

# Plantation Slavery and Economic Development in the Antebellum Southern United States

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*The relationship of plantation slavery in the Americas to economic and social development in the regions it was dominant has long been a subject of scholarly debate. The existing literature is divided into two broad interpretive models – ‘planter capitalism’ (Fogel and Engerman, Fleisig) and the ‘pre-bourgeois civilization’ (Genovese, Moreno-Fraginals). While each grasps aspects of plantation slavery’s dynamics, neither provides a consistent and coherent historical or theoretical account of slavery’s impact on economic development because they focus on the subjective motivations of economic actors (planters or slaves) independent of their social context. Borrowing Robert Brenner’s concept of ‘social property relations’, the article presents an alternative analysis of the dynamics of plantation slavery and their relation to economic development in the regions it dominated.*

*Keywords:* plantation slavery, capitalism, USA, world market, agrarian class structure

## INTRODUCTION

From the moment that plantation slavery came under widespread challenge in Europe and the Americas in the late eighteenth century, its economic impact has been hotly debated. Both critics and defenders linked the political and moral aspects of slavery with its social and economic effects on the plantation regions

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of the Americas and the world market. Critics of slavery condemned bonded labour as immoral and economically inefficient, limiting economic growth in the Caribbean, the Southern USA and in the emerging centres of industrial production in Britain and Western Europe. Defenders of slavery presented it as a beneficial political and cultural institution that had made New World slave-owners and European merchants and manufacturers wealthy (Davis 1966, 1975).

The debate on the economic effects of plantation slavery continued over the next two centuries. Currently, there is some consensus about the role of New World plantation slavery in creating the world market that was one precondition of the British industrial revolution. While historians still disagree about the impact of industrialization on the trajectory of the slave economies in the nineteenth century, there is little disagreement that the 'triangular trade' linking together Africa, the New World plantation zone and Britain was a central motor of the 'Atlantic economy'. The markets created by the African slave trade and the plantation economies for British manufactured goods as diverse as iron, textiles, glass and china were important stimuli for the growth of industrial capitalism in Britain.<sup>1</sup>

Current scholarly controversy centres on plantation slavery's impact on economic development in the regions where it was the dominant form of social labour. Focusing primarily on the Southern USA, historians and social scientists have debated whether slavery was a stimulus or an impediment to technical innovation in agriculture, to the deepening of the social division of labour ('home market') and to the growth of industry.

Scholarly discussion of plantation slavery and economic development has produced two broad interpretive models. The advocates of what can be called the 'planter capitalism' thesis (Coclanis 1989; Fogel 1989; Oakes 1982; Fleisig 1976; Wallerstein 1974–1980; Aufhauser 1973; Knight 1970; Gray 1933), whose most articulate spokespersons are Robert Fogel and Stanley Engerman (1974), argue that despite the unfree legal status of slave labourers, plantation slavery was a variant of capitalism. The planters' ability to organize their slave labourers in a centralized labour process allowed the planters to maximize profits in the production of staple crops (sugar, tobacco, cotton, etc.) for a competitive world market. According to the 'planter capitalism' model, plantation slavery was highly efficient, productive and profitable, and allowed rapid economic growth in the regions where it was dominant. The relative absence of industrial and urban development in the Southern USA and the Caribbean was simply the result of these regions' 'comparative advantages' in agricultural production.

<sup>1</sup> The contemporary discussion of the relationship of New World slavery to industrialization begins with Williams (1944). For recent evaluation of the 'Williams thesis' and evidence for the growing consensus on the positive effects of slavery on the growth of the world market and industrial development in Britain, see Solow and Engerman (1987); Blackburn (1997, ch. XII); and Inikori and Engerman (1992). On the continuing debate on the impact of the industrial revolution on slavery in the New World, see Drescher (1986) and Tomich (1988).

Opposing the 'planter capitalist' thesis is what can be broadly defined as the 'non-bourgeois civilization' thesis (Oakes 1990; Ashworth 1995; Moreno Fraginals 1976; Wade 1964).<sup>2</sup> According to this model, whose most important advocate is Eugene D. Genovese (1989/1965, 1972; Genovese and Fox-Genovese 1983), the slaves' unfree legal status gave rise to a number of social-institutional characteristics that distinguish slavery from capitalism. For a variety of reasons, but most importantly the slaves' purported lack of motivation and the resulting need for their close supervision in simple, repetitive and unskilled tasks, slavery was an obstacle to technical innovation in agriculture. The failure of an 'agricultural revolution' in the New World plantation regions meant that the 'home market' for industrially produced capital and consumer goods of the sort that provided a mass market for industrialization in the northern US, Europe and Japan never developed. As a result, plantation slavery was an obstacle to industrial development in the Southern US and the Caribbean through the nineteenth century.

While both models capture facets of the dynamics of plantation slavery in the Americas, neither the 'planter capitalist' nor 'non-bourgeois civilization' models provide an adequate basis for understanding slavery as a distinct form of social labour inserted into the expanding capitalist world market. Ultimately, the failure of both models stems from their shared assumption that 'economic rationality' – the organization of production, technical innovation, the depth of the social division of labour and the trajectory of economic development – is simply the reflection of the subjective motivations of key economic actors abstracted from their social and economic context. For the 'planter capitalism' model, the masters' goal of profit-maximization made plantation slavery an 'efficient' and 'rational' form of capitalist production. For the 'pre-bourgeois civilization' model, the slaves' unfree legal status made them recalcitrant labourers, placing severe limits on the economic activity of their masters and giving rise to a society that eschewed market rationality.

Neither of the dominant interpretive models places the structure of social property relations – class relations – at the centre of their analysis. Class structure is viewed either as incidental to the planters' goal of profit-maximization or as a manifestation of the slaves' lack of economic motivation. It is the central thesis of this article that attempts to explain the dynamics of plantation slavery in the New World without reference to class structure are fundamentally flawed. Ultimately, it is the structure of the master-slave relation that defines what constitutes economic 'rationality' and shapes the broad patterns of economic development in the plantation regions. Following Robert Brenner, we define class structure as having:

... two analytically distinct, but historically unified, aspects. First, the relations of the direct producers to one another, to their tools and to the

<sup>2</sup> James Oakes's inclusion as a representative of both interpretive models is the result of his shifting from a spirited defence of the 'planter capitalism' thesis (1982) to a thoughtful presentation of the 'non-bourgeois civilization' thesis (1990).

land in the immediate process of production – what has been called the ‘labor process’ or the ‘social forces of production.’ Second, the inherently conflictive relations of property – always guaranteed directly or indirectly, in the last analysis, by force – by which an unpaid-for part of the product is extracted from the direct producers by a class of non-producers – which might be called the ‘property relationship’ of the ‘surplus-extraction relationship.’ It is around the property or surplus-extraction relationship that one defines the fundamental classes in a society – the class(es) of direct producers on the one hand and the surplus-extracting, or ruling, class(es) on the other . . . different class structures, specifically property relations or surplus-extraction relations, once established, tend to impose rather strict limits and possibilities, indeed rather specific long-term patterns, on a society’s economic development. (Brenner 1985, 11–12)

Put simply, it is our contention that the objective structure of the social property/surplus extraction relation between master and slaves – not the subjective desires of either – shaped and limited both technical innovation in plantation agriculture and broader patterns of economic growth and development in the plantation regions of the Americas.

To make our argument more concrete, we first interrogate the arguments of the leading proponents of both explanatory models in light of the comparative development of slavery in both the ancient and modern worlds. This comparative perspective, we hope, will highlight the limited explanatory power of both models. We then develop a theoretical model of slavery’s specific social property relations, and demonstrate our model’s analytic potential through an analysis of the development of plantation slavery in the Southern USA.

## THE ‘PLANTER CAPITALISM’ MODEL

### *The Plantation as Capitalist Enterprise*

The central claim of the ‘planter capitalism’ model is that the slave plantations of the New World were highly efficient, productive and profitable enterprises producing commodities for a competitive world market. The ‘planter capitalism’ model recognizes, correctly, that the slaveholding planters of the Americas faced what Ellen Meiskins Wood (1999) calls ‘market imperatives’. Despite attempts to make the plantation ‘self-sufficient’ in food and some tools, staple-producing planters had to accrue debts to purchase land and slaves. Unlike the grain-exporting lords of Eastern Europe in the sixteenth and seventeenth centuries, whose possession of land rested on non-market power, the master classes of the ‘New World’ did not have the option of withdrawing from the world market when prices fell below their costs of production (Brenner 1977, 70–5; Kula 1976, 100–20). To meet their debts and avoid the loss of their land and slaves, the planters were compelled to ‘hold their place’ in the world markets for sugar, tobacco, rice, indigo, coffee and cotton through cost reduction (Price 1991; Woodman 1968, chapters 3–6).

For the proponents of the 'planter capitalism' model, the master classes of the Americas responded to this 'market coercion' in the same ways other capitalists responded – through productive specialization and technical innovation. According to Lewis Gray: 'The plantation was a capitalistic type of agricultural organization in which a considerable number of unfree laborers were employed under unified direction and control in the production of a staple crop' (1933 vol. I, 302). The planters, 'hard, calculating businessmen' committed to individual effort, upward social mobility, and the accumulation of wealth (Fogel and Engerman 1974, 73; Oakes 1982, chapter 1), successfully utilized command of slave labour in the pursuit of profits on the world market.

On sugar and cotton plantations in the Caribbean and the Southern USA, the work of slave gangs was 'as rigidly organized as in a factory' (Fogel and Engerman 1974, 203). Unlike tobacco cultivation, where small teams of slaves were given fixed tasks that were to be accomplished each day (Gray 1933 vol. I, chapters X, XXIV), sugar and cotton production were amenable to a division of tasks where slave gangs performed simple and repetitive tasks under the command of masters and overseers. In sugar production, gangs of slaves prepared the soil and planted and cultivated (weeded) sugar cane using hoes and other hand tools. At the harvest, the slaves would be again organized into gangs to cut the cane with machetes and transport the cane to be crushed, boiled and evaporated into powdered sugar. Cotton production involved an even more 'factory like' labour process. In the planting and cultivation of cotton, slaves were organized into labour gangs with a detailed technical division of labour and a high degree of coordination and interdependence, which 'as on an assembly line . . . generated a pressure on all those who worked in the gang to keep up with the pace of the leaders' (Fogel and Engerman 1976, 572). While an assembly-line like division of tasks was not possible during the harvest, the prudent use of rewards and prizes promoted competition between harvest gangs, maximizing the slaves' effort and output. The slave plantation labour process, resting upon the organization of gang labour, allowed the planters to achieve economies of scale (greater output per input of labour, capital and land) than family farmers in the Northern and Southern USA (Fogel and Engerman 1974; Fogel 1989, chapters 2–3). The division and simplification of tasks, the coordination of the work of the gang and other 'capitalist' features of plantation slavery's work regime led one proponent of the 'planter capitalism' model to argue that New World planters' management practice anticipated Frederick Winslow Taylor's theory of 'scientific management' (Aufhauser 1973). The planters' rigorous management of gang labour led the slaves 'to produce, on average, as much output in roughly 35 minutes as a farmer using traditional methods, whether slave or free, did in a full hour' (Fogel 1989, 79, chapters 3–6; Fogel and Engerman 1974, 38–43, chapter 4).

Fogel and Engerman assert that the 'capitalist' organization of slave labour on large cotton and sugar plantations not only made plantation slavery a profitable investment in various parts of the New World during the eighteenth and nineteenth centuries, but was the basis for rapid economic growth in those regions as well. Expanding and refining the path-breaking work of Conrad and Meyer

(1958) on the profitability of slavery, Fogel and Engerman (1974, chapter 3) convincingly demonstrate that slave production of cotton earned returns comparable to other investments in 1860. Clearly, the profitability of plantation slavery in the antebellum South in the mid-nineteenth century and various parts of the Caribbean in the eighteenth and nineteenth centuries is no longer open to empirical challenge (Fogel 1989, chapters 3–4; Ward 1978). However, the advocates of the planter capitalism model go further, asserting that profitable slave-based plantation agriculture promoted rapid economic growth in the Caribbean and Southern USA as well. Fogel and Engerman's (1974, 247–55) data for the Southern USA in the two decades prior to the Civil War show Southern per capita income growing at a slightly more rapid rate than Northern per capita income between 1840 and 1860 (1.7 per cent per annum versus 1.4 per cent). While average Southern per capita income remained lower than average Northern income in 1860 (\$103 versus \$141), incomes in the rapidly expanding southwestern frontier (Texas, Oklahoma, Arkansas and Louisiana) were higher (\$184) than in any subregion of the North. Southern per capita incomes were much higher than any contemporary independent nation, with the exceptions of Australia and Great Britain (Fogel 1989, chapter 4).

