew so
quickly in the late 1840s that R.L. Allen remarked in De
Bow's Review that "the extension of cane cultivation . . .
is fast occupying every one of [the] innumerable bayous or
outlets." With land prices steadily rising, some parishes
passed laws establishing state sponsored land reclamation

113Data drawn from P.A. Champomier, Statement of Sugar
Made In Louisiana in 1845-1846 (New Orleans: Cook, Young, &
Co., 1846).
programs. Through ditching and especially with the prudent use of draining wheels, Allen noted that the sugar planters were "rapidly bringing into use larger portions of tillable land in the rear, and making all far more productive."

These projects, Allen concluded, were "one of the most efficient means for reclaiming land for the future cultivation of cane."\(^{114}\) P.A. Roy, editor of the Pointe Coupee Democrat, aptly described the severity of the land pressure in 1860:

> Lands suitable for the cultivation of . . . sugar, are rising so fast in value and the demand is so great, that it becomes absolutely necessary to bring into cultivation, by artificial means, those lands which have heretofore been looked upon as unfit for cultivation, but when brought in cultivation, are the richest in the State.\(^{115}\)

Citing the example of West Baton Rouge Parish, Roy urged his readers to follow their neighbors' example and to provide for a parish-wide program of land drainage and reclamation. If properly directed, land reclamation, Roy confidently observed, could "drain every inch of low land in this State and [bring] its fertile soil into high cultivation." The Planter's Banner concurred, noting that "many fine sugar plantations . . . have been opened in the swamps." Advocating a systematic program of leveeing and land reclamation, the Planter's Banner concluded that reclaimed swamp lands might produce up to 250,000

\(^{114}\)De Bow's Review 3 (May 1847): 414.

\(^{115}\)Pointe Coupee Democrat (New Roads), 18 August 1860.
additional hogsheads of sugar. Ever sanguine, editor Daniel Dennett optimistically announced that land drainage and improvements would give Louisiana "a position of the first importance in our confederacy."\textsuperscript{116}

While sugar fever surely struck Louisiana in the 1840s, other parts of the antebellum South strove to experiment with cane cultivation and mirror the success of the Louisiana sugar masters. Facing perennially low cotton prices during the late 1840s, the \textit{Mobile Register} urged its readers to experiment and announced that sugar cane grew well in the interior of Alabama. John Erwin of Greensborough in Hale County, for instance, reported that his sugar cane "compared favorably with any raised in Louisiana."\textsuperscript{117} Another Black Belt farmer in Dallas County cultivated thirty acres of cane that proved "equal, in weight, grain, and colour, to the best Louisiana sugar."\textsuperscript{118} Mississippi similarly experimented with cane farming and in 1849, federal census enumerators reported that Mississippi farmers produced 388 hogsheads and about 18,000 gallons of molasses. With crude sugar milling facilities, those planters who manufactured sugar tended to produce only enough for their own use. Geographer B.L.C. Wailes

\textsuperscript{116} \textit{Planter's Banner} (Franklin), 18 October 1851.

\textsuperscript{117} \textit{Mobile Register} reprinted in \textit{Scientific American} 4 (December 1848): 93.

\textsuperscript{118} \textit{American Farmer} 8 (January 1832): 352.
confidently expected a time when "cane will . . . supersede the cultivation of cotton on the river plantations as high up as Natchez or Vicksburg." As early as 1849, Wailes's expectations were already partially fulfilled, for P.M. Lapice experimented in growing cane near Natchez, which he later transferred to his Paragon Sugar Works in St. James Parish for final cultivation and harvest. Despite experimentation, the Mississippi sugar industry remained a small and lackluster business. Geographically limited to a handful of counties in the southeastern quadrant of the state, the Alabamians had much greater success than their neighbors, producing over 8000 hogsheads in 1849. Of these, only Barbour and Fayette counties produced a significant crop.

Interest in sugar planting extended further east into coastal and central Florida, where Senator D.L. Yulee proclaimed that Floridian sugar planters possessed a superior growing season to that of Louisiana. Similarly disappointed with low cotton prices, the Jacksonville

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119 B.L.C. Wailes, Report on the Agriculture and Geology of Mississippi: Embracing a Sketch of the Social and Natural History of the State (Jackson, Miss.: E. Barksdale, 1854), 190.

120 Moses Liddell to John Liddell, 19 February 1849, Liddell Papers, LSU; New Orleans Bee reprinted in Opelousas Courier, 29 January 1853.

Florida News announced that, "general attention is being awakened to the vast profit which results to the cultivation of the sugar cane in Florida." 122

Surprisingly, interest in sugar planting stretched as far north as Maryland, where several planters experimented with cane cultivation in 1830. 123 After an initial period of optimism, the nascent Maryland sugar industry dwindled and planting ceased. The main threat to the Louisiana industry, however, did not come from the East but rather from the newly annexed lands of south Texas. Boasting a longer growing season and a milder fall, Texan sugar planters enthusiastically proclaimed that their state could march forward with Louisiana "only rivaling each other in a vain attempt to supply the increasing demand for the richest agricultural product on earth." 124 Located primarily around Galveston Bay, the first planters cultivated sugar during the 1830s. Small and modest in size, the Texan sugar industry expanded dramatically during the late 1840s and continued to flourish in the 1850s. An indicator of the importance of the Texan crop is that in 1852, P.A. Champomier began enumerating the annual


123American Farmer 12 (November 1830): 294.

performance of the Texan sugar planters. In that year alone, Brazoria, Matagorda, Wharton, and Fort Bend counties produced over 11,000 hogsheads of sugar, a figure almost surpassing the annual production of Pointe Coupee Parish. Three years later, the crop remained somewhat smaller though each planter produced almost 225 hogsheads. Of the forty planters operating sugar mills that year, over 80 percent possessed steam powered mills. These statistics indicate that most Texan cane farmers were medium to large operators who, like their brethren in the leading Louisiana sugar parishes, modernized their estates with the steam technology available to them.

Although small in the 1850s, the evolution of the Texas sugar industry brought anger and resentment in some quarters of Louisiana while delighting others. Anxious to decry the nascent Texan industry, Judge P.A. Rost's scathing criticism of the Texas sugar country symbolized the fear that some Louisianans felt for their neighboring sugar industry. Lambasting the Texas sugar fields as "naked land, exposed to the unmitigated fury of north-westers", Rost described southern Texas in icy terms. Ever keen to champion the economic development of his native Louisiana, Rost charged that "Louisiana must remain the

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great sugar region; her climate and her soil are the best, and her geographical, position unrivaled."\textsuperscript{126} Not all Louisianans, however, appeared so negative about the development of the Texas and Florida fields. The \textit{New Orleans Price Current} cheerfully looked forward to the day when "this State [Louisiana], aided by Florida and Texas, will be able to furnish enough to meet all the demands for the consumption of this article in the United States."\textsuperscript{127} Small though efficient, the Texas sugar industry during the antebellum era evolved as a discreet though important sugar producing area that economically mirrored the larger developments within the Louisiana industry.

By the middle of the nineteenth century, the Louisiana sugar industry was advancing toward maturity and sustained growth. Thirty years ago, Walt Rostow's \textit{Stages of Economic Growth} revolutionized economic theory by arguing that every industrialized nation experiences a common pattern of economic development. Rostow's theory posits that every economy advances from traditionalism to modernity. The "great watershed in the life of modern societies," Rostow maintains, is the take-off when "the forces making for economic progress . . . expand and come to dominate the

\textsuperscript{126}\textit{De Bow's Review} 4 (December 1847): 434.

Sustained and normal growth, Rostow maintains, distinguishes the "take-off" phase of economic development. The Louisiana sugar cane industry experienced such a "take-off" during the last two decades of the antebellum era. The sugar masters rationally directed an industry that grew rapidly and matured both quantitatively and qualitatively during the 1840s and 1850s. Innovation, expansion, and high investment characterized the late antebellum sugar industry while profit-maximization defined the entrepreneurial ideology of the sugar masters. By mid-century, the Louisiana sugar industry bore the indelible stamp of capitalist development, for the sugar masters emerged as a class of economically rational and profit maximizing businessmen who guided an industry that thrived and expanded throughout the antebellum decades.

 CHAPTER 3

"GIVE TO THE LABOR OF AMERICA, THE MARKET OF AMERICA": THE DYNAMICS OF ECONOMIC GROWTH IN THE LOUISIANA SUGAR INDUSTRY

In the first fifty years of the nineteenth century, the Louisiana sugar cane industry grew and expanded enormously. By mid-century, sugar cane cultivation reached its geographical limits, as it stretched, albeit intermittently, from the Gulf of Mexico north to the 31st parallel. Commercially planted throughout southern portions of the state, sugar emerged as the primary crop of the region and as a vital economic commodity for Louisiana.

As a crop, sugar cane requires good well-drained soil, ample moisture, and a long frost-free growing season. While tropical and sub-tropical climates easily satisfy these botanical and environmental requirements, sugar cane grows in all humid areas where average rainfall reaches approximately 50 inches per annum.¹ A member of the grass family, the robust and hardy Saccharum proves surprisingly resistant to a broad climatic range, though mean annual temperature and the length of the growing season ultimately define the geographical extent of sugar cultivation. Native to the humid tropics, sugar cane requires an abundance of heat and water for its superior cultivation. For these climatic reasons, cane flourishes in the

¹F.S. Earle, Sugar Cane And Its Culture (New York: John Wiley & Sons, 1928), 191.
Caribbean, parts of Latin America, India, the Philippines, South Africa, and in Louisiana.

Botanically, sugar cane requires a minimum temperature of 21 Celsius (70 F) for satisfactory growth, though the plant flourishes at temperatures between 27 and 31 Celsius (80 to 88 F). Below 21 C, the rate of growth slows dramatically and below 11 to 13 C (52 to 55 F) no growth occurs whatsoever and the plant fails to germinate. Frank Blackburn, a prominent cane agronomist, states that the ideal climate for sugar cane includes a long, warm growing season with mean day temperatures around 30 C (86 F) and a harvesting season that is cool, dry, frost-free, and with mean day temperatures between 10 and 20 C (50 to 68 F). Any region on the outer perimeter of the tropics with cold or cool winters tends to be a marginal cane-producing area. Louisiana with its annual frosts and cool winters lies exactly at the northern edge of the global sugar producing belt. Geographer Fred B. Kniffen states that the annual temperature for south Louisiana averages 68.5 F, barely the acceptable minimum for cane cultivation. January, with

\[ \text{\textsuperscript{2}} \text{Frank Blackburn, } \textit{Sugar-Cane} \text{ (London: Longman, 1984), 65.} \]

\[ \text{\textsuperscript{3}} \text{Fred B. Kniffen, } \textit{Louisiana: Its Land and People} \text{ (Baton Rouge: Louisiana State University, 1968), 21. For other temperature statistics, see National Oceanic and Atmospheric Administration, Climatography of the United States No. 81, } \textit{Monthly Normals of Temperature, Precipitation, and Heating and Cooling Degree Days 1951-80, Louisiana} \text{ (Asheville, NC: National Climatic Center, 1982);} \]

\[ \text{(continued...)} \]
its low average temperatures of 54.2°F, arrests cane growth but the plant prospers during the warm summer months when the mean July temperature averages 82°F. Although these temperatures represent modern climatic conditions, they remain extremely similar to weather reports collected for *De Bow's Review* in 1857. Table 3.1 presents these data and illustrates that mean temperatures in New Orleans remained considerably lower than those enjoyed by Caribbean sugar producing competitors. Havana, on the north coast of Cuba, for instance, recorded an average annual temperature some 11 degrees higher than that of New Orleans. Mobile, on the other hand, with its humid subtropical climate and mild winters and hot summers, possessed a similar climatic structure to New Orleans. While neither city enjoyed the climatic stability of Havana, their warm summers and abundant rainfall assured that both south Louisiana and south Alabama met the minimum requirements for cane cultivation. Further north, however, the picture changes significantly, for while Vicksburg had a similar mean annual temperature to New Orleans, the winters proved much

(continued)


colder beyond the 31st parallel. These lower temperatures retarded the rate of cane growth and assured that the sucrose failed to trans-locate from the leaves to the stem.\(^5\)

Table 3.1. Mean Temperatures In Selected Cities, 1857.

<table>
<thead>
<tr>
<th>Place</th>
<th>Spring</th>
<th>Summer</th>
<th>Autumn</th>
<th>Winter</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Orleans</td>
<td>67.7 F</td>
<td>79.5 F</td>
<td>67.9 F</td>
<td>55.2 F</td>
<td>67.5 F</td>
</tr>
<tr>
<td>Mobile</td>
<td>70.7 F</td>
<td>82.4 F</td>
<td>70.1 F</td>
<td>56.4 F</td>
<td>69.9 F</td>
</tr>
<tr>
<td>Vicksburg</td>
<td>66.7 F</td>
<td>78.4 F</td>
<td>64.7 F</td>
<td>50.3 F</td>
<td>65.0 F</td>
</tr>
<tr>
<td>Havana</td>
<td>79.1 F</td>
<td>83.4 F</td>
<td>79.7 F</td>
<td>71.2 F</td>
<td>78.2 F</td>
</tr>
</tbody>
</table>

Bedeviling the Louisiana cane farmer, disappointingly low temperatures conspired with a short growing season to arrest the spatial expansion of the sugar crop. Geographer Fred Kniffen, for instance, contends that the coastal Louisiana growing season lasts from February 1 to December 15, while the northern part of South Louisiana struggles with a growing season that begins on March 10 and ends a month earlier than the coast on November 10.\(^6\) Data received from the Burrwood meteorological station on the


southwest corner of the Mississippi River delta supports Kniffen's conclusions by indicating that the southern tip of Plaquemines Parish enjoys an average growing season of 354 days a year. Clinton in East Feliciana Parish, however, possesses a growing season of just 232 days. This enormous variance appears quite remarkable as coastal Louisiana remains almost winter-less while Clinton, just 130 miles due north, experiences a growing season that proves no longer than that of Seattle or of the Ohio River valley. Clearly, the warming effect of the Gulf rapidly decreases as we move inland. Figure 3.1 illustrates the Louisiana weather patterns and exhibits the mean growing season for the entire state. The proximity of the isochrones through coastal Louisiana and their wider spacing inland indicates the geographical constraints to sugar cultivation as cane requires a minimum growing season of 250 days. Sweeping northward through Rapides and Avoyelles Parishes, the isochrone marking the 250 day growing season serves as a northern geographical boundary to sugar cultivation. While cane farming usually succeeded in most areas south of the 250 day isochrone, sugar cultivation in Alexandria and central Louisiana remained, at best, a marginal crop that grew on the absolute northern limit of the climatic zone for sugar cultivation. Plantations farther south had and continue to possess a significant advantage over their northern competitors, as
farmers in Terrebonne Parish experience a growing season fifty days longer than that of central Louisiana while planters in Plaquemine Parish bask in a long, almost tropical, growing season.

While the duration of the growing season plays a significantly less important role in modern sugar cultivation, day length, warmth, and rainfall proved absolutely crucial to antebellum cane cultivation and the position of Louisiana in the global sugar competition. Since cane farmers in tropical latitudes harvest their crops 15 to 22 months after planting, tropical sugar canes contain an extremely high sucrose content that yields a high quality sugar with ease. In Louisiana, however, killing frosts shorten the growing season to just nine months and consequently assure that farmers invariably harvest immature cane with a low sugar content. Although it remains impossible to generalize about every sugar producing area in the world, it seems plausible to conclude that those areas with very long growing seasons usually produce better and sweeter cane juice, while zones with relatively shorter seasons produce poorer and sucrose deficient juice. At extreme latitudes where freezing temperatures remain a perennial difficulty, as in

Louisiana, the slightest frosts cause irrevocable harm. While a light frost, for instance, kills the seed buds, a harder freeze, where temperatures fall to -6 or -7 °C (21 to 19 °F), destroys the cells and the sucrose hydrolyses into glucose and fructose. In this condition, the cane juice fails to granulate or produce marketable sugar. Even at slightly higher temperatures, frost causes an expansion of cane juice and an irreversible rupture of the vessels containing the liquid. Crop deterioration remains slow if cold weather persists, but increases rapidly if a thaw succeeds the frost. Under these conditions, the cane juice becomes "viscid and mucilaginous, the syrups resulting from it will not crystallize, and the only use to which they can be applied is distillation."

With the danger of annual frosts, the effective growing season for Louisiana cane farmers lasts just nine months. Inevitably, the result of harvesting immature cane produces a relatively weak cane juice that contains only 8 or 9 percent sucrose by volume. In the Caribbean, by contrast, Cuban farmers who cultivate their canes to maturity can expect the sucrose content within each cane to

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average between 14 and 15 percent.® Today, modern frost-resistant canes sometimes produce 10 or 11 percent sucrose by weight in Louisiana, but these plant varieties combined with modern crushing and processing facilities remained unavailable in the antebellum era. Consequently, antebellum farmers could probably expect their canes to produce only 6 or 7 percent sucrose by weight under climatically trying conditions.

An additional ecological limit to cane cultivation lay in the availability of well drained alluvial soils. In the lower Mississippi valley, plenty of good soil exists but not infrequently quality river bottom land remained flooded or water-logged. Without sufficient drainage, wet, heavy, and compact soils consistently plagued the cane farmer who struggled to cultivate these sodden fields. Fortunately, however, the many rivers and bayous that traverse south Louisiana formed natural levees, which Sam Hilliarrobserves "are considerably better drained than the adjacent backswamp land."® While some of these natural levees are quite narrow, others extend to four or five miles in width and up to 30 feet in height. Terminating in the backswamp some two to three miles to the rear of the levee crest, 

®F. Blackburn, Sugar-Cane, 75; F.S. Earle, Sugar Cane and Its Culture, 192.

most antebellum sugar plantations contained a mix of varying quality soils that not only shaped the regional geography of south Louisiana, but additionally defined the spatial distribution of sugar planting on each estate. Well drained and porous, the soils nearest the river remain predominantly sandy while those closer to the backswamp consist of fine silts and clays. Although some of these soils proved highly fertile, sugar cane farmers much preferred the well drained and porous soils near the natural levee over the heavy, compact, and often boggy backswamp clays. Difficult to drain and easily waterlogged, these clayey soils constituted a perennial problem for the planter who wished to expand his operations into the low lying back swamp. Particularly desirous of

"Constrained by the availability of good cane soil, sugar planters understandably demanded levee land with access to the river and with as much well drained land as possible. To satiate the tremendous demand for land near the natural levee, colonial French administrators established a cadastral and land survey pattern that allocated tracts lying ninety degrees to the river. Based on the French arpent system, these narrow strips of land were frequently twenty-five arpents wide and forty arpents deep. Guaranteeing river frontage for all, this land system well suited the cane country as most planters coveted the prized sandy soils near the levees. On this topic, see John B. Rehder, "Sugar Plantation Settlements of Southern Louisiana: A Cultural Geography" (Ph.D. diss., Louisiana State University, 1971), 82-116; John W. Hall, "Louisiana Survey Systems: Their Antecedents, Distribution, and Characteristics" (Ph.D. diss., Louisiana State University, 1970); Carolyn O. French, "Cadastral Patterns in Louisiana: A Colonial Legacy" (Ph.D. diss., Louisiana State University, 1978); Jack D.L. Holmes, "The Value of the Arpent in Spanish Louisiana and West Florida," Louisiana History 24 (Summer 1983): 314-20. One arpent represents approximately 0.85 of an acre."
well-drained soil, sugar cane struggles in low lying wet soils, for like all plants, cane obtains its oxygen by root absorption. Water-logged land not only retards root formation but by saturating all air pockets within the soil structure, water additionally prevents the plant from absorbing essential nutrients and from fully developing its root system.*^ 

Limited and circumscribed in its development by two ecologically powerful factors, the Louisiana sugar cane industry remained confined to the availability of well-drained alluvial soils and to a climatic area enclosed by the 250 day growing season isochrone. Trapped within a limited geographic area and with scarce room for areal expansion, the sugar planters had but little choice to intensify their operations and bring science to the art of agronomy. 

By mid century, sugar cane farmers throughout Louisiana justifiably prided themselves that despite ecological limitations to cane production, the Louisiana sugar industry seemed to flourish and expand to levels heretofore unknown. Optimism ran to intense levels and the faith in the future of sugar stood at its antebellum highpoint. In the March 1853 volume of De Bow's Review, Samuel Cartwright, for instance, celebrated Louisiana's

progress noting that the best of the planters produced sugar on a scale matching, and in some cases surpassing, the vast tropical plantations in Cuba.\textsuperscript{13} Proud and boastful of his native sugar industry, one planter remarked that industry and initiative made the Louisiana estates second to none. "There are but few estates," he added, "either in Mexico, Cuba, or any of the West India Islands which equal . . . the average plantations in Louisiana."\textsuperscript{14} Englishman James Robertson concurred, noting that the sugar planters prevailed over the ecological obstacles to cultivation by introducing improved farming techniques, excellent machinery, but above all "by that enterprise and energy which the Americans infuse into all their undertakings."\textsuperscript{15} Filled with the spirit of progress and growth, the sugar masters expanded their operations and enlarged the sugar producing belt by experimenting and systematically mastering the environment around them. Charles Fleischmann, reporting to Edmund Burke, US Commissioner of Patents, similarly remarked that the "enterprise and high intelligence" of the Louisiana sugar planters carried "this important branch of agriculture and

\textsuperscript{13}De Bow's Review 14 (March 1853): 200-201.

\textsuperscript{14}De Bow's Review 15 (December 1853): 647-48 reprinted in Planter's Banner (Franklin), 5 January 1854.

\textsuperscript{15}James Robertson, A Few Months In America Containing Remarks On Some Of Its Industrial And Commercial Interests (London: Longman & Co., 1855), 90.
manufacture to its highest perfection." Profoundly impressed by his tour through the state, Fleischmann informed his superiors that the sugar planters produced a chemically pure cane-juice, a task previously considered impossible. Delighted by their economic progress, Fleischmann concluded that Louisiana planters excelled not only in the raising of cane and manufacturing of sugar but had also "embellished [the] country." The key to economic growth, Peter Coclanis observes, lies in increasing aggregate demand and in the ability of an economy to supply that market. In antebellum America, sugar, like cotton and rice, was a highly popular staple commodity that proved increasingly sought after as the century advanced. A cursory glance at the national consumption figures in Table 3.2 indicates that sugar consumption increased dramatically during the middle decades of the nineteenth century. Figure 3.2 portrays this information graphically and plots two curves illustrating the national increase in the consumption of sugar. While the raw data appears in a solid line, the dashed line directly beneath raw consumption plots the three year moving average so as to


Table 3.2. US Imports and Consumption of Sugar, 1837-58.\textsuperscript{16}

<table>
<thead>
<tr>
<th>Date</th>
<th>Total Imports, (Lbs.)</th>
<th>Louisiana (Lbs.)</th>
<th>US Consumption (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1837</td>
<td>136,139,819</td>
<td>68,000,000</td>
<td>161,092,811</td>
</tr>
<tr>
<td>1838</td>
<td>153,879,143</td>
<td>70,000,000</td>
<td>201,624,719</td>
</tr>
<tr>
<td>1839</td>
<td>195,331,273</td>
<td>115,000,000</td>
<td>241,262,173</td>
</tr>
<tr>
<td>1840</td>
<td>120,890,585</td>
<td>87,000,000</td>
<td>194,764,937</td>
</tr>
<tr>
<td>1841</td>
<td>184,169,662</td>
<td>90,000,000</td>
<td>232,103,397</td>
</tr>
<tr>
<td>1842</td>
<td>171,879,236</td>
<td>140,000,000</td>
<td>243,274,422</td>
</tr>
<tr>
<td>1843</td>
<td>70,632,356</td>
<td>100,000,000</td>
<td>209,056,749</td>
</tr>
<tr>
<td>1844</td>
<td>184,599,007</td>
<td>100,000,000</td>
<td>278,264,053</td>
</tr>
<tr>
<td>1845</td>
<td>131,130,078</td>
<td>187,000,000</td>
<td>298,728,920</td>
</tr>
<tr>
<td>1846</td>
<td>127,775,497</td>
<td>160,000,000</td>
<td>287,959,764</td>
</tr>
<tr>
<td>1847</td>
<td>235,879,397</td>
<td>240,000,000</td>
<td>376,655,814</td>
</tr>
<tr>
<td>1848</td>
<td>260,215,133</td>
<td>220,000,000</td>
<td>474,637,773</td>
</tr>
<tr>
<td>1849</td>
<td>268,919,227</td>
<td>247,923,000</td>
<td>453,456,333</td>
</tr>
<tr>
<td>1850</td>
<td>217,649,131</td>
<td>211,307,000</td>
<td>445,474,361</td>
</tr>
<tr>
<td>1851</td>
<td>368,424,298</td>
<td>257,138,000</td>
<td>568,406,575</td>
</tr>
<tr>
<td>1852</td>
<td>380,402,024</td>
<td>368,129,000</td>
<td>627,901,547</td>
</tr>
<tr>
<td>1853</td>
<td>464,400,664</td>
<td>495,156,000</td>
<td>807,720,632</td>
</tr>
<tr>
<td>1854</td>
<td>455,877,853</td>
<td>385,726,000</td>
<td>894,224,858</td>
</tr>
<tr>
<td>1855</td>
<td>473,756,704</td>
<td>254,569,000</td>
<td>814,606,686</td>
</tr>
<tr>
<td>1856</td>
<td>545,177,856</td>
<td>81,373,000</td>
<td>743,517,092</td>
</tr>
<tr>
<td>1857</td>
<td>776,868,842</td>
<td>307,666,700</td>
<td>838,171,794</td>
</tr>
<tr>
<td>1858</td>
<td>518,995,698</td>
<td>414,796,000</td>
<td>745,020,654</td>
</tr>
</tbody>
</table>

minimize the effect of statistical outliers and to provide a smoother index to increasing national consumption. The two lines below the consumption figures plot annual Louisiana production and sugar import levels. While Louisiana production clearly increases at a pace comparable to rising consumption, Louisiana farmers never managed to produce more than 63 percent of the national demand. Peaking in 1847, though remaining high through the late 1840s and early 1850s, Louisiana produced on average 45.6 percent of the national demand from 1837 to 1858. When a hurricane decimated the cane crop in 1856, Louisiana farmers produced less than 11 percent of the sugar required to meet the burgeoning national demand that declined only marginally in response to soaring prices. Faced with a rapidly growing market for sugar, Louisiana farmers surely cultivated an increasing volume of cane, yet in order to match the national demand, brokers simply imported additional sugar from the Caribbean. This proved particularly necessary in the late 1850s, when the Louisiana crop successively failed to produce even 40 percent of the sugar required in the domestic market. Sugar proved such an important national commodity that throughout the nation, city-wide newspapers and commercial magazines such as The Cincinnati Prices Current predicted that the demand for sugar appeared to advance rapidly.
Figure 3.2. US Consumption, Production, and Imports, 1837-1858.
Clearly valid, this opinion reflected the dramatic increase in per capita sugar consumption during the first half of the nineteenth century.\(^\text{19}\) By 1831, for instance, every American consumed 13.33 pounds of sugar while only a decade later, most citizens consumed 18 pounds of sugar per person. The increase in consumption continued apace through the antebellum era, and by 1850 the per capita consumption of sugar surpassed 30 lbs. per annum. In 1853, Americans enjoyed a bumper and particularly gluttonous year when they consumed over 36 lbs. of sugar per head.\(^\text{22}\) Only the ravenous English retained a sweeter tooth than the Americans and by the late antebellum decades, both Britain and the United States consumed thousands of pounds of crystalline sugar every year. Their consumption proved so great that they far outstripped Russia, Ireland, France, Holland, and Spain who consumed approximately 6 lbs. of sugar per head per annum.\(^\text{21}\)

The American fixation with sugar, *Hunt's Merchant Magazine* declared, reflected the "improved prosperity ... of the United States."\(^\text{22}\) Robert Fogel, Stanley Engerman,

\(^{19}\)Cincinnati Prices Current reprinted in *De Bow's Review* 10 (May 1851): 564.


\(^{21}\)Journal of Agriculture 1 (December 1845): 281.

\(^{22}\)Hunt's Merchant Magazine 27 (December 1852): 679.
and Richard Easterlin's data on regional income trends support this view, for between 1840 and 1860, the national average per capita income increased from $96 to $128.\textsuperscript{23} Leading regional indicators in wealth accumulation, residents in the Northeast maintained a particularly high per capita though all areas of the nation posited expanding income levels.\textsuperscript{24} With greater disbursable income available to middle and working-class Americans, the relative cost of sugar declined in real and relative terms over the antebellum era. Despite a series of occasional peaks and troughs, Figure 3.3 indicates the essential stability in the price of sugar throughout the first half of the

\begin{table}[h]
\centering
\begin{tabular}{|l|c|c|}
\hline
 & \textbf{Free Population 1840} & \textbf{Free Population 1860} \\
\hline
National Mean & $109 & $144 \\
North Mean & $110 & $142 \\
Northeast Mean & $130 & $183 \\
South Mean & $105 & $150 \\
S Atlantic Mean & $96 & $124 \\
\hline
\end{tabular}
\caption{Table 3.3. Per Capita Income by Region, 1840 and 1860 (in 1860 Prices).}
\end{table}


nineteenth century.\textsuperscript{25} The linear trend-line on Figure 3.3 additionally indicates that the price of "plantation" grade sugar in New Orleans declined by over 1.5 cents per pound in the forty years prior to the Civil War. Equipped with greater personal income, many Americans could afford to purchase sugar even when the price of the commodity occasionally peaked. Figure 3.4 graphs the mean annual price of sugar against rising consumption, and suggests that even during the relative price surges of 1844, 1847, and most particularly during 1856 and 1857, consumption increased at a steady pace despite the high cost of the sweetening commodity. This appears particularly so in 1857, a year marked by both extremely high sugar prices and bumper consumption. Explaining this phenomena in greater detail, economists Theodore Schultz and John Mellor contend that as per capita income rises, demand shifts from basic

\textsuperscript{25}Data for Figure 3.3 drawn from Arthur Harrison Cole, \textit{Wholesale Commodity Prices in the United States, 1700-1861} (Cambridge, Mass.: Harvard University Press, 1938), 192-357. Since planters sold most of their sugar between December and April each year, I present the mean of the monthly prices in Figure 3.3. The disparity in cost between the line representing the price series in New Orleans and that in New York reflects the differing quality of the sugar. The New York price, for instance reflects, "Prime New Orleans" sugar while the lower price represents the cheaper and lower "Plantation" grade sugar sold on the New Orleans levee. For comparative price series on sugar see Noel Deerr, \textit{The History of Sugar} (2 vols., London: Chapman and Hall, 1950), II: 524-533; on other commodities, see Douglass C. North, \textit{The Economic Growth of the United States, 1790-1860} (New York: W.W. Norton, 1966), 239-240.
Figure 3.3. Domestic Sugar Prices, 1820-1861.
Figure 3.4. US Sugar Consumption and the Price of Plantation Grade Sugar in New Orleans, 1837-1858.
food products to higher value products including sugar. From 1840 to 1860, for instance, Fogel calculates that the mean per capita national income increased from $109 to $144, an increase of 32 percent. The consumption of sugar, however, soared in this period from almost 200 million pounds per annum to 745 million pounds in 1858, a remarkable 282.52 percent increase over the space of eighteen years. Since both income and commodity consumption increased by sizeable degrees, it appears accurate to conclude that as aggregate income grew, the demand for sugar increased at an extremely rapid rate.

Economists who attempt to calculate the precise dynamics between changing income and shifting demand utilize the concept "income elasticity of demand." This theory, Peter Coclanis notes, "refers to the degree to which the quantity demanded of any given commodity changes with changes in consumers' incomes. If the quantity demanded moves sharply as income changes," Coclainis continues, "income elasticity for a given demand is said to


27Fogel, Without Consent or Contract, 85.
be high." In contrast, if the volume demanded changed little with increasing income, income elasticity is low.²⁸ Basic foodstuffs, Theodore Schultz maintains, present a very low income elasticity of demand while upper income foods such as meat, milk, and vegetables possess a high income elasticity of demand.²⁹

In order to calculate the income elasticity of demand for any product, economists Donald Watson and Malcolm Getz argue that it proves necessary to divide the "relative change in quantity [demanded] by the corresponding relative change in the incomes of the buyers."³⁰ Following the findings presented in Peter Coclanis's *The Shadow of a Dream*, it appears accurate to state that as per capita income increases, a relative shift occurs in the structure of demand to favor goods with higher positive income elasticities.³¹ In antebellum America, Robert Fogel established that mean per capita income throughout the nation expanded from $109 to $144 in the twenty years prior to the Civil War. Rising at a rate of $1.75 per year, the mean income in 1858 stood at $140.50, an increase of 28.89

³¹Coclanis, *Shadow of a Dream*, 54.
percent over income levels in 1840. Simultaneously, however, the consumption of sugar increased from 194 million pounds of sugar in 1840 to 745 million pounds in 1858. With an increase of 282 percent, the relative growth in sugar consumption when divided by the percentage change in income and factored over 18 years produces an income elasticity coefficient of 0.543. This high index of income elasticity suggests that antebellum sugar consumption responded vigorously to relatively small increases in per capita income. For the sugar planters, the rapidly expanding consumption of sugar profoundly shaped not only the dynamics of demand, but as they strove to meet the national appetite, the planters found that they had to increase supply rapidly to meet the burgeoning demand. This demand boom combined with rising national incomes profoundly shaped the economic rise of the sugar country and the primacy of cane within the regional economy. In his masterful analysis of the emerging global sugar industry, Sidney Mintz confirms that rising income levels among working-class Britons similarly shaped the increasing demand for sugar and the dynamics of supply

Income elasticity of demand:

\[ Ey = \frac{Y \Delta Q}{Q \Delta Y} \]

Ey stands for coefficient of income elasticity, Y for income, \( \Delta Y \) for relative change in income, Q for quantity and \( \Delta Q \) for relative change in quantity consumed.

\[ Ey = \frac{109}{550255717} = 0.543 \]

\[ 194764937 \quad 31.50 \]

among the British Caribbean islands. Wealthier and more affluent than their antecedents, the nineteenth century working-class with their lust for sucrose heavy foods, Mintz concludes, proved central to the expansion of British sugar. 33 Responding to income and dietary change in America, the juggernaut of economic expansion similarly steamed into nineteenth century Louisiana, where the sugar masters raised production and reaped their financial harvest.

While the British increasingly turned to sugar as their primary condiment, middle and lower-class Americans similarly purchased molasses and sugar in increasing quantities. Frequently kept under lock and key in the eighteenth century, sugar, Joe Gray Taylor notes, no longer maintained its luxury status and by the mid 1800s, imported and Louisiana sugar proved so cheap and readily available that even city workmen could afford the sweet product. 34 In 1833, for instance, a Philadelphia canal laborer's family purchased predominantly bread, a small amount of meat, a half-bushel of potatoes, three pints of milk, and


34Joe Gray Taylor, Eating, Drinking, and Visiting In The South: An Informal History (Baton Rouge: Louisiana State University, 1982), 42.
some sugar. These purchases appear typical and reflected the change in the dietary status of sugar as the product became an increasingly normal part of the average American's diet. Richard Osborn Cummings, for instance, argues that as the cost of a market basket of food dropped in relation to wages during the early nineteenth century, American laborers and farmers invested their weekly food savings in more expensive articles such as sugar. G.R. Porter similarly concluded that the consumption of sugar proved an excellent test for measuring the comparative conditions of the working class. Remarking that "if by reason of the cheapness of provisions, the wages of the labourer afford means for indulgence," Porter observed that "sugar, tea, and coffee are the articles to which he earliest has recourse."^37

In America, where tea and coffee vied for national popularity during the first thirty years of the nineteenth century, the average consumption of tea and coffee rose dramatically from one pound per capita to three and one-half pounds by 1830. Combined with this increase lay a

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36Ibid., 76-77.

dietetic shift to coffee consumption, and by 1830, most Americans drank three pounds of coffee during the year.\textsuperscript{36} This switch to coffee drinking appears particularly important in the history of sugar consumption, for although tea remained flavorful without sugar, Brazilian coffee proved much less palatable without the supplementary use of milk and sugar.\textsuperscript{39} The consumption of coffee and sugar alone, however, cannot adequately explain the candied nature of the American diet. One area in which the Americans surpassed all others lay in the production of jellies, jams, preserves, and sweet pies. While the British doggedly soldiered forth with the monotonous meat pie, colonial Americans experimented with candied preserves and fruit pies. Today, the most conspicuous of these are the apple and pumpkin pies, but in antebellum America, a vast range of sweet fruit pies proliferated in kitchens throughout the nation. This "pie explosion," as J.C. Furnas terms it, required a large quantity of sugar since classic American pies are extremely sweet.\textsuperscript{40} Although molasses served as a cheap alternative, American chefs and homemakers increasingly demanded cane sugar as its taste

\textsuperscript{38}Cummings, \textit{The American And His Food}, 34.

\textsuperscript{39}Burnett, \textit{Plenty And Want}, 162; Elaine N. McIntosh, \textit{American Food Habits in Historical Perspective} (Westport, Conn.: Praeger Books, 1995), 83.

proved much more satisfying than that of molasses. American cook books from the colonial era to the mid nineteenth century often reflect the increased use of brown sugar throughout the nation. Amelia Simmons, for instance, authored the popular tract American Cookery and encouraged readers to use brown sugar in her recipes for fruit preservation and fruit tarts. Contemporary descriptions of the American dinner table similarly suggest that cooks and chefs commonly used sugar as many meals included pies, preserves, and other sweet products. Harriet Martineau on a visit to a plantation near Montgomery, Alabama, remarked that her hosts served "pies of apple, squash, and pumpkin . . . and a variety of preserves." Henry Barnard, a young university graduate, also found a sweet and candied diet during his stay at Shirley Plantation on the James River peninsula in Virginia. After a rich and wholesome meal, Barnard noted that "plum pudding, tarts, ice cream and brandied peaches are served as dessert." Sugary food, however, was not only the domain of the planter class as southern yeomen additionally consumed a good deal of sugar. Published just a few years after the

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42Joe Gray Taylor, Eating, Drinking, and Visiting In the South, 58.

Civil War, Mrs. Hill's New Cook Book recorded that the humble sweet potato pie required "a thick layer of good brown sugar" while its sister sweet potato pudding needed "six ounces of powdered sugar." Sweet potato salad included a teaspoon of sugar, while baked sweet potatoes, Mrs. Hill proclaimed, tasted finer with an extra dash of sugar. If the family remained hungry after so many sweet potato dishes, then one could easily turn to Mrs. Hill's Secession Pudding, a candied delight that included "three cups of dry crushed sugar." In antebellum America, no crop or dish proved humbler or simpler than the sweet potato. Prepared in countless ways throughout the nation, candied yams, sweet potato pies, and even potato vine tea, all required the addition of a few ounces of sugar. Present on kitchen tables from Massachusetts to Mississippi, powdered and loaf sugar increasingly served as an integral part in the middle class or yeomen diet.

Economically, the growth in domestic sugar consumption played an essential role in shaping the sugar revolution in south Louisiana. Equipped with a rapidly growing domestic market for sugar, Louisiana cane agriculturists confidently expanded their planting and processing operations cognizant that a large home demand existed for their product. At the vanguard of an economic boom that profoundly shaped the

development of the region, the Louisiana cane farmers consistently supplied at least 40 percent of the national appetite for sucrose. In his analysis of a contemporaneous economy and state, Peter Coclanis accurately concludes that "the market conditioned [South Carolina's] economic growth." Fully integrated within the Atlantic World economy, South Carolina's export sector flourished and boomed under favorable prices and with a thriving international market for rice. Similarly blessed with a prosperous international market for cotton, Gavin Wright contends that "southern incomes from cotton growing were primarily governed by demand and not by production." Wright additionally argues that supply expanded at a pace assuring long-term price stability and that the antebellum South profitably expanded due to the dynamics and pressure of British industrial demand. While the international market played a minor role in the emergence of the Louisiana sugar industry, the flourishing domestic demand for cane sugar ultimately shaped the dynamics of regional growth. Economic historians remain perennially interested in whether the demand for a product triggers economic growth in that sector or if the supply of a product initiates a growth in demand. While Wright, Coclanis, and

45 Coclanis, Shadow of a Dream, 91-110.

Peter Temin contend that demand shaped the emergence of the US cotton and rice industries, it appears equally true that demand functioned similarly in Louisiana sugar where the planters operated as "price-takers" who responded to market indicators and exercised minimal leverage over the daily price of sugar.\(^7\)

Utilizing qualitative evidence seventy years ago, Walter Prichard argued that most planters faced three options for marketing their crop. First, they could immediately ship their sugar to their factor in the New Orleans market, who would sell it on the levee front to the

highest bidder. If the price of sugar, however, remained depressed or low, factors not infrequently placed their sugar in storage hoping that the prices might rise. 48 Unfortunately, storage costs in New Orleans proved so high that few planters found it profitable to store their sugar in the long-term. A second option for the planter was to sell his sugar on the plantation to a journeying speculator, while the final option included selling his crop to merchants from Louisville, Charleston, Baltimore, or New York who would then assume responsibility for shipping the crop. 49 Although some planters adopted this method, others maintained factors in a number of coastal cities where they would disburse a small portion of the crop. Wade Hampton, for instance, preserved factors and agents in New York, Philadelphia, Baltimore, Nashville, and New Orleans. Anxious to safeguard his crop against low prices and concerned about the risk of a flooded market, Hampton desperately tried to divide his crop and sell in the most profitable markets. 50 Despite his well-meant


50 Hampton retained the factors Goodhue and Co., in New York, 31 March 1829; Harrison and Sterett in Baltimore, 8 August 1829; Lippincott and Richards in Philadelphia, 25 February 1831; Dick and Co., in New Orleans, 14 November (continued...)
efforts, even the South's wealthiest planter systematically failed to shape prices, and like smaller planters, Hampton accepted, albeit grudgingly, the available market price for sugar.\(^5\)

In his quest to spread his crop and financial risk throughout several markets, Hampton chartered his own vessels and stored his sugar in warehouses throughout the nation. Although Hampton surely experimented and sought to maximize his returns by seeking the highest price for the crop, he nonetheless functioned as a perennial price-taker who followed the market price rather than setting it himself.\(^5\) Like his brethren sugar masters throughout the antebellum era, Hampton's impact on the market remained too small to shape the price level throughout the nation. Without a centralized commercial organization that could support the planters' interest and assist in defining superior prices, antebellum planters found themselves incapable of protecting the price of sugar from the

\(^{50}(\ldots\text{continued})\) 1831; James Woods and Co., in Nashville, 30 January 1832; Wade Hampton Papers, South Caroliniana Collection, University of South Carolina.


\(^{52}\)See, for instance, Goodhue and Co., to Wade Hampton, 29 March 1831, Wade Hampton Papers, USC.
instability and vagaries of the marketplace. A creature of the market and the increasing demand for sugar, the antebellum sugar planter responded to exogenous changes in the growth of sucrose consumption to increase their operations.

To examine the planters responsiveness to changes in consumption and the statistical relationship between Louisiana production and national consumption, I used bivariate analysis to examine the correlation between these values. The first test measured the relationship between production and consumption in corresponding years and, unsurprisingly, showed an extremely high correlation of 0.9038 from 1837 to 1855. Since most planters produced sugar and ultimately sold it rapidly on the market, it seems quite logical that production and consumption should remain closely correlated. Figure 3.5 presents the relationship between production and consumption and plots a regression line indicating that a strong linear

53Sitterson, "Financing and Marketing the Sugar Crop," 197-199.

54In all tests, I applied Pearson's Product Moment coefficient (r), a quantitative measure of correlation between two variables. The coefficient (r) takes values between -1.0 to +1.0. The sign indicates whether the correlation is either positive or negative and the magnitude of the correlation, or the absolute value of r indicates the strength of the relationship. The value 1 is the strongest while 0 indicates that there is no relationship between the variables. Any value above either + or -0.5 is a mild to strong correlation. The closer the value is to 0, the weaker the correlation proves.
relationship existed between rising production and the increased consumption of sugar. Figure 3.6, in contrast, graphs total production and consumption from 1837 to 1855. From the first data point in 1837, the dotted line progresses to a zone of production and consumption stability where the Louisiana crop of 100 million pounds constituted approximately half of the national sugar consumption. During the 1840s, both consumption and production increased dramatically though this pattern of growth stabilized from 1848 to 1850. The introduction of new technology, the passage of the pro-sugar 1842 tariff act, and increased sugar consumption ultimately fuelled growth in the mid to late 1840s. In the last decade of the antebellum period, consumption and production increased dramatically and reached a highpoint in the three years prior to 1855. The line bisecting the data points graphs the overall trend in rising production and consumption. As with Figure 3.5, this line indicates the strong linear relationship existing between rising consumption and Louisiana production during the antebellum era. A more interesting calculation, however, measures the correlation between consumption in year \( x \) and production in year \( x+1 \).

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Figure 3.5. US Sugar Consumption and Louisiana Production, 1837-1855.
Figure 3.6. US Sugar Consumption and Louisiana Production, 1837-1855 (Linear).
This test indicates that while the correlation coefficient declined, it remained relatively strong at 0.7918.

