



Eli Whitney: Diligent Pioneer of Modern Industry

Handout A: Narrative

BACKGROUND

Eli Whitney was one of the fathers of modern American industry. He was born into a family of modest means in Westborough, Massachusetts in 1765. Eli Whitney grew up less than forty miles from the location of the “shot heard round the world” at Lexington and Concord, and the ensuing Revolutionary War would provide his introduction to the world of industry.

While only fourteen years old, he convinced his father to allow him to open a nail forge to sell nails to the surrounding community. Young Eli had heard local farmers complain about how it was impossible to buy nails, as all the local blacksmiths were occupied with military work for colonial patriots. While nails may not seem like a very exciting item, for eighteenth-century farmers they were a necessity. Eli’s vision was correct, and the forge was a tremendous success and provided financial help for the family.

Eli aspired to attend college, a dream that seemed out of reach because his family’s lack of finances would make paying tuition a hardship. In addition, he had not attended a college preparatory school, so even if the finances could be arranged, passing the entrance exam would be extremely difficult. Eli Whitney did not let any of this stop him from achieving his goal. Despite his lack of formal education, he was able to obtain employment as a schoolmaster. He used the income from that position to attend Leicester Academy in the summer to prepare him for the challenging entrance exam to Yale College.

He managed to pass the entrance exam and became a Yale student at the age of twenty-three. Whitney diligently completed his studies at Yale over the next three years. He earned money while a student by repairing various pieces of equipment on campus. Whitney caught the eye of college president Ezra Stiles. Upon graduation, Stiles arranged a position for Eli working as a tutor on a southern plantation. He was hesitant to move so far away from home, but the pay was significant.

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During Eli Whitney’s voyage south to become a tutor, he became friends with Caty Greene, the widow of Revolutionary War hero Nathaniel Greene. This new acquaintance proved fortuitous when the promised tutoring position didn’t work out. Mrs. Greene invited Whitney to stay as a guest at her plantation in Georgia. He appreciated her hospitality and helped out whenever he could. He was especially successful in repairing equipment around the farm and fashioning new devices to make tasks easier.

One day, a group of veterans who had served under General Greene during the American Revolution came to the plantation for a visit. The men, who were mostly planters themselves,

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lamented the state of agriculture in the South. They couldn't find a profitable and sustainable crop to plant since the most popular crop, tobacco, severely depleted the land of nutrients. They expressed frustration that green-seed cotton grew so well, but the amount of labor it took to remove the seeds made it unprofitable. When one of the men stated that he wished a machine existed that could remove the seeds, Mrs. Green proposed that Whitney was the man to invent one.

Whitney accepted her challenge to make a machine to remove cotton seeds. He was able to produce a crude but workable model of the "cotton gin" (gin was slang of the time for "engine"). Whitney had an idea that could transform agriculture and make a vast fortune. However, he did not have the money to develop, patent, and manufacture his invention. He overcame this hurdle by entering into a partnership with Phineas Miller—the manager of Green's plantation—who agreed to provide financial backing for a percentage of ownership in the proceeds.

With Miller's investment secured, Whitney headed north to secure a patent and begin manufacturing the cotton gin. The potential for this invention excited even Secretary of State Thomas Jefferson, who wrote to Whitney in November of 1793, "I feel a considerable interest in the success of your invention, for family use...Favorable answers to [my] questions would induce me to engage one of them to be forwarded to Richmond for me."

With such endorsements, Whitney was anxious to get into business and anticipated great success. He wanted to repay his father for his college tuition, and wrote him with excitement in the fall of 1793, "I am now so sure of success that ten-thousand dollars, that if I had it counted out to me, would not tempt me to give up my right and relinquish the object."

Whitney was awarded a full patent in March of 1794. He had planned, along with Miller, to develop a network of cotton gins throughout the South. Instead of selling the machines (which were too expensive for most planters), they would clean the cotton for a percentage of the crop. What Whitney didn't plan for was the harsh reality of competition.

Despite having a patent, many copied his invention throughout the South. It took a stroke of genius to develop the idea for a cotton gin; however, the device was pretty simple and easily copied by competent mechanics. With money to be made, competitors were willing to take the risk of violating Whitney's patent rights.

What the patent did empower Whitney to do was to sue those who violated it. This proved to be more difficult than he expected. He first sued in 1797, but was unable to win a judgment until 1807. He also suffered a setback when his shops that manufactured the cotton gins in Connecticut mysteriously burned down in 1795.

However, Whitney was diligent in pursuing his claims, even in the face of more setbacks. Although the states of South Carolina and Tennessee had settled with Whitney over the rights to purchase a license of his patent, they suddenly annulled their contracts in 1801 and 1802 respectively. In the following year, his trusted partner and friend Phineas Miller died.

As Whitney recovered enough judgments to make a profit finally, his patent neared its expiration. He earnestly pleaded to Congress for a patent renewal, something that was generally granted

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without question. However, Congress refused to renew Eli Whitney's patent on the cotton gin in 1812, effectively putting him out of the business. Whitney had lost the right to his invention, one that had transformed American agriculture. U.S. cotton exports had grown from under 150,000 pounds before his invention, to more than 18,000,000 pounds by the turn of the century.

Inventing the cotton gin had earned Whitney fame and a reputation as a great mechanical mind. What it hadn't earned him was a great fortune. Fortunately for Whitney, he had taken up a different invention alongside the cotton gin. At the end of the 18th century, war between France and the U.S. appeared imminent. Whitney sought to invent something that would help his country's military and turn a profit.

At that time, muskets were handmade by craftsmen, with no two guns being exactly the same. Whitney had the vision to apply the new concept of interchangeable parts to arms manufacturing. He saw the advantages this would provide in the speed of manufacturing and ease of maintenance for weapons. Whitney opened an arms factory outside New Haven, Connecticut. In 1798, his efforts paid off when he received a contract from the Army for 10,000 muskets.

There were serious growing pains as Whitney developed his manufacturing process. Although he was not able to deliver arms as promised in his initial contract, the Army was willing to extend his contracts based on his reputation and potential. Former Secretary of the Treasury, Oliver Wolcott, Jr. urged the War Department to stick with Whitney, stating, "Mr. Whitney's talents are of the first order; his establishment is an object worthy of national encouragement."

Whitney's diligence and the government's faith in his character paid off. He perfected the manufacturing process so that inexperienced workers could operate his machines and produce muskets. His process was able to save the Army \$25,000 annually. In 1812, he received a second contract for 15,000 more firearms.

Eli Whitney's life was marked by setbacks and disappointment. No one would have blamed him if he had given up hope numerous times. However, he remained diligent in the face of failure, always keeping faith in his abilities and searching for new opportunities when old ones dried up. In doing so, Whitney helped usher in the modern industrial world.