NATIONAL HISTORY DAY 2027

INNOVATION IN HISTORY

IMPACT, INFLUENCE, CHANGE

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WHAT IS NATIONAL HISTORY DAY®?

National History Day® (NHD) is a nonprofit organization that creates opportunities for teachers and students to engage in historical research. NHD is not a predetermined, by-the-book program but rather an innovative curriculum framework. Students learn history by selecting topics of interest and launching into year-long research projects. The mission of NHD is to improve the teaching and learning of history in middle and high school. The most visible vehicle is the NHD Contest.

When studying history through historical research, students and teachers practice critical inquiry, asking questions of significance, time, and place. History students become immersed in a detective story. Beginning in the fall, they choose a topic related to the annual theme and conduct extensive primary and secondary research. After analyzing and interpreting their sources and drawing conclusions about their topics' significance in history, students present their work in original papers, exhibits, performances, websites, or documentaries. These projects are entered into competitions in the spring at local, affiliate, and national levels, where professional historians and educators evaluate them. The program culminates at the national competition held each June at the University of Maryland at College Park.

Every year, National History Day uses a theme to provide a lens through which students can examine history. The annual theme frames the research for students and teachers alike. It is intentionally broad enough to allow students to select topics from any place (local, national, or world) and any period in history. Once students choose their topics, they investigate historical context, historical significance, and the topic's relationship to the theme. Research can be conducted at libraries, archives, and museums; through oral history interviews; and by visiting historic sites.

NHD benefits students and teachers. For students, NHD allows self-direction of their learning. Students select topics that match their interests. NHD provides program expectations and guidelines for students, but the research journey is unique to each project. Throughout the year, students develop essential skills and foster intellectual curiosity. In this process, they gain critical-thinking and problem-solving skills to manage and use information now and in the future.

The classroom teacher is a student's greatest ally. NHD supports teachers by providing instructional materials and hosting workshops at local, affiliate, and national levels. Many teachers find that bringing the NHD model to their classroom encourages students to watch for examples of the theme and to identify connections in their study of history across time. To learn more, visit **nhd.org**.

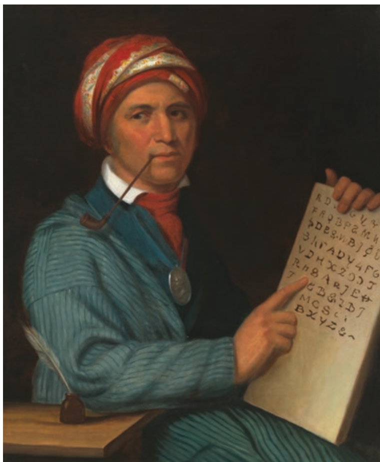
2027 THEME NARRATIVE: INNOVATION IN HISTORY: IMPACT, INFLUENCE, CHANGE

CATHY GORN, Ph.D., Executive Director, National History Day®

INTRODUCING THE THEME

The theme for National History Day® (NHD) 2027 is *Innovation in History: Impact, Influence, Change*. As it is with every NHD theme, it is not quite as obvious as it looks, so before we begin considering topics, let's take a closer look at the theme itself.

New technologies may be the first examples that come to mind—such as the printing press, the airplane, television, or even the microwave oven. These are all important inventions, but it's important not to confuse innovation with invention. Innovation goes beyond creating new tools or devices; to finding new ways of thinking, organizing, and influencing society.



Developed in the early nineteenth century, the Cherokee Syllabary is an excellent example that demonstrates how innovation builds on earlier invention. Sequoyah, the developer of the syllabary, did not invent writing from nothing. He built on the existing concept, which was already widespread around the globe. What makes the Cherokee syllabary an innovation is how it improved and adapted that idea for a specific community. Instead of simply making use of the English alphabet, Sequoyah created new symbols that matched syllables in the spoken Cherokee language. As demonstrated by his young daughter Ayokeh (also spelled Ayoka), it was relatively easy for Cherokee speakers to learn. This dramatically increased literacy among the Cherokee people, allowing them to use writing in their own language for their own needs—publishing texts, keeping records, and strengthening communication. Image credit: National Portrait Gallery, Smithsonian Institution (NPG.79.174).

To get started, let us consider the terms. Many dictionaries define the noun "innovation" as "a new idea, method, or device." The verb "to innovate" is defined as a way "to introduce a new process or way of doing things." The historian's job is to help us make sense of the newness and to understand the impact of the innovation: the intended and sometimes unintended consequences on human society and the course of human events. Historians and NHD students do so by asking questions that lead them to identify primary and secondary sources, evidence that helps them draw conclusions about a topic's significance in history.

To put it simply, innovation, at its core, is about change and the impact of that change.

EXPLORING ASPECTS OF INNOVATION: IMPACT, INFLUENCE, CHANGE

When considering the theme *Innovation in History: Impact, Influence, Change*, it is important to focus on what follows the word "Innovation." This portion of the theme is essential, as it helps students begin shaping meaningful research questions to guide their inquiry. To fully explore innovation in a historical context, we must look beyond the idea itself and examine its effects. How did people, over time, imagine, develop, and implement new ideas, technologies, or methods? And in what ways did those innovations influence societies?

Innovation can include social, political, cultural, and intellectual breakthroughs, as well as new technologies. Students should also keep in mind these questions as they consider their topics:

- What problem or need drove this innovation?
  - How has necessity helped to drive innovation? Consider war, disease, food preservation, etc.
- How was it received at the time?
  - Consider topics related to the advancement of science and medicine. Were they welcomed, resisted, or feared? What were the consequences?
- Who benefited, and who did not?
- How did it change lives and society in the short term and the long term?
- What connections can be traced between past innovations and today's world?

IMPACT INFLUENCE CHANGE

Asking research questions about impact, influence, and change over time is an important way to identify examples of innovation in history. Questions like these encourage students to move beyond simply describing an event or invention. Instead, they prompt deeper analysis—challenging students to consider how people created, refined, and adapted ideas and technologies over time.

CHOOSING A TOPIC: INVENTION OR INNOVATION?

Remember that innovation is not simply an invention, but a creative and new approach to how we live, work, and think and its consequences for human society. An invention is a starting point; an innovation is an example of what happens as people keep changing, improving, and adapting that idea. *Innovation in History* examines how innovative ideas, devices, or methods have had short- and long-term consequences, changing the course of human society.

For example, how have scientists and doctors been able to view the inside of the human body? In 1895, German scientist Wilhelm Conrad Röntgen discovered X-rays. (Notably, this was an accidental discovery!) Soon after, doctors began using X-ray machines to see inside the human body without surgery. For the first time, they could look at broken bones while a patient was still alive. The X-ray machine is an example of an invention: it introduced a brand new tool. Students of history must take it a step further. Simply put, what difference did it make? What was the impact on medicine, human health, and industry?

The first X-ray photograph by Wilhelm Conrad Röntgen of his wife's hand. Since Röntgen's accidental discovery in 1895, X-rays have revolutionized medicine and led to innovations in treating patients. National Library of Medicine (101448275).

Of course, the X-ray machine is an obvious choice of topic in the history of medicine. Why not consider topics that are less obvious, such as shoe inserts? As Dr. Scholl explained, "when your feet hurt, you hurt all over." How did William Scholl's apprenticeship as a cobbler and later his medical degree lead him to produce an innovative medical device in the early twentieth century? What impact did his work have on health care? On industry? On individuals? Why was Dr. Scholl's invention an innovation?

Display of Dr. Scholl's shoes and "foot comfort appliances" in the window of R. Berberich's Sons, a store in Washington, DC, c.1925. Library of Congress (96521543).

Nikola Tesla changed the world with his innovative ideas about and experiments with electricity. How? What were the consequences?

Introducing the SPARK Test

For a classroom-ready resource that helps determine if a topic is an invention or innovation, refer to the SPARK test. This test was designed to help educators and students evaluate if potential topics are a good fit to explore for the theme *Innovation in History: Impact, Influence, Change*.

Find more information here: **nhd.org/theme**

MOVING BEYOND TECHNOLOGICAL INNOVATIONS

When we think about invention and innovation, it can be easy to identify examples that relate to machines or technology. However, we know that innovation is not just about technology. Ideas and social systems can also be invented and improved over time. Consider: What innovations changed the nature of citizenship and governance? How was the founding of the United States 250 years ago an innovative experiment in governance? What were the founders trying to change? Why? Did they succeed?

What was the impact of universal and compulsory education? How was universal education innovative? How was this innovative: what impact did public education and literacy have on society and citizenship?

This 1909 photograph by Lewis Hine shows young children in Georgia working long hours in a textile mill. Progressive Era reformers used images like this to expose unsafe conditions and argue that children needed protection through education, health care, and labor laws. What problems affecting children do you see in this image—and how might a stronger federal role in education have helped address them? Library of Congress (2018675020).

EXPLORING LOCAL HISTORIES

Students should be encouraged to think locally. If one is interested in the steam engine or electricity, how did such technology have an impact on a student's town? How did the steamboat create growth and change in small towns along the Mississippi River in the 19th century? What were the consequences of the New Deal's Rural Electronification Act (REA) on rural communities in the 1930s? Students should ask similar questions about the impact of innovation in their own communities. How and why did innovation change the way people lived? What were the consequences?

A woman uses an electric washing machine after the REA provided electricity to rural communities across the country. Franklin D. Roosevelt Library, National Archives (195877).

GUIDANCE ON CHOOSING A TOPIC

Of course, not all technological innovations are as big as designing the steam engine or bringing electricity to a rural area. History is often changed by small tools as well as by big inventions. The paper clip is a seemingly insignificant piece of technology. But stop and think for a moment. What spurred its development? How did it contribute to changes in office work and bureaucracy? How did it, along with other innovations, help create the modern office? Historically, the paper clip has done more than hold paper together. How was it used as a symbol of resistance during World War II? What was its social impact?

An advertisement for the Niagara Clip, c.1900. The design of this paper clip looks different from the typical paper clips we use today, reminding us that many inventors were experimenting with ways to hold papers or fabric together before one common design became popular.Wikimedia Commons.

Choose historical topics thoughtfully—ones that allow you to trace change over time, examine cause and effect, and assess long-term impact. While subjects like artificial intelligence (AI) may be interesting, they are not ideal for a history project because they are too recent to evaluate fully.

Instead, look to past innovations that have already shaped society in lasting ways. Developments such as early banking systems or expanding trade networks offer rich opportunities to explore how new ideas transformed the way people lived, worked, and understood the world.

Understanding a topic's significance in history requires careful attention to historical context, or the political, social, economic, and cultural climate in which a topic occurs. By examining this context, students can better analyze causes, events, and changes over time and ask important questions: How did the conditions of the time contribute to the development of this innovation or event? What factors allowed it to emerge and shape society?

Studying historical context helps explain not only how and why an innovation came about, but also its immediate effects and long-term impact.

CONCLUSION

Consider what drives innovation. Necessity often accelerates innovation in times of war, disease, or cultural exchanges.

Are innovations always positive? Not necessarily. While innovation often brings progress, it can also provoke skepticism, resistance, or unintended consequences. Students should be careful to examine how people reacted to innovation and change. The vaccine, for example, was an innovation that was not immediately accepted.

Innovation, at its core, involves change. The history of innovation is about creativity and transformation. Whether those changes are the result of technological advances or human factors is for students to interpret as they explore this theme through their projects.

To access more theme resources, go to nhd.org/theme.

2027 NCHE Conference

BELONGING IN HISTORY

Providence, Rhode Island

March 4-6, 2027

NCHETEACH.ORG

NCHE

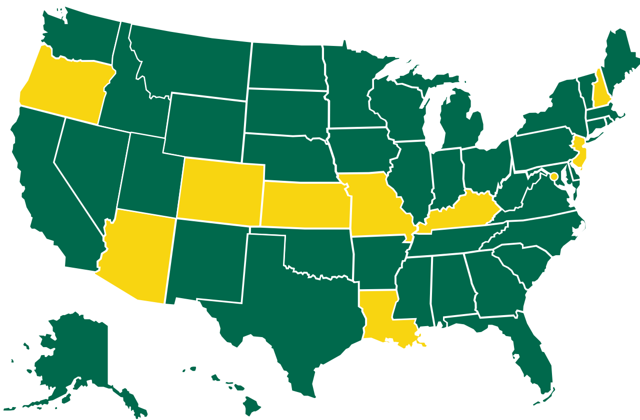
National Council for History Education

CELEBRATING AMERICA 250 AND INSPIRING NATIONAL HISTORY DAY® TOPICS

As National History Day® (NHD) continues to celebrate the 250th anniversary of the Declaration of Independence, we add to a series that appears across theme books through 2030. Each year, we ask NHD affiliates for topics that will encourage NHD students to explore the theme through the lens of local history. One strength of the United States is its diverse stories of people, places, and events. There is no one American story—instead, there are millions of them. We hope NHD teachers and students will be inspired to explore what makes their communities unique and discover ways they can find examples of *Innovation in History: Impact, Influence, Change* right in their own backyard.

Local topics from ten affiliates follow. Each page includes an image that connects to local history and is accompanied by a description and questions to encourage students to consider the topic in light of the 2027 NHD theme. We hope these topics will provide inspiration to students across the nation and around the world as they work to identify their NHD topics.

CONTRIBUTING AFFILIATES



Explore NHD resources that address and celebrate the 250th anniversary of the Declaration of Independence. All are created by teachers and for teachers and are available for free download on the NHD website.

Revolutionary Ideals
nhd.org/RevIdeals

Revolutionary Ideals is a teacher resource created by teachers who participated in a 2022 NHD teacher institute in Providence, Rhode Island. The book, developed in partnership with the Rhode Island Historical Society, includes two essays and 15 lesson plans created by NHD teachers. These lessons explore the ideals that drove the American Revolution and how these ideas were (or were not) applied. The book includes lessons that explore the Gaspee Raid, the Philadelphia Tea Party, the Regulator Rebellion, the role of a free press, the Rhode Island First Regiment, mercantilism and the triangle trade, the Indigenous roots of revolutionary ideas, and the impact of the American Revolution in France and Haiti. Teachers can download the lesson plan book or the individual lessons, which include the supporting materials (primary sources, graphic organizers, student instructions, and more).

Building a More Perfect Union
nhd.org/250

Building a More Perfect Union is a two-part resource series (published in 2021 and 2023) that explores how individuals and groups have worked to make the United States a better place for all its citizens. Developed in partnership with the National Endowment for the Humanities, the series includes four historical essays and 30 lesson plans. Topics span from the colonial period to modern American history and include inquiry-based lessons in which students explore primary source content using active learning strategies. The lessons are designed to be used in full, mined for primary source content, or modified or adapted to meet the needs of learners.

OREGON

ISABEL RUELAS, EDUCATION & VOLUNTEER SPECIALIST, OREGON HISTORICAL SOCIETY

At 4:17 pm on May 30, 1948, the Columbia River broke through a railroad embankment and completely submerged Vanport, Oregon, just outside Portland. Within hours, Vanport's legacy as a center of wartime **innovation** was erased from the landscape. Built in 1942, Vanport used industrial production **innovations**, such as modular buildings and prefabricated materials. Notably, it incorporated social infrastructure including schools into its design. Built in just 110 days, Vanport became the country's largest World War II-era public housing project, with nearly 10,000 housing units. This feat demonstrated the scale and speed that were possible when governments worked with industrial giants. The Kaiser Company built Vanport to address the housing shortage needed for the workers recruited from other states to build Liberty ships. This shortage disproportionately impacted Black workers and their families, as racist policies restricted their access to adequate housing in the area.

Before the United States entered World War II and in the face of the state's White pioneer heritage, Oregon's Black population stood at around 1,800—less than one percent of the entire state's population. The low percentage was significantly **impacted** by policies that excluded enslavement, free Black people, and Black land ownership. Vanport welcomed its first residents on December 12, 1942, and within months, it became Oregon's second-largest city. At the height of the war in 1944, it had a population of 42,000, including around 10,000 Black residents. This influx reflected a major population **change**, making Vanport the largest Black community in Oregon's history.

Black residents of Vanport faced racism in the mostly White city of Portland. Racist ideas influenced rules made by the Housing Authority of Portland (HAP), including separating people by race in housing and medical care. However, integration lived alongside segregation in Vanport. The city became known for its **innovative** programs available to all residents, regardless of race, such as meal programs, 24-hour childcare, and enriching after-school and summer school activities.

As the end of the war approached in 1945, demand for ships dropped. Kaiser shipyards began laying off thousands of workers, who then left the area. The Columbia River flooded in 1948 and displaced the remaining 18,500 people who still called Vanport home, a third of whom were Black. Something unexpected occurred in the flood's aftermath: Portland-based charities, churches, and individuals offered aid and opened their homes to Vanport refugees, prompting a period of meaningful interracial collaboration. The influx of Black residents who settled into Portland's Albina District resulted in a critical mass who went on to enact political **change**.

After the Vanport flood, Oregon's larger Black community **influenced** the passage of landmark civil rights legislation, including the: 1949 Fair Employment Practices Act (which outlawed racial discrimination in hiring), the 1953 Oregon Civil Rights Act (which banned segregation in public accommodations), and the 1957 Fair Housing Act (which forbade discrimination in housing and business properties). What began as an **innovation** in wartime urban design turned into one of social **change**. Vanport's diverse population and integrated community life challenged Oregon's history of racial bias and laid the groundwork for future movements toward a more racially just state.

QUESTIONS

- What **impact** did the destruction of Vanport have on grassroots organizing efforts among Black Oregonians, and how did those efforts shape campaigns for civil rights and housing justice afterward?
- In what ways did racist policies in Oregon **influence** housing patterns, labor opportunities, and political power leading up to, and following, the creation of Vanport?
- How did the destruction of Vanport **change** the daily lives, educational opportunities, and long-term prospects of Black children?