Although these figures, as with most antebellum data, reflect a myriad of statistical variables, it appears accurate to conclude that the planters responded positively to rising national consumption by planting more cane and increasing production. Since planters usually required a minimum of one year to increase production, it seems reasonable to infer that the sugar masters responded to market or demand pressures by planting more cane. After calculating the correlation of consumption in year $x$ and production in years $x+2$ and $x+3$, 0.7237 and 0.7499 respectively, we can conclude that, as market-responsive individuals, the planters rationally increased production to maintain their share of the growing market. This conclusion proves wholly consistent with Coclanis’s findings for rice where he concluded that market or demand conscious farmers in South Carolina similarly boosted aggregate output to meet "the growth of both internal and external trade and commerce during the antebellum era."

Apparently responsive to the shifting nature of national demand, the sugar planters, however, failed to respond significantly to changes in price.\(^5\) In a second

\(^5\)Coclanis, Shadow of a Dream, 118.

\(^5\)For a similar approach to the one presented below, see Winifred B. Rothenberg, "The Market and Massachusetts (continued..."
set of correlation analysis, I sought to measure the relationship between the annual yield of the Louisiana sugar harvest and a price index computed from the average price obtained for "plantation" grade sugar in New Orleans from December to April. As a measure of planter

57(...continued)

Farmers, 1750-1855," Journal of Economic History 41 (June 1981): 305-310. Rothenberg concludes that Massachusetts hog farmers relied primarily on the expectation of price shifts in making their decisions on when to butcher and sell pork. Noting that "expectations . . . played a decisive role here," Rothenberg suggests that a rise in the price of corn "may have led to the anticipation of a rise in the price of pork fed on corn, and therefore to delayed butchering." This argument sustains Marc Nerlove's conclusion that farmers primarily respond to those price changes that they expect to be permanent and that the expected price of a commodity "is arrived at by a progressive and cumulative learning process in which past expectations are regularly scrutinized." See, Rothenberg, "The Market," 305 and Marc Nerlove, The Dynamics of Supply: Estimation of Farmers' Response to Price (Baltimore: Johns Hopkins University Press, 1958). If Rothenberg and Nerlove prove correct, the antebellum farmer seems to have advanced his retail skills by learning from repeated experience in the market. On 'learning by doing,' see, Kenneth J. Arrow, "The Economic Implications of Learning by Doing," The Review of Economic Studies 29 (June 1962): 155-173.

58Like cotton and other agricultural commodities marketed in the antebellum era, factors and purchasers graded the sugar quality by testing for color, consistency, and moisture content. While some planters produced finer quality sugar, I use "plantation" grade as it realistically reflects the bulk of the sugar harvested and marketed in New Orleans. Since planters sent approximately 50 percent of the Louisiana crop to the Crescent City marketed about 50 percent of the Louisiana crop to New Orleans for sale, it clearly proved most logical to take the New Orleans, rather than the Louisville or New York price. See, J. Carlyle Sitterson, Sugar Country: The Cane Sugar Industry in the South, 1753-1950 (Lexington: University of Kentucky Press, 1953), see Chapter 9. The price index reflects the average price obtained for "plantation" grade sugar in New Orleans from December to April. This was the peak season (continued...)
responsivity to price changes in the New Orleans market in corresponding years, the correlation coefficient of -.5909 indicates that a mild correlation exists between the price obtained in year $x$ and production in that year. This relationship appears in Figure 3.7 which plots a linear regression line. The graph, logically, demonstrates that price remained highest when low production levels prevailed. In turn, the lowest prices existed when production peaked beyond 350 million pounds. Drawing from price-production data presented in the Figure 3.7, it seems accurate to conclude that as production increased, the price of sugar followed a steep and rapid decline. This inverse relationship lends credence to Mark Schmitz's conclusion that the sugar-masters operated their marketing affairs as "price-takers" whose increased production ultimately assisted in driving the price of their commodity down. Further correlation analysis suggests that cane

58 (...)continued

for sugar marketing and the five months in which most Louisiana sugar was sold. The months May to November were excluded from the price index as they tended to offer higher prices during this period. My goal is to generate an average price that sugar planters could realistically expect to obtain. For this reason, I excluded the summer months. For the monthly price data, see Arthur Harrison Cole, *Wholesale Commodity Prices In The United States, 1700-1861: Statistical Supplement Actual Wholesale Prices of Various Commodities* (Cambridge, Mass.: Harvard University Press, 1938).

59Mark D. Schmitz, "Economic Analysis of Antebellum Sugar Plantations in Louisiana" (Ph.D. diss, University of North Carolina, 1974), 17.
Figure 3.7. Louisiana Sugar Production and the Price of Plantation Grade Sugar in New Orleans, 1837-1855.
farmers did not shift production to meet the rising or declining price levels. When price in year \( x \) and production in years \( x+1, x+2, \) and \( x+3 \) are correlated, the coefficients decline to \(-.4409, -.4767, \) and \(-.5035\) respectively. This pattern appears quite rational given that the duration of time required for effective sugar cultivation assured that a farmer who planted cane after good prices in year \( x \) could not realistically expect a return on his new crop until years \( x+2 \) and \( x+3 \). Despite the gradually rising figures in years 2 and 3, the low correlation coefficients suggest that a weak statistical relationship exists between price and production in the antebellum era. This conclusion underscores the apparently feeble position the sugar masters maintained in price fixing, though confirms the notion of the planter as a demand-led producer who cultivated as much cane as possible, irrespective of price, to maintain his share in the burgeoning national market.

As Paul Heyne remarks, economists find it cumbersome to talk about "the amount by which people increase or decrease their purchases when the price changes."\(^6^0\) In order to explain this process, economists use the concept, price elasticity of demand. Briefly stated, if the quantity of any good purchased changes dramatically in

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response to a small change in price, demand is price-elastic. However, if a very large price change produces little change in the amount purchased, demand is said to be price-inelastic. In quantitative terms, elasticity is the percentage change in quantity divided by the percentage change in price. In Old South, New South, Gavin Wright calculated that the elasticity of demand for cotton remained unit elastic for most of the nineteenth century prior to the First World War. The reason for unit elasticity, Wright maintains, reflected the predominant influence of American cotton in shaping the world market price. In antebellum sugar, however, the demand for sugar remained clearly elastic throughout the first half of the nineteenth century. Figure 3.4, for instance, charts the price elasticity of sugar, for while the price of sugar gradually falls, consumption or demand increases rapidly. Ignoring the statistically anomalous price spike in 1857 that emerged as a direct response of the disappointingly poor crop in 1856, consumption increased dramatically after the price of sugar collapsed in 1847 and 1848. The central factor in the collapse of the price of sugar from 6 to 7 cents a pound in 1845 to between 3 and 4 cents a pound in

1847 and 1848 lay in the removal of the 2.5 cents per pound duty in favor of a 30 percent ad valorem rate in 1845. The dramatic deflation in the value of sugar, while proving economically injurious to the sugar masters, spurred national consumption to higher levels. Figure 3.8 plots a scatter graph with a regression line marking the trend in the overall decline of sugar prices and increased consumption from 1837 to 1855. Most importantly, the graph indicates that as the price of sugar fell markedly over the eighteen-year period, relative consumption increased conspicuously by over 400 percent. Bumper consumption, consequently, peaked when the price of sugar dropped to its lowest antebellum level of just 3.22 cents per pound, but consumption remained extremely high whenever the price fell below 4 cents a pound. In contrast, when sugar prices hovered between 5 and 6 cents a pound, consumption remained lagard as consumers evidently steered away from the luxury item. The popularization of sugar and its transformation from luxury status to mass consumption occurred, consequently, as a direct product of its declining price in the national market.

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"On the parallel effect of reduced sugar prices and increased sugar consumption throughout the Atlantic economy of the eighteenth and nineteenth centuries, see Mintz, (continued..."
Figure 3.9 presents the same data in an alternative manner, plotting the annual pattern of price and sugar consumption. Like Figure 3.6, graphing consumption and production, two particularly intense areas of activity emerge on the graph. The first one lies between 1840 and 1843, when consumption clearly stabilizes at two hundred million pounds, while the market price of sugar remained relatively fixed between four and five cents per pound. Peaking at 6.17 cents per pound in 1847, the price of sugar plunged in value by 40 percent to just 3.67 cents within a calendar year. This fall, however, triggered a second area of price/consumption stability between 1848 and 1850, where consumption and prices remained stable until the dramatic increase in consumption during the early 1850s. The rampant increase in consumption combined with the significantly reduced cost of sugar in the New Orleans market suggests that the demand for sugar proved highly price-elastic. The elasticity of sugar appears particularly marked after considering that, although the price of sugar decreased by only 36 percent from 1837 to 1855, consumption raced ahead by over 405 percent. To calculate the price elasticity of sugar, the percentage change in quantity demanded was divided by the percentage

\[ \text{Price Elasticity of Sugar} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}} \]

\[64\] (continued)

Figure 3.8. US Sugar Consumption and the Price of Plantation Grade Sugar in New Orleans, 1837-1855.
Figure 3.9. US Sugar Consumption and the Price of Plantation Grade Sugar in New Orleans, 1837-1855 (Linear).
change in price. Whenever the coefficient of elasticity proves greater than 1.0, demand is said to be elastic. From 1837 to 1855, the elasticity coefficient for sugar was 11.166, suggesting that demand proved highly price elastic and that American consumers responded dramatically to the decline in prices by purchasing more sugar. By the late 1850s, however, the American consumer possessed a remarkably sweet tooth, for between 1855 and 1857, the consumption of sugar remained high even when the price of the commodity almost trebled. The elasticity coefficient for these years remained at the low figure of 0.02035, showing that, by the latter 1850s, demand proved extraordinarily inelastic. Armed with higher per capita incomes and having purchased large volumes of sugar at comparatively low prices during the 1840s, American consumers demonstrated their clear willingness to pay dearly for the sweetener they used on an increasingly frequent basis.

With a burgeoning national demand for sugar throughout the antebellum era, the Louisiana cane industry clearly expanded to meet the increasing consumption of sucrose from the 1830s to the 1850s. Characterized by a rapid increase in sugar production during the early and mid nineteenth century, Louisiana sugar producers ultimately failed to satiate the American appetite for sugar and throughout the

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antebellum decades, the domestic sugar industry never supplied more than half of the national demand. In this respect, the Louisiana sugar masters appear as market responsive individuals who increased their yields to match the growing demand for sugar. Concomitantly, the price of sugar fell drastically, assuring that while the consumer enjoyed a cheap sweetener, the planter had to grow ever more cane to maintain his payments and place within the market. Perennially a price-taker, the Louisiana sugar master found that by increasing production, concentrating his resources, and by pursuing superior management practices, the planters could meet the burgeoning demand for sugar. Caught within an impasse of declining prices but rising national demand, the sugar masters responded positively to the capitalist market and augmented production throughout southern Louisiana.

While demand fueled regional economic growth in the sugar country, rice kingdom, and cotton South, a range of factors assured that Louisiana's comparative advantage in cane cultivation spawned monetary and financial success for southern portions of the state. Diane Lindstrom in her account of regional economic growth in the Philadelphia region, argues that growing demand and economic specialization combined with improved transportation,

66On the role of demand as the chief engine of economic progress, see Coclanis, Shadow of a Dream, chapter 3; Wright, Political Economy of the Cotton South, 90-106.
technical progress, urbanization, and manufacturing, to mark the economic development of the East coast industrial core.\(^{67}\) Although not all aspects of Lindstrom's model appeared in the South, Peter Coclanis agreed that economic growth in the South Carolina low country rested on technical gains in productivity and a radically improved transportation system to ease access to market. Central to the economic expansion of the rice industry lay the improvement in financial instruments and the emergence of a political-economic framework conducive to growth.\(^{68}\)

While Coclanis's analysis focused predominantly on the eighteenth century, several of the same ingredients commingled to spark the economic transformation of the sugar country. As an agricultural region, the Louisiana sugar country surely benefitted from its climatic advantage in the production of sub-tropical staples. Richly endowed with alluvial soil and a growing season long and humid enough to cultivate cane sugar, Louisiana possessed a comparative advantage for the production of sugar.\(^{69}\)

\(^{67}\)Lindstrom, Economic Development, 1-21.

\(^{68}\)Coclanis, Shadow of a Dream, 91-105.

\(^{69}\)The theory of comparative advantage, Coclanis states, rests on the assumption that an area will "tend to specialize . . . in the production of those articles for which it is in terms of its relative endowment of land, labor, and capital best suited." See, Coclanis, Shadow of a Dream, 57. Functioning as an obvious corollary to this model, "staples theory" stresses the decisive role of agrarian seasonality and the centrality of staple
While technological details on improved performance appear in following chapters, it remains prudent to add in this context that the Louisiana sugar industry underwent a significant revolution in sugar production during the 1840s and 1850s. Throughout the sugar country, but particularly on the larger estates along the Mississippi River, planters replaced small primitive milling facilities with steam powered machines that proved faster and infinitely more efficient in grinding and milling the crop. The sugar makers' art similarly altered from empiricism to science as planters replaced old methods with applied and theoretical practice. Science and technology, consequently, combined to transform the sugar trade from a primitive extractive industry to a modern business where factory production became increasingly the standard. While the introduction of mechanical power and technology marked the late antebellum sugar industry, steam similarly shaped the development and transformation of the Louisiana transportation system.

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Characterized by slow moving rivers and primitive flat boats in the early 1800s, the application of steam power to water transportation revolutionized transport beyond the Appalachian Mountains and transformed river conveyance on the bayous and waterways of south Louisiana. By the early nineteenth century, transportation in the sugar country remained slow, time-consuming, and often impracticable when driftwood clogged bayous and low water made access to smaller rivers and canals almost impossible.

In order to alleviate transportation difficulties and bring the Attakapas within reach of the New Orleans market, private individuals and the state government sponsored canal construction and river clearance projects. Noting that sugar planter Walter Brashear directed the construction of the Barataria and Lafourche Canal, Thomas Becnel accurately observed the central role of this canal in easing water-born transportation to Terrebonne Parish. Supported by Governor Pierre Debigny, an enthusiastic state legislature, but above all by local


farmers who saw the canal as an avenue to prosperity and the market, the Barataria and Lafourche canal sought to span southern Louisiana and build a permanent and reliable link between the Atchafalaya Bay near Morgan City and the Mississippi River slightly upstream from New Orleans. Bedeviled by managerial incompetence, corruption, and the high rate of $3.75 for shipping a hogshead of sugar to New Orleans, the Barataria and Lafourche canal failed to meet its expectations and in 1859, Governor Robert Wickliffe removed the last state support for the ailing canal.73

Despite the failure of the overall scheme, the Barataria and Lafourche canal eased transportation difficulties in Terrebonne Parish. Other state sponsored projects, however, proved considerably more successful in assisting the flow of shipping through the sugar country. Perhaps one of the most significant internal improvements passed during the antebellum era lay in the closure of Bayou Plaquemine in 1858.74 Not only did accumulating driftwood obstruct navigation, but as Joshua Baker observed, the absence of free-flowing water in Bayou


74Pointe Coupee Democrat (New Roads), 27 February 1858; Charles Lyell on his visit to Louisiana in the late 1840s similarly observed that state engineers cleared Bayou Plaquemine in the 1840s though clearly driftwood blocked the Bayou once again in the 1850s.
Plaquemine caused the risk of flooding further downstream.\textsuperscript{75} Planters and residents in low-lying areas similarly applied for state aid and additionally petitioned the Commissioner of the Second Swamp Land District to ease transportation through the myriad of bayous and rivers by constructing canals and dredging rivers. By petitioning Commissioner Lafayette Caldwell, whose jurisdiction included drainage and riverain improvements in the Attakapas, St. Mary Parish planters appealed for state assistance in draining the Grand Marais swamp. The petitioners additionally declared that the draining of the Grand Marais "would remove a serious obstacle to the prosperity of our parish," and consequently they urged the Second Swamp Land Commissioner to build canals minimizing flood risk and assuring improved navigation on the lower reaches of Bayou Teche.\textsuperscript{76} Sponsored by all leading Attakapas sugar masters and conducted with their assistance, the Grand Marais project and similar internal improvements required the mutual cooperation of planters and state government in ameliorating navigation through the sugar country. While these improvements certainly eased

\textsuperscript{75}Charles Lyell, \textit{A Second Trip to The United States of North America} (2 vols., New York: Harper and Brothers, 1849), II: 137.

transportation difficulties throughout south Louisiana, the key to expanded market access lay with the popularization of the steam boat in the 1830s and the railroad in the 1850s.

The steamboat in particular proved central to the integration of the sugar country into the national market. Prior to 1820, flat boats and primitive pirogues served as the sole means of transporting goods from upriver to New Orleans. Not only could these small vessels carry little, but they remained, of course, unable to successfully navigate upstream. Robert Fulton's tremendous success with the steamboat Clermont on the Hudson River in 1807, however, sparked a profound transportation revolution that left an indelible mark on the emerging sugar industry. Pioneered by Robert Livingston and Fulton, the Pittsburgh built New Orleans successfully sailed down in the Mississippi in 1815 and by 1817, the Enterprise confirmed the long-term potential of the steamboat by returning upstream from New Orleans to the mouth of the Monongahela at Pittsburgh.77 This navigational success ultimately paved the way toward a remarkable transformation in western transport where the number of steam boats arriving in New

Orleans soared from 191 in 1818 to 1958 in 1840.\textsuperscript{78}

Increasing the freight received in the Crescent City by five-fold, the steamboat wrought a profound transformation to western transport, New Orleans, and to the sugar country where a dynamic network of packet services assured that steamboats could serve all but the most extreme locales in Louisiana. Matilda Houstoun observed on her visit to southwestern portions of the state that an infinite number of rivers, canals, and lakes required "intricate navigation" that mystified Houstoun but seemed so routine and simple to her crew. While the small steamboat ploughed its way through the waterways of south Louisiana, Matilda Houstoun observed sugar plantations that remained bound to the New Orleans market through the regular steamboat packets that wended their way through the bayous of the Attakapas.\textsuperscript{79}

Although it remains impossible to know the exact percentage of trade sugar constituted, it appears accurate to suggest that the steamboat revolutionized the sugar economy and ultimately facilitated the geographical expansion of the industry into remote areas of south Louisiana. In their service as trade ties linking New


\textsuperscript{79} Matilda Houstoun, Hesperos: Or, Travels in the West (London: John W. Parker, 1849), 166-169.
Orleans and the outskirts of the sugar country, steamboats played a central role in hauling hogsheads of sugar to New Orleans and returning with the provisions that all plantations required. Planter William Pugh of Oak Lawn Plantation underscored this point when he observed that from his plantation on Bayou Lafourche, he consistently succeeded in shipping his crop to market even during low water. With one steam packet that made daily trips to Donaldsonville and a weekly steam service to New Orleans, Pugh noted that he usually paid between $1.25 and $2 to ship a hogshead of sugar to New Orleans and that after twelve years of marketing his sugar in such a manner, he could not recall ever charging his insurance companies a cent for damage during shipping. Advocating water carriage as "decidedly preferable for sugar and molasses," Pugh urged fellow sugar masters to support both canal and railroad construction so that "the people of Attakapas . . . will reap the benefits of the new channel for commerce opened by their enterprise and energy." 80 Like Pugh, sugar planters accurately knew that they could expand their operation and settle on new land confident that an established transportation network through the countless number of Louisiana's aquatic highways could promptly take their crop to market.

80Planter's Banner (Franklin), 14 March 1850.
Sugar planters, however, did not solely rely on regular steamboat services as several towns throughout southern Louisiana maintained direct contact with sugar markets on the Atlantic Coast. Located sixty-five miles by water from the Gulf of Mexico, the town of Franklin with 891 inhabitants in 1850 remained a bustling center of activity throughout the latter antebellum decades. The local Planter's Banner remarked that "no inland southern town of the size presents the business, life-like appearance of Franklin," that stocked such a treasure trove of goods brought directly from Northern markets.  

Physically small but economically prosperous, Franklin served as the primary shipping point for St. Mary Parish farmers and as such, the port of Franklin maintained direct connections on ocean going schooners with Baltimore, New York, Boston, Mobile, Charleston, Richmond, and Philadelphia. While these markets would seemingly suffice even the most price-conscious sugar master, Franklin also received shipping from Havana, Kingston, Bermuda, St. Croix, and Nassau. Intricately connected within the national coastwise trade and with foreign markets, the

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82 Planter's Banner (Franklin), 21 December 1848. On Franklin's connection with the coastwise trade, see Reed, "Footnote to the Coastwise Trade," 191-197.
volume of trade reported at Franklin increased dramatically during the antebellum era. In 1847 for instance, 71 coastwise vessels and 9 foreign registered ships entered the port of Franklin during the year. On the 70 ships that cleared the harbor master and left Bayou Teche for the Gulf of Mexico, ship crews packed away 6,735 hogsheads of sugar, 1,671 barrels of molasses, and almost 31,000 feet of live oak timber. The following year, however, the Planter's Banner reported that 96 schooners and 29 brigs sailed into Franklin from port cities in the United States while 32 foreign vessels docked at the harbor wall. By New Year's Eve, 1848, 157 ships displacing 19,916 tons set their sails and left the commotion of Franklin where the 941 crewmen who visited the town during the year must have filled not only the local streets but also the coffers of saloon owners who stood to gain from their thirsty patrons. Conversing in a myriad of languages and accents, these crewmen stored in the holds of the ships, 16,589 hogsheads of sugar, 19,664 barrels of molasses, and over 55,000 feet of timber. By 1853, the port of Franklin reported 127 departures during the calendar year though the vessels that passed through the harbor gates weighed an average of 158 tons per ship, an increase of over 31 tons per vessel from

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Planter's Banner (Franklin), 8 February 1849.

Ibid.
1848. While fewer though larger ships called at the port of Franklin, over 19,000 hogsheads of sugar and 41,194 barrels of molasses left the town for northerly markets. The 20 million pounds of sugar that left Franklin during 1853 constituted 56 percent of the entire St. Mary Parish sugar crop, or 6 percent of all sugar produced in Louisiana that year. Intricately binding Bayou Teche with Battery Park in booming New York City, ship chandlers in Franklin outfitted a marketing operation that proved international in scope though it rested firmly on the growing national demand for St. Mary Parish sugar.

Brought within the web of national market penetration, sugar planters in the Attakapas and Mississippi river valley confidently produced sugar cognizant that the steam boat and ocean going schooner would transport their commodity through Louisiana's avenues of commerce and on to the market at the New Orleans levee. Ever keen, however, to expand their market access, the sugar masters advocated and called for railroad construction in south Louisiana.

As with canals and riverain improvements, the state attempted to aid railroad companies by offering state land

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85 Planter's Banner (Franklin), 5 January 1854 reprinted in De Grummond, "A Social History," 53.

grants and tax exemptions. Although state, municipal, and parish governments donated $7,166,546 in aid to several railroad schemes during the 1850s, the New Orleans, Jackson, and Great Northern and the New Orleans, Opelousas, and Great Western Railroads proved by far the most important lines for the sugar masters. The New Orleans, Jackson, and Great Northern Railroad, in particular, proved highly profitable to prominent sugar planters like Stephen Minor and William Butler whose land the railroad traversed, but this northern bound rail company mainly benefitted those planters living close to the depot in the Crescent City as the tracks quickly swung away from the main plantation zone on the Mississippi River. In contrast, the New Orleans, Opelousas, and Great Western Railroad struck west from its terminus on the banks of the Mississippi at Algiers across sugar cane rich St. Charles


and Lafourche Parish, before turning to the North and heading up Bayou Teche toward Opelousas and central Louisiana. To those who supported the NOOGWR, the rail link seemed to proffer wealth and a promising future that would bring the Attakapas within just hours of the New Orleans sugar market. The Louisiana Spectator accurately pointed to the value of the railroad to Attakapas planters when it noted, "the very idea of placing a country like that within a few hours run of New Orleans is sufficient to nerve the arm of everyone who cultivates the soil in that healthy, rich, and beautiful section."

Sponsored and publically promoted by such local luminaries as Senator John Moore and Francis Dubose Richardson, St. Mary Parish sugar masters clearly perceived of the "Attakapas Railroad" as a major commercial avenue that could materially benefit the local sugar interest. Daniel Dennet of the Franklin Planter's Banner admonished fellow residents to support the rail link as a means to directly market sugar in the North while allowing the planter to avoid costly expenditures such as wharfage,

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91 Planter's Banner (Franklin), 7 March 1850.

92 Ibid., 2 May 1850.
storage, cartage, and factor commission in New Orleans. Few in Franklin doubted Dennet's wisdom and in the early 1850s, planters enthusiastically eyed the possibility of almost halving their sugar transportation costs from between $3 and $4 to $2.50 a hogshead on the railroad. Vociferous in its ardent zeal for the road, the Planter's Banner challenged the sugar masters to subscribe and purchase stock in the railroad. Dennet, in particular, appealed to the planter's business acumen by announcing that once complete, the railroad "will be the mainspring of a new spirit of enterprise that will be infused into the country." With the promise of increasing land values and rapid access to the New Orleans sugar market, planters along the route invested almost $760,000 in private subscriptions during the first year of the railroads incorporation. Evidently impressed by the company's commitment to "develop large agricultural districts," sugar planters supported the road that Superintendent Buckner H. Payne scheduled to pass through 933 plantations producing

93Ibid., 29 August 1850.
94Sitterson, Sugar Country, 168.
95Planter's Banner (Franklin), 6 February 1851.
96Report of the President and Directors of the New Orleans, Opelousas, and Great Western Railroad Company to the Stockholders, At their First Annual Meeting, 24th January, 1853 (New Orleans: J.B. Steel, 1853), 10.
Despite initial support, however, the enormous cost of laying rails through the Louisiana swamps made for slow progress and extremely high costs. After opening the first few miles in December 1853, construction slowed as engineer George Bayley attempted to lay heavy "T" rails with eleven feet long cypress cross ties on the silty and geologically unstable Lafourche prairies. Advancing sixty-six miles to Tigersville in October 1855 and over Bayou Boeuf in 1856, locomotives steamed into the Great Western terminus at Berwick's Bay in April 1857.

The NOOGWR, bedeviled by lack of sufficient funding, escalating costs, and a perhaps overly grandiose scheme, failed to attract adequate support and by 1857, private investors furnished only 20 percent of the construction costs disbursed in laying the track and building port facilities at Berwick's Bay. Despite the relative failure of the Bayou Teche-New Orleans rail link, the Thibodaux Minerva trumpeted that "in times gone by, it was often impossible for those planters removed from navigable water courses, to profit by the fluctuations that the market was occasionally subject to." With the arrival of


98 Reed, New Orleans and the Railroads, 115; "A Century of Progress in Louisiana, 28; Thibodaux Minerva, 7 October 1854.

99 Reed, New Orleans and the Railroads, 119; Opelousas Courier, 27 February 1858.
the railroad, however, "the wonderous results of steam as a motive power" placed all planters on an equal footing in the New Orleans market. By 1856, the railroad clearly played a significant role in shipping sugar from Terrebonne Parish as in 1855 alone, the Great Western's eight locomotives hauled over 17,000 hogsheads and 33,000 molasses barrels into the terminus at Algiers on the Mississippi River. Quickly surpassing the volume of trade shipped by coastwise brigs and schooners, the total railroad shipments represent almost the entire Terrebonne sugar crop for 1854-1855. By 1858, planters apparently shipped an increasing volume of sugar on the railroad as the Great Western's gross earnings during the peak sugar season from November to March increased by 64 percent from $97,115 to $159,733 between November 1856 and March 1858.

The New Orleans Bee also announced that regular steamship services to Texas with direct scheduled connections to the Great Western ultimately brought the Houston region into New Orleans's commercial orbit. Such an improvement in western transport, the Bee concluded, would not only improve travel and transportation but it would additionally

100 Thibodaux Minerva, 3 November 1855.
101 Ibid., 8 March 1856.
103 Opelousas Courier, 19 March 1859.
enhance property values throughout southern Louisiana. The transportation revolution, consequently, not only bound the sugar country within the national market but it dramatically improved business communications and enhanced the dissemination of valuable crop and price information. By providing superior access to the New Orleans sugar market, steam ships and railroads wrought a profound commercial revolution in the sugar country where farmers and planters increasingly marched to the beat of national demand and sugar consumption.

The final component in Louisiana's antebellum economic development lay in the availability of banking capital to foster growth. While economic historians Fred Bateman and Thomas Weiss contend that antebellum southern banks lacked sufficient capital to fund material economic growth, George Green, Larry Schweikart, and Richard Kilbourne underscore the maturity of Louisiana's financial institutions and the available credit for economic expansion. Schweikart, in

104 New Orleans Bee reprinted in Opelousas Courier, 11 February 1860; Houma Ceres, 28 February 1857.

105 Coclanis in Shadow of a Dream underscores the centrality of the transportation in shaping the economic rise of the South Carolina Lowcountry (see, Coclanis, Shadow of a Dream, 98-101), while Lacy K. Ford, Jr., in Origins of Southern Radicalism: The South Carolina Upcountry, 1800-1860 (New York: Oxford University Press, 1988) argues that the railroad played a seminal role in tying the upcountry in to the national market.

106 Fred Bateman, James Foust, and Thomas Weiss, "The Participation of Planters in Manufacturing in the

(continued...)

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particular, concludes that "Louisiana's growth rates as measured by its banking statistics are impressive," as specie reserves grew at an "enviable" 6 percent per annum from 1819 to 1861. Paralleling Schweikart's conclusions on the relatively robust condition of southern banking and the strength of regional financial markets, George Green contends that Louisiana's financial system adequately sufficed the capital requirements for economic expansion.

Capital intensive in structure, the Louisiana sugar industry required an increasing volume of credit throughout the antebellum era as machinery and slave costs escalated in the 1840s and 1850s. The sugar masters, assisted by the establishment of such property banks as the Consolidated Association of the Planters of Louisiana, found that by mortgaging their own property as collateral for specie reserves, they could partially fulfill their growing demand

106 (...continued)

107 Schweikart, Banking in the American South, 258-259.

for rural credit.\footnote{Green, Finance and Economic Development in the Old South, 21, 115.} As the Louisiana banks grew dramatically in both scale and scope, the number of banking institutions increased from just 4 in 1830 to 47 in 1837.\footnote{Stephen A. Caldwell, A Banking History of Louisiana (Baton Rouge: Louisiana State University Press, 1935), 127.} With the rapidly increasing demand for rural credit, the state legislature chartered twelve new banks, augmenting the total capital from $9 million in 1831 to $46 million in 1837.\footnote{Green, Finance and Economic Development in the Old South, 25.} In the wake of the 1837 financial panic, the banking system disintegrated and experienced chronic contraction as credit and specie reserves rapidly declined.\footnote{Temin, The Jacksonian Economy, 113-147.} Despite the "continued contraction of the banking system," George Green observes, "agriculture and commerce expanded steadily" throughout the 1840s.\footnote{Green, Finance and Economic Development in the Old South, 27.} By mid-century, the rural and urban demand for credit proved so strong a lobby that the Louisiana legislature passed a "free banking" law in 1853 to ease bank incorporation. As \textit{De Bow's Review} announced, the New Orleans banking system while surely expanding both capital and credit, "has been
tested and not found wanting." Lauded by *Hunt's merchants Magazine* as "remarkable," the commercial and financial progress of New Orleans underpinned the economic expansion of the region. The volume of bank loans in New Orleans, for instance, increased from $18.6 million in 1850 to $31 million in 1856 before dropping marginally during the panic of 1857. With a healthy and sound banking system in New Orleans and throughout the sugar country, planters found readily available credit for the expansion of their industry throughout the antebellum decades. The extremely positive allocation of rural credit, consequently, allowed Louisiana to expand on its "comparative advantage" in cane cultivation and increase the spatial and technological dimensions to the sugar industry. Equipped with credit reserves to purchase slaves and steam engines, the sugar masters advanced their crops to meet the growing national demand.

On the masthead of the *Planter's Banner* lies the quotation "Give to the Labor of America, the Market of America." Quintessentially representing the market orientation of the Louisiana sugar industry, planters in Franklin accurately knew that their financial success

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114*De Bow's Review* 25 (November 1858): 559.


116*Planter's Banner* (Franklin), 13 December 1849.
rested on supplying the laboring workman of the North with the sugar he required. Throughout the antebellum decades, the Louisiana sugar masters supplied that market with increasing quantities of sugar and emerged as an entrepreneurial class whose business operations responded to the beat of demand. While surely assisted by the transportation revolution and the availability of credit, the sugar planters enlarged their operations and advanced toward the Civil War secure in their knowledge that they possessed a solid share of the national sugar market.
CHAPTER 4

STRENGTH AND CAPITAL: MICROECONOMICS AND THE LOUISIANA SUGAR PLANTATIONS

The vast Weeks family estate on Grand Cote Island lay on rich cane land overlooking Vermillion Bay and the Gulf of Mexico. Managing the plantation his father established in 1820, William F. Weeks masterminded an immense agricultural enterprise that included 200 slaves, 2000 acres of land, and a "superior" sugar mill that included a steam granulating pan. While sugar operations flourished in both scale and scope under the tutelage of William Weeks and his progenitors, the family holdings at Grand Cote grew and expanded into a vigorous plantation unit throughout the antebellum decades. In 1820, for instance, the sprightly twenty-three year old wife of David Weeks, the founder of Grand Cote, wrote her brother that "we are as busy as bees. We have forty-seven hogsheads of beautiful sugar made and we are not half done yet." Three decades later, the fertile soils at Grand Cote yielded almost four hundred hogsheads, a figure bettered eight years later when Weeks recorded that his plantation produced 711 hogsheads of

1Advertisement for William F. Weeks, Grand Cote Plantation, Weeks (David and Family) Papers, LSU.

2Mary C. Moore to Alfred Conrad, 29 November 1802, Weeks (David and Family) Papers, LSU. The date on the letter appears to be an lapse by the writer, Mary Conrad Weeks, who probably wished to write 1820. Born in 1797, Mary Weeks and her husband, David, did not begin cultivating sugar on a significant level until 1820.
sugar in 1858. Fully aware that his success rested on technological and agronomic improvement, William Weeks victoriously announced, "I am very much gratified at my crop on C[ypre] Mort which taken in connection with the building of the sugar house and other improvements, is extraordinary—and what is more remarkable—I shall beat all my neighbors with superior forces and on improved plantations."

Maintaining that technology and improvement signaled economic success in the sugar country, William Weeks stood with his contemporaries at the vanguard of a progressive movement that embraced technology, science, and the imposition of book farming. A paper commitment to such qualities, however, failed to suffice in the antebellum sugar industry, for those who truly succeeded combined a tough driving temperament with a rational eye for profit and innovation. Exemplary in his possession of these qualities, Francis DuBose Richardson initially carved a farm and subsequently a prosperous plantation from the fertile Attakapas soils. Candidly analyzing his son-in-law's capacity for sugar farming, Moses Liddell provided a striking portrait of the drive and enthusiasm required for

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⁴William F. Weeks to John Moore, 24 December 1858, Weeks (David and Family) Papers, LSU.
cane cultivation. "I think FDR may succeed pretty well," Liddell observed, "he has industry and management, and some experience, and has had a little success, he is dependant, and has a share of ambition to press on and has but little means to do otherwise." Ever shrewd in his business acumen, Liddell calculatingly observed that Richardson "is willing and desirous to go ahead," and that "he will be very useful to himself, his neighborhood, country, and to me in the management of my interests."^5

With their entrepreneurial talents channeled into sugar making, Richardson and Weeks clearly possessed both skill, drive, and a perceptive capacity to measure risk and financial success. William F. Weeks, for instance, observed in mid 1858 that "I see now that we have been dancing too fast for the music—or rather that we have, contrary to our custom expended more than our receipts." Weeks continued and explained that "the purchase of slaves—and the amount expended toward the establishment of a new place and machinery necessary for the advantageous working of Grand Cote" drew heavily upon operating funds. Weeks remained optimistic, noting that "not one dollar of what has gone through my hands has been expended uselessly [as] we have a fair prospect for a crop if no bad luck befalls

^5Moses Liddell to John R. Liddell, 28 July 1845, Liddell (Moses, St. John R., and Family) Papers, LSU.
us—we will pay all off next year and be ahead. * Such commitment and drive marked the Louisiana sugar master as a hardy market orientated competitor who combined industriousness with the capital required for modernization and technical improvement.

Commentators on the sugar industry frequently remarked on the agricultural and industrial transformation that the planters orchestrated throughout south Louisiana. Charles Fleischmann, for example, concluded in his Annual Report for the Commissioner of Patents that "there is no sugar growing country, where all the modern improvements have been more fairly tested and adopted than in Louisiana." Attributing the success of these "improved modes" to the "enterprise and high intelligence of the Louisiana planters, who spare no expense to carry this important branch of agriculture and manufacture to its highest perfection," Fleischmann paralleled other observers in noting that, despite the climatic limitations to cane cultivation in south Louisiana, the planters achieved a "proud triumph" in adopting the latest boiling apparatus and in "fulfilling all the conditions that science and

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6 William F. Weeks to John Moore, 14 July 1858, Weeks (David and Family) Papers, LSU.

experience have pointed out . . . for obtaining a pure and perfect crystalline sugar."

One anonymous contributor to the Baton Rouge Gazette similarly lauded his fellow sugar masters for their skilful mastery of "the mechanical and chemical sciences which now become so apparent in this country." Acquainted with several "going-a-head" planters, the correspondent announced that by introducing improvements in agriculture and machinery, the sugar master "will reap his harvest in half the time, and with half the labor and expense" than he previously achieved with primitive agronomy and animal powered sugar mills.® One planter from Guadeloupe, after a tour through his native Caribbean, additionally observed that the Louisiana sugar country appeared "far superior to most sugar growing regions . . . in the intelligence and skill manifested in both the cultivation and manufacturing of sugar."® The Planter's Banner further added that the sugar masters displayed both "intelligence and skill" in their planting operations combined with "good management on the improved principle adopted in Louisiana." This blend of management and skill, not only assured the relative economic success of the US sugar industry but, the Planter's Banner concluded, gave Louisianans a marked

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®Baton Rouge Gazette, 2 December 1843.
advantage over their competitors in Mexico, Cuba, and the West Indies.\(^{10}\)

Within the sugar country, newspaper editors praised local planters whose public spirited "enterprise" assured regional wealth and development. Editor William P. Bradburn noted in the Plaquemine Southern Sentinel that "the planters are our bankers. Sweep them from our parish, and the wheels of every description of business would stop as suddenly as the paddles of a bursted steamboat!" Almost all Iberville Parish mechanics and businessmen, Bradburn concluded, have "felt the invigorating influence" of the planters' energy and financial patronage.\(^{11}\) Somewhat critical, but rather more insightful, an anonymous contributor to the Thibodaux Minerva remarked that in contrast to the conservatism of the "past generation," the late antebellum sugar masters proved impatient to test the latest technical fad for the improved production of "a superior article of sugar." Whenever a new process is introduced, the Minerva announced, "everybody jumps at it, pays an exorbitant price for using it, and, having given it a fair trial, abandons it in disgust and damns himself for having been humbugged."\(^{12}\) In contrast to older planters, the sugar masters of the late 1840s and 1850s embraced

\(^{10}\)Planter's Banner (Franklin), 5 January 1854.

\(^{11}\)Southern Sentinel (Plaquemine), 12 April 1851.

\(^{12}\)Thibodaux Minerva, 24 December 1853.
progress, science, and agricultural improvement. James DeBow, for instance, announced: "we congratulate our country on the spirit of enterprise which prevails. The competition evinced in the improvement of the manufacture of sugar shows energetic feelings among our planters." Eager to praise the sugar industry in his adopted state, DeBow's conclusions paralleled those of his contemporary, Pierre Rost, who emphatically declared before the Agricultural and Mechanics' Association of Louisiana that:

> the innate faculty of our people to subdue the physical world, their energy and self-reliance . . . have made other nations say of us, that we alone could instil heroism in the common pursuits of life. With heroic determination, then, speed the plow; bear in mind that to go ahead without ever taking difficulties into account, and by that means, when others dare not undertake, is emphatically the AMERICAN SYSTEM."

By promoting land improvement, fertilization, crop rotation, and the use of increasingly complex machinery, the sugar masters transformed their industry from a small technologically backward trade that utilized eighteenth century Caribbean implements to a modern agro-industry where the synchronization of science and agriculture shaped the dynamics of the late antebellum industry. With a rigorous program of agricultural change, the Louisiana sugar masters stood at the van of the industrial revolution and advocated economic growth and regional development.

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13 *De Bow's Review 1* (February 1846): 166.

14 Ibid., 4 (December 1847): 436.
within the sugar industry. The notion of the southern farmer as an acquisitive, improvement orientated agrarian, however, lies in stark contrast to the historiographical image of the antebellum planter as an individual averse to risk, who pursued environmentally destructive farming that exhausted the soil and stripped it of its nutrients. Thirty years ago, Eugene Genovese argued that the blighting influence of slavery stymied all attempts at crop-rotation, fertilization, and land improvement.\(^{15}\) With a particularly destructive agronomy and a work-force that destroyed all improved agrarian implements, Genovese portrayed the southern planter as a "soil miner" who practiced primitive farming and destructive agriculture. Although Genovese's argument received serious challenge from Robert Fogel, Stanley Engerman, William Cooper, and more recently from John Hebron Moore, William Scarborough, and Carville Earle, the concept of the ecologically destructive southern farmer remains doggedly persistent.\(^{16}\) Gavin Wright, for instance,


returns to the concept of the erosive southern planter in *Old South, New South* where he echoes geographer Stanley Trimble's conclusions that "planters earned well their reputation as 'land killers'."  

Reputedly averse to technological improvement and investment in machinery, the institution of slavery remains similarly culpable in the historical literature for arresting the pace of economic change in the South. Stating that the South "grew but did not develop," Roger Ransom and Richard Sutch contend that by investing their financial resources in slavery, southern planters remained relatively short of the monetary assets required for investment in machines, technology, and social overhead capital. Ransom and Sutch consequently conclude that "slaves as assets crowded physical capital out of the portfolios of southern capitalists," assuring that southern farms remained technologically backward while regional

16(...continued)

economic development grew at a sluggish and disappointingly slow pace.\textsuperscript{18}

Heywood Fleisig closely parallels Ransom and Sutch's findings, by arguing that slavery arrested economic progress on southern farms. In contrast to smaller labor-constrained northern farms where technical change guaranteed higher profits, Fleisig maintains that southern plantations with their lower capital-labor and land-labor ratios possessed little incentive to adopt or invent new labor-saving machinery.\textsuperscript{19} Although Gavin Wright maintains that Fleisig's endogenous model of farm size and invention proves correct for the cotton South, it appears suspect for the sugar country where planters increasingly used costly and capital-intensive machinery to grind and process their crops. Figure 4.1, for instance, clearly graphs the industrial transformation of the Louisiana cane industry as


farmers shifted from relatively inexpensive horse-powered sugar mills to the more valuable and costly steam mill. While the data on mechanization remains circumscribed by the absence of historical sources, Figure 4.1 demonstrates the dramatic decline in the use of horse-powered milling and the relative increase in steam technology. With most steam mills valued between $5,000 and $7,000, it appears unsurprising that many smaller operators decided to leave the industry and return to cotton in the early 1850s. Increased machine costs, consequently, explain why the total number of estates declined from a high of 1,536 in 1849 to 1,292 in 1860. Despite the decreasing number of sugar estates, however, technical progress and farm expansion assured greater productivity per unit. The rising yield per plantation, for example, increased from an average of 161 hogsheads of sugar in 1849 to 177 hogsheads

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Figure 4.1. The Rise of Steam Power and the Decline of Horse Powered Sugar Mills, 1845-1861.

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in 1860. To produce increasing quantities of sugar, the financial demands that large sugar operators faced frequently proved too substantial for all but the largest planters.

Table 4.1 documents the estimated capital value of sugar estates and clearly demonstrates that the giant sugar planters required a huge capital outlay for both machinery and slaves. Such financial requirements ultimately squeezed out the smaller planters, but those who remained in the industry clearly mechanized and shifted from antiquated methods to the latest steam technology. Figure 4.2 chronicles these changes in Ascension and St. Mary Parishes, two large and vitally important sugar producing regions in south Louisiana. While the number of steam powered mills remains fairly constant in a mature sugar producing district like Ascension Parish, the scale of the industrial and agricultural transformation appears particularly marked in St. Mary Parish where energy use gradually switched from horse to steam power in the 1840s and 1850s. This remarkable transformation stands as testimony to the planters' willingness to invest in machinery and alter production techniques to match the demand for quicker and more efficient grinding. In his seminal work, The Political Economy of the Cotton South, Gavin Wright contends that the southern alluvial region stands as an anomaly to regional economic development.
Table 4.1. Louisiana Sugar Estates in 1853.