While providing important insights into the organization of the plantation labour process and its insertion into a competitive, capitalist world market, the central claims of the 'planter capitalism' model concerning the 'capitalist' character of plantation slavery are subject to several important criticisms. Fogel and Engerman's statistics on profitability and economic growth in the antebellum Southern USA, the plantation region in the Americas where the most systematic data have been collected, is an artifact of world cotton market conditions in 1860. Gavin Wright (1978, 90–7, 102–6; 1976) and others (David and Temin 1976) have produced a convincing critique of Fogel and Engerman's claim that the planters' high profits and the growth of per capita income in the South were the result of the 'efficient' organization of slave labour in plantation agriculture. Instead, the rapid growth of demand for raw cotton on the part of industrial capitalists in Great Britain and the US North, combined with the US South's near complete domination of the world's supply of raw cotton, account for both the high rates of return in slave-based cotton production and the growth of Southern per capita income. According to Wright, 'southern incomes from cotton growing were primarily governed by demand and not by production' (1978, 98). Eugene Genovese and Elizabeth Fox-Genovese (1983, 45–9, 156–62) found similar patterns in other slave plantation regions in the New World. Consistently, 'prosperity' and 'stagnation' in these regions were determined externally, by the global demand for their staples, rather than internally, by the organization of plantation production.

In addition, Wright demonstrates that Fogel and Engerman's claims concerning alleged economic superiority of the slave plantation compared with family farming are flawed as well. Fogel and Engerman (1974, chapter 6) argued that the greater intensity, duration and efficiency of slaves' labour under the supervision of the master accounted for the greater output of cotton per work hour on

the plantation than on family farms in the South. Wright (1978, chapter 3) shows that the higher outputs of cotton and other cash crops per capita were the result of the planters' ability to direct the majority of the slaves' labour into production of marketable commodities. In contrast, Southern family farmers, whose acquisition, maintenance and expansion of land holdings did not require successful market competition, devoted the vast majority of their labour to the production of food and handicrafts for household and community consumption. Put simply, the 'relative efficiency' of slave labour was not the result of the superior, 'capitalist' organization of the slaves' labour, but of the planters' capacity to devote a large proportion of the slaves' labour into commodity production.

#### *Episodic Labour-Saving Technical Change in Plantation Slavery*

A careful examination of Fogel and Engerman and other proponents of the 'planter capitalist' model's description of the plantation labour process actually contradicts their claim that the planters responded to competitive market imperatives in the same way as capitalists. The labour process under slavery was organized to maximize the use of human labour in large, coordinated groups under the continual supervision of masters, overseers and drivers. As we shall see, the tools slaves used were simple and virtually unchanged. Even with a detailed division of tasks in planting and cultivation, such a labour process left the masters few options to increase output per slave. Planters could either increase the pace of work through punishments or rewards, increase the amount of acreage each slave or slave-gang cultivated, increase the number of slaves working by tapping the capacities to work of female and juvenile slaves, or move the plantation to more fertile soil.

All of these methods of increasing output expanded *absolutely* the amount of surplus labour performed by the slaves, while leaving the amount of necessary labour performed constant. As Brenner (1977) and others (Marx 1976, Parts Three and Four; Shaikh 1978) have pointed out, this sort of *extensive* growth based on the absolute growth of surplus labour is typical of non-capitalist forms of social labour. By contrast, there is little evidence of gains in productivity through replacing labour with new and more complex tools and machinery, the increase in *relative* surplus labour extraction that typifies capitalist agriculture and industry. While capitalists continuously attempt to increase absolute surplus labour extraction by increasing and intensifying the pace of work (speed-up), it is relative surplus labour extraction through mechanization that distinguishes capitalism from all previous forms of social labour. The capitalists' ability to introduce, in a relatively continuous manner, labour-saving tools and machinery is the basis for capitalism's unique capacity to shift labour progressively from agriculture to manufacturing and services.

Technical innovation under plantation slavery did not display the relatively continuous introduction of new and more complex tools and machinery that has allowed capitalist agriculture and industry to 'expel labour' from the production of material goods over the past two centuries. Instead, labour-saving technological

change in slave economies had a highly episodic character. The introduction of techniques that fundamentally altered the ratios of labour, land and tools were 'once and for all' processes, corresponding to the introduction of new crops or the expansion of plantation slavery to new regions of the Americas. The technical change that did occur more regularly in response to competitive market pressures was essentially what M.I. Finley (1982, 188) called 'cheese-paring' – economizing in the use of raw materials or increasing yields without altering the fundamentally labour-intensive features of the slave labour process. While this 'cheese-paring' did produce important increases in output and reductions in costs, this process of technical innovation did not lead to the systematic and continuous replacement of human labour with machines that was typical of capitalist agriculture and industry in the past four centuries.

The shift from tobacco to cotton production and the geographic expansion of cotton production to the lower South (Georgia, Alabama, Mississippi, Louisiana, Texas) fuelled the most important wave of technical change in the antebellum Southern USA. Not only did the development of cotton production allow for the replacement of task labour with gang labour, but it also led to the introduction of a number of labour-saving tools and seeds. Hoes and light ploughs had been the basic implements used by slaves planting and cultivating tobacco in the US southeast. When cotton displaced tobacco as the main crop in the region in the late eighteenth century, planters all along the southeastern coast from Virginia to Georgia simply continued to use hand-held hoes and light ploughs in cotton planting and cultivation. In the 1820s, the heavier, mule or horse-drawn 'sweeper' plough was introduced throughout the cotton South. The new plough produced deeper furrows and higher yields per acre and reduced the amount of human labour required both to prepare the soil for planting and to cultivate the growing cotton plants. While never completely replacing hand hoeing in cultivation, the sweep plough and other horse or mule drawn implements allowed the planters to increase sharply the amount of acreage each slave gang could plant and cultivate. The cotton harvest remained labour intensive, with slaves working in gangs picking cotton by hand. However, the geographic expansion of cotton production to the lower South in the 1820s and early 1830s brought with it the introduction of a new cotton variety, the 'Petit Gulf'. Replacing the older 'Georgia upland' variety, 'Petit Gulf' was both more resistant to disease and could be picked more easily, allowing a significant increase in the number of acres slave gangs could harvest (Garrett 1978, 107–125; Gray 1933 vol. II, 70–4, 794–6).

The historic shift in the locus of sugar production from Jamaica and St. Domingue (Haiti) to Cuba and Puerto Rico in the nineteenth century unleashed the most dramatic wave of technical innovations in a slave economy. Unlike tobacco and cotton production, sugar production under slavery combined both agricultural (planting, cultivation, harvest) and industrial (refining cane into powdered sugar) processes in a single productive unit. From the late seventeenth through the early nineteenth century, the transport of cut cane to the sugar refineries, the crushing of sugar cane to extract cane juice, and the boiling and

evaporation of the cane juice to produce powdered sugar relied on the physical strength and skill of masses of slaves organized into work gangs often labouring day and night, in shifts, at harvest time.

As capitalist industrialization fuelled European and North American demand for sugar (Mintz 1985), plantation slavery expanded into the new, 'frontier' regions of Cuba and Puerto Rico in the 1820s and 1830s. Cuban sugar plantations established in the nineteenth century initiated production at a much more capital-intensive technical level than their counterparts in the seventeenth and eighteenth centuries. While the agricultural phase of production remained unchanged through the nineteenth century, relying on simple hand tools and brute human strength to plant, cultivate and harvest sugar cane, Cuban sugar planters introduced steam-powered milling-crushing machinery in the 1830s and 1840s. The mechanization of rolling alone increased the amount of cane that could be processed, compelling slaves to harvest additional acreage. In the 1840s and 1850s, in newly settled western Cuba, planters replaced the wood-burning 'Jamaica train' stoves in the boiling of cane juice with vacuum pans that lowered the boiling point of the cane juice and economized on the use of fuel. They also introduced centrifuges to speed the separation of molasses and water from the powdered sugar (Bergad 1990, 48–56, 89–91, chapter 7; Galloway 1989, 133–42; Watts 1987, 482–93; Scott 1985a, 20–41; Scott 1985b, 25–53; Scarano 1984, chapter 5; Moreno Friginals 1976, chapter 4; Knight 1970, 32–40, 68–75). The result of these technical changes on the shifting sugar frontier of the nineteenth century was a radical shift in the ratio of slaves to land and output. According to Phillip Curtin:

For the old-style, eighteenth-century sugar estate the rule of thumb was one acre of land and one slave to produce one ton of sugar annually. By the 1830s, in Cuba, this had doubled. By the 1860s, production was in the range of six to eight tons per worker on the best estates and two to four tons even on the smaller or older plantations. (Curtin 1990, 197)

Clearly, changes in the world market occasioned by the growth of capitalist industry in Europe necessitated both of these episodes of labour-saving technical change in plantation slave agriculture (Tomich 1988, 104–16). Both radically altered the ratio of slaves to land and tools. However, neither episode led to a self-sustaining 'agricultural revolution' in the new plantation regions of the US lower South or the Caribbean sugar 'frontier'. Contrary to the claims of historians in the 'planter capitalism' school like John Moore (1988) and Franklin Knight (1970),<sup>3</sup> neither the introduction of horse and mule drawn implements in cotton production nor the mechanization of sugar refining was symptomatic of a process

<sup>3</sup> Moore (1988, chs. 2–3) found evidence of the same technical changes that occurred in other areas of the South in the 1820s and early 1830s occurring in Mississippi in the late 1830s and early 1840s, which he then deemed an 'agricultural revolution'. Rather than an 'agricultural revolution', these changes represented the adaptation of the productive standards that existed in the rest of the cotton South in a relatively newly settled area. As Steven F. Miller (1993, 161–2) points out, the use of the hand hoe was common in cotton production in newly settled areas, like Mississippi before the mid-1830s, because tree roots and stumps prevented the use of plows in soil preparation and cultivation.

that continuously replaced human labour with new and more complex tools and machinery. Instead, these new methods, once adapted, became the unchanging standard for slave production in those regions.

For the most part, the technical changes that occurred in slave-based agriculture in the Americas in response to the imperatives of world market competition took the form of what Finley described as 'cheese-paring' – changes that increased output and reduced costs without fundamentally changing the labour intensive character of the plantation labour process. The late seventeenth and eighteenth centuries saw numerous changes to sugar cultivation and refining that reduced the planters' costs. The most important of these were reactions to the growing deforestation and soil exhaustion that accompanied the spread of the sugar plantations. The destruction of the large timber reserves on many of the larger Caribbean islands raised the cost of the fuel used to boil sugar cane juice in the late seventeenth and early eighteenth centuries. The increased use of bagasse (crushed sugar cane) and the introduction of the 'Jamaica train', a series of cauldrons for boiling sugar all heated by a single fire whose heat was transferred from cauldron to cauldron through a system of internal flues, allowed substantial savings in fuel costs. The chronic soil exhaustion that plagued all plantation regions led Caribbean sugar planters in the eighteenth century to abandon the practice of planting sugar cane in horizontal trenches which promoted soil erosion. Planters introduced vertical 'cane holing' and extensive manuring to slow the loss of the soil's fertility. Similar patterns of 'cheese-paring' technical change continued in the nineteenth-century sugar islands, with the introduction of new cane varieties ('Ohati-Bourbon' cane), and in the Southern USA with the cotton planters' attempts to slow soil exhaustion through extensive manuring. These changes brought important savings in raw materials costs, and increased, or at least slowed the decrease in, yields per acre allowing the sugar planters who adapted these techniques to compete successfully in the world market. However, none of these changes fundamentally altered the ratio of labour to land and tools – none reduced the quantum proportion of human labour in the plantation labour-process (Tomich 1990, 140–6; Galloway 1989, 96–102; Watts 1987, 390–2, 429–31; Garrett 1978, 124–36; Wright 1978 50–5, 74–87, 102–9; Gray 1933 vol. II, 800–10).

As a result of the highly episodic process of technical change in the slave plantation regions of the Americas, the relationship of slaves to land and tools remained essentially fixed for long periods of time. The ratio of slaves to land and tools remained relatively stagnant through the seventeenth and eighteenth

Once the roots and stumps were removed completely, frontier cotton planters were able to adapt the horse-drawn tools that had been standard in the settled areas since the 1820s.