Capturing a moment of everyday life in the racially diverse wartime housing community of Vanport, Oregon, children line up for lunch at a school cafeteria as a cafeteria worker serves their meals. Unlike housing and medical services, educational services were integrated, reflecting the city's social innovation, c.1944–1948. Oregon Historical Society Research Library, Leonard Delano photographs, Org. Lot 980.

WASHINGTON, DC

AZIA RICHARDSON-WILLIAMS, Education Coordinator, DC History Center

By outlining the history and future direction of DC's Metrorail system, the Metro Owner's Manual helped foster a broader attitude of community ownership and responsibility, 1976. DC History Center (P 2853_001).

The first line of the Washington Metrorail (the Metro) opened on March 27, 1976, running from Farragut North to Rhode Island Avenue on the Red Line. From those first stations, the system has grown into 98 stations across six lines, making it one of the largest rapid transit networks in the United States. Conceived in the 1950s and authorized by Congress in 1965, the Metro was designed to ease highway traffic congestion, modernize the capital, and connect the District to its growing suburbs in Maryland and Virginia. Here, "the District" refers to Washington, DC's federally governed land area, distinct from the surrounding states. The Metro's vaulted, Brutalist architecture, characterized by exposed concrete and coffered ceilings, alongside coordinated design elements such as unified signage, lighting, and public art, represented **innovation** in how a city could move, grow, and define itself.

The Metro's development illustrated the tension between progress and equity. Early highway plans would have cut through predominantly Black neighborhoods, displacing families and businesses. The Emergency Committee on the Transportation Crisis, led by activist Julius Hobson in the early 1960s, challenged those plans and demanded **change**. Instead of destruction, they called for investment in public transit. The committee's efforts expanded the idea of **innovation** beyond technology, showing that bold thinking could also mean protecting communities and redefining what urban progress looked like.

The Metro's **impact** reshaped the District. When trains began running in 1976, they linked downtown with the surrounding region, including Maryland and Virginia. Routes connected people to jobs, schools, and cultural institutions. During the late 1970s and into the 1980s, new businesses and housing grew near stations in neighborhoods such as Gallery Place, Silver Spring, and Arlington, creating hubs of commerce and community. The system transformed daily life and preserved the city's social fabric by offering an alternative to destructive highway projects.

The Metro's **influence** reached far beyond transportation in two significant ways: its distinctive architectural design and its federally funded model. Its architecture earned national acclaim, including the American Institute of Architects' 25-Year Award in 2014, highlighting the system's lasting **influence** on design. The Metro also became an example for other cities planning modern transit systems. Because the project was built under congressional oversight, it became intertwined with the District's broader fight for Home Rule.[1] When the first trains rolled out in 1976, just two years after the city gained an elected mayor and council, the Metro symbolized both technological progress and a growing push for self-determination.

Over the decades, **change** has remained central to the Metro's story. The system continues to expand, adapt, and face new challenges, including issues related to funding, maintenance, and equity. Yet its legacy endures as a reminder that **innovation** is not only about building something new but also about transforming how a community imagines its future.

QUESTIONS

› In what ways did the construction of the Metro represent **innovation** in both design and urban planning?

› How did the Metro's development **impact** the neighborhoods, economy, and daily life of residents in Washington, DC and the District?

› How did the opening of the Metro intersect with and help drive **change** within the city's movement for Home Rule and self-government?

1 For access to the *DC Home Rule Curriculum* (published by the DC History Center in 2025), see https://dchistory.resourcespace.com/pages/search.php?search=%21collection575. This curriculum adapts for a high school audience material first published in the Fall 2024 *Washington History* magazine commemorating the 50th anniversary of the implementation of the DC Home Rule Act of 1973. The full text of the magazine, also produced by the DC History Center, is available through the (free) JSTOR database at https://www.jstor.org/stable/e48517999.

ARIZONA

LEONARD MOODY, Affiliate Coordinator, National History Day in Arizona
VANESSA FAJARDO, Exhibits Coordinator, Arizona Historical Society

The Hohokam were an ancient agricultural people in Southern Arizona known for their **innovative** irrigation system and flourishing society that lasted from approximately the first century CE to 1450. They created the largest known prehistoric irrigated land system in the Americas, and perhaps the world. This system of canals had a profound **impact** on maintaining culture and civilization both in the past and into the present day.

The Hohokam initially grew beans, squash, corn, and cotton, serving a small population of fewer than 1,000. Around AD 600, this **changed**, and the population grew, pushing the Hohokam farther from the river. Using hand tools called digging sticks, the Hohokam created a system of canals to bring water to their new settlements. These 12-foot trenches led to a larger network of canals, which supplied water throughout the Sonoran Desert, an area that includes present-day metropolitan Phoenix. The irrigation system allowed the Hohokam to successfully support agriculture in otherwise difficult growing conditions. At its peak, the Hohokam had a population of as many as 80,000. The **innovative** canal system is a significant reason why the Hohokam settlement and farming were possible in the harsh environment of the Sonoran Desert.

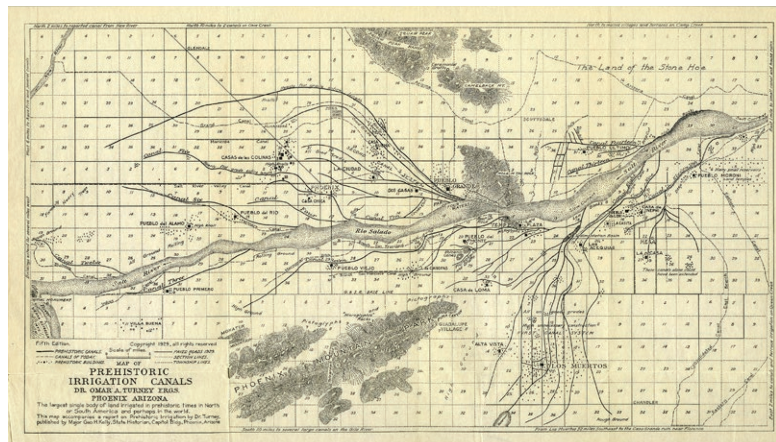
Around the fifteenth century, however, the Hohokam community experienced drastic **change**. Archaeologists continue to research the causes, but are unsure of why the Hohokam abandoned most of their settlements. Some theories hold that they migrated to Mexico after an extended drought, or that they eventually evolved culturally into the Akimel O'odham and/or Tohono O'odham (both Indigenous groups of the Sonoran Desert).

Centuries later, the Hohokam had a significant **influence** on the major settlement that would eventually become Phoenix, Arizona. In the mid-1800s, Jack Swilling, a former Confederate soldier, came across abandoned Hohokam canals and recognized their potential. He realized that these ancient waterways would bring much-needed water to the area's settlers and re-established the canals. Thus, this existing infrastructure greatly influenced the city's urban development and modernization. To improve water accessibility, the federal government (under the auspices of the Bureau of Reclamation) built the Theodore Roosevelt Dam to help settlers control the unpredictable waters of the Salt River. The project was completed in 1910.

The ancient canal beds **impacted** the development of a twentieth century urban area and provided the foundation for irrigation systems in modern-day Arizona. As they did more than 500 years ago, the reconstructed canals transformed what were desert valleys into thriving agricultural areas that allowed people to settle and to have a reliable food and water supply. Even today, concrete water lines in Phoenix follow many of the original paths made by the Hohokam. The Hohokam canal system is a prime example of **innovation** in history because it not only created a way to access water in the desert, but also laid the roadmap for future settlement.

QUESTIONS

- Why did the creation of irrigation canals represent an **innovation** in Arizona agricultural history, both ancient and modern?
- How did the Hohokam irrigation canals **influence** later settlement and farming practices in the Phoenix Basin in the state of Arizona?
- How does the map of the canals represent **influence**, and why do you think it was created? Who do you think developed it?



Created in 1929, a survey map showing prehistoric irrigation canals built by the Hohokam Native Tribe. Map of Prehistoric Irrigation Canals. Arizona Historical Society, TP Oversized Mounted Collection (1988.45.17/100-0006054).

MISSOURI

AJ MEDLOCK, Research Center Coordinator, St. Louis Historical Society of Missouri, St. Louis Research Center

Skylab was an orbital space station launched by the National Aeronautics and Space Administration (NASA) on May 14, 1973. NASA's goal for Skylab was to create technological **innovations** that enabled humans to live in space for long durations and conduct science experiments. Through their studies, Skylab successfully **influenced** Americans' views on humans' ability to live and adapt in space; this **change** in perspective **impacted** NASA's long-term plans, leading to the launch of the International Space Station (ISS) in 2001.

Skylab's story began in the mid-1960s, when NASA officials began planning new projects after the conclusion of the Apollo moon landing missions. NASA settled on developing an orbital space station, which became Skylab. In 1969, NASA selected the McDonnell-Douglas Aeronautics Corporation of St. Louis (which developed spacecraft for NASA's Mercury and Gemini projects) to do the work. McDonnell-Douglas spent the next few years **innovating** and developed Skylab's key components: the Multiple Docking Adapter, the Airlock Module, and the Orbital Workshop. McDonnell-Douglas's St. Louis office oversaw the construction of Skylab's Multiple Docking Adapter and Airlock Module. The Airlock Module enabled astronauts to safely leave the station and conduct spacewalks, while the Multiple Docking Adapter served as Skylab's docking port.

The Orbital Workshop, overseen by McDonnell-Douglas's Huntington Beach facilities, included living quarters and work areas for the crew. It contained several showers, sleeping bags, and toilets—all **innovations** designed for living in space. For example, Skylab's shower consisted of a curtain that extended from the floor to the ceiling. After the crew member completed their shower, a special vacuum system removed the water to prevent damage to the rest of the station. However, Skylab's crew found the process of showering and vacuuming water this way too time-consuming and **changed** course, requiring astronauts to use dry soap for bathing, enabling astronauts to wash without using water.

After Skylab's launch into Earth's orbit in May 1973, three separate three-person crews occupied the space station over the next several months. Each successive crew broke the record for the longest time spent in outer space. Several of the crews' science experiments focused on their ability to live and work in space. Overall, the results revealed that humans could survive for extended durations and successfully re-adapt to Earth's atmosphere upon their return.

After Skylab's final mission in 1974, NASA initially planned to reuse the space station for a shuttle mission sometime in the early 1980s. Unfortunately, Skylab endured irreparable damage from solar activity and crashed back to Earth on July 11, 1979. Despite Skylab's unexpected demise, the space station was **influential**, demonstrating that humans could live and work in space for extended periods of time. Former Skylab crew members later brought their **innovative** ideas to the development of the ISS, **impacting** its final design.

QUESTIONS

- In what ways did **innovations** developed at Skylab **impact** spacecraft living conditions for astronauts?
- How did astronauts' experiences living on Skylab **change** NASA's original ideas or plans for space technology? What does this tell us about learning through trial and error?
- Why do you think Skylab was still considered **influential** or successful even though it was damaged and eventually crashed back to Earth? How should historians judge success or failure in scientific projects?

McDonnell-Douglas workers prepping the Skylab airlock module for transport to NASA. The State Historical Society of Missouri-St. Louis, *NASA Skylab Collection* (S0831).

KENTUCKY

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ALYSSA OLLIER, Digital Archivist, Kentucky Historical Society

KFC promotional button released between 1980 and 1990. Kentucky Historical Society (2017.00.191).

Although Harland Sanders was born in Indiana, he became one of Kentucky's most famous **innovators**. As a 40-year-old who had previously worked odd jobs until the onset of the Great Depression, he launched his business during a time of widespread economic hardship. The results of his efforts were not just a thriving enterprise, but a set of inventive and **influential** practices that helped reshape regional food culture and sparked broader **change** in the industry.

Beginning in 1930, Sanders managed a Shell Oil service station in Corbin, Kentucky, a small town situated along U.S. Route 25, which ran from northern Kentucky to southern Georgia. Here, highway travelers could rest, refuel, and enjoy a home-cooked meal. Sanders first began to **innovate** with a signature recipe for his specialty: fried chicken. Over the next decade, he developed his own secret blend of herbs and spices that consistently delivered a tasty and popular experience for customers. Sanders also experimented with ways to cook more efficiently, inventing a new type of pressure cooker that, with his addition of a release valve, allowed chicken to cook faster than in a traditional skillet or griddle.

Sanders' fame grew alongside the demand for his food, allowing him to expand his venture into a full restaurant and motel. By 1950, two separate governors of Kentucky had awarded him the honorary title of a "Kentucky Colonel," spurring Sanders to cultivate a new professional identity that blended his personality with the products he sold. Sporting a goatee, white suit, and black bow tie for every public appearance, Harland Sanders quickly became recognizable as "Colonel Sanders," or simply: "the Colonel."

Twenty-two years after opening his service station, Colonel Sanders entered into an agreement with Salt Lake City businessman Pete Harman to develop a fast-food franchise they named Kentucky Fried Chicken. In exchange for a royalty of one nickel per cooked chicken, franchisees received permission to use the Kentucky Fried Chicken name along with the Colonel's previous **innovations**, including his pressure-cooking method, spice blend, and personal image.

Colonel Sanders devoted himself entirely to franchising in 1956 and sold the original Corbin site. Though a relatively new concept, this business strategy proved to be a vital **innovation** when, that same year, President Dwight D. Eisenhower's Federal Highway Act established plans for the construction of Interstate 75, which rerouted traffic away from Corbin. As most other major restaurant chains adopted franchising, the success of this business model would leave a lasting **impact** on the fast-food industry.

With more than 600 locations by the mid-1960s, Kentucky Fried Chicken had outgrown Colonel Sanders. When Kentucky Fried Chicken expanded into the global market in 1967 with a franchise location in Canada, Colonel Sanders had already sold his stake in the company. Though he continued to receive a salary for the use of his image, he brought multiple lawsuits against the company's new owners for altering his original recipe. Nevertheless, Kentucky Fried Chicken retained the use of the Colonel's likeness and kept it at the forefront of their brand, even after officially shortening their name to "KFC" in 1991.

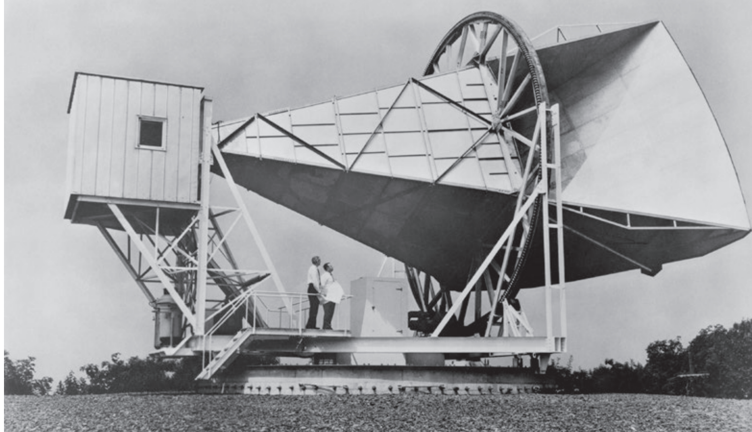
As the company **changed** over the years, so too did the image of the Colonel, with contemporary advertising trends **influencing** the Colonel's appearances in cartoons, video games, and commercials where various celebrities donned the iconic goatee and suit. Although he died in 1980, Harland Sanders endures as the Colonel: a symbol of KFC's history of **innovation** in an ever-evolving fast-food industry.

QUESTIONS

- How did Sanders' initial business in Corbin, Kentucky, **impact** his community and lay the groundwork for Sanders' reputation as an **innovator**? After expanding beyond Kentucky, how did KFC continue to **innovate** in the culinary and business industries?
- What economic and social factors **influenced** the development of fast-food franchising as a business model? What **impact** have these changes, including the 1956 Federal Highway Act, had on KFC, small towns like Corbin, or the culinary landscape of the United States?
- How did Colonel Sanders' image **change** throughout his life and after his death? In what ways have trends in advertising and pop culture **influenced** how Sanders is depicted?

NEW JERSEY

MICHELLE MOON, AFFILIATE COORDINATOR, NEW JERSEY HISTORY DAY



A photo of the Horn Antenna at Bell Telephone Laboratories in Holmdel, New Jersey, from June 1962. In 1964, radio astronomers Robert Wilson and Arno Penzias used the Horn Antenna to discover the cosmic microwave background radiation, for which they were awarded the 1978 Nobel prize in physics. It is now a National Historic Landmark. Wikimedia Commons, NASA (62-Tels-20).

The buzzing sound would not go away. It was 1964, and Arno Penzias and Robert Wilson were working on innovations in satellite communication technologies at Bell Telephone Labs in Holmdel, New Jersey. Trying to tune into radio waves around our galaxy, they kept hearing a fuzzy noise. Was it traffic on the Garden State Parkway? The pigeons nesting in the antenna? After evicting the pigeons, they still heard a sound like "an old FM receiver . . . with an unused channel."[1]

The mystery continued until they learned that Princeton University scientists, at work on the "Big Bang" theory, had predicted that if the universe were created by a giant explosion, its energy would still be radiating through space. Could the buzzing in the Horn Antenna be the sound of that energy? They checked their data, and the noise matched the predictions perfectly. The sound they heard, now called "cosmic background radiation," was an echo of the universe's birth. The discovery profoundly **influenced** not only satellite technology but also our understanding of the universe, helping scientists answer a fundamental question: Did the universe have a starting point?

Penzias and Wilson, twentieth-century scientists, were building on New Jersey's long history as an **innovation** powerhouse. In 1791, Alexander Hamilton planned the first industrial city powered by the Great Falls of Paterson. In 1876, Thomas Edison's Menlo Park labs created research and design methods that went on to **influence** major corporations and the military. In 1917, the Army Signal Corps came to Fort Monmouth, advancing communications technology from flags and messenger pigeons to radar, weather satellites, and the first mobile computers.

