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### **Technological Revolution And Prospects for Black Liberation in the 21st Century** (page 1 of 2)

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This talk will focus on two main points. The first point is that in the long run the greatest force for change in history is technology. As such, technological change is a historical force that, more than any other, sets the objective context for consciousness and social movement. In other words, what is usually missing in our celebrations of Black history is a focus on how technological change contributes to the structural basis for Black history. Once we have clarity on this, then it is possible to grasp how ideological positions and social movements did or did not, do or do not, contribute to real historical change.

My second point is to discuss how technological change, when fundamental and systemic, leads to conflicts that get resolved by changing society one way or another. Economic transformation through the polarization of wealth and poverty is usually at the base of these conflicts. This usually leads to the destruction of the old way of doing things and the construction of a new society.

This is the approach that seems most useful in explaining the deepening social crisis that we face today. What is truly unique about the end of the 20th century is that we are undergoing a transformation no less than the 19th century with the rise of the industrial stage of capitalism. We are at the beginning of a new revolutionary transformation, the most important aspect of which is the birth of a new class in history. At the heart of this new class are those Black and immigrant workers tossed into the street and forced to fight to survive.

So, my two points are first the technological revolution and its importance for Black history, second how the current technological revolution is forcing the fundamental restructuring of society, creating a new class which can be the basis for the new society.

#### **Technology and Black History**

The entire sweep of Black history needs to be reexamined on the basis of the thesis that technological change creates the main structural context for the grand historical narrative of enslavement and the subsequent freedom struggle. However, for our immediate purposes the main point I want to make can be illustrated as part of the general process of the rise and fall of industrialization, specifically the two cases of the mechanization of cotton production and the electronic transformation of the auto industry. Cotton and auto, as the leading sectors of the US economy--19th century agricultural and 20th century industrial production--helped to structure more than 150 years of Black labor. It has been this economic structure of how agriculture and industry have utilized Black labor that has set the stage for all of Black history.

The main point here is to demonstrate that, for both cotton and auto, technological innovation led to increasing the demand for Black labor. Conversely, subsequent technological innovation led to the expulsion of Black labor based on this same motive, the search for greater productivity, competitiveness and hence more profit. First the use of technology that leads to inclusion, and then technology used to exclude.

#### **Cotton**

Cotton was grown in India and Egypt as the basis for cloth, but England had first used wool for that purpose. In fact the British woolen manufacturers were so set on maintaining their dominant market share that they got the Calico Act passed in 1721 forbidding the importation of Calico cotton cloth from India. But the political forces whose interests converged on cotton as the cheaper cloth helped get this act repealed by 1774. During these 50 years the British cotton industry developed without foreign competition. When the Calico Act was repealed, however, capital was forced to invest in efforts to invent machines to help the British cotton textile industry become competitive with the cheap, labor intensive, cotton production from the East.

The first new technology of spinning machines was patented in 1738 by John Wyatt. But the factory use of even more developed technology began in the 1770's with the water-powered cotton mills of Richard Arkwright, and in the 1780s with the steam engines of James Watt. In 1761 the cotton industry in England was so undeveloped that it did not employ any workers in Manchester, but by 1774 (just over 10 years later) there were 30,000 people in the industry in or near Manchester. This textile mill technology was imported illegally into the United States by Samuel Slater to set up the first US factory mill in Pawtucket, Rhode Island in 1790.

The expansion of slavery in the American colonies was thus a function of the demand for more cotton, especially by the textile industry in England. However, it is to the technological innovation within the US slave labor plantation system that we have to look for the critical

turning point.

In 1792, Eli Whitney graduated from Yale University and went off to Georgia to teach school. In an environment of cotton plantations, he was quickly confronted with the major problem in cotton production: how to speed up the process of cleaning cotton in preparation for shipping cotton bales of 1,000 pounds each to the textile mills. There was a cotton gin in use that worked well with the long staple cotton of the sea islands, but that technology would not work with the short-fiber or green seed cotton that was suitable for most soil conditions of the South that had enabled cotton production to spread. It is generally believed that in less than two weeks, Whitney designed a cotton-gin for short-fiber cotton, although the historian Herbert Aptheker reports that this cotton gin developed from the drawing of a slave in Mississippi. (Workers have been ripped off at the suggestion box for a long time!)

The cotton gin increased productivity in a very dramatic way. When cleaning the cotton by hand, it took one slave a complete day to clean one pound of cotton. The hand-powered cotton gin increased this productivity to 150 pounds per day. With steam power driving the gin, one slave could produce one bale or 1000 pounds per day. So the statistics speak for themselves. Before the cotton gin, in 1790, the US produced 6,000 bales of cotton, by 1810 this was up to 178,000 bales of cotton, and by 1860 four million bales of cotton. By 1820 cotton was more than 50% of all US exports and after 1825, US-produced cotton was 80% of the commercial supply on the entire world market. Cotton had become King, meaning that from 1830 to 1860 more money was invested in land and slaves for cotton production than all the rest of the US economy put together! In 1790 there were 700,000 slaves and by 1860 there were 4 million, of whom more than 70% were in cotton production.