Similarly, Franklin Knight argued that in Cuba 'technology . . . was the salvation of the sugar industry . . . it made possible a substantial reduction in the work force' (1970, 184). However, there is evidence first, that the mechanization of refining actually increased the number of slaves needed in agriculture, which remained unchanged technically (Bergad 1990, 89–91); and second, that the introduction of new technology was concentrated in the newest Cuban plantation regions in the 1860s and 1870s and was not generalized (Scott 1985a, 20–4).

centuries, creating a 'rule of thumb' where each slave could be allocated an acre to plant, cultivate, harvest and refine one ton of sugar. The application of steam-power to cane crushing in the early nineteenth century and the introduction of the vacuum pan in mid-century increased that ratio. However, once established in the 'new' Caribbean, this ratio remained unchanged until the abolition of slavery and the separation of agriculture and industry in sugar production. Similarly, the ratio of slaves to land and tools remained unchanged in the cotton South after the introduction of gang labour and horse or mule drawn implements. Gavin Wright's research found that Southern planters invested much less in machinery and tools per worker than Northern family farmers in 1860, and that investments in implements and machinery per worker may have been dropping in the 1850s. Even more indicative of a stagnant ratio of labour to land and tools, Wright found little evidence of economies of scale in Southern plantation agriculture. In other words, the growth in the volume of slave-produced cotton involved the addition of more slaves and more land, rather than increased labour productivity through continually improving technique (Tomich 1990, chapter 6; Galloway 1989, 88–9, 105–10; Watts 1987, 390–2, 429–31; Wright 1978, 50–5, 74–87, 102–9; Barrett 1965).

#### *Were Slaves 'Cheap Labour'?*

Some of the proponents of the 'planter capitalism' thesis have argued that the slave plantations' failure to mechanize production was simply a rational market response to the relatively low cost of slave labour. According to Fleisig (1976, 572), the availability of inexpensive land in both the Southern and Northern antebellum USA severely limited the supply of labourers who would voluntarily sell their capacity to work to farmers, placing a 'labour constraint' on the size and volume of agricultural production. In the North, the adaptation of the mechanical reaper and other labour-saving technologies removed the 'labour constraint' by allowing families to expand the amount of acreage they farmed without additional labour. In the South, slavery created a highly elastic supply of labour, removing the 'labour constraint' on the scale of production. However, 'the relaxation of this constraint' through slavery 'reduced . . . the incentive to invent and innovate farm machinery' (Fleisig 1976, 572).<sup>4</sup> Franklin Knight adopts the

<sup>4</sup> Gavin Wright (1978, 46–55, 106–8) made a similar argument. In his later work, Wright (1986, ch. 5) shifts to a different explanation of the absence of technical innovation in Southern agriculture – that the planters invested all of their capital in slaves ('capitalization of labour') rather than new and improved machinery, railroads and industry. However, this claim does not stand up to empirical and comparative interrogation. First, Fred Bateman and Thomas Weiss (1981, 74–7) demonstrate that planters' investments in slaves did not 'absorb' capital that could have been otherwise used to build factories, urban buildings, railroads and mines. Planters, especially the largest, had considerable cash reserves, which they invested in additional land and slaves, the Northern stock and bond markets, and land speculation on both the Northern and Southern frontiers. Second, the ability of Cuban and other 'new sugar island' planters to mechanize sugar refining and build railroads to transport sugar to port cities contradicts the claim that the 'capitalization of labour' under slavery is the barrier to technical innovation and economic growth (Bergad 1990, ch. 3).

same logic in explaining the mechanization of sugar refining in Cuba. The end of the African slave trade in the early 1800s drove up the cost of slaves, 'constraining' the supply of labour for Cuban sugar planters. The planters introduce new machinery that reduced the need for slave labour on the sugar plantations. According to Knight:

Technology . . . was the salvation of the sugar industry. In the first place, it made possible a substantial reduction in the work force. The railroads, the use of steam, and more scientific processing enabled a higher output capacity with a lower ratio of laborers to the land. No longer did more sugar necessarily mean more land and more slaves. Nor did a larger work gang necessarily mean the acquisition of more slaves, as Indians, Chinese, and white wage earners joined the estates. Technology, therefore, changed the nature of the sugar estate. (Knight 1970, 182)

Fleisig's thesis that slavery created an elastic supply of labour in the antebellum South that reduced the planters' incentive to introduce labour-saving machinery is questionable. Clearly, a surplus of labour may *slow* the rate of mechanization in certain branches of production under capitalism. Marx (1976, 590–3, 599–610) pointed out how mechanization in the more capital-intensive sectors of industry reproduced the reserve army of labour (the unemployed and underemployed), driving wages down sufficiently to allow more labour-intensive sectors to delay replacing human labour with machinery. As a particular reserve army of labour is absorbed into the labour-intensive sectors, wages begin to rise, the retarding effects of a 'labour surplus' on technological innovation in these sectors are reduced and new, labour-saving instruments of production are introduced. Despite the indisputable fact that the price of slaves rose dramatically in the Southern US during the 1840s and 1850s (Bergad et al. 1995, 146–7, Gray 1933 vol. II, 665–7), there is no evidence of systematic and widespread introduction of labour-saving technology in cotton production. In other words, even as the supply of labour became *less elastic* and the cost of slaves increased, the master class in the USA was incapable of replacing slave labour with improved farm implements in the established cotton plantation regions.

Knight's thesis is also problematic. First, the initial wave of mechanization of Cuban sugar production – the introduction of steam-powered milling in the 1820s and 1830s – corresponds to a period of 'labour surplus'. While the African slave trade to the Southern USA and the rest of the Caribbean was effectively abolished in the first decade of the nineteenth century, the African slave trade to Cuba continued through the 1830s and early 1840s, leading to falling slave prices though the 1840s. Second, the mechanization of sugar refining actually increased the need for slave labour in planting, cultivation and harvesting throughout the nineteenth century in Cuba because techniques in the agricultural phase of sugar production remained unchanged. Knight clearly recognizes this as the case before 1840, when 'more efficient mills demanded more canes, which meant a greater area under cultivation, hence a need for more slaves' (1970, 32). Nor did the introduction of the vacuum pan after 1840 change the relationship between

the number of slaves and land and tools. The greatest numbers of slave labourers were to be found on the most technically advanced plantations in the newly settled regions of western Cuba (Scott 1985b, 28–30, 34–9). Rather than an automatic response to a changing labour market, the mechanization of sugar refining in the nineteenth century was only possible because Cuba remained a ‘frontier’ region for sugar cultivation through the 1870s.

*Other Non-Capitalist ‘Anomalies’*

Slave-owning planters, despite being subject to the competitive imperatives of the capitalist world market, behaved differently from capitalists in two other important ways. First, planters did not specialize their productive activities and purchase their inputs from other producers. Capitalist firms increasingly specialize in the production of a single good or service, reducing costs through the purchase of inputs on the market from other specialized capitalist producers. By contrast, planters throughout the New World struggled to make their plantations self-sufficient in food and tools. As Robin Blackburn argues:

The resilience and versatility of the New World slave plantation derived from the fact that it walked on two feet: that which stepped forward commercially being able to rely on that which remained fixed to the *terra firma* of natural economy. Planters generally preferred their slaves to be producing commodities for the Atlantic market; but at all times, and especially when the latter were closed, slaves could be directed to produce foodstuffs, manufactures and services – for themselves, for their masters and for the local market. (Blackburn 1997, 502)

Plantation self-sufficiency was accomplished either through the planters’ organization of their slaves into work gangs to raise food crops and raise animals, or through the slaves’ working ‘provision grounds’ or garden plots independently during the time their masters did not require their labour. The staggering of sugar planting on the eighteenth-century Caribbean sugar islands created nearly year round demand for the slaves’ labour, reaching its zenith during the five-month long harvests with their sixteen to twenty hour work days. With little or no time free to work either on their own or under the command of their masters in food production, plantation self-sufficiency was difficult and contributed to the inability of Caribbean slave populations to reproduce naturally before the nineteenth century. In the nineteenth century, sugar cultivation outside of Cuba became less demanding and plantation self-sufficiency through the independent production of slaves was achieved in most of the Caribbean, with slaves producing enough food to feed themselves and the white urban populations of the sugar islands. On the North American mainland, the less demanding work rhythms of tobacco and cotton allowed planters to make their productive units self-sufficient in food. Tobacco and cotton planters took advantage of their staples’ lengthy ‘slack-seasons’ to organize slaves into work gangs to grow corn and raise hogs for plantation consumption. Between corn and pork raised under the direction of

the masters and the slaves' independent production of vegetables, poultry and other food items on small garden plots, US slave plantations were self-sufficient in food in the eighteenth and nineteenth centuries (Blackburn 1997, 423–30, 437–9, 462–8; Berlin and Morgan 1991; Genovese 1972, 535–9; Hilliard 1972; Gallman 1970).

The second way in which slave-owning planters acted differently from capitalists was their tendency to *increase* rather than *decrease* output over the medium term in the face of falling commodity prices. It is true that capitalists, especially those in capital-intensive industries, will maintain production levels in the short-run in the face of falling prices to preserve market-share. However, all capitalists over the medium- to long-term reduce output, either through reductions in capacity utilization (laying off workers) or abandoning a particular line of production, as prices fall (Botwinick 1993, chapter 5).<sup>5</sup> Slave-holding planters, by contrast, consistently raised output in the face of decades-long declines in the prices of tobacco, sugar and cotton. Only the near collapse of staple prices as the result of new and more efficient producers entering the world market and the possibility of shifting their slaves and other economic resources to other activities induced New World planters to abandon their traditional staple for new crops or products, as happened with the shift from tobacco to cotton in the Southern US during the late eighteenth century (Tomich 1990, chapter 3; Kulikoff 1986, chapter 3; Whartenby 1963, 44–9; Gray 1933 vol. I, chapter XII, 458–61, vol. II, 496–700).

Plantation slavery in the Americas was the creature of the capitalist world market and was subject to its imperatives of cost-cutting, but rested on non-capitalist social property relations. Despite the planters' need to maximize profits in the production of commodities for the world market, they were unable to achieve this economic goal in the same manner as capitalists. The planters struggled to maximize revenue and minimize costs in order to 'hold their place' in the world market and maintain and expand their possession of land and slaves. However, they did not specialize production, smoothly adjust output to market signals, and, *most importantly, did not increase productivity through the routine introduction of labour-saving technology*. The state of world market demand for tobacco, sugar and cotton, rather than the plantations' technical conditions of production, determined the level of the planters' profits and of regional per capita income. Economic growth tended to be *extensive*, the addition of more slaves and more land in a process of geographic expansion, rather than *intensive*, with the introduction of labour-saving tools, implements and machinery. The episodic and 'cheese-paring' process of technical innovation and the planters' attempts to be self-sufficient in food and tools limited the development of the social division of

<sup>5</sup> Ironically, non-capitalist producers who have non-market access to land (traditional landlords, independent peasants) can also immediately reduce output in the face of falling prices; redeploying most of their labour to subsistence production. Staple-producing planters were compelled to maintain or expand output in the face of falling prices, while capitalist producers must eventually find alternative goods to produce for the market.

labour – the ‘home market’ for industrially produced capital and consumer goods. As a result, plantation slavery systematically stifled the development of large-scale industry and manufacturing in the regions it dominated. In sum, despite slave-owning planters and capitalists sharing the need to maximize profits in competitive markets, slavery’s social and economic dynamics were fundamentally different from those of capitalism.

#### THE ‘NON-BOURGEOIS CIVILIZATION’ MODEL

The ‘non-bourgeois civilization’ model, in a number of respects, marks an advance over the ‘planter capitalism’ model of plantation slavery in the Americas. Represented first and foremost by Eugene Genovese, the ‘non-bourgeois civilization’ thesis has produced a sophisticated account of the non-capitalist character of the slave plantation regions. Influenced by such Marxist writers as Maurice Dobb (1947), Genovese has forcefully argued that an ‘agricultural revolution’, the continuous introduction of labour-saving farm implements and machinery, is an essential prerequisite for industrialization. Genovese’s research has described how plantation slavery in the Southern USA prevented such a transformation of agriculture, blocking the emergence of a ‘home market’ for industrially produced capital and consumer goods.