Male scientists outnumbered women and scientists of color in the twentieth century, as inequalities **impacted** access to education and opportunity. Even so, many New Jersey **innovators** broke barriers. African American inventor Alice Parker **changed** the way we heat our homes when she patented a natural gas heating system in 1919. In the 1940s, Chinese American physicist Dr. Chien-Shiung Wu became the first woman to teach physics at Princeton. She also led uranium experiments for the Manhattan Project. In 1946, African American physicist Dr. Walter McAfee calculated antenna signals for Project Diana, enabling the first Earth-to-Moon radar transmission.

Decades later, people still feel the **impact** of these and other twentieth-century New Jersey **innovations** in everyday life, even if the magic of their discovery has been forgotten. In the end, the buzzing sound that puzzled Penzias and Wilson was not a mistake but a breakthrough. Their work shows how efforts to improve technology can lead to discoveries far beyond their original goal. It also reflects the long tradition of **innovation** in New Jersey, where new ideas (sometimes unexpected ones!) have shaped science, technology, and how people understand the world.

QUESTIONS

- What resources, ideas, and **influences** helped to create centers of **innovation** like New Jersey?
- How did an unexpected discovery at Bell Telephone Labs lead to a major scientific **innovation** and change scientists' understanding of the universe?
- How did inequalities in education and opportunity shape who could participate in scientific innovation, and what **impact** did barrier-breaking scientists have over time?

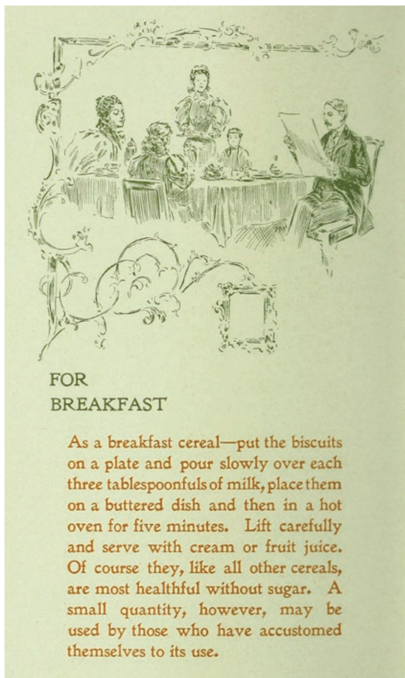
1 Geoff Brumfiel, "Big Bang's Ripples: Two Scientists Recall Their Big Discovery," All Things Considered, National Public Radio, May 20, 2014, https://www.npr.org/2014/05/20/314239930/big-bangs-afterglow-two-scientists-recall-their-big-discovery.

COLORADO

DR. KELLY CVANCIGER, State Director, National History Day in Colorado
KATE KENNEDY, Program Assistant, National History Day

Years before Colorado's admittance into the United States in 1876, mining was the major economic driver in the state. All of that **changed** in 1893, when the government repealed the Sherman Silver Purchase Act. This caused silver prices to plummet, triggering the nationwide Panic of 1893. As a result, Colorado went into an economic depression because the state's economy relied on silver production. This economic shock made **innovation** in Colorado a necessity, as people struggled to find new ways to make a living. Entrepreneurs turned from extraction to experimentation.

One of those people was Denver attorney and businessman, Henry Perky. Perky had his hand in many different business endeavors, but was **influenced** to develop a shredded wheat biscuit machine after learning that eating boiled wheat with cream could help his stomach ailments. Just a year before the crash, he took his idea for a machine that would produce "little whole wheat mattresses" to his friend, machinist William H. Ford, in New York. The two brought their machine to the 1893 World's Columbian Exposition in Chicago. Unfortunately, the **impact** of the Panic of 1893 created a deep recession marked by bank failures, business bankruptcies, and high unemployment. Consequently, no one at the Exposition was interested in buying their shredded wheat biscuit machine.


FOR
BREAKFAST

As a breakfast cereal—put the biscuits on a plate and pour slowly over each three tablespoonfuls of milk, place them on a buttered dish and then in a hot oven for five minutes. Lift carefully and serve with cream or fruit juice. Of course they, like all other cereals, are most healthful without sugar. A small quantity, however, may be used by those who have accustomed themselves to its use.

Page eight of a pamphlet titled *For Serving Shredded Wheat*, published in 1896, describes how to prepare Shredded Wheat for breakfast. This page also includes an illustration of a family eating breakfast, suggesting not only *what* to eat for breakfast, but *how* and in what setting to eat it. Other pages in the pamphlet share recipes for how to eat Shredded Wheat for lunch or dinner. Library of Congress (ca10005331).

The economic recession's **impact** forced Percy to rethink his plan. He decided to distribute the wheat biscuits from a horse-drawn carriage in his hometown of Denver while promoting the idea that they had improved his health. This tactic was **influenced** by the larger healthy-eating-through-natural-food movement of the 1800s. In fact, Perky did not originally intend for his whole-wheat biscuits to become solely a breakfast food. He published millions of booklets with ideas for using the biscuits, such as pairing them with mushrooms or sardines. Once the little wheat pillows took off, Perky moved production to Massachusetts, where he became the first person to mass-produce and nationally distribute ready-to-eat cereal. By 1898, Shredded Wheat distribution was global.

The Panic of 1893 transformed Colorado from a state built on mining into a laboratory for **innovation**. Companies like Jackson-Richter Iron Works, later Midwest Steel and Iron Works, shifted from raw mining and extraction to the production of steel structures that shaped Denver's skyline. The Kuner-Empson Cannery became one of Colorado's largest, pioneering large-scale food production. In northern Colorado, the Great Western Sugar Company **impacted** practices in the sugar beet industry and used the leftover beet pulp as an **innovative** type of cattle feed. But it is Henry Perky's Shredded Wheat that stands out as an example of a Colorado idea that has had the greatest **impact** on the wider world. Perky was likely **influenced** by other cereal manufacturers at the time, such as Will Kellogg and C.W. Post. Together, they developed and marketed their products to reflect social **changes** in household dynamics. As the shift to manufacturing happened, families needed a faster and more convenient way to feed themselves. This idea **changed** not only a local economy but an everyday ritual, making ready-to-eat cereal a staple of modern life. From Frosted Mini-Wheats and Triscuit crackers to various spin-offs in other countries, such as Shreddies in Canada and Weetabix in the United Kingdom, the cereal industry currently generates $87 billion in annual sales worldwide.

Perky's Shredded Wheat demonstrates how **innovation** can **influence** habits, **impact** economies, and ultimately **change** the way people live.

QUESTIONS

- In what ways can economic uncertainty drive **innovation**?
- How can businesses be **influenced** by their customers to **change** their products?
- Who would be most **impacted** by the invention of ready-to-eat cereals?
- How did the invention of shredded wheat **impact** how families ate breakfast in the early 1900s? How did Perky's **impact** on the cold cereal industry change the way we eat breakfast today?

KANSAS

TRACIE LAMB, Executive Director, Kansas History Day Foundation
JULIE CLOVER, Public Education Director, Robert J. Dole Institute of Politics
SARAH GARD, Senior Archivist and Head of Collections, Robert J. Dole Institute of Politics

From the earliest intersections of Native Americans, settlers, cowboys, and bison along the westward Oregon, California, and Santa Fe Trails, **innovation** has been at the core of Kansas history. Since achieving statehood in 1861, Kansas has been home to bold visionaries **impacting** and **influencing** our country.

Nicodemus, a town founded by African Americans during the Reconstruction Era, stands as a powerful testament to resilience and self-determination. Famed Atchison aviatrix Amelia Earhart's daring flights challenged norms and expanded aviation boundaries. And Abilene native President Dwight D. Eisenhower transformed American infrastructure and transportation through the Interstate Highway System.

A native of Russell, Kansas, Senator Bob Dole was inspired by President Eisenhower to enter public service. Like Eisenhower, Dole built a reputation as a pragmatic conservative who prioritized bipartisan cooperation. His partnership with Democratic Senator Birch Bayh of Indiana to **change** and improve patent law is just one notable example of Dole's collaboration across the aisle. The legislation, known as the Bayh-Dole Act of 1980, to honor their visionary leadership, has reshaped American **innovation** policy in the decades since its passage.

As market stagnation persisted throughout the 1970s, Congress looked for ways to improve the economy. Universities had also started to lobby their elected representatives, advocating for **changes** to the current patent regulations. At that time, the federal government owned and managed patent rights for all discoveries made with federal funding. As a result, many **innovations** were not turned into real-life products that could benefit the general public.

Speaking in 1994 to the U.S. Senate Judiciary Subcommittee on Patents, Copyrights, and Trademarks, Senator Bob Dole reported that before the Bayh-Dole Act, the federal government spent billions of dollars on research that never saw the light of day, and that less than 4 percent of government-owned inventions were commercialized before 1980.

When Senators Dole and Bayh learned they were both investigating patent issues, they decided to work together. Their Act **changed** patent law to allow universities, small businesses, and nonprofits to own the inventions discovered through their federally funded research.

Since its passage nearly five decades ago, the Bayh-Dole Act has revolutionized the modern American **innovation** economy, resulting in technology that **impacts** our world today: the algorithm that became Google, high-definition video and audio, mRNA technology advances behind Covid-19 vaccines, and the discovery of many new drugs that **influence** and improve how we treat cancer were all developed using federal funding.

Throughout history, Kansas and Kansans have stood at the forefront of **innovation**. Working on behalf of his constituents in Kansas, Senator Bob Dole shaped U.S. policy during his 36 years in Congress and became just one example of the **influence** of our state on the country and world.

Senators Birch Bayh and Bob Dole. Their vision and bipartisan cooperation changed United States patent law to allow universities, small businesses, and nonprofits to retain patent rights on their discoveries made through federally funded research. Photograph courtesy of the Robert and Elizabeth Dole Archives and Special Collections, Robert J. Dole Institute of Politics, University of Kansas.

QUESTIONS

- In what ways does the Bayh-Dole Act represent **innovation** in government policy?
- What were the short- and long-term **impacts** of the Bayh-Dole Act? How did its passage **impact** development in science and technology?
- How did the passage of the Bayh-Dole Act **change** the relationship among the federal government, universities, and private industry?

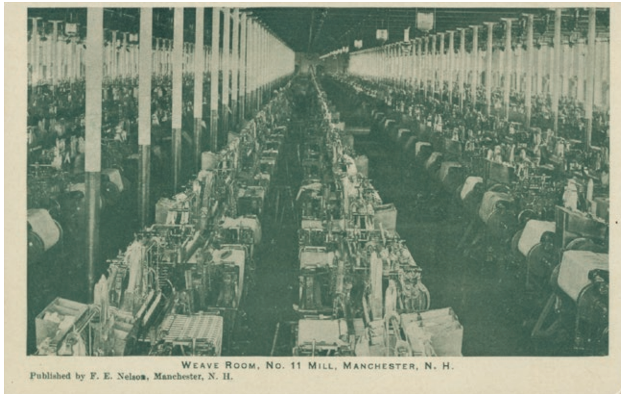
The Robert J. Dole Institute of Politics at the University of Kansas is home to Senator Bob and Elizabeth Dole's career collections, which offer unique insights into pivotal national and international events, the inner workings of congressional leadership, and the development of U.S. policy across a wide range of subjects.

The Dole Archives is also a contributing partner to the American Congress Digital Archives Portal, a collaborative, non-partisan project that makes congressional archives available online, bringing the history of the People's Branch to the people.

Explore digitized resources about the Bayh-Dole Act and many more pieces of influential legislation online at **dolearchives.ku.edu** and **congressarchives.org**.

NEW HAMPSHIRE

KELSIE BROOK ECKERT, Coordinator of Social Studies Education at Plymouth State University, Affiliate Coordinator of National History Day in New Hampshire



A photo of the weaving room at one of the Amoskeag mills. Here, the looms weave the cotton into cloth, c.1872. F. E. Nelson, New Hampshire Historical Society.

The Amoskeag Manufacturing mill in Lowell, Massachusetts, is better known, but the company's mill in Manchester, New Hampshire, is older, having opened in 1814. Eventually, it became the main supplier of denim for Levi Strauss & Co. as well as the largest cotton manufacturing plant in the world. Like most industries of the nineteenth century, **innovation** was driven by immigration, laissez-faire economic policies in which the government does not intervene in labor disputes, and emerging technologies.

Known locally as the Queen City, Manchester was an industrial powerhouse with international renown. It started as a small farming village called Derryfield near the Merrimack River, and it helped bring trade from Boston to New Hampshire. Samuel Blodget, the **innovator** who drove investment in the region, stated that the spot around the Amoskeag Falls would become the "Manchester of America," a nod to the water-powered mills based in and around Manchester, England. After he died, the town was renamed to honor his **impact**.

The mills struggled financially until wealthy businessmen and the New Hampshire government converged to invest in them. The mills added 40 buildings between 1838 and 1915, a result of the New Hampshire legislature appropriating $1 million in the mid-nineteenth century. They also endured social, political, and economic **changes**; the mills adapted to the booms and busts of economic success through the Civil War, as well as the growth of the railroads. Eventually, Amoskeag cotton was shipped around the country and world.

At its peak, the Amoskeag mills employed 17,000 people who worked six days a week. Like most textile mills, the first workers were young women from the nearby farms. As the mills expanded, they employed more and more laborers, people who originated from Quebec, Ireland, Greece, Germany, Sweden, and Poland. Manchester grew as Amoskeag grew—an **impact** of immigration. For example, Manchester is one of the earliest planned cities in the country, with areas set aside for churches, public parks, and employee housing, a welcome **change** to urban planning practices at the time.

The famous progressive photographer Lewis Hine visited Manchester in 1909 to document labor conditions and bring about **change**. His photographs of children in mills (including Amoskeag) turned public opinion nationally against child labor. However, it was not until 1938 that the "Live Free or Die" state ended child labor, one of the last states to do so.

In 1922, the company cut pay and increased expected weekly hours per worker from 48 to 54. The **impact** was a nine-month strike. It was ultimately the combined impact of aging infrastructure and machinery, these worsening labor conditions and push-back, the Great Depression, and environmental factors that led Amoskeag to file for bankruptcy in 1935.

Still, Manchester's history as the world's leading cotton manufacturer both **changed** and reflected New Hampshire's landscape. Over time, Manchester became the epicenter of industry in the state. It **influenced** the growth of mill cities upriver, including Claremont, Laconia, and Franklin. Paper mills such as Monadnock (the oldest in America) mark this industrial past. Long-active mills in the White Mountains, like those in Berlin, also reflect New Hampshire's lasting industrial **impact**. Together, these cities and mills show how industrial **innovation** shaped New Hampshire's economy, communities, and landscape over time.[1]

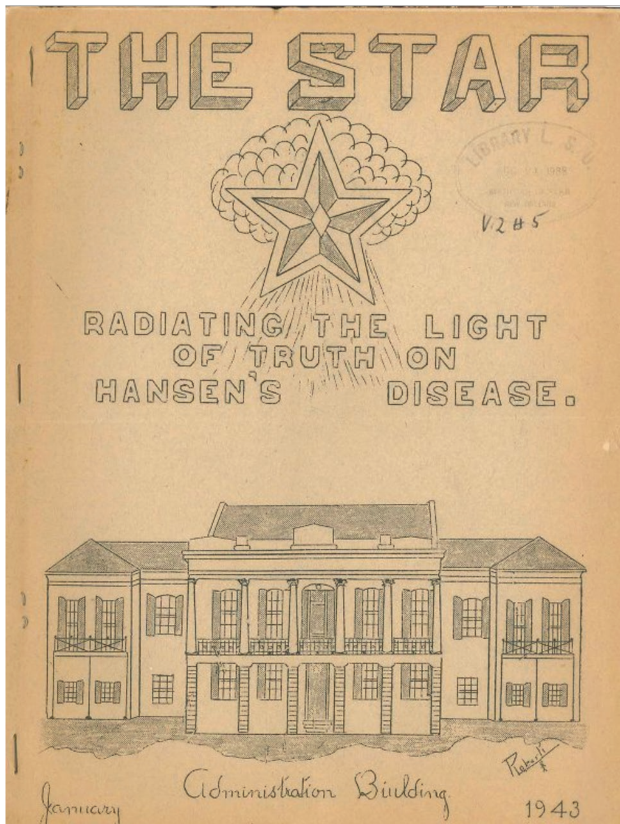
QUESTIONS

- What role did individuals play in the **innovation** of mills in Manchester?
- What role did the government play in mill development in Manchester? Consider direct and indirect **impacts**.
- How did geography **influence** mill development in Manchester?

1 "Primary Source Set - Amoskeag Manufacturing Company," Moose on the Loose: Social Studies for Granite State Kids, New Hampshire Historical Society, https://moose.nhhistory.org/educators/Primary-Source-Sets/Source-Set-Amoskeag-Manufacturing-Company.

LOUISIANA

ANNA KENEDA, Assistant Director of Student Programs, The National WWII Museum, Louisiana History Day Coordinator



The cover of an issue of *The Star* from 1943. The cover depicts the administration building of the The National Leprosarium at Carville. Louisiana State University Health Sciences Center New Orleans (0049-2116).

One of the world's oldest infectious diseases, Hansen's disease, or leprosy, was once a diagnosis that ensured social isolation and stigma. Countries across the world established forced segregation of people with Hansen's disease by creating institutions where patients lived in isolation due to fears that they would spread their illness to others. However, within one of these communities—the National Leprosarium at Carville, Louisiana—key medical and social **innovations** were developed that radically **changed** the treatment and quality of life for those **impacted** by Hansen's disease.

Established in 1894 on a former sugar plantation, the National Leprosarium (known as "Carville") was both a place of confinement and an epicenter of groundbreaking **innovation**. Until the 1960s, it was common for patients to be admitted without their consent and forced to build new lives within the hospital. The **impacts** of Dr. Guy Henry Faget's medical advances and the first successful drug trials enabled Carville to evolve into a community that **changed** medical treatment and patient advocacy.