<table>
<thead>
<tr>
<th>Number of Sugar Houses</th>
<th>Capacity of Sugar Yield (Hhds)</th>
<th>Mean Capital Value (Slaves -Machinery)</th>
<th>Aggregate Capital Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>547</td>
<td>0 to 99</td>
<td>$40000</td>
<td>$21920000</td>
</tr>
<tr>
<td>347</td>
<td>100 to 199</td>
<td>$75000</td>
<td>$26025000</td>
</tr>
<tr>
<td>232</td>
<td>200 to 299</td>
<td>$90000</td>
<td>$20884000</td>
</tr>
<tr>
<td>132</td>
<td>300 to 399</td>
<td>$125000</td>
<td>$16500000</td>
</tr>
<tr>
<td>81</td>
<td>400 to 499</td>
<td>$150000</td>
<td>$12150000</td>
</tr>
<tr>
<td>64</td>
<td>500 to 599</td>
<td>$175000</td>
<td>$11200000</td>
</tr>
<tr>
<td>33</td>
<td>600 to 699</td>
<td>$200000</td>
<td>$66000000</td>
</tr>
<tr>
<td>14</td>
<td>700 to 799</td>
<td>$225000</td>
<td>$31500000</td>
</tr>
<tr>
<td>9</td>
<td>800 to 899</td>
<td>$250000</td>
<td>$22500000</td>
</tr>
<tr>
<td>10</td>
<td>900 to 999</td>
<td>$275000</td>
<td>$27500000</td>
</tr>
<tr>
<td>6</td>
<td>1000 to 1199</td>
<td>$300000</td>
<td>$18000000</td>
</tr>
<tr>
<td>2</td>
<td>1100 to 1299</td>
<td>$325000</td>
<td>$6500000</td>
</tr>
<tr>
<td>3</td>
<td>1200 to 1999</td>
<td>$350000</td>
<td>$10500000</td>
</tr>
</tbody>
</table>

Noting that alluvial farms frequently proved larger and more capital intensive, Wright unfortunately failed to expand on his conclusions and document the microeconomics of the sugar country. As two representative sugar producing districts in geographically distinct regions of Louisiana, Ascension and St. Mary Parish serve as good case studies for analyzing economic growth in the latter.


24 Wright, Political Economy of the Cotton South, 49-55.
Figure 4.2. The Dynamics of Mechanization in Ascension and St. Mary Sugar Parishes, 1845-1861.
antebellum decade. Centrally located at the heart of the sugar country, Ascension Parish contained many large, well-developed plantations that grew and flourished throughout the antebellum years. Easily accessible on the river, Ascension Parish farmers, like their brethren along the "Mississippi Coast" from New Orleans to Baton Rouge, quickly adopted machinery and possessed both capital and credit to advance their crops.

St. Mary Parish, in contrast, remained geographically isolated throughout the early nineteenth century, and exhibited relatively small farm holdings that frequently lacked the vast capital reserves of the Coast planters. Referring constantly to the apparent conservatism of the Attakapas planters, editor Robert Wilson consistently criticized St. Mary Parish sugar farmers for their aversion to "innovations and improvements." James DeBow easily explained this fact by noting that "scarcely any of the planters of Attakapas have adopted the new improvements in sugar making, which are in such progress in other Parishes." De Bow concluded his remarks by pertinently observing that "for a great part, the estates are too small

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27 Planter's Banner (Franklin), 20 September 1845.
unless the machinery were less expensive.\textsuperscript{27} Despite the apparently laggard improvement of St. Mary Parish throughout the antebellum years, the region made substantial economic progress and by the eve of the Civil War possessed a radically improved sugar industry and several large planters who commanded major cane operations.

Figure 4.3 plots the economic performance of William F. Weeks and Francis DuBose Richardson, two leading St. Mary Parish sugar masters whose plantations grew sporadically and fluctuated annually in response to regional climatic conditions.\textsuperscript{28} Despite occasional disappointments and crop short-falls, both Weeks and Richardson possessed the strength and capital to advance their operations at Grand Cote and Bayside Plantation. In their weekly remarks on the regional sugar industry, the editors for \textit{Le Pioneer de L'Assomption} accurately concluded that for lucrative economic success in the sugar industry, "it is necessary to have great capital or immense credit."\textsuperscript{29} Even so equipped, \textit{Le Pionner} continued, inclement weather or a particularly vociferous outbreak of

\textsuperscript{27}Ibid., 18 April 1848.

\textsuperscript{28}Number of Hogsheads of Sugar Made in the Parish of St. Mary in the Years 1838-1843, Liddell (Moses, St. John R., and Family) Papers, LSU; Planter's Banner (Franklin), 10 February 1848; P.A. Champomier, \textit{Statement of the Sugar Crop Made in Louisiana in 1845-1861} (New Orleans: Cook, Young, & Co., 1845-1862).

\textsuperscript{29}Le \textit{Pionner de L'Assomption} (Napoleonville), 26 October 1851.
Figure 4.3. Economic Performance on Grand Cote and Bayside Plantations, 1838-1861.
disease among the slaves could readily destroy an immense wealth. Considering the instability of weather, the shifting scale of tariff protection, and the cost of new and improved machinery, it remains striking that the planters invested in expensive steam machinery while significantly expanding their holdings and operations. Drawn from the manuscript census for 1850 and 1860, statistical data on 412 sugar estates in Ascension and St. Mary Parish indicate the dynamics of regional economic growth and the anomalous relationship the sugar country held with the cotton South.

Twenty years ago in *The Political Economy of the Cotton South*, Gavin Wright concluded that on southern plantations where "the supply curve of slave labor is infinitely elastic," and where few labor constraints existed, the slaveowning farm should surpass the free farm in output, labor, acreage, and farm capital.\(^3\) Having definitively established that plantations in the cotton South were significantly larger in both acreage and capital than labor-constrained free farms, Wright calculated that farms in the rich cotton belt included an average of 130 improved acres per estate, while those in the old Northwest averaged 70 improved acres per farm.\(^4\) Total farm value

\(^3\)Wright, *Political Economy of the Cotton South*, 48.

\(^4\)By the Northwest, Wright refers to Illinois, Indiana, Michigan, Ohio, and Wisconsin.
similarly tilted in favor of the cotton South where the mean farm value of $4,370 dwarfed the estimated farm value of $2,958 for the Northwest. These figures, however, appear minuscule in comparison with the Louisiana sugar country where the estates possessed the scale and scope for economic advancement. Table 4.2 charts both improved acres per farm and the recorded cash value of each plantation. To minimize the risk of statistical outliers overly shaping the results of this study, both mean and median values are included in the tables.

Table 4.2. Improved Acres Per Farm and the Cash Value of Sugar Farms, Ascension and St. Mary Parish, 1850 and 1860.

<table>
<thead>
<tr>
<th></th>
<th>Improved Acres Per Farm (Acres)</th>
<th>Cash Value Per Farm (Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Mean) 460.58</td>
<td>(Mean) $107,543</td>
</tr>
<tr>
<td></td>
<td>(Median) 500.00</td>
<td>(Median) $75,000</td>
</tr>
<tr>
<td>Ascension Parish</td>
<td>1850</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Mean) 809.69</td>
<td>(Mean) $124,817</td>
</tr>
<tr>
<td></td>
<td>(Median) 500.00</td>
<td>(Median) $50,000</td>
</tr>
<tr>
<td>Ascension Parish</td>
<td>1860</td>
<td></td>
</tr>
<tr>
<td>St. Mary Parish</td>
<td>1850</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Mean) 230.20</td>
<td>(Mean) $23,948</td>
</tr>
<tr>
<td></td>
<td>(Median) 160.00</td>
<td>(Median) $15,000</td>
</tr>
<tr>
<td>St. Mary Parish</td>
<td>1860</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Mean) 413.71</td>
<td>(Mean) $61,986</td>
</tr>
<tr>
<td></td>
<td>(Median) 300.00</td>
<td>(Median) $50,000</td>
</tr>
</tbody>
</table>

Table 4.2 clearly indicates that both Ascension and St. Mary Parishes included vast agricultural enterprises that eclipsed smaller cotton estates while expanding in

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Source: Seventh Census of the United States, Agricultural Returns, Ascension Parish and St. Mary Parish, Louisiana, 1850 and Eighth Census of the United States, Agricultural Returns, Ascension and St. Mary Parish, Louisiana, 1860.
total acreage and in cash value during the last decade of the antebellum era. Perhaps one of the most remarkable factors in Table 4.2 lies in the very rapid expansion of the St. Mary Parish sugar estates. While Figure 4.2 indicated that the Attakapas sugar industry experienced an economic transformation from horse to steam power, the increased scale and cash value of St. Mary Parish plantations appears very clearly in Table 4.2 where the mean number of improved acres per estate roughly triples over the decade. Although these figures certainly suggest that a smaller number of planters increasingly concentrated their wealth in a shrinking number of sugar estates, the rapid growth in both acreage and cash value implies that the Attakapas sugar master stood at the van of industrial "take-off," a period economist W.W. Rostow remarks, in which "the forces making for economic progress . . . expand and come to dominate the society." 33

If growth becomes a "normal condition" during economic take-off, the remarkable economic increase in farm value and acreage, should, find a parallel in the use of implements and in hogsheads of sugar produced. Table 4.3 presents further data to suggest that growth and technical

improvement fundamentally marked the microeconomics of the Louisiana sugar plantations.

Table 4.3. Hogsheads of Sugar and Value of Implements Per Farm and Per Improved Acre.  

<table>
<thead>
<tr>
<th></th>
<th>Value of Implements/ Machinery Per Farm</th>
<th>Value of Implements Per Improved Acres</th>
<th>Hogsheads Produced Per Estate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascension Parish 1850</td>
<td>(Mean) $10,884</td>
<td>$23.27</td>
<td>(Mean) 259</td>
</tr>
<tr>
<td></td>
<td>(Median) $5,000</td>
<td></td>
<td>(Median) 200</td>
</tr>
<tr>
<td>Ascension Parish 1860</td>
<td>(Mean) $18,778</td>
<td>$22.55</td>
<td>(Mean) 324</td>
</tr>
<tr>
<td></td>
<td>(Median) $7,000</td>
<td></td>
<td>(Median) 155</td>
</tr>
<tr>
<td>St. Mary Parish 1850</td>
<td>(Mean) $4,034</td>
<td>$17.52</td>
<td>(Mean) 137</td>
</tr>
<tr>
<td></td>
<td>(Median) $1,500</td>
<td></td>
<td>(Median) 102</td>
</tr>
<tr>
<td>St. Mary Parish 1860</td>
<td>(Mean) $7,612</td>
<td>$18.13</td>
<td>(Mean) 191</td>
</tr>
<tr>
<td></td>
<td>(Median) $5,000</td>
<td></td>
<td>(Median) 142</td>
</tr>
</tbody>
</table>

The rising mean and median values of total farm implements and machinery, for instance, reveals the increasing cost of sugar production in the steam age and the investment sugar planters made in capital intense technology. This conclusion proves wholly compatible with Figures 4.1 and 4.2, where the shift to steam power evidently characterized the economic behavior of most

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35Source: Seventh Census of the United States, Agricultural Returns, Ascension Parish and St. Mary Parish, Louisiana, 1850 and Eighth Census of the United States, Agricultural Returns, Ascension and St. Mary Parish, Louisiana, 1860.
leading sugar planters during the latter antebellum decades. The relatively high investment in machinery by Ascension Parish farmers similarly echoes contemporary descriptions of the sugar region where the immense Mississippi River planters allocated both capital and credit to purchase larger steam engines and more efficient sugar producing techniques.

In comparison with the Ascension sugar magnates, the St. Mary Parish planters appear to have invested relatively less capital in machinery. Such a conclusion, while partly accurate, undervalues the vast investment the Attakapas sugar masters made in shifting their industry from horse to steam power. The profound difference between the Ascension and St. Mary Parish sugar masters, however, lay in the type of machinery the planters adopted. In Ascension Parish, large sugar planters advanced in the 1850s toward expensive vacuum pans and evaporation techniques in the manufacturing of sugar. To the West, however, the Attakapas planters remained technologically at least five to ten years behind their neighbors in Ascension, for although the Attakapas industry revolutionized during the 1850s, most St. Mary sugar masters still manufactured sugar with the traditional open-kettle method of sugar production. Laboring in the midst of rapid economic growth, the Attakapas planters need only have looked to Ascension Parish to observe the future of the sugar industry unfolding before their eyes. Despite
the large investment Attakapas sugar planters expended in technological improvement during the 1850s, the value of farm implements and machinery per improved acre remained almost constant from 1850 to 1860. Rather than suggesting that the industry was in stasis, these figures on machine investment per farm suggest that implement and capital disbursement kept pace with acreage expansion.

In 1850, for instance, the sum of improved acres under cultivation in Ascension Parish numbered 23,029 acres. A decade later, fourteen fewer sugar planters recorded for the census enumerator that 29,149 acres lay under crop. In St. Mary Parish, cane farmers cultivated 40,054 improved acres in 1850 while ten years later, Attakapas planters raised cane on almost 63,000 acres of rich sugar land. Expansion in both field acreage and machine investment, consequently, characterized and distinguished the Louisiana sugar industry during the 1850s. The profound distinction between cotton, wheat, and sugar production appears in the value of implements per improved acre. Gavin Wright concluded that in the free states, the value of implements and farm machinery to improved acres averaged $1.60, while in the South, most cotton farmers invested $1.46 in tools for each cultivated acre.\(^{36}\) In the sugar country, by contrast, the planters spent between $17.52 and $23.27 on implements and machinery per improved acre. Financially

\(^{36}\)Wright, *Political Economy of the Cotton South*, 52.
intensive, the sugar masters expended well over ten times
the capital their brethren in cotton and wheat disbursed in
implement and machine investment.

Moses Liddell, a Mississippi cotton planter who joined
his son-in-law, Francis DuBose Richardson, in cane
cultivation at Bayside Plantation, seemed readily aware of
the immense costs involved in sugar production and the
great dissimilarity between cotton and sugar. Ever willing
to counsel his son on the benefits of cotton cultivation,
Liddell warned that the enormous investment in capital and
labor made cotton a preferable crop in the long-term. With
cotton, Liddell noted:

| your income would be small but certain and subject to
| no great losses. Whereas if you go at sugar it will
| take you three years before you can procure seed or
| plant cane to make a full crop—you have an extensive
| building—you must have a steam engine and mill[,] $4500[,] expenses putting it up and keeping it in
| order, risk of crops, and continuous unforeseen . . .
| expenses that will eat up the profits . . . It is true
| that some very large fortunes have been realized at
| sugar planting but with an immense exertion and
capital to commence with or a strong mind and over
| laborious perseverance.36 |

At times unhappy with his investment in sugar cultivation,
Liddell exclaimed, "I am rather sick of sugar growing,
there is such a succession of labor to perform the whole
season round and so much anxiety prevails." While he hoped
that the anxiety and cost of sugar production would subside
after completing all improvements on the plantation,

36Moses Liddell to John R. Liddell, 28 July 1845,
Liddell Papers, LSU.
Liddell anxiously wrote "yet every year improvements are to be made, repairs to be done, new fixtures to be added—that there is never an end of these things as it is with cotton."^37 Accurately pointing to the immense capital expenditure required for effective cane farming, Moses Liddell understandably complained that the comparatively high cost of sugar implements stood in distinct contrast to the cotton South where machinery expenditure remained low.

The immediate question as to whether an increasing investment in machinery yielded a comparably improved sugar yield remains unanswered. The following figures suggest that a statistically strong relationship exists between the cash value of farm implements and hogsheads of sugar produced. Figure 4.4 plots all 412 data points representing every sugar producer, regardless of size, in St. Mary and Ascension Parishes for 1850 and 1860 in a scatter graph. The figure initially suggests that when the cash value of implements (CVI) increased over approximately $3,500, which was significantly the price of a good second-hand steam powered mill, the farmer might expect moderately decreasing returns in hogsheads of sugar produced. The apparently close relationship between the value of farm implements and sugar production appears confirmed by the

^37 Moses Liddell to John R. Liddell, 6 September 1846, Liddell Papers, LSU.
Figure 4.4. Value of Farm Implements to Sugar Production.
Pearson correlation coefficient of 0.751. Considering the myriad of factors that shaped sugar production on each estate, this correlation coefficient strongly indicates the close relationship between investment in machinery and increased sugar production. The trend toward implement investment and increased sugar production, marked by the regression curve, suggests that medium sized planters could expect a conspicuous improvement in the volume of sugar produced for every additional dollar spent on farm implements and processing machinery. While the regression line indicates that a linear relationship existed between CVI and sugar production when investment in machinery remained under $20,000, the curve additionally suggests that after expending $50,000 on processing equipment, the largest sugar masters would not significantly increase their sugar yields. Ultimately, vast investment in machinery and farm implements proved economically inefficient while disbursement at the comparatively lower sums assured a sizeable increase in yield for every $1,000 invested in machinery.

Although Figure 4.4 presents a comprehensive picture for the Ascension and St. Mary Parish sugar industries during 1850 and 1860, the graph universalizes the relationship between investment in implements and sugar yield. Figures 4.5 and 4.6, however, exhibit the two-tier nature of Louisiana sugar production in 1860 and
demonstrate the marked differences between the Attakapas and Mississippi River estates. Figure 4.5 plots the very strong linear relationship between investment in machinery and hogsheads produced on thirty-six sugar estates in Ascension Parish. With a Pearson correlation coefficient of 0.939, the regression line plots an almost perfect relationship between the rising value of implements and increased sugar production. In contrast, Figure 4.6 exhibits the data for 152 cane cultivating farms in St. Mary Parish. The regression line suggests that while there is a strong relationship between CVI and hogsheads produced, it is a much weaker relationship than in Ascension Parish where planters employed more advanced machinery. Although correlation coefficients do not imply causation, it appears reasonable to conclude that in the more technologically advanced Ascension Parish, where investment per farm remained greater than in the Attakapas, the greater capacity of each mill provided the planter with ample opportunity to increase his production. This view parallels Mark Schmitz's conclusion that the key to plantation expansion lay in the use of powerful steam engines that possessed the satisfactory strength to grind increasingly large crops. Breaking the technological bottle-neck to enlarged production, the steam engine had

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Figure 4.5: Value of Farm Implements to Sugar Production, Ascension Parish, 1860.
Figure 4.6. Value of Farm Implements to Sugar Production, St. Mary Parish, 1860.
both an "excess-capacity for expansion" and was wholly compatible with vacuum pans and other advanced equipment.

Equipped with steam engines that expanded the grinding capacity of the mills, the planters could ultimately augment their operations, confident that their machinery would rapidly and efficiently mill the crop before the first killing frosts. In contrast to St. Mary Parish where both steam and horse powered mills co-existed throughout the antebellum era, the Ascension sugar masters operated an industry marked by technological investment and large field holdings. Since they possessed the fields and machinery to expand their plantations and boost production, the Ascension sugar masters found themselves more capable than their brethren in the West to expand their farms and increase their yield of sugar. This technological advantage, consequently, partly explains the relatively high correlation between the cash value of implements and hogsheads produced in Ascension Parish.

Tables 4.4 and 4.5 expand on the microeconomics of the sugar plantation and suggest that on the very largest estates with over fifty slaves, planters in both Ascension and St. Mary Parishes cultivated approximately the same quantity of land per worker and invested similar sums in farm implements and machinery. Table 4.4 registers the mean and median populations for both slaves and field workers on 114 large sugar plantations in Ascension and St.
Mary Parish in 1860. The slight size advantage Ascension Parish estates maintained in raw and adjusted population significantly diminishes in Table 4.5 where the number of improved acres and the cash value of implements per worker remained largely equal on large sugar estates.

Table 4.4. Raw and Adjusted Slave Population on Large Sugar Estates in Ascension and St. Mary Parish, 1860.

<table>
<thead>
<tr>
<th></th>
<th>Raw Population of Slaves</th>
<th>Adjusted Population of Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Mean)</td>
<td>(Mean)</td>
</tr>
<tr>
<td>Ascension Parish</td>
<td>186.43</td>
<td>133.67</td>
</tr>
<tr>
<td>1860</td>
<td>(Median) 129.00</td>
<td>(Median) 78.67</td>
</tr>
<tr>
<td>St. Mary Parish</td>
<td>105.71</td>
<td>64.50</td>
</tr>
<tr>
<td>1860</td>
<td>(Median) 90.00</td>
<td>(Median) 54.90</td>
</tr>
</tbody>
</table>

The enormous disparity between the sugar country and the cotton South, nevertheless, appears particularly marked in Table 4.5 as Gavin Wright contends that farmers in the Northwest cultivated 43 improved acres while slaves in the cotton South tilled 25 improved acres per worker. Clearly distinct, cane farmers and their slave gangs cultivated between nine and ten acres per hand. While the comparatively low figure for sugar might initially appear

\[^{39}\]Like Heywood Fleisig and Gavin Wright, I used a conversion rate of 0.39 to convert the raw slave population into an adjusted population of prime field hand workers. See, Wright, Political Economy of the Cotton South, 52.

\[^{40}\]Database from Joseph Karl Menn, The Large Slaveholders of Louisiana-1860 (New Orleans: Pelican Publishing, 1964), 121-124, 380-389. All estates listed owned a minimum of 50 slaves and produced sugar as their primary crop.
as an indictment of less efficient cane farming, it remains crucial to underscore that the intensive tillage and cutting requirements of sugar exerted a limit on the number of acres that a slave could plant, cultivate, and harvest.

Table 4.5. Improved Acres and Value of Implements Per Worker, Ascension and St. Mary Parish, 1860.41

<table>
<thead>
<tr>
<th></th>
<th>Improved Acres Per Worker</th>
<th>Value of Implements Per Worker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascension Parish</td>
<td>(Mean) 10.75 (Median) 11.12</td>
<td>(Mean) $193.36 (Median) $179.81</td>
</tr>
<tr>
<td>1860</td>
<td></td>
<td></td>
</tr>
<tr>
<td>St. Mary Parish</td>
<td>(Mean) 9.81 (Median) 9.18</td>
<td>(Mean) $195.06 (Median) $178.18</td>
</tr>
<tr>
<td>1860</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Writing on the dynamics of antebellum cotton cultivation, Gavin Wright and Carville Earle differ profoundly over the upper-bound to cotton farming. Wright, in The Political Economy of the Cotton South, contends that the capacity of the slaves to pick cotton represented a labor constraint that checked the expansion of farm operations.42 In his attempt to challenge Wright's hypothesis, Earle suggests that rather than focusing on constraints to output, such as picking capacity, the true

41Ibid.

limit to cotton planting lay in tillage capacity. To establish the picking capacity of a single working slave, Earle calculated the length of the harvest season multiplied by the picking rate of a single worker before dividing the sum by cotton yields per acre. This calculation convinced Earle that a planter in the cotton South could expect each working slave to pick between 17 and 20 acres during an 85-day picking season.

Despite the mass of plantation data on the sugar country, it remains almost impossible to know how many acres of cane land each slave worker could harvest during the six week to two month long grinding season. Contemporaries, such as Valcour Aime, not infrequently estimated that the average yield of sugar per hand in the late 1840s varied between 5 and 8 hogsheads of sugar, but few determined the actual number of acres a slave could harvest. The distinguished agricultural historian Lewis Cecil Gray maintained that a marked improvement occurred throughout the first half of the nineteenth century, as the number of acres cultivated per hand rose from approximately 2 acres in 1802 to 3.5 in 1822 but finally climbed to 5 acres by the latter years of the antebellum period. To perfect these figures still further and establish a sugar


Ibid., 34-35.

production rate per hand, Earle's model on cotton picking proves highly valuable as a schematic base for estimating daily production rates on large sugar plantations in Ascension Parish.\(^7\)

The length of the grinding season serves as the first of three variables in defining the production capacity and rate per hand.\(^8\) Although varying in duration, the harvest season in south Louisiana normally lasted six weeks to two months. Measured between 42 and 56 days, the harvest season should be reduced by 20 percent to account for the rain showers and inclement weather that threatened to bring the rolling season to a halt. After reducing the harvest by 20 percent, the rolling season on most estates lasted between 34 and 45 days.\(^9\)

The second variable in calculating mean production per hand lies in the production rate per worker. On the 29 Ascension Parish estates used in this present study, I divided the total number of hogsheads produced by the number of workers on each plantation. This simple calculation, when averaged through all estates studied,


\(^{8}\)For an expansion of this model, see Earle, "The Price of Precocity," 33-35.

\(^{9}\)Database from Menn, *The Large Slaveholders of Louisiana-1860*, 121-124. All estates listed owned a minimum of 50 slaves and produced sugar as their primary crop.
yielded a mean production rate of 4.5 hogsheads of sugar per adult worker. During the short six-week-long grinding season, each slave labored to produce 133 lbs. of sugar per day, though during the longer eight week season, this average dipped to 100 lbs. In essence, each slave produced approximately 10 to 13 percent of a hogshead of sugar per day during the grinding season. This conclusion confirms Valcour Aime's judgment that slave workers could cultivate and harvest approximately five hogsheads of sugar per annum.

As the third variable, sugar yields per acre establish the maximum number of acres a sugar cane worker could cultivate and harvest. One of the central problems in using the United States Census as a data source is that census enumerators failed to record the land-use for every plantation they visited. As a result, the number of improved acres on a farm often proves quite illusory as a gauge for agricultural land-use and as an indicator of the predominance of one crop. Despite the difficulty in defining land-use from the Census, Mark Schmitz calculated that sugar farmers planted approximately 60 percent of all their improved acreage with cane.\(^{50}\) With the other 40 percent of their cultivable land, the Louisiana sugar masters, Schmitz continues, clearly pursued a policy of

\(^{50}\)Mark Schmitz, "Farm Interdependence in the Antebellum Sugar Sector," *Agricultural History* 52 (January 1978): 102.
agricultural self-sufficiency by planting corn, provisions, and fodder, while also maintaining adequate land for sugar production. Dividing the sugar production on every estate by 60 percent of its improved acreage established that planters could expect to produce 0.68 hogsheads to every improved acre sown with cane. This figure serves as the third variable and as the denominator in establishing the production capacity or the maximum number of acres a sugar worker could harvest during the grinding season.

After dividing the production rate per worker of 4.5 hogsheads by 0.68, the value of sugar production per improved acre, the resulting 6.6 acres represents the production capacity on 29 large Ascension Parish estates. During the six-week grinding season, each hand consequently

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produced almost one-twentieth of an acre of sugar per day, or about 133 lbs. of sugar for each day of the grinding season. These production rates vary significantly from cotton where a single worker could pick between 17 to 20 acres during the course of the cotton harvest. The low sugar harvesting figures indicate that both cultivating and cutting cane proved a labor-intensive task that profoundly shaped the microeconomics and the potential expansion of the Louisiana sugar estates.

Cognizant of the pressing need to harvest their crop as quickly as possible and the labor-intensive work required of their field-hands, sugar planters found their potential acreage limited by the amount that their slave crews could harvest before the first killing frosts. As with Wright's description of the cotton South, the ultimate limit to plantation expansion lay with the picking or production capacity of the slave crews. Unlike cotton, however, sugar included a climatic constraint that squeezed the harvest season into a brief six-week spell when the planter would play a desperate waiting game before the temperatures fell and the crop fatally froze on the ground. Aware that rented labor proved uneconomical for long-term expansion and that labor-force expansion remained costly, the sugar masters wisely pursued an ecological and labor

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conscious agronomy that carefully accounted for both labor and climatic constraints to cultivation.\textsuperscript{52}

In his perceptive analysis of the cotton South, Gavin Wright found that although "the capitalization of large plantations . . . was many times that of small farms, it is not true that the plantations were either capital-intensive or land-intensive, relatively speaking."\textsuperscript{53} Wright's conclusions, however, require modification for the sugar country where medium to large sugar plantations possessed a very high ratio of improved acres to each worker, indicating land-intensive cultivation. While Table 4.5 displayed that the mean number of improved acres per worker varied between 10.75 acres in Ascension Parish and 9.81 in St. Mary Parish, Table 4.6 presents the same data after sub-division according to size of slave-holding. On sugar estates where the sum of workers remained between 51 and 100, the number of cultivated acres peaked at 12.91 in Ascension and at 10.05 in St. Mary Parish. In contrast, large plantations with between 201 and 300 laborers farmed 67 percent less land than their smaller competitors. This pattern of declining land use per worker on larger estates partly confirms Robert Fogel's argument that moderate sized

\textsuperscript{52}See chapter 5 for a full discussion of slave rental and the dynamics of labor supply to the Louisiana sugar country.

\textsuperscript{53}Wright, \textit{Political Economy of the Cotton South}, 51.
plantations had a slightly higher productivity rate than the very largest estates.⁵⁴

Table 4.6. Improved Acreage Per Worker, Ascension and St. Mary Parish, 1860.⁵⁵

<table>
<thead>
<tr>
<th>Size of Slave Holding</th>
<th>0-50</th>
<th>51-100</th>
<th>101-200</th>
<th>201-300</th>
<th>301+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascension 1860</td>
<td>11.07 Acres</td>
<td>12.91 Acres</td>
<td>11.30 Acres</td>
<td>7.71 Acres</td>
<td>9.20 Acres</td>
</tr>
<tr>
<td>St. Mary 1860</td>
<td>9.82 Acres</td>
<td>10.05 Acres</td>
<td>9.29 Acres</td>
<td>6.75 Acres</td>
<td>7.25 Acres</td>
</tr>
</tbody>
</table>

Fogel, like Gavin Wright, however, argues that peak productivity occurred on those plantations with less than fifty slaves.⁵⁶ When applied to the sugar country, this conclusion proves a little misleading as the maximum number of acres cultivated per hand reached its apex on estates with between 51 and 100 slaves. Above this figure, the supervisory role of the overseer declined and ultimately assured that the volume of acres worked per hand decreased on larger estates.⁵⁷


⁵⁵Database from Menn, The Large Slaveholders of Louisiana-1860, 121-124, 380-389. All estates listed owned a minimum of 50 slaves and produced sugar as their primary crop.

⁵⁶Wright, Political Economy of the Cotton South, 53.

⁵⁷I explore this topic in detail in chapter 6.
While scale seemed to benefit the medium sized sugar plantation in acres cultivated per hand, the larger estates differed considerably from cotton plantations and from the antebellum North where capital and machinery investment remained highest on those estates with few workers. In the cotton belt, for instance, the largest slave plantations used 30 percent less equipment per worker than small farms in the South. If small cotton plantations proved relatively more capital intensive than their larger competitors, the reverse appears true in Ascension Parish, where the mean investment in machinery per worker increased dramatically. Presented in Table 4.7, increasing technological investment per hand indicates the disparate dynamics of mechanization in Ascension and St. Mary Parish. Two clearly defined patterns emerge with a rapid increase in investment on Mississippi River estates where large planters purchased modern machinery and consequently escalated their capital investment per worker. The reverse, however, occurred in the more traditional Attakapas sugar industry, where most planters, irrespective of size, remained wedded to older, simpler, and cheaper methods of sugar production. Such a pattern of technological conservatism, ultimately explains why capital investment in farm machinery per worker remained constant in St. Mary Parish.

^56Wright, Political Economy of the Cotton South, 51.
Table 4.7. Value of Farm Implements Per Worker, Ascension and St. Mary Parish, 1860.\textsuperscript{59}

<table>
<thead>
<tr>
<th>Size of Slave Holding</th>
<th>0-50</th>
<th>51-100</th>
<th>101-200</th>
<th>201-300</th>
<th>301+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascension 1860</td>
<td>$119.60</td>
<td>$213.32</td>
<td>$192.81</td>
<td>$271.89</td>
<td>$312.29</td>
</tr>
<tr>
<td>St. Mary 1860</td>
<td>$194.38</td>
<td>$194.90</td>
<td>$189.28</td>
<td>$152.48</td>
<td></td>
</tr>
</tbody>
</table>

Declaring that the intensive use of farm implements in Northern agriculture "fulfilled a function for which slavery was a direct substitute," Wright contends that on slave plantations little reason existed to adopt machinery when more intensive labor sufficed for a long-term increase in acreage and farm productivity.\textsuperscript{60} While Wright's description accurately accounts for the microeconomics of cotton farming, it appears as a less satisfactory explanation to the capital intensive sugar industry where rising machine investment proved the hand-maiden to economic progress and increasing production.

In his definition of 'industrial revolution', N.F.R. Crafts writes that "a period of accelerated structural change," marked the nineteenth century, "involving a rapid

\textsuperscript{59} Database from Menn, The Large Slaveholders of Louisiana-1860, 121-124, 380-389. All estates listed owned a minimum of 50 slaves and produced sugar as their primary crop.

\textsuperscript{60} Wright, Political Economy of the Cotton South, 55.
rise in industrial output . . . based on major technical innovations." Although Craft's description served only to describe the transformation of the English cotton textile industry, his characterization of economic change as a product of structural transformation and technological innovation remains pertinent to the nineteenth century American South. Sharing a commitment to the centrality of technology in economic development, the Louisiana sugar masters clearly understood the value of mechanization and the central role of the steam engine in defining improved sugar production. Technically acquisitive yet consistently aware of the climatic risks and immense costs inherent in sugar production, the antebellum sugar planters marched into the second half of the nineteenth century with an industry that advanced at dual speed. At the vanguard of this economic transformation stood the Ascension Parish sugar masters, a class of men who embraced the latest capital intensive machinery in their quest to produce the whitest and purest sugar possible. With both strength and capital, these sugar planters dominated an industry marked by its reliance on steam power, vast agricultural estates, 

large slave crews, and sizeable crops. To the West, however, lay the slow winding bayous of the Attakapas, a region characterized by horse powered sugar mills, smaller estates, reduced farm capital, and modest cane crops. Slowly adapting to the new and improved methods of sugar production, St. Mary Parish planters entered the 1850s with a parochial and traditional sugar industry that shared more in common with the eighteenth century than it did with the nineteenth. In the space of a decade, however, the Attakapas started upon the road of economic take-off and by the onset of the Civil War, the St. Mary Parish sugar masters advocated steam technology and agricultural improvement. Although the western sugar planters advanced a relatively slower pace than their compatriots in Ascension Parish, they nonetheless found that the route to economic take-off in the 1850s required capital, steam, and acreage expansion.

The key to economic expansion lay with the increased use of technology. Twenty years ago, Eugene Genovese and Gavin Wright declared that the region's relative economic underdevelopment rested upon the single-minded opposition southern farmers held against technological progress. In agricultural inventions, however, Louisiana mechanics and planters achieved signal successes where they designed and

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subsequently popularized a number of key technological developments in the sugar industry. In south Louisiana, the demand, and ultimately the market, for technology expanded dramatically in the 1840s and 1850s as most large estates shifted from horse to steam power.

This technological transformation stimulated a wave of invention and improvement in sugar machinery as planters, inventors, and mechanics increasingly sought to produce improved and cheaper sugar. This market stimulus combined with an increasing willingness on the behalf of the planters to experiment with technology and learn from their collective experience. Frequently termed the "Horndal..."


On the concept of demand as the key to economic innovation, see Jacob Schmookler, Patents, Invention, and Economic Change (Cambridge, Mass.: Harvard University Press, 1972), 70-84; David Landes, The Unbounded Prometheus: Technological Change and Industrial Development in Western Europe from 1750 to the Present (Cambridge: Cambridge University Press, 1969), chapter 2 and 3. David Mowery and Nathan Rosenberg offer a more holistic interpretation to inventiveness by contending that "the process of technical innovation has to be conceived as an ongoing search activity that is shaped and structured not only by economic forces that reflect cost considerations and resource endowments but also by the present state of technological knowledge, and by consumer demand for different categories of products and services. Successful technological innovation is a process of simultaneously coupling at the technological and economic levels-of drawing on the present state of technological knowledge and projecting it in a direction that brings about a coupling..."
effect," the economic implications of "learning by doing" proved seminal in the inventive activity of Louisianans who improved upon earlier techniques of sugar manufacturing and furnace construction.\(^5\) However, the imitative nature of early inventions should not deprecate the achievements of the Louisiana sugar masters who played a central role in modernizing their industry.\(^6\)

From issuing the first patent in 1790, the United States Patent Office grew dramatically in scale and scope as the number of patents increased quickly during the early nineteenth century. In 1840, President Martin Van Buren's administration granted 477 patents, but by the eve of Abraham Lincoln's election, the Commissioner of Patents issued over 4,500 registrations of new and novel technological ideas. The pace of innovation, consequently, \(^6\)

\(^6\) (...continued)


\(^6\) On the concept of "emulation" and technological improvement within existing industries, see Brooke Hindle, Emulation and Invention (New York: W.W. Norton, 1981), especially chapter 6.
multiplied by fourfold in the 1850s as inventors and mechanics increasingly sent their latest designs to the patent offices in Washington. In the sugar industry, a similar transformation occurred to patent activity as the total number of inventions increased during the latter antebellum decades. Figure 4.7 illustrates the rising number of inventions by plotting the total number of patents granted for sugar machinery between 1828 and 1860. While the numbers remain relatively low in the 1830s, a marked increase occurs in the 1840s when the average number of patents issued increases to between 4 and 5 a year. Of these patents, the share of Louisiana patent holders remains fairly constant until the late 1850s, when Louisiana inventors play an increasingly important role in patented innovation. The increased diffusion of the steam engine undoubtedly played a significant role in the rising number of patents as planters and inventors both adapted and improved the steam engine to meet a variety of tasks in the sugar house. By 1838, Louisiana possessed 274 stationary steam engines, assuring that the state lagged

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Figure 4.7. Total Patents Issued for Sugar Machinery and Contribution by Louisiana Patent Holders, 1828-1860.
behind only Pennsylvania in the total number of engines and behind no state in the total volume of horse power.\textsuperscript{70}

Although some planters procured their engines from Cincinnati, Pittsburgh, and Louisville in the Ohio river valley, others purchased their steam engines from large foundries and machine shops in the industrializing Northeast. Ultimately, these steam engines underpinned the technological transformation of the cane industry and profoundly shaped the dynamics of patent issuing in Louisiana.\textsuperscript{71}

While Louisianans failed to make a significant contribution to the technological development of the steam engine, they excelled in two areas of applied science where they could use their experience as planters and sugar makers to the optimum success. In the field of sugar making and manufacturing techniques, inventors residing along the Mississippi river produced 55 of the 181 patents issued for sugar manufacturing and refining. Of these


\textsuperscript{71}Pursell, \textit{Early Stationary Steam Engines}, 73-74.
patents, Louisiana inventors proved particularly important in the development of sugar boilers in the mid 1840s, sugar juice evaporators in the 1850s, and in the evolution of improved sugar making techniques. Singular among these individuals stands Norbert Rillieux who assisted in the transformation of the sugar industry from its reliance on primitive open kettle sugar making to its scientific use of vacuum pans and multiple effect evaporators. Located in New Orleans though practicing his trade on Theodore Packwood's Myrtle Grove Plantation, Rillieux joined fellow Louisiana inventors in improving the technological condition of the industry.

While Louisianans made a significant contribution to innovation in sugar manufacturing, their greatest


accomplishment lay in designing and building bagasse furnaces. By the mid 1850s, most sugar plantations in Louisiana had produced large crops of sugar for twenty years. Early steam engines, however, proved voracious in their appetite for wood and by the last decade of the antebellum era, planters required an alternative power source for their steam engines. Although some experimented with coal, most turned to burning bagasse as a fuel.  

After milling, compressed cane shoots are known as bagasse, and in the 1850s, planters found that these dried and spent canes could replace the dwindling timber reserves as the primary fuel for the industrializing sugar mill. At the van of the bagasse revolution stood James H. Dakin, a Baton Rouge sugar planter, who invented a machine for drying bagasse and converting it into a cheap and readily available fuel that could fire the sugar mills.  

The necessity of using bagasse as a fuel, *De Bow's Review* explained, proved increasingly important as "wood is daily becoming more scarce, and, in many cases on plantations fronting the Mississippi river . . . not a cord is to be obtained." With the extreme risk facing the antebellum sugar masters of running short of wood during the critical  

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75On the use of coal, see *New Orleans Weekly Delta*, 23 December 1850 reprinted in *De Bow's Review* 13 (December 1852): 624-626. The central problem with coal, however, lay in the instability of supply and its relatively expensive price of $1 per barrel.

76*Planter's Banner* (Franklin), 6 December 1849.
grinding season, planters and inventors increasingly turned to drying bagasse as the primary fuel on the sugar estates.\textsuperscript{77}

Utilizing Dakin's patent bagasse-drying machine, planters increasingly found that neighboring sugar masters and inventors improved upon Dakin's design and by 1860, a range of bagasse furnaces and drying machines supplied the industry's need for an alternative fuel source. Perhaps most significantly, the drive and technological thrust to the bagasse revolution lay in south Louisiana where all patent holders for bagasse furnaces resided from 1845 to 1860. While some inventors like A.J. Chapman resided on Bayou Goula in Iberville parish, others such as Evan Skelly who designed the patent Star Bagasse Furnace resided near Plaquemine.\textsuperscript{78} These rural engineers combined with local mechanics in New Orleans, such as Samuel Gillman, to transform the nature of the sugar industry in the 1850s.\textsuperscript{79} Although not all planters needed to use the latest technology, most of the large sugar masters constructed bagasse burners on their estates, where they could quickly transform the spent canes into a valuable fuel. Editor William Bradburn studied the effectiveness of the Star

\begin{footnotes}
\textsuperscript{77}De Bow's Review 8 (April 1850): 401-402.
\textsuperscript{78}Gazette and Sentinel (Plaquemine), 20 November 1858; Ibid., 5 December 1857.
\textsuperscript{79}Weekly Comet (Baton Rouge), 30 March 1856.
\end{footnotes}
Bagasse Furnace on his visit to Benjamin Deblieux's estate on Bayou Jacob. Describing the furnace in great detail, Bradburn marvelled at the quality of the furnace which burned so effectively as to keep the sugar kettles at full blast throughout his visit. On Raceland Plantation, Abraham Hager and Youngs Allyn similarly constructed their patent bagasse furnace for a planter who proudly stated that his new furnace "has been a decided improvement and in fact has exceeded my most sanguine expectations." Such optimism, however, could not match the effusive praise sugar masters warmly expressed for Moses Thompson's Bagasse Burner. Specially designed in New York to burn both wet and dry bagasse, Thompson's design found initial use on Nineteen Mile Point Plantation, where *De Bow's Review* reported that "green bagasse is freely burnt without the aid of wood or blowers, furnishing sufficient steam for running the engine and other purposes." Subsequently tested by William Stackhouse, John White, Seth Trufant, and Charles Neames, Thompson's bagasse burner found reasonably wide-spread use among the largest planters who could afford to purchase the new machinery. William F. Weeks characteristically invested in the latest technology by purchasing the patent right to use Thompson's furnace for

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60. *Southern Sentinel* (Plaquemine), 5 December 1857.
Like his brethren sugar masters, Weeks clearly understood the value and economy of the bagasse burner in the late antebellum sugar economy.

In the field of sugar production, a technological revolution occurred during the first half of the nineteenth century that systematically transformed the nature of the industry. In a letter describing his adopted home in St. Mary Parish, Joseph Lyman wrote his grandfather in March 1831 to report on agrarian developments on Bayou Teche. The Attakapas, Lyman noted, "is one immense flat surface, intersected by bayous running in every direction and bearing on its surface, almost every vegetable." Eager to recount the physical attributes of the Teche country, Lyman added that "the soil is entirely alluvial and very productive [producing] sugar cane, corn, sweet potatoes, melons, and most articles in the gardening line." Turning to the condition of the sugar industry, Lyman explained that after plowing a shallow furrow, farmers cultivated cane largely as they would corn. During the grinding season, Lyman continued, Attakapas planters utilized primitive sugar mills that appeared closer in design to a cider mill than to an industrial or processing plant. Equipped with three relatively simple rollers and powered by the plodding pace of a horse, the early mill

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81 Patent License, 10 April 1855, Weeks (David and Family) Papers, LSU.
remained simplistic and labor intensive as a slave stood guard individually feeding the cane shoots in to the revolving cylinders. Extracting only a portion of the available cane juice, the early sugar mill remained technically wedded to the pre-industrial age. Further in his description of the Attakapas sugar industry, Lyman observed that most sugar houses used four large iron kettles for boiling and evaporating the crop. Once the cane juice reached "striking point" and began to granulate, a task that "is generally taken every hour," slaves transported the syrup to coolers before finally packing the hopefully dry sugar into wooden hogsheads.84

Rudimentary and technologically simplistic, Lyman's account of sugar making in the Attakapas reflected an industry that remained bound to the time-worn traditions of the seventeenth and eighteenth centuries.85 Thirty years

84 Joseph Lyman Letter, UNC.


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later, however, visitors to the cane country remarked on an industry that combined science, technology, and a level of industrialization that compared strikingly with Lyman's description of the Attakapas in the 1830s. Frederick Law Olmsted observed on a trip to Governor André Roman's plantation in St. James Parish.

The apparatus used upon the better class of plantations is very admirable, and improvements are yearly being made, which indicate high scientific acquirements, and much mechanical ingenuity on the part of the inventors. The whole process of sugar manufacturing . . . has been within a few years greatly improved, principally by reason of the experiments and discoveries of the French chemists, whose labors have been directed by the purpose to lessen the cost of beet-sugar. Apparatus for various processes in the manufacture, which they have invented or recommended, has been improved, and brought into practical operation on a large scale, the owners of which are among the most intelligent, enterprising, and wealthy men of business in the United States.\(^5\)

While Roman's manufacturing facilities clearly delighted Olmsted, large sugar houses throughout the state proved similarly impressive. Solon Robinson, for instance, on his visit to Madewood Plantation on Bayou Lafourche observed that Thomas Pugh utilized efficient labor saving machinery in his sugar house. Equipped with an "extensive cane shed" that measured 40 by 340 feet, Pugh brought the freshly cut cane to the mill on a small iron railroad that

\(^{5}(...continued)\)


arrived at sugar house door before dropping their load onto the cane carrier. From the carrier, conveyor belts transported the cane shoots to the mill for grinding. Keen to utilize the bagasse as a fuel, Pugh stationed additional carts at the base of the mill that would catch the crushed canes as they fell from the mill. The cane juice, Robinson observed, "runs to the vats . . . and thence to the kettles; thence to the coolers, and from there the sugar is carried upon railroad cars along lines of rails between the rows of hogsheads to the farther end of the building." While Pugh clearly favored mechanization and assembly line production on his Madewood estate, others similarly strove to establish the latest technology and build railroads on their estates. Samuel Tillotson, for instance, spent $2,500 on building a cedar railroad from his sugar house to the Mississippi River where he built a small depot for storing sugar and goods until the steamboats passed to carry his goods to market. This commitment to mechanization profoundly marked the latter antebellum industry and distinguished it from earlier decades when simplistic methods and well-worn traditions dictated the grinding season.