Despite these advances, however, the ‘non-bourgeois civilization’ thesis has been unable to provide a convincing explanation of *why* plantation slavery is incompatible with continuous technical innovation that replaces human labour with new and more complex tools, implements and machinery. Again, Genovese provides the most rigorous attempt, to date, to provide such an explanation. Genovese’s depiction of plantation slavery as a non-capitalist form of social labour rests on a comparison of the market ‘rationality’ of capitalism (the dynamic of specialization, technical innovation and accumulation in response to competitive market signals) with the ‘irrationality’ of slavery. Relying on Max Weber’s (1978, 162–3) discussion of slavery, Genovese identifies four ‘irrational’ features of slavery:

First, the master cannot adjust the size of his labor-force in accordance with business fluctuations . . . Second, the capital outlay is much greater and riskier for slave labor than for free. Third, the domination of society by a planter class increases the risk of political influence in the market. Fourth, the sources of cheap labor usually dry up rather quickly, and beyond a certain point costs become excessively burdensome. (Genovese 1989/1965, 16)

These ‘irrational’ features of slavery resulted in the continual investment in more land and more slaves, rather than new and more productive instruments and tools. Consequently, slavery led to technological stagnation, low labour productivity in agriculture and a shallow ‘home market’ for industrial production.

Genovese’s model of slavery, derived from Weber, prevents him from developing a consistent explanation of how slavery’s social property relations block

relatively continuous labour-saving technical change. The ‘irrationality’ of slavery is derived from a comparison of the observable features of slavery with those of capitalism. There is no attempt to link the observed ‘rationalities’ of capitalism and ‘irrationalities’ of slavery to the structural constraints their respective social property relations place on the actions of both non-producers and producers. Genovese never satisfactorily answers the questions of why the capital–wage labour relation of surplus extraction *necessarily* compels both capitalists and workers to act according to the dictates of market ‘rationality’, or why the master–slave relation *necessarily* compels both masters and slaves to act ‘irrationally’ despite their subordination to world market imperatives. Put another way, Genovese can not explain why the social property relations of slavery made ‘cheese-paring’ technical change and geographic expansion *rational* methods of expanding output for the market. The result is an account of technical stagnation under slavery that is ambiguous and, at key points, self-contradictory.

Initially, Genovese gives explanatory emphasis, correctly in my opinion, to the planters’ inability to adjust the size of their labour force to take advantage of new tools and machinery. Genovese recognizes that the use of new machinery ‘would increasingly have required a smaller slave force, which in turn have depended on expanding markets for surplus slaves and thus could not have been realized in the South as a whole’ (1989/1965, 44). Further on, Genovese argues that ‘technological progress and division of labour result in work for fewer hands, but slavery requires all hands to be occupied at all times’. Thus, it would appear that the planters’ inability to adjust the size of the labour force in the face of market imperatives is the main obstacle to the mechanization of agriculture and the development of industry.

However, Genovese follows these insights about slavery and mechanization with the claim that ‘capitalism has solved this problem [excess workers] by a tremendous economic expansion along a variety of lines (qualitative development), but slavery’s obstacles to industrialization prevent this type of solution’ (1989/1965, 49). Since capitalism’s ability to generate ‘qualitative development’ – industrialization – is the result of its necessary dynamic of specialization, technical innovation and accumulation, Genovese’s argument becomes circular. On the one hand, the masters’ inability to alter the size of his labour force is the major obstacle to introduction of labour-saving techniques in agriculture, and to the development of a home market and industrialization. On the other, plantation slavery’s inability to industrialize and provide employment for surplus slaves makes technical innovation in agriculture impossible. In sum, the master’s inability to vary the size of their labour force becomes *both* the cause *and* the effect of Southern economic underdevelopment.<sup>6</sup>

<sup>6</sup> Genovese’s argument also overlooks the fact that workers under capitalism are responsible for organizing their own reproduction and maintenance outside the production process. When unemployed or underemployed, they become part of the reserve army of labour whose presence regulates wage rates under capitalism (Marx 1976, 781–802). Under slavery, the existence of a large number of slaves ‘without masters’ would represent ‘social chaos’ (Tomich 1990, 136).

*Slaves as 'Recalcitrant' Workers*

In an implicit recognition of the conceptual difficulties that flow from his inability to specify how the structure of capitalist and slave class relations shape their respective labour processes, Genovese introduces the notion that the slave was a recalcitrant labourer with a distinctive, non-capitalist 'work ethic'. Drawing upon the work of the nineteenth-century liberal economist J.E. Cairnes (1968/1862),<sup>7</sup> Genovese argues that the slaves' unfree legal status deprived them of any material interest in the labour process, making them reluctant workers whose labour could be utilized only under close supervision of highly repetitious tasks. According to Genovese, 'Bondage forced the Negro to give his labor grudgingly and badly, and his poor work habits retarded those social and economic advances that could have raised the general level of productivity' (1989/1965, 43). In later formulations Genovese emphasized the unique, non-capitalist slave 'work ethic' shaped by the day to day contestation with the masters (1972, 285–94; Genovese and Fox-Genovese 1983, 90–171). Put simply, the slave's 'lack of motivation' shaped the labour process on the plantations of the antebellum South.

Other proponents of the 'pre-bourgeois civilization' thesis echo Genovese's argument that the slaves' unfree legal status made them unmotivated and recalcitrant workers whose labour was incompatible with the introduction of new and more complex machinery. James Oakes locates slavery's failure to increase labour productivity in the slaves' lack of incentives:

Nevertheless, slavery actually provided little room for significant improvements in productivity. As laborers, the slave had little incentive to care very much or to work very hard. They had nothing like the serf's powerful claim to rights on the land. Slaves also lacked the incentives built into a wage-labor economy: the sheer need to go to work to survive, the promise of more pay for more work, and the added enticement of upward mobility in the long run. They had nothing to gain from working hard on cash crops that added nothing to their basic subsistence. The limited hierarchy of the slave community offered no real possibility of social advancement. Slave parents could work neither for their own nor their children's eventual independence. No institutional promise of future freedom provided an incentive for slaves to work hard. So, while countless slaves took justifiable pride in their skills as nurses, managers, cooks, or artisans, the vast majority of slave laborers, the field hands, had no good reason to care much about the success of the master's efforts to produce a 'good crop.' (Oakes 1990, 140–1)

For John Ashworth, 'the fact that so many slaves did not wish to be slaves, did not wish to see the fruits of their labour appropriated by another, and therefore attempted, in various ways, to resist this exploitation' (1995, 92) was the major

<sup>7</sup> Cairnes, as in most nineteenth-century liberal critiques of slavery, derives his argument from Adam Smith (1937/1776, 364–6).

obstacle to continuous technical innovation in the antebellum US South. Not only did slave resistance to their unfree legal status block the introduction of new and more complex tools on the plantation, but it severely limited industrialization and urbanization in slave societies. The risks associated with slave tool breaking were even greater in industry, with its more expensive machinery, than agriculture, with its inexpensive hand tools. The independence and autonomy that urban slaves experienced also undermined their masters' control over their labour (Ashworth 1995, 96–122; Wade 1964, chapter 9).

For Manuel Moreno Fraginals, the slaves' lack of motivation flowing from their unfree legal status placed severe constraints on the mechanization of the Cuban sugar industry and made the mechanization of sugar refining a source of profound social and economic tensions in Cuban slavery:

Slaves showed their innate rebelliousness by slowing down on the job, doing it badly, or simply sneaking off. As machines began to be the only solution, the negativeness of slave labor made itself painfully obvious. Slaves worked badly and grudgingly, beat up the animals, ruined the tools – a trend against which handbooks and regulations were as futile as punishment. All this was reflected in the instruments of production: enormously thick and heavy machetes, spades and hoes any free peasant would have refused to work with, iron *jans* [hoes] of vast size. If the change of implements slowed down the high incidence of breakage and damage, it also made slave labor slower and less productive. So much slovenly work resulted that in the end only the simplest physical tasks were assigned to slaves. And, as a final and insurmountable obstacle, year after year the system germinated violent rebellions. (Moreno Fraginals 1976, 134–5)

### *Skilled Slave Labour*

The notion that the slaves' unfree legal status was an obstacle to acquiring technical skills or working with complex tools and machinery, either in agriculture or industry, is empirically untenable. In both classical European antiquity and the plantation regions of the Americas, slaves made up a large proportion of the skilled artisans. According to Westermann (1955, 11, 6–7, 11–14, 67–9, 73–5, 91–6), 'there were few economic services which were closed to the slave class' in ancient Greece and Rome. Slaves could be found among the urban and rural building trades (stone masons, carpenters), in various metal working crafts (sword and shield making; bronze, iron and goldsmiths), and in other 'handicraft industries' (couch makers, charcoal burners, leather tanners and cutters, engravers, wool spinners and weavers, potters). All of these trades required extensive training, considerable technical knowledge and judgement, and often involved the slaves working under their own supervision.

Slaves also dominated the ranks of plantation artisans in both the Caribbean and in the Southern USA. While sugar and tobacco plantations, with their more extensive processing and storage facilities, required more skilled workers than

cotton plantations, slaves could be found working on almost all New World plantations as teamsters, blacksmiths, harness makers, boatmen, stave and barrel makers, sawyers and carpenters. In the urban zones of the American plantation regions, slave artisans were also found among the ranks of such diverse crafts as barbers, rope-makers, shipwrights, masons, carpenters and tailors. Cotton plantations required fewer skilled artisans, and urban slave artisans in the US South faced the hostility of free, white artisans. However, Fogel and Engerman (1976, 38–9) estimate that slightly over one-fourth of all slaves in the US were not gang labourers in 1860, with some 7 per cent acting as supervisors of other slaves ('drivers'), 11.9 per cent as skilled artisans, and 7.4 per cent as semi-skilled workers (boat and cartmen, domestic servants, etc.). In what ever capacity they laboured, these skilled slaves, like the slave artisans of classical antiquity, acquired and utilized extensive knowledge of their craft and often worked under their own supervision (Berlin 1998, 134–8, 154–9; Berlin and Morgan 1993, 17–20; Tomich 1990, 225–7; Fogel 1989, 42–5, 49–2; Moore 1988, chapter 11; Kulikoff 1986, 396–9).

Highly skilled slaves effectively controlled the sugar-refining process before the introduction of the vacuum pan in the mid-nineteenth century. The boiling and curing of sugar before mechanization were processes that required very precise judgements concerning the use of heat and chemicals:

From the mills, the spurting cane-juice coursed through lead-lined wooden gutters straight into the boiling house. In this steaming and smoking inferno it was crystallized by evaporation. After being held in one of several large reservoirs or 'receivers', the juice was first heated in shallow round pans called 'clarifiers,' during which it was 'tempered' with lime. The calcium carbonate acted as a catalyst, causing the sediment to sink and other impurities to rise to the top of the seething liquid. This 'crust' was constantly skimmed. After tempering, the juice was boiled in a succession of progressively smaller hemispherical cast-iron 'coppers', up to five in all, until it was ready to enter the 'tache' . . . in which it was finally crystallized, or 'struck'. (Craton and Walvin 1970, 110)

Slaves, not free workers, directed these processes in New World sugar plantations during the eighteenth and early nineteenth centuries, making crucial decisions based on their knowledge and experience:

Despite growing scientific interest and inquiry, for all practical purposes knowledge of the techniques of sugar refining remained a craft secret and could only be acquired only by long practice and experience. This knowledge was the property of the slaves . . . Although the white sugar master nominally oversaw the boiling house, the slave refiner was in practical control of its activities. . . . His technical qualifications made the slave refiner indispensable to the operation of the estates, and the master was obliged to concede control over the most strategic aspect of the labor process to this craftsman. (Tomich 1990, 223–4)

Moreno Fraginals (1976, 112, 115–16) claimed that the introduction of the vacuum pan in the 1850s and 1860s made sugar refining ‘too complicated for slaves’ and led to the introduction of contract and free labourers in the Cuban sugar refineries. However, recent research on the introduction of the vacuum pan in Martinique and Cuba has shown that the new machinery actually *lowered* the level of skill and judgement required of the workers who operated it, and that slaves made up almost all of the vacuum pan operators in mechanized sugar refining (Tomich 1990, 199–201, 221–5; Scott 1985b, 34–9).

The slaves’ legal status did not prevent them from acquiring skills and working under their own supervision in a variety of trades; nor did it prevent them from working effectively in non-agricultural pursuits. In Rome and Greece, the largest concentrations of slaves were found in mining, a relatively unskilled and highly dangerous occupation, not agriculture (Westermann 1955, 12–15). In the Southern USA, some 5 per cent of all slaves worked in industrial settings, labouring in such industries as coal, lead and salt mining, cotton spinning and weaving, iron smelting and forging, leather tanning, tobacco, hemp cloth and rope making, and lumbering. According to an exhaustive study of industrial slavery in the antebellum South, these slaves worked with the latest contemporary machinery and tools and were at least as productive, in terms of output per worker, as legally free workers in the rest of the US (Lewis 1979; Starobin 1970, chapter 1, 153–63).