Importantly, one of Carville's key **innovations** was not medical but social: the destigmatization of Hansen's disease through patients sharing personal stories and confronting misinformation. In 1931, a group of patients created *The Star*, a community newspaper with the motto "radiating the light of truth on Hansen's disease." For those who had been removed from the rest of society, *The Star* was a place of connection with the outside world and a way to build empathy and understanding for their struggles beyond the confines of Carville, Louisiana.

The Star was a grassroots public health communication and patients' rights platform. Through its writing, the Carville community worked to **influence** legislation that abolished forced isolation in the 1960s and promoted the use of the term "Hansen's disease" as the accepted name for their condition rather than "leprosy."

From isolation came **innovation**. The National Leprosarium at Carville did not just treat a disease; it redefined and **changed** how we understand it. In the face of stigma, patients turned to journalism, community, and science to transform fear into hope and silence into a powerful voice.

QUESTIONS

- How can *The Star* newspaper be understood as an **innovation**, and what **impact** did it have on how people viewed those living with Hansen's disease?
- How did the actions of Carville's patients help **change** unfair laws and attitudes, and what does this show about the **impact** of personal stories in public health?
- How did the experience of forced isolation at Carville eventually lead to important **changes** and **innovations** in both medicine and patient rights?

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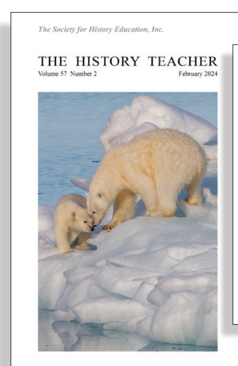

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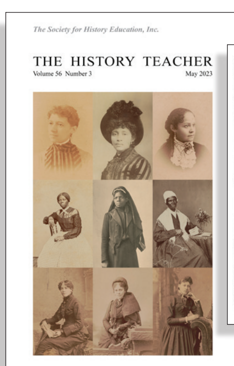

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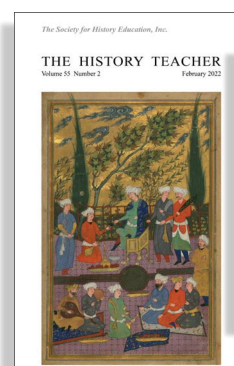

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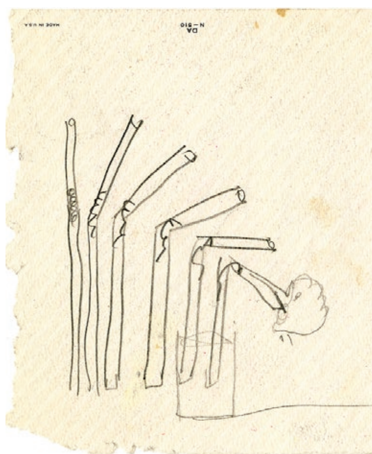
UNCOVERING HUMAN STORIES OF INNOVATION

ALISON OSWALD, Archivist, Archives Center, National Museum of American History
JULIE BOTNICK, Access and Outreach Archivist, Archives Center, National Museum of American History

The Archives at the Smithsonian's National Museum of American History encourages students to look beyond "the eureka moment" to illuminate the social stories behind **innovations**. Archives (which curate and preserve records and objects) collect source materials students can use to tell human stories of **impact**, **influence**, and **change** through in-person and virtual research.

THE CONTEXT OF INVENTION

A patent is a tool for inventors to protect their novel designs, processes, tools, and even plants. You can find the patent for the original bendy straw and any other patent by searching the United States Patent and Trademark Office database.[1] Try it out! Search for patent number 2,094,268 to bring up the "drinking tube with a flexible section so positioned that the tube may be bent during use without substantially reducing the diameter of the straw."[2]



Pencil conceptual sketch for flexible straw invention, 1930s. Joseph B. Friedman Papers, Archives Center, National Museum of American History (AC0769-0000006-01).

The patent record shows the inventor, the file date, the diagram of the straw, and the description of why it is an **innovative** product. Joseph Friedman was issued this patent in 1937. But archives can help you understand *how and why* he achieved this. Friedman observed his young daughter Judith struggling to drink a milkshake on a countertop using a tall, straight straw. He took a paper straight straw, inserted a screw, and using dental floss, he wrapped the paper into the screw threads, creating corrugations. This design **change** allowed Judith to stay seated and drink her milkshake without spilling it! With proof that his invention worked, Friedman founded the Flex-Straw Corporation to manufacture the straw. The Archives Center now holds 17 boxes of material—including a seven-minute soundless video that shows a toddler clapping and then shifts to a bespectacled man playfully talking and miming to the camera—documenting Friedman's life and inventions, all of which are open to the public for research.

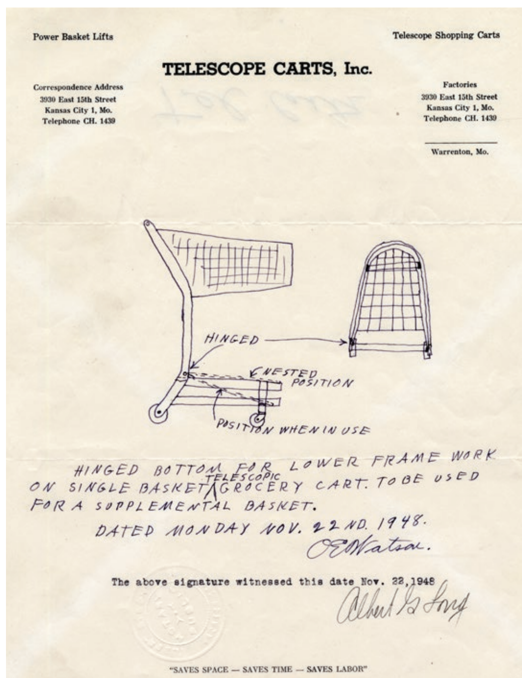
Historians and sociologists have long argued that "invention and **innovation** are deeply social processes."[3] By examining the social aspects of invention, development, and **innovation**, we can learn more about the factors that drive independent inventors; how technologies are shaped by social, cultural, and political contexts; and what consequences new technologies may have on the environment, labor market, and existing social structures.

The records of invention and **innovation** help researchers understand the creative process and provide perspective on how invention **impacts**, **influences**, and **changes** our daily lives. **Innovators** document their processes, archives preserve their documentation, and researchers—including National History Day® (NHD) students—make meaning of the **innovation** in history.

1 Find the patent for the bendy straw, and countless other inventions, at: www.uspto.gov/patents.
2 Friedman, J. B. 1937. *Drinking Tube* (U.S. Patent No. 2,094,268). U.S. Patent and Trademark Office, https://patentimages.storage.googleapis.com/01/04/f2/13db9a8c162c5b/US2094268.pdf.
3 Peter Whalley, "The Social Practice of Independent Inventing," *Science, Technology, & Human Values* 16, no. 2 (Spring 1991): 208-232, p. 227.

PATENTING LASTING IMPACT

Besides tangible resources like tools and materials, inventors draw on a range of intangible resources like their pre-existing knowledge from formal and informal training, and their ability to look at a problem uniquely. They may also be **influenced** by current events, such as wars or economic conditions, that can force a **change** in perception. Later in the process, after the invention has been developed, other intangible resources are produced, like patent documents and business and publicity materials. Inventors may also keep court documents, interviews, lectures, or publications to illustrate the evolution of the invention.



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Telescope Shopping Carts

TELESCOPE CARTS, Inc.

Correspondence Address
3930 East 15th Street
Kansas City 1, Mo.
Telephone CH. 1439

Factories
3930 East 15th Street
Kansas City 1, Mo.
Telephone CH. 1439

Warrenton, Mo.

HINGED

NESTED POSITION

POSITION WHEN IN USE

HINGED BOTTOM FOR LOWER FRAME WORK ON SINGLE BASKET TELESCOPIC GROCERY CART. TO BE USED FOR A SUPPLEMENTAL BASKET.

DATED MONDAY NOV. 22ND. 1948.

O E Watson.

The above signature witnessed this date Nov. 22,1948

Albert G. Long

"SAVES SPACE — SAVES TIME — SAVES LABOR"

Sketch of telescoping shopping cart on letterhead, signed by O. E. Watson, November 22, 1948. Telescoping Shopping Cart Collection, Archives Center, National Museum of American History (AC0739-0000011).

Advertisement of Telescope Carts, Inc. promoting new product, the Two Basket Telescope Cart, 1947-1948. Telescoping Shopping Cart Collection, Archives Center, National Museum of American History (AC0739-0000008-02-S).

The first patented shopping cart by Sylvan Goldman, and Orla Watson's subsequent improvement upon its design, show a significant **innovation** that **impacted** the way people shop.[4] Goldman analyzed shoppers in his Oklahoma grocery store and saw people having difficulty maneuvering and handling a hand-held basket. He took two baskets, placed them on top of a folding frame, and added caster wheels, so the new contraption could move across the floor easily. Following use, the baskets could be removed and stacked with others, and the frame folded. Before each use, the baskets and the frame needed to be assembled.

At the same time, Orla Watson, a machinist from Missouri, studied how to telescope carts. As American suburbs expanded in the post-World War II years, more and larger grocery stores were required to feed the growing population. Newly reliable refrigeration allowed consumers to buy more groceries and keep them fresh in their homes. The cart needed to scale up to meet these needs. Watson invented a telescoping shopping cart in 1949 that was hinged and moved inward, allowing the basket to telescope and nest to take up less space on a store floor when not in use.[5]

4 Find the patent for the shopping cart (US Patent 2,155,896) at: patentimages.storage.googleapis.com/3e/a2/cf/ce4a635ffa160b/US2155896.pdf.
5 Find the patent for the telescoping shopping cart (US Patent 2,479,530) at: patentimages.storage.googleapis.com/1c/ba/fd/b5cfd31321c3a0/US2479530.pdf.

Inventors who plan to patent their inventions need to make sure their ideas are not already patented, so they will conduct what is called a "prior art search," or a search to see if any similar work is already published. As a result, inventors' files will often contain numerous copies of others' patents. These are important because they allow comparisons between the invention under study (the subject of the patent application) and existing devices. The patenting process itself is an asset for documenting an invention's development, since it mandates that the inventor spell out exactly what makes their invention "useful, novel, and non-obvious" and, therefore, worthy of being granted a patent.

Questions to Consider

- Who were the two inventors involved in the creation of today's shopping cart, and what did each offer to its development?
- What does post-World War II American society have to do with the development and need for shopping carts?
- Think about your daily life. What other inventions have their roots in the growth of consumerism and the way people shop?

The shopping cart revolutionized the shopping experience, allowing shoppers to buy more per trip. We see shopping carts in every type of store today, not just grocery stores, and the design has remained largely the same since it was patented.[6]

The history of how and why the shopping cart was developed illustrates that new ideas can have a lasting **influence** on individuals and businesses.

MEETING THE MARKET

Friedman's flexible straw, marketed as sanitary and disposable, had a direct **impact** on the healthcare sector. Specifically, it was useful in hospitals, where his paper (and later, plastic) straws replaced glass drinking tubes. It also assisted patients who were bedridden or otherwise unable to use a cup. Despite its apparent usefulness, Friedman worked hard to market his invention and encountered many challenges. His sister Betty played a critical role in helping the company Flex-Straw expand and exert **influence** on the home and child markets.

Flex-Straw Corporation advertisement, 1950s. Joseph B. Friedman Papers, Archives Center, National Museum of American History (AC0769-0000032).

Questions to Consider

- How was the straw marketed to hospitals?
- How did it become so recognizable and/or common in everyday life?
- What is the key **innovation** of the straw that allows it to bend?

The Joseph B. Friedman Papers contain many documents that help challenge the mythical image of the "lone inventor." In the collection, researchers can find items that help illuminate professional relationships. For example, documents that show communication with patent lawyers, business partners, and investors. Friedman's papers also contain items from personal relationships, demonstrating how emotional support and encouragement can play a role in the process of invention. Not all inventors participate in this part of the invention process, but its documentation sheds light on the relationships the inventor develops to persuade, convince, market, and sell their idea or product. Visit the Joseph B. Friedman Papers to learn more.[7]

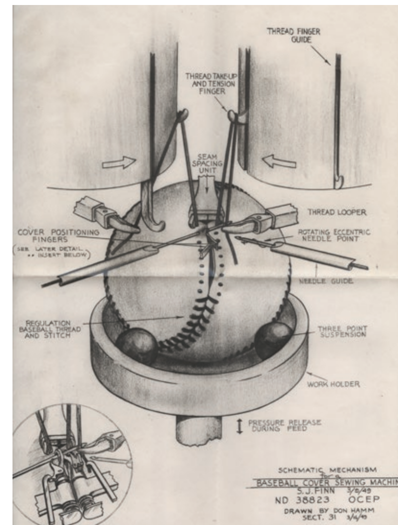
Are Papers Just . . . Paper?

"Papers" is a term used in archives to refer to a group, or collection, of primary source documents, created and kept by a single person or family. "Papers" can include a mix of many kinds of primary sources, including letters, photographs, bills, flyers, diaries, or other records. Sometimes, "papers" include or consist entirely of primary sources that were born digital, meaning they were *never* on paper (like emails).

6 Learn more about the Telescoping Shopping Cart Collection here, sova.si.edu/record/nmah.ac.0739.
7 Access the finding aid to the Joseph B. Friedman Papers here, sova.si.edu/record/nmah.ac.0769.

TRIAL AND ERROR

Many companies, both past and present, constantly seek new improvements for their products, respond to consumer needs, and imagine new ways to market products and implement **change** so they can adapt to survive and succeed. Consider the following example: In the mid-twentieth century, United Shoe Machinery Corporation (USMC) attempted to diversify its product offerings. They applied the company's expertise in machine shoe technology for stitching baseballs. The baseball is a complicated little sphere, and the stitching process had long resisted mechanization. At USMC, a team of developers (including Sidney J. Finn, Otto R. Hass, and Joseph Foss) worked together to solve the problem of how to use USMC's existing technology to stitch a baseball. From the historical and archival perspective, this period of **innovation** is well-documented. Today, researchers can access the many notebooks, memos, drawings, and photographs from this time period.



Schematic drawing of mechanism for a baseball cover sewing machine by S.J. Finn, March 9, 1949. United Shoe Machinery Corporation Records, Archives Center, National Museum of American History (AC0277-0000001).

Technical drawing for a man-machine system for lacing baseballs, April 23, 1959. United Shoe Machinery Corporation Records, Archives Center, National Museum of American History (AC0277-0000003).

Ultimately, USMC was unable to create a working, full automatic baseball stitching machine. USMC also received little support from the baseball industry. Both of these hard realities led to USMC abandoning the project. An important takeaway from this historical example is that not all inventions are successful, and that trial and error is just part of the process! Visit the United Shoe Machinery Corporation Records to learn more about the company's research and development progress.[8]

Generally, inventors record details of the progress of their work, personal reflections, and new ideas in invention notebooks and digitally. To verify that the ideas are theirs, they will often have witnesses sign documents when important steps in the process are noted. Other documents include correspondence, where they build relationships, secure financing, and make business deals. Additionally, important primary sources may be found in unexpected places, such as family records and email files.

Questions to Consider

- From the finding aid for the collection, what other products did USMC introduce to demonstrate **change**?
- How can having a strong research and development culture help companies?
- Are there economic advantages to repurposing existing machinery?
- Does all **innovation** succeed? What can we learn from studying failure?

FINDING STORIES IN THE ARCHIVES

National History Day student projects draw on compiling primary source materials from a variety of archives, repositories, and holding institutions. Here are some tips for making the most of archival research:

1. **Plan ahead and know before you go.** Due to limited staffing and storage space pressures, many repositories store materials offsite or offer research opportunities by appointment only, so make contact as soon as possible. Very few places offer walk-in appointments. Some archives are open only during regular business hours, which can unfortunately make it difficult for students and educators. Look for evening, weekend, and holiday break hours. Many—but not all—archives offer appointments to people under 18, but may have differing policies around whether minors need to be accompanied by an adult. Make sure to read through the policies specific to each site.
2. **Look everywhere for archives!** Universities, museums, historical societies, affinity groups and associations, and public libraries all can be treasure troves of archival materials. Most archives have a catalog, index, or a simple list of materials available, but students can also take advantage of searchable databases that compile archival finding aids from many repositories, such as ArchiveGrid (**researchworks.oclc.org/archivegrid**) and the Online Archive of California (**oac.cdlib.org**).[9]
3. **Use digital tools, but know their limitations.** More material is available online than ever before, but even in places with active digitization programs, less than 1 percent of all material might be available online. Most repositories have some sort of on-demand digitization program, and a few have more advanced virtual access options, but students should know there are generally fees associated with these services; lengthy timelines, as every new request requires research, handling, preservation, and imaging; and limits to what can be digitized due to volume, conservation, and copyright concerns.
4. **Talk to a librarian, archivist, or education specialist.** Many places offer research assistance to the public. Sometimes questions can be answered in a simple email, but reference interviews can also be helpful. They are usually held over the phone or via video call. The purpose of a reference interview is to help researchers identify materials of interest and make sure the requester's needs can be met. They are mutually beneficial, since a lot of time can be saved on both ends by setting expectations ahead of a research visit or digitization request, and the researcher can gain insights about collections they might not have found on their own.

Did you spot an unfamiliar term?

Check out the Society of American Archivists' Dictionary of Archives Terminology: **dictionary.archivists.org**.

8 Access the finding aid to the United Show Machinery Corporation Records here, sova.si.edu/record/nmah.ac.0277.
9 Learn more about archival finding aids using this resource from the Society of American Archivists, archivists.org/usingarchives/findingandevaluating.

CONCLUSION

Archives offer a wealth of primary source materials that document successes (and failures!) of the invention process. Researchers—from students, to university professors, to members of the public—can use these materials to illuminate stories behind inventions. They can ask: who was responsible for designing this object? How does its invention mark an **innovation**? What populations, practices, or ways of thought did it **impact**? Did it have a lasting **influence**, or was it useful only in a historic moment? And how did the meaning, use, or significance of this object **change** over time?