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88 Ibid., 162.
When the first planters began sugar production at the turn of the nineteenth century, sugar mills remained fairly crude machines that utilized two or three vertical rollers that cattle or oxen powered. The slaves' task was simply to feed the cane through the turning rollers, collect the cane juice, and transport the liquid to the kettles for evaporation and granulation. In 1822, however, the first steam mills emerged on the sugar plantations and in the thirty years following their introduction, the number of steam facilities increased in all areas of the sugar country. Through the exertion of constant pressure, steam mills not only increased the volume of juice extracted from each cane, but, additionally, they raised the speed of milling and grinding the sugar.

After milling the canes and obtaining the juice, the second stage in sugar production lay with filtration and clarification. On many plantations, sugar planters simply boiled the sugar in four or six iron kettles. The first of these kettles, known as the grande, served as the

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primary pan for evaporating the cane juice. Once the liquid sugar boiled, a skilled slave or sugar maker would add lime to the juice causing the impurities to rise into a scum that a worker would then skim off. Transferring this liquid into the next kettle, slaves would tend over the boiling mixture until it reached the final kettle, the battery, where a sugar maker would stand guard and watch over the liquid until it reached the proper consistency for granulating. At the point of granulation, or the strike, the early sugar maker thrust a copper spoon into the battery and "lifted it into the air [to see] if the syrup is so thick that it covers the spoon in a thick pellicle, and drains from it slowly, presenting at the same time a grained appearance."\textsuperscript{93} Timing, needless to say, proved crucial in sugar making as juice removed too early would seldom granulate, while over boiling usually resulted in a scorched or burnt product. The next stage in sugar production included transferring the clarified sugar into wooden vats, known as coolers, where the sugar would crystallize over the course of twenty-four hours. This sugar was then packed into large wooden hogsheads with holes in the base and allowed to drain until all the molasses separated from the brown crystalline sugar. In this condition, planters then shipped the sealed hogshead to market.

\textsuperscript{93} Southern Agriculturist 7 (July 1834): 358.
By the late antebellum era, the demand for improved sugar and a whiter article required a dramatic shift in the technology of sugar production and in all methods of evaporation and clarification. In his detailed account of these technological changes, John Heitmann stresses the central role of French scientists in shaping the technological revolution of the sugar industry. Keen to experiment with the latest French inventions and scientific methods, a number of leading planters lead by Judah P. Benjamin, embraced science as the route to increased profits and improved sugar. Benjamin, in particular, proved extremely anxious to experiment with the vacuum processing of sugar where sealed vacuum pans no longer utilized the direct heat of a furnace, but rather, the heat generated by the exhaust of a steam engine. Although the first vacuum pans in Louisiana emerged in the 1830s, it remained to Norbert Rillieux to truly popularize vacuum evaporation. Patenting his multiple effect vacuum pan in 1843, Rillieux expanded upon contemporary steam boiler technology from the railroad industry and from Louis Charles Derosne and Jean-Francois Cail's vacuum pan that

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94 Heitmann, *Modernization of the Louisiana Sugar Industry*, see especially Chapter One.

additionally used latent heat to evaporate sugar.\footnote{Heitmann, Modernization of the Louisiana Sugar Industry, 36; Edward Koppeschar, Evaporation in the Cane and the Beet Sugar Factory: A Theoretical and Practical Treatise (London: Norman Rodger, 1914), 20-30.}

Rillieux's pan possessed a number of key technological advantages over the older and primitive method of boiling sugar in open kettles. First, the use of steam minimized the risk of scorching or discoloring the sugar, while assuring "large and brilliant crystals, resembling sugar candy."\footnote{J.D.B. De Bow, The Industrial Resources, Etc., of the Southern and Western States (3 vols., New Orleans: Offices of De Bow's Review, 1853), II: 206.} Second, vacuum pans maintained a lower average temperature than open kettles and by evaporating the sugar in a sealed unit, the quality and quantity of the final product surpassed the caliber of sugar made by all previous methods. "But the advantages of the vacuum pan do not end here," Judah Benjamin explained to De Bow's Review, "for it is an easy and simple matter, in using these pans, to give to the crystal or grain of the sugar any size required by the caprice of the customer."\footnote{Ibid., II: 206.}

In order to supply the increasing demand for quality white sugar, wealthy planters, such as Judah Benjamin, experimented with the Rillieux apparatus on their plantations. Benjamin, in particular, purchased one of Rillieux's facilities for use on his Bellechasse Plantation

\footnote{Ibid., II: 206.}
below New Orleans.\textsuperscript{99} Ever enthusiastic to experiment with improved technology, Benjamin formed a partnership with Theodore Packwood for the production of sugar under the Rillieux process. While Rillieux's machinery cost over $30,000, Benjamin's commitment to improved sugar extended to trans-Atlantic trips to France where the master of Bellechasse studied the latest techniques for evaporating and clarifying sugar. Armed with both technological and practical knowledge of the cane industry, Benjamin undertook to spread the gospel of improvement to fellow sugar planters in south Louisiana. Benjamin's experience and commitment evidently proved burdensome for both his wife, Natalie, and his partner Theodore Packwood whose spouse noted: "I never see them riding about the field together without trembling for the consequences. Mr. Benjamin can talk him into buying any newfangled pot or pan . . . and then Theodore has the worry of trying to make the thing work."\textsuperscript{100} Fortunately, Theodore Packwood possessed considerable skills as an engineer who labored to produce the finest results from the Rillieux apparatus.


\textsuperscript{100}Evans, \textit{Judah P. Benjamin}, 32.
In James De Bow's compendium volume on the *Industrial Resources of the Southern and Western States*, Benjamin calculated that for a large planter who produces approximately 500 hogsheads of sugar, the Rillieux apparatus would generate a profit of $14,531 every season over the open kettle method of production. In his enumeration of the benefits Rillieux's apparatus brought to sugar production, Benjamin noted that the larger planter could confidently expect to save at least one and a half cords of wood per hogshead, while obtaining 1.5 cents more for each pound of sugar produced. The final benefit, Benjamin listed, lay in the fact that the new vacuum system would produce 25 percent more sugar from the molasses than all other methods of extracting sucrose from the cane juice. In his own evaluation, Norbert Rillieux similarly concluded that while his apparatus might prove a little more expensive than double vacuum pans and open steam pans, the Rillieux apparatus would save enough wood every year to make it a more favorable long-term investment to the planter. While he advocated the vacuum process for sugar production, charcoal filtration of sugar, the use of Soleil's saccharometer in calculating the percentage of sugar in heated cane juice, and a host of chemical improvements to raise the percentage of sugar extracted

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102 *De Bow's Review* 5 (February 1848): 292-293.
from the cane, Benjamin encouraged readers of *De Bow's Review* to follow his example and apply science to sugar production.\textsuperscript{103} Evidently, Benjamin's improved methods proved highly successful as the Princeton chemist R.S. McCulloh reported to the United States Senate that the "crystalline grain and snowy whiteness" of Benjamin and Packwood's sugar "are equal to those of the best double-refined sugar of our northern refineries."\textsuperscript{104} Bellechasse sugar, McCulloh continued, proved "of absolute chemical purity, combined with perfection of crystal and color." Such a "proud triumph in the progress of the sugar industry," Professor McCulloh observed, stands as a notable achievement as "in the whole range of the chemical arts, I am not aware of another instance in which a perfect result is in like manner obtained immediately."\textsuperscript{105}

While *De Bow's Review* and other improvement minded publications surely assisted in the dissemination of

\textsuperscript{103}Ibid., 2 (November 1846): 322-325; Ibid., 5 (January 1848): 44-57; Ibid., 5 (April 1848): 357-364; *De Bow, Industrial Resources*, II: 195-213.

\textsuperscript{104}Report of the Secretary of the Treasury, 29th Congress, 2nd Session-Senate Doc. No. 209. "Investigations in Relation to Cane Sugar: A report of scientific investigations relative to the chemical nature of saccharine substances, and the art of manufacturing sugar; made under the direction of Professor A.D. Bache by Professor R.S. McCulloh," (Washington, D.C.: Ritchie and Heiss, 1847), 121.

scientific knowledge throughout the sugar country, the acid
test on the impact of technology in the Louisiana sugar
industry suggests that while a few very wealthy planters
experimented with vacuum pans, most medium sized operators
retained open kettles but used steam powered mills. In
particular, the Rillieux apparatus failed to attract more
than a handful of converts during the late 1840s and 1850s.
In 1849 Champomier calculated that only ten planters used
the Rillieux machinery, while a decade later, eighteen
planters possessed the triple pan evaporator on their
estates. Those planters who invested the $10,000 required
for Rillieux's apparatus all possessed major land and slave
holdings that produced a mean of 475 hogsheads, almost
three times more than the state average. Although Duncan
Kenner and William Barrow produced enormous crops of well
over 1000 hogsheads in 1859 with their Rillieux machinery,
most sugar masters found that the instability of sugar
cultivation and the unreliability of price made such high
capital investment a hazardous pursuit. William P.
Bradburn, editor of the Plaquemine Southern Sentinel,
underscored the difficulty of sugar production and the risk
of misfortune and adversity. As Bradburn announced:

In our countryside the people seem run mad upon
the culture of staple products . . . They turn the
farmers' life into that of a gambler and speculator.

Schmitz, "Economic Analysis of Antebellum Sugar
Plantations in Louisiana," 35; De Bow's Review 5 (March
1848): 286.
They are dependent upon chance, and an evil turn of the cards—a bad season, a fall in prices, or some such usual calamity. Is such the legitimate mode of practice laid down by reason for those who cultivate the earth?\footnote{107}

With the risk of bad weather and ill-fortune jeopardizing the success of every sugar estate, it appears quite logical that none save the very largest planters invested in Rillieux’s expensive vacuum machinery. Despite the disappointingly low number of planters who invested in Rillieux’s triple effect evaporator, Mark Schmitz concludes that the "share of output produced by non-open kettle plantations rose slowly but steadily during the antebellum period." By 1860, at least 65 estates producing 29,592 hogsheads of sugar evaporated their cane juice with vacuum pans and steam powered machinery.\footnote{108} By contrast, planters manufactured 86 percent of all sugar produced in 1860 with the open-kettle technique. These planters, however, were not mired in the muddy fields of technological inertia, for although they chose not to invest in vacuum pans, they mechanized their estates by investing in powerful steam engines that increased the speed of production and the volume of juice extracted from the canes.

\footnote{107}{Southern Sentinel (Plaquemine), 22 June 1850.}

THE SUGAR MASTERS: SLAVERY, ECONOMIC DEVELOPMENT, AND MODERNIZATION ON LOUISIANA SUGAR PLANTATIONS, 1820-1860
VOLUME II

A Dissertation
Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy in The Department of History

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CHAPTER 5

"NOTHING BUT SEVERELY WORKFUL": SLAVERY AND THE DYNAMICS OF LABOR SUPPLY ON THE LOUISIANA SUGAR PLANTATIONS

The Capitalistic economy of the present day is an immense cosmos into which the individual is born, and which presents itself to him . . . as an unalterable order of things in which he must live. It forces the individual, in so far as he is involved in the system of market relations, to conform to capitalistic rules of action.¹

Max Weber

Like Weber, Bennet H. Barrow of Highland Plantation believed that his estate conformed to market relations and the capitalist rules of action.² Counseling his wary overseers, Barrow observed:

A plantation might be considered a piece of machinery, to operate successfully, all of its parts should be uniform and exact, and the impelling force regular and steady; and the master, if he pretended at all to attend to his business, should be their impelling force . . . when a regular watch is established, each in turn performs his tour of duty, so that the most careless is at times, made to be observant and watchful—the very act of organizing a watch bespeaks a care and attention on the part of a master, which, has the due influence on the negro." Having turned to sugar cultivation in the early 1850s, Barrow's sound advice echoed throughout south Louisiana where similar management styles emerged on plantations and


farms throughout the sugar country. The paramount need for order and discipline on a sugar estate largely reflected the complex nature of sugar cultivation by the late antebellum period. One New Yorker remarked that the imposing sugar house on one plantation impressed him as "a brick and mortar edifice, suggestive of a New England factory, with its tall, smoky chimney, and mill-roll buzzing."* Reverend Robert Everest, the late chaplain to the East India Company, recalled that the Louisiana sugar mills reminded him of "the tall, brick chimneys of the sugar factories" that dotted the banks of the Nile, while Charles Lanman observed that "the factory-looking sugar houses with their towering chimneys" dominated the landscape.5 Within the mill, the industrialized and factory like pace of the sugar house thrilled and horrified visitors during the annual grinding season when the slaves toiled to granulate and manufacture dark and rich sugar. One correspondent for Harper's New Monthly Magazine vividly portrayed the grinding season to his readers:

Everything is hurry and bustle . . . The teams, the negroes, the vegetation, the very air, in fact, that has been for months dragging out a quiescent

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*A. Oatley Hall, The Manhattner in New Orleans; or Phases of "Crescent City" Life (New York: J.S. Redfield, Clinton Hall, 1851), 121.

existence ... now start as if touched by fire. The negro becomes supple, the mules throw up their heads and paw the earth with impatience, the sluggish air frolics in swift currents ... while the once silent sugar house is open, windows and doors. The carrier shed is full of children and women, the tall chimneys are belching out smoke, and the huge engine as if waking from a benumbing nap, has stretched out its long arms, given one long-drawn respiration, and is alive.

With the pace of life marching to the methodical beat of the steam engine, slaves and masters alike faced an arduous schedule where labor continued at a frenzied pace until the grinding season drew to a close. One English traveler noted that once grinding begins, torrid working conditions persevered "without intermission" until sugar-making ceased in late December. Solomon Northup, a slave who labored during the grinding season in St. Mary Parish, recorded that his fellow bondsmen worked at a punishing rhythm supplying the mill-house with cane brought "from the field as fast as it is cut." Enmeshed within a mechanical system of production, Northup, like his fellow slaves, labored at the metered pace of the industrial age. Hunton Love, a former slave on Bayou Lafourche, realized that labor discipline and order proved essential both in the mill-house and on the cane field. During the Civil War,

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7Mrs. Houstoun, Hesperos or Travels in the West (London: John W. Parker, 1850), 156.

8Solomon Northup ed. Sue Eakin and Joseph Logsdon, Twelve Years A Slave (Baton Rouge: Louisiana State University, 1968), 161.
Love assumed the overseership of one plantation and quickly imposed his own discipline and order with the crack of the whip. "I had to whip 'em," Love recalled, "I had to show 'em I was boss, or the plantation would be wrecked."

Astutely recognizing the need for order and regimen in efficient plantation management, Love's tactics were hardly novel in the sugar country. Solomon Northup, while working as a driver at William Turner's sugar house on Bayou Salé, similarly recorded that order and rigorous supervision facilitated sugar production. "From the time of the commencement of sugar making to the close," Northup remembered, "the grinding and boiling does not cease day or night. The whip was given to me with directions to use it upon anyone who was caught standing idle." In the hot and sticky conditions of the industrializing sugar mill, indolence and loafing evidently received swift punishment.

Ceceil George, a former slave in St. Bernard Parish, recalled the appalling laboring conditions on Dick Proctor's sugar estate. "Everybody worked, young an' ole, if yo' could carry two or three sugar cane yo' worked. Sunday, Monday, it all de same . . . it like a heathen part o' de country." Rebecca Fletcher concurred by remarking

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9Interview with Hunton Love (Date unknown), WPA Ex-Slave Narratives, LSU.

10Northup, Twelve Years A Slave, 148.

11Interview with Ceceil George (15 February 1940), WPA Ex-Slave Narratives, LSU.
that the unbending and ironclad nature of sugar work proved both exhausting and laborious. "The slaves," she observed, "go to the fiel befo daybre'k and didn't come home till after dark." Long working hours, however, yielded striking results that impressed both northern and foreign visitors alike. The "armies of negroes," that A.A. Parker observed in St. John the Baptist Parish proved particularly arresting as they advanced through the cane fields in almost military fashion "cutting and transporting cane to the mills." Parker, however, was not alone in noting the martial order that appeared to dominate the sugar fields of south Louisiana. Francis and Theresa Pulszky similarly remarked on the military appearance of the slaves and overseers on one plantation in Orleans Parish. Homer, the slave overseer who branded a whip in one hand as he guided these Hungarian visitors through the labyrinthine maze of sugar fields, reminded the Pulszkys of those who wielded the stick with apparently equal ease in the Austrian and Russian armies.

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12 Interview with Rebecca Fletcher (20 August 1940 to 24 September 1940), WPA Ex-Slave Narratives, LSU.

13 A.A. Parker, *Trip to the West and Texas* (Concord, New Hampshire: White and Fisher, 1835), 188.

Ordered and disciplined by a class of plantation sergeants majors, slave labor proved highly effective on the sugar plantations. Cora Montgomery, while sojourning in south Louisiana, remarked that "the coast" between New Orleans and Baton Rouge "soon becomes radiant with verdure and beauty. The voices of busy men come from the fields . . . and every sight and sound is redolent of luxuriant fertility." While Montgomery surely romanticized the flourishing beauty of the sugar fields, she accurately observed the energetic and vigorous labors of the bondsmen as they toiled among the growing canes. The slaves, however, viewed their field labor in colder terms, wryly commenting that, "to them what work hour in, hour out, them sugar cane fields sure stretch from one end of the earth to the other." And stretch they surely did, for most visitors who journeyed through the sugar country commented on the immensity of the cane fields and the superiority of cultivation. Harriet Martineau, for instance, found the fields "level and rich-looking," while The London Times war correspondent, William Howard Russell observed that the carefully manicured cane fields appeared as "level as a billiard-table, [and] are of the brightest green with crops

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of maize and sugar." Thomas Low Nichols concurred that the cane fields lush color surpassed even the corn prairies of his native homeland in the North. Charles Lanman's enthusiasm for the "rank luxuriance" of the cane country led him to conclude that "certain portions of this region are compared, by their happy and sanguine people, to the paradise of the antediluvian world." Lanman's purple prose, however, fails to match Henry Lewis' lyrical description of the sugar country. Traveling downstream, past New Orleans, Lewis remarked that the plantation settlements "present to the traveler's eye the appearance of a small Eden." Impressed by "the extraordinary fertility of the soil" and the many fine sugar plantations he beheld, Lewis left south Louisiana astonished by the size, complexity, and proficiency of the sugar estates.

South Louisiana, however, proved to be far from paradise for those who toiled in the fields. Ceceil George eloquently articulated the African-American position when


\[\text{\textsuperscript{18}}\text{Thomas Low Nichols, }\textit{Forty Years of American Life, 1821-1861} (reprint, New York: Stackpole Sons, 1937, 123.

\[\text{\textsuperscript{19}}\text{Lanman, }\textit{Adventures In The Wilds of the United States}, 209.


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she bitterly noted, "we come to de mos' wicked country dat our God's son ever died for! De ole people used to cry-Dear Lawd, how dey grieved! Dey never thought dey'd have to live in a heathen country." Outraged and repulsed by laboring conditions that few thought idyllic, African-American slaves quickly inverted the biblical reference to Eden by describing their adopted home as "Ole debble Lousy Anna." The English visitor Francis Kemble Butler concurred, remarking that "the far more intolerable existence and harder labor of those employed on the sugar estates," produces "the effect of a lower circle in Dante's 'Hell of Horrors',' where the slave "seems to have reached the climax of infernal punishment."

Those who visited the sugar estates, however, soon realized that slave labor underpinned the entire plantation economy and staple production. The slaves, Thomas Nutall observed on a visit to Wade Hampton's Houmas plantation, were "the engines of their wealth," who amassed an immense fortune for the hard-driving South Carolinian that equaled

21Interview with Ceceil George (15 February 1940) WPA Ex-Slave Narratives, LSU.


"that of almost any English nobleman."\(^2^4\) Having arrived in New Orleans after a lengthy sojourn in Cuba, James Stirling similarly remarked that the Creole sugar master looked upon his slaves as "sugar machines."\(^2^5\) Others commented on the regimented and efficient nature of slave labor in the sugar parishes. Victor Tixier, for instance, observed that slave work was "well regulated" on the estates he visited in St. James Parish.\(^2^6\) A traveling planter from the French sugar island of Guadeloupe additionally registered his surprise at "the industry of the slaves, even when the overseer was away." Differing enormously from his native Caribbean, sugar cultivators in Louisiana, he noted, appeared "superior in the intelligence and skill manifested in both the cultivation and manufacturing of sugar."\(^2^7\) Although many visitors lauded the sugar planters for their improved husbandry and horticulture, most travelers in the cane country particularly remarked on the proficiency of slave labor. On a visit to Magnolia Plantation, a correspondent for the American Farmer marveled at the professionalism and

\(^2^4\)Thomas Nutall, A Journey of Travels into the Arkansa Territory, during the year 1819 (Philadelphia: Thomas H. Palmer, 1821), 239.

\(^2^5\)James Stirling, Letters From The Slave States (London: John W. Parker, 1857), 124.

\(^2^6\)John Francis McDermott, ed. Tixier's Travels on the Osage Prairies (Norman: University of Oklahoma Press, 1940), 47.

\(^2^7\)De Bow's Review 15 (December 1853): 648.
competency of the slave work-force. Examining both the fields and improvements on the estate, he noted that "all work is done with regularity, and in an efficient manner." Valcour Aime, a major sugar planter in St. James Parish, explained that the excellence of Louisiana production owed a great deal to "the superiority of our American negroes over ... newly imported African slaves." Cora Montgomery, a visitor to both the cane fields of Cuba and Louisiana, quickly rationalized slave labor as logical and necessary. "This whole region is so noxious to white constitutions," she added, that without slavery, "we should have to resign altogether the production of sugar and rice, until we have reared in starving poverty a Paria class of whites miserable enough to undertake it." Cognizant that sugar cultivation attracted few white laborers, Robert Russell stressed that where free labor existed, slave labor remained a preferable and more efficient labor system. "Free labour," he charged, "cannot compete, in the manufacture of sugar, with the better organized slave labour."  

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28 Southern Planter 17 (August 1857): 484.  
30 Montgomery, The Queen of Islands and King of Rivers, 35.  
31 Robert Russell, North America Its Agriculture and Climate: Containing Observations on the Agriculture and Climate of Canada, the United States, and the Island of (continued...)
Travelers to the sugar plantations during the grinding season found slave labor particularly impressive. Thomas Bangs Thorpe characteristically waxed lyrical in his account of the grinding season in *Harper's New Monthly Magazine*. "The negroes," he recounted, "suddenly rising in importance by the multifarious demands made upon them, seem to shine with an extra polish as they pursue their allotted tasks." \(^{32}\) Attakapas sugar planter F.D. Richardson similarly remarked on the harmony and efficient rhythm of slave labor on Bayou Teche. The slave, he noted, appeared to be in his "native element" during the grinding season and "his jokes and long-ringing laugh kept time with the rattle of the cane as he dashed it on the carrier and wheeled to get another turn." \(^{33}\) More than a little prejudiced in his viewpoint, Richardson nonetheless touched upon a key theme: the efficiency and productivity of slave labor.

For the rational profit-seeking agriculturists of south Louisiana, slavery provided the key labor supply for agricultural expansion. Infused by an ideology that combined, Carville Earle contends, "a dynamic capitalism

\(^{31}\)(...continued)


and a credo of rational economic calculations," southern planters quickly realized that the labor requirements of sugar cultivation made slavery or forced labor almost a necessity. As a crop, sugar cane requires an immense

labor input throughout the calendar year. Figure 5.1 graphically portrays the monthly labor requirements for sugar cultivation and production on Valcour Aime's plantation in St. James Parish. Although the actual number of days that slaves labored on sugar cultivation varies a little between 1837 and 1850, the graph demonstrates that sugar cultivation requires a major labor input from September to March and again in the mid-summer. Labor requirements peaked during harvest time though they remained high through the planting season and during late spring and early summer tilling.

Facing multiple day labor requirements, sugar planters responded to the agronomic demands of their staple crop by embracing slavery as their labor regime. Not only were slave labor costs lower than free labor, but the intensive nature of sugar cultivation made slavery both profitable and cheaper in the long-term. Since most plantations additionally produced their own corn, provisions, and conducted routine maintenance, the labor requirements on a sugar plantation very often exceeded the number of working days available during the calendar year. This labor shortage proved particularly damaging during the harvest and grinding seasons when many planters found themselves deficient and wanting in hands. Theodore Weld in his

34(...continued)

Figure 5.1. Labor Requirements for Sugar Cultivation, 1837 and 1850.
abolitionist tract, *American Slavery As It Is*, elucidated upon this point when he stated that during the grinding season, the sugar masters required twice the amount of laborers than during other parts of the year. Unwilling to purchase and augment the slave crews for this season, the planters, Weld maintains, "could by excessive driving, day and night, during the boiling season, accomplish the whole labor with one set of hands."  

Weld's views, although surely propagating the anti-slavery cause, proved accurate as many planters either hired extra laborers during the harvest or pushed their crews to work at a feverish pace. Solomon Northup, a hired slave who traveled south to St. Mary Parish to cut cane and work in Judge William Turner's sugar house, remembered that "nearly every plantation [required] the services of one or more" additional slaves and that "the only respite from constant labor the slave has through the whole year, is during the Christmas holiday." New Orleans sugar factor Martin Gordon accurately concluded that the largest problem Benjamin Tureaud faced on his Brulé plantation reflected the apparent dearth of labor available on the estate. "It is a pity," he noted, "that you have not hands sufficient to carry on all operations at once . . . However, you must

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36 Northup, *Twelve Years A Slave*, 147, 163.
attend to the most important part—viz the making of the sugar and whenever you have a chance to ship either molasses or sugar, do not forget me."  

In order to supply the sugar estates with the labor they required, Louisiana sugar masters responded by hiring extra hands from either neighboring cotton planters who by late October and November could afford to minimize their slave crews, or from small local slave-holders who wished to profit from the planters' labor short-fall by renting out their small slave crews. Not infrequently, the need

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37 Martin Gordon, Jr. to Benjamin Tureaud, 3 November 1849, Tureaud (Benjamin) Papers, LSU.

38 Robert Gallman contends in "Self-Sufficiency in the Cotton Economy of the Antebellum South," Agricultural History 44 (1970): 5-23 that an "active and deep" slave rental market existed on "alluvial lands along the Mississippi" where plenty of surplus slave labor remained because the region rejected agricultural self-sufficiency. Mark D. Schmitz rightly challenged and contradicted this view in "Farm Interdependence In The Antebellum Sugar Sector" Agricultural History 52 (January 1978): 93-103 where he proved that the sugar region produced enough food to suffice for all their needs. Building on this argument, Andrew W. Foshee maintains that no active and deep rental market in rural Louisiana existed and that by pursuing agricultural self-sufficiency, both sugar and cotton planters lacked the surplus labor to maintain a slave rental market. See: "Slave Hiring in Rural Louisiana," Louisiana History 26 (Winter 1985): 63-73. Foshee supports his argument by citing Robert Gallman and Ralph Anderson's essay, "Slaves as Fixed Capital: Slave Labor and Southern Economic Development," Journal of American History 44 (June 1977): 24-46 to argue that since "slaves were a form of fixed capital, the slave owners were obliged—in ways Northern employers of free labor were not—to devise means for employing their labor force fully and effectively year round. This led them into agricultural diversification... [and] all these activities tended to limit the volume of transactions in which planters were obliged to engage with (continued...)
for extra slave labor during the grinding season preoccupied the planter during October and November. In a rather desperate letter to Attakapas sugar magnate David Weeks, Frederick Conrad beseeched his brother-in-law to supply him temporarily with extra slaves. These additional hands, Conrad implored, "will give me a great lift in my troubles."39 Turning to his sister, Rachel O'Connor, a modest cotton planter in West Feliciana Parish, Weeks finally hired five young men to assist Conrad in his ailing sugar operations.40 There appears to be little unusual in Conrad's request as those planters with connections in the cotton industry frequently moved their slaves from cotton

38(...continued) the outside world...[including] the easy movement of...labor...in the slack agricultural seasons...did not develop so fully in the South." see Robert E. Gallman, "Slavery and Southern Economic Growth," Southern Economic Journal 45 (April 1979): 1018-19. I agree with Anderson and Gallman that the institution of slavery forced planters to diversify, though I disagree that agricultural self-sufficiency and the structural dynamics of slavery checked the evolution of a deep slave hiring market in the sugar parishes. The historical record indicates that slave hiring occurred frequently, but most importantly the corn harvest is complementary to the sugar cycle as corn picking occurs at least a month before the first sugar cane shoots are cut. This fact allowed planters to produce large corn crops and still have surplus slave laborers who entered the rural slave trading market. The complimentary nature of corn and sugar production did not check the rental market, but actually released a large class of available laborers for the annual grinding season.

39F.A. Conrad to David Weeks, 9 October 1833, Weeks Papers, LSU.

to sugar cultivation during the November and December grinding season after completing all cotton picking on their more northerly estates. Dr. William Webb Wilkins, for instance, owned Wilton Plantation, a sugar estate in St. James Parish, and a cotton plantation over one hundred miles to the North in East Carroll Parish. To assist in the 1847 grinding season, Wilkins simply transferred a small number of slaves from his estate in north Louisiana downstream to help during harvest time. Despite these steps, Wilkins turned to the local slave rental market and hired an additional number of hands from his neighbor Octave Colomb to further augment his crews.\textsuperscript{41} Patrick Keary similarly shifted his slaves between cotton and sugar cultivation during the 1852 rolling season. Assuring sugar factor Juan y de Egana of the rationality in his labor management, Keary strategically relocated twenty of his slaves from cotton production on Ben Lomand Plantation to increase the sugar yield at Catalpa Grove. Predicting that with the extra hands he could produce a bumper sugar and cotton crop on his Bayou Boeuf plantation, Keary's decision to expand the slave crews at Catalpa Grove proved successful as the Keary estate produced over 500 hogsheads

\textsuperscript{41}Volume 2, Cash Book, 5 December and 10 December 1847, Bruce, Seddon, and Wilkins Plantation Records, LSU.
in 1852, a figure representing over 10 percent of all sugar
produced in Avoyelles Parish that year.\textsuperscript{42}

Local slave hiring proved similarly advantageous for
William T. Palfrey, a part owner of Ricahoc Plantation on
Bayou Teche. Facing labor shortages on the plantation
prior to the 1835 harvest, Palfrey hired widely in the
Attakapas slave rental market to expand his own meager
crews. On Sundays, Palfrey elected to maintain the
traditional Sabbath observance by preserving the slaves'
Sunday vacation. Such a luxury during the grinding season,
however, could easily prove fatal as Palfrey accurately
knew that the pressure to cut and grind the cane rendered
Sunday vacations an impossibility. To maximize production
and yet retain the Sunday vacation, Palfrey turned directly
to the slave rental market where he engaged the services of
twelve slave boys.\textsuperscript{43}

With short contracts and the sugar cane to cut,
conditions for hired slaves proved tough, demanding, and
extremely trying during the grinding season. On Andrew
Crane's plantation in St. James Parish, for instance, the
hired slaves complained to their owner, Euphiman Hebert,
that Crane provided scant food. Rather than hiring them to

\textsuperscript{42}Patrick F. Keary to Juan y de Egana, 30 November
1852. Keary (Patrick F.) Letters, LSU; P.A. Champomier,
\textit{Statement of the Sugar Crop Made in Louisiana in 1852-1853}
(New Orleans: Cook, Young, & Co., 1853), 3.

\textsuperscript{43}Volume 1, Account Book 1834-1839, 10 January 1836,
Palfrey Family Papers, LSU.
Crane for a second year, Hebert responded to his slaves' wishes when they complained "that they would go anywhere before they would [go] to you." Unwilling to tolerate Crane's miserly approach to slave management, Hebert agreed to hire the slaves "according to their wishes." 4

Although hired labor often proved a necessity for the sugar masters, the expense frequently required a hefty outlay of cash and capital. Samuel Fagot, a large sugar producer and owner of Uncle Sam Plantation, for example, spent almost $850 on renting slaves during the 1854 rolling season. 5 When Edward Gay similarly hired extra slaves to cut cane in early December 1854, he established a payment scheme where each slave received one dollar for a full day's labor. Children received half pay and for those who labored through the night, Gay paid an additional fifty cents. Clearly each journeyman slave had to work swiftly as Edward Gay carefully docked each man's wage for slow or inefficient work. Few, however, fell behind the required pace and during December 1854, Gay hired over 171 slaves to work a total of 337.25 days on his plantation near Plaquemine, Louisiana. 6 Needless to say, the slaves

4Euphiman Hebert to Andrew E. Crane, 6 October 1858, Andrew E. Crane Papers, LSU.

5Volume 45, Cashbook, 1845-1859, 15 March and 22 March 1854, Uncle Sam Plantation Papers, LSU.

6Volume 36, Plantation Record Book, 1849-1860, Gay (Edward J. and Family) Papers, LSU.
rarely received a penny of this money as Edward Gay paid these sums directly to the owners of the rented slaves. Requiring additional labor during the summer and fall seasons, Maunsell White contracted with a fellow planter whose farming operations fell victim to spring flooding. Unable to save his crop, this farmer willingly agreed to rent eighteen or twenty slaves to White providing that his slaves labored solely on "high and dry" ground and conducted "perfectly healthy work." White in return agreed to hire the slaves at the rate of $10 per month for the women and $12 for the men. Anxious that they clear

"Such a dictate on the behalf of the owner appears wholly logical as the slaveholder retained legal and financial responsibility over rented slaves who died or were injured. Judith Schafer and Andrew Fede contend that slave-holders often chose "civil remedies if the offender had the financial means to compensate for the damages to or loss of the slave, but chose criminal prosecution to serve as a deterrent to poor whites" who lacked the financial resources to justify the cost of a civil suit. See Judith Kelleher Schafer, Slavery, the Civil War, and the Supreme Court of Louisiana (Baton Rouge: Louisiana State University Press, 1994), 35-36, 101-107; Andrew Fede, "Legitimized Violent Slave Abuse in the American South, 1619-1865: A Case Study of Laws and Social Change in Six Southern States," American Journal of Legal History 29 (April 1985): 113. In Taylor v. Andrus and in Downey v. Stacey et al., the Louisiana Supreme Court declared that in cases of slave rental where the slave is killed, the owner cannot recover his value. See William D. Henner, A Digest of Reported Decisions of the Superior Court of the Late Territory of Orleans; The Late Court of Errors and Appeals; and the Supreme Court of the State of Louisiana (2 vols., Cambridge: H.O. Houghton, 1861), II: 802; Taylor v. Andrus in Reports of Cases Argued and Determined in the Supreme Court of Louisiana (New Orleans: Benjamin Levy, 1841), XVI: 15; Downey v. Stacey et al in Reports of Cases Argued and Determined in the Supreme Court of Louisiana (New Orleans: Thomas Rea, 1847), I: 426.

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land, cut cane, and fence in a tract of land. White clearly stipulated that the hired laborers must find their own bedding though he would supply food and provisions. Evidently, hiring extra slaves for White's Deer Range Plantation proved quite costly as he invested well over $1,600 to augment his regular slave crews during the peak harvest period.48

Financially, the decision to hire slaves during the grinding season proved economically rational as the cost of renting extra labor was considerably lower than the annual cost of purchasing and maintaining a slave. In calculating the relative advantages of slave and free labor in the antebellum era, Carville Earle modified Evsey Domar's economic model of labor profitability to argue that most farmers, in both the North and South, adapted to the "economically rational labor supply." For the South, the multiple day labor requirements of staple production made slavery the cheapest and most efficient labor source, while in the Midwest, the reduced demand for agricultural labor assured that a hired work force emerged as the labor system of choice. In both cases, "rational agrarians" chose their respective labor systems after "continually checking and rechecking the comparative profitabilities of slavery,

48Volume 1, Letter Book, 1845-1850, Maunsell White to N.C. Hall, 30 March 1849, Maunsell White Papers, UNC.
servitude, and free hired hands.49 In making their decision, Earle contends that the profit conscious farmer chose free labor when $W^tD^r < W^r$ where $W^r$ is the wage rate of free labor and $D^r$ symbolizes the labor days required by the staple and where $W^t$ represents the cost of slaves and their subsistence.50 In the cane country, the extensive labor requirements of sugar production made slavery the cheapest and most efficient labor choice. Following Earle's argument, rational agrarians selected free labor when the yearly cost of employing free laborers was less than the annual cost of purchasing and maintaining a slave. In turn, the farmer preferred slave labor when free labor costs escalated above the annual cost of purchasing and supporting a slave. To conclude, labor choice became a matter of least cost.

By applying this model to the slave hiring market, the economic rationality of the sugar masters becomes visibly apparent. Following Earle's model of rational labor choice, sugar planters similarly applied the least cost theory of labor choice to the slave hiring market. Slave rental proved remunerative when the total wage paid to the hired slave was less than the annual cost of owning a slave outright. The new equation states that slave hiring

49 Earle, "To Enslave or Not To Enslave," in Earle, Geographical Inquiry, 227.
50 Ibid., 236.
remained profitable when $W^D \leq W^*$, where $W^*$ reflects the wage obtained for a day's work during the grinding season.

Following the path-breaking work of Alfred Conrad and John Meyer, David Whitten calculated that to purchase and maintain an adult male field hand on a sugar plantation required an average capital outlay of $2,398.\(^5\) This figure indicates that a slave cost $79.93 per annum during the peak thirty years of his working life. To calculate the rationality of slave rental, we must know the number of labor days that the hired slave worked. Although this figure varied from plantation to plantation, most planters hired slaves for the eight week long grinding season before returning them to their respective owners. The pay rate similarly oscillated, though most planters who hired male slaves in 1860 could expect to pay $171 during the course of the calendar year or approximately 46.8 cents per day if

\(^5\)David O. Whitten, "Antebellum Sugar and Rice Plantations, Louisiana and South Carolina: A Profitability Study," (Ph.D. diss., Tulane University, 1970), 99. In "Sugar Slavery: A Profitability Model for Slave Investments In The Antebellum Louisiana Sugar Industry," Louisiana Studies 12 (Summer 1973): 423, Whitten states that he followed Conrad and Meyer's technique of measuring profitability. This included "the cost of the slave and land, implements, housing, and livestock, including replacement of non-human capital. The investment was assumed purchased at age twenty and retired after age fifty. It was assumed that the gross earning from the investment and out of pocket costs incurred were constant over the life of the chattel." In their seminal work, "The Economics of Slavery In The Antebellum South," Journal of Political Economy 66 (April 1958): 95-123, Alfred Conrad and John Meyer estimate slave costs as $51 per annum.
the slave worked all 365 days per annum. Since most bondsmen labored for approximately six weeks to two months, the total cost of hiring one slave for the entire grinding season varied between $19.66 and $26.21; a figure well below the $79.93 required to maintain a slave for the whole year. Operating as rational agrarians who carefully weighed the advantages and disadvantages of each respective labor system, the sugar masters evidently realized that the rental market sufficed for short-term labor needs, such as during the fall harvest and sugar-making season. The absence of year long rental contracts in the manuscript record indicates that while many planters turned to the slave rental market to augment their crews during the grinding season, they proved unwilling to pay the comparatively high sum of $171 to obtain the slaves' services for the calendar year. As long as the cost of

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53 If \( W'D' < W^s \), then $26.21 < $79.93 assuming that the average wage is 46.8 cents per day and the average grinding season lasts two months (8 weeks). Following this logic, the hired market remains profitable for the slave owner who does not wish to expend more capital on purchasing a slave. Slave hiring becomes unprofitable on the 171st consecutive labor day as the total cost exceeds the annual costs of slave labor at $80.03. Assuming that a hired slave also receives a free day on Sunday and a seven day holiday after the grinding season (306 labor days per annum), the total cost of a hired slave for the calendar year is $143.21 or $63.28 more than the annual cost of purchasing a slave. These numbers indicate the economic rationality of a short hiring season as the planters could meet their short-term labor requirements without investing their capital in expensive slave labor.
rented labor remained below $79 per annum, the hiring trade proved remunerative for the sugar planter who sought to gain for the short-term. One planter eloquently explained why the rental market proved so important for the sugar masters. Once the sugar-making season commenced, he remarked, "it must be pushed without cessation, night and day, and we cannot afford to keep a sufficient number of slaves to do the extra work at the time of sugar-making as we could not profitably employ them the rest of the year." Obligated by the punishing requirements of sugar cultivation to press their slaves to breaking point or to rent extra laborers, most sugar planters responded to short-term labor demands by relying on the local slave rental market.

Although the slave rental market sufficed for the rolling season, few planters relied on hired workers for long-term expansion. Indeed, after only five months, the total cost of a single hired laborer approached that of owning a slave for a year. Facing flexible labor costs and changeable work requirements, the planters successfully adjusted to this situation by embracing either the rental market or long-term slave investments depending on their shifting labor requirements. When the planters wished to expand operations, they inevitably turned to the domestic interregional slave trade, though when the task required

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short bursts of intensive labor, slave rental proved the logical choice. Consequently, any notion "that the ownership of men was incompatible with the shifting labor requirements of capitalist society," Fogel and Engerman conclude, "is without warrant or fact."\(^{55}\)

The presence of an active and deep rental market in the sugar parishes indicates that, despite the comparatively high costs incurred with rented labor, planters rationally responded to their labor needs by adapting their work-force to meet their changing requirements. The crucial decision between permanently expanding their slave crews through purchase, or temporarily augmenting their labor crews by renting, remained largely an economic decision that reflected the staple requirements of sugar cane production, the price of labor, and the annual per capita cost of slave ownership. Operating as rational agrarians and efficient capitalist farmers, the sugar planters swiftly responded to their variable labor requirements by shifting between two labor markets and by rationally responding to the market value of slave labor.

One of the most distinctive features of the slave rental market lay in the slave-holders' commitment to male laborers. In the inter-regional slave trade, a similar pattern emerged where planters actively sought male labor

for the sugar plantations. Michael Tadman, in his superior analysis of the slave trade, contends that the traders who supplied the sugar planters with bonded labor from the Chesapeake and upper South practiced gender selectivity as males accounted for 68 percent of those slaves who entered the sugar region from the inter-regional slave trade.  

This remarkable figure compares favorably with similarly skewed sex ratios in the Caribbean, where sugar planters clearly demonstrated their preference for males as agricultural workers. With a persistent sexual imbalance

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56 Michael Tadman, Speculators and Slaves: Masters, Traders, and Slaves in the Old South (Madison: University of Wisconsin Press, 1989), 68.

57 In Slave Populations of the British Caribbean, 1807-1834 (Baltimore: Johns Hopkins University Press, 1984), Barry Higman maintains that in those colonies that developed and expanded sugar production after 1807, such as Trinidad, sugar planters plainly demonstrated their preference for male labor by purchasing men widely. On the Trinidadian sugar plantations, for instance, the sex ratio in 1813 reached 140 (this figure reflects the number of males divided by the number of females times 100). See especially pp.115-124. Rebecca Scott similarly discovered that the slave force on most Cuban plantations remained heavily male biased. See Rebecca Scott, Slave Emancipation in Cuba: The Transition to Free Labor, 1860-1899 (Princeton: Princeton University Press, 1985), 93-95. A similar pattern emerged in Brazil where a sex ratio of 275 males for every 100 females existed on several Bahian engenhos in 1819. See Stuart B. Schwartz, Sugar Plantations In The Formation of Brazilian Society: Bahia, 1550-1835 (Cambridge: Cambridge University Press, 1985), 348. On the sexual imbalance of sugar plantations also see Michael Craton and James Walvin, A Jamaican Plantation: The History of Worthy Park, 1670-1970 (Toronto: University of Toronto Press, 1970), 126-128; Arthur L. Stinchcombe, Sugar Island Slavery In The Age of Enlightenment: The Political Economy of the Caribbean World (Princeton: Princeton University Press, 1995), 89-91.
in the slave population, south Louisiana's sugar belt remained demographically akin to the Caribbean sugar islands, though distant from the neighboring cotton South. Gender selective purchasing, then, profoundly shaped the demography of slavery in Louisiana's sugar bowl. Nicolas Reggio, represents a case in point as he acquired part ownership of Habitation Pointe aux Chenêts south of New Orleans in 1824. Taking over property valued at over $86,000, Reggio's estate included thirty-four adult male slaves and sixteen adult women. Less than a decade later, the Union Bank of Louisiana appraised Reggio's estate, noting that the plantation included fifty-one male slaves and twenty-one women. With the male slave population increasing by almost 60 percent, a rate double that of the female slaves, Nicolas Reggio seemingly relied on gender selectivity when augmenting his slave crews from 1824 to 1832. William Webb Wilkins, James Coles Bruce, and James A. Seddon similarly relied on a predominantly male slave force on their sugar plantation in St. James Parish. Assessing their slave crews in 1859, Bruce, Seddon, and Wilkins calculated that of their 124 adult slaves, men

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59 Division of Estate of Charlotte Constance and Hélène Jorda, 11 February 1824; Certificat et Serment Des Apprecaiateurs, Banque de L'Union de la Louisiane, 28 September 1832, Reggio (Family) Papers, LSU.
represented over 60 percent of all slaves. Males dominated by a comparable percentage on Oaklands Plantation, where in 1859, men constituted almost 60 percent of all Samuel McCutchon's adult slave force. With thirty-one boys under fifteen years of age, McCutchon could confidently look forward to a continued gender imbalance on his plantation. Resident on Bayou Plaquemine in Iberville Parish, Eugenie Dardenne similarly noted that her labor force remained demographically imbalanced with thirty-six men and just fourteen women. With a pronounced preference for male laborers, the sugar masters, demographic historian Ann Patton Malone contends, maintained a distinct sexual imbalance on 155 cane estates by owning 2,252 male and 1,859 female slaves. These figures stand in distinct contrast to the cotton South where balanced sex ratios existed.