#### *Free Wage Labourers as ‘Recalcitrant’ Workers*

The ‘pre-bourgeois civilization’ historians’ claim that the slaves’ unfree legal status made them recalcitrant, unmotivated and untrainable workers is both empirically untenable and tends to *idealize* the condition of legally free wage workers under capitalism. The juridical freedom of the wage earner under capitalism does not make her or him a motivated and willing labourer. Unlike peasants and other household producers, neither slaves nor wage workers have control over or interest in the production process. Peasants and artisans organize their own labour and the labour of household members, making all decisions about the timing, pace and technical character of the labour process. As a result, they are ‘self-supervising’ and require no external ‘labour discipline’ to propel them to labour.<sup>8</sup> By contrast, both the slave and wage worker confront a labour process whose timing, pace

<sup>8</sup> The ability of peasants to organize their own household labour-process does not imply that these households were not subject to external demands on their product, were egalitarian social organizations or were required to technically innovate. In many cases, landlords or the agents of centralized states appropriated taxes and rents from the peasantry through non-market mechanisms, imposing some external discipline on the household producers who, nevertheless, remained in control of their labour-process. In almost all cases, peasant households were *patriarchal* – the eldest males effectively commanded the labour of women and children in the household. Finally, the ability of peasant households to obtain, maintain and expand their landholdings without successful market competition freed these household producers from any compulsion to specialize production and introduce labour-saving technology.

and technical character has been shaped by the non-producers – the master or the capitalist. Thus, the problem of ‘labour discipline’ – ensuring continuous labour on the part of the direct producer – only becomes an issue in the labour process under slavery and capitalism. Clearly the forms and goals of the slaves’ struggles at the workplace differed from those of wage workers, as the slave-owners’ fundamental mechanisms of ‘labour discipline’ differed from those of the capitalists. However, the similarities that flow from the non-producers’ command over the labour process in both forms of social labour are striking:

The conflict between master and slave took many forms, involving the organization of labor, the hours and pace of work, the sexual division of labor, and the composition of the labor force – all questions familiar to students of free workers. The weapons that workers employed in such conflicts – feigning ignorance, slowing the line, minimizing the stint, breaking tools, disappearing at critical moments, and, as a last resort, confronting their superiors directly and violently – suggest that in terms of workplace struggles, slaves and wage workers had much in common. Although the social relations of slave and wage labor differed fundamentally, much can be learned about slave life by examining how the work process informed the conflict between wage workers and their employers. For like reasons, the processes of production were as much a source of working class culture for slave workers as for free workers. (Berlin 1998, 11)<sup>9</sup>

Wage workers’ lack of motivation, their indifference to the labour process, has not been an obstacle to the introduction of new, complex labour-saving machinery under capitalism. In fact, the division and simplification of tasks and the mechanization of production have systematically lowered the levels of skill, knowledge, judgement and initiative on the part of wage workers. While the machinery may be more complex and require a small number of technicians to service and maintain it, the level of skill required on the part of the mass of workers who operate that machinery tends to drop under industrial capitalism (Montgomery 1992; Thompson 1989, chapters 4–6; Marx 1976, chapter 15; Braverman 1974). Thus, the slaves’ lack of motivation and recalcitrance, purportedly a product of her or his unfree legal status, could not be an obstacle to the introduction of new, labour-saving technology under plantation slavery.

While the ‘pre-bourgeois civilization’ model marks an important advance over the ‘planter capitalism’ model, it fails to provide an adequate understanding of the fundamental economic dynamics of plantation slavery. Ultimately, the ‘pre-bourgeois civilization’ historians fail to explain plantation slavery’s retarding effects on technical innovation, the social division of labour and economic development for the same reasons the ‘planter capitalism’ historians fails. Both schools view the subjective goals and desires of key economic actors as the central

<sup>9</sup> Thompson (1993) presents a path-breaking analysis of the historical struggle to impose ‘labour discipline’ on workers in Britain in the late eighteenth and early nineteenth century. Aufhauser (1973) makes a similar point about both free industrial and slave agricultural workers’ lack of motivation.

determinants of economic development regardless of social context. Genovese's slaves, lacking personal freedom, were unmotivated labourers incapable of developing the skills and self-discipline necessary to master new and more complex tools. Fogel and Engerman's 'slaveowners were hard, calculating businessmen who priced slaves, and their other assets, with as much shrewdness as could be expected of any northern capitalist' (1974, 73).

As we have seen, neither explanation is sufficient. New World planters were subject to the imperatives of the world market and were compelled to maximize profits through reducing costs. However, they were unable to pursue these goals in the same way as capitalists – through specialization and changing output in response to price signals and, most importantly, through the regular introduction of labour-saving tools, implements and machinery. New World slaves were, in their majority, unmotivated and indifferent labourers. However, wage workers under capitalism, in their majority, are also unmotivated and indifferent labourers. The wage workers' subjective motivations were and are not an obstacle to the capitalist mechanization of production. Rather than placing subjective motivations and goals at the centre of the analysis of the social and economic dynamics of slavery, we will focus on how the structure of the master–slave class relation provided the social context that shaped the organization of production and economic development in the antebellum Southern USA.

## CLASS STRUCTURE AND ECONOMIC DEVELOPMENT IN THE ANTEBELLUM SOUTHERN UNITED STATES

### *The Master–Slave Social Property Relation*

To grasp the specificity and dynamic of the master–slave class relation, we will compare it to the capitalist–wage labourer relation.<sup>10</sup> Capitalist and slave social relations of production share certain characteristics. In both capitalism and slavery, the non-producers have both legal ownership and effective possession (the ability to organize the labour process) of the means of production – land, tools, machinery, raw materials and the like. In both forms of social labour, the direct producers are separated from legal ownership and effective possession of the means of production, and are thus compelled to labour for others. Put simply, in both capitalism and slavery the capitalists and the masters can organize a collective, cooperative labour process under their command. The wage worker or the slaves confront the labour process as 'ready-made,' as a creation of the capitalist or masters. This crucial similarity accounts for the lack of interest in the production process on the part of both the slave and the wage worker – their shared 'recalcitrance'. Unlike various forms of household production, where the artisan or peasant organizes their own labour process and thus requires no supervision,

<sup>10</sup> The following paragraphs draw upon Marx's (1976) discussion of capitalist social property relations and discussions of slave social property relations in Ste. Croix (1981, 504–5); Hindess and Hirst (1975, 125–48) and, in particular, Tomich (1990, ch. 4).

both slavery and capitalism require 'labour discipline'. As we have seen, the masters' and capitalists' ability to combine labour, tools and land in a cooperative labour process under their command also explains the strong similarities between the day to day conflict over the pace and organization of work in both capitalism and slavery.

The masters' ability to organize a cooperative, centralized labour process under their control also accounts for the productive superiority of the plantation over household producers of cotton, tobacco and other staple crops. Gavin Wright (1978, 74–87, 102–9) claims that there were no significant differences in economies of scale between household (family farms) and slave plantation producers of cotton in the antebellum South. Clearly, the economies of scale achieved on cotton plantations (with twenty or more slaves)<sup>11</sup> compared with household production of cotton were much smaller than the gains made on sugar plantations, where the much larger investments in tools and machinery for sugar processing made household production of sugar nearly impossible. However, the introduction of cooperative, centralized labour processes (gang labour), along with superior financial resources, gave the planters productive superiority over small farmers who owned no slaves or too few slaves to create work gangs. Once gang labour was established, Wright is correct that no economies of scale accrue with increased size of the slave workforce, as the ratio of labour, land and tools remains unchanged (Genovese and Fox-Genovese 1983, 156–61).

The crucial difference between capitalism and slavery appears in the surplus-extractive relationship between the non-producers and the direct producers. Capitalists purchase the *labour power*, the capacity to work, of the workers for a specified period of time. Masters, by contrast, purchase *the labourer*, the person of the worker. The purchase of the *labourer*, rather than her or his *labour power*, has important economic effects. The purchase of labour power allows the worker to enter the capitalist production process as a *variable* element of production. The capital invested in the reproduction of the workers, their wages, is a variable cost clearly distinguished from the constant costs of objects and instruments of production. The masters' purchase of the labourer converts the direct producer into 'means of production in human form'. The 'capitalization of labour' requires the slave to enter the production process as a *constant* element of production. Under slavery, the master is unable to distinguish capital invested in objects and instruments of production from that invested in reproducing his labourers. Both the labourers and land, tools and the like appear as fixed and inflexible costs to the planter.

The 'capitalization of labour' under slavery necessitates that slaves be maintained and reproduced, whether or not they actually labour, in order to preserve their potential market value. Slaves who could not work were without market value. By contrast, wage workers receive wages that allow them to maintain and

<sup>11</sup> The figure of twenty slaves as the minimum for gang labour in cotton cultivation – as the dividing line between 'farms' and 'plantations' – is derived from Fogel (1989, 50), Moore (1988, 116), Genovese (1972, 7) and Gates (1960, 139).

reproduce themselves only if they labour under the command of the capitalist. This fundamental difference in the structural position of slaves and wage workers accounts for the different forms 'labour discipline' takes in the two forms of social labour. Under slavery, physical force and violence, actual or potential, was a *necessary* element of the plantation labour process. The 'whip of starvation', rather than physical force, is all that is necessary to ensure that wage workers actually labour for capital. Fogel and Engerman grasp this difference:

The hiring of free workers in the marketplace provided manager of labor with a powerful new disciplinary weapon. Workers who were lazy, indifferent, or who otherwise shirked their duties could be fired – left to starve beyond the eyesight or expense of the employer. Interestingly enough, denial of food was rarely used to enforce discipline on slaves. For the illness and lethargy caused by malnutrition reduced the capacity of the slave to labor in the fields. Planters preferred whipping to incarceration because the lash did not generally lead to an extended loss of the slave's labor time. (Fogel and Engerman 1974, 147)

The slaves' position as a constant element of the production process, who must be maintained whether or not they laboured, severely restricted the masters' ability to adjust the size of their labour force through technical innovation. Having invested in 'means of production in human form', the masters were burdened with relatively inflexible costs of reproducing their direct producers and a relatively inflexible ratio of labour to land and tools. Put simply, the masters could not readily reduce the size of their slave labour force to adopt labour-saving technologies in the face of changing market imperatives. Like all other pre-capitalist dominant classes, they were unable to 'expel' labour from production. 'Redundant' slaves had to be sold to another slaveholder in order to recoup their market value.

Individual slave-owners or segments of the master class might be able to sell surplus slaves and adapt labour-saving implements and machinery, as did many planters in the 'upper' South in the nineteenth century. Only the continued geographic expansion of slavery and the resultant growth of the domestic slave trade allowed this limited 'agrarian reform' (Genovese 1989/1965, chapter 3; Tadman 1989, part I; Fields 1985, chapter 2). However, at no point in the antebellum period in the USA did plantation slavery expand rapidly enough to generate sufficient demand for slaves to allow a significant sector of the planters to adopt labour-saving tools and machinery. The domestic slave trade reached its zenith in the 1830s, when approximately 20,000 slaves were exported from the 'upper' to 'lower' South each year.<sup>12</sup> While this represented some 10 per cent of

<sup>12</sup> All data on the domestic slave trade derived from Tadman (1989, 5, 12, 44). I derived the figure of an average of 20,000 slaves sold each year by taking 70 per cent of the total slave population exported 1830–9 (approximately 290,000) and dividing by ten. The 70 per cent figure is based on Tadman's calculation of the relative proportions of slaves sold and slaves transported by masters from the 'upper' to 'lower' South each year after 1820.

the total slave population of the 'upper' South, the domestic slave trade accounted for less than 1 per cent of the total US slave population of approximately 2.4 million counted in the 1840 census. Natural demographic increase provided the bulk of the growing slave labour force in the US South, limiting the market for 'surplus' slaves made redundant through attempts to introduce labour-saving techniques into Southern agriculture. Thus, the generalized mechanization of slave agriculture was *impossible* – there could be no 'reserve army' of unemployed under slavery.<sup>13</sup> Dale Tomich, in his study of slavery in Martinique, captures the structural roots of slavery's inability to introduce labour-saving technology:

The contradiction between slave labor and technological innovation does not reside in the capacity or incapacity of individual workers to perform specific concrete tasks; rather, the specific character of slavery as a social relation determined the conditions under which such changes could be implemented and their consequences for social and economic development. In the slave relation, the instruments of labor did not function as capital. The reorganization of production did not save labor or reduce its cost either relatively or absolutely. Labor was not expelled from the production process, and the costs of slave maintenance remained independent of the changes in production. (Tomich 1990, 201)

By contrast, capitalists can reduce the size of their labour force to adapt new, labour-saving machinery in response to changing competitive pressures simply by laying off their 'redundant' workers and expanding the size of the reserve army of labour. Having consumed their capacity to work for a specified period of time, the capitalists no longer have any obligation to their former workers who are 'free' to compete with one another to find other buyers for their labour power. In sum, while capitalists have and do attempt to intensify the labour of wage workers through speed-up and lengthening working hours, the most effective means of increasing output and reducing costs – the mechanization of production – is available to capitalists, but not to slave-owners.