To access more theme resources, go to nhd.org/theme.

Keep Exploring the Archives!

The following list includes archives mentioned in this article. Keep exploring to find archives that contain primary sources about where you are, where you and your family come from, or what you're interested in.

Archives Center, National Museum of American History
americanhistory.si.edu/about/centers/archives

Henry Ford Museum of American Innovation
www.thehenryford.org/

ADDITIONAL RESOURCES

Eric S. Hintz, "The Post-Heroic Generation: American Independent Inventors, 1900-1950." *Enterprise & Society* 12, no. 4 (2011): 732–48. **https://www.cambridge.org/core/journals/enterprise-and-society/article/postheroic-generation-american-independent-inventors-19001950/33D610983C9C981BFE688C57692865AF**

Matthew H. Wisioski, Eric S. Hintz, and Marie Stettler Kleine, *Does America Need More Innovators?* (The MIT Press, 2019) **https://ieeexplore.ieee.org/book/8671657**

inVentEd
inventioneducation.org/

Jerome and Dorothy Lemelson Center for the Study of Invention and Innovation **invention.si.edu/**

USPTO Kids (United States Patent and Trademark Office)
www.uspto.gov/kids

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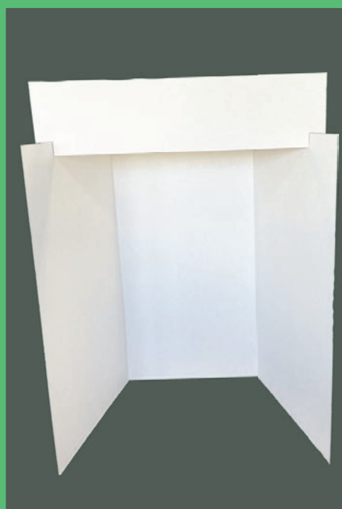

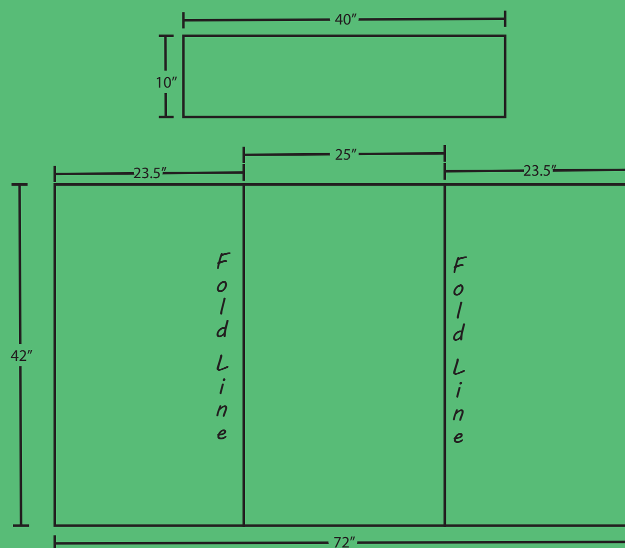

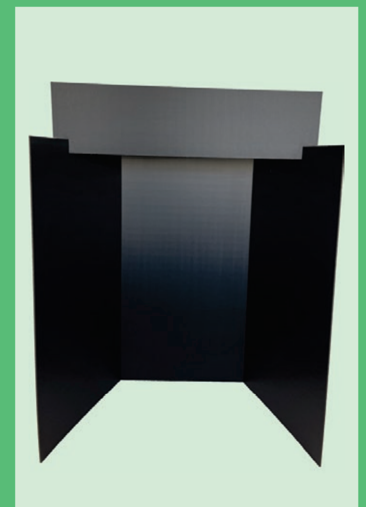

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EXPLORING INNOVATION IN HISTORY WITH NATIONAL PARK SERVICE RESOURCES

EMILY BUTTON KAMBIC, Bureau Historian & National Coordinator for American World War II Heritage City Program, National Park Service

Students are encouraged to use National Park Service (NPS) resources to explore the ways **innovation**, **impact**, **influence**, and **change** shape the world in which we live. This article will explore **innovation** during World War II, giving students research ideas for their National History Day® (NHD) projects.

Imagine growing up in a small town surrounded by farms that rapidly transformed into a sprawling complex of roads, housing, and massive military and industrial buildings. Imagine not knowing what the next year might hold—whether you would risk your life in a conflict across the world, be the first in your family to move to a city, or become adept in technology that had not existed when you were born.

From the United States' entry into the Second World War in 1941 to its end in 1945, everyday life **changed** at a pace rarely seen in our history. At all scales across the World War II home front, **innovation** meant solving problems by analyzing available resources from a different perspective, using existing labor, skills, land, and materials in new ways.

YOUTH AND INNOVATION: EVERYONE PLAYS A PART

After Japan's attack on Pearl Harbor on December 7, 1941, the United States government called upon Americans of all ages to contribute to the war effort. Many young people watched their fathers enter the armed forces, while their mothers went to work closer to home to support the nation's war production. Much was also asked of them. By 1944, three million teenagers, or about a third of the population of 14 to 18 year olds, were part of the workforce. Many took care of younger siblings, often at the cost of completing high school.[1] Some aimed to contribute directly to the war effort at home by training for civil defense roles as air raid wardens, nurses' aides, or messengers. Others tended Victory Gardens to feed their households and schools, so food produced on farms could support soldiers. Young people also found ways to help by organizing fundraising drives for War Bonds, knitting and baking for drives and fundraisers, learning to repair and recycle their belongings, and volunteering throughout their communities.[2]

"American Junior Red Cross Enrolling for Service," by A.M. Upjohn, illustrates one way youth were asked to serve on the home front, 1919. Bangor Public Library.

One visible way young people contributed on the home front was by gathering resources to fulfill the seemingly endless demand for the materials used to produce arms, ammunition, and other wartime products. These so-called "scrap drives" were based on the **innovative** idea that, at a national scale, the conservation and recycling of everyday materials could address shortages due to wartime production. For example,

1 William M. Tuttle, Jr. "The American Family on the Home Front," in *World War II and the American Home Front: A National Historic Landmarks Theme Study*, p. 71; National Park Service, Washington, DC, 2007.

2 Laura Lee Oviedo, "Selling Democracy: War Bonds & World War II" and "World War II: Adaptations for Wartime Survival," in *American World War II Home Front Heritage City Criteria Essays*; National Park Service & National Council on Public History, 2023. https://irma.nps.gov/DataStore/DownloadFile/687970.

Children participate in a scrap drive in Paterson, New Jersey's World War II Heritage City, 1942. Paterson Museum.

"commonplace materials and objects could be turned into instruments of war—glycerin in kitchen fats could be used in making gunpowder; lipstick tubes contained brass used in cartridges; tin used in cans could be employed in building ships; steel in razor blades could be recycled in producing machine guns; and old nylon stockings could help make parachutes."[3] Nationwide scrap drives urged Americans to comb through the worn remnants of their daily lives, contributing even the smallest items to help build planes, ships, life jackets, and more for the military overseas.

While these scrap drive efforts were promoted in popular culture, through state propaganda, and by schools, individuals **innovated** and developed their own initiatives and practices. In many communities, children and youth groups went door-to-door to collect materials like old tires, empty cans, and newspapers to be recycled for the war effort. They filled bags with milkweed pods from wild plants to generate floss for filling life vests.[4] In Manitowoc, Wisconsin, where submarines were manufactured and launched, a local troop of Sea Scouts hosted a "Waste Paper Ball" in December 1941. Admission to the ball required attendees to use scrap paper as their tickets.[5] By the end of January, the town had collected 142 tons of wastepaper to address shortages of wood pulp. These efforts **impacted** local morale and identity, as local newspapers proudly celebrated the contributions of their young volunteers.

The NPS has many resources for learning about the experiences of children and youth on the home front, including a National Historic Landmark Theme Study as well as multiple lesson plans.[6] However, students and educators may find that the most interesting opportunities for exploring home front innovation at the individual and community levels are in local newspapers, yearbooks, oral histories, and other primary sources.

Research Questions to Direct Student Inquiry

- How did youth from your community try to "do their part" for the war effort during World War II? What new ideas did they bring to national campaigns? How did participation **influence** young people's ideas about patriotism and identity?
- How were reuse, repair, and recycling **innovative** strategies for supplying the military and dealing with shortages during World War II? What types of materials were used in unexpected ways? Did any long-term changes in manufacturing or daily life come from the wartime focus on reuse?
- What do the stories of young people's roles in World War II make you think about ordinary people's ability to **influence** global events?

3 John W. Jeffries, "Mobilization and its Impacts," in *World War II and the American Home Front: A National Historic Landmarks Theme Study*, p. 31. National Park Service, Washington, DC, 2007.

4 Megan Springate, "Material Drives on the World War II Home front." National Park Service, accessed December 5, 2025, https://home.nps.gov/articles/000/material-drives-on-the-world-war-ii-home-front.htm.

5 Sarah Lane, "WWII Heritage Cities Lesson Collection: Manitowoc, Wisconsin," National Council on Public History & National Park Service, 2025, https://ncph.org/wp-content/uploads/2025/07/Manitowoc-WI-PDF-Version.pdf.

6 Find a PDF of the National Historic Landmarks Theme Study here, irma.nps.gov/DataStore/DownloadFile/638007 and the World War II Home Front Education Materials here, ncph.org/what-is-public-history/national-park-service-projects/world-war-ii-home-front-education-materials/.

SCIENCE AND TECHNOLOGY: INNOVATING THE NUCLEAR AGE

Scrap drives supported the massive expansion of scientific research and industrial production during the war. One of the most complex and influential outcomes of this period was the development of the atomic bomb. Nuclear fission had been discovered in Germany in 1938. After entering the war, the United States recruited scientists working on the cutting edge of scientific advancement to study it further. The military mission called the "Manhattan Project" aimed to develop atomic weapons before the United States' enemies did, even as the leading scientists and political figures involved debated its ethics and feared its **impacts**.

Early construction of the laboratory building behind Manhattan Engineering District Administration Building in Oak Ridge, Tennessee, 1943. US Department of Energy/Ed Wescott 2/16/1943.

The "Manhattan Project" was national in scale. Three major complexes were constructed from the ground up in Oak Ridge, Tennessee; Hanford, Washington; and Los Alamos, New Mexico. At Oak Ridge, three separate facilities **innovated** different and novel methods for separating the rare and necessary uranium-235 isotope from the more common uranium-238 isotope.[7] At Hanford, the first working nuclear reactor in the United States was built to produce plutonium from uranium through a chain reaction.[8] These two key radioactive elements were sent to Los Alamos, where physicists researched how to create working weapons.[9] Together, they required an incredible variety and quantity of resources: massive quantities of uranium, metals, and chemicals; vast expanses of land, water, and construction materials; housing and infrastructure; and the scientific expertise and labor power of tens of thousands of people.

After years of secretive development, the first atomic bomb exploded during a test in Alamogordo, New Mexico, over an area including parts of today's White Sands National Park.[10] With the goal achieved, U.S. leadership had to weigh the **impacts** of using atomic weapons and continuing conventional warfare. Ultimately, President Harry S. Truman approved the use of the first atomic bombs on Hiroshima and Nagasaki, Japan, in August 1945. The attacks killed an estimated 150,000–250,000 civilians, both instantly and through later effects, and led to Japan's surrender.[11]

Today, Manhattan Project National Historical Park shares the project's history across all three sites. The NPS provides educational resources to explore multiple aspects of the Manhattan Project at Hanford, Oak Ridge, and Los Alamos. Site interpretation and associated resources and lesson plans address the **changes** to everyday life for people in these three communities, including the social, scientific, and environmental **influences** of the development of the nuclear bomb.[12]

Research Questions to Direct Student Inquiry

Students interested in researching **innovation** in industry and military operations may explore these resources to frame questions such as:

- Choose one person involved in completing the Manhattan Project. What specific **innovations** made their work possible? What **influences** did their work have after the war, in science, politics, or their community?
- Choose a place like a building at Oak Ridge or the White Sands proving (testing) grounds. Why was its location chosen for this project? What does this show about the infrastructure necessary to support **innovation**? What **impact** did the testing have on the location?
- Focus on one aspect of how nuclear technology **changed** the world after World War II. What were the social and political **influences** of the bombings of Hiroshima and Nagasaki? How was the environment **impacted** by nuclear testing? What **innovations** in nuclear science, medicine, or power generation stemmed from this earlier research?

7 "Enriching Uranium," Manhattan Project National Historical Park, U.S. National Park Service, accessed December 2, 2025, https://www.nps.gov/mapr/learn/uranium.htm.

8 "Producing Plutonium." Manhattan Project National Historical Park, U.S. National Park Service, accessed December 2, 2025, https://www.nps.gov/mapr/learn/plutonium.htm.

9 "Developing the Atomic Weapons." Manhattan Project National Historical Park, U.S. National Park Service, accessed December 2, 2025, https://www.nps.gov/mapr/learn/atomic-weapons.htm.

10 "White Sands New Mexico: The National Park Service, the U.S. Army and the Atomic Bomb." U.S. National Park Service, accessed December 2, 2025, https://www.nps.gov/articles/whitesandsww2.htm.

11 "Timeline of the Atomic Bombings of Hiroshima and Nagasaki," Manhattan Project National Historical Park, U.S. National Park Service, accessed December 19, 2025, https://www.nps.gov/articles/000/the-atomic-bombings-of-hiroshima-and-nagasaki.htm.

12 Find links to these resources at the end of the article.

The B Reactor National Historic Landmark in Hanford, Washington, is the world's first full-scale plutonium production reactor and is administered by the U.S. Department of Energy and the National Park Service, 2018. NPS/Rebecca Wiles Burghart.

This poster depicts a woman factory worker in coverall jumpsuit with hair tied back assembling a part, 1943. United States Office of War Information, Courtesy of Northwestern University Libraries.

INNOVATING INFRASTRUCTURE: SUPPORT FOR AN EXPANDING WORKFORCE

The rise of industrial-scale war production during World War II required **innovation** not just in technology, but in how and where Americans lived, worked, and cared for their families. Millions of people moved from rural areas to cities or new military and industrial installations for jobs. During the war years, one in five Americans moved. Over sixteen million adults served in the armed forces.[13] On the home front, over six million women across the nation stepped into new jobs in factories, farms, hospitals, research facilities, and more, increasing the number of women in the labor force by more than 50 percent. Wartime jobs also sparked African American migration from the rural south into industrial cities in the North, Midwest, and West. Notably, many Black women left domestic labor for jobs in industry, seeking better pay and working conditions.[14]

These shifts required **innovation** to solve new social challenges: where could all these people live, and what would happen to their children while parents were at war or at work? Some places grew so rapidly that workers rented beds or rooms in shifts, a practice people called "hot beds," and a federal agency encouraged residents to "Share Your Home."[15] To address the shortages, the federal government and private developers carried out large-scale construction of both temporary and permanent emergency housing. The wartime expansion continues to **influence** many of today's suburban locations, community institutions, road patterns, and modern architecture.

With many parents entering the workforce and moving away from extended families, the war years also required **innovation** around the problem of childcare. The few existing providers had nowhere near the capacity to meet demand. In 1940, a new federal infrastructure law, the Lanham Act, devoted funding for a universal childcare program that states, cities, and companies used to set up affordable childcare centers. While the reach of the program was never truly universal, it served approximately 550,000 children in the United States' first large-scale experiment with workforce childcare.[16]

Private employers also saw a business case for providing childcare. Kaiser shipyards on the West Coast built large, specially designed, and professionally staffed childcare centers at the shipyards' entrances, and even a service to

13 Jeffries, *Mobilization*, 51.
14 Jeffries, *Mobilization*, 39-40, 60.
15 Jeffries, *Mobilization*, 53-56.
16 Ella Wagner, "Childcare on the World War II Home Front," U.S. National Park Service, accessed December 2, 2025, https://home.nps.gov/articles/000/childcare-on-the-world-war-ii-home-front.htm.

send hot meals home with women and their children at the end of the day. This approach was **innovative** because it recognized childcare as a structural barrier to women in the workforce that employers could address effectively on a company-wide rather than individual scale.[17] However, the end of Lanham Act funding and widespread layoffs of women meant that this system did not result in permanent **change** after the war.

Maritime Child Development Center Exhibit at the Rosie the Riveter WWII Home Front National Historical Park, 2013. NPS/Luther Bailey.

Similarly, the first widespread before- and after-school care programs for school-aged children date to the World War II era. In 1942, the Office of Education created the Extended School Services program. With seed funding from the government, local schools took on the primary responsibility of management, offering educational and enriching programs in their communities. Because so many of these programs were locally funded, unlike the childcare centers, they continued after the war.[18] Their influence is clear in the ways extended school programs enable parents to remain in the workforce today.

CONCLUSION

The examples of the contributions of children and youth on the home front, the development of the Manhattan Project, and wartime experiments with childcare for working and deployed parents show how World War II-era **innovation** stretched from the scale of individual creativity to nationwide military, scientific, governmental, and corporate experiments. Educators can use a variety of resources from the NPS parks and preservation programs to teach about the World War II home front, encourage their students to use primary sources to discover the unique experiences and contributions of their own communities, and reflect on individuals' roles as they explore **innovation** in history.

Paths for Student Inquiry

Students can research the social **innovations** and **impacts** of World War II through multiple lenses, turning to different kinds of primary sources:

- **Personal accounts**: Oral histories of women and children during World War II show how every person's experience was unique, and they had to be creative with limited resources to adapt to wartime **change**. For example, listen to interviews with Mary Mulcahy from Springfield, Massachusetts, or Mary Martin from Dayton, Ohio, to analyze how they experienced **innovation** on both industrial and social fronts.[19]
- **Community development**: Trace how an industrial or military center grew by exploring historic maps or dig into your own local archives.[20] Where were new workplaces, roads, housing, churches, and stores built? Were there **innovations** like new materials, transportation, or design ideas? How can you trace connections between World War II expansion and the infrastructure present today?
- **Policy**: The Lanham Act and Kaiser shipyard childcare centers were **innovative** for their time, but the availability of childcare shrank after the war. Why was the **influence** of this experiment limited? Trace debates over childcare and government roles from World War II onward.
- **Other sources**: What are other important "social **innovations**" in U.S. history, where neighborhoods, communities, institutions, or the nation have had to restructure aspects of daily life to accommodate **change**?

