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## African Americans and the Industrial Revolution

Until recently, scholarship on industrialization treated Africans and African Americans as peripheral to that process. Industrialization was considered a peculiarly European or Western innovation that owed little to the rest of the world and especially to blacks in the New World. This bias was not simply one of race. It was also one of class. The masses of working-class and poor whites were also excluded from consideration of the key dynamics of technological and social change. Historians of American technology privileged the deeds of famous inventors like Eli Whitney, Samuel F. B. Morse, Thomas Edison, Cyrus McCormick, and Henry Ford. Over the past several decades, however, scholars have gradually revamped our understanding of the industrial revolution from the vantage point of the working class as well as consumers of the products of technological innovations. As such, they have also illuminated the myriad ways that African Americans both influenced and were in turn influenced by the industrial revolution.

Teachers of the industrial revolution are now able to draw upon a growing body of knowledge that treats race, class, and technology as tightly interwoven themes in African American and U.S. history. Accordingly, this essay offers a brief outline of the ways that race and technology shaped the early enslavement of Africans in the New World; the work of bondsmen and women during the antebellum era; and especially the increasing urbanization of the African American population during the industrial age. For classroom purposes, however, teachers should find this essay most useful for organizing discussions around the interplay of class, race, and technology during the late nineteenth and early twentieth centuries.

From the outset of their enslavement, Africans brought a substantial body of technological know-how to the New World. Before the advent of the international slave trade, West African societies had developed diverse trade, manufacturing, and agricultural economies. In colonial America, enslaved Africans not only lived, worked, and fought closely with whites, but shared important knowledge that enabled Europeans to survive and thrive on the southern terrain. Africans entered the low country of colonial South Carolina with knowledge of rice planting, hoeing, processing, and

cooking techniques. They planted rice in the spring by creating a hole in the ground with the heel of their foot, planting the seed, and then covering it with their foot. Slaves also influenced the use of the "mortar-and-pestle" method of cleaning and processing the rice. As historian Peter Wood notes: "There was a strikingly close resemblance between the traditional West African means of pounding rice and the process used by slaves in South Carolina. Several Negroes, usually women, cleaned the grain a small amount at a time by putting it in a wooden mortar which was hollowed from the upright trunk of a pine or cypress. It was beaten with long wooden pestles which had a sharp edge at one end for removing the husks and a flat tip at the other for whitening the grains" (1).

While the technological know-how of African Americans was especially prominent in the early creation and settlement of plantations in colonial America, the advent of Eli Whitney's cotton gin during the 1790s transformed the work of bondsmen and women during the antebellum era. Manufacturers had long recognized the value of cotton, but technological obstacles precluded use of the fiber on a massive scale. The difficulty of separating the cotton fiber from its seed made the production of cotton an extremely slow, labor intensive, and costly enterprise. The fibers clung to the seed so firmly that they had to be "cut or torn away" by hand. This was particularly true for short-staple cotton, which grew in the interior, compared to long-staple sea island cotton, which grew in the low lying coastal areas of Georgia and South Carolina. The cotton gin effectively separated the fiber from the seed and fueled demand for increasing numbers of field hands to plant, cultivate, and pick cotton for national and international markets.

Cotton soon emerged at the center of southern and U.S. economic growth and stimulated the spread of the industrial revolution. Production rose from less than 300,000 bales in 1820 to over 700,000 in 1830 to over 2.0 million in 1850 and to nearly 4.5 million in 1860. Cotton dominated the nation's foreign exports, especially to England where revolutionary changes in the textile industry—i.e., new spinning and weaving machines—cheapered the production of cotton fabrics and created huge demand for raw cotton. At the same

time, northern states rapidly set up their own textile mills in places like Lowell and Waltham, Massachusetts, and created their own demand for cotton.

As the demand for raw cotton escalated, the black population experienced a painful relocation from the older Chesapeake and southeast coastal regions to the Southwest. Nearly a million blacks migrated under the lash from the upper South states of Virginia and Maryland to the deep South states of Georgia, South Carolina, Alabama, Mississippi, and Louisiana. By 1860, the black population had increased to an estimated four million and nearly 60 percent lived in the deep South. More so than earlier agricultural practices, the cotton gin placed African American's labor power, rather than their technical knowledge, at the center of agricultural production.