By preserving a sexually imbalanced labor force, the sugar masters strove to assure maximum labor productivity on their estates. Physically punishing, sugar cultivation in Louisiana sustained an appalling reputation since it was

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60 Volume 6, Cashbook, 1854-1862, Bruce, Seddon, and Wilkins Plantation Records, LSU.

61 Oaklands Plantation Document, 1859, McCutchon (Samuel) Papers, LSU.

62 Dardenne (Eugenie) Document, LSU.

commonly believed that few could survive the severity of the agricultural year. Touring the South in 1844, George William Featherstonhaugh described the Louisiana sugar planters as "white men with liberty and equality in their mouths," driving African-Americans "to perish in the sugar mills of Louisiana, where the duration for a sugar mill hand does not exceed seven years." Pushing their slaves to work at a ferocious pace, sugar cultivation, Thomas Hamilton remarked,

was only carried on at an appalling sacrifice of life. At the season when the cane is cut ... the fatigue is so great that nothing but the severest application of the lash can stimulate the human frame to endure it, and the sugar season is uniformly followed by a great increase in mortality among the slaves.  

Widely reputed as fatal for all save the strongest, Frenchman C.C. Robin observed the severity of sugar cultivation. On a visit to Louisiana, Robin observed that the "masters prolong the working day several hours into the night after which the slaves before thinking of going to bed had to grind up and cook their corn." Noting that the slaves awoke long before dawn, Robin remarked that the punishing labor regime of the sugar world suppressed the fertility of the slave population. Horrified by "the gloomy melancholy of these unfortunate people," Robin


calculated that on a plantation of twenty slaves, the death rate surpassed live births by such a degree that within two decades, the slave force withered to just four or five. 66 Reputed within the slave community to be a "life of living hell," the fear of working in the sugar parishes instilled terror and trepidation among African-American bondsmen. 67 Recalling that the Irish born slave trader Charles Logan purchased a number of John Singleton's slaves from the Sand Hills of South Carolina for trans-shipment to south Louisiana, former slave Jacob Stroyer observed that as the locomotive, taking its human cargo south and west to New Orleans, pulled out of the depot, "the colored people cried out with one voice as though the heavens and earth were coming together." As Stroyer contends, emotional outbursts of this type came logically as "Louisiana was considered by the slaves as a place of slaughter, so those who were going did not expect to see their friends again." 68 Perhaps somewhat melodramatic, Stroyer's account serves to highlight the consistent theme of mortality and death on the sugar estates. Despite its appalling reputation, aptly

66 C.C. Robin, Voyage to Louisiana, 240.

67 Frederick Douglass, Life and Times of Frederick Douglass (Secaucus, NJ.: Citadel Press, 1983), 173.

68 Jacob Stroyer, My Life In The South (Salem, Mass.: Salem Observer Book and Job Print, 1885), 42-43. On Charles Logan, see Tadman, Speculators and Slaves, 208 and Frederic Bancroft, Slave Trading In The Old South (New York: Frederick Ungar, 1959), 241.
described by C. Duncan Rice as "the most terrifying of all the various hells of the deep South to which blacks . . . could be sold," there remains little doubt that the exhausting demands of sugar cane cultivation made brute strength an indispensable quality for sugar production.\textsuperscript{69}

For this reason, the sugar planters utilized:

able bodied laborers. Children were less used than in tobacco and cotton production, and the men and women, like the mules, tended to be of sturdier physique. This was the result partly of selection, partly of the vigorous exertion required.\textsuperscript{70}

In order to supply the New Orleans market with the adult male slaves the sugar planters required, a complex and sophisticated trading network emerged binding the Chesapeake to the sugar country. This trade, Michael Tadman maintains in Speculators and Slaves, focused on prime adult males and remained gender selective throughout the antebellum decades. New Orleans, Tadman continues, differed considerably from other slave trading markets

\begin{footnotesize}
\textsuperscript{69}C. Duncan Rice, The Rise and Fall of Black Slavery (Baton Rouge: Louisiana State University Press, 1975), 287 reprinted in Malone, Sweet Chariot, 52.

\textsuperscript{70}U.B. Phillips, American Negro Slavery, 245 reprinted in Tadman, Speculators and Slaves, 65. Planter preference for male labor appears equally true for the Caribbean where Bryan Edwards wrote: "I have to observe, that though it is impossible to conduct the business, either of a house or plantation without a number of females . . . the nature of the slave-service in the West Indies (being chiefly field labour) requires, for the immediate interest of the planter, a greater number of males." Bryan Edwards, The History, Civil and Commercial, of the British Colonies in the West Indies (5 vols., London, 1801), II: 36 reprinted in Barbara Bush, Slave Women in Caribbean Society, 1650-1838 (Bloomington: Indiana University Press, 1990), 36.
\end{footnotesize}
where sexually balanced slave imports predominated. The Crescent City slave traders, in contrast, imported about 60 percent male slaves. In the cane country, however, men constituted over two-thirds of all slaves purchased and imported through the inter-regional slave trade. Herman Freudenberger and Jonathan Pritchett similarly calculated that men represented as many as 85 percent of all slaves sold to sugar planters.

William B. Turnbull, a sugar and cotton planter in West Feliciana Parish, pursued an analogous pattern of gender selective purchasing when he obtained eighteen men and six females for his Rosedown Plantation. By the latter 1850s, however, slave purchasing tended to show much less gender and age selectivity. Robert Ruffin Barrow, a sugar magnate in Terrebonne Parish, for instance, purchased thirty-four slaves for Residence Plantation in July 1857.

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7Tadman argues that all other branches of the slave trade, save New Orleans, transported equal numbers of males and females to their respective markets, see Speculators and Slaves, 23. Also see Herman Freudenberger and Jonathan B. Pritchett, "The Domestic United States Slave Trade: New Evidence," Journal of Interdisciplinary History 21 (Winter 1991): 452.

7Tadman, Speculators and Slaves, 68. Tadman's brief though singular analysis of the exigencies of the sugar plantation slave trade relies on the incomplete coastal manifests and on census data.


7Plantation Management Papers, Turnbull-Bowman-Lyons Papers, LSU.
Forming eight sexually balanced nuclear families, Barrow could easily contemplate on his fine prospects as children constituted over 50 percent of his purchase. On a slave purchasing trip to New Orleans in early 1859, Alexander Franklin Pugh similarly rejected the former sugar planter bias in favor of men by buying thirteen women and eleven men. For these slaves, Pugh paid from $1,325 to $1,400 for the women and between $1,600 to $1,700 for the men. Complaining extensively in his diary, Pugh wrestled with the high slave prices but nonetheless purchased additional hands, noting that "it seems we must have them at any price," he protested, "for I fear they will go still higher when we require them, and I cannot do without them." Misled in his attempt to purchase an extra six male slaves for his estates, Pugh returned to Boatner Plantation with more women than he surely intended to buy. Facing escalating costs and a scarcity of "good-ones," Pugh forsook his initial desire for men in favor of more readily available women. With the absence of Pugh's clear explanation as to his purchasing, we can infer that he bought suitable slaves, irrespective of gender, largely because of the escalating cost of human property. Only five days after he jotted in his diary that "we must have

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75Residence Journal of R.R. Barrow, 10 July 1847, Robert Ruffin Barrow Papers, UNC.

76Diary for 1859, 5 February 1859, Alexander Franklin Pugh Papers, LSU.
them at any price," Pugh relented on his idea of purchasing six more men when he spotted a women and a child "offered low at $1,400."^7 With the fear of rising slave costs clearly in his mind, Pugh satisfied his labor demands by purchasing women. Alexander Franklin Pugh had good reason to fear that the price of slaves might rise still further. Research conducted by Ulrich Phillips seventy years ago and more recently by Laurence J. Kotlikoff suggests that the price of bonded labor rose dramatically from 1857 to 1860. Pugh as a "calculating transactor operating" in a rational and "highly developed market in human beings," pursued the logical economic course by meeting his labor demands prior to a further price surge in prime field hands.78

Andrew Durnford, an African-American sugar planter, residing on his plantation, St. Rosalie, promptly realized the value of slave labor for long-term agricultural expansion. Following the advice of his neighbor and premier sugar master, Theodore J. Packwood, Durnford noted that "he [Packwood] advised me very much to get people, and says that [I] cannot do as my neighbors to make 3 and 400

77Ibid., 10 February 1859.

hogsheads without augmenting my force." Counselled by his friend and benefactor, John McDonogh, to purchase slaves for expansion at St. Rosalie, Durnford apparently excelled as he increased his slave crews to include forty-six men and thirty-one females by 1860. Like most sugar planters, Durnford maintained not only a gender imbalanced work-force but a distinctly youthful slave population on his plantation. With thirteen men, aged between 18 and 29 years, working the St. Rosalie estate, Durnford's prime male slaves constituted over 30 percent of all male slaves on the plantation from 1856 to 1858. Similarly aged women, in contrast, comprise just 21 percent of the total female slaves on the plantation. Children, under six, represent the only age cohort bearing resemblance to the adult working slaves as Durnford's stock of infants numbered ten males and seven females. Durnford's age-sex profile conforms to the common pattern of most sugar plantations where youth and brawn proved highly valuable commodities.

Figure 5.2 graphically portrays the remarkable age curve among the slaves on Wilton Plantation in 1859. Owned

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in partnership by W.W. Wilkins, J.C. Bruce, and J.A. Seddon, the distribution of slaves by age and sex reflects the sugar masters' desire for youthful muscle power on their plantations. Among prime sugar workers, aged between 18 and 39, Bruce, Seddon, and Wilkins could count 50 men and 33 women. This sexual imbalance, however, appears less obvious among the younger cohort where women slightly outnumbered the plantation males.® Joseph Kleinpeter similarly maintained a youthful slave force on his Variety Plantation in Iberville Parish. With a good supply of 21 slaves under age eighteen to furnish his labor requirements for the future, Kleinpeter operated his plantation with 13 men and 8 women aged eighteen to thirty-nine. Forming almost 30 percent of the labor force, the slaves aged 18 to 29 ultimately formed the principal working gangs on the plantation.®

To supply the sugar bowl with the young, predominantly male slaves the planters desired, the inter-regional slave trade in New Orleans focused on age and gender distinctions in their slave importation. Expanding on Tadman's contention that the Louisiana slave traders selected higher quality slaves for the New Orleans market, Jonathan Pritchett and Herman Freudenberg stress that traders

®Volume 6, Cash Book, 1854-1862, Bruce, Seddon, and Wilkins Papers, LSU.
®Slave List, 1856, Joseph Kleinpeter and Family Papers, LSU.
Figure 5.2. Age Distribution of Slaves, Wilton Plantation, 1859.
tended "to purchase slaves between the prime ages of 10 and 30 years since these slaves generally commanded the highest prices in the New Orleans market." Noting that 77 percent of all slaves imported to New Orleans represented the prime age cohorts, Pritchett and Freudenberger maintain that the age selectivity of the traders reflects the dynamics of the New Orleans demand. Since cane planters purchased their slaves almost exclusively from New Orleans slave traders, it seems likely to deduce that the demand for young prime adults on the sugar plantations had a direct influence on the inter-regional slave trade, as traders clearly attempted to purchase high quality slaves for the New Orleans market. The slave trading partners Isaac Franklin and John Armfield serve as two large, though representative, slave traders supplying the New Orleans market and, by extension, the sugar parishes. When Franklin and Armfield opened their business venture in May 1828, they advertised that they would pay "more than any

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84 New Orleans slave traders, such as Bernard Kendig and his competitors, clearly focused their attention on supplying the sugar market. Historian Richard Tansey calculates that well over 50 percent of all slaves sold by Kendig and his rivals in the New Orleans market in 1856 and 1859 supplied the sugar planters' desires for further slave labor. See Richard Tansey, "Bernard Kendig and the New Orleans Slave Trade," Louisiana History 23 (Spring 1982): 164.
other purchasers that are in the market" for "one hundred and fifty likely young negroes of both sexes between the ages of 8 and 25 years." Offering cash for "any number of likely negroes, of both sexes, from 12 to 25 years of age," Franklin and Armfield clearly focused their slave buying on young prime aged slaves who would sell rapidly in the New Orleans market. Procuring slaves in the upper South with a rational and calculating eye for the purchaser's demands in New Orleans, Franklin and Armfield established a network of agents throughout Maryland and Virginia acquiring the choicest prime slaves available in the market. Shipping from 1,000 to 1,200 slaves a year to their main entrepot in New Orleans, Franklin and Armfield evidently marketed slaves that would appeal to the gender and age conscious sugar planters. Of the 3,600 bondsmen recorded on the slave trade shipping manifests, males constituted over 55 percent of all slaves dispatched to New Orleans. Of these men, a staggering 84 percent were single males and 75

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86Bancroft, Slave Trading, 59.
percent came from age cohorts less than twenty-five years of age. Evidently specializing in slaves aged between seventeen and twenty-five, Franklin and Armfield effectively supplied the sugar masters' needs for young and strong workers. Figure 5.3 graphs the age and sex distribution of both single male and female slaves shipped to New Orleans by the Franklin and Armfield Company. One of the most dramatic features of this graph lies in the dissimilarity of gender purchasing as almost 70 percent of all single women imported aged between 13 and 20. Slave trade demographer Donald Sweig estimates that the large number of young single women reflects that "Armfield was selectively purchasing women who would be easy and most profitable to sell, as he did with males." In contrast, peak male purchasing occurred among slaves between 17 and 25 years of age. Like Franklin and Armfield, Austin Woolfolk, a professional slave trader in Maryland, clearly tailored his slave purchases to meet the burgeoning New Orleans demand. Woolfolk's biographer, William Calderhead, calculates that most slaves Woolfolk shipped to the Southwest "were in their teens and males outnumbered

Figure 5.3. Age-Sex Profile of Franklin and Armfield Slave Imports.
females by a ratio of 8 to 5."®® Despite their sterling work, Sweig and fellow slave trade historians, have made no effort to connect the dynamics of the slave trade with natural demographic patterns.

Human growth, J.M. Tanner observes, follows a "very regular process" where the rate of growth, or velocity, rises sharply during adolescence.®® In girls, the adolescent growth spurt occurs between ages 12.5 and 13.5 while in boys, the adolescent growth spurt peaks between ages 15.5 and 16.5. Demographer Richard Steckel maintains that physical human growth stopped at age 18 in African-American female slaves and age 21 among male slaves.®® These figures, while indicating that slaves matured earlier


than contemporary Europeans help explain the dynamics of
the slave trade as only 25 percent of all single male
slaves shipped by Franklin and Armfield came from age
cohorts below the average age of the adolescent growth
spurt, while just 13 percent of single females shipped
south came from pre-adolescent cohorts. These data suggest
that both slave traders and slave buyers purchased their
slaves with a calculating regard toward the respective age
of adolescence and the maximum rate of physical growth.
Significantly, Franklin and Armfield shipped the largest
number of slaves South in the two age cohorts directly
after the peak in both male and female adolescent growth
rates. In the case of women, such a pattern of selective
marketing additionally assured that a very large number of
the female slaves sold in New Orleans had passed menarche
and were fecund. James Trussell and Richard Steckel
estimate that most slave girls experienced menarche at age
15, though remained effectively sterile until they reached
their eighteenth birthday.*^ Although it seems difficult

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*^James Trussell and Richard Steckel, "The Age of
Slaves at Menarche and Their First Birth," Journal of
Interdisciplinary History 8 (Winter 1978): 477-505; Rose E.
Frisch in "Demographic Implications of Female Fecundity,"
Social Biology 22 (Spring 1975): 17-22 estimates that
"adolescent sterility after menarche, when many menstrual
cycles are anovulatory . . . is now about 3.5 years."
Since slave women probably experienced a similarly long
period of adolescent sterility, we can conclude that most
slave women could bear their first child at approximately
18 years. R.J.W. Burrell, M.J.R. Healy and J.M. Tanner,
"Age At Menarche In South African Bantu Schoolgirls Living
(continued...)

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to state with specificity the average age at which young African-American slaves could carry children, the manuscript record certainly suggests that many slave women faced their first pregnancy between ages 17 and 18.

Figure 5.3, graphing the age-sex profile of Franklin and Armfield's imports to the New Orleans slave market, indicates that almost 70 percent of all single female slaves shipped south came from the two age cohorts, 13 to 16 and 17 to 20. Initially, it seems easier to explain this pattern of slave shipments as a reflection of female adolescence and growth. The planters and traders were, after-all, primarily interested in shipping physically fit and mature young adults to the sugar plantations and by age 16 most female slaves had reached full physical development. This argument, however, fails to satisfy, for it appears equally likely that the traders calculating regard for strength and physique, additionally extended to a careful awareness that young female slaves would soon carry children. Franklin and Armfield did not practice stock farming or slave breeding, but they surely sent to

91(continue)
In the Transkei Reserve," Human Biology 33 (September 1961): 250-261, discovered that Bantu girls, with a low protein diet (like most African-American slaves) experienced menarche at age 15. Like African-American slaves and most nineteenth century Europeans, Bantu schoolgirls in the late 1950s consumed a low protein diet that ultimately kept the age of menarche high. Nutritional improvement over the past 150 years explains why the average age of menarche and fertility is so much younger today than in antebellum America.
the New Orleans slave market, and by extension to the sugar fields of Louisiana, young female slaves at their physical and sexual prime. When Professor Ethan Allen Andrews visited Franklin and Armfield's slave pen in Alexandria, Virginia, in July 1835, the traveling Bostonian remarked on the gender and age selectivity of the slaves purchased for the Southwest trade. Noting that approximately fifty to sixty men and between thirty or forty women filled the slave pen, Andrews quickly observed that most of the slaves aged from eighteen to thirty years.  

**92** These observations bear close similarity to the data presented in Figure 5.3 where the clear peak in slave exportation came in the age cohorts 13 to 28. Twenty years ago, Robert Fogel and Stanley Engerman advanced an analogous view, though using different data, when they suggested that the slaves' ability to carry children received especially high appraisal in the Southwest, where "the present value of the child bearing capacity was $170 in Louisiana in 1850 but only $80 in the Old South."  

**93** While Fogel and Engerman perhaps underestimate the importance of rearing slave

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children in the East, they accurately describe the economic motivation that slave-holders and sugar planters shared by encouraging fertility among their slave women. By supplying the New Orleans market, with young fecund females, Franklin and Armfield materially advanced an economically rational policy of child rearing in the sugar parishes. The slave trade to the sugar country, consequently, bore the signature marks of age and gender selectivity as the sugar masters clearly favored a predominantly young male population though with a large number of youthful women within childbearing age.

Although it remains impossible to state with absolute clarity that Franklin and Armfield's slave trading operations reflect the precise dynamics of slave demand among the sugar parishes, it appears accurate to conclude that these large slave traders surely purchased slaves in the upper South with a clear perception as to the needs and demands of the sugar masters. The exigencies of sugar cultivation with its arduous and intensive labor regimen, consequently, uniquely shaped the demography and the nature of the gender selective slave trade to New Orleans. Ever keen to profit through maximum productivity and labor efficiency, the sugar masters' thirst for youth and brawn ultimately defined and underpinned the particularities of the New Orleans slave trade.
An illustrative example of the sugar planter’s interest in young sexually maturing slaves lies in the census data for William J. Minor’s Waterloo Plantation in Ascension Parish. Listing 191 slaves on the Waterloo estate in 1847, Minor maintained a slight male majority with 76 men, 65 women, and 50 children.\(^4\) Three years later, Minor's slave crews numbered 168, but by 1860, the census enumerator recorded that 217 slaves resided at Waterloo.\(^5\) Figure 5.4 presents the census data for 1860 and illustrates that William Minor owned 28 young women aged 17 to 28 years. Significantly, the graph additionally shows that Minor maintained an especially large number of females in the age cohort 17 to 20. This factor appears wholly consistent with Schweig's findings for the interregional slave trade where young fertile women were similarly in demand. If Trussell and Steckel's conclusions that most slave women entered child-rearing age at 18 prove correct, then Minor's interest in slave women aged 17 to 20 appears highly significant. This seems especially so, when we remove the age cohort 0 to 10, a statistical outlier, leaving the cohort 17 to 20 as the mode. As a calculating businessman who surely valued the twin attributes of

\(^4\)Volume 2, Minor Diary, 1847-1848, 20 March 1847, Minor (William J. and Family) Papers, LSU.

physical strength and fertility, Minor, like fellow sugar planters, purchased and ultimately maintained slave crews at the peak of their physical strength and reproductive capacity. Interestingly, Minor's slave crew at Waterloo Plantation closely corresponds to the gender and age specific nature of the interregional slave trade. William Minor, for instance, owned many young females while additionally maintaining a large number of fully grown, mature, adult males who could easily serve as prime field hands. Physically at their peak, Minor possessed 34 adult males aged 21 to 32 years, a figure in extreme contrast with the relatively small number of slaves that Minor owned, per age cohort, in their thirties, forties, and fifties. Such relative youth in the slave population should hardly surprise given the nature of the slave trade and the intensive nature of sugar cultivation. William Minor, like his fellow sugar masters, accurately knew that their staple crop ultimately required a youthful and strong slave population. To assure their labor needs, consequently, the sugar masters proved discriminating buyers who pursued age and gender selective purchasing for their sugar estates throughout the cane country.

While youth and brawn surely appealed to the sugar masters, Pritchett and Freudenberger maintain that particularly tall slaves proved equally attractive to the New Orleans slave traders. Ever keen to augment the might
Figure 5.4. Age and Gender on Waterloo Plantation, 1859.
of their slave crews, Southwestern slave holders purchased "prime-age, high-quality" slaves who, on average, stood an inch taller than those transported by non-traders. Drawing on data collected from the coastwise manifests, Pritchett and Freudenberger calculated that adult male slaves, aged 21 years, averaged 5 feet 7.5 inches. Small by today's standards, these bondsmen measured a full inch taller than slaves imported to the Southwest by their masters, two inches taller than contemporary Britons, and at least four inches larger than African born Cuban slaves.96

Other issues, including price and the slaves' capacity to resist local disease often proved crucial in the sugar planters' decision to buy additional bondsmen. Douglas M. Hamilton, for instance, counseled his brother to purchase South Carolina and Florida slaves for his proposed sugar estate in Pointe Coupee Parish. Clipping some slave advertisements from the Charleston Mercury, Hamilton urged his brother to examine the Charleston slave market as "the negroes of South Carolina generally stand our swamps remarkably well, living in a climate at home very much like ours." Cautioning his sibling to purchase "choice negroes"

from Florida instead of expensive Virginia slaves, Hamilton advised the purchase of climatically seasoned slaves in favor of "Northern negroes on account of sickness."\(^7\)
Despite this sound advice, most sugar planters, when they wished to augment their crews, turned to the New Orleans market where they predominantly purchased slaves from the Chesapeake and upper South. Some slave traders attempted to acclimate their slave cargoes to the humid Louisiana climate before sale, though few followed suit and most Virginia slaves, sold in the New Orleans market, arrived directly from the more temperate Chesapeake.\(^8\)

Ultimately, the inter-regional slave trade proved particularly important for the sugar region because of the small natural increase among slaves in the sugar parishes. Michael Tadman suggests that the natural growth rate may have been as low as 6 or 7 percent, a figure four times smaller than the antebellum Southern mean.\(^9\) With such a meager natural growth rate, the slave trade proved a necessity for the sugar planters who sought to maintain a young and virile labor force on their estates. The central problem in maintaining a high birth rate in the sugar

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\(^7\)Douglas M. Hamilton to William B. Hamilton, 24 December 1858, Hamilton (William S.) Papers, LSU. Hamilton advises the purchase of a gang of 80 slaves from Jefferson County, near Tallahassee, Florida.

\(^8\)Bancroft, Slave Trading In The Old South, 316-317.

\(^9\)Tadman, Speculators and Slaves, 68.
parishes lay in the punishing rhythm and labor requirements of cane production. Facing little respite and a brutal harvest season where most slaves worked long into the night, African-American bondspeople faced particularly heavy labor requirements throughout the year. This demanding labor regime combined with deficient nutrition, John Campbell contends, can lead to subfecundity, depressed libido, and abnormally low levels of conception. Barry Higman argues that the specific labor requirements of sugar cultivation and production similarly checked demographic increase in the British Caribbean, where none, save the marginal sugar producers, displayed positive natural increase. Combining a demanding and exacting labor regime with the physically exhausting grinding season, "the satanic mills of the Caribbean," Higman eloquently remarks, "created conditions that made demands on human endurance rarely matched on such a scale." 

Heavy physical work proved particularly deleterious for pregnant women and their unborn infants who faced a higher rate of child and mother mortality than those who


received a respite from their work both before and after pregnancy. Research conducted among contemporary African-American women in the United States and in Ethiopia indicates that hard physical work during pregnancy when combined with malnutrition slows fetal growth and augments both fetal and neo-natal mortality. Pregnant women who conduct hard physical labor, especially that done while standing, in a hot climate with a nutritionally deprived diet usually deliver infants at least 210 grams or 0.46 pounds lighter than those of less physically active mothers.¹⁰² Slave women, particularly those working on labor intensive sugar estates, faced a demanding schedule with little opportunity for sitting or avoiding the daily toil of sugar cultivation. Richard Steckel, who utilized the slave manifests for the coastwise slave trade, calculates that slave children weighed on average 5.10 pounds or 2,320 grams at birth.¹⁰³ These values, Steckel continues, "place American slave newborns among the smallest documented for poor populations in developing


countries of the mid-20th century." On sugar plantations, where slave women regularly worked 60 to 70 hour weeks, while standing or stooping over cane shoots in 90 degree temperatures, the physical damage inflicted on unborn infants by reducing the blood supply to the placenta partly explains the low birth weight of American slaves and the high level of infant mortality.

As breast fed babies, slaves embarked on a mineral deficient diet that considerably worsened after weaning. Kenneth and Virginia Kiple suggest that the carbohydrate rich slave diet and the African-American's high frequency of lactose intolerance conspired to create a slave diet that proved "nutritionally disastrous for children." High levels of protein-calorie malnutrition assured that while slave infants looked chubby and healthy to their owners, they appeared prone and highly susceptible to a series of lethal infections that preyed on the nutritionally deprived.

On William J. Minor's Waterloo estate, common afflictions among slave children such as "convulsions," "teething," "tetany," and "worms" proved fatal for eight

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infants, or approximately a quarter of all infant deaths reported for the twenty year period from 1836 to 1856.\textsuperscript{105} In particular, calcium-magnesium deficiency appears to have burdened the slave infants at Waterloo as seven infants died of teething, tetany, and convulsions, afflictions that frequently proved rampant among those with calcium, magnesium, and vitamin D deficiencies.\textsuperscript{106} Beyond nutritional and mineral deprivation, African-American

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\textsuperscript{105}Volume 17, List of Negroes at Waterloo Plantation, 1848, 1852, and Southdown Plantation, 1852, Minor (William J. and Family) Papers, LSU. Of the 37 infant (0-4 years) deaths, 8 died of nutritionally related diseases, 11 died of whooping cough, 7 died of cholera (largely due to the epidemic striking the plantation in 1851), and 11 died of other and unknown afflictions. On disease and infection precipitated by nutritional deficiency see Kiple and Kiple, "Slave Child Mortality," Journal of Social History 10 (March 1977): 290-299 and Michael P. Johnson, "Smothered Slave Infants: Were Slave Mothers at Fault?" Journal of Southern History 47 (November 1981): 495-520, the latter contends that reports of infant death by smothering were, in reality, cases of Sudden Infant Death Syndrome or cot death, an affliction that bears strong similarity to nutritional tetany. Reports of "child smothering" appear, not uncommonly, in the manuscript record. Mary Ann, a slave infant on Frogmoor plantation, for instance, died of "smothering" on 10 April 1859. Although it remains impossible to know the medical history of Mary-Ann's mother, the slave Amanda, it appears possible that this case of "smothering" was, in fact, an instance of SIDS. Frogmoor Plantation Diary in Affleck's Sugar Plantation Record and Account Book, Turnbull-Bowman-Lyons Papers, LSU.

\textsuperscript{106}Kiple and Kiple, "Slave Child Mortality," 291. Tetany, "an affliction characterized by hyperirritability of the neuromuscular system, whose symptoms include convulsions and [occasionally fatal] spasms of the voluntary muscles," and caused by calcium, magnesium, and vitamin D deficiencies should not be confused with tetanus, a disease transmitted by wounds. Although the symptoms of tetany and tetanus are identical, the former is differentiated by its nutritional causation.
children perished in large numbers both as stillborns and as infants who fell victim to cholera, dysentery, whooping cough, and a host of other maladies. On Waterloo Plantation, for instance, 45 of the 184 slaves born from 1836 to 1854 died before reaching their fourth birthday and an additional thirteen died before age 10.\textsuperscript{107} While combatting a relatively low survival rate among children, slaves on the sugar estates also experienced low birth rates, largely because of the sparsity of potential child-bearing women and reduced fertility rates due to excess labor during pregnancy.\textsuperscript{108}

The final check on demographic increase, however, lay in the high mortality rate among adult laborers. Not only did the slaveholders drive their bondsmen hard, but the hot and swampy sugar lands proved a perfect breeding ground for infections, disease, and above all for the malaria carrying mosquito. Already weakened by the punishing order of the sugar mills, the slaves became easy prey to malaria,

\textsuperscript{107}Volume 17, List of Negroes on Waterloo Plantation 1848, 1852, and Southdown Plantation, 1852, Minor (William J. and Family) Papers, LSU. Although such levels of slave morbidity may surprise and shock, the expected post-neonatal mortality rate on sugar plantations, Richard Steckel contends, was only 6.6 percent, a figure less than half of that on cotton plantations, see Steckel, "A Dreadful Childhood: The Excess Mortality of American Slaves," Social Science History 10 (Winter 1986): 447.

cholera, hookworm, and yellow fever. As a virulent disease community, the south Louisiana sugar fields reaped a grim harvest of death that struck with frightening rapidity and regularity. An example of mortal nature of life in the sugar country lies in the 1848 cholera epidemic that struck Bayou Lafourche and infected all but 50 slaves on Bishop Leonidas Polk's Leighton Plantation. Despite obtaining the services of "the best medical skill" available, the Bishop's wife reported that 106 slaves "were hurried into eternity" within a brief eight week spell.

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Polk's experiences at Leighton Plantation appear hardly abnormal as cholera ravaged slave communities wherever its fatal touch rested. Mary Holley, a denizen of St. Charles Parish noted in a desperate letter to her daughter that over 300 slaves had died suffering "all the plagues of hell" during a particularly virulent outbreak of cholera in November 1832. William J. Minor similarly experienced the destructive effects of a cholera epidemic on his Ascension Parish estate during 1851. Diligently recording each new fatality in his annual demographic report, Minor logged 39 deaths from cholera alone during early Summer 1851. Figure 5.5 graphs this information and clearly marks the cholera epidemic as a singular event on Waterloo Plantation's normally stable demographic pattern.

\(^{110}\)(...continued)


\(^{111}\)Letters of Mrs. Mary Holley reprinted in William Dosite Postell, The Health of Slaves on Southern Plantations (Baton Rouge: Louisiana State University Press, 1951), 76-77.

\(^{112}\)Volume 17, List of Negroes on Waterloo Plantation 1848, 1852, and Southdown Plantation, 1852, Minor (William J. and Family) Papers, LSU. The first line charts the total number of live births per annum recorded at Waterloo while the second denotes the number born per year that are still alive by 1857. The resulting gap between these lines reflects adult and infant mortality on the plantation. The third line charts the raw number of deaths at Waterloo, though again does not include stillbirth data.
Figure 5.5. Slave Births and Deaths on Waterloo Plantation, 1835-1854.
While not every bondsman or woman died of tropical disease, the exhausting physical demands made upon them as sugar cane workers surely made the African-American slave a susceptible victim to debilitating and occasional fatal fevers, chest infections, and contagions. Adult slave morbidity, high levels of infant mortality, and low fertility, consequently, emerged largely as byproducts of the staple requirements of sugar cultivation and production. With an exacting labor regime that embraced a long cultivating season with the physically demanding and exhausting harvesting and manufacturing of sugar, the slaves faced a labor cycle on the sugar plantations that required punishing and substantial work, late night exertion, and sustained mental and physical attention. Encountering a labor system that proved economically rational for the sugar planters though ruining for the slaves, the African-American bondsmen sustained severe population restraints and significant problems in maintaining positive demographic growth. To counteract, or to alleviate, these population difficulties and to assure maximum physical performance on their estates, the sugar planters manipulated and controlled the inter-regional slave trade, while tapping the slave rental market to strengthen their labor crews during peak working periods. Molding their slave crews into efficient machines that could undertake the rigors of sugar work, the south
Louisiana slave-holders fashioned gender and age selective labor gangs that forced the pace of work on the cane estates. Prior to 1860, rational southern agrarians exhibited little moral guilt over the institution of slavery or the cost of maintaining human chattel in the United States. For the sugar masters, the only issue of real import lay in whether the institution of slavery proved efficient enough for the production and manufacturing of sugar on an agro-industrial scale. That question, they answered in the affirmative, but, as this chapter attempts to illustrate, the sugar masters could only assure agricultural productivity by driving their labor crews at break-neck speed, by shaping the local slave trading market to meet their needs, and by relying on the inter-regional slave trade to supply their youthful human cargoes. For both planters and slaves, however, the price of agrarian efficiency lay in extreme working conditions, low fertility, and a sluggish natural growth rate.

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CHAPTER 6
"JES' STIDDY MANAGEMENT": PLANTATION SUPERVISION AND THE
DRIVE TO EFFICIENCY ON THE LOUISIANA SUGAR ESTATES

Residing on rich sugar land in Pointe Coupee Parish, William Hamilton wrote his father in September 1858 expressing the quintessential values of the antebellum sugar master. "I am a lover of order and system," Hamilton declared, "to have a certain way of doing everything, and a regular time for doing everything."1 Like Hamilton, those who controlled the sugar plantations of south Louisiana valued industry, order, discipline, and diligence in the management of their estates. Moses Liddell knew this from first hand experience when he counseled his son that sugar planting requires "energy, activity, and ingeniousness." Success, Liddell continued, rests on "strength and capital [combined] with remarkable energy and unbounded perseverance to succeed well." Such qualities, Liddell's son-in-law, John Hampden Randolph, surely possessed in great quantities, but even the master of Nottoway Plantation realized that the true key to prosperity in the sugar bowl lay with "perseverance" and above all "good management."2

1 William B. Hamilton to William S. Hamilton, 27 September 1858, Hamilton (William S.) Papers, LSU.

2 Moses Liddell to John R. Liddell, 28 July 1845; Moses Liddell to John R. Liddell, 25 August 1845; John H. Randolph to John R. Liddell, 22 March 1846, Liddell (Moses, St. John R., and Family) Papers, LSU.
Sugar factor Martin Gordon concurred with Randolph by consistently emphasizing the need for "the strictest economy" in the management of the Bringier sugar estates along the Mississippi River. Evidently heeding Gordon's sound advice, the Bringiers curbed their losses on their Ascension Parish estate and by 1853, Gordon celebrated that "the Houmas Plantation has made more money this year than any other plantation in Louisiana." Planter Andrew McCollam similarly valued discipline, economy, and prudent supervision on his Terrebonne Parish estates. Cognizant that successful plantation management rested firmly on the institution of chattel slavery, McCollam evidently realized that without slave labor, the future of the sugar country appeared grim indeed. In the aftermath of the Civil War, Andrew McCollam joined fellow sugar master James L. Bowman on a tour of Brazilian sugar lands near Rio de Janeiro. Examining the lands and sugar operations with the intention of commercially speculating in pro-slave Brazil, McCollam's shrewd business eye quickly focused on the deficiencies of Brazilian land and slave management. Noting in his travel diary that "everything is going to decay," McCollam significantly concluded that he could "do more work with

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3Martin Gordon to Ben Tureaud, 3 May 1851 and 3 December 1851, Tureaud (Benjamin) Papers, LSU. The Bringier estate often carried the name Houmas, as did Wade Hampton's estate, because both plantations lay near Point Houmas on the Mississippi River.
the same number of hands than was being done" on Julian Rebeiro de Castro's sugar estate.©

Others additionally lauded superior American management practices, remarking that the Louisianans pursued "greater economy" than their Caribbean competitors who, James Stirling concluded, self-assuredly lived in "stagnation and contented nonchalance."© James Robertson remarked that, in contrast, the Americans infused into all their undertakings "energy and enterprise" by embracing agronomic and mechanical improvements.© As one visiting Caribbean planter observed, through the application of advanced cultivation and milling techniques, the sugar planters exhibited "intelligence and skill" in both plantation management and supervision.© Relying on methodical and structured order, economy, and prudent management practices, the sugar masters shared James Ramsay's eighteenth century conviction that "the discipline

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©Volume 1, Brazilian Diary of Andrew McCollam, 1866-1867, 13 July 1866, Andrew McCollam Papers, UNC.


of sugar plantation is exact as that of a regiment."®

One hundred years later, Charles Stewart, a slave on Alexander Porter's Oak Lawn Plantation in St. Mary Parish, continued to find Ramsay's conclusions pertinent, when he noted that his master "wouldn't stand for no foolin' neither, I tell you. Things had to be jes' so, but dar warn't no naggin' nor scoldin'; it was jes' stiddy management."®

Chattel bondage proved not only profitable for the sugar masters, but it also emerged as an advanced and flexible enough labor system to permit the modernization of the Louisiana sugar industry. In pursuing the seductive and alluring fruits of technological and commercial progress, the sugar masters turned their estates into capitalist mechanized plantations where the slaves became an additional factor in the planter's production schedule. Such a conclusion, however, should not minimize African-American cultural achievements, as the slaves endured their bondage not solely as factors of production, operating merely at the behest of their masters, but as active agents


who directly shaped their community and work-place. In

Historiographical literature on African-American culture in the sugar parishes remains sadly lacking, especially so when compared with the wealth of studies on slave life and culture in the rice and cotton country. See V. Alton Moody's archaic, Slavery on Louisiana Sugar Plantations (New York: AMS Press, 1976); Joe Gray Taylor's, Negro Slavery in Louisiana (Baton Rouge: Louisiana Historical Association, 1963) remains similarly dated though covers slave life and culture in some detail. Roderick A. McDonald focused on the slaves' material culture and on their internal economy in The Economy and Material Culture of Slaves: Goods and Chattels on the Sugar Plantations of Jamaica and Louisiana (Baton Rouge: Louisiana State University Press, 1993), 129-166; also his, "Independent Economic Production by Slaves on Antebellum Louisiana Sugar Plantations," Slavery and Abolition 12 (May 1991): 182-208, both works derive form his Ph.D dissertation written over fifteen years ago, "'Goods and Chattels': The Economy of Slaves on Sugar Plantations in Jamaica and Louisiana" (Ph.D. diss., University of Kansas, 1981). Ann Patton Malone analyzed domestic organization and the role of the nuclear and extended family within the slave community in Sweet Chariot: Slave Family and Household Structure In Nineteenth-Century Louisiana (Chapel Hill: University of North Carolina Press, 1992), also see her "Searching For the Family and Household Structure of Rural Louisiana Slaves, 1810-1864," Louisiana History 28 (Fall 1987): 357-379. On ethnicity, see Gwendolyn Midlo Hall's magnificent, Africans in Colonial Louisiana: The Development of Afro-Creole Culture in the Eighteenth Century (Baton Rouge: Louisiana State University Press, 1992) but as the title suggests, Hall's analysis does not include African ethnicity in the nineteenth century. Her contention, however, that Senegambia, the Congo, and Bight of Biafra constituted the ethnic and cultural origin of most Louisiana slaves appears to remain true in the early nineteenth century, prior to the impact of the inter-regional slave trade. John Palfrey, for instance, noted in February 1810 that two of his slaves, Mandingo Charles alias Goliah and "an Ebo negro named Cracker" had absconded from his plantation on the German Coast, upriver from New Orleans. John Palfrey to James Johnston, 1 February 1850 (Palfrey Family Papers), LSU. Sam Steer similarly remarked on African ethnicity in New Orleans when he wrote his uncle, John Minor, that "fresh imported Guinea negroes were lately sold in New Orleans at $1500." Sam Steer to John Minor, 6 August 1818, Minor (William J., and Family) Papers, LSU. Since Guinea refers to Senegambia and the (continued...)
the following two chapters, I suggest that African-American bondspeople accepted and adapted to mechanization and new management strategies largely because the exigencies of the machine age provided the slaves with a range of potential opportunities to improve their condition. While working class Northerners and Europeans smashed the machines that so often left them redundant, African-American slaves largely rejected Luddism by accommodating the machines of the new industrial and steam age.  

(...)continued

Mandinga or the Malinke-speaking people are a prominent tribe from the Gambia valley, it appears reasonable to conclude that the Senegalese cultural influence remained reasonably vigorous into the early nineteenth century. The Ibo ethnic group, in contrast, originated along the Bight of Biafra in modern Nigeria. The ethnicity of this minute sample of nineteenth century Africans indicates that Hall's conclusions as to the most powerful ethnic contributor to eighteenth century Louisiana culture, apparently remains true for nineteenth century. On the origins of these African ethnic groups, see Philip D. Curtin, The Atlantic Slave Trade (Madison: University of Wisconsin Press, 1969), 184-185 and John Thornton, Africa and Africans In The Making of the Atlantic World, 1400-1680 (Cambridge: Cambridge University Press, 1992), 183-205.

In contrast, the central Luddite concern that the introduction of labor saving devices might lead to working class redundancy, unemployment remained an impossibility in a fixed labor system such as slavery, where the risk that the adoption of labor saving devices might lead to redundancy, as in a free labor system, appears negligible if not non-existent. Although the fear of being sold croppers' labor by machinery. George Rudé and Eric Hobsbawm contend that machine breaking in 1830s England reflected the laborers anger at the threshing machines which by substituting peasant labor, led to high levels of rural unemployment. Rudé and Hobsbawm, Captain Swing (New York: Pantheon Books, 1968), especially Chapter 10. Parallel movements in working-class opposition to industrialization occurred in the United States contemporaneously with those in Britain and Europe. Charles Sellers and Sean Wilentz, in particular, contend that industrialization transformed the social relations of production and ultimately "bastardized" labor in antebellum America. Maintaining that most mechanics and journeymen resisted industrial capitalism, Sellers and Wilentz analyze strike and union action against the "irreversible proletarianization of the mechanic class." See Charles Sellers, The Market Revolution: Jacksonian America, 1815-1846 (New York: Oxford University Press, 1991), 23-31, quote on pp.25; Sean Wilentz, Chants Democratic: New York City and the Rise of the American Working Class, 1788-1850 (New York: Oxford University Press, 1984), especially Chapters 3 and 6.

On the concept of slavery as a "fixed" labor system, see Ralph V. Anderson and Robert E. Gallman, "Slaves as Fixed Capital: Slave Labor and Southern Economic Development," Journal of American History 64 (June 1977): 24-46. Anderson and Gallman contend that by purchasing and owning a slave, the slaveholder, while gaining control over the slave's production, must pay not only the capital cost of the slave but also all maintenance expenses such as food, housing, medical care etc. The bondsman was a fixed capital asset that often proved more valuable in the planter's portfolio than his relatively small capital assets in land. This peculiarity, marked the large (continued...)
from family and friends surely tormented many slaves, the machines and new management techniques adopted on the sugar estates did not prove alarming enough for the slaves to

12 (...continued) "laborlord" rather than a landlord. See Wright, Old South, New South: Revolutions in the Southern Economy Since the Civil War (New York: Basic Books, 1986), 18. With so many of his assets bound as "fixed capital," the slaveholder, Anderson and Gallman argue, was ill-equipped to make financial adjustments during temporary economic depressions as the risks and costs of selling bondspeople and liquidating slave assets "were too large" for the average slaveholder. Reducing costs, by dismissing wage laborers, normally serves as an effective way for an entrepreneur to lessen expenses. Such an option, however, was not realistically available to the slaveholder as to lower labor costs, he would have to commit himself to significant capital liquidation by selling his fixed assets, namely slaves. This factor fundamentally distinguished the slaveholder from the free labor entrepreneur who utilized redundancy as a quick and efficient means for cost reduction during unfavorable business cycles. The fear of being made redundant by labor saving machines, in turn, remained entirely moot as the slave-holders did not have recourse to such a system of labor cost reduction. Working-class Luddism, rooted in a logical fear that industrialization and mechanization would threaten their livelihoods and cause widespread unemployment, inevitably proved a dead letter in the slave South where technological unemployment remained an impossibility. This factor, I contend, partly explains why the slaves, in contrast to contemporaneous Europeans, did not smash machines or confront mechanization with such bellicosity. Rather than facing the risk of redundancy, the slaves labored with no respite throughout the year. As a form of fixed capital, that could not be temporarily dismissed, the slave-owners, Anderson and Gallman contend, had "to devise means for employing their labor force fully and effectively year round" as few planters would want the slaves "idle, especially since the [planter] was obliged to pay for their upkeep and since they were held in bondage . . . might prove troublesome if left idle." See Robert E. Gallman, "Slavery and Southern Economic Growth," Southern Economic Journal 45 (April 1979): 1118; Anderson and Gallman, "Slaves as Fixed Capital," 26; Stuart Bruchey, Enterprise: The Dynamics of a Free People (Cambridge, Mass.: Harvard University Press, 1990), 241.
reject the modernization of the cane industry. This argument inverts most of the historical literature on the incompatibility of slavery and technical progress in contemporaneous sugar industries by reasoning that the structural nature of slavery combined with the possibilities of self improvement, endemic within the agricultural revolution, assured that the slaves accepted, though ultimately shaped, the dynamics of their labor on the sugar plantations.  