To access more theme resources, go to nhd.org/theme.

17 Tuttle 2007, 66-68.
18 Tuttle, *American Family*, 69-70.
19 Access Mary Mulcahy's interview here, npgallery.nps.gov/SPAR/AssetDetail/c2e766e9-858b-4703-874f-338c6922697b and Mary Martin's here, digitalgallery.bgsu.edu/exhibits/show/wwii_oral_histories/item/35562. Links to the oral history projects that contain their interviews can be found at the end of this article.
20 A great place to explore this question is at the Rosie the Riveter WWII Home Front National Historical Park; find information about the park here, nps.gov/rori/index.htm.

National Park Service and Partner Organization Home Front Resources

THE MANHATTAN PROJECT

"Manhattan Project"
National Park Service
nps.gov/mapr/learn/education/index.htm

"A Series of Lessons on Los Alamos, NM, WWII Heritage City"
National Park Service
nps.gov/articles/000/a-series-of-lessons-on-los-alamos-nm-wwii-heritage-city.htm

"A Series of Lessons on Oak Ridge, TN, WWII Heritage City"
National Park Service
nps.gov/articles/000/a-series-of-lessons-on-oak-ridge-tn-wwii-heritage-city.htm

"Tri-Cities, Washington Introduction: A series of lessons from the WWII Heritage Cities Lesson Collection"
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nps.gov/articles/000/tri-cities-washington-introduction-a-series-of-lessons-from-the-wwii-heritage-cities-lesson-collection.htm

PLACE-BASED RESOURCES

"Designated American World War II Heritage Cities"
National Park Service
nps.gov/subjects/worldwarii/world-war-ii-heritage-cities.htm

"Rosie the Riveter WWII Home Front National Historical Park"
National Park Service
nps.gov/rori/index.htm

"Visit WWII Parks"
National Park Service
nps.gov/subjects/worldwarii/visit.htm

"Untold WWII: From Pearl Harbor to the Atomic Bomb"
National Park Service
nps.gov/subjects/worldwarii/index.htm

"World War II Home Front Education Materials"
National Council on Public History
ncph.org/what-is-public-history/national-park-service-projects/world-war-ii-home-front-education-materials/

HISTORICAL STUDIES

"American World War II Home Front: Heritage City Criteria Essays" (2023)
National Park Service, National Council on Public History
irma.nps.gov/DataStore/DownloadFile/687970

"Japanese Americans in World War II" (2012)
National Park Service
irma.nps.gov/DataStore/DownloadFile/706556

"World War II and the American Home Front" (2007)
National Park Service
irma.nps.gov/DataStore/DownloadFile/638007

"World War II and the American Home Front, Volume II" (2025)
National Park Service
ncph.org/wp-content/uploads/2025/03/World-War-II-and-the-American-Home-Front-Volume-2.pdf

PARK & HERITAGE CITY ORAL HISTORIES

Guam: "Voices of Guåhan (Guam) Oral History Tour"
National Park Service
nps.gov/wapa/planyourvisit/voices-of-guahan.htm

Dayton, OH: "History 303 World War II Oral Histories"
Bowling Green State University
digitalgallery.bgsu.edu/collections/show/97

Dayton, OH: "Dayton and Miami Valley Oral History Project"
Wright State University
corescholar.libraries.wright.edu/history_oral_history/

Hanford, WA: "Hanford History Project"
Washington State University Tri-Cities
hanfordhistory.com/items/browse?collection=2

Oak Ridge, TN: "City Behind a Fence Interview"
Oak Ridge Public Library Digital Collections
oakridgetn.contentdm.oclc.org/digital/collection/p16107coll10/search/searchterm/city%20behind%20a%20fence/field/creato/mode/exact/conn/and

Springfield, MA: "Springfield Armory National Historic Site Oral History Collection"
National Park Service
npgallery.nps.gov/SPAR/SearchResults?collection=Springfield+Armory+Oral+History+Collection+%28SPAR+15458

Waterloo, IA: "Voices of Iowa"
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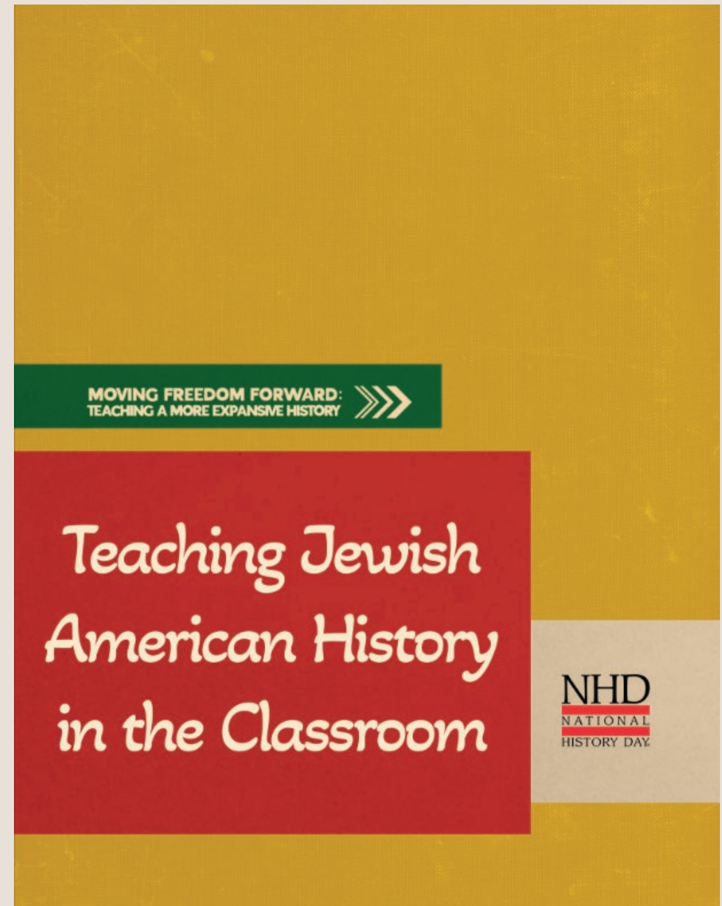

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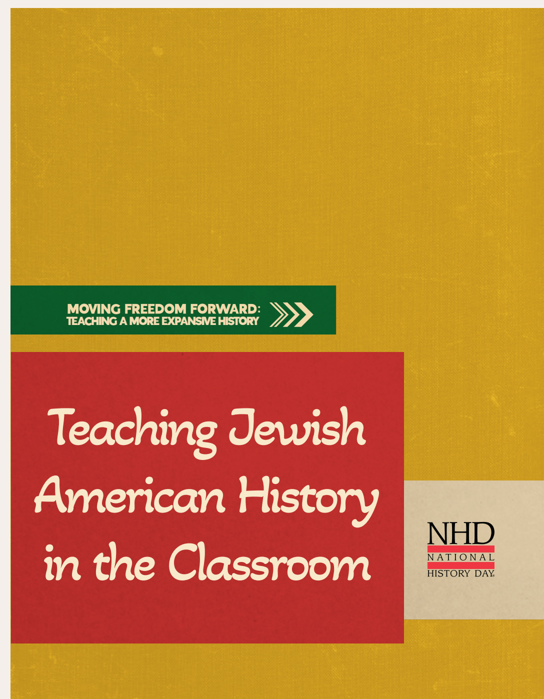
AMERICAN COMICS: A JEWISH HISTORY

JEREMY DAUBER, Ph.D., Atran Professor of Yiddish Language, Literature and Culture and Director Emeritus, Institute for Israel and Jewish Studies, Columbia University

We include this sample from National History Day®'s new resource on teaching Jewish American history because comics showcase **innovation** in storytelling and visual culture. A Jewish history of American comics demonstrates how creators used (new and existing) techniques, formats, and ideas—including experimentation with graphic design and serialized narratives—to **influence** society, reflect historical **change**, and **impact** popular understanding of the past.



To support educators and students, any terms highlighted in this article can be found in the glossary that accompanies this resource: **nhd.org/wp-content/uploads/2026/01/Glossary.pdf**.

Comics: a series of images put in sequence, usually mixing in some text, has a long history in the United States. Americans did not create this art form (scholars believe comics can be found in medieval European tapestries, Mayan codices, and even ancient Egyptian hieroglyphics), but the modern form of comics, ranging from superheroes to lengthy autobiographical stories, has been significantly influenced by their development in America. Throughout the different stages of comic history, Jews have been involved at every level, often playing crucial and foundational roles. This article will provide a brief overview of American comics, emphasizing the contributions of Jewish creators—one of the many influential roles American Jews have had in shaping American popular culture. And certainly one of the most fun.

Comics have been part of American culture since before the Revolutionary War. Benjamin Franklin even created a few, most famously the 1754 cartoon showing a snake cut into pieces to represent the colonies, with the caption "JOIN, or DIE." Comics grew in popularity around the turn of the twentieth century with the rise of affordable newspapers that carried national content.

Join, or Die, a 1754 political cartoon by Benjamin Franklin published in *The Pennsylvania Gazette* in Philadelphia, addresses the disunity of the thirteen colonies during the French and Indian War. Several decades later, the cartoon resurfaced as one of the most iconic symbols in support of the American Revolution. Wikimedia Commons.

One of the leading publishers, Joseph Pulitzer (a Jewish **immigrant** from Hungary), understood the importance of comics. Before this, comics mostly appeared in expensive, high-status weekly magazines. Pulitzer used comics to attract more readers to his newspapers. He also liked sensationalistic journalism (the "if it bleeds, it leads" style), which is surprising since today his name is linked to a major prize for excellence in journalism.

Pulitzer's publishing rival, William Randolph Hearst, also embraced comics. In 1895, Pulitzer's newspaper *The World* introduced *The Yellow Kid* by Richard F. Outcault, one of the first great comic strips. In the early decades of the new century, when nearly everyone read newspapers, it was impossible to grasp American life without considering the cartoons that tens of millions of readers enjoyed each day.

Being a newspaper cartoonist was a high-status, high-income job, and Jewish people were mostly excluded from that world. There were, however, some exceptions. Cartoonists like Milt Gross, who brought ethnic dialect to the comics page with works like *Nize Baby*,[1] and Rube Goldberg, whose cartoons of ridiculously complex machines became legendary, managed to break through. But they were rare, and their success proved the rule.

On the other hand, a side business that grew out of newspaper comics—collecting old cartoons and reprinting them in books—was low-status work. In other words, comic books started as reprints. It was not until the mid- to late-1930s that people began creating new stories for them. And it was in one of those comics, focused on the theme of "action," that the world changed.

In 1938, *Action Comics #1* introduced the character Superman, created by Jerry Siegel and Joe Shuster, marking the birth of the superhero genre. This new style of storytelling, focused on larger-than-life heroes, shaped the future of comic books and popular culture. Siegel and Shuster, young Jewish men from Cleveland, Ohio, created a hero who mixed pulp fiction and science fiction—a guy from outer space who came to Earth to fight for truth, justice, and the American way. After their idea was rejected by newspapers, they moved to sell it to a comic book company.

Superman became a massive hit and the superhero an icon, and started a wave of superheroes. The overwhelming majority of the creators behind these modern comic book pioneers were Jewish. Batman, Robin, the Joker, Captain America—their creators, Bob Kane (born Robert Kahn), Bill Finger (born Milton Finger), Jerry Robinson (born Sherrill David Robinson), Joe Simon (born Hymie Simon), and Jack Kirby (born Jacob Kurtzberg), were all Jewish. Some people say these heroes' alter egos were intentionally un-Jewish, as the creators tried to distance themselves from their Jewish identities.

Joe Shuster (seated) and Jerry Siegel at work on *Superman*, in their studio, in 1942. Wikimedia Commons.

Others believe these creators were simply trying to write stories that would appeal to a wide audience. However, one thing did seem more Jewish: many of their characters, including Superman and Captain America, opposed the Nazis early on, even before America entered the war, at a time when much of the country was still isolationist.

Another important Jewish creator from the time was Will Eisner, the son of a **Yiddish** theater set designer. Eisner played a key role in creating the "shop" system, which broke down comic book production into different assembly line steps, much like many immigrant-run shops in New York's garment district at the time. Along with his business perspective, Eisner viewed comics also as a medium for artistic expression. This led to his creation of innovative splash pages (one-panel covers) and new narrative techniques in his superhero comic, *The Spirit*.

After World War II, one company produced the most important and influential comics in the country for a time. EC Comics was founded as Educational Comics by Jewish publisher M.C. Gaines (who passed on Superman). After M.C. died in a boating accident, his son Bill took over and changed the "E" to "Entertaining." And entertaining they were—though for adults, not just the kids who loved superheroes

1 *Nize Baby* is a 1926 book that collected humorous retellings of classic stories like "Elledin witt de Wanderful Lemp" and "Jack witt de Binn Stuck," using a playful mix of Yiddish and English that would define much of his later work. For a collection of Gross's work, see *Is Diss a System?: A Milt Gross Comic Reader*, edited by Ari Y. Kelman (2010)

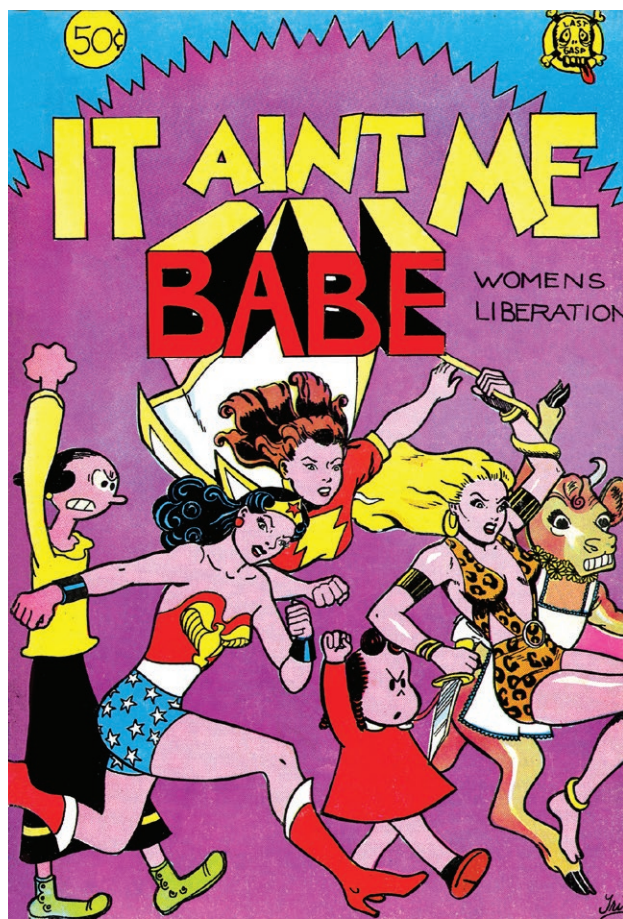
like Superman, Batman, and Captain America. EC's comics set the standard for several genres, including science fiction, war comics, and horror comics. Horror comics sparked a moral panic in the early 1950s. This led to a Senate subcommittee investigation into comic books and juvenile delinquency, where Gaines testified. He infamously noted that, for a comic book, a cover of theirs depicting a hand holding a severed human head was in "good taste"—after all, it could have had more blood dripping from it.

In use from 1954 until 2011, all comics that (voluntarily) carried this seal were approved by the Comics Code Authority. Under the code, almost all depictions of horror and violence were forbidden. The seal became a powerful symbol of the industry's self-censorship during a time of heightened concern over comic books' influence on youth. Toronto Metropolitan University.

The backlash nearly drove Gaines out of the comic book business, but he had the last laugh. The new industry rules did not apply to magazines, so he created *Mad*, a wildly successful magazine full of comics. *Mad* influenced a generation of counter-culturists, nonconformists, and even some conformists who appreciated a little silliness. The magazine also had a distinctly Jewish flavor, with Yiddish sounds and humor, like the "chicken fat" of Eastern European Jewish cuisine, as one artist described it.

Some of the kids who grew up reading *Mad*—about a generation later—helped change comics into *comix* (with an "x"). This small change in spelling highlights how different these new works were and the significant changes they brought to the medium. Comix were bold and challenged social norms. Jewish artists like a young Art Spiegelman, Aline Kominsky (later known as Aline Kominsky-Crumb), and Trina Robbins were at the forefront of this transformation. They expanded the possibilities of what comics could express. Often, their creations used strong language and addressed new themes. These themes included personal narratives (especially autobiographical ones) and political critiques, often directed at powerful institutions.

While Jews were not the only Baby Boomers involved in liberal movements within comix or elsewhere during the late 1960s, they played a significant role. This was especially true for Jewish women, who began to find ways to express themselves in a field that had long been closed off to them.



Cover of *It Aint [*sic*] Me Babe* Comix (1970), the first underground comic created entirely by women (and co-produced by Trina Robbins and Barbara "Willy" Mendes), featuring iconic female characters like Wonder Woman, Sheena, and Little Lulu raising their fists beneath the slogan "women's liberation." Grand Comics Database.

Even outside of underground comics, a new sense of adulthood (or at least maturity) was taking hold. College students were drawn to a new wave of superheroes who dealt with more adult issues, or at least very late teenage ones, compared to the science fiction adventures of the Justice League of America. Many of these characters came from the creative minds at Marvel Comics. Two of the most influential were Stan Lee (born Stanley Lieber) and Jack Kirby, who had co-created Captain America a generation earlier. Most of the superheroes that would later dominate movie theaters were created during this time, most by American Jews.