Black people were pulled west by the expansion of the cotton belt, so that after beginning with a concentration in South Carolina, the main concentration of Blacks had moved over to Mississippi, Louisiana and Alabama. Moreover, this cotton-based economy persisted even after the Civil War. The Civil War was a war over control of the federal government and the commanding heights of the national economy. But, it was not over a fundamental economic revolution in the South as the tools and techniques for cotton cultivation remained the same. What changed was the form of political power, but most of the basic economic processes remained the same.

In the sharecropping system adopted after the end of slavery, the main change was the social organization of production—from forced group labor to family labor—although the rest basically remained the same. In fact, it was the low cost of labor under both slavery and sharecropping that enabled the US to generate the wealth out of the cotton industry that it did.

But this system also had the effect of forcing the South into stagnation and backwardness. Little industrial investment was encouraged, and social relations were polarized to maintain the elite culture of the plantocracy. Black people lived under a form of virtual fascist rule under slavery and sharecropping, a barbaric politics that served economic interests in the South and the North.

The political change of the Civil War was not equaled by changes in the economic system until World War II. The critical event was again a technological innovation, the mechanical cotton picker. Two brothers named John and Mack Rust had begun testing a machine in 1931. They achieved some success, but their machine was not commercially viable, as it was not structured for mass production.

The breakthrough came with the work of International Harvester, working with a plantation in Clarksdale, Mississippi. Here is how one account sums up the introduction of the first commercially viable version of the mechanical cotton picker:

"An estimated 2,500 to 3,000 people swarmed over the plantation on that one day. 800 to 1,000 automobiles leaving their tracks and scars throughout the property."...The pickers, painted red, drove down the white rows of cotton. Each one had mounted in front a row of spindles, looking like a wide mouth, full of metal teeth, that had been turned vertically. The spindles, about the size of human fingers, rotated in a way that stripped the cotton from the plants; then a vacuum pulled it up into the big wire basket that was mounted on top of a picker. In an hour, a good field hand could pick twenty pounds of cotton; each mechanical picker, in an hour picked as much as a thousand pounds....picking a bale of cotton by machine cost...\$5.25, and picking it by hand cost...\$39.41. Each machine did the work of fifty people...What the mechanical cotton picker did was make obsolete the sharecropping system....

The result of this technological innovation was that the sharecroppers were literally driven off the land in the great migration of Black people out of the rural South into the urban industrial North. From 1910 to 1970, more than six and a half million Black people migrated from the South, but 5 million left after 1940, showing the impact of the mechanical cotton picker. Now only half of the Black community was in the South, and only 25% remained rural. Everything began to change. The historical mass Black experience of cotton, under slavery and sharecropping, was bracketed by two technological innovations: it began with the cotton gin and ended with the mechanical cotton picker.

The cotton gin had pulled Black people into the plantation system of the Deep South, and under the control of fascist terror. While Black people were slaves, the resistance they adopted included a multitude of private acts of protest, while the public forms of collective protest included the underground railroad and the slave revolt. While sharecroppers, they faced peonage and the lynch rope, but continued to fight back in the form of organizations, from the Southern-based tenants union to the NAACP based in New York. However, it was only after the need for Black labor in the rural South had been eliminated, and Black people had migrated to the urban industrial scene gaining more education and resources of all kinds, did the right mix exist for the powerful civil rights movement to emerge.

### **The Auto Industry's Critical Role**

The driving engine of US capitalism has been its industrial development supported by its agricultural base. The automobile industry is critical as it represents the convergence of steel, glass, and rubber production with petroleum, highway construction, and massive repair and parts support along with a wide diversity of other economic linkages. At its height the auto industry was one of the greatest employers in the economy.

The first commercially viable automobiles date from the late 19th century, when they were produced with highly complex craft techniques. Automobiles used to be produced one at a time. In the 20th century Henry Ford led the revolution that transformed auto technology, from universal standards for exchangeable parts to the moving assembly line initiated in 1913. Because of Ford, General Motors and Chrysler auto companies, Detroit was to auto as the Mississippi delta was to cotton.

The use of the term "technological innovation" should always be thought of as a diverse process of discovery through trial and error, a process of incremental gains that in the end, when successful, eventually produces a big impact. Auto is a good example. The moving assembly line was created in 1913, and it turns out to be the end of a long process of technological innovation. In 1908 auto's were put together by assemblers, people who performed a whole series of tasks, gathering up parts and then fitting them together. The average assembler worked nearly nine hours before they repeated one task a second time. The Ford company led in three kinds of innovations of auto parts and assembly: interchangeability, simplicity, and ease of attachment. Thus, by 1913 the task cycle was limited to one task and took only 2.3 minutes, with each assembler walking from spot to spot where each auto was being put together. The moving assembly line, however, meant that the worker would stand still would move. Each task cycle was thus reduced further to 1.2 minutes less than one year after the moving line was installed.