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13 For a definitive account on the incompatibility of slavery and mechanization, see J.E. Cairnes quoted in Fred Bateman and Thomas Weiss, A Deplorable Scarcity: The Failure of Industrialization in the Slave Economy (Chapel Hill: University of North Carolina Press, 1981), 80. "Slave labour," Cairnes propounded, "is unskilled . . . and is unsuited for all branches of industry which requires the slightest care, forethought or dexterity. He cannot be made to cooperate with machinery; he can only be trusted with the coarsest implements; he is incapable of all but the rudest forms of labor." Karl Marx concurred that slavery and advanced mechanization were antagonistic values though he differed from Cairnes in his explanation. "Under slavery," Marx announced in Capital, "the worker is distinguishable only as instrumentum vocale from an animal, which is instrumentum semi-vocale, and from a lifeless implement which is instrumentum mutum. But he himself takes care to let both beast and implement feel that he is none of them, but rather a human being . . . by treating the one with brutality and damaging the other con amore. Hence the economic principle . . . of employing only the rudest and heaviest implements, which are difficult to damage owing to their very clumsiness" quoted in John Ashworth, Slavery, Capitalism, and Politics in the Antebellum Republic. Volume 1: Commerce and Compromise, 1820-1850 (Cambridge: Cambridge University Press, 1995), 95-96. In the historiography of contemporaneous Caribbean sugar industries, slavery and technology are frequently portrayed as incompatible polar opposites. See Manuel Moreno Fraginals, The Sugar Mill : The Socioeconomic Complex of Sugar in Cuba, 1760-1860 (New York: Monthly Review Press, 1976), 134-135; "El esclavo y la mecanización (continued...)
The key to economic success on a Louisiana sugar plantation lay in the effective and profitable use of slave labor. David Whitten maintains that "slave investments for sugar cultivation and manufacture were renumerative" and that large operators could expect to procure significant profits through the utilization of slave labor. Very large planters producing 1600 hogsheads of sugar in 1853 earned a return of 14.2 percent on their capital, while significant operators producing 550 hogshead could expect

13(...continued)

an average annual return on their investment of almost 10 percent. While calculating the profitability of slavery in the sugar parishes, Whitten established that, on extensive and mechanically advanced sugar estates utilizing double vacuum pans, the sugar master might reasonably expect high annual returns on his slave investments. In turn, smaller planters endured less satisfactory profit margins, though all save the very smallest planter utilizing a horse powered mill and open kettles could expect to earn a profit equaling, if not bettering, the average annual interest rate of 6 to 8 percent.\(^{15}\)

Whitten maintains that profit margins rose in direct relation to the size of the estate and the capital equipment utilized within the mill house. These findings strongly support Mark Schmitz's conclusion that large planters who possessed the milling capacity to expand production enjoyed "economies of scale" on their estates.\(^{16}\)


\(^{16}\)Mark D. Schmitz, "Economies of Scale and Farm Size in the Antebellum Sugar Sector," *Journal of Economic*
Schmitz's argument suggests that large cane farmers who harvested vast sugar crops additionally enjoyed marked economies of scale in the volume of cane cultivated and processed per hand on their estates. In elementary terms, economies of scale apply when increasing numbers of slaves ultimately expand the overall efficiency of the plantation.¹⁷

Figure 6.1 plots census data collected on over one hundred sugar plantations in Terrebonne Parish for the crops of 1849 and 1859.¹⁸ As a large sugar producing parish, Terrebonne experienced a small decrease in total production during the 1850s, but, as the graph shows, actual production increased on those plantations that survived the expensive rise in production costs. Within a decade, the Terrebonne sugar industry rapidly modernized

¹⁶(...continued)


with the introduction of steam powered grinding mills. In 1849, less than half of the ninety-two sugar houses in Terrebonne Parish possessed steam powered mills, though a decade later, 76 percent of the eighty-one sugar mills along Bayou Terrebonne, Bayou Black, and Grand Caillou utilized steam as their primary power source in their mill houses. This economic transformation distinguishes Terrebonne as a particularly representative sugar parish that innovated and technologically modernized during the last decade of the antebellum era. Figure 6.1 indicates that while mean production per estate remained relatively stable in those plantations with less than 50 slaves, the average yield increased dramatically among estates with over 50 bondspeople. The rate of increase appears singularly marked, however, among those sugar estates with over 150 slaves. Recording a 67 percent mean increase in production over plantations with between 101 and 150 slaves, and 125 percent growth over plantations manned by between 51 and 100 bondspeople, large Terrebonne sugar estates surely benefitted from the use of vast slave crews. This conclusion might lead to the inference that economies of scale seemed to benefit the largest planters with the greatest slave crews. Nevertheless, this observation appears inaccurate on closer inspection as median

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Champomier, Statement of Sugar Made in Louisiana in 1849-1850, 51; Champomier, Statement of Sugar Made in Louisiana in 1859-1860, 39.
Figure 6.1. Median Production Per Slave and Mean Production Per Estate, Terrebonne Parish, 1849 and 1859.
production per hand actually declined on the largest estates.

Figures 6.1 and 6.2 clearly indicate that the median number of hogsheads of sugar a slave could expect to produce per annum varied significantly according to year and plantation size. In 1831, efficient sugar masters cultivated and manufactured approximately 2.61 hogsheads per slave or 4.03 per plantation worker. Fourteen years later, Edward Forstall argued that on favorably managed estates where the slaves' tasks "are made to harmonize, so as to assure rapidity and constant working," the sugar master might reasonably hope to produce 7 hogsheads of sugar and 350 gallons of molasses per working hand. Figures 6.1 and 6.2, however, demonstrate that for the optimal use of slave labor in 1859, preferred sugar estates contained between 51 to 100 slaves with each hand producing a mean of 3.386 or a median figure of 3.333 hogsheads per annum. In contrast, larger plantations recorded

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22 To maintain a standard, these figures represent the median production of all slaves, irrespective of age and gender, within each plantation group. Median production,

(continued...)

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significantly lower figures for median sugar production than their relatively more efficient but smaller competitors. The largest plantations produced 2.129 hogsheads of sugar per hand in 1859. This figure suggests that those slaves on plantations with over 151 slaves produced 1204 pounds, or almost one-third less sugar per head than moderate sized sugar plantations with 51 to 100 slaves. Remarkable in its size, the variation in median production per hand among the larger estates indicates that pure efficiency peaked among those plantations with approximately eighty slaves producing 450 hogsheads per year.\(^23\)

Adolphe Verret, a forty-one year old sugar planter on Bayou Black proved singularly productive in running his estate and steam powered sugar mill during the 1850s. Producing 435 hogsheads of sugar and 32,000 gallons of molasses on his 1,800 acre estate, Verret's 79 slaves produced 5.506 hogsheads of sugar each. This exceptional performance marked Verret as the most efficient sugar planter in his parish for 1859. Based on seven years of experience on his Bayou Black estate, Verret's success in

\(^{22}\)(...continued)

per hand, consequently does not signify output per worker but rather output per slave on each estate.

\(^{23}\)Determined by calculating mean production per hand on each Terrebonne sugar estate for 1859 and averaging the slave populations and annual harvests of the four plantations recording a mean of over 5 hogsheads per hand.
Figure 6.2. Mean Production Per Hand, Terrebonne Parish, 1859.
1859 pales in significance with the 530 hogsheads he produced with presumably a similar number of slaves, in 1858. A model of a highly successful though moderately large sugar planter, Adolphe Verret's seventy-nine strong slave force proved the optimal size for maximum productivity and efficiency within the Terrebonne sugar industry.24

Although productivity peaks among moderately large plantations in 1859, Figure 6.1 shows that in 1849, smaller estates tended to produce relatively more sugar per hand than most of their larger competitors. This appears particularly marked among slaveholdings with 20 to 30 slaves and with 41 to 50 bondspeople. Larger estates, in contrast, tended to produce smaller crops per hand though in 1849, the most efficient of the large estates cultivated and subsequently yielded 450 hogsheads with 107 slaves. The mammoth sugar estates, belonging to William Minor and James Cage, differed considerably and failed to produce more than an average of 2.6 hogsheads per hand. The marked difference between productivity per hand in 1849 and 1859 in part reflects the small sample size for each plantation-slave grouping in 1849, though even when factored in there appears little doubt that smaller plantations remained highly efficient operations. These small plantations,

however, fade in importance as moderate and large sugar plantations with over 51 slaves produced 88 percent of the Terrebonne sugar crop in 1859 and contained 89 percent of the total slaves residing on the 58 plantations sampled.\textsuperscript{25} Figure 6.3 plots this data and underscores the relative insignificance of small sugar estates in Terrebonne Parish. If true economies of scale existed on the Terrebonne estates, the data presented should have indicated rising efficiency as plantation size increased. That this appears

\textsuperscript{25}Table 6.1. Data Base Sample on Terrebonne Parish. Source: see footnote 18.

<table>
<thead>
<tr>
<th>Plantation Size (20-30 slaves)</th>
<th>Total No. Estates in Sample</th>
<th>Total Yield (Hhds x 1000 lbs.)</th>
<th>Total Slaves</th>
<th>Sample Year</th>
<th>1849</th>
<th>1859</th>
</tr>
</thead>
<tbody>
<tr>
<td>31-40 slaves</td>
<td>n=01</td>
<td>(74 Hhds)</td>
<td>3253</td>
<td>1849</td>
<td>45</td>
<td>58</td>
</tr>
<tr>
<td>41-50 slaves</td>
<td>n=04</td>
<td>(683 Hhds)</td>
<td>5298</td>
<td>1859</td>
<td>10734</td>
<td>15514</td>
</tr>
<tr>
<td>51-100 slaves</td>
<td>n=20</td>
<td>(4718 Hhds)</td>
<td>3253</td>
<td>1849</td>
<td>45</td>
<td>58</td>
</tr>
<tr>
<td>101-150 slaves</td>
<td>n=06</td>
<td>(2319 Hhds)</td>
<td>5298</td>
<td>1859</td>
<td>10734</td>
<td>15514</td>
</tr>
<tr>
<td>150+ slaves</td>
<td>n=03</td>
<td>(1905 Hhds)</td>
<td>3253</td>
<td>1849</td>
<td>45</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5298</td>
<td>1859</td>
<td>10734</td>
<td>15514</td>
</tr>
</tbody>
</table>
Figure 6.3. Hogsheads Produced Per Plantation Size, Terrebonne Parish, 1859.
inaccurate supports Gavin Wright's findings for the cotton South where he argues that "[it] is not that larger slave farms were more efficient, but that there was an upper bound on the possibility of efficient expansion."^26

Fogel and Engerman similarly found that the largest cotton plantations operated less efficiently than their competitors in the intermediate class with sixteen to fifty slaves.\(^2^7\) Evidently, the upper bound toward efficiency was higher on sugar than on cotton plantations, but there seems convincing evidence to conclude that decreasing returns applied on the largest estates where median production dropped by 30 percent over those estates with 51 to 100 slaves. The conclusion that economies of scale particularly benefitted the moderately large planter rather than the giant producer modifies Schmitz and Wright's argument that those planters with modern machinery and the capacity to expand cultivation possessed an incentive to increase annual production and establish economies of scale on their estates.\(^2^8\) The distribution of slaveownership and


^28See, Mark D. Schmitz, "Economies of Scale," 980; Schmitz, "Economic Analysis of Antebellum Sugar (continued..."
the concentration of production among large operators indicates that while true economies of scale existed on some cane producing estates, maximum efficiency in production per hand peaked among those operators with moderately large slave gangs.29

Utilizing overseers who closely supervised both field and factory work, sugar planters seemingly experienced problems in maintaining optimum efficiency on the largest estates. In his superior analysis of business practices on antebellum plantations, Jacob Metzer contends that one overseer could maximize his managerial capacity on an estate with fifty working hands.30 Above this number, a single overseer would increasingly struggle to maintain optimal supervision. Managing a large sugar plantation,

28(...continued)

29Albert W. Niemi, Jr. in "Inequality in the Distribution of Slave Wealth: The Cotton South and Other Southern Agricultural Regions," Journal of Economic History 37 (September 1977): 747-753, contends that among all southern staple producing regions, the sugar parishes maintained the highest degree of inequality in slave ownership as the upper 5 percent of adult free males owned 66.2 percent of the region's slaves. Only the rice counties closely matched the cane parishes with a Gini coefficient, a standard measure of wealth concentration, of .752 as opposed to the sugar parishes with a coefficient of .769 indicating that the extreme degree of wealth inequality in the sugar parishes surpassed all other Southern staple producing regions.

consequently, placed a weighty responsibility on the overseer's shoulders and as the size of operation increased, few overseers possessed the capacity to prevent the slaves' from loafing on disparate parts of the plantation. This administrative debility, Metzer continues, assured the "existence of long-run managerial dis-economies of scale" where the overseer and planter experienced increasing difficulty in sustaining control over their workers.

Such "control-loss" occurs frequently among large businesses without an effective network of managers, overseers, and superintendents. Sidney Pollard, in his astute analysis of the British industrial revolution, similarly observed that "while there may be technical, financial, or marketing advantages in growth, management difficulties . . . [tend] to work in the opposite direction, toward a lower optimum size." Sidley Pollard, in his astute analysis of the British industrial revolution, similarly observed that "while there may be technical, financial, or marketing advantages in growth, management difficulties . . . [tend] to work in the opposite direction, toward a lower optimum size." Under laws of diminishing control, the "larger an organization becomes," bureaucratic theorist Oliver Williamson argues, "the weaker is the control over its actions exercised by those at the top." On sugar plantations, where usually no-more than

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one overseer managed the estate, Williamson's concept of diminishing control seems applicable.

Rather than maximizing productivity on the largest sugar estates by adding extra overseers, the Louisiana slave-holders rarely advanced their managerial strategy, during the field-work seasons, beyond that of the single unit or lowest level of modern management. In *The Visible Hand*, Alfred Chandler contends that the Southern plantation represented "an ancient form of production," practicing traditional labor management and exhibiting little modernity in work organization. As the principal salaried manager, the plantation overseer, Chandler contends, "had little impact on the evolution of the management of modern business enterprise." While surely correct in describing the plantation as a traditional firm or single-unit enterprise with an apparently primitive management hierarchy, the Louisiana sugar estate evolved into a multi-unit operation during the grinding season that functioned with a rudimentary system of salaried managers who

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supervised the work of diverse units under their jurisdiction. Although the antebellum sugar estates never evolved into complex modern multi-unit corporations that both vertically and horizontally integrated, the sugar masters surely advanced the operating efficiency of their plantations during harvest time, while marching toward organizational and business development. The key to this process lay in the introduction of advanced technology and machinery that imposed the regimented order of the machine age, while requiring the further subdivision of labor.

In the half-century prior to the Civil War, sugar production rapidly mechanized throughout the Louisiana sugar parishes. In 1828, for instance, only 17 percent or 120 of Louisiana's sugar estates ground their cane stalks by steam power. Almost two decades later, however, 408 steam powered sugar houses operated throughout the state and by 1859, Champomier enumerated 992 steam powered estates and 316 primitive horse mills in his annual report

on the sugar industry. While dramatically increasing the pace and capacity of the sugar mills, steam power established a mechanical rhythm to labor that remained both exacting and relentless. Frequently equipped with mechanical cane carriers that two slaves fed with a steady supply of cane, these constantly moving conveyor belts established an early form of assembly line production where the steam powered sugar mill imposed an inflexible, persistent, and unforgiving labor discipline on the slaves. In the transitional phase of assembly line development, Siegfried Giedion remarks, "man acts as a lever of the machine" and although the "tempo of work is geared to the human organism . . . the inexorable regularity with which the worker must follow the rhythm of the mechanical system is unnatural to man."36

Striving toward operational efficiency and productivity maximization, the assembly line established a new labor organization in the mill house where each operative, Thorstein Veblen poignantly noted, keeps "pace


with the machine process . . . and adapts his movements with mechanical accuracy to its requirements."\(^{37}\) Laboring to the metered cadence of the steam engine, plantation owners and overseers profoundly altered and disciplined the working habits of the African-American slaves by subdividing their laborer's tasks and imposing the order and discipline of the industrial age.\(^{38}\) To coordinate their activities, the planters altered the managerial structure


of their enterprises and established a system of salaried managers or foremen who directed the labor of the slaves with both incentives and the omnipresent lash. Although the antebellum sugar plantation hardly classifies as a "modern multi-unit enterprise" with a hierarchy of senior, middle, and lower managers, the sugar masters certainly utilized extra foremen such as sugar makers and engineers who directly supervised the slaves working on the sugar house floor. New technology similarly permitted an enormous increase in the production of sugar, and during the grinding season the sugar planters advanced the business structure of their estates by both subdividing the factory into distinct units, while integrating mill operations with modern technology. With subunits simultaneously functioning as separate though interdependent branches of production, the antebellum sugar mill stood within a transitionary phase of industrial and organizational development. Sugar producers, like textile mill owners, pioneered modern manufacturing by integrating the diverse steps of sugar production within a single mill house. Such integration, Chandler concludes, "provided a basic model for later mass production."\(^{39}\)

The key to efficiency and economic growth, however, lay in the superior utilization and management of slave labor. Twenty years ago, Robert Fogel and Stanley Engerman

\(^{39}\)Chandler, Visible Hand, 72.
argued that gang labor underpinned the efficiency of the plantation complex and assured that southern slave based agriculture "was about 35 percent more efficient than northern agriculture . . . [and] 28 percent more efficient than southern free farms." Gang labor provided "highly disciplined, interdependent teams capable of maintaining a steady and intense rhythm of work that appears to be the crux of the superior efficiency of large-scale operations." Through a disciplined regimen of intensive labor and proficient management, slave gangs established a clearly defined division of labor on the plantations, while additionally easing the planter's goal of achieving the maximum intensity of labor on his estate. Slave-holders with their established labor gangs, economist Keith Aufhauser contends, could methodically routinize labor while maintaining strict supervision over their slaves as they toiled beneath the overseer's eye in the open field. To guarantee maximum efficiency, slave-holders additionally chose to subdivide their labor crews according to task and

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establish a finely graded system of work specialization that required gang and labor interdependence on the plantations. Jacob Metzer concludes that in their attempt to optimize gang and labor specialization, the planters managed their estates with "a great deal of coordination and organizational skill . . . in order to realize the gainful potential of specialization and interdependence."\(^{42}\)

In striving toward efficient and optimal productivity, the Louisiana sugar masters similarly specialized and divided work tasks, as well as utilizing gang labor in their quest for prosperity and plantation success.\(^{43}\)

\(^{42}\)Metzer, "Rational Management," 139.

\(^{43}\)In the past decade Philip D. Morgan has consistently stressed the need for the further examination of slave work patterns and the dynamics of both gang and task labor. In his "Work and Culture: The Task System and the World of Lowcountry Blacks, 1700 to 1880," *William and Mary Quarterly* 39 (October 1982): 563-599, Morgan urges historians to analyze the worker's experience, a view he reiterates in his essay, co-authored with Ira Berlin, "Labor and the Shaping of Slave Life in the Americas," in Cultivation and Culture: Labor and the Shaping of Slave Life in the Americas, ed. Berlin and Morgan (Charlottesville: University Press of Virginia, 1993), 1-45. Focusing on the requirements of staple crop production, Morgan contends that while sugar required gangs, rice production was more easily adapted to task labor. "Where supervision was at a premium," as on the sugar estates, Morgan contends that "gang systems seem to have arisen." Pointing to sugar as the quintessential gang labor crop, Morgan contends that "there was no better-brigaded, better supervised form of labor," than on the Caribbean sugar estates. Where urgency in cultivation and harvesting proved less of a problem, as with rice and naval stores manufacturing, the task labor system emerged, particularly on the Georgia and South Carolina sea islands. See Morgan, "Task and Gang Systems: The Organization of Labor on New World Plantations," in Work and Labor in Early America, ed. Stephen Innes (continued...
Requiring intensive cultivation and labor during the planting and harvesting seasons, the annual rhythm and staple requirements of cane farming necessitated the discipline and effective organization of gang labor. With serious climatic constraints to sugar cultivation, Louisiana planters sought to maximize the potential growing season by seeding the cane stalks as quickly and as proficiently as possible in the New Year. In order to assure rapid planting, sugar cultivators frequently organized their slaves into plowing and sowing crews that moved over the cane fields with military like regulation and precision. On Robert Ruffin Barrow's Residence Plantation, for instance, the estate manager, Ephraim A. Knowlton, carefully recorded in his plantation journal the structured division of labor and gang work on Barrow's Terrebonne Parish farm. On New Year's Day, 1857, Knowlton took charge and within a week, Barrow's slave driver, Andrew, found himself at the van of the planting gangs. Obtaining fourteen mules from Barrow's Oak Grove estate in Lafourche Parish, Knowlton set Andrew to work leading a gang of 23 hands in planting the cane. A week later, Andrew's gang counted 35 acres of cane planted, while Peter and Jerry, two slaves given similar leadership responsibilities, led 12 of Barrow's slaves in repairing 

the levee, cleaning the canal, and rolling logs. To assure the completion of all plantation duties, Knowlton subdivided his labor crews and allotted five slaves to the hired white carpenter to work on repairing the slave quarters and cane house. Anxious that not a single hand remain idle, Knowlton additionally sent the young children, or suckling gang, to the fields to either weed the cane land or to follow the rather perilous pursuit of burning logs. By using all slaves and subdividing their work into respective gangs with allotted duties, Knowlton optimized plantation performance and exploited potential economies of scale on Residence Plantation.**

Frederick Law Olmsted similarly observed the division of labor while visiting one large sugar estate on the Mississippi River. Remarking that the laborers toiled in three separate, but interdependent groups, Olmsted noted that while the first team, "consisting of light hands, brought the cane by armfuls from the cart, and laid it by the side of the furrows; the second planted it, and the third covered it." Maximizing productivity with

**Residence Journal of R.R. Barrow, 1 January 1857 to 13 February 1857, Robert Ruffin Barrow Papers, UNC.

**Frederick Law Olmsted, A Journey in the Seaboard Slave States In the Years 1853-1854 With Remarks on Their Economy (reprint. New York: G.P. Putnam, 1904), 324, 320. Solomon Northup describes similar gang work in Twelve Years A Slave (Baton Rouge: Louisiana State University Press, 1968), 159. Noting that three gangs operate in unison during planting, Northup remarked that while the first gang (continued...)
interdependent gang work, Olmsted concluded that such plantership showed "that intelligence, study, and enterprise had seldom better claims to reward." George W. Woodruff, an overseer on Bayou Grosse Tête, additionally realized the advantages of gang labor during the planting and cultivating seasons when he diligently recorded in his record book that while forty hands scraped the small sugar cane shoots in mid-March, nine plow teams hoed the cane furrows, four slaves planted cotton, and fourteen hands and three ploughs planted corn. Dividing his seventy-two strong slave labor force into several teams that Woodruff could effectively manage, sugar operations at Frogmoor Plantation clearly flourished in 1857 as Woodruff produced 167 hogsheads of sugar for his employer, James P. Bowman.46 Keen to improve, Bowman wrote his wife a year earlier, stating that he wished "to learn as much of planting as possible . . . [so] that here after I may better understand management and all unnecessary mistakes."47 Evidently, Bowman grasped the value of labor specialization and

45(...continued)
"draws the cane from the rick, or stack, cutting the leaves and flags from the stalk...another gang lays the cane in the drill . . . [and] the third gang follows with hoes, drawing earth upon the stalks, and covering them to the depth of three inches."

46Frogmoor Plantation Diary, 19 March 1857, Turnbull-Bowman-Lyons Family Papers, LSU.

47J.P. Bowman to Sarah Turnbull, 29 June 1856, Turnbull-Bowman-Lyons Family Papers, LSU.
division, as his Pointe Coupee estate surged in productivity the following two years. Valcour Aime, one of the state's premier sugar masters, similarly found that interdependent gang labor proved highly successful at his sugar refinery in St. James Parish. Finding no contradiction between gang work and managerial improvement, Aime and fellow sugar planters clearly appropriated their slaves to diverse tasks with a clear notion as to the potential productivity of each hand. Thomas Bangs Thorpe on his visit to the Louisiana sugar country also observed that while a gang of "the most robust negroes" cleaned the myriad of drains and ditches on a plantation, another, presumably less vigorous gang, "prepared the fields for the plow." Valcour Aime, in particular, discovered that the use of gang labor proved wholly compatible with improved cultivation and mechanization. Ascribing to the fertilization and land improvement movement in the mid 1850s, Aime found little difficulty in improving his

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cultivation techniques by ordering his crews to apply guano and to plant nitrogen fixing clover and peas.\textsuperscript{50}

By dividing and specializing tasks among slave laborers and through the organization of workers into manageable crews during planting time, the sugar planters strove to regulate their labor system and institute order and efficiency in production. Jacob Metzer concludes that the establishment of team interdependence necessitated an efficient division of labor with plow teams composed of stronger males and hoe gangs staffed by women.\textsuperscript{51} Requiring the physically taxing work of holding the plow firm while pressing the share point into the earth as the mule or oxen marched forward, plow teams inevitably demanded the services of sturdy male laborers who could assure maximum productivity and efficient plowing. The hoe, in contrast, required significantly less gender specificity as all women and men could easily manage these simpler and lighter farm implements. Such a gendered division of labor proved particularly important when planters utilized the older and heavier shovel plow that required both physical strength and the maintenance of a vertical and exhausting stance. As plantations increasingly adopted the lighter and more maneuverable cast iron plow, the absolute need for a

\textsuperscript{50}Plantation Diary of the Late Mr. Valcour Aime (New Orleans: Clark and Hofeline, 1878), 155, 163.

\textsuperscript{51}Metzer, "Rational Management," 135.
gendered division of labor lessened.\textsuperscript{52} However, by the late 1840s, the adoption of sub-soiling assured the necessity of brute strength to operate the larger and heavier cultivator. Where soil was especially clayey or damp, a frequent problem on the levee back-slope, the necessity for deep plowing proved indispensable as the dense compact soils hindered cultivation and required heavy physical exertion to turn a furrow.\textsuperscript{53}

The successful organization and division of gang labor, consequently, furnished a high level of efficiency and productivity on the sugar estates. When he toured Louisiana in 1853 and 1854, Frederick Law Olmsted found the labor gangs particularly impressive as he passed through West Feliciana Parish, a district that had turned to sugar cultivation in the late 1840s and by 1853 contained 19 technically advanced sugar houses. Watching slaves march back home after a day's labor in the fields, Olmsted stood aghast at the sight that befell his eyes:

\begin{quote}

\textsuperscript{52}\textit{Fred B. Kniffen, \textit{Louisiana: Its Land and People} (Baton Rouge: Louisiana State University, 1968), 76."
\end{quote}
First came, led by an old driver carrying a whip, forty of the largest and strongest women I ever saw together; they were all in a simple uniform dress of a bluish check stuff, the skirts reaching little below knee; their legs and feet were bare; they carried themselves loftily, each having a hoe over the shoulder, and walking with a free, powerful swing, like chasseurs on the march. Behind them came the cavalry, thirty strong, mostly men, but a few of them women, two of whom rode astride on the plow mules. A lean and vigilant white overseer, on a brisk pony, brought up the rear. The men wore small blue Scotch bonnets; many of the women, handkerchiefs, turban fashion, and a few nothing at all on their heads.  

While these slaves probably worked on a cotton plantation, there remains little reason to doubt that slaves on sugar estates dressed and organized themselves in largely similar ways with a clearly defined division of labor. One sugar planter counseled fellow readers of De Bow's Review that "by proper treatment and a judicious distribution of their work," the slaves would maintain their health and, perhaps most importantly, reserve their energy for the grinding season in November and December. Declaring himself a planter of the "new and progressive school of husbandry," this Louisiana sugar master clearly appreciated the value of efficient gang work and the sagacious division of labor on his estate. Calling for "close attention to . . . good husbandry, and the proper balancing of my working power," this planter confidently

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predicted that by prudent slave management, the improving farmer could double the crop of the unreformed slave master.⁵⁵ Timothy Flint, a visitor in the Louisiana sugar parishes, concurred, noting that through exacting discipline and almost military regimen, "one hundred slaves will accomplish more on one plantation, than so many hired free men, acting at their own discretion."⁵⁶

As a "process centered" industry, sugar production requires rapid harvesting and prompt grinding.⁵⁷ In order to maximize the growing season and the sucrose content in the stalk, Louisiana cane farmers cultivate their crops for as long as possible prior to harvesting. Described at times as a "very precarious production," the sugar masters acutely realized that a fall frost followed by a warming front would spell disaster as the cane juice irrevocably soured.⁵⁸ Keen to extend the growing season as long as possible, though anxious to harvest the crop before the arrival of the first killing frosts, the sugar planters knew that the annual grinding season called for

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⁵⁵De Bow's Review 3 (March 1847): 249.

⁵⁶Timothy Flint, The History and Geography of the Mississippi Valley. To Which is Appended a Condensed Physical Geography of the Atlantic United States, and the Whole American Continent (2 vols., Cincinnati: E.H. Flint and L.R. Lincoln, 1832), I: 244-245.


⁵⁸Stirling, Letters from the Slave States, 126.
particularly swift action and efficient labor discipline. To execute the harvest and hasten production, the planters relied on interdependent gang work combined with assembly line production techniques. Vividly describing the furious activity of the grinding season to his national audience in 1853, Thomas Bangs Thorpe aptly used militaristic metaphors in his stirring account of the annual sugar harvest.

And now may be seen the field-hands, armed with huge cane knives, entering the harvest field. The cane is in the perfection of its beauty, and snaps and rattles its wiry-textured leaves, as if they were ribbons, and towers over the overseer as he rides between the rows on his good sized horse. Suddenly, you perceive an unusual motion among the foliage—a cracking noise, a blow—and the long rows of growing vegetation are broken, and every moment it disappears under the operation of the knife. The cane is stripped by the negroes of its leaves, decapitated of its unripe joints, and cut off from the root with a rapidity of execution that is almost marvelous. The stalks lie scattered along on the ground, soon to be gathered up and placed in the cane-wagons, which with their four gigantic mule-teams, have just come rattling on to the scene of action with a noise and manner that would do honor to a park of flying artillery.⁵⁵

Those who observed the frenetic pace of the grinding season concurred with Thorpe's militaristic description of the annual harvest. Solon Robinson, who visited Ormond Plantation in 1848, appeared similarly impressed by the order of the cane cutting crews on Stephen McCutcheon's estate. Noting that thirty-six identically dressed cane-cutters labored on the plantation, Robinson remarked that "this uniform company" made a particularly imposing sight.

⁵⁵Thorpe, "The Sugar Region of Louisiana," 760.
as they sallied forth with "their formidable-looking weapons, the cane knives" in hand. As the lead hand in a gang of 50 to 100 slaves, Solomon Northup graphically described the interdependence of team work and the division of labor among the cane-cutters on Bayou Boeuf. Flanked on either side, the lead hand advanced slightly ahead of his compatriots, who formed the base of a triangle, which labored wholly in unison and at the pace of their squad leader. Progressing forward and armed with their razor sharp knives, the lead hand sheared the cane from the ground, stripped the stalk of its flags, sliced off the top and placed it behind him. Proceeding slightly behind their pacesetter, the two other cane-cutters followed suit and laid their stripped canes upon the first, so that the young slave who followed the squad could gather up the bundle and place it in the cart that followed him. Once filled, the cart left for the sugar house, though it was quickly replaced by a second wagon, assuring that the process of cutting, stripping, collecting, and loading the cane rarely ceased or slowed.

Throughout the grinding season, this brutal yet highly efficient field labor regime continued to supply the voracious demand of the sugar mill from dawn to dusk.

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61 Northup, Twelve Years A Slave, 160, 162.
Operating as the first stage in the assembly line production of sugar, the cane-cutters took their place at the van of a process characterized by the transformation of a raw material into a finished product. This prototype of the modern line production system combined labor saving techniques with "production-raising" methods. Invented by Henry Ford and Charles Sorensen for the manufacturing of automobiles at the Highland Park assembly works, the modern assembly line replaced human labor with a conveyor belt system that transported Model T components to each worker who performed his or her task often with the assistance of a further machine. A mechanized, constantly moving, assembly line, consequently, assured an efficient division of labor, rapid production, and under Ford, a minimal role for the laborer. While the antebellum sugar mill hardly matched the complexity of Highland Park, the sugar masters found that "flow production" raised efficiency and increased production speed. Working at the methodical pace of the steam engine, sugar mill hands staffed every part of the production process, from placing the cane on to a mechanized cane carrier to manning the mill, kettles, vacuum pumps, and all ancillary machinery. Assuring a smooth and continuous flow of material throughout the manufacturing process, the sugar planters combined a strict

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division of labor with line production that ultimately exploited economies of speed. To achieve optimal productivity in an era prior to full mechanization, Siegfried Giedion contends that laborers "had to be inserted in the mechanisms, as it were, to ensure an uninterrupted production line." 63

Therefore, efficient labor management assured maximum productivity and integrated gang work during the physically demanding harvest season. Undoubtedly appealing, the argument that the imposition of scientific management stood as the foundation of the planters' success fails to satisfy, as the sugar masters could only guarantee a rapid harvest by driving their laborers to stay at their posts all day and frequently most of the night. Joseph Ingraham remarked that the slaves labored from eighteen to twenty hours during the grinding season, a view similarly expressed by Frenchman Claude Robin when he observed that the slaves sole respite from the toil of sugar production came from a few hours sleep, snatched during the middle of the night. 64 To ensure efficient production, the sugar masters combined an effective division of labor and long working hours. Additionally, in their quest to meter the pace of work to the unbending regimen of the steam engine,

63 Giedion, Mechanization Takes Command, 86.
the slave-holders established a flow production system that advanced at the methodical pace of the mechanized mill. In allocating tasks to their laborers during the grinding season, the masters carefully distributed occupations with a clear and rational concept of labor specialization and efficiency. The New Orleans physician Dr. Samuel Cartwright observed that during the harvest season, "all of the laborers . . . are divided into two portions-one to labor in the field and to supply the mill house with cane; the other to manufacture the juice . . . into molasses and sugar." Remarking that "the negroes are generally tasked up to their strength during the crushing system," Robert Russell accurately observed the occupational division of labor that most planters pursued during the harvest season. On Residence Plantation, Ephraim Knowlton established a classification list that defined the occupational division of labor for the 1857 grinding season. Listing each slave's name below his or her expected task, Knowlton subdivided his labor force into a number of interdependent teams that worked on all tasks from cooking a communal meal to running the steam engine.

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65 *De Bow's Review* 13 (December 1852): 598.

Barrow's division of labor appears entirely logical and consistent with rational management practice where labor specialization helped "maximize gains" and assure inter and intra-team cooperation that "made the marginal product of teams larger than the sum of the marginal products of the individuals in them." Team efficiency and gang interdependence similarly marked the activities of other sugar masters who adopted analogous labor systems to manage their crews during the grinding season. Edward Gay, for instance, paralleled Barrow's division of labor on his Iberville Parish estate, by classifying his laborers according to task. Preserving a small, all male, crew of kettle hands and engineers, Gay subdivided his labor force to assure that Jacob Lennox, Gay's slave sugar maker, would rarely lack canes to grind during the rolling season. Cognizant that the Louisiana sugar harvest represented a battle between the planters and the state's sporadically icy climate, the masters additionally established regular watches by which the overseers and plantation managers could cycle slave workers through the cane shed at different points during the day and night. This simple managerial strategy guaranteed that comparatively fresh hands were readily available to staff


68 Volume 36, Plantation Record Book, Gay (Edward and Family) Papers, LSU.
the machines and to conduct the complex art of sugar making. As planters mechanized throughout the antebellum era, the need for attentive and alert workers increased as the steam mill introduced an unforgiving pace to sugar production that required highly skilled and watchful workers. Those who momentarily lost concentration found that the penalty for lax and careless work could often prove extremely painful. Jacob, a slave on William Palfrey's sugar estate, for example, fell victim to an early industrial accident when he became caught on the steadily moving cane carrier that dragged him up the conveyor belt toward the mill. Fortunately, Jacob suffered only a dislocated collar bone and some severe bruises, but in an era of minimal safety protection, those who briefly turned away from the grinding cogs often paid the ultimate price for disregarding the new industrial machinery. Writing to the Novelty Iron Works in New York, sugar master Maunsell White expressed his sorrow at the death of a "valuable" female slave who died of complications following a grim accident where the unfortunate bondswoman, while trying to unchoke the mill, caught her hand and arm in the moving parts which quickly exerted its thousands of pounds of pressure in crushing her

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69Volume 17, Palfrey, William T. Diary, 1842-1859, 21 November 1846, Palfrey Family Papers, LSU.
The risk of industrial accidents and the need for attentiveness during the sugar making process evidently placed a premium on attention to detail and on vigilance at the work-place. To assure their skilled engine hands remained reasonably alert, the masters established a system of watches where slaves labored at their shifts, before changing occupation for the following eight hours.

On Nottoway Plantation, John Hampden Randolph instituted two watches per day for the 1857 grinding season. Dividing his slave force according to task and to watch, Randolph established a revolving labor system where he divided the working day and night into three, eight hour long watches, of which most slaves worked two. For example, Big Alfred began his working day as a cart loader who followed the cane cutters through the fields. Big Alfred presumably took a rest through the early evening and night, until he entered the mill house in the early morning hours where he stood guard as the steam engine fireman on the second watch. Weary from his night's labor, where he controlled the fire beneath the sugar kettles, Big Alfred returned to the fields as a cart loader with the first morning light.  At Shady Grove Plantation in Iberville Parish, Isaac Erwin instituted a similar watch system

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71 Slave List, 1857, Randolph (John H.) Papers, LSU.
during November and December 1851. Noting that his labor crews followed a strict division of labor, Erwin's interdependent gangs apparently operated in unison and efficiently enough to produce a strike every 15 to 20 minutes. Functioning like clockwork, Erwin's teams clearly functioned satisfactorily in producing "good sugar . . . "pretty fast." To assure effective management through the night, sugar masters not infrequently found that their presence in the mill proved a requirement for the smooth running of the night watches. Another planter, John Slack, wrote his brother that he spent sixty consecutive nights manning the night watch at Bay Farm on Bayou Grosse Tete. Charles D. Stewart, the master of Hog Point, equally found his attendance in the sugar mill a necessity during the grinding season. Noting to his father that "Uncle Charley never leaves the sugar house when the mill is going," William B. Hamilton recorded that his kinsman served as a sugar maker and presumably the plant manager on his Pointe Coupee Parish estate. Evidently, the need to maintain personal direction appealed to Dr. H.G. Doyle, the owner and superintendent of Eureka Plantation in Iberville

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72 Diary, 26 October 1851 to 25 December 1851, Isaac Erwin Diary, LSU.

73 John Slack to Brother, 18 December 1854, Slack Family Papers, UNC.

74 William B. Hamilton to W.S. Hamilton, 13 December 1857, Hamilton (William S.) Papers, LSU.
Parish. On a visit to his estate, William P. Bradburn remarked that "the industrious proprietor" had "a neat little room," overlooking the shop floor in the sugar house, where the Doctor retired after leaving his post at the sugar kettles. Functioning as the primary manager, engineer, and sugar maker, Doyle clearly realized that to maximize productivity through the night, the planters' guiding hand proved valuable in optimizing the sugar yield on his estate.\footnote{The Sentinel (Plaquemine), 23 December 1857.}

In their quest to assure efficiency and work discipline, the sugar masters' approach to plantation management proved considerably more sophisticated than dividing their laborers according to task, introducing integrated flow production, and establishing watches and shift labor. Thirty years ago, the renowned social historian E.P. Thompson argued that eighteenth and nineteenth century industrialists sought to impose time discipline on their laborers. Finding the irregularity of the natural world unconducive for industrialization, factory owners, Thompson continues, strove to establish the drill and punctuality of industrial capitalism by measuring the worker's day with a time-sheet and gauging productivity by the methodical beat of the ticking clock.\footnote{E.P. Thompson, "Time, Work-Discipline, and Industrial Capitalism," Past and Present 38 (December (continued...)}
occidental people in the eighteenth century, Africans retained a natural order of time where the daily rhythm of farm work profoundly influenced the working day. Usually defined as 'task-orientation,' anthropologists contend that workers in 'pre-industrial' societies labored to the natural and rhythmic order of the agricultural year rather than internalizing the disciplined time awareness of the industrial age. Sub-Saharan historians and anthropologists maintain that Africans remained bound to the natural order of time where the sun and essential daily tasks shaped their natural concept of time. In contrast to time-conscious Europeans, John S. Mbiti argues that most Africans conceive time as comprised of events. A day, month, or year, Earl Mackenzie writes, "is simply the sum of . . . events. There is no fixed time which is independent of events, and which can be computed for its own sake." This traditional concept of time, stands in


direct contrast to the emerging cult of rapidity and efficiency that forcefully emerged during the market revolution. Writing on emerging time awareness in the nineteenth century, Marvin Fisher remarks that most Europeans who visited the United States found the frenzied pace of life "decidedly faster, more frenetic than in the cities of Europe." One anonymous American similarly offered candid reflection on the national penchant for punctuality and rapidity:

We are b o m in haste, . . . we finish our education on the run; we marry on the wing, we make a fortune at a stroke, and lose it in the same manner . . . Our body is a locomotive, going at the rate of twenty-five miles an hour; our soul, a high-pressure engine.78

In using the steam engine as a particularly apt metaphor for the emergence of a time conscious economic culture, this contemporary accurately pointed to the emerging national pre-occupation with punctuality, time, and ordered industrial discipline. In Northern factories, the capitalist principles of the industrial revolution

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propelled mill owners and plant managers to establish a clock-orientated labor regime where the owner established an iron clad factory schedule that increasingly focused on optimizing labor production. With machinery synchronized to operate as part of a larger calibrated system, the need for punctuality and efficiency in the job place assured that, while tardiness received quick punishment, discipline was strictly pursued throughout the sugar country. To establish order within the mill house, the sugar masters, Eugene Genovese contends, "presided over a plantation system that constituted a halfway house between peasant and factory culture." Facing a profound contradiction in advancing modern capitalist values in a slave society, the planters, Genovese argues in Roll, Jordan, Roll, toyed with instituting bourgeois work discipline, but found that they could not "instill factory-like discipline into a working population engaged in a rural system that, for all its

tendencies toward modern discipline, remained bound to the rhythms of nature and to traditional ideas of work, time, and leisure."^6^ Genovese maintains that the slaves rejected the bourgeois work ethic, and resisted the method and structure of the industrial revolution by clinging to a pre-modern work order where a traditional task-orientated mentalité prevailed. Contrast Genovese's reasoning, however, with that of his polar opposite, Robert Fogel, who maintains that African-American slaves embraced the Protestant work-ethic and became "metaphoric clock punchers," who labored "under a regime that was more like a modern assembly line."^6^ Disciplined by the work rhythms of industrial society, slaves, Fogel and Engerman contend, stood at the vanguard of the market revolution. Bold, provocative, and challenging, Robert Fogel's assumptions, while perhaps a little overstated, appear largely accurate for the Louisiana sugar country, where the planters similarly strove to instill efficient, factory-inspired,

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time discipline in the mill house. In his recent analysis of time discipline among Southern slave-holders, Mark Smith contends that, by introducing "the clock and the watch to the field," the planters behaved as "clock-conscious capitalists . . . [who] in effect produced a time-based form of plantation capitalism" in the antebellum South.  