As the 1960s gave way to the 1970s, mainstream and independent comics began to converge more and more. Part of this shift was driven by the return of an old master—Will Eisner—who had spent years creating industrial comics for businesses. In 1978, Eisner released *A Contract With God*, a semi-autobiographical work that looked back on his youth in the Lower East Side. It showed the comics world that serious, artistic storytelling was not just for the younger countercultural crowd.

Eight years later, Art Spiegelman, who had long explored autobiography in his work, published the first volume of *Maus* in book form. The graphic memoir told the story of his father's experiences in the **Holocaust** and Spiegelman's own experience as the son of a survivor. *Maus* went on to win a special Pulitzer Prize. It remains one of the most powerful examples of how comics can address any subject—even the most serious.

In the two generations since *Maus* was published, the old anxieties about comics—that they are only for kids, socially harmful, or too slight to take seriously—have mostly faded. With the rise of the Internet and the increased diversity of creators across the country, comics have become more accessible to a wider range of people. As a result, Jews are no longer at the center of American comics in the way they once were. But that does not mean they have disappeared from the scene.

Jewish creators continue to play important roles in the field. Ben Katchor won a MacArthur "genius grant" for his surreal and nostalgic stories about Jewish life. Brian Michael Bendis, who was raised in a traditionally **Orthodox** Jewish home, has become one of the most prolific and respected superhero writers of the twenty-first century. J.T. Waldman reimagined the biblical Scroll of Esther in a style that recalls ancient illustrated manuscripts. And Barry Deutsch's *Hereville* series brings the folk traditions of Eastern European Jewish culture into the modern world, following a brave and clever girl named Mirka.[2]

The work of these creators, and many, many more, suggest that the story of American Jews and comics is far from over.

To access more theme resources, go to nhd.org/theme.

To access the full *Teaching Jewish American History* book, visit nhd.org/expansivehistory.

2 Jeremy Dauber, *American Comics: A History* (W. W. Norton & Company, 2022).

INNOVATION

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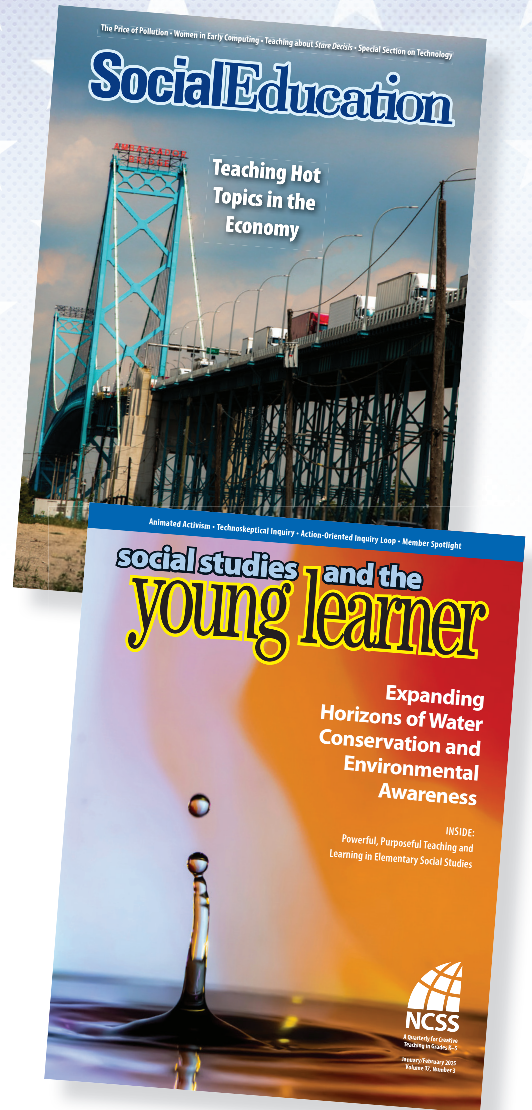

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INNOVATION AT WORK: FIGHTING FOR FAIR PAY AND SHORTER HOURS

JANINE GIORDANO DRAKE, Clinical Associate Professor, Department of History and Liaison to Advance College Project, Indiana University; Teaching Resources Committee, Labor and Working-Class History Association (LAWCHA)

For many people, the word **innovation** conjures images of fancy new technologies that we celebrate for compressing time and space. Transportation technologies such as canals, railroads, trollies, automobiles, and airplanes served to connect an expanding republic. They are often remembered for tightening the bonds of interdependence among the several regions of the sprawling nation. Similarly, we often praise technological **changes** in work processes and industrial management, such as factory assembly lines, for lowering the cost of production and the final prices of goods, making it possible for ordinary people to benefit from greater buying power. Yet, for the workers at the heart of the American manufacturing economy for most of the nineteenth and twentieth centuries, the **impact** of technological **innovation** has been more mixed.

New transportation and production technologies expanded markets and lowered costs, but they also increased competition, made many traditional skills obsolete, and pushed workers to develop new ways to fight the growing devaluation of their labor. Therefore, in order to study **innovation** in history, we must consider both the progress it brought and the challenges it created for workers.

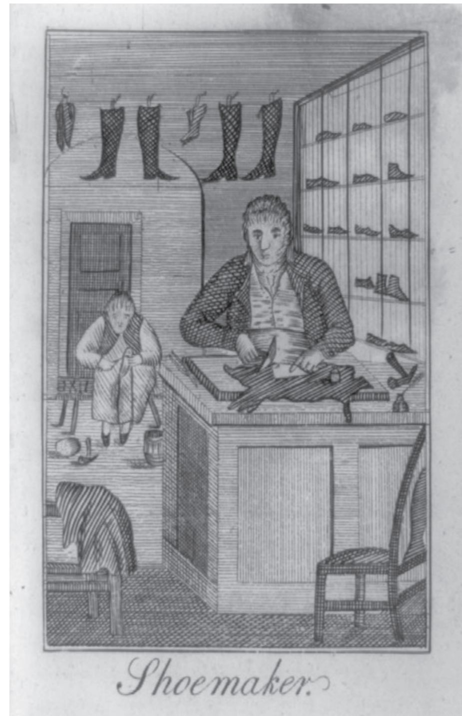
Workers in a room of the David Cummings & Company shoe factory stood, each in front of his workbench, around a worktable strewn with cuttings for leather shoe uppers. The Cummings factory building on Norton Street in South Berwick, Maine, was constructed about 1872. By the late 1800s, the mill employed 350 men and women who manufactured nearly 5,000 pairs of shoes per day. The factory later operated as the South Berwick Shoe, Inc., and, finally, as the Duchess Shoe Company. It closed in the early 1990s. Old Berwick Historical Society (MMN #101751).

FROM APPRENTICES TO WORKERS: HOW LABORERS RESPONDED TO EARLY INDUSTRIAL CHANGE

Workers' organizations in the United States are as old as the nation itself. New ideas and attitudes about social equality that arose in the Revolutionary Era coincided with a decline in the apprenticeship system. Apprenticeships usually provided training for young boys to become business owners. When a journeyman apprentice had finally "mastered" his craft, usually in his early twenties, he became a "master craftsman," opened his own shop, and joined a guild of highly skilled tradespeople. Yet by the second decade of the nineteenth century, many apprentices found that their likelihood of becoming master craftsmen was disappearing. Workshops were expanding into factories. Journeymen could no longer count on receiving a sizable plot of land and a few suits of clothes at the conclusion of their indentures.

In response to these **changes**, some artisans—such as blacksmiths, carpenters, and mechanics—formed trade unions. These groups worked to protect the value of their skills and to demand better wages and working conditions. As factories grew, workers also began to ask bigger questions about fairness and independence. As they held rallies and circulated their ideas in newspapers, craftspeople pointed out that it was fundamentally workers' labor that produced the profits which enabled workshops to expand into factories.[1]

Because many political rights were limited to landowners, wage workers pushed for **change** beyond the workplace. Through trade unions and groups like the Workingmen's Parties, they called for reforms such as shorter workdays, debt relief, and expanded voting rights. Workers also argued that their labor helped create the wealth that allowed factories to grow. In 1829, the Workingmen's Party of New York called for lawmakers to "give to every human being an equal amount of property" from the public domain.[2] The short-lived Equal Rights Party (also known as the "Locofocos") pushed for free trade.[3] By organizing together, these workers responded to the challenges of industrial **change**, showing that **innovation** not only transformed how people worked, but also how they fought for their rights.



From a book titled *The Book of Trades; or Library of the Useful Arts* (1807) by Jacob Johnson, an illustration of a shoemaker cutting out the upper leather of a shoe and a journeyman joining the upper leather to the sole of a shoe. Library of Congress (92500396).

WORKERS ORGANIZE: BUILDING ALLIANCES IN THE GILDED AGE

The acceleration of industrial production during the Civil War also accelerated the growth of waged labor. More Americans began working for wages instead of owning their own farms or businesses. Investors built mines, factories, and railroads, and many farmers took wage jobs to earn extra income. While wages could be negotiated, workers often faced low pay and unstable conditions.

Between 1861 and 1877, workers across many industries—including miners, railroad workers, carpetweavers, furniture makers, and roof tilers—continued forming trade unions. These groups helped workers organize and demand better wages and safer working conditions. Some unions used strikes, refusing to work until employers agreed to their demands. In January 1861, coal miners in Belleville, Illinois, launched strikes to prevent reductions in the price per ton of coal and to avoid wage theft.[4] African American washerwomen in Jacksonville, Mississippi, united to collectively bargain for better rates. As the washerwomen

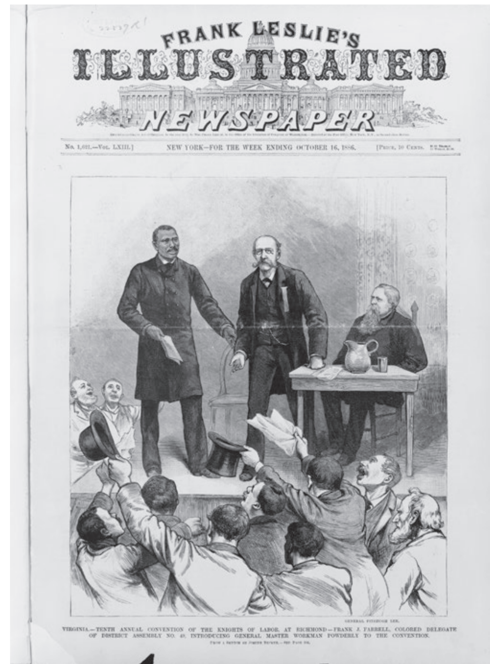
1 Sean Willentz, *Chants Democratic: New York City and the Rise of the American Working Class, 1788-1850* (Oxford University Press, 1984); Mark Lause, *Long Road to Harper's Ferry: The Rise of the First American Left* (Pluto Press, 2018).
2 Sean Griffin, *The Root and the Branch: Working Class Reform and Anti-Slavery, 1790-1860* (University of Pennsylvania Press, 2024), 62-64.
3 Griffin, *Root and Branch*, 73.
4 Rosemary Feurer, "Contesting the Insatiable Maw of Capital: Mine Workers' Struggles in the Civil War Era," *Civil War History*, 70:3 (2024): 17-42.

stated in their petition, "We do not wish in the least to charge exorbitant prices, but desire to be able to live comfortably if possible from the fruits of our labor."[5] So many workers demanded an eight-hour day as the fair condition for honest labor that President Ulysses Grant issued an executive order in 1868 that an eight-hour day was the legal length of the workday for all federal government workers and contractors.[6]

The Supreme Court ruled that neither an executive order nor a law passed by Congress had the power to limit the legal length of a workday in private industry.[7] By the late 1870s, laborers were widely celebrated in popular culture as the foundation of American prosperity, but the average length of the workday was closer to ten hours. Magazines like *Harper's Weekly* and *Frank Leslie's Illustrated Newspaper* represented workers sympathetically as they struggled against the unchecked power of large business conglomerates. Both major political parties tried to court workers with their platform statements. While some read this celebration of workers more as lip service than real respect, union leaders used this opportunity to **innovate** new strategies to **change** the terms under which workers sold their labor.

As industrial growth continued in the late 1800s, many workers faced low wages, long hours, and unsafe conditions. In response, the Knights of Labor grew into one of the largest labor organizations in the country after the Great Railroad Strike of 1877. Unlike many earlier unions, the Knights welcomed all workers who earned their living through labor, including those in factories, railroads, farms, and mines. By the mid-1880s, the group had more than 700,000 members across the nation. With such a large network, the Knights began to push for broad **changes**. They called for government regulation of railroads, an end to child and convict labor, and an eight-hour workday. They also supported cooperative ownership of businesses and greater access to land for working people.[8]

In 1886, a rally demanding the eight-hour day in Chicago's Haymarket Square erupted in violence, leading to the public hanging of the rally's organizers and the decline of the Knights as a national mouthpiece for workers. At the state level, however, individual Knights continued to combine with populists and socialists to demand public ownership of city trolley systems, heating and electricity distributors, and municipal water. Through local unions, they hoped to not only negotiate for better wages and working conditions but also draw attention to the role of workers in producing value for cities and states through farms, ranches and industry.[9]


FRANK LESLIE'S
ILLUSTRATED
NEWSPAPER

No. 1,621.—Vol. LXIII.] NEW YORK—FOR THE WEEK ENDING OCTOBER 16, 1886. [Price, 10 Cents.

VIRGINIA.—TENTH ANNUAL CONVENTION OF THE KNIGHTS OF LABOR, AT RICHMOND—FRANK J. FARRELL, COLORED DELEGATE OF DISTRICT ASSEMBLY NO. 49, INTRODUCING GENERAL MASTER WORKMAN POWDERLY TO THE CONVENTION.

The cover of *Frank Leslie's Illustrated Newspaper* from October 16, 1886, depicts Frank Farreel, a Black Knight, introducing Terence Powderly, the Grand Master of the Knights, at the local interracial assembly of the Knights of Labor in Richmond, Virginia. Library of Congress Prints and Photographs Division (LC-USZ62-120765).

While the Knights of Labor declined in national **influence** after the Haymarket Affair, the American Federation of Labor (AFL) emerged as a leader for uniting the interests of skilled craftspeople, particularly native-born and English-speaking immigrants in the urban North. The AFL championed the eight-hour day, opposed convict labor and child labor, pushed for better education for working people, and, above all else, united to protect the value of the artisanal skills required for manufacturing and construction.

When strikes during the Gilded Age often failed, workers looked for new ways to respond to the **changes** brought by industrial growth. They revived the idea of workingmen's parties to build a national alliance between farmers and laborers, hoping to gain more power through politics. Groups such as the Greenback Party, Greenback Labor Party, National Grange of the Order of Patrons of Husbandry, Farmers' Alliance, and the People's Party competed to shape this movement. Together, they pushed for **changes** to both working and business conditions. For example, the Omaha Platform called for shorter workdays, easier access to credit, graduated income taxes, and reforms to expand democracy. Although these parties won only a few elections, they

5 "First Collective Action of Black Women Workers," *Jackson Daily Clarion*, June 24, 1866, in *The Black Worker: A Documentary History from Colonial Times to the Present*, ed. Philip S. Foner and Ronald L. Lewis (Temple University Press, 1978-1984).

6 Edward McPherson, "President Grant's Order Respecting Wages of Labor, May 19, 1869," in *A Handbook of Politics for 1872* (Philip and Solomons, 1872), 70.

7 In *United States v. Martin* (1876), the Supreme Court held that the eight-hour directive did not override individual contracts for longer hours.

8 Henry George, *Progress and Poverty: An Inquiry into the Cause of Industrial Depressions, and of Increase of Want with Increase of Wealth* (Doubleday and McClure, 1879), 157-158.

9 Leon Fink, *Workingmen's Democracy: The Knights of Labor and American Politics* (University of Illinois Press, 1985).

influenced major political debates, showing how workers adapted to **innovation** by seeking **change** not just in the workplace, but in government as well.[10]

NEW IDEAS ABOUT EFFICIENCY CHALLENGE WORKERS

The rhythm of workers' lives, as well as the composition of the working classes, **changed** again in the early twentieth century. Employers who wanted to reduce their reliance on skilled craftspeople **innovated** new methods of industrial production that attempted to move completely away from skilled training outside the workplace. At the Ford Motor Company, for example, Henry Ford implemented ideas he learned from Frederick Winslow Taylor's *The Principles of Scientific Management* (1912) to make his factory less reliant upon the ingenuity of highly skilled machinists that commanded some of the highest wages among the working classes. Ford hired engineers to carefully observe and then subdivide the work of the machinists who built cars so that he could instead use an assembly line of semi-skilled workers, each assigned one small task. As Charlie Chaplin parodied this process in the film, *Modern Times* (1936), the work of a so-called "specialist" could be mind-numbingly boring.[11]

This illustration appeared in *Frank Leslie's Illustrated Newspaper* on December 31, 1887, and depicts a long line of African American families carrying bales of cotton in from the fields. Library of Congress Prints and Photographs Division (LC-USZ62-121658).

The rise of semi-skilled industrial jobs provided an opportunity for **innovative** union organizing. Factories quickly transitioned to large, diverse workplaces, filled with migrants from both the rural United States and overseas, with a particularly large group from Southern and Eastern Europe. Southern African Americans, who spent the previous several generations as sharecroppers and tenant farmers in the South, sought waged work in cities at an accelerating rate after 1900. A growing share of industrial workers were women and children, a fact that did not go unnoticed by middle-class women calling for social and legal equality. However, the men who led most trade unions—even the International Ladies' Garment Workers' Union—were often reluctant to organize women and girls, who were expected to leave paid work after marriage. Many also refused to see young women seamstresses as equal to the male tailors who had founded the union. In 1909, young Yiddish- and Italian-speaking women garment workers in New York City joined with the Women's Trade Union League to organize a massive strike known as the Uprising of the 20,000. These immigrant women marched alongside middle-class allies to demand better pay, shorter hours, and safer working conditions, including bathroom breaks and factory inspections. Their partnership turned the strike into a broader fight for women's rights, including equal pay, access to education, and a stronger voice in unions and the law. The strike also showed that workers could organize across ethnic lines and across an entire industry.