Federal, state, and local authorities also enacted policies aimed to reinforce the separation of blacks from technical expertise. Following Nat Turner's rebellion in 1832, southern states and localities outlawed the teaching of blacks to read, write, and cipher. Since the U.S. Patent Act of 1836 required inventors to submit models showing the precise construction, design, and specifications of their



Although most African American women were employed as domestics in the early twentieth century, a significant number found work in the industrial sector. In this 1922 Department of Labor photograph, a woman processes tobacco in a tobacco factory. (Courtesy of the National Archives and Records Administration, NWDNS-86-G-1E[1].)

innovations, literacy restrictions denied African Americans significant channels to technical knowledge as well as patents for their innovations. Moreover, following the U.S. Supreme Court's *Dred Scott* decision of 1857, the federal government ruled that bondsmen were not citizens of the republic and therefore could not receive patents for their inventions. Until then, some enslaved blacks, notably Norbert Rillieux of Louisiana and Henry Blair of Maryland had received patents for sugar refining equipment and mechanical corn harvesters, respectively.

Alongside the expansion of southern plantations was the growing use of unfree black labor in rural- and urban-based industries. Southern elites regularly touted the virtues of industrial slavery for their lumber, naval stores, coal, railroad, textile, tobacco, and iron companies. In 1859 the New Orleans *Daily Picayune* predicted global success for the industrial South, based upon its low transportation costs, abundant raw materials, and slave labor: "With raw material growing within sight of the factory; with slave labor that, under all circumstances and at all times is absolutely reliable...manufactured fabrics can be produced so as to compete successfully with the world." The most prominent case of urban-industrial slavery emerged in the antebellum Chesapeake, where an estimated seven thousand blacks worked in the iron works of Maryland and Virginia.

Formed in 1836, Richmond's Tredegar Iron Works emerged as the South's leading manufacturing firm. Initially the company employed a mixed labor force of slaves and free whites. In 1847, however, when white workers walked out to protest the training and hiring of skilled slaves, the company dismissed the whites and turned to a slave labor force, except for "boss men." In the iron plants, blacks not only did the hot, heavy, and dirty tasks of cleaning the plant and lifting and hauling the ore, they also performed the skilled jobs of puddling, heating, and rolling the iron ore into bars for market. Some two thousand bondsmen also entered "the darkest abode of man" to load and transport coal to manufacturing sites. As owners instituted boilers, steam-powered elevators, and water pumps, slave miners also operated the new equipment. More so than in the countryside, however, a small free black population supplemented the labor of urban bondsmen and women. The free black population rose from less than a hundred thousand at the turn of the century to nearly a half million by the late 1850s.

In the wake of the Civil War and Reconstruction, African Americans gradually moved off the land into the major cities of the North, South, and West. While black men had entered a variety of urban and rural industrial occupations as slaves and free blacks, they now saw their occupational horizons shrinking. As the industrial revolution expanded during the late nineteenth and early twentieth centuries, African Americans found it exceedingly difficult to move out of agricultural, personal service, and domestic jobs into the industrial sector. Employers now reversed their perception that blacks could perform profitable labor in both rural and urban industrial settings.

In 1881 a Nashville cotton manufacturer hired an all-white workforce. Blacks, these employers now claimed, were incapable of

mastering work on machinery. Moreover, one employer argued that the whirring of the machines would put blacks to sleep. While blacks continued to work in the iron and tobacco industries of Richmond, one of the most industrialized cities of the South, postwar employers narrowed their range of occupations according to certain stereotypes about black character. The Richmond Chamber of Commerce declared that: "In temper he is tractable and can be easily taught...the negro in the heavier work...is a most valuable hand."

Although African Americans were largely excluded from the booming industrial sector of the late-nineteenth-century economy, they nonetheless used their newly won freedom to participate in the proliferation of mechanical innovations during the industrial era. Under the impact of emancipation, civil rights laws, and constitutional amendments, African Americans made the transition from slave to citizen and gained the right to patent their own inventions. Black domestics, farm laborers, and artisans patented a variety of implements designed to ease household, agricultural, and industrial labor. The most notable of these included Jan Matzelliger's shoe lasting machine; Elijah McCoy's numerous lubrication devices for locomotive engines for the railroads; and Granville T. Wood's electrical inventions, including a telephone transmitter. In the emerging age of Jim Crow in the aftermath of Reconstruction, black inventors faced enormous difficulties translating their technical innovations into profitable consumer products. They also found it increasingly difficult to establish their claims to authenticity against white competitors, including leading white entrepreneurs and inventors. Thomas Edison launched stiff legal challenges to the claims of Granville Wood, for example. Unlike most black inventors and entrepreneurs, however, Madame C. J. Walker transformed her hair-straightening formula for black women into a million-dollar enterprise, with sales representatives throughout the U.S.