The status of slaves as a form of 'fixed capital' provided few opportunities for slave-owning planters to introduce new labour-saving technology even when such innovation would allow planters to cut costs in response to market imperatives. The introduction of new crops or expansion to new regions provide the only opportunity for planters to break the fixed relationship between labour, land and tools through the introduction of new tools and implements. However,

<sup>13</sup> Clearly, like other forms of 'fixed capital', slaves are 'worn out' (no longer able to work in the fields) and lose market value through age. As slaves age and are 'devalorized,' they are 'discarded' (given light domestic tasks, caring for children, etc.) and younger slaves replace them in the fields. However, this 'normal' cycle of 'human fixed capital' could not have accommodated the generalized introduction of new tools and machinery. Instead, it would have required the replacement not only of older 'devalued' slaves, but younger slaves with substantial market value. To introduce new machinery, these younger slaves would have to be sold to other masters in order for their owners to recoup their investment in 'means of production in human form'.

once the new ratio of labour, land and tools had been established with the new crop or in the new region, it remained fixed and inflexible because of the planters' inability to adjust the size of their slave labour force. Thus, the master-slave social property relation necessitated episodic and 'cheese-paring' technical innovation in the slave plantation regions of the Americas. Unable to reduce the amount of necessary labour the slave performed through mechanization, the planters were *compelled* to organize the plantation production process along the lines of closely supervised and coordinated cooperative work that maximized the use of human labour. The only options open to planters who sought to increase the volume of production and cut costs on their plantations was either increasing the intensity and pace of work (increasing the acreage each slave gang tilled in a given period of time), or moving production to more fertile land. In sum, geographic expansion was the *most rational* means of increasing output and reducing costs available to slave holders embedded in the capitalist world market.<sup>14</sup>

*The Tobacco and Cotton Labour Processes and the Geographic Expansion of Plantation Slavery*

The effects of the master-slave social property relation are clearly evident in the organization of the labour process in tobacco and cotton production. While the natural features of tobacco production did not allow the detailed division of labour that would make gang labour possible in sugar and cotton production, tobacco planters in seventeenth- and eighteenth-century Virginia and Maryland strove to create a coordinated labour process that maximized the use of human labour (Berlin 1998, 118–19; Blackburn 1997, 461–2; Walsh 1993, 172–3, 176–278; Kulikoff 1986, 324–5, 384–6, 401–2, 408–12; Gates 1960, 100–3; Gray 1933 vol. II, 215–17, 545–6). Tobacco plantations were organized around the 'task-system', where the ten or more slaves on the plantation were broken into groups of two to three and assigned daily work quotas. White overseers would supervise the slave work groups in seasonal tasks. During the spring, slaves would plant tobacco seeds and cultivate the seedlings, often by hand or using simple hoes, until the seedlings were ready for replanting. The transplanting of seedlings in the summer was one of the two peak periods of labour on the tobacco plantation:

After the land was cleared the ground was 'grubbed' with the 'grubbing hoe' – a kind of small mattock. Then hilling hoes, 6 to 8 inches wide and 10 or 12 inches long in the blade, were used to prepare the hills. The laborer stood with foot advanced and throws dirt from all sides around his leg, then withdrew his foot and flattened the top of the hill. (Gray 1933 vol. I, 217).

<sup>14</sup> Geographic expansion was a common form of increasing output in other non-capitalist forms of social labour. According to Perry Anderson (1974, 31), the geographic expansion of feudalism through conquest in the medieval and early modern period 'was probably the most *rational and rapid* single mode of expansion of surplus extraction available for any given ruling class under feudalism'.

Cultivation (clearing of weeds) proceeded through the rest of the summer and early autumn, with the slave work groups using broad 'weeding' hoes to remove weeds that threatened to sap nutrients from the tobacco plants. The harvest, the other peak period of labour, began in the later autumn. The slaves would pick the ripened tobacco leaves by hand, transport them to the smoking-curing house and pack the cured tobacco in crates for market. The tools used in tobacco cultivation, primarily hand-held hoes, remained unchanged until the shift in tobacco cultivation to Kentucky and Tennessee in the early nineteenth century. As a result, a ratio of three acres of tobacco land planted, cultivated and harvested each season per slave remained unchanged through the end of the eighteenth century.

To maximize the use of human labour in the production of tobacco, the planters and their overseers utilized the labour of all their slaves. Both slave men and women laboured together in the tobacco fields, performing the same tasks in planting, cultivation, and harvest seasons. Slave children began to labour part time in the fields at the age of 9 or 10, and became full time 'hands' at the age of 14. To maintain and increase the intensity of the work group's task labour, planters often appointed young male slaves to lead the group and set the pace of the group's work. This intensified pace became the basis for determining work quotas in the task system. Finally, by the early eighteenth century, the work day had been lengthened to twelve to fourteen hours (with a two hour mid-day break), Saturdays became a regular workday and the number of holidays reduced to three (Christmas, Easter and Whitsunday).

Geographic expansion, with the addition of more slaves and more land, was the most rational way for planters to increase output given the fixed ratio of labour to land and tools imposed by the social property relations of slavery. The nearly universal tendency toward soil exhaustion in the plantation regions of the Americas, resulting from the availability of inexpensive land appropriated from the native Americans,<sup>15</sup> heightened the necessity of geographic expansion. Because the cost of land was less than that of purchasing or producing manure, most tobacco plantations held large tracts of land in reserve to allow field rotation that slowed soil exhaustion. Land would be planted with tobacco until yields per acre began to decline, usually within five years. At that point, the planters would move production to new lands and allow the older fields to remain fallow for twenty years. In this system, only three acres per slave would be planted at any given time, but some twenty acres per slave were needed to allow effective field rotation. Despite these efforts, overall tobacco yields began to decline in the Chesapeake during the early eighteenth century and tobacco cultivation moved onto the coastal plains and into the piedmont regions of

<sup>15</sup> Genovese (1989/1965, ch. 4) argued that soil exhaustion was the direct result of the slaves' inability, as recalcitrant unfree labourers, to raise sufficient livestock for manure or to apply manure effectively. However, the record of slave societies in the Ancient World indicates no necessary relation between slave property relations and soil exhaustion (Hindess and Hirst 1975, 162–70).

Virginia, the Carolinas and Georgia between 1720 and 1770 (Walsh 1993, 172–3, 178–81; Berlin 1998, 121–3; Kulikoff 1986, 47–9, 63–4, 92–9, 142–61; Gray 1933 vol. I, 217–18, 233–4).

The transition from tobacco to cotton as the US South's main export staple in the nineteenth century brought a profound transformation in the slave labour process. First, the natural features of cotton production allowed the development of a detailed division of labour in planting and cultivation that made possible the introduction of gang labour on Southern cotton plantations. The shift from task to gang labour gave the masters' greater control over the tempo and organization of their slaves' labour and allowed a growing scale of production, with the minimum number of slaves needed for plantation production rising from ten to twenty. Second, the growth of cotton production opened the way for an episode of labour-saving technical innovation in the 1820s, with the horse or mule-drawn 'sweeper' plough displacing the hand hoe and the introduction of 'Petit Gulf' cotton. Taken together, the introduction of gang labour and new labour-savings tools, seeds and implements tripled the ratio of slave labour to land and tools, from three acres per slave in tobacco production to nine to ten acres per slave in cotton production, by the late 1830s (Reidy 1992, 38–42; Gates 1960, 136–7; Gray 1933 vol. I, 707–8). However, once the crop changeover was completed, labour-saving technical innovation halted, the ratio of slave labour to land and tools became fixed, and the planters were compelled to maximize output through the close supervision of centralized work gangs that maximized the use of human labour.

In cotton planting, the slaves were divided into five gangs, each responsible for a specific aspect of soil preparation and seed placement:

Leading the procession were the plowmen who ridged up the unbroken earth; then came the harrowers who broke up the clods; then drillers who created the holes to receive the seeds, each hole a prescribed distance apart from the next one; then droppers who planted the seeds in the holes; and finally the rakers who covered up the holes. (Fogel and Engerman 1974, 203)

In cultivation, the nurturing of the cotton plants while they grew to maturity, the hoe gang and the plough gang would work in close coordination. The hoe gang would begin first, chopping up weeds and trimming the cotton plants. They were followed by the plough gang, which would stir up the soil near the rows of cotton plants and place it back on the plants. The detailed division of labour broke down during the harvest, as undifferentiated groups of slaves would pick the cotton by hand:

It was customary to pick the field three times, the several pickings being designated successively the 'bottom,' 'middle,' and 'top,' crops. The middle picking furnished the largest product, and usually the best quality. The entire slave force capable of going into the field was employed. Each hand carried a sack suspended about the waist, in which the cotton was

deposited as gathered, and later emptied into a basket or large sheet placed at a convenient location in the row. (Gray 1933 vol. II, 702)<sup>16</sup>

As in tobacco production, the planters employed all of their slaves in the cotton fields to maximize the use of human labour in cotton production. Again, there was no gender division of labour with both men and women labouring together in all aspects of cotton production, and juvenile labour was mobilized for minor tasks at the ages of nine or ten and for adult work at fourteen. Slaves in cotton production worked a five and one-half day week, with Sundays and parts of Saturdays free from the masters' demand for their labour, and enjoyed the same three major holidays as slaves in tobacco production. The slaves' work day in cotton production varied considerably:

The length of the solar day, seasonal weather patterns, and the variable demands of crops shaped the nature, intensity, and duration of labor. Moreover, cotton cultivation embraced two major 'slack' seasons: midsummer's laying-by time, when the cotton and corn required no further weeding prior to harvest, and winter's dead time, between the end of the harvest and the start of plowing. Both lulls provided occasions for performing routine maintenance work on the plantations, including repairing fences and ditches, removing stumps, clearing land, chopping wood, and building or repairing slave cabins and other plantation buildings. (Reidy 1992, 65–6)

Geographic expansion was, as it had been in tobacco production, the most rapid way cotton planters could increase output in the face of their inability to 'expel' slave labour from production. The tendency of cotton production to reduce the fertility of the soil again sharpened plantation slavery's need to expand geographically. The only systematic crop rotation in the nineteenth-century South was between cotton and the equally soil exhaustive corn. Cotton planters grew very little clover, peas or other nitrogen-fixing crops and relied on manuring and the availability of inexpensive land to counter-balance declining yields. The older cotton growing regions of upper South Carolina and middle Georgia began to experience declining yields in the 1820s. By the 1840s, segments of the lower South were encountering the effects of soil exhaustion on cotton output. The larger planters owned substantial 'private frontiers' – large tracts of cultivated land – which could be brought into production when yields began to decline on the older fields. Small and medium planters had little land in reserve and were often the first to feel the impact of declining yields and the first to move (Genovese 1989/1965, chapter 4; Gates 1960, 142–4; Gray 1933 vol. II, 910–11). For all

<sup>16</sup> Moore (1988, 95–6) suggests that the introduction of horse-drawn plows raised the skill level of slaves on cotton plantations, undermined gang labour and brought a revival of the task system in cultivation. This claim is not supported by any of the other studies of the slave labour process in cotton. In fact, Reidy (1992, 38–42) details the efforts of lower South planters to completely eliminate any vestiges of the task system so as to consolidate their command over the slave labour process.

planters, moving their operations to virgin lands, given the obstacles to altering the ratio of slave labour to land and tools, was the most rational way for planters to increase output per slave in the cotton South (Foust and Swan 1970; Whartenby 1963, chapters II, V).