Embracing mechanization, the division of labor, and flow production during the grinding season, sugar planters strove to instill industrial discipline among their slave workers by substituting the natural order of time with formalized work rules and a structured discipline that marched to the beat of the ticking clock. Publishing in the four principle Southern agricultural journals, antebellum planters consistently advised their readers to regulate their slaves' work and impose timed discipline in the work-place. In a syndicated article, released at least six times from 1850 to 1855, one planter using the


63These four journals, De Bow's Review, Southern Cultivator, Southern Planter, Southern Agriculturist, while having a regional appeal were certainly purchased in large number by antebellum sugar planters. This appears particularly true for De Bow's Review, the quintessential organ of the sugar masters.
pseudonym Tattler counseled fellow agrarians that the key to judicious slave management lay in the "saving of time." Calling upon slaveholders to employ a central slave cook to prepare all meals for the bondspeople, Tattler calculated that prudent, "time-conscious" labor management of this sort, would yield several hours of saved labor time that the planter could expropriate for field-work.84 With such broad dissemination, we can deduce that Tattler's reprinted article, "Management of Negroes," probably lay on more than one sugar planter's desk and received a close reading by those interested in plantation supervision. Evidently emerging as an authority on the sordid field of slave management, Tattler's time saving advice appealed to the sugar masters who, on most plantations during the grinding season, selected one or two cooks to prepare meals for all. Estimating that each slave family probably required one hour to cook and eat their meal, planters realized that by pooling resources during the harvest, a significant saving

84 "The Management of Negroes," published successively in Southern Cultivator 8 (November 1850): 162-164; Southern Planter 2 (February 1851): 39-43; De Bow's Review 10 (March 1851): 326-328; J.D.B. De Bow, The Industrial Resources of the Southern and Western States (3 vols., New Orleans: Office of De Bow's Review, 1853), II: 333-336; De Bow's Review 19 (September 1855): 358-363; Southern Cultivator 13 (June 1855): 171-174. On the saving of time, Tattler writes: "To make one negro cook for all, is a saving of time. If there be but ten hands, and these are allowed two hours at noon, one of which is employed in cooking their dinner, for all purposes of rest that hour had as well be spent in plowing or hoeing; and would be equal to ten hours work of one hand: whereas the fourth of that time would be sufficient for one to cook for all."
in labor time might prove achievable. On Oaklands Plantation, Samuel McCutcheon delegated three rather elderly and sick women to cook for all hands in 1859. Noting that his cooks included Milly, a perennial rheumatic; 58 year old physically handicapped Beershiba; and asthma suffering Betsey, McCutcheon's kitchen staff prepared meals for 107 working adult hands on his Plaquemine Parish estate. By organizing a refectory meal service, McCutcheon saved the precious working time of healthy strong adults by centralizing food preparation. James P. Bowman similarly consolidated cooking operations prior to the rolling season at Frogmoor Plantation. After discharging his daily duties, Bowman's overseer, George Woodruff, wrote his plantation journal in a copy of Thomas Affleck's Sugar Plantation Record and Account Book. Published primarily for the improving planter, Affleck's commercially successful register included a two-page essay entitled "Duties of an Overseer." Urging the pursuit of judicious management, Affleck advised overseers to provide plenty of "wholesome well cooked food . . . supplied at regular hours." Evidently following this stricture on plantation timing and efficiency, Woodruff commenced with centralized cooking on Monday 26 October, 1857, exactly one day before the start of the grinding season. Clearly understanding

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85Oaklands Plantation Document 1859, McCutcheon (Samuel D.) Papers, LSU.
the potential gain in time by centralizing operations, Bowman and McCutchon found that time thrifty management, ultimately helped to assure greater plantation efficiency.\textsuperscript{86}

Other articles published on the optimization of slave labor equally urged planters to institute time and time discipline on their estates. Publishing in both \textit{Southern Cultivator} and \textit{De Bow's Review}, Robert Collins beseeched planters across his native South to guarantee that their workers followed a disciplined and timed day where they began work at first light, broke at 8 am for breakfast, and stopped at noon for a two-hour break during the heat of the early afternoon. Returning to their tools at 2 O'clock, the slaves then labored on until night fall.\textsuperscript{87} To enforce such discipline, however, required the imposition of the mechanical clock and the sounding of bells to notify the

\textsuperscript{86}Frogmoor Plantation Diary 1857, Turnbull-Bowman-Lyons Family Papers, LSU. On the widespread acclaim for Affleck's \textit{Plantation Record and Account Book}, see \textit{American Agriculturist} 6 (November 1847): 356, and \textit{Planter's Banner} (Franklin), 14 January 1847. Cuban sugar planters also found centralized cooking and eating beneficial during the grinding season. Establishing \textit{barracas} or "prison-like barracks," Cuban sugar estates mirrored factory towns where centralization similarly prevailed. Assuring heightened control over their laborers, these appalling barracks additionally enabled the planter to expropriate the maximum labor possible from his slaves. On \textit{barracas}, see Rebecca J. Scott, \textit{Slave Emancipation in Cuba: The Transition to Free Labor, 1860-1899} (Princeton: Princeton University Press, 1985), 17-19.

slaves of the changing time. Published initially in the Carolina Planter but subsequently re-printed in The Farmer's Register and in the prominent sugar cultivator's newspaper, the Thibodaux Minerva, overseers received clear counsel to time the slaves' working day by blowing a horn to apprise the bondspeople of their daily schedule. Such tactics and use of the horn or bell to time workers appears as common advice among the leading agricultural journals. Writing in De Bow's Review, Joseph Acklen, a cotton planter in West Feliciana Parish, announced that on his estates, the plantation manager rose at dawn each morning and proceeded to regiment the worker's day by ringing a bell in the slave quarters to caution the slaves that roll call would occur exactly twenty minutes after the ringing of the bell. While indicating that Acklen strove to enforce the rigors of time management, it appears logical to conclude that the slaves congregated and were quite conscious of the passing of time. Published in a multi-part series, Acklen's "Rules in the Management of a Southern Estate,"


probably shaped plantation supervision throughout the sugar country, where the sugar masters similarly utilized bells and horns to chime instructions to their laborers.\(^{90}\)

Touring south Louisiana in the late 1820s, Timothy Flint astutely observed the imposition of formalized work rules on one antebellum sugar estate:

There is in a large and respectable plantation as much precision in the rules, as much exactness in the times of going to sleep, awakening, going to labor, and resting before and after meals, as in a garrison under military discipline, or in a ship of war. A bell gives all the signals. Every slave at the assigned hour in the morning, is forthcoming to his labor, or his case is reported...

While the imposition of such order helped assure plantation efficiency and the successful production of sugar, Flint's description of plantation discipline conforms to his broader view on the Louisiana sugar industry. Writing on the consequences of strict plantation management, Flint observed:

All the process of agriculture are managed by system. Everything goes straightforward. There is no pulling down to-day the scheme of yesterday, and the whole amount of force is directed by the teaching of experience to the best result.\(^{91}\)

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\(^{91}\)Timothy Flint, *The History and Geography of the Mississippi Valley. To Which is Appended a Condensed Physical Geography of the Atlantic United States and the Whole American Continent* (2 vols., Cincinnati: E.H. Flint and L.R. Lincoln, 1832) I: 244-245.
Outstanding in its detail, Flint's description of the immediate association between time signals, discipline, and plantation efficiency directly addresses the compatibility of slavery and the emergence of capitalist work rules in the sugar country. The emerging bourgeois obsession with time, consequently, seems to have left its indelible print among the sugar fields of south Louisiana. Representative of the sugar masters, William Minor established exacting time-conscious rules on his Southdown and Hollywood Plantations. Directing his overseers to follow a set of strict regulations, Minor directed his managers to employ bells at established times in regimenting the slaves' day. At 9 O'clock in the evening, for example, Minor's overseers rang the plantation bell warning all slaves that they must promptly return to their own houses. Noting that slaves had 30 minutes in the winter but only 15 minutes in the spring and summer to return to their houses, Minor's slaves seemingly fathomed and grasped the significance of both the clock and time signals at Southdown and Hollywood Plantations. Responding to Solomon Northup, the driver on William Turner's sugar estate in St. Mary Parish, both slaves and masters apparently internalized the metered pace of modern clock discipline by entering and exiting the mill house,

92Volume 34, "Rules and Regulations on Governing Southdown and Hollywood Plantations," Plantation Diary, 1861-1868, Minor (William J.) and Family Papers, LSU.
Northup remarks, at "the proper time." Other time signals, such as the peal of a steamboat bell tolling in the night, engendered similar timed responses from all sections of the plantation community. Noting that the arrival and departure of scheduled steamboat services helped to instill order and regimen along the Mississippi Coast, Sir Charles Lyell observed that "the American captains are beginning to discipline the French proprietors into more punctual habits." Requiring no further lessons in promptness, Frederick Law Olmsted similarly recorded that before his arrival at one sugar estate, the steam boat captain tolled a bell to warn the welcoming committee on the river bank of the boat's imminent arrival. Surprised by the swiftness of the landing, Olmsted remarked that exactly ten minutes after the steam boat sounded its bell, a slave came out to meet him. Although incidents such as the one Olmsted described might appear uneventful, African-Americans slaves accurately responded to the disciplined time signals of the modern age, and partook of

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93Northup, Twelve Years A Slave, 148.


95Olmsted, The Seaboard Slave States, 313.
a "time-based form of plantation capitalism" that historians of the Old South have consistently overlooked."

By combining economies of scale, division of labor, flow production, and an effective use of time signals, the antebellum sugar planters established a highly effective management system that strove toward rapidity and efficiency in plantation supervision. Through the maximization of work-levels and by forcing the pace of work to the methodical beat of the steam engine, the planters rationally responded to the managerial demands of the sugar crop by transforming the plantation into a modernizing business where technology, time, and economies of scale operated in unison to guarantee maximum and optimum efficiency. Writing forty years ago, Kenneth Stampp eloquently observed:

These agricultural enterprises, with their business directors, production managers, labor foremen, and skilled and unskilled workers, approached the organizational complexity of modern factories. Though agriculture was not yet mechanized, the large plantations were to a considerable extent 'factories in the fields.'

Perhaps accurate for the cotton South, Stampp's analysis proved particularly true for the Louisiana sugar country where both the fields and sugar houses appeared to hum with the energy and vigor of the factory age. Central


to this process of economic modernization and development stood the sugar masters, a class of men who systematically pursued the fruits of mechanization, the division of labor, and time consciousness on their plantations.
CHAPTER 7

ACCOMMODATING THE MACHINE: SLAVERY AND MECHANIZATION IN THE LOUISIANA SUGAR INDUSTRY

Underpinning the entire plantation structure lay the slaves' ability to adapt to the new industrial order, scientific agriculture, and mechanization. As the Louisiana sugar industry geographically and technologically advanced in the last twenty years of the antebellum era, the planters increasingly relied on groups of highly trained slaves who possessed the skills and ability to operate new machinery while technologically advancing the industry. Two decades ago, Eugene Genovese charged that slaves resisted the "regularity and routine which became the *sine qua non* for industrial society," by clinging to pre-bourgeois traditionalism. Explaining that slaves often proved "careless" with their implements, Genovese contends that while African-American slaves derided laziness, they rejected "steady routinized work" in favor of a work ethic that shared aspects of African communalism and their own experiences as slaves.\(^1\) Economist Stefano Fenoaltea similarly argues that slaves constituted an inferior labor force for care-intensive industries, while they worked particularly well in effort-intensive work such as

farming. This assumption on the incompatibility of slavery and mechanization rests on the erroneous argument that slaves constituted nothing more than brute labor and that only free workers possess the motivation to mechanize. This fallacious hypothesis, however, fails to address the important role of skilled slave labor in diverse New World societies.

In maintaining that industrial slavery proved particularly unmerciful, Robert Starobin contends that slaves proved "more tractable, efficient, and profitable than alternative labor forces." Treated appallingly however, skilled industrial slaves, Starobin continues, labored under an especially ruthless regime where working conditions "were usually worse than those for laborers engaged in southern farming." By challenging Starobin, Charles Dew and Ronald Lewis argue that skilled slave labor proved essential for the smooth running of the Virginia

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5 Ibid., 36.
coal and iron industries, where particularly skilled slaves both asserted their autonomy and challenged their masters to provide them with overwork payments, additional rations, and further free time where they could enjoy their temporary "liberty" unfettered by their masters influence. Although they focused their work solely on industrial slavery in the Chesapeake iron industry prior to the Civil War, Dew and Lewis's conclusions appear partially accurate for the Louisiana cane industry where skilled slaves similarly utilized the overwork system to bring "the requirements of both master and the slaves into some sort of balance." Nonetheless, Dew's contention that the institution of slavery checked mechanization and "exerted a profoundly conservative force on the manufacturing process" fails to satisfy in the Louisiana sugar bowl, where planters mechanically advanced their milling techniques with slave laborers.  

In a fascinating letter to sugar master and patrician John McDonogh, the creole J. Deballièvre requested that McDonogh sell him twelve highly trained and skilled slaves for a plantation that he sought to establish near Baton Rouge. Specifically stating that these slaves would serve as the primary team in the sugar house, the contract agreement listed thirty-two year old François as the team "Commander." An accomplished brick-layer, cooper, and carpenter, François evidently possessed the rare skill of reading and writing, faculties he clearly used, as his evaluation of $4000 in 1829 reflected the bondsman's singular talent as a "good accountant." Possessed of considerable intelligence, François's ability clearly appealed to Achille Sigur d'Iberville as he offered to teach the slave craftsman the art of sugar making during the following grinding season. Hand-picked by Deballièvre as a superior crew leader, François did not stand alone in attracting this sugar planter's attention. Listed below the Commander, appeared the names of "sub-commander" Nat,

6(...continued)
whose particular skills lay in carpentry and masonry; Jesse, a thirty-two year old mason and bricklayer; Jules, an excellent twenty-year old bricklayer; and Peter, a young man of just sixteen years whose skills included shovelling, delving, plowing, and driving a wagon. Seven other craftsmen served to complete this particularly skilled slave crew. Relying on slave labor to staff all aspects of the sugar house, however, proved quite routine among the sugar masters who strove to introduce new machinery and maintain their predominantly African-American labor teams.

On Residence Plantation, Robert Ruffin Barrow placed so much confidence in his slaves' capacity to operate the steam engine that he named the bondsman Jake as the engineer during the grinding season. Complaining that the throttle valve and governor on the steam engine operated poorly, Barrow's plantation manager, Ephraim Knowlton, remarked significantly: "I fear Jake does not understand the engine well [but] Mr. B says he is willing to trust Jake, so I will say nothing." Confident in his other slaves, Barrow relied extensively on his skilled slave mechanics Ruben and Shell to repair the sugar mill when a

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7J. Deballièvre to John McDonogh, 24 March 1829, John McDonogh Papers, Louisiana State Museum.

8Residence Journal of R.R. Barrow, Monday, 30 November 1857, Robert Ruffin Barrow Papers, UNC.
cylinder bolt came loose on his Myrtle Grove Plantation. Barrow's reliance on his skilled slave laborers for engineering and sugar house work reflects standard plantation procedure where each estate designated a few highly skilled slaves for mechanical work. At Bayside Plantation, Moses Liddell and Francis DuBose Richardson similarly placed the assistant engineer's post in the hands of Monday, a skilled slave who three years later remained on Liddell's first watch in the sugar making roll for 1851. On neighboring Grand Cote, David Weeks also established a team of skilled slaves, including Peter Congo, a forty-two year old sugar maker valued at $1000 in 1853; Somerset, a sawyer in 1835 who within a decade held the driver's post; Isaac, a youthful engineer at age 25; and Frederick, the sugar mill engineer who at twenty-seven years of age clearly possessed considerable talents.

William P. Welham additionally maintained a highly skilled labor force on Hester Plantation in St. James Parish. Recording that the bondsman, William Bias served as the sugar maker on his Mississippi River estate, Welham could accurately conclude that his slave sugar maker

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9Ibid., Tuesday, 15 December 1857.

10Moses Liddell to John R. Liddell, 29 November 1848; Sugar Making Roll, 31 October 1851, Liddell (Moses, St. John R., and Family) Papers, LSU.

11Inventory for 1835 and Inventory for 1846, Weeks (David and Family) Papers, LSU.
possessed the skill and capacity for diligent and effective work as George Bias produced a bumper crop of 371 hogsheads with his steam powered mill in 1859. In his quest to define a clearly established division of labor on his estate, Welham additionally picked forty-six year old Jesse as the plow foreman, Southern as the plantation blacksmith, and 41 year old Aleck Ross as the carpenter. To assure that the plantation remained prepared for the next decade of bonded labor, Welham also placed young Jean Baptiste alongside Aleck, where he could learn the carpenter's trade and René, who at seventeen years of age, found himself learning the crucial duty of coopering. Since most planters assembled their own molasses barrels and sugar hogsheads on their respective estates, René's task to build water or treacle tight casks proved a demanding, skilled, and highly important task on the plantation. Edward Gay also found that skilled slave labor sufficed for the administration of his estate in the late 1840s. Noting that the bondsmen William Saunders and Jake Lennox served as the plantation sugar makers while Bill Garner stood guard as engineer, Gay relied on a host of skilled slaves who built carts, made shoes, and coopered barrels to run

his plantation." Aware that good skilled slaves proved a necessity on every sugar estate, Francis D. Richardson attempted to buy Colbert, a particularly dexterous slave for his plantation on Bayou Teche. Colbert, William Winans wrote his nephew in the Attakapas, "is a very ingenious and mechanical man" with expertise in operating a steam-engine, tanning leather, carpentry, brick-laying, and black-smithing. Possessing a wide range of talents as a "practical engineer," Winans estimated the slave's value at between $1800 and $2000. While Colbert proved a little slow at work, Winans quickly added that "his slowness is not the effect of indolence, but of an extreme desire to do his work well." Industrious in his labors, this slave workmen had exerted his authority and independence more than once, by trying to escape to the North on two occasions. Remarking that this tendency and his alleged "lasciviousness" proved deleterious to his character, Winans nonetheless urged his kinsman to invest his funds and strengthen his plantation slave crews with this particularly capable and skilled bondsman.15

13Inventory in Case: Succession of Andrew Hynes, 12 April 1850, Gay (Edward and Family) Papers, LSU.

15William Winans to Francis D. Richardson, 15 April 1847, Simpson and Brumby Family Papers, UNC. For an account of slave engineers and ironworkers, see Marcus Christian, Negro Ironworkers in Louisiana, 1718-1900 (Gretna, La.: Pelican Publishing, 1972), 18-23.
By proficiently training skilled slaves, the sugar masters found no contradiction between enhanced production, mechanization, and slave labor. On Eureka Plantation for instance, skilled slave labor proved integral in modernizing and improving the sugar works where the production of pure white sugar impressed local visitors from neighboring Plaquemine. After a visit to James J. Hanna's Ardoyn Plantation in 1854, the editorial staff from the Thibodaux Minerva observed Hanna's slaves managing a steam engine that "seemed to . . . work quietly and steadily" and two vacuum pans that produced a sugar "to rival the snow in whiteness, and the diamond in the sparkling brilliancy of its grain." Profoundly impressed by the operations that lay before them, the visitors remarked that Hanna "employed neither sugar maker nor sugar boiler, except the negroes who belonged to the plantation." Utilizing the latest technology with competence and dexterity, Hanna's bonded mill crews evidently proved highly successful as the annual production at Ardoyn surpassed 700 hogsheads in 1854.

Subsequent to a tour through several sugar estates in the Attakapas region of south Louisiana, one traveling Alabamian observed that some sugar planters undertook the systematic training of their hands in the art of sugar

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16 The Sentinel (Plaquemine), 23 December 1857.

17 Thibodaux Minerva, 23 December 1854.
making. Noting that "all depends upon getting one acquainted with graining and managing," the visitor apprised future settlers that bondsmen require a season to adequately learn the sugar maker's trade. Robert Russell also observed highly trained slaves on his visit to a large sugar estate in St. James Parish. Remarking that the sugar maker and all "inferior functionaries were negroes," Russell praised the slaves, "who were, from the trust which was committed to them, evidently possessed of considerable skill and intelligence." Slave sugar masters proved similarly successful on the cane estates Thomas Bangs Thorpe visited in the early 1850s. In his description of the sugar maker's crucial role in the boiling of cane juice, Thorpe observed that "his commands, be he as black as midnight, are attended to do with a unquestioning punctuality that shows how much is dependent upon his [the sugar maker's] skill." In his signature melodrama, Thorpe mused on the extraordinary skills both slave and free sugar masters possessed. Contending that the commercial value of the crop rested in the sugar maker's assured hands, Thorpe observed that "no tyro can fathom the mysterious wisdom of the sugar maker's mind. He looks into the batterie, but

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sees more than is accorded to the vision of the uninitiated." While lyrical enough, Thorpe's description points to the significant fact that trained African-American slaves not uncommonly served as the sugar makers on whom the planters relied for both the proficient production of their crop and their annual financial success.

Adam Abruzzi and Albert Hirschman maintain that the introduction of machinery greatly affects labor efficiency by establishing a "steadiness of pace" and in assuring that production rates "are dominated by . . . the machine" and not by human variables. In process centered industries, such as sugar making, where assembly-line production and technology establishes "the basic process around which work falls into place almost naturally," Hirschman contends that machinery establishes a pattern, organization, and metered cadence to work. This new work discipline marched to the

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22 Hirschman, Strategy of Economic Development, 146-147. On the relationship between work patterns and machinery, see Frederick Winslow Taylor, Scientific Management (New York: Harper and Brothers, 1947); Benjamin W. Niebel, Motion and Time Study (Homewood, Ill.: Richard D. Irwin, Inc., 1972), 40-169; Ralph M. Barnes, Motion and Time Study: Design and Measurement of Work (New York: John
ordered beat and pace of the machine age where the mill and steam engine instilled a metered rhythm on the plantations. Solomon Northup, in his description of the annual grinding season, observed the frenetic pace of work as slaves labored at double quick time to keep up with the cane carrier that perpetually advanced before their eyes:

The mill is an immense brick building . . . at least a hundred feet in length and forty or fifty feet in width . . . an endless carrier, made of chain and wood, like leathern belts used in small mills, extends through the entire length of the open shed. All along the endless carrier are ranged slave children, whose business it is to place the cane upon it, when it is conveyed through the shed in to the main building, where it falls between the rollers, is crushed, and drops upon another carrier that conveys it out of the main building in an opposite direction, depositing it in the top of a chimney upon a fire beneath, which consumes it.23

Eager to establish a work gang that could match the incessant pace of the mechanical cane carrier, Hore Browse Trist installed Aggy as the captain of the cane-carrier brigade on his Ascension Parish estate.24 In order to assure a ready supply of cane for the Rillieux apparatus that Trist constructed on Bowdon Plantation, these slaves labored at an industrial pace to man the conveyor belts

22(...)continued)


24H.B. Trist to Bringier, 25 November 1854, Trist Wood Papers, UNC.
that transported a ready supply of cane at the mill. Francis DuBose Richardson similarly recalled that "night watches" and a "frenetic pace of work" singularly marked the harvest season in the antebellum Attakapas. Laboring at the exacting pace of the mechanical cane carrier, the slaves, Richardson remembered, worked to the methodical beat of a short-meter song "that fairly made the old cane-shed shake."25

While Genovese's argument that the slaves rejected the pace and order of the industrial age might prove pertinent for the cotton South, it seems inaccurate for the sugar country, where the slaves did not apparently eschew the disciplined order of the modernizing and mechanized sugar mill. Contemporaries who visited the sugar region frequently commented on the marked absence of labor difficulties during the grinding season and on the striking inconsistency of the slaves' apparent willingness to work long hours in exhausting conditions.

On a visit to a large sugar plantation bordering the Mississippi River, Matilda Houstoun observed the stark contradiction that, while the slaves "had been severely worked" for the previous four or five days, they appeared "as cheerful and merry a set of people as I ever saw." Joseph Ingraham similarly remarked that the slaves appeared

"more animated" during the grinding season, a period, Ingraham contends, "which . . . if not the freest, is certainly the gayest and happiest portion of the year."

Paralleling these sentiments, the New Orleans Weekly Delta pronounced that, "although the necessities of the crop demand almost incessant exertion, the happy blacks seemed to enjoy the fun, [and that] they 'went at it' with much more ardor and zeal than at any other labor." Despite the absence of rest and recreation, African-American bondsmen, "prefer it to any other employment, and always look forward to the grinding season as a pleasant and exciting holyday."

Reporting to Harper's New Monthly Magazine, Thomas Bangs Thorpe additionally acknowledged the energy and verve the slaves brought to the grinding season. Contending that the slaves "seem to shine with an extra polish as they pursue their allotted tasks," Thorpe mirrored other contemporary observers in perceiving the apparent willingness of the slaves to work long hours in exhausting conditions. Since chattel property has apparently little to gain by working rapidly and long into the night, the slaves eagerness to work, or at least to


27 The New Orleans Weekly Delta, 18 October 1847.

28 Thorpe, "Sugar and Sugar Region of Louisiana," 760.
accept the new industrial order, requires further explanation. In Autumn 1853, Frederick Law Olmsted proffered an explanation for this apparent paradox when he observed that, despite eighteen hour shifts, the slaves "worked with greater cheerfulness than at any other time of the year." Calling upon abolitionists and social critics of slavery to account for the apparent productivity of slave labor during the grinding season, Olmsted maintained that the slaves particularly enjoyed "that season of the year when the hardest labor was required of them," largely because of the remunerative advantages they gained from accepting the discipline of the grinding season and the new industrial order of the mill house. In his description of slave productivity, Olmsted wrote:

The reason for it is that they are better paid; they have better and more varied food and stimulants than usual, but especially because they have a degree of freedom and social pleasure, and a variety of occupations which brings a recreation of mind, and to a certain degree gives them strength for, and pleasure in, their labor. Men of sense have discovered when they desire to get extraordinary exertions from their slaves, it is better to offer them rewards than to whip them; to encourage them rather than to drive them.29

While perhaps over-estimating the possibility of freedom and social pleasure during the grinding season, Olmsted accurately portrayed the close affinity between the slave-holders' use of incentives in the management of their

29Frederick Law Olmsted, A Journey in the Seaboard Slave States In the Years 1853-1854 With Remarks on Their Economy (reprint, New York: G.P. Putnam, 1904), 327.
plantations and the slaves' desire to improve their lifestyles. Eager to expand their personal autonomy and improve their material conditions, the slaves appear to have accepted the factory age with, E.P. Thompson argues, its restructured "working habits-new disciplines, new incentives, and new human nature." Discovering that enough advantages existed in the new industrial order to improve their lives, the slaves largely accepted the rigors of the two month long grinding season. Additionally aware of the climatic constraints and perilous nature of sugar cultivation, the planters remained ever keen to assure an efficient and intensive labor force that would quickly and proficiently harvest the crop. The sugar masters additionally knew that since they had to harvest and grind the sugar cane before the first killing frosts, they could scarcely afford work slow-downs, slave resistance, or sabotage during the grinding season. By offering the slaves various incentives and rewards, the planters avoided these potentially costly risks and established a seemingly satisfied labor force that accepted mechanization and worked long into the night during the grinding season. In his analysis of the use of incentives in slave management, Randall Miller contends that "persuasion and accommodation, incentives and rewards, avoided clashes and promoted worker

efficiency." Particularly keen to avoid potentially costly conflict with their laborers during the grinding season, the slave-holders offered their bondspeople the opportunity to trade and barter for wood, corn, moss, chickens, and even to receive remuneration for extra work. Aware that these inducements, combined with better housing and rewards, might prove profitable in the long-term, the planters used a complex system of incentives, though maintained the whip as a guarantee against the failure of positive motivation through inducements and rewards.\textsuperscript{12}

By establishing trading networks with the planters, African-American slaves entered into an exchange economy where they found that they could earn considerable sums by collecting wood and subsequently selling it to the planter or in retailing food crops that they had cultivated on their garden plots. Through trade networks with their


\textsuperscript{12}Stefano Fenoaltea closely parallels this argument in his "Slavery and Supervision in Comparative Perspective: A Model," 635-668, where he contends that while pain incentives generate greater worker effort in land and effort intensive activities, they are significantly less successful in care-intensive industries where physical punishment (i.e whipping) tends to reduce the worker's capacity to perform skilled and concentrated tasks. In contrast, skilled slaves tend to perform better in a system characterized by rewards.

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masters, the slaves became active market participants who, John Campbell argues, "temporarily experienced one of the central attributes of freedom: the purchase and sale of labor power and the enjoyment of its fruits." In his detailed account of the slaves' internal economy in the Louisiana sugar parishes, Roderick McDonald contends that, by withholding their labor power and lowering productivity on the sugar estates, the slaves forced their masters to provide "better working conditions and more adequate clothing, food, and shelter." Certainly attractive and fashionable as an argument, McDonald provides scant evidence on how the slaves systematically slowed their work to force concessions from the master. The absence of historical testimony to sustain McDonald's argument should not surprise as there appears remarkably little manuscript evidence on the role of slaves as market participants, see John Campbell, "As 'A Kind of Freeman'? Slaves' Market Related Activities in the South Carolina Up Country, 1800-1860," in Cultivation and Culture: Labor and the Shaping of Slave Life in the Americas, ed. Ira Berlin and Philip D. Morgan (Charlottesville: University Press of Virginia, 1993), 243-274; Roderick A. McDonald, Economy and Material Culture of Slaves: Goods and Chattels on the Sugar Plantations of Jamaica and Louisiana (Baton Rouge: Louisiana State University Press, 1993), 50-91; Lawrence T. McDonnell, "Money Knows No Master: Market Relations and the American Slave Community," in Developing Dixie: Modernization in a Traditional Society, ed. Winifred B. Moore, Jr., Joseph F. Tripp, and Lyon G. Tyler, Jr. (Westport, Conn.: Greenwood Press, 1988), 31-44; Philip D. Morgan, "The Ownership of Property by Slaves in the Mid-Nineteenth Century Low Country," Journal of Southern History 49 (August 1983): 399-426.

McDonald, Economy and Material Culture of Slaves, 50.
evidence to suggest that the slaves operated communal slow-downs or sabotaged machinery to force further concessions from their owners. Undoubtedly, most planters realized, and at times adapted to, the occasional risks of sabotage and slave resistance, but these occasions pale in significance with the hundreds of hours that plantation operations ran smoothly. Despite occasional violence and resistance, slave empowerment did not satisfactorily challenge the planter's hegemony or systematically shape the nature of plantation management on any of the estates analyzed in this present study.

A more realistic interpretation on the emergence of the slaves' internal economy reflects John Campbell's recent findings for South Carolina, where he discovered that African-American bondsmen developed active market relations only on the sufferance of the planters. By chopping wood or producing corn for wages on the sugar estates, the slaves found economic opportunity in the planters' work regimen and in their need for steam engine

35On the role of sabotage see Norrece T. Jones, Born A Child of Freedom, Yet A Slave: Mechanisms of Control and Strategies of Resistance in Antebellum South Carolina (Hanover: University Press of New England, 1990), 64-97. Where resistance occurred, it tended to be individualistic and in response to an immediate insult or beating rather than communal and systematically designed to destroy the plantation system. While these actions undoubtedly reflect personal autonomy and slave assertiveness, there seems to be inadequate evidence to suggest that slave pressure forced the master to acquiesce to the slaves.

36Campbell, "As 'A Kind of Freeman'" 243-274.
fuel and sufficient food crops for the year. While these market relations certainly proved advantageous for slaves, who could sell the fruits of their labor and materially improve their life with goods purchased from the plantation commissary, the slaves' internal economy also fortified the institution of slavery as planters could easily work their labor crews on additional tasks during the day, aware that the bondsmen would fell and chop trees at night and on Sundays. A fine line, however, existed in encouraging the slaves market activities, for all but the most foolhardy masters knew that a slave exhausted by night work in the woods would prove less competent during the day. Additionally, those slaves who had the direct and beneficial experience of trading home-grown goods in the local market might inculcate the values of free labor and ultimately prove recalcitrant and rebellious on the plantation. As in South Carolina, Louisiana planters also chose to minimize the slaves' market relations by assuring that each bondsperson traded solely with his master and received no specie, but rather available credit at the plantation store. In circumscribing the slaves' economy, the planters ultimately assured that they would directly profit from the slaves' outside labor and minimize the interaction of their bondspersons with free labor in the local towns. Ultimately, the slaves' independent economic activities appear considerably more circumscribed than
Roderick McDonald argues in *The Economy and Material Culture of Slaves*. Although satiating the slaves' desire for a materially improved life, the introduction of overwork payments profoundly benefitted the planters, who could control the nature and direction of the slaves' internal economy and pay small sums for tasks that would ordinarily consume the work-day.

With the popularization of the steam engine as the primary power source for sugar mills in the 1840s, each plantation required at least three to four cords of wood to produce one hogshead of sugar. On Barrow's Residence Plantation, for instance, overseer Ephraim Knowlton estimated that 1580 cords would probably satisfy for the 1857 grinding season, though to assure a comfortable surplus Knowlton wisely pressed on and finally prepared 2050 cords of wood.\(^3\) Constituting over 260,000 cubic feet of wood, the enormous demand for timber on Residence Plantation, as on every other sugar estate, necessitated a considerable labor input throughout the late spring, summer, and autumn. Conscious of the time-consuming nature of timber collection and the voracious appetite of the steam engine for fuel, the sugar masters agreed to let their slaves collect fire-wood at the cessation of the

\[^3\]Residence Journal of R.R. Barrow, Tuesday, 15 September 1857; Sunday, 18 October 1857, Robert Ruffin Barrow Papers, UNC.
regular working day for approximately 50 to 55 cents a cord.\textsuperscript{36}

Standing on the hurricane deck of a Mississippi steamboat as it passed through the heart of the sugar country in 1838, Harriet Martineau observed that groups of slaves continued to chop wood under moonlight and "toil along the shore line" even after dusk had turned to nightfall.\textsuperscript{39} On the left bank of the river, as Martineau hurried downstream lay Uncle Sam Plantation, an estate where the slaves evidently took full advantage of their opportunity to earn overwork payments. In preparation for the 1859 rolling season, the slaves on Samuel Fagot's Uncle Sam Plantation collected and chopped 2018 cords of wood in the evenings and in their own time for which they earned $1077. Aware that he could wholly rely on the slaves' extra work to meet his annual demand for cordage, Fagot's 130 slaves evidently proved highly capable woodsmen who produced not only firewood but additionally over 1300 hewn wooden boards that Fagot hoped to use as sheathing material. Crediting the slaves an additional $660 for their boards, Fagot discovered that he had paid his slaves, for timber products alone, over $4600 during the six year period from 1853 to

\textsuperscript{36}Memorandum Book 10, 1846-1848, Accounts with Slaves, 1859, Landry Family Papers, LSU; William Whitmell Pugh,, Accounts With the Negro Men, Pugh Family Papers, University of Texas.

\textsuperscript{39}Harriet Martineau, \textit{Retrospect of Western Travel} (3 vols., London: Saunders and Otey, 1838), II: 166.
Since the mill house at Uncle Sam produced 585 and 894 hogsheads in 1857 and 1858 respectively, Fagot clearly planned to rely extensively on his slaves' wood as they had more than adequate fuel to grind the 435 hogsheads that Uncle Sam yielded in 1859. Resident just three miles upstream from Fagot, Octave Colomb similarly found slave over-work beneficial to his plantation operations. In his journal, Colomb recorded that while he paid his slaves $494 for additional wood, he saved hundreds of hours in assuring that his slave crews cut timber on their time and not on his. Meeting a large part of their fuel requirements from slave over-work, Colomb and Fagot stand as representative examples of large sugar planters who satisfied their slaves' demand for disbursable income, while placing a time-consuming task outside of the normal working-day.

A mutually satisfactory solution for both planter and bondsman similarly emerged in other areas of the slaves' internal economy where African-Americans received payment for producing a range of plantation goods. After his visit to Wade Hampton's Houmas Plantation, one visitor noted that

40Volume 28, Plantation Journal, 1859-1872, Uncle Sam Plantation Papers, LSU.


4210 February 1854, Octave Colomb Plantation Journal, 1849-1866, Tulane.
behind each slave cabin lay a small garden that displayed "the neatness of a clean . . . village," where each hut possessed a garden plot "surrounded by fruit trees and shrubbery." Despite the Victorian romanticism, most visitors to the sugar plantations observed that many slave quarters included either garden plots attached to the slave cabin or separate fields where the slaves could cultivate their own crops. In her description of life in Assumption Parish before the Civil War, former slave Elizabeth Ross Hite recalled that her parents maintained a garden in front of their slave cabin where they planted corn, watermelon, mushmellon, and flowers. While these products surely bettered the slaves' diet, most bondspeople sold their produce to the plantation master. Artemise Ross, for instance, planted com and sold it for fifty cents a barrel to her master, Pierre Landreaux. With this money, Elizabeth Ross Hite perhaps exaggerated a little in recalling that her mother "bought good clothes . . . nothin' but silk dresses." Despite the ambiguous place


"Interview with Elizabeth Ross Hite (Date Unknown), WPA Ex-Slave Narratives, LSU. While Mrs. Hite gives Pierre Landro as the name of her former master, it seems probable that she was referring to Pierre Landreaux, the owner of Trinity Plantation on Bayou Lafourche. See Cohen's New (continued...)

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of slave trading under the law, the planters frequently circumvented the Black Code by allowing their slaves to maintain the practice of raising corn and selling it directly to the slave holders. At times, the planters allowed the slaves to trade directly with neighboring planters, river boatmen, and in the local towns, but on most plantations, the sugar masters circumvented and regulated the slaves' internal economy by requiring that the bondspeople sell all goods produced directly to the planter. Crediting each slave at the plantation commissary

46(...continued)

47In Slavery, the Civil Law, and the Supreme Court of Louisiana (Baton Rouge: Louisiana State University Press, 1994), 21-27, Judith K. Schafer maintains that the contradictory nature of Louisiana slave law provided for ambiguity over slave trading. Stating that it was illegal for any slave to sell "corn, rice, greens, fowls, or any other provision" without the written permission of his/her master, the Black Code also provided that the slaves must receive a plot of ground "to cultivate on their own account." Such legal variance reflects the incongruity of the slaves' role in Louisiana, where he was both chattel property and human being. Acts Passed at the First Session of the First Legislature of the Territory of Orleans, 1806 (New Orleans: Bradford and Anderson, 1807), Section 14, 3. The Supreme Court similarly upheld the right of the slave to be "entitled to the fruits of their labor on Sunday" and that "even the master must remunerate them if he employs them." See, William D. Henner, A Digest of Reported Decisions of the Superior Court of the Late Territory of Orleans; The Late Court of Errors and Appeals; and the Supreme Court of the State of Louisiana (2 vols, Cambridge: H.O. Houghton, 1861), I: 1450. On the contradictory nature of Louisiana jurisprudence and the position of the slave see David C. Rankin, "The Tannenbaum Thesis Reconsidered: Slavery and Race Relations in Antebellum Louisiana," Southern Studies 18 (Spring 1979): 5-19.

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for their goods, the planters assured that the slaves maintained minimal contact with the potentially hazardous effect of the world beyond the estate boundaries. In consensus that open communication between slaves and free people proved deleterious to the discipline and order of an estate, the sugar masters strove to minimize contact beyond the plantation by circumscribing the range and dynamics of their slaves' market relations.\(^7\)

Besides wood collecting, the slaves earned considerable sums from trading and selling corn that they cultivated in the evenings and after the completion of all daily work. At Houmas Plantation, for instance, Benjamin Tureaud maintained a ledger where he recorded over-work payments for 109 slaves working at the Bringier family estate in Ascension Parish. Predominantly a male occupation, almost 92 percent of all over-work transactions included payment to men, though it appears likely that women played an active role in cultivating and harvesting corn on the slave plots. In 1858 alone, Tureaud paid his slaves for the annual corn crop a total of $1583.85. Since corn sold in New Orleans at approximately 50 cents a

\(^7\)Olmsted noted that the relaxed and lackadaisical manner of neighboring Acadians proved injurious to plantation discipline in the sugar country. Quoting one planter, Olmsted noted that "it was better that negroes never saw anybody off their own plantations [and] that they had no intercourse with other white men than their owner or overseer . . . especially [those] who did not command their respect." Olmsted, The Seaboard Slave States, 332-333.
barrel, Tureaud's slaves produced over 3,100 barrels or 107 pecks of corn for each man, woman, and child on the plantation.\footnote{Volume 46, Plantation Ledger, 1858-1872, Tureaud (Benjamin) Papers, LSU; Menn, Large Slaveholders, 121. To remove any confusion over weights used, one barrel contains 105 quarts of meal, one peck contains 8 quarts (8.089 liters), and one quart equals 2 pints (1.101 liters).} Even if Sam Hilliard under-estimated the average slave corn intake by a factor of fifty percent, Tureaud's bondspeople produced more than enough to meet their own dietary requirements for the calendar year.\footnote{Sam B. Hilliard in Hog Meat and Hoecake: Food Supply in the Old South (Carbondale, Ill.: Southern Illinois University Press, 1972), 157, maintains that the average slave ration was one peck of corn per full hand per each week or 52 pecks per adult per year.} Adequately provided for, the slaves had additional corn for livestock and poultry feed. Such apparent self-sufficiency seems particularly important in the light of Mark Schmitz's argument that most sugar estates produced adequate cereal to meet their own demands.\footnote{Mark D. Schmitz, "Farm Interdependence in the Antebellum Sugar Sector," Agricultural History 52 (January 1978): 93-103.} At Houmas Plantation, the slaves evidently surpassed their own requirements and harvested enough corn to feed some of the 208 mules, horses, and oxen reported in the 1860 census. Hauling their corn to Benjamin Tureaud's office on November 29, 1858, most bondsmen who harvested maize that year earned approximately $10 to $15 for their crop. Other slaves, however, produced staggering quantities of corn and earned...
a significant income from their over-work. Aaron Butcher, for example, earned $120 for his corn, while fellow bondsman, Mitchell brought $110 of maize to Tureaud's desk in late November. While these two slaves surely produced a great deal of corn, they could not match the productivity of Bill Siddon, who found time to harvest corn valued at $130 and chop an additional thirty cords of wood. In crediting his slaves just days prior to the rolling season, Tureaud effectively placated his bondsmen's desire for material goods, while assuring a reasonably pleased labor force as he entered the most exacting time of the year. By transferring the production of corn to the slaves and strictly controlling their potential avenues for marketing the crop, Tureaud clearly accumulated sufficient corn for the year and additionally gained the labor time that the slaves would have ordinarily expended on corn cultivation. Such labor and time saving strategies had the added advantage of assuring that the slaves had a direct economic stake in the plantation.

On other sugar estates, the practice of slave over-work included not only corn production and wood chopping but also livestock raising, basket weaving, and moss collection. When Theresa and Francis Pulszky visited a large estate on the Mississippi River, they observed that "the negroes have their own little gardens, they keep their poultry, and sell it to the master." Inquiring to the
plantation mistress as to the rationale in paying their bondspeople for these fowl, the Pulszky's remarked that "the planters think it mean to rear their own poultry, and not to leave the profits to the slaves."\(^53\) William Howard Russell similarly spotted pigs and poultry when he visited the slave quarters at Governor Andre Roman's plantation in St. James Parish.\(^54\) Archeological research of the slaves' garden plots at Duncan Kenner's Ashland Plantation additionally indicates that the slaves probably fenced in pens for raising livestock near their cabins.\(^55\) Although it remains impossible to know what Kenner's slaves maintained in their enclosures, it appears likely that they mirrored other plantations where the slaves tended to their poultry and chicken coops.\(^56\) On Andrew McCollam's plantation in Ascension Parish, for instance, the slaves established a flourishing trade with their mistress, who, after losing eight of her hens to theft, purchased 29


\(^{56}\)Thorpe, "Sugar and Sugar Region of Louisiana," 173.
chickens, one rooster, and three pullets from the slave community. Not satisfied with her purchases, Ellen McCollam returned to the quarters to purchase two additional hens from Little Jack and Molly, an action she repeated a year later when she offered Little Isaac a dollar for five hens, two roosters, and a small chicken. Presumably procuring these birds from both adults and young children, Ellen McCollam paralleled other planters who occasionally purchased livestock from their slaves. Edward Gay, for example, acquired two pigs from his slaves Harry Tunley and Mack in 1854, and returned to Hunley to purchase a cow two years later. Finding himself in want of young and tender meat, Samuel Fagot also turned to the slave quarters where he obtained a fat calf for $8.

While most slaves traded wood, corn, livestock, hay, and a range of vegetables, the slaves on Edward Gay's plantation established a complex and highly remunerative trade with Missouri furniture makers, who required Spanish moss for stuffing bed mattresses and lounge cushions. Collecting and drying the moss on Gay's Iberville Parish estate, the slaves turned to their master to ship their

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55. 15 August 1847, 29 August 1847, 18 November 1848, Diary of E.E. McCollam of Ellendale Plantation, 1842-1846, McCollam (Andrew and Ellen E.) Papers, UNC.

56. Volume 36, Plantation Record Book, Gay (Edward and Family) Papers, LSU.

57. Volume 28, Plantation Journal, 1859-1872, Uncle Sam Plantation Papers, LSU.
material to St. Louis, where Gay's factor sold over 1,000 bales of moss between 1849 and 1861. Although the slaves surely profited from the trade in earning a few extra dollars a year, Gay maintained a tight grip over the slaves' market activities by managing the shipments from his estate and subsequently crediting the slaves' earnings to their accounts at the plantation commissary. Gay's slaves found their entrance into the market fruitful, but by trading only at the whim and behest of their master, the bondspeople discovered their moss enterprise perhaps inevitably circumscribed by the controlling hand of the master.