Only the events of World War I and its aftermath brought African Americans into the industrial sector in large numbers. As European nations mobilized for war, they disrupted established patterns of immigration to the U.S. and stimulated the search for national sources of labor. In 1917, when the U.S. declared war on Germany and initiated its own mobilization of young men for war, industrialists found it even more difficult to meet their wartime labor needs and turned to southern black workers in growing numbers. By 1930 an estimated 5.1 million blacks lived in cities, an increase from about 27 percent of all blacks in 1910 to over 43 percent as the Depression got underway.

In western Pennsylvania, black steelworkers increased from less than 3 percent of the total workforce before the war to 13 percent by war's end. At the same time, the number of black workers in meatpacking firms rose from less than six thousand in 1910 to nearly thirty thousand in 1920. The meatpacking centers of Kansas City, St. Louis, and Chicago attracted the bulk of these newcomers. In Detroit, as early as May 1917, the Packard Company had 1,100 blacks on the payroll, but the Ford Company soon outdistanced other automakers in the employment of African Americans. The number of blacks at Ford rose from only 50 in 1916 to 2,500 in 1920, 5,000 in 1923, and 10,000 in 1926. Ford also offered blacks a broader

range of production and supervisory opportunities than did other companies. A reporter for the Associated Negro Press later recalled that "Back in those days [the 1920s and early 1930s] Negro Ford workers almost established class distinctions here....the men began to feel themselves a little superior to workers in other plants...'I work for Henry Ford' was a boastful expression." In west coast cities like Seattle, one black resident, Horace R. Cayton Jr. later recalled that World War I opened up "Good jobs for negroes, in the shipyards and in many other places we had not worked before." While the textile industry continued to exclude black workers, blacks represented a large percentage of workers in southern tobacco, lumber, railroad, and coal mining industries.

Although their gains were less dramatic and less permanent than those of black men, black women also gained access to industrial jobs during the labor shortages of World War I. They not only gained employment in jobs traditionally held by white women in textiles, clothing, and food production, but glass, leather, paper, iron, and steel manufacturing as well. In the postwar years, these jobs did not entirely disappear. In Louisville, Seattle, Pittsburgh, Philadelphia, New York, and Chicago, black women continued to work in a variety of industrial jobs.

In 1922 the Women's Bureau of the U.S. Department of Labor surveyed the employment of black women in 150 plants in nine states and seventeen localities. Some 11,812 black women performed labor intensive jobs in food processing, tobacco, clothing, glass, paper, iron, and steel plants. In Chicago, the number of black women classified in manufacturing trades increased from fewer than one thousand in 1910 to over three thousand in 1920. Industrial jobs now made up 15 percent of the black female labor force, compared to less than 7 percent in 1910. One woman wrote back from Chicago to her southern home: "I am well and thankful to say I am doing well....I work in Swifts Packing Company." Prospective household employers now complained that black women wanted industrial wages: "Hundreds of jobs go begging" at domestic pay.