Plantation slavery in the antebellum South met the growing demand for raw cotton on the part of industrialists in Britain and the Northern US through geographic expansion. The centre of slave cotton production shifted southwesterly through the early nineteenth century, from coastal South Carolina and Georgia in 1815, to western Georgia and southern Mississippi and Alabama in 1830, to northern Mississippi and Alabama and Louisiana and Texas in 1850 (Gates 1960, 7–8, 10–11; Gray 1933 vol. II, 893–907). Between 1840 and 1860, the production of cotton in the US rose 173 per cent, from approximately 834 million pounds to 2.3 billion pounds. At the same time, cotton acreage grew 167 per cent, from approximately 4.5 million acres to 12 million acres and the number of slaves producing cotton grew 87.5 per cent, from approximately 1.2 million to 2.25 million (Hammond 1897, 59–61, 74, Appendix I). Put simply, the addition of more slaves and more land, combined with the intensification of the slaves' labour and increased yields per acre resulting from the cultivation of more fertile soils were the basis for expanding cotton production in the antebellum period. The regular introduction of labour-saving techniques was incompatible with the master–slave social property relations, necessitating this pattern of *extensive* growth.

### *Plantation Self-Sufficiency*

The slaves' place in the plantation labour process as a constant element of production – as 'fixed capital' – also explains the near universal tendency of slave-owning planters in the Americas to attempt to make their plantations self-sufficient in food and other productive inputs.<sup>17</sup> In order for masters to realize their investments in slaves, the slaves must be compelled to work all year round. Agriculture, as a natural-biological process, is not well suited to providing year round, continuous work.<sup>18</sup> There are sharp discontinuities between the time human labour is required to plant, harvest and cultivate crops (labour time) and the time required for natural-biological processes to bring crops to maturity (production time). Put simply, labour time in agriculture tends to be concentrated in the planting and harvesting of crops, which are separated by a prolonged production time when little or no labour is required. This disjunction between labour and

<sup>17</sup> Our discussion of 'plantation self-sufficiency' owes much to Anderson and Gallman (1977). However, they tend to minimize the effects of slaves as 'fixed capital' on the plantation labour process. For example, they tend to see 'technological obstacles' accounting for the planters' inability to introduce labour-saving machinery in cotton production.

<sup>18</sup> This is one of the reasons that ancient slavery tended to be concentrated in mining and manufacturing (Wood 1988, 45–6, 79–80; Jones 1956; Westerman 1955, 8–9, 14–15).

production time, which has limited the development of wage labour in capitalist agriculture more generally (Mann 1990, chapter 2), posed a challenge for slave-owning planters in the Americas. All New World planters' strove to spread their slaves' labour-time across the calendar year. While sugar planters had the greatest success in engaging their slaves in staple-crop production year round, the gap between production and labour time in *all* plantation staples created the need for planters to find other employment for their slaves during the staple crop's 'slack season'. Thus, the possibility was opened for masters to put their slaves to work producing food and other productive inputs, either under the masters' supervision or through the slaves' independent efforts. Thus, the drive to make the slave plantation self-sufficient and the resulting inability of the planters to specialize output was thoroughly rational and efficient given the logic of the master-slave social property relation.

The constant need to weed tobacco plants during their slow maturation process from early spring to late autumn engaged the slaves' labour for considerable portions of the year. However, except for the fall harvest, slaves worked fewer hours in tobacco than in sugar (ten versus sixteen to twenty hours per day) and were free half of Saturday and on Sunday. In addition, 'after the crop was hung in the tobacco house,' in late autumn, 'masters had to manufacture new work for their slaves if they expected them to continue to labour' (Kulikoff 1986, 412). The tobacco planters were able to organize, under their supervision, the growing of corn and the raising of hogs, allowing most of the slaves' basic food ration (ground corn and pork) to be produced directly on the plantation rather than purchased. In addition, the masters put their slaves to work repairing and, in some cases, producing tools and equipment. The slaves were also granted garden plots which they tilled during their 'free' time. Not only did the slaves grow a wide variety of vegetables and root crops to supplement their diet, they produced and owned most of the fowl in Virginia and Maryland in the eighteenth century. The slaves also engaged in various craft activities, making a variety of handicrafts, including clothing to supplement the simple clothes provided by their masters (Blackburn 1997, 465-7; Berlin and Morgan 1993, 9-11, 25-6, 29-32; Kulikoff 1986, 337-40, 392-3, 411-13).

In cotton production, the harvest season (late October through November) represented the peak period for labour time, when slaves would work eleven hours per day, seven days per week. A lengthy slack season followed, ending with renewed planting in the early spring. Corn, a major source of food for both slaves and plantation livestock, was a complementary crop to cotton. According to Battalio and Kagel:

If a plantation had a labor force sufficient to meet the harvest requirements, it followed that a labor surplus existed in other months that was available for other pursuits at little or no opportunity cost with respect to cotton production. The raising of corn was ideally suited to utilizing this labor supply. Corn has a short growing period which leads to a very wide range of suitable planting dates. Corn could have been planted in March before

the cotton and harvested in July, or it could have been planted in June and harvested after the cotton crop was picked. (Battalio and Kagel 1970, 33–4)

The planters organized the production of corn, with the slaves working in gangs utilizing the same tools (ploughs and hoes) they wielded in cotton production. The planters also organized the raising of hogs, which were allowed to forage in the woodlands surrounding most plantations most of the year and kept in pens to fatten on corn for a few weeks prior to slaughter. Together cotton and corn production kept the slaves working some 280–290 days per year, some 3000 hours per year – a 60 hour week, 50 weeks per year (Anderson and Gallman 1977, 29–32; Hilliard 1972, 95–102; Battalio and Kagel 1970, 26–7).

In addition to the planters' organization of corn and pork production, which supplied most of the weekly rations slaves received from their masters, most planters granted garden plots of approximately one acre to each slave household in the cotton South. On their own time (usually evenings, Saturday afternoons and Sundays), the slaves organized their own independent production of cabbage, collards, turnips, sweet potatoes and other vegetables. Usually, one slave household was able to grow enough vegetables in its garden to feed the household and provide a surplus for exchange with other slaves and for sale. Slaves in the cotton South also raised the majority of chickens and other fowl, and engaged in hunting and fishing to supplement their diets. Slaves also produced a wide variety of handicrafts, including baskets, brooms, horse-collars and bows both for household consumption and sale (Campbell 1993, 245–6; Reidy 1992, 60–1, 67–70; Moore 1988, 101–5; Genovese 1972, 535–6; Hilliard 1972, 172–85).

The masters were able to achieve a considerable degree of plantation self-sufficiency in food and tools. The successful production of corn and cotton, using slave gang labour under the planters' direction, ensured that most plantations at most times were able to produce sufficient quantities of corn and pork to feed their slaves. As corn and cotton output rose together with the size of plantation, many of the larger planters were able to raise marketable surpluses of both corn and pork for the Southern towns and cities (Hilliard 1972, chapters 1, 11; Battalio and Kagel 1970, 31–3; Gallman 1970, 18–23). Not only were the planters generally able to feed the slave population of the antebellum South without buying food on the market, they were able to produce many of their own tools directly on the plantation. There is evidence that the larger planters owned full-time slave blacksmiths who used wrought iron to produce and repair the plantations' ploughs and hoes. Although small and medium planters could not afford to purchase a full-time slave blacksmith, they were able to lease these slaves' services from larger planters (Moore 1988, 39–41; Garrett 1978, 64–5). In sum, the planters were able to feed their labour force and produce a substantial portion of their tools and implements without recourse to the market by ensuring that their slaves laboured year round. While the planters remained subject to market imperatives to increase output and cut costs in order to maintain their possession of land and slaves, the expansion of plantation slavery did not deepen the social division of labour through productive specialization.

*Plantation Slavery and the World Market*

The master–slave social property relation, in particular the masters' inability to alter the size or cost of their labour force, had a profound impact on plantation slavery's relation to the world market. From the eighteenth century through the abolition of slavery during the Civil War, merchants organized the shipment and sale of North American plantation staples on the world market, as well as provided the credit necessary for the purchase of supplies, slaves and land. The British Navigation Acts gave British merchants a monopoly on all aspects of trade and credit with colonial Virginia and Maryland tobacco planters. Until the 1730s, tidewater planters sold their tobacco directly to London merchants, who would take a commission from the final sale in exchange for shipping, storing and marketing the tobacco. The same commission merchants would arrange the extension of credit for the purchase of plantation supplies, slaves and land. As tobacco production expanded from the tidewater into the coastal plain and interior regions of Virginia and Maryland, direct shipments of tobacco became impractical. In the 1730s and 1740s, agents of Scottish merchants began to open stores in the Virginia and Maryland interior to purchase tobacco, which they would ship to agents of their firms in the coastal port cities for shipment to Scotland and resale (Brenner 1993, chapter XII; Kulikoff 1986, 122–31; Breen 1985, chapters III–V; Davies 1952; Gray 1933 vol. I, chapter XVII).

During the nineteenth century, the cotton planters consigned their crops to factors, merchants based in Southern towns and port cities, who gathered up the cotton crop and arranged for its shipment to England via the port of New York. In return, the factor received an average commission of 2.5 per cent of the gross price of the cotton sold. The factors also extended credit to the planters for the purchase of supplies, land and slaves, charging an additional 2.5 per cent annual interest. As collateral for their loans, planters gave the factors both the exclusive right to sell their current cotton crop and pledged the next year's crop. If the next year's crop fell below the amount specified in the loan contract, the planter was charged additional interest as a penalty (Woodman 1968, 30–42, 49; Gray 1933 vol. II, 711–13).

The creditor–debtor relationship between merchants and planters was one factor contributing to the tendency of slaveowners in the Americas to increase rather than decrease staple output in the face of falling prices. The merchants' mandate that planters continue producing their major staple as a condition for credit severely restrained the planters' ability to respond to falling prices by shifting production to new crops. Clearly, credit is a feature of almost all commodity production, allowing producers to purchase tools and machinery and pay workers before the sale of any finished goods. It is especially important in agriculture, where the long period between planting and harvesting creates the need for substantial credit to purchase land, seeds and tools and to secure labour long before the first crop is harvested, no less sold. For the slave plantation, the need for credit is particularly acute because the planters have to make large

outlays to purchase the person of their labourers, rather than simply purchasing their capacity to work for fixed periods of time.

Credit and debt compelled the planters to compete on the world market in order to maintain or expand their ownership of land and slaves. However, the structure of the master–slave social property relation compelled the slave-owning planters to increase production systematically in the face of falling world market prices. Because the slave entered the production process as a constant or fixed element of production, planters experienced inflexible costs of reproducing their labour force. Capitalists can and do respond to falling prices by ‘expelling labour’ from production – by reducing output through lay-offs or introducing labour-saving machinery. The options for the slave-owner were much more limited:

The planter could only respond to the market by increasing the exploitation of slave labor. This could take the form of either expanding production to marginal lands or intensifying production on the better lands. In either case, the labor component of the product could not be reduced. The planter was continuously burdened with the enormous fixed costs of slave maintenance. These costs were independent of sugar prices and had to be paid whether the slave worked or not. They thus compelled the planter to keep producing no matter what. As market conditions declined, the slave owner could not reduce his labor force. Instead, the need to cover the costs of slave maintenance created pressure to increase production. (Tomich 1990, 77)

### *Slavery and Economic Development in the US*

A consistent theme in the historical and theoretical literature on the origins of capitalist industrialization is the necessity of the transformation of the countryside (Post 1995, 389–90). An ‘agricultural revolution’ that results in a dynamic of productive specialization, relatively continuous labour-saving technical innovation and accumulation not only ‘frees’ a section of the rural population to work in manufacturing and industry, but deepens the social division of labour creating a ‘home market’ for industrially produced goods. Rural productive specialization creates a growing market demand for food, clothing and other consumer goods that rural producers formerly produced themselves, while the labour-saving technical change creates a growing market for new and more complex tools and machinery.

The master–slave social relation of production systematically blocked the deepening of the social division of labour and the creation of a home market for industry. The masters’ ownership of the slave as ‘means of production in human form’ and the resulting inability to ‘expel labour’ from the production process created a highly episodic process of labour-saving technical innovation and a fixed and inflexible ratio of labour to land and tools. The relatively unchanging tools and implements used on the slave plantations of the US South, along with the attempts of planters to produce hoes and ploughs on the plantation, severely

limited market demand for capital goods. The masters' need to keep the slaves employed continuously throughout the year impelled the planters to put the slaves to work growing corn and raising hogs, making the cotton plantations generally 'self-sufficient' in food and other consumer goods. Plantation self-sufficiency severely limited the purchase of consumption goods to simple clothing and shoes for the slaves. Put simply, the slave plantation provided at best a shallow and unchanging market for industrial producers in the region.