Ford was clear on what this could mean for his profits. Workers, especially Black workers, could see what it meant for them in wages. In 1917 when agricultural work meant less than one dollar per day in wages in Mississippi, Ford was paying five dollars a day. In 1910 there were 6,000 Black people in Detroit and by 1920 there were 41,000, making Detroit the fastest growing Black community of all major US cities. In 1916 there were 50 Black people working for Ford Motor Company in Detroit, and by 1920 there were 2,500. This means that if people were living in families of four each, then in 1910-16 about 3% of the Detroit Black community was connected to Ford, but by 1920 that was up to 25%.

In each instance advances were not automatic but were accomplished through struggles. Ford was faced with the militancy of a fighting workers' movement. Black people were convenient, so he used them. Ford gained an advantage, but other companies were forced to adopt similar policies in the end.

This auto-based economy continued to expand until the 1950's. By that time General Motors had grown so big that it was the nation's largest employer and by itself accounted for 3% of the entire US GNP. Detroit led the country in per capita home ownership, and gained worldwide recognition as a center of US corporate genius and secure blue collar communities. Black people, mainly those with their roots in rural Tennessee and Alabama, migrated to Detroit and created an urban culture best represented by Motown Records and its popular icons of Smokey Robinson and the Miracles, Marvin Gaye, Stevey Wonder, Martha and the Vandellahs, etc. Generally it was a town of trade unionists, especially UAW Local 600, which was the world's largest trade union local based at the Ford River Rouge Plant. Even as late as the 1960's militant Black workers used to say that it was so good in Detroit that if you got fired at one plant you could get hired at another plant in time for the second shift.

But good things don't always last. The mass production techniques of Ford were challenged and overcome by the lean production system of Toyota, the Japanese auto company. Ford had gotten the idea of the assembly line from the meat packing industry for his endless chain conveyor. Toyota got its idea of lean production from the US supermarket, especially how they handled inventory control and work assignments, and how the supermarket industry maximized economy of time and space. These new management techniques for the social organization of production were linked to the increased use of computers and robots to initiate a new revolutionary transformation of all manufacturing. Once again the auto industry was leading the way for all industrial activity.

### What is this "lean production?"

Lean production...is 'lean' because it uses less of everything compared with mass production - half the human effort in the factory, half the manufacturing space, half the investment in tools, half the engineering hours to develop a new product in half the time. Also, it requires keeping far less than half the needed inventory on site, results in many fewer defects, and produces a greater and ever growing variety of products. (Machine that changed the world, p 13)

At a GM plant in the 1980's one car was build in 31 hours, in a little more than 8 square feet, with an average of 1.3 defects per car. At this same time Toyota built a car in 16 hours, in less than 5 square feet, with an average of 0.45 defects per car. Lean production began in the 1950's and by the 1970's and 80's has transformed standards for the auto industry on a global level. Here is one account of what happened to Ford during the 1980's:

Ford...carried out...investing \$28 billion to automate production and to eliminate excess capacity. The company's global work force was cut from 506,500 to 390,000. Most of the cuts were in the United States. Over a nine-year period, the number of robots in the North American plants rose from 236 to 1,300, and more than 80,000 hourly workers and 16,000 salaried white-collar workers were discharged. The number of hourly workers fell by 47 percent and productivity increased by 57%....Computer driven machines to weld, stamp out parts, and schedule, control, and monitor production were introduced into Ford plants in Europe as well as in North America. Ford also adopted "just in time" production, enabling the company to reduce its inventories from three weeks to one week.... (Global Dreams, p. 268)

The overall picture is quite clear. Total US auto production in 1994 was 12.2 million cars, the highest since 1978 when 12.8 million cars were produced. The main point is that this was done in 1994 with 50% of the workforce they had in 1978. For Ford during this period, their US workforce was reduced from 200,000 to 101,000. The Ford Company has now abandoned all workers, including Black people, as a new plant announcement makes clear. The first new Ford plant since 1980 is being built in the US to forge steel crankshafts. In 1980 they would have hired 1500 workers. In this new plant on 103 acres at a cost of \$50 million they will employ 65 people in two shifts.

Detroit was yanked out of its economic security to become the nation's leading example of deindustrialization and urban decay. The entire period had not been without violent eruptions over the emergence of such a strong Black proletariat. There was a major rebellion in 1943 (4 days, 34 dead - 25 Black) and in 1967 (6 days, 43 dead - 34 Black). But the most profound destruction is the death dance of permanent unemployment that came so abruptly to all too many people. [More >>](#)

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