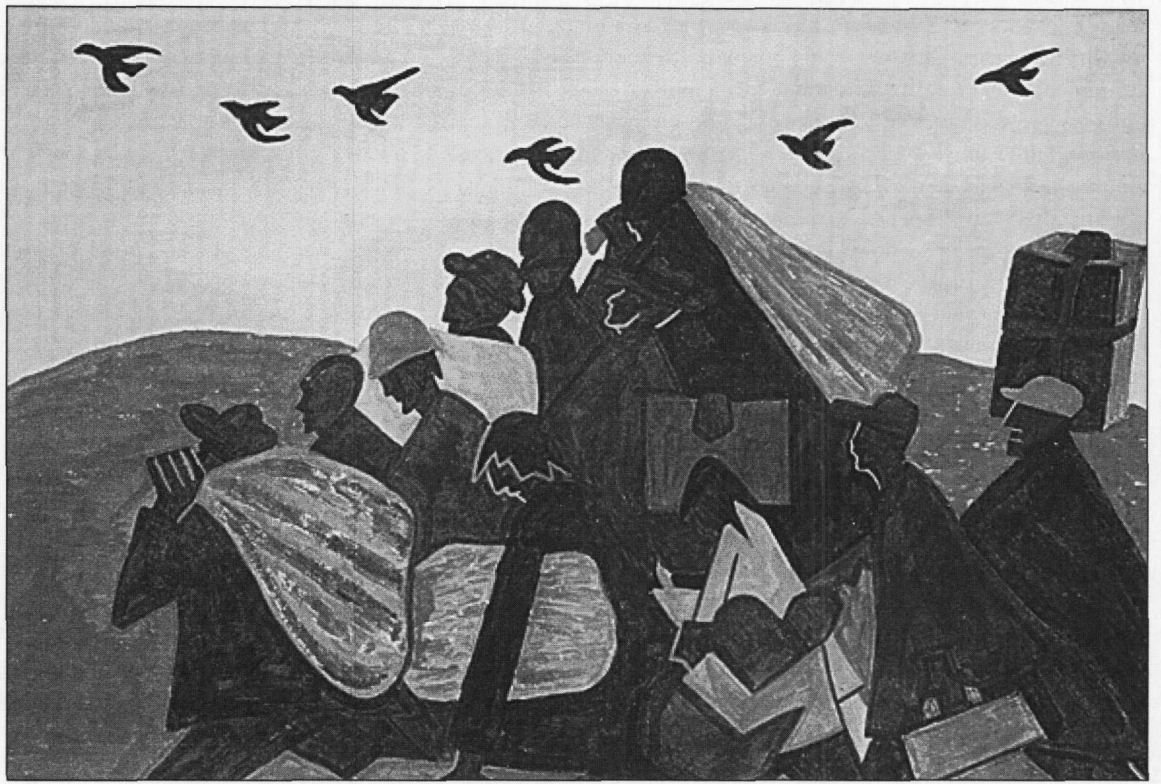
As the black industrial workforce expanded, African Americans faced new patterns of economic inequality. They worked in the most difficult, dangerous, dirty, and low-paying categories of industrial work. These conditions were most acute in the South. According to the Louisville Urban League (LUL), for example, black tobacco workers made between four and ten dollars per week less than their white counterparts. As the LUL put it, "It is the low wage scale...that constitutes the basis for most of our industrial troubles."

In addition to wage discrimination, black workers repeatedly complained that their jobs entailed disproportionate exposure to debilitating heat, deadly fumes, disabling injuries, and even death. In the steel industry, African Americans worked in the hottest areas of the plants. They fed the blast furnaces and performed the most tedious operations that made rails for the railroads. As one black steelworker recalled, African American men "were limited, they only did the dirty work...jobs that even Poles didn't want." In packing-houses, few blacks worked as butchers, a skilled job requiring the use of a knife. Instead, they unloaded trucks, slaughtered the animals, transported intestines, and generally cleaned the plants. Black

tannery employees worked mainly in the beam houses. They placed dry hides into pits filled with lime in order to remove the hair. According to one black tannery worker, this job required rubber boots, rubber aprons, rubber gloves, "everything rubber because that lime would eat you up." For their part, coal miners reported low coal seams, excessive water, bad air and rock: "Sometimes the circulation of air or no air would be so bad you'd have to wait sometimes up to two hours before you could get back in there and load any coal...I have been sick and dizzy off of that smoke many times ....that deadly poison is there....It would knock you out too, make you weak as water." In New York, a

black female garment worker complained that, "Over where I work in the dye factory, they expect more from a colored girl if she is to keep her job. They won't give a colored girl a break." In Philadelphia and eastern Pennsylvania, employers presumably hired black women in glass factories, "where at times bits of broken glass were flying in all directions," because of "their ability to stand the heat without suffering."

Black women carried out their jobs in addition to the work within their own households—washing, ironing, cooking, and tending children. Moreover, although large numbers of women worked in industrial jobs, most continued to work in the domestic sector. As with factory employment, certain technological changes transformed the nature of household work under the impact of the industrial revolution. The transition from open-hearth to cast-iron stoves increased the amount of housework performed by women, especially black women employed in white homes. Cooks were expected to use the new technology to prepare more complex and time-consuming meals. As technology historian Ruth Schwartz Cowan notes, "Unlike hearths, stoves had to be meticulously cleaned and coated because they were subject to rust." While a stove made "complex meals easier to prepare," they also increased the level of expectation and labor: "With a reasonably well-designed stove, a woman could bake and boil with the same fire or could bake several different items at one time." Furthermore, as the use of manufactured clothing expanded, laundry chores also increased; as flush toilets eliminated