Non-slaveholding Southern farmers did not provide an alternative market for industrial producers of capital and consumer goods. While slaveless white farmers often cleared land and initiated agriculture on the Southern frontier, planters were able to supplant the 'yeoman' farmers and engross the best located and most fertile lands. The displaced farmers settled in the Southern 'upcountry' – the hill regions and pine barrens. Inexpensive land, few debts and low property taxes, which planter-dominated Southern legislatures guaranteed for most of the antebellum period, allowed the bulk of these small farmers to maintain their possession of landed property without competing on the market. Facing no compulsion to 'sell to survive', these independent producers neither introduced new technology nor specialized output, growing small amounts of cotton along with various food crops, raising animals and producing most of their own clothing and tools. These 'self-sufficient' communities provided little market demand for either consumer or capital goods (Weiman 1987; Wallenstein 1985; Hahn 1983, Part I; Schlotterbeck 1982; Wright 1978, 62–74). Cotton farmers in the plantation regions who owned less than ten to fifteen slaves, and were thus unable to organize gang labour on their farms, might have become a potential market for consumer and capital goods. However, the planters' growing concentration of land holdings in these areas in the 1840s and 1850s pushed many of these farmers into the 'upcountry' and effectively short-circuited such a development (Genovese and Fox-Genovese 1983, 249–71; Barney 1982; Wright 1978, 24–37).

Several 'planter capitalist' historians have challenged the notion that plantation slavery limited the growth of the social division of labour and the depth of the home market for industry. Fogel and Engerman, utilizing data that assigned market prices to the food, clothing, shoes and other items consumed by slaves, argue that the plantation South provided a substantial market for low-quality consumer goods industries. The high rates of return in cotton production, however, explained the relative absence of manufacturing in the South:

. . . it was natural resource endowments which gave the South a comparative advantage in agriculture . . . To the extent that slavery permitted economies of large scale and raised agricultural productivity, it might have created an economic incentive to shift resources away from industry and into agriculture. (Fogel and Engerman 1974, 255–6)

As Wright points out, the claim that the underdevelopment of Southern industry was the result of comparative advantages is a 'tautology: goods would not be produced unless it was profitable to do so, and if it was profitable to produce

these goods, the region must have had a comparative advantage in those goods' (1978, 111–12). In addition, there are clear data demonstrating that rates of return in Southern industry were no lower than in Southern agriculture, eliminating any 'comparative advantage' (Bateman and Weiss 1981, chapter 5). More importantly, the notion that the depth of the market can be derived from data that assign prices to the slaves' consumption is highly questionable. The size of the market depends upon the degree to which direct producers *purchase* consumer goods and non-producers *purchase* capital goods. No matter how large the amount of goods the slaves *consumed*, the amount *purchased* was relatively small because the plantations directly produced most of the food consumed by the slaves.

Fred Bateman and Thomas Weiss (1981, chapters 3, 7 and 8) argue that the market for industrial goods was not substantially different in the South and Midwest before the Civil War. Specifically, they claim that both Southern and Midwestern agriculture provided relatively narrow and geographically fragmented markets for industry, limiting the scale and scope of industry in both regions. They attribute the absence of Southern industrialization to a planter class who 'were exceptionally averse to risk' (Bateman and Weiss 1981, 161). This argument is open to a number of criticisms. Bateman and Weiss ignore the differing dynamics of Midwestern family farming (petty commodity production) and plantation slavery. At a given historical moment, the markets in the Midwest and South may appear similar. However, the Midwestern family farmers, through their search for labour-saving technology and increased dependence on the market for consumer goods, progressively deepened, expanded and unified the 'home market' for industrially produced commodities in the 1840s and 1850s (Post 1995, 393–406, 428–34). By contrast, plantation slavery, by blocking technical innovation and promoting self-sufficiency, left the 'home market' shallow, small and fragmented.

Nor is there clear evidence that planters were 'risk averse' in relation to investing in manufacturing. Planters, often in partnership with merchants, invested in iron foundries, textile factories, coal mines, lumbering, rope making, cotton ginning, sugar refining and various other resource extractive and plantation auxiliary industries which used free white workers as well as owned and 'hired' slaves (Lewis 1979; Starobin 1970). Southern industry, however, lagged far behind in the medium- and large-scale production of iron, cotton textiles and farm implements that would fuel the Northern industrial revolution of the 1840s and 1850s (Parker 1970, 121–5). This qualitatively different pattern of industrial growth was the product of the fundamentally different effects of slavery and agrarian petty commodity production on the social division of labour and the home markets for industrial production.

While plantation slavery placed severe limitations on industrialization and economic development in the South, its impact on the Northern US in the nineteenth century was more ambiguous. As Eric Williams (1944) and others (Solow and Engerman 1987) have pointed out, plantation slavery simultaneously retarded economic development in the Caribbean while promoting the expansion of global commodity circulation that was one precondition for the British

industrialization in the late eighteenth century. Douglass North (1961) made a similar argument about US industrialization, placing the growth and expansion of Southern plantation slavery at the centre of economic development in the nineteenth century. Following upon the work of Louis Schmidt (1939), North argued that the expanding Southern plantation economy exporting cotton to industrial Britain constituted a major market for both Western family farmers producing grain, meat and other foodstuffs and Northeastern manufacturers producing cloth, shoes and iron before 1840. After 1840, the completion of canals, railroads and roads created 'a new market for western staples . . . in the rapidly industrializing East . . . The dependence of both the Northeast and the West on the South waned' (North 1961, 69–70). Put simply, plantation slavery was the major motor of the expansion of commodity production before 1840; and the mutual expansion of Northern family farming and manufacture became the main engine of growth after 1840.

Albert Fishlow's (1965a, chapters III–IV and 1965b) research revealed important empirical flaws in North's thesis. Fishlow demonstrated that the bulk of Western foodstuffs shipped down the Mississippi river to New Orleans during the 1820s and 1830s was reshipped and sold in the Northeastern urban centres. Fishlow concluded that the plantation South consumed no more than 20–25 per cent of all foodstuffs shipped through New Orleans and was not an important market for Western family farmers. He concluded that Southern food producers, who he assumed were mostly slaveless white farmers, produced enough food to make the region self-sufficient. Later research by Diane Lindstrom (1970) confirmed that little Midwestern grain and meat were consumed in the plantation South. Robert Gallman (1970) and Sam Bowers Hilliard (1972) demonstrated that slave plantations, not the Southern family farms, produced the vast majority of the corn and pork consumed in both the Southern countryside and cities.

Clearly, North's claim that the growth of slave-produced cotton exports created a market for Western agriculture before 1840 is not empirically tenable. However, North (1956, 1960, chapter VII) presented a subsidiary thesis that does shed light on the relationship of Southern plantation slavery to the development of Northern manufacturing and family farming. The growing exports of slave-produced cotton to Britain stimulated the activities of Northern merchant capitalists, which bound together the diverse, sectional-based, forms of social labour (plantation slavery, capitalist manufacturing and 'subsistence' and 'commercial' family farming) in the US before 1840. Specifically, the growing exports of cotton allowed Northern merchants to accumulate capital directly from the cotton trade, and to import British capital. This accumulation of merchant capital financed the westward expansion of agricultural production in both the South and North. Northern merchants, directly and indirectly through Southern merchants and bankers, provided the capital that Southern planters needed to purchase land and slaves for the expansion of cotton production (Woodman 1968, Part III). Northern merchants and British investors provided the capital that fuelled the speculative boom in land and transport infrastructure in the North during the 1830s.

The speculative boom of the 1830s and the subsequent depression of 1837–42 marked the completion of the transformation of Northern family farming that had begun in the 1780s (Post 1995, 415–28). After 1840, Northern family farmers, burdened with growing debts and taxes, had to compete successfully in the market in order to maintain possession of their land and tools. This shift from independent household ('subsistence') to petty commodity ('commercial') production unleashed a dynamic of productive specialization, technical innovation and accumulation that made Northern agriculture the growing home market for Northern industrial capitalists. Thus, after 1840, the expansion of Northern family farming stimulated the activities of industrial capitalists, which increasingly bound together the different forms of production in the USA.

The transformation of the US economy after 1840 radically altered the position of plantation slavery and its geographic expansion. The growth of slave-produced cotton did not simply cease to be the motor of economic growth in the USA after 1840. In the two decades before the Civil War, the geographic expansion of plantation slavery became the major obstacle to the further development of capitalism in the rest of the USA. As we have seen, plantation slavery and agrarian petty commodity production had very different social conditions of existence. In the slave plantation regions of the lower South, the planters used their productive and financial advantages to appropriate the best-located and most fertile lands. Southern family farmers were concentrated in the hill regions and pine barrens and faced no compulsion to specialize output, technically innovate or accumulate. In no part of the antebellum South did a dynamic, 'commercial' family farming develop. Put simply, the geographic expansion of plantation slavery was incompatible with the development of agrarian petty commodity production. As a result, plantation slavery's further westward expansion during the 1840s and 1850s would have severely retarded the development of the rural 'home market' for capitalist manufacture and industry.

At the very historical moment when the geographic expansion of slavery became a potent obstacle to the development of capitalism in the North and West, the planters faced new pressures to expand into new territories and branches of production. Profound changes in the place and structure of capitalist cotton textile production in Britain and the US Northeast in the 1840s and 1850s, the cotton South's main market, produced the new urgency for expansion. First, the rate of growth of global cotton demand began to slow as the cotton industry 'matured' and fewer and fewer new consumers in the industrializing countries were substituting cotton for other cloth (Wright 1978, 94–7). Second, the introduction of specially produced metal cotton textile machinery reduced the labour component, while simultaneously increasing the raw material component of the cost of cotton textiles. To reduce their raw material costs, British industrialists promoted cotton production in Egypt and Turkey during the 1840s and 1850s. Cotton exports to Britain from these areas increased over five-fold (10.3 million pounds to 54.8 million pounds) between 1848 and 1860 (Ellison 1968/1886, Appendix II; Landes 1972, 103–8). Together, the 'maturation' and restructuring of cotton textile production produced increased global competition among cotton producers.

The US planters had few options, operating within the logic of the master-slave social property relation, in responding to this impending crisis of profitability in slave-produced cotton. Geographic expansion of cotton production to new and more fertile lands was one possibility. Within the boundaries of the slave South, the best-located and most fertile cotton lands were already under cultivation.<sup>19</sup> New regions suitable for cotton cultivation were not easily available within the USA. As a result, US slaveholders looked to 'frontier' regions where they could shift to new lines of production. Some planters saw the Mid-western prairies as a possible location where slaves could grow corn and raise pork. Others viewed the territories conquered from Mexico in 1848 as a region where slaves could mine metals and graze cattle and sheep. Still others hoped that the USA could annex Cuba and other Caribbean islands with large reserves of uncultivated land, where slaves could grow sugar, cotton and other tropical staples (Genovese 1989/1965, 255–64; May 1973).

The growing contradiction between the social conditions of the development of capitalism and of slavery set the stage for the sharp class conflicts over the social character of the expansion of commodity production that dominated political life in the 1840s and 1850s. Put another way, the political conflicts that culminated in the US Civil War were rooted in the contradictory social requirements of the development of industrial capitalism and plantation slavery. The contradictory requirements led to sharpening conflicts between manufacturers, merchants, farmers, planters and slaves over a variety of political policies, but especially the future class structure of westward expansion, in the two decades leading to the Civil War. These sharpening class conflicts produced the political crisis – the collapse of the 'bi-section' Whig and Democratic parties, the increasing 'sectionalization' of political life, and the 'secession crisis' – that culminated in four bloody years of Civil War. The outcome of the war and the nearly dozen years of tumultuous struggles during 'Reconstruction' ultimately secured the social and political conditions for industrial capitalist development in the 'Gilded Age' (Post 1983).

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<sup>19</sup> Wright argues that 'there is no evidence to indicate that they [the planters] were "feeling the pinch" of land shortage in the 1850s. Supplies of untouched cotton land were vast within the 1860 boundaries of the slave states' (1978, 132). As evidence, he cites the massive expansion of cotton acreage in the Southern, 'ex-slave' states after the Civil War (1978, 132–3). This argument ignores that fact that the bulk of the new acreage brought into cotton cultivation after 1865 was the less fertile soils farmed by white 'yeoman' farmers in the pine barrens and hill areas. See Hahn (1983, Part II).

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