While some of Gay's slaves profited by supplying moss to meet the northern white demand for comfortable furniture, other skilled bondsmen on Home Plantation discovered that the pressure to grind cane and the advent of the industrial age proved particularly lucrative for those who conducted extra-work during the planting and rolling seasons. On Edward Gay's estate, Bill Garner received $75 in 1854 for his services as an engineer during the rolling season, while Harry Tunley profited not only from livestock raising, but also by cleaning the steam engine boilers. Aleck, likewise found his skill at fixing

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Volume 35, Moss Record Book, Gay (Edward and Family) Papers, LSU. For a slightly alternative view on Gay's moss operations, see McDonald, The Economy and Material Culture of Slaves, 66-67.
and setting the sugar kettles a profitable employment for which he earned $3.50. Perhaps the most interesting overwork accounts, however, lie with Gay's payments to Jake Lennox and App, two slaves whom Gay paid $40 as recompense for their work as sugar-makers during the grinding season. Similarly benefitting from their skills, Moses received $5 for his mastery of the kettle furnaces, while Patrick cleared $31 in 1854 for making five sugar coolers and completing several tasks in the carpenter's shed. Thornton also turned his carpentry skills to profit when he constructed a cart in his own time for which Gay credited him $25. Two years later, Joe Penny additionally gained from Gay's need for sturdy plantation wagons when he received $5 for encasing five cart wheels with iron.®

While he credited his skilled slaves for extra tasks during the grinding season, Gay also paid his slaves $82.75 for holiday work that the slaves completed during their post grinding season vacation. Finding Gay's pay rate of $1 a day attractive, thirty-three slaves accepted the offer to work over-time in the sugar house, where they potted and drained the sugar. While the slaves profited from their opportunity to earn additional money, Edward Gay ultimately benefitted by assuring that his labor force did not view the sugar season or the machinery as their enemies, but

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®Volume 36, Plantation Record Book, Gay (Edward and Family) Papers, LSU.
rather as a source of additional income. Through payment to chop fire-wood, cultivate corn, raise livestock, ditch canals, sharpen plow points, construct hogsheads, build carts, weave baskets, and pot sugar in their own time, Gay, like many other sugar masters, discovered that slave over-work assisted in completing a range of tasks and in maintaining plantation productivity.\footnote{For other examples of slave over-work, see, \textit{Plantation Diary, 1842-1863}, Ransdell (John H.) Papers, LSU; Volume 2, Cash Book 1847-1851, Volume 4, Cash Book 1848-1851, Volume 5, Cash Book 1851-1854, Bruce, Seddon, and Wilkins Plantation Records, LSU; Valerin Ledoux and JC Van Wickle Account Book, 1849-1883, Devereux (John G.) Papers, UNC; Accounts of Wood Cut by Slaves and Moss Accounts, Journal of St. Rosalie Plantation, 1840-1868, Andrew Durnford Plantation Journal, Tulane.} Frederick Law Olmsted observed the beneficial nature of paying slaves when he remarked that "the effect of this arrangement ... was to give the laborers a direct interest in the economical direction of their labor: the advantage of [which] is said to be very evident."\footnote{Olmsted, \textit{The Seaboard Slave States}, 317.}

Christmas bonuses also served as an effective means to placate the slave crews and assure a relatively content labor force during the grinding season. Aware that their financial rewards often rested on the success of the grinding season, the slaves exerted community wide pressure on their fellow bondsmen to process the crop smoothly and efficiently. For example, at Forest Home Plantation, John Hampden Randolph paid the slaves 40 cents a hogshead or
$175 as a Christmas bonus in December 1851. One year later, Randolph increased his bonus by $25 and in January 1854, Randolph rewarded his slaves $300, a significant increase to mark the signal success of the new vacuum pans that produced 680 hogsheads at Forest Home. Randolph's slaves, who controlled the expensive and complex pans with considerable aplomb, found mechanization financially advantageous as each adult slave increased his annual bonus and gained approximately five dollars by accepting the new machinery. Since Randolph scaled the size of the Christmas rewards to the volume of the crop, one imagines that communal pressure existed in the slave quarters against those loafers who loitered in the sugar house but drew an equal share of the Christmas bonus. Recalling that the slaves received a dollar for each hogshead they produced, Olmsted similarly observed that both master and bondspeople enforced a community wide work discipline as "if any [slave] had been particularly careless or lazy, it was remembered at this Christmas dole."

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64 Olmsted, The Seaboard Slave States, 317.
The most common method by which the planters could monitor the over-work system lay in the establishment of plantation commissaries where the slaves would receive credit for their wood, corn, or services undertaken. These small emporiums stocked a range of goods that the slaves could subsequently purchase either on credit or with money debited from their accounts. Evidently emerging as quite a complex trade on George Lanaux's Bellevue Plantation, slaves not infrequently found themselves working extra hours to pay their debts to the plantation commissary. Frederick, a slave at Bellevue, symbolizes the nature of the long-term credit relations Lanaux chose to maintain with his bondspeople. Purchasing a barrel of flour for $5.50, Frederick attempted to repay his debt quickly by bringing $2.50 in cash and 8 chickens to the plantation commissary, where Lanaux credited him $4.50. Somewhat later, Frederick, who perhaps imbued the time-conscious values and consumerism of the industrial age, purchased a silver watch for $5. With his debts growing to $6, the bondsman clearly decided to expand his chicken sales to pay not only for his newly acquired time-piece, but also for the half-barrel of rice that Frederick purchased on 27 December 1853. Selling Lanaux a total of seventeen chickens and twelve dozen eggs, Frederick systematically
reduced his debt to just 55 cents by 2 January 1854. At Houmas Plantation, Benjamin Tureaud similarly maintained an estate commissary where he credited each slave for their produce, while selling a range of goods to the bondspeople. Probably charging no more than the prevailing prices, Tureaud's best selling products included plugs of tobacco, barrels of flour, meat, hats, and shoes differentially priced for men, women, and children. Jack Lockett proved a particularly munificent client during 1858, when he purchased one barrel of flour, four handkerchiefs, two pairs of shoes, ten pounds of chewing tobacco, 20 yards of calico, 14 yards of cotton, three yards of checked cloth, and a pair of hoes. Working in the back-swamp to pay off his debt, Tureaud credited Lockett almost $26 for wood cut during 1858 and 1859. Slightly more frugal with his earnings, Little Jesse clearly sought to protect his corn patches and his personal possessions as he invested in wire, twine, and a lock. The latter purchase proved particularly valuable as Jesse received $42 in cash as part recompense for his particularly large corn crop. Although it remains impossible to know how Jesse expended the balance of his income, it appears likely that he visited

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67 Volume 14, Journal, 1851-1860, Lanaux (George) and Family Papers, LSU.
the market in nearby Donaldsonville, or traded with traveling peddlars along the banks of the Mississippi.\textsuperscript{68}

In the plantation commissary, both planters and slaves found a mutually acceptable and remunerative system whereby the planters gained such important commodities as wood, corn, and services, while the slaves materially improved the quality of their lives by purchasing a range of consumer items. Structured to benefit the planters, the practice of over-work seems to have partly alleviated potential slave hostility to the industrial order and discipline of the grinding season. Through the establishment of a trade and monetary network based on supplying wood for the steam engine or working extra hours in the sugar house, the slaves discovered an avenue for wealth and tangible improvement that perhaps explains why the slaves accepted the punishing rigors of the grinding season. With new opportunities for effective slave management and enhanced living conditions, both planters and slaves advanced relatively harmoniously toward further mechanization, industrial order, and plantation efficiency.

While over-work payments and monetary rewards served to benefit both bondspeople and masters, the slave-holders used a range of incentives to stimulate productivity and encourage rapid and disciplined work during the grinding

\textsuperscript{68}Volume 46, Plantation Ledger, 1858-1872, Tureaud (Benjamin) Papers, LSU.
season. One of the most effective of these inducements lay in the annual post harvest celebrations. These short vacations usually coincided with Christmas, but on occasional years, the planters delayed their celebrations until after all sugar making ceased in January. On her visit to the sugar country, Matilda Houstoun observed that the slaves "seemed to look forward with intense delight to the harvest home festivities," where the bondspeople could "dance and sing, and drink incessantly, never pausing in their merriment for an hour." Stylized and highly fanciful in her description, Houstoun nonetheless points to the slaves' ardent interest in maintaining and preserving the week-long Christmas holiday, a period, Victor Tixier superficially observed, when the slaves "are almost free." Although emancipation remained but a distant vision for most slaves during the Christmas holiday, the bondspeople found welcome release from the rigors of sugar work. On Grand Cote Island, for instance, William F. Weeks, the twenty-three year old estate manager for the vast family plantation on Vermillion Bay, wrote his father-in-law that after finishing the grinding season in mid-January, the "negroes have holidays now, and appear to enjoy themselves much more than I do, as it is extremely

67Matilda C. Houstoun, Hesperos, 156.

66Victor Tixier, Tixier's Travels on the Osage Prairies (reprint, Norman: University of Oklahoma Press, 1940), 47.
dull to be here without occupation.⁶⁶ During the short vacations, the planters frequently supplied their slaves with a harvest or Christmas meal where the size of the meal often reflected the sugar master's pleasure at the quality and quantity of the sugar crop. Complaining bitterly that "there is something wrong in the management of this plantation," Robert Ruffin Barrow provided the slaves with a freshly killed cow but a miserably short three day Christmas vacation on his Terrebonne Parish estate. Since Barrow was more than a little disappointed that his crop amounted to only 175 hogsheads of sugar with 75 hands, the master of Residence Plantation evidently saw little reason to share the harvest cheer with his slaves who returned to work just days after completing their sugar house work.⁷⁰

In contrast to Barrow's miserly approach to the slaves' vacation, Harriet Meade produced a large and seemingly sumptuous meal for her slaves who, labored particularly efficiently during the 1858 harvest season. Meade had obvious reasons to praise her slaves, because after installing a new steam powered apparatus earlier in the year, Harriet Meade increased production by 60 percent on

⁶⁶William F. Weeks to John Moore, 23 January 1848, Weeks (David and Family) Papers, LSU.

⁷⁰Residence Journal of R.R. Barrow, Monday, 11 January 1858, Friday, 15 January 1858, Robert Ruffin Barrow Papers, UNC.
her Bayou Teche plantation. In a letter to her mother in January 1859, Meade observed:

Amanda is busy today making pies, cak, etc. for the people who give a supper tomorrow night at the lower place. They have a wet time for their frolic, but I suppose they will enjoy a supper and dance in the sugar house. I gave them ten geese, a hog, and shall have lots of cakes and pies made for them. Poor creatures, they deserve it for they had a long and tedious sugar making.

While most planters were neither so uncharitable as Barrow nor as generous as Meade, the vast majority of the Louisiana sugar masters provided their slaves with a special Christmas or harvest meal that frequently included extra rations of pork, rice, sugar, potatoes, coffee, and flour. Despite the legal prohibition on slaves consuming alcohol, the bondspeople clearly developed quite a taste for whiskey, which the planters customarily supplied for the harvest celebrations. Recalling that he provided the slaves with four hogs, potatoes, molasses, and five gallons of whiskey, George W. Woodruff clearly dispensed enough whiskey for the merriment of the seventy-two strong slave force at Frogmoor Plantation. Anxious to obtain


72H.W. Meade to M.C. Moore, 28 January 1859, Weeks (David and Family) Papers, LSU.

sufficient whiskey for the Christmas holiday, the slaves on Bay Farm mobbed John Slack, swept him off his feet, and proceeded to carry their master on their shoulders until he "promised them plenty of whiskey." Although he later recounted the story with considerable mirth, Slack clearly perceived of his whiskey reward as an acceptable and well established precedent. George Marsh similarly realized that after a grueling three month long grinding season on Petite Anse Plantation, the slaves deserved a great festivity where Marsh orchestrated an evening of dancing and eating, followed by a week long vacation. Ellen Betts, a former slave on Bayou Teche recalled that "marse sure good to them gals and buks what cutting the cane." After the termination of all sugar making, Betts explained that her owner, William Tolas Parsons, gave a drink called "Peach and Honey" to the female slaves while offering whiskey and brandy to the men.

Apart from granting their slaves a meal and holiday, the sugar masters additionally used the post harvest vacation as a time to distribute clothing and to pay the

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76 John Slack to Henry Slack, 18 December 1855, Slack Family Papers, UNC.

77 George Marsh to Sarah Craig Marsh, 1 February 1840, Avery Family Papers, UNC.

slaves for their over-work." On Shady Grove Plantation, Isaac Erwin adopted a similar program of Christmas incentives, although he combined these with an additional schedule of holidays and vacations prior to the grinding season. In his plantation journal, Erwin noted that in late September, the slaves received a two day pre-harvest holiday which the bondspeople put to good use by digging and storing their crop of potatoes. Exactly one day before commencing to grind the sugar crop, Erwin additionally furnished the slaves with their fall clothing. This included two pair of pantaloons, a coat, and a shirt for the men, while the women received two slips and a dress. Three months later, Erwin supplied his slaves with freshly slaughtered meat and with sufficient coffee, rice, potatoes, flour, and whiskey "to make a big ball" on Christmas night. By timing his rewards and incentives to coincide with the beginning and end of the grinding season, Erwin provided two complementary stimuli to effective plantation work during the harvest period. Somewhat contented by Erwin's pre-harvest mini holiday, the slaves labored diligently to keep pace with their master's regimented labor system that included disciplined watches and timed shifts where Erwin measured his slaves productivity with his timepiece in hand. Despite a hard

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Thorpe, "Sugar and Sugar Region of Louisiana," 767; William F. Weeks to Mary C. Moore, 29 December 1853, Weeks (David and Family) Papers, LSU.
frost in mid December and the inconvenience of changing his
overseer in mid-harvest, Erwin recorded no discipline
problems with his slaves, who produced 260 hogsheads of
sugar before receiving their post-harvest rewards on
Christmas day.\textsuperscript{78} Elu Landry similarly used incentives both
before and following the harvest to goad his slaves into
particularly productive work during the grinding season.
Noting that he distributed shoes just two days prior to the
commencement of the rolling season, Landry also issued a
three day holiday in mid-November after the completion of
all sugar boiling. To supplement this brief respite,
Landry additionally provided the slaves with a Christmas
and New Year's vacation.\textsuperscript{79}

As an additional incentive toward productive work, the
planters supplied extra rations during the grinding season.
Olmsted noted that on one large sugar plantation he
visited, the slaves acquired extra rations of flour and
molasses at harvest time, while those "on duty" in the
sugar house received a plentiful supply of coffee and hot
molasses or "sirop."\textsuperscript{80} This sweet and sticky juice proved
particularly health-giving and appealing to the slaves who

\textsuperscript{78}Plantation Diary, 1848-1868, Isaac Erwin Diary, LSU.

\textsuperscript{79}Plantation Diary and Ledger, Sunday, 21 October
1849, Wednesday, 21 November 1849, Elu Landry Estate
Plantation Diary and Ledger, LSU.

\textsuperscript{80}Olmsted, The Seaboard Slave States, 317.
after "drinking freely of the cane-juice," Joseph Ingraham noted, "revive and become robust and healthy."^{81}

At times, incentives satisfied as a means toward assuring plantation efficiency, but slaves, masters, and overseers remained entirely cognizant that, however useful incentives proved, slavery remained, at bottom, a relationship built on force and the unmerciful coercion of one person's will to another. Accurately portrayed by an Englishman as "embruted creatures" with a ruffianly mien, prowling sulkily about, watching every motion of the bondsmen," the overseers evidently applied the whip with wanton freedom as they strove to establish and maintain a rigorous work discipline throughout the grinding season.^{82}

Joseph Ingraham similarly noted that the plantation overseer carefully assured rapid work by "quickening the steps of a loiterer by a word, or threatening with his whip" any bondsman or woman who slowed their labor. Armed with "short-handled whip, loaded at the butt, which had a lash four or five times the length of the staff," the overseer remained the symbol of strict plantation

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supervision within the mill house and cane fields. Former slaves particularly recalled the brutalizing nature of plantation discipline and the vicious form of physical punishment that slaves endured at the behest of their overseers. Recollecting the ferocity of one plantation overseer in Rapides Parish, Peter Hill remembered that when his sister proved recalcitrant at work, the overseer punished Hill's sibling by staking her out and subsequently breaking her legs. Hunton Love, a former slave on Bayou Lafourche, additionally described the horrors of plantation discipline in south Louisiana. Summoning from his memory an account of one woman whom the overseer tied face down in a bed of ants with a heavy weight on her back, Love described how the bondswoman visibly suffered and "was tortured awfully." One slave on Valsin Mermillion's sugar plantation additionally remembered that:

one of his [master's] cruelties was to place a disobedient slave, standing in a box, in which there were nails placed in such a manner that the poor creature was unable to move. He was powerless even to chase the flies, or sometimes ants crawling on some parts of his body.

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84 Interview with Peter Hill (18 May 1937), WPA Ex-Slave Narratives, LSU.

85 Interview with Hunton Love (Date unknown), WPA Ex-Slave Narratives, LSU.

86 Interview with Unidentified Ex-Slave (17 August 1940), WPA Ex-Slave Narratives, LSU.
Whipping pregnant women that they placed face down with a hole for their swollen abdomens proved an equally brutal punishment that former slaves recalled from their childhood experiences. While Maunsell White rarely whipped his bondspeople, Albert Patterson recalled that Colonel White used a brutal neck brace to maintain discipline on his sugar estates. In his eloquent description of this correctional device, Patterson remarked that after placing ankle cuffs, White "had a iron band to go round the neck, with a piece o'iron standin up in de front, de back, an' each side." Adding that it remained impossible to lay down with the brace on, Patterson concluded that "yo' had to pad that iron band, 'cause it was so heavy[,] it would cut yo' neck." Confident that when incentives failed, they possessed the ultimate inducement for hard work, planters and overseers retained and used the threat of physical intimidation as a means to compel break-neck speed in the fields and mill house.

In their drive to assure optimal productivity, the planters clearly utilized both incentives and physical punishment in the management of their estates. While financial rewards and over-work payments certainly

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89 Interview with Octavia Fontenette (11 March 1940) and Rebecca Fletcher (20 August 1940 to 24 September 1940), WPA Ex-Slave Narratives, LSU.

90 Interview with Albert Patterson (22 May 1940), WPA Ex-Slave Narratives, LSU.
functioned as a means to achieve relatively peaceful labor relations, the sugar masters also furnished their work crews with comparatively good accommodation. Built in compact villages surrounding the mill house, the slave quarters not infrequently resembled small industrial villages where the planters and overseers could easily regulate their slaves's activities. On the sugar plantations, such regulatory control undoubtedly appealed as a means of surveillance against slave insurgency, but also as a logical step toward disciplining and directing their laborers. In order to assist in establishing a disciplined work order, the planters potentially benefitted from tightly knit industrial housing where the slaves resided close to the locus of plantation work. Such geographical proximity to the sugar mill, of course, proved particularly valuable during the grinding season, when centralized food preparation and rotating shift or watch labor prevailed. Although the slave quarters never quite developed as Cuban barracones or barracks, the factory compound on most Louisiana sugar estates included compact and concentrated housing where the planter could maintain a watchful eye over his laborer's every move. Writing on the establishment of industrial villages in mid-nineteenth century England, John Rule contends that most mill owners "could . . . appreciate the extra element of discipline" that they could achieve through employer-provided
housing. Mill housing during the British industrial revolution provided not only the opportunity for extreme labor regulation, but as Enid Gaulie observes, the factory town essentially isolated the workers from all outside influences.

Visitors to the sugar country not infrequently remarked on the similarity of the sugar plantations with the recti-linear factory towns. Observing on a tour of Wade Hampton's Houmas Plantation that the "direct lines of uniform huts . . . exhibited the neatness of a clean New England Village," one correspondent for the Southern Cultivator noted that the slave quarters stood adjacent to the sugar houses and at a "convenient distance for receiving the cane crop." Charles Lanman similarly remarked on the industrial appearance of the sugar estates when he wrote that at the core to each plantation stood "the factory-looking sugar houses, with ther[e] towering chimneys, and neat white-washed cabins of the negroes." These houses, Frederick Law Olmsted noticed "were as neat and well-made externally as the cottages usually provided


by large manufacturing companies in New England, to be rented to their workmen." 92

Geographer John Rehder contends that the spatial dimensions of sugar plantations followed three fundamental designs: the bayou-block pattern, the nodal-block pattern, and the linear pattern. 93 In each of these different settlement patterns, Rehder maintains that the sugar mill and slave quarters formed the nucleus of each estate. On linear plantations, the quarters frequently stood along a single road that led back from the levee, master's house, and sugar mill. After a visit to Pointe à la Hache in Plaquemine Parish, the correspondent for James De Bow's Commercial Review noted the long rows of slave cabins on these slender linear plantations along the Mississippi River. 94 War correspondent William Howard Russell likewise described the sugar country as one "bounded by lines drawn at right angles to the banks of the river," in which "rows of whitewashed [slave] huts" seemed to stretch into the


distance. On block plantations, the slave quarters or village constituted part of a rectangular grid pattern where the sugar house stood at the core of the settlement. These plantations often included several slave streets that included several roads that traversed and crossed each other. In both settlement patterns, the slave quarters remained fully within the planter's orbit and beneath the slaveholder's commanding influence.

Although generalizations prove difficult, there seems convincing evidence to suggest that the plantation masters provided reasonably good housing for their slaves. Recalling from her childhood that "we slept on wooden beds wid fresh moss mattresses," Elizabeth Ross Hite also remembered that on Trinity Plantation, Pierre Landreaux required that the bondspeople scrub their cabins once a week. Such enforced cleaning, Hite recounted, assured that "our bed was kep clean. Much cleaner den de beds of today." Internal cleanliness mirrored the planter's apparent willingness to provide a moderate quality of housing for their bondspeople. Victor Tixier mentioned that the slaves' cabins "are rather large and each one, protected by a wide projection if the roof, is divided into

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96 Interview with Elizabeth Ross Hite (Date Unknown), WPA Ex-Slave Narratives, LSU.
two parts, of which lodge a family composed of three or four members."  

On Wade Hampton's Houmas Plantation, the slaves resided, Solon Robinson remarked, in thirty double cabins "all neatly whitewashed frame houses, with brick chimneys, built in regular order upon both sides of a wide street, and which is the law, must be kept in a perfect state of cleanliness."  

Traveling a little further down-stream, Robinson described the slave cabins on Myrtle Grove Plantation where the bondspeople's living quarters included 32 feet square brick houses with elevated floors and chimneys in the center.  

At Ashland Plantation, archeological evidence suggests that Duncan Kenner also maintained double cabins with a central fire-place that served both rooms. Archaeologists Rosalinda Méndez and Jill-Karen Yakubik argue that these whitewashed cabins contained two rooms, each measuring 20 ft. x 20 ft, plate glass windows, and a small vegetable garden behind the structure.  

Located on a long street close to the sugar

100 Victor Tixier, Tixier's Travels on the Osage Prairies, 47.


102 Yakubik and Méndez, Beyond the Big House, 20; Craig A. Bauer, A Leader Among Peers: The Life and Times of (continued...)

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house, these cabins appear quite commodious as archeological research on other southern plantations indicates that most slave families on the Georgia rice country lived in single room cabins measuring 17 by 20 feet.\textsuperscript{102}

On Uncle Sam Plantation, Samuel Fagot also used double unit creole housing for his slave quarters. These slave dwellings consisted of four rooms and housed three to four people, a notable reduction from Fogel and Engerman's estimate that a mean of 5.2 slaves lived in each house.\textsuperscript{103}

On a visit to the sugar country, Olmsted paralleled the opinions of other contemporaries in noting that the slave cabins appeared "neat and well-made" and "are very comfortable houses, supplied with every necessity of life, [and] arranged in proper method."\textsuperscript{104} After visiting the Mississippi River coast from New Orleans to Baton Rouge,

\textsuperscript{102}(...continued)
\textit{Duncan Farrar Kenner} (Lafayette, La.: Center for Louisiana Studies, 1993), 54-55.


\textsuperscript{105}Olmsted, \textit{The Seaboard Slave States}, 317; \textit{De Bow's Review} 8 (February 1850): 149.
the editorial crew from the *New Orleans Weekly Delta* described the slave quarters in similarly utopian terms when they portrayed the slave villages as "perfect little villages," with brick built quarters that "are most comfortable, clean, commodious, and desirable residences, such as we poor city folks would be glad to rent at $25 per month."\(^{106}\) Seemingly idyllic in existence, the construction of new and improved slave cabins perhaps reflects the stirring of planter paternalism but more importantly the sugar master's drive for profit. Asked why he built new quarters for his slaves, one sugar planter informed Teresa and Francis Pulszky that "it was a good investment to have the slaves well lodged, as their health was then generally better."\(^{107}\) Such self-regarding profit motivations, however, proved perfectly compatible with plantation management and its complex blend of incentives and inducements for efficient slave labor.

While overpayments, rewards, and holidays functioned as stimuli for productive work, improved housing and good medical care additionally served as a means toward inducing the slave labor force to work a little more diligently for the sugar masters. In the damp humid environment of south 

\(^{106}\) *The New Orleans Weekly Delta*, 18 October 1847.

\(^{107}\) Francis and Theresa Pulszky, *White, Red, Black*, II: 105. Not all sugar plantations conformed to this model of cleanliness; see, for instance, William Howard Russell, *My Diary North and South*, 140 for a contrasting description of the slave quarters on one large sugar estate.
Louisiana, enhanced housing and health care also proved valuable in checking the virulent outbreak of disease and infection among valuable slave property. On most plantations, for instance, a slave hospital staffed by African-American nurses and visiting white doctors addressed the myriad of medical complaints that emerged on every plantation. Matilda Houstoun maintained that the slave hospital on one sugar plantation featured "excellent" interior arrangements that proved "as clean and comfortable . . . as one could wish to see." Perhaps overly embellished, Houstoun's description nevertheless underscores the presence of slave hospitals on the sugar plantations. Elizabeth Ross Hite similarly remembered from her childhood on Bayou Lafourche that old or retired slaves frequently staffed these hospitals. On Trinity Plantation, Hite recalled that Grandma Delaite "had charge of de hospital," a pattern that repeated itself on many estates where most planters utilized older slaves who had passed their productive prime in the hospitals.\(^{109}\)

Very often, the sugar masters employed local physicians to attend to their slaves medical needs. On Frogmoor Plantation, for example, two doctors visited the estate thirty-nine times in the space of eight months, a


\(^{109}\) Interview with Elizabeth Ross Hite (Date Unknown), WPA Ex-Slave Narratives, LSU.
frequency of over one visit per week. Examining the slaves for fevers, chronics, and pleurisy, the physician's presence at Frogmoor evidently proved a common occurrence and one proving particularly important as overseer George Woodruff reported that, from January to mid-May 1857, the remarkably high number of 901 slaves reported sick and consequently failed to labor during the day. With an average of 7.5 slaves citing a medical reason for not working on a daily basis, the need for medical care proved an economic necessity on Frogmoor Plantation. At David Weeks' estate on Vermillion Bay, the demand for medical care proved similarly pertinent as the master of Grand Cote arranged for a physician to visit his island estate every six months. Cognizant of Weeks' vigilance in slave medical care on Grand Cote, Alfred Weeks paralleled his father by pressing upon John Moore that "I am very particular in regard to the diet and conditions of the negroes, and have told them all that the moment any symptoms of disease arise, they must inform me." Not infrequently contracting with a single doctor to supply medical services for a calendar year, the sugar planters often paid as much

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110 Frogmoor Plantation Diary, Plantation Management Papers, Turnbull-Bowman-Lyons Papers, LSU.

111 Alfred W. Weeks to John Moore, 23 March 1849, Weeks (David and Family) Papers, LSU.
as $300 to neighboring doctors who assumed responsibility for one or more plantations.\textsuperscript{112}

Other planters, however, seem to have shared a widespread distrust of physicians and rather than relying on hired medical services, many sugar masters preferred to treat medical cases themselves. In the Attakapas region of south-west Louisiana, the medical lobby published a three-part essay in the Planter's Banner, decrying the planting community for their home-spun medical treatments and "the total lack of confidence . . . toward their physicians, both as respect their skill and honesty."\textsuperscript{113} Urging the planters to employ professional medics, the Attakapas physicians cogently argued that, because no rational planter would accept the advice of an amateur agrarian, they should rely more extensively on professional and qualified medical staff to address all medical complaints on their estates.\textsuperscript{114} To ignore professionals, Medicus maintained in the Planter's Banner, stood as an immense contradiction to the planter's normally proficient and rational managerial strategy. Despite the cries of the medical profession, several planters clearly possessed medicinal skills that cured or prevented common illnesses

\textsuperscript{112}Volume 5, Cash Book 1851-1854, Bruce, Seddon, and Wilkins Plantation Records, LSU.

\textsuperscript{113}The Planter's Banner (Franklin), 26 April 1849.

\textsuperscript{114}Ibid., 24 May 1849.
in the sugar country. Such medical knowledge is substantiated in *De Bow's Review*, where one reporter stated that "intelligent planters" adopted "judicious precautions against cholera" on their estates. After removing all refuse from the slave quarters, several planters, the correspondent continued, whitewashed all cabins, placed lime beneath each slave hut, and paid particular attention to "the quality of food used." Although such preventive measures offered limited curative effect, they "prevailed with extraordinary virulence" on several occasions in warding off the worst effect of the disease. The most effective course of action that *Fenner's Southern Medical Reports* advised was to follow the successful practice of one large sugar planter.

As soon as cholera appeared on his place, he made all hands quit work, and permitted them to go into a regular frolic. Whiskey and fiddle were called in requisition, and for two or three days the plantation presented a scene of unrestrained merriment and mirth; he did not permit them to drink to intoxication but sufficient to produce a pleasant exhilaration. He informed me that hardly a new case occurred after the commencement of the frolic, and he is clearly of the opinion that it had a most beneficial effect. I am strongly inclined to concur with him, and should resort to the plan under similar circumstances.\(^\text{115}\)

While not doubting the medicinal qualities of whiskey, whitewashing the slave cabins and dramatically improving sanitation appears as a significantly more effective precaution against the further onslaught of cholera. When

\(^{115}\) *De Bow's Review* 11 (November 1851): 476.
an outbreak of cholera struck south Louisiana in June 1849, Elu Landry whitewashed both the sugar house and the inside of the all the slaves' quarters, while also regimenting a uniform cleaning of all housing on the estate. When Big Henry fell ill, Landry turned to his own medical experience and administered laudanum, brandy, and "frictions of cayenne." After consuming this heady and spicy brew, Henry unsurprisingly died within six hours. Other planters, however, proved a little more successful in their medical treatment than Elu Landry. Rebecca Fletcher, for example, remembered that "ole missus useter give us blue mass pills when we needed medicine. It sho did make us sick. We had to get sick to get well, ole Missus said." Undoubtedly leaving the patient with severe stomach ache, these pills containing powdered mercury offered primitive assistance in easing fever and dysentery. John Lobdell similarly turned his hand to medical science in the management of Bayou Plantation in West Baton Rouge Parish. Purchasing epsom salts, sulphur, camphor, nitre, ipecacuanha, bark extract, calomel, quinine, cream of tartar, and 200 cholera

116Plantation Diary and Ledger, Wednesday, 11 July 1849, Elu Landry Estate Plantation Diary and Ledger, LSU.

117Interview with Rebecca Fletcher (20 July 1940), WPA Ex-Slave Narratives, LSU.

pills, Lobdell filled his medicine cabinet with the latest cures and panaceas that antebellum medicine afforded.\footnote{Anonymous Planter's Ledger, LSU.}

Wisely preparing himself for the risk of malaria with his quinine purchase, Lobdell possessed primitive cures for marsh miasmata and fevers through the use of the bark extract cinchona, skin infections with sulphur, fevers and ague by utilizing calomel, and dropsy through the liberal use of cream of tartar. Including camphor in his medical chest, Lobdell clearly equipped himself to counter the mortal effects of dysentery and gonorrhoea. In purchasing two onces of ipecacuanha, Lobdell additionally stocked one of the most common cures when mixed with calomel for yellow fever, while the bottle of nitre served as a reputedly reliable antidote for consumption.\footnote{On the curative properties of the above drugs, see James Ewell, The Planter's and Mariner's Medical Companion (Philadelphia: John Bioren, 1807), 25, 46, 104, 110, 141, 145, 153; Jabez W. Heustis, Physical Observations and Medical Tracts and Remarks, on the Topography and Diseases of Louisiana (New York: T & J Swords, 1817), 117, 137; Todd L. Savitt, Medicine and Slavery: The Diseases and Health Care of Blacks in Antebellum Virginia (Urbana: University of Illinois Press, 1978), 155-156.}

At the root of the sugar planter's concern over medical care lay self-interest and the economic motive of maintaining the value of their investment. Standing before the law as legal property, slaves served as both financial investments and as working capital on the estates. With the value of slaves increasing throughout the antebellum
era and increasingly so in the 1850s, a premium clearly existed on reasonably competent medical care. Perhaps humanitarianism or "paternalism" may have guided some planters behavior, though it seems more likely that the medical care of slaves functioned as one additional component to the sugar masters' economic rationale.\footnote{For a similar view, see David O. Whitten, "Medical Care of Slaves: Louisiana Sugar Region and South Carolina Rice District," Southern Studies 16 (Summer 1977): 153-180.} From the slaves perspective, however, medical care appears to have complemented a broad system of rewards and incentives that underpinned the planters' approach to plantation management.

Those who visited the antebellum sugar country consistently remarked on the productivity and efficiency of the estates. After visiting Magnolia Plantation, the reporters for the American Farmer concluded that "all work is done with regularity and in an efficient manner."\footnote{The Southern Planter 17 (August 1857): 484.} While this characterization accurately describes competent and productive organization, prosperity at Magnolia fundamentally rested on the success of plantation system and order. A subscriber to the New Orleans Weekly Delta similarly concluded that "strict economy" and industriousness procured success in the Attakapas sugar
industry. After visiting William Polk's sugar estate in St. Charles Parish, Solon Robinson concurred that "judiciously applied labor" proved highly effective in assuring an increasingly productive plantation unit. With their wealth resting on the institution of racial slavery, the Louisiana sugar masters clearly realized the potential reward of proficient and competent plantation order. Echoing the advice of William Minor, the sugar masters seemingly followed Minor's advice to the Southern Planter. Exhorting fellow planters that "to be profitable, labor must be directed by an intelligent eye," Minor counseled readers that agrarian success hinged on the "proper adaptation of the means to the end."

In the sugar country, the means toward economic prosperity lay firmly with the institution of slavery and in the application of proficient labor management on the sugar estates. To assure the smooth running of the plantation and to prevent any obstacles during the grinding season, the sugar masters introduced a series of incentives and rewards to encourage the slaves to labor long into the night and to accept the new machinery and industrial order of the machine age. Ultimately, the bondspeople acclimated

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123 The New Orleans Weekly Delta, 1 November 1847.


125 The Southern Planter 12 (June 1852): 163.
to the machine and the disciplined pace of the steam age, largely because the overwork and incentive system provided enough remunerative advantages for the acquiescence of the slaves to the regimented and labor intensive demands of the industrialized grinding season. While the planters surely utilized inducements and incentives to assure a productive and content labor force, there remains little doubt that the sugar masters profitably gained from apparently complying with the slaves' wishes for financial rewards and payment. Not only could the slave-holder obtain all the wood and corn that he required by systematizing the slaves over-work systems, but by offering extra rewards, the planter could also minimize the risk of labor instability during the grinding season. Given the staple requirements and climatic constraints on sugar production, the absolute need for efficiency and labor stability singularly marked the dynamics of plantation management in south Louisiana. Eager to avoid any work slow-downs and cognizant that they needed to harvest and grind the cane prior to the first frost, the planters rationally and logically responded to the demands of their crop by shaping a slave management system that combined incentives to the slaves with material and economic advantages for the antebellum sugar masters. Brutally aware that the whip served as an additional means to enforce work discipline, the planters realized that, as the intensity of production peaked, the value of rewards in
slave management similarly increased. These findings significantly modify Stefano Fenoaltea's model of slavery and supervision by suggesting that, in time constricted or process centered industries such as sugar production, rewards rather than pain incentives proved effective in motivating labor. In contrast to Roderick McDonald's argument that an empowered community of slaves forced the masters to acquiesce to their demands for improved living conditions and a vigorous over-work system, this chapter documents that the planters remained firmly in control of slave management and instituted over-work and rewards as a logical attempt to maximize productivity while, increasing resource utilization in all areas of the antebellum sugar plantation.

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126 Fenoaltea, "Slavery and Supervision," 635-668.
CHAPTER 8
CONCLUSION

As Peter Coclanis has shown with rice and Gavin Wright with cotton, the key to economic progress in antebellum America lay with consumer demand.\(^1\) In Louisiana, a similar pattern emerged where the burgeoning domestic demand for sugar underpinned the rapid expansion of the sugar industry from the 1830s to 1860. In 1831, every American consumed approximately 13 lbs of sugar per year, while a decade later most citizens consumed almost 20 lbs of sugar per person. This increased consumption continued apace throughout the antebellum era and by 1850, per capita consumption of sugar surpassed 30 lbs per annum. Only the English retained a greater passion for sugar than the Americans and by the late antebellum decades, both Britain and the United States consumed millions of pounds of crystalline sugar every year. With the US consumption of sugar increasing by almost 300 percent in just twenty years, a booming market existed for any planter who sought to tap the nation's savory appetite. Responding to this market opportunity, sugar cultivation spread north into central Louisiana, while expanding westward and southward

along Bayous Teche and Lafourche. Geographically confined by the relative sparsity of well drained alluvial soils and by the climatic constraints to cane cultivation, planters found that to compete effectively with their Caribbean rivals, they had to raise production standards by pursuing economies of scale and instituting a regimented plantation discipline.

Declaring that the South "with its stagnant economy and leaden social system lagged hopelessly behind the North . . . in all elements of modern civilization," John Ashworth joins Eugene Genovese and Gavin Wright in decrying the southern planter as a technologically averse soil miner who practiced primitive farming and destructive agriculture. This image, however, stands at odds with contemporary descriptions of the Louisiana sugar country. Charles Fleischmann, for instance, in his report to the Commissioner of Patents, remarked that "there is no sugar growing country, where all the modern improvements have been more fairly tested and adopted than in Louisiana." Representative in his findings, Fleischmann joined other contemporary observers in praising, as one Caribbean

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visitor put it, "the intelligence and skill manifested in both the cultivation and manufacturing of sugar." ¹

Gleaning advice from agricultural journals, sugar planters practiced economically sound agronomic practices such as field and crop rotation, fertilization, and deep soil plowing. While these agro-ecological practices assured increasing yields per acre, the sugar planters transformed the production stage of their industry from its reliance on primitive horse drawn sugar mills to expensive steam powered equipment. Understandably, many smaller planters who found the escalating cost of sugar production too expensive left the industry in the 1850s, but those who remained expanded their operations by planting more cane, purchasing the latest evaporation machinery, and by buying further slaves from the domestic slave traders. Evidently successful in their endeavors, the annual sugar crop quickly increased and by 1853, Louisiana produced a quarter of the world's sugar. Such progress, Representative Miles Taylor pronounced, "is without parallel in the United States, or indeed in the world in any branch of industry." ²

Aptly described by former slaves as "exhausting" and "physically punishing," cane cultivation peaked during the


annual harvest or grinding season when the planters attempted to cut and grind all their cane prior to the first killing frosts. With such a labor intensive crop, the sugar planters strove to maintain a gender and age selective work-force on their estates, where young males constituted approximately 60 to 70 percent of the slave crews. Turning to the domestic slave trade to supply the sugar country with young males, both planters and slave traders focused on age and gender in purchasing their slaves. Isaac Franklin and John Armfield, for example, procured bondspeople in the Chesapeake with a shrewd eye for the New Orleans market as males represented a majority of all slaves they sold in Louisiana. Of those men, a staggering 84 percent were single and 75 percent were less than 25 years of age. Clearly specializing in young males, Franklin and Armfield additionally concentrated on women aged 13 to 20. Although it appears easier to explain this pattern of slave shipments as a reflection of the sugar masters' desire for young physically fit adults, it seems equally likely that the traders' regard for strength and brawn additionally extended to a careful awareness that most slave women would soon bear children. Research conducted on African women with low protein diets, like most African-American slaves, suggests that slave women passed menarche at age 15 though remained effectively sterile until they reached their eighteenth birthday.
Slave traders and planters were undoubtedly aware of these broad demographic patterns and they consequently placed a premium on young women aged 17 to 20. Planter William Minor, a slaveholder in Ascension Parish, paralleled such age and gender selectivity on his plantation as he retained a particularly youthful slave force with a very high number of males in their twenties and a large number of women aged 17 to 20. Surely keen on youth and brawn, Louisiana slaveholders demographically shaped their slave crews to maximize both the strength and reproductive potential of their bondspeople.

To increase productivity on their estates, the planters strove toward instituting economies of scale and enforcing factory discipline on their plantations. With the introduction of steam power, sugar mills operated at a mechanical rhythm that remained both exacting and relentless. Frequently equipped with conveyor belts, the late antebellum sugar mill resembled an assembly line where the unforgiving steam engine established an inexorable regularity to the pace of work. In their quest to establish a disciplined work-force who would labor at the speed of the steam age, overseers and planters subdivided the laborers tasks, instituted systematized shift work, and imposed the regimented order of the mechanical clock. In sugar production, where the risk of frost threatens every plantation during the harvest season, the absolute premium
on speed ultimately enforced a work discipline that visitors to the sugar country frequently described as militaristic in organization. Combining a strict division of labor with the regimentation of industrial order, the sugar planters also strove to impose time discipline on their workers. With a growing national penchant for punctuality and time-consciousness, antebellum Americans sought to institute clock-ordered discipline in the industrial north where the working day was punctuated by formalized work rules and a labor discipline dictated by the ticking clock. In the sugar country, planters similarly enforced a timed working day by using horns, bells, and the clock to subdivide the slaves' tasks. Visiting south Louisiana in the late 1820s, Timothy Flint observed that "there is in a large plantation as much precision in the rules, as much exactness in the times of going to labor, as in a garrison under military discipline or in a ship of war."\(^5\) Observing that a bell gave all the signals, Flint's description paralleled plantation management in the sugar country where overseers similarly utilized bells to chime timed instructions to their slaves.

The enormous question remains: how did the slaves respond to the imposition of industrial discipline and the

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\(^5\) Timothy Flint, *The History and Geography of the Mississippi Valley. To Which is Appended a Condensed Physical Geography of the United States and the Whole American Continent* (2 vols., Cincinnati: E.H. Flint and L.R. Lincoln, 1832), I: 244-245.
introduction of new machinery? Eugene Genovese, in his seminal work, Roll, Jordan, Roll, contends that the slaves rejected the steady routinized work and order of the industrial age by clinging to a pre-bourgeois traditionalism that rejected the values and discipline of the industrial age.⁶ In the Louisiana sugar country, however, the slaves neither broke tools, smashed machines, nor apparently rejected the disciplined order of the modernizing sugar mill. Contemporaries who visited the sugar region frequently commented on the marked absence of labor difficulties during the grinding season and on the stark contradiction of the slaves' apparent willingness to work long hours in exhausting conditions. Since slave property can apparently gain little by working efficiently for interminable hours, the slaves accommodation to the new pace of work requires additional explanation.

In his trip to Louisiana, Frederick Law Olmsted observed that the slaves worked with particular energy during the grinding season because "they are better paid, they have better and more varied food and more stimulants than usual."⁷ While Olmsted underestimated the power of the whip, he accurately portrayed the central role of


⁷Frederick Law Olmsted, A Journey in the Seaboard Slave States In the Year 1853-1854 With Remarks on their Economy (reprint, New York: G.P. Putnam, 1904), 327.
incentives in slave management. To assure smooth operations and a reasonably content labor force, sugar planters established overwork systems where the slaves received financial remuneration for chopping wood, growing corn, or trading poultry and livestock. Wood, in particular, became an increasingly profitable trade for the slaves who chopped and hauled timber for 50 cents a cord. Other incentives the sugar planters utilized included payment to skilled slaves, Christmas bonuses, rewards for rapid work, post and pre-harvest celebrations, and improved accommodation. While incentives sometimes functioned as a means toward assuring plantation efficiency, slave-holders knew that when rewards and payment failed to motivate the workers, they possessed the whip and a variety of ruthless punishments as the ultimate inducement to hard work.

Writing in his plantation diary, Bennet H. Barrow noted: "A plantation might be considered a piece of machinery, to operate successfully all of its parts should be regular and exact and the impelling force regular and steady." Like most antebellum sugar masters, Barrow knew that "the impelling force" and ultimately the key to economic growth lay firmly within the planters' hands. Finding no contradiction between modernization and slave

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labor, the sugar masters controlled immense agricultural enterprises that approached the organizational complexity of modern factories. Cultivating and marketing sugar on an agro-industrial scale, the sugar masters stood at the vanguard of a booming industry where the dynamics of economic growth lay in the synchronization of agriculture, industry, entrepreneurialism, but above all with the institution of racial slavery.
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VITA

Richard J. Follett was born on May 1, 1968 in Leeds, England. After receiving his secondary school education at Cotham Grammar School and Bristol Cathedral School, Follett entered the University of Wales at Swansea where, in 1990, he received a Joint Honours Bachelor of Arts in History and American Studies. Subsequently, Follett enrolled at the Institute of United States Studies at the University of London and in 1991, he received an Master of Arts with Distinction.

Having been awarded a Fulbright Scholarship in 1991, Follett began his graduate studies at Louisiana State University. After two years of support by the Fulbright Commission, Follett received the appointment as a Graduate Teaching Assistant in the Department of History, Louisiana State University. Follett completed all course work requirements for the Doctor of Philosophy degree in 1993 and will graduate in December 1997.

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Candidate: Richard J. Follett

Major Field: History


Approved:

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

[Signatures]

Date of Examination: June 23, 1997