This painting by Jacob Lawrence (b. 1917) depicts the "great migration" of African Americans to the North. (*Negroes were leaving by the hundreds to go north and enter northern industry*, by Jacob Lawrence, Migration of the Negro Series, Harmon Foundation. Courtesy of the National Archives and Records Administration, NWDNS-H-HN-LA-3.)

the old "slops," they added the chore of cleaning inside toilet bowls; and, as gas and oil lamps eliminated the job of candle-making, they ushered in the task of cleaning soot-covered glass globes; only the spread of mass-produced electric power during the 1920s and 1930s gradually eliminated the latter chore. In the case of black women, these processes affected their lives and labor in white households long before they affected their lives at home within their own families, where blacks faced stiff barriers in the housing market.

Black industrial workers resisted not only the strict time discipline, speed-ups, and regimentation of the industrial system, but its racially discriminatory employment, pay, and promotion policies as well. In search of higher pay, healthier conditions, and better treatment, African Americans moved from job to job; formed all-black labor unions like the Brotherhood of Sleeping Car Porters and a variety of domestic and servants unions; and broke the strikes of discriminatory white labor unions in aluminum, coal mining, meatpacking, and steel industries.

In addition, black workers supplemented these strategies with a plethora of informal modes of resistance. In Atlanta, as historian Tera Hunter notes, household workers regularly supplemented their meager incomes by taking food from their employers' cupboards, taking loads of laundry home and refusing to return them, and quitting their jobs in the midst of employers' plans to lavishly entertain business and professional guests. Finally, and most

importantly, black workers not only developed their own independent class-based workplace strategies for addressing economic inequality, they also forged broad community-based alliances with each other as well as black business and professional people—in churches; fraternal orders; and civil rights, nationalist, and social service organizations like the National Association for the Advancement of Colored People, the Universal Negro Improvement Association, the National Urban League, and the black press. These efforts both reflected and promoted efforts to build the Black Metropolis—a city within the city that would serve the needs of African American families and their communities.

Before African Americans could secure their footing in the industrial workforce, they faced the onset of the Great Depression and later deindustrialization. The depression undercut the position of black workers and revealed the precarious institutional foundation of the African American community during the industrial age. While urban blacks faced extraordinary difficulties, the depression took its greatest toll on blacks in the rural South, where the collapse of cotton prices and the growing use of mechanical devices reduced the demand for farm laborers.

Neither the Republican administration of Herbert S. Hoover nor the early years of the Democratic regime of Franklin D. Roosevelt offered much hope. New Deal programs like the Agricultural Adjustment Administration hastened the exodus of blacks from the land. Large landowners gained increasing control of southern agriculture and applied new labor-saving technology. Tractors, flamethrowers, herbicides, and increasingly mechanical cotton pickers all helped to undercut the position of black agricultural labor and fueled the movement of blacks into cities. By 1950 the South had lost an estimated 1.5 million blacks as a result of war and early postwar migration. The percentage of blacks living in cities increased from less than 50 percent in 1940 to over 80 percent in 1970. Blacks were now divided almost equally between the urban North and West on the one hand, and the South on the other.

The changes of the postwar years coincided with the onset of deindustrialization. As the black urban population increased, manufacturing in the nation's central cities declined from about 66 percent of the total in 1947 to about 40 percent by the late 1960s. While African Americans would continue to rely upon their own work, familial, and community-based institutions for help, such responses were insufficient to address the mass suffering that they faced. Consequently, African Americans would deepen their political and civil rights struggles and demand greater access to government-supported social welfare and labor programs. Their campaign received its most powerful expression in the March on Washington movement of the 1940s; the modern civil rights movement of the 1950s and 1960s; and the militant Black Power movement of the late 1960s and early 1970s. These postwar changes not only revealed how the interplay of race, class, and technology would continue to shape African American and U.S. history through the last years of the twentieth century, they also revealed how the socioeconomic, technological, cultural, and political changes of the postindustrial age were deeply rooted in the era of the industrial revolution. □

### Endnotes

1. For the source of this and all other quotations and statistics, see Joe William Trotter Jr., *The African American Experience* (Boston: Houghton Mifflin, forthcoming 2001).

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