As industrial production skyrocketed during the First World War, the American Federation of Labor (AFL) expanded organizing campaigns to reach more workers in semi-skilled jobs, particularly immigrants, women, and African Americans. The number of strikes increased every year between 1914 and 1919, and the new War Industries Board policy of guaranteed arbitration helped many unions win concessions, including higher wages, shorter workdays, and official recognition of unions.[12] At the close of the war, steel production was both one of the largest industries in the country and one that had profited most from lucrative government contracts. However, the close of the war also led employers to harass workers for continuing the practice of organizing union meetings.[13]

In 1919, after several years of organizing iron and steel mills in fifty cities across ten states, more than 300,000 steelworkers went on strike to demand recognition of the Amalgamated Association of Iron, Steel and Tin Workers. Workers expected that President Woodrow Wilson would support their right to strike, as he had during wartime and in his 1916 campaign. However, as industrial production was no longer seen as a national security priority, Wilson remained silent. In response, employers worked to defeat the strike. At first, they ignored the striking workers. Later, they supported efforts like the "Interchurch World Movement," which portrayed companies like U.S. Steel as defenders of traditional values, while labeling unions as radical.[14] Employers also brought African American workers from the South to Northern mills as strikebreakers to keep production going. The failure of the Great Steel Strike of 1919 in early

10 Lawrence Goodwyn, *The Populist Moment: A Short History of the Agrarian Revolt in America* (Oxford, 1978).

11 Stephen Meyer, *The Five Dollar Day: Labor Management and Social Control in the Ford Motor Company, 1908-1921* (SUNY Press, 1981).

12 Joseph McCartin, *Labor's Great War: The Struggle for Industrial Democracy and the Origins of Modern American Labor Relations, 1912-1921* (Chapel Hill: University of North Carolina, 1998).

13 Meredith Tax, *The Rising of the Women: Feminist Solidarity and Class Conflict, 1880-1917* (Verso, 1980).

14 Eldon Ernst, *Moment of Truth for Protestant America: Interchurch Campaigns Following World War One* (American Academy of Religion, 1974).

1920 showed that new industrial systems required new organizing strategies. It was not enough to call a strike—workers also had to build broader support and rethink who could be part of a union.

Packinghouse workers processing meat in long assembly lines, 1892. Chicago Historical Society (ICHi-04076).

By 1908, shoemaking had become even more mechanized. In this factory, young women work side-by-side in long assembly lines. Library of Congress Prints and Photographs Division (2003654907).

THE GREAT DEPRESSION SPARKS NEW WAYS TO SUPPORT WORKERS

From 1929 through 1941, the Great Depression forced American workers to find new ways to organize and support one another. For example, in the Mississippi Delta, sharecroppers formed cooperatives that pooled resources like equipment and seeds to survive. In New York City, African American tenants organized rent strikes to protest poor housing and racist city planning.[15] Coalitions of unemployed workers staged public marches demanding relief, jobs, and housing. In 1930 alone, Unemployed Councils organized 107 protests in 47 cities.[16] These actions showed the growing pressure on the federal government to respond to workers' needs and **influenced changes** in public policy.

The Democratic Party of the early 1930s represented a coalition of diverse and sometimes competing interests. It included Northern wage earners, Southern plantation owners, and progressive Northern business owners. Franklin Delano Roosevelt's 1932 party platform included rights to collective bargaining, a limited workday, and safe working conditions. Roosevelt also wanted to **change** the way the federal government responded to workers facing unemployment, disability, and the loss of a breadwinner. In what he called a "New Deal," Roosevelt urged Congress to support the principles of "social insurance," the idea that those who could not support themselves ought to receive financial support from the federal government. **Influenced** by socialists, communists, and widespread labor strikes between 1932 and 1937, Roosevelt backed a national wage floor and reforms like the Fair Labor Standards Act of 1938. This law banned child labor, limited working hours, and ensured that even low-skill jobs paid enough for a worker to support a family.[17]

Roosevelt's New Deal and related labor laws helped millions of industrial workers join the middle class. Many could now afford homes, cars, pensions, and healthcare. But these protections did not extend to all workers. Agriculture, education, healthcare, and private home workers were largely excluded, reflecting the **influence** of Southern planters. Over time, private employers and city governments exploited these gaps, cutting benefits and outsourcing work, and some unions lost battles simply because their jobs disappeared. Through these struggles, the Depression showed that **innovation** in work and labor policy was not just about technology or efficiency—it was also about finding new ways to organize, negotiate, and protect workers' rights in a rapidly **changing** economy.[18]

15 Mark Naison, *Communists in Harlem During the Depression* (Grove Press, 1984).

16 The Mapping American Social Movements Project offers teachers and students free interactive maps showing the historical geography of labor movements, civil rights movements, women's movements, and more; see, "Mapping American Social Movements Project," https://depts.washington.edu/moves/unemployed_map.shtml

17 William Leuchtenburg, *Franklin Roosevelt and the New Deal: 1932-1940* (Harper Perennial, 2009).

18 Jesse Chanin, *Building Power, Breaking Power: The United Teachers of New Orleans, 1965-2008* (UNC Press, 2024); Gabriel Winant, *The Next Shift: The Fall of Industry and the Rise of Health Care in Rust Belt America* (Harvard University Press, 2021).

Auto workers in Flint, Michigan, 1937, stage a strike wherein they sit down on the job and do not work until the employer is willing to bargain, 1937. Wikimedia Commons.

Employees of Woolworth's holding a sign indicating they are striking for a 40-hour work week, 1937.Library of Congress Prints and Photographs Division (LC-USZ62-124545).

WHY LABOR HISTORY MATTERS FOR UNDERSTANDING INNOVATION

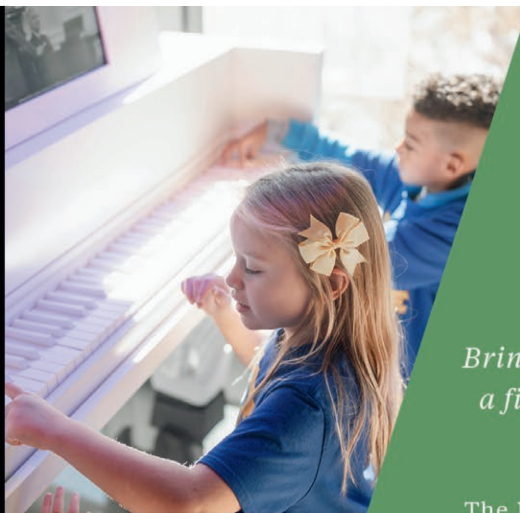
The steady decline in industrial manufacturing in the United States over the last 50 years has **impacted** the shape of labor and working-class organizing. Many workers in the United States continue to labor in mines, fields, and factories, usually at an intense pace and alongside precisely engineered robots. Others labor within schools, hospitals, medical clinics, office buildings, public services, retail, warehouses, customer service, or construction. Some members of the working classes, including plumbers, electricians, computer technicians, auto mechanics, and nurses, require years of training to perform their highly skilled labor. Others gain their training on the job. Some workers enjoy relatively higher wages because of the benefit of unions, and others benefit from the relative scarcity of their skills or the social prestige associated with their work.

Innovation is more than new machines or technologies. The **impacts** of **innovations change** the way people work and live. Looking at the history of U.S. labor movements shows how workers responded to those **changes**, fought for fair wages, safer conditions, and political power, and shaped laws and society in the process. By studying these struggles, we see that **innovation** is not just about ideas or tools—it's about how people adapt, resist, and create new ways to protect their lives and communities.

Suggested Project Topics

- American Federation of Labor (AFL)
- The Birth of the "Living Wage"
- The Great Railroad Strike of 1877
- The Great Steel Strike of 1919-1920
- Haymarket Affair (1886)
- International Ladies Garment Workers Union
- The Knights of Labor
- National Labor Relations Act of 1935
- Women's Trade Union League and the Uprising of the 20,000

To access more theme resources, go to nhd.org/theme.



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IDEAS THAT SOARED: ARMY INNOVATIONS AND THEIR LASTING LEGACIES

ELIZABETH L. MAURER, Chief, Programs & Education and Visitor Services, National Museum of the United States Army

INTRODUCTION

National History Day® (NHD) invites students to explore a theme that connects the past to the present. The 2027 theme—*Innovation in History: Impact, Influence, and Change*—asks us to consider how new ideas, inventions, and processes have solved problems and shaped the world.

Innovation often begins as a response to a problem. Throughout history, the U.S. Army has been called upon to solve many problems. While challenges remained similar from conflict to conflict—mobilization, technological gaps, and information needs—present circumstances called for new approaches each time. This prompted the Army to become a learning organization, ready to adapt to new situations.

To meet these challenges, Soldiers, civilians, and scientists engineered solutions whose outcomes would impact not only the Army but also the entire world.

Why Capitalize "Soldiers?"

The word "soldier" is not generally capitalized as a common noun, but the U.S. Army capitalizes it when referring to its own members. Capitalizing the term denotes respect and importance, and is a practice established by Army leadership. This article was written by an NHD partner at the National Museum of the United States Army, so you'll see the term capitalized here! Other branches of the U.S. Military follow a similar practice, capitalizing terms like "Marine," "Airman," or "Sailor" in internal documents.

This article looks at three Army technological advancements: rockets, computers, and flight. In each case, it will explore the advancement through a framework of **innovation**. It will pose questions related to each of the sub-parts of the theme:

- **Impact:** What happened right away?
- **Influence:** Who copied or built upon this idea?
- **Change:** How did this make the world different in the long run?

Rockets, computers, and flight revolutionized our lives. Each of these Army **innovations** responded to an urgent, unmet need. Teams of people proposed solutions, refined and expanded the answers, and produced results that spread far beyond the Army. Today, these breakthroughs are embedded in everyday life. Navigation using the Global Positioning System (GPS), smartphones, and global air travel all arose from Army ingenuity. These stories show that when faced with challenges, Soldiers changed the world.

ROCKETS AND SPACE TRAVEL

When you think of space exploration, you might imagine astronauts floating in zero gravity or rockets blasting off into the atmosphere. But did you know the U.S. Army helped launch America into space?

The Space Age dawned in 1957 when the Soviet Union launched its *Sputnik* satellite. This was a wake-up call for the United States. The U.S. Army had explored rocket technology for decades, starting in World War II. During that war, German V-2 rockets demonstrated the power and potential of guided missiles. The U.S. Army wanted to achieve these same capabilities and they knew that having rockets capable of sending their payloads farther and faster would change the battlefield.

After World War II, the Army accelerated its rocket program.[1] Under Operation Paperclip, the Army studied captured V-2

1 "Early Army Space Innovation," National Museum of the U.S. Army, accessed December 15, 2025, https://www.thenmusa.org/articles/early-army-space-innovation/.

rockets and brought German scientists and engineers to the U.S. These experts, including Wernher von Braun, joined the Army Ballistic Missile Agency at Alabama's Redstone Arsenal. There, they worked on improving rocket propulsion and guidance systems. Their early designs drew on lessons learned from the German V-2 rocket.

The Cold War made rocket research even more urgent. In January 1958, the Army's research paid off. *Explorer 1*, America's first satellite, successfully reached orbit aboard a modified Redstone rocket. Building on the technology, the Army developed tactical nuclear weapons such as the HONEST JOHN rocket and the portable Davy Crockett system.[2] The Army designed these weapons to warn the Soviets against launching a first strike. Missiles could deliver nuclear warheads over long distances, ensuring strategic superiority.[3]

Juno I, a slightly modified Jupiter-C launch vehicle, shortly before the January 31, 1958, launch of America's first satellite, *Explorer I*. The Jupiter-C, developed by Dr. Wernher von Braun and the rocket team at Redstone Arsenal in Huntsville, Alabama, consisted of a modified version of the Redstone rocket's first stage and two upper stages of clustered Baby Sergeant rockets developed by the Jet Propulsion Laboratory. NASA.

These weapons reflected the era's "what if?" mindset: what if an attack came, what if nuclear war erupted? Army technology advanced both science and military needs. It shaped a world where space exploration and nuclear deterrence were two sides of the same coin.

Rockets developed by the U.S. Army had more than a technological **impact**. They were a statement that the United States could compete in space. At first, the rocket program aimed to strengthen U.S. defense and deter future threats. Its success showed the Army's ability to **innovate** under pressure and proved that large-scale space missions were achievable, blasting the U.S. into the Space Race.

In 1960, the Army's rocket program transitioned to NASA, the newly created civilian space agency. The Redstone technology helped engineers develop the Saturn rockets that carried astronauts during the Apollo missions to the Moon. Army research also advanced solar cell technology, which continues to power satellites today. What began as a military project to strengthen national defense ultimately **changed** how people live on Earth. Satellites now guide Global Positioning Systems (GPS), predict weather, and connect people across the globe. Smartphones and global communications owe their existence to Army **innovations** from the early Cold War.

The HONEST JOHN was a simple, free-flight rocket capable of delivering a nuclear warhead. This highly mobile system was designed to fire like conventional artillery in battlefield areas. The Basic (M31) HONEST JOHN system was first deployed in 1954. It was replaced by the Improved (M50) HONEST JOHN in 1961, which reduced the system's weight, shortened its length, and increased its range. United States Army Photo.

Think About It:

- How did Cold War fears **influence** Army investment in rocket technology?
- Why did the Army develop both space rockets and tactical nuclear weapons?
- How has space **innovation**, originally for defense, changed people's lives today?

2 "Davy Crockett, Curator's Corner, Ep. 04, U.S. Army Museum," posted December 8, 2023, by National Museum of the United States Army, YouTube 4 min., 9 sec., https://www.youtube.com/watch?v=HXyykAZFs5o.

3 "The Army and the Cold War," National Museum of the U.S. Army, accessed December 15, 2025, https://www.thenmusa.org/articles/the-army-and-the-cold-war/.

THE BIRTH OF COMPUTING

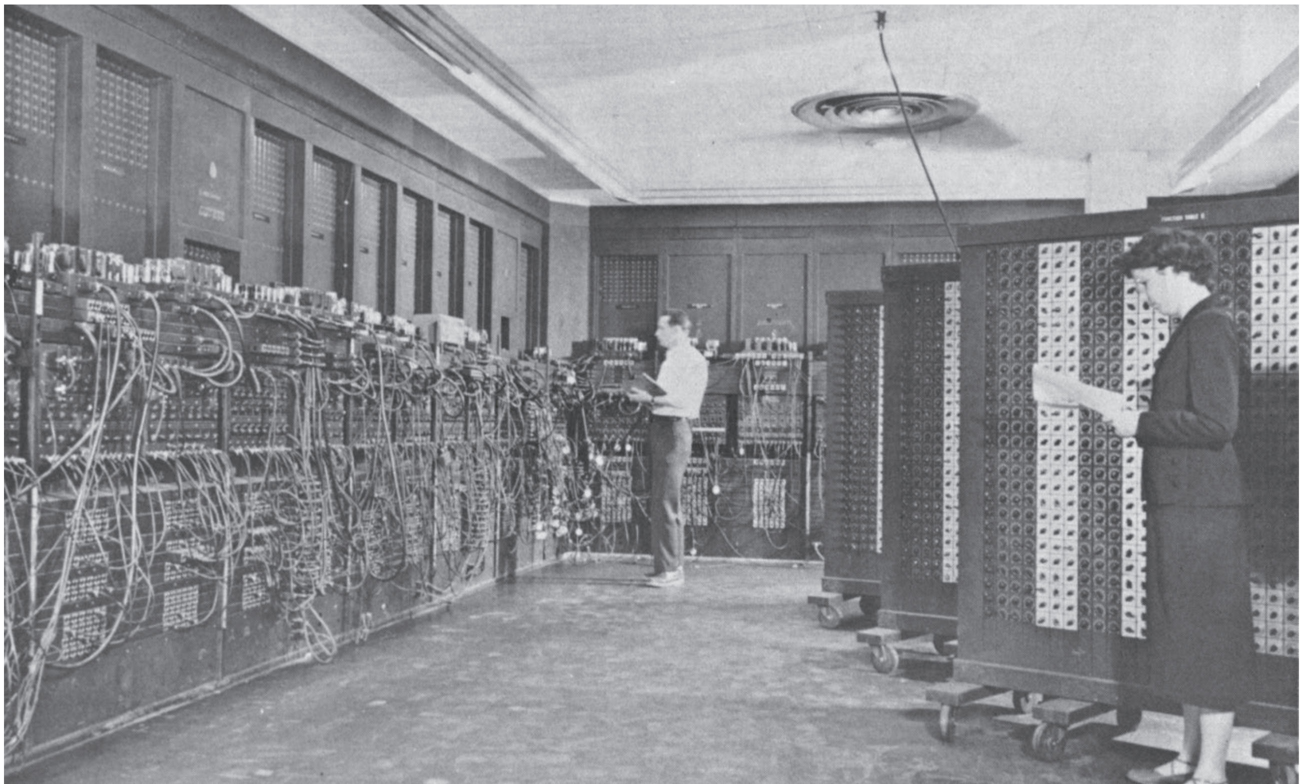
Imagine performing thousands of mathematical calculations on paper. During World War II, Army Ordnance workers called "computers" did this every day.

After the 1941 bombing of Pearl Harbor, the U.S. Army and American society mobilized for war overnight.[4] Everyone wanted to win the war as fast as possible. The Army hired thousands of workers to support the war effort. One area where it sought to help was in the setup of new weapon systems. Soldiers needed guidelines for each new system to properly aim at enemy targets.[5]

Aiming and firing artillery took a lot of math. Conditions like distance, elevation, wind, and temperature affect how projectiles travel. To adjust gun settings, Soldiers used firing tables, a set of pre-calculated numbers that provide instructions on how to aim artillery pieces under different conditions. The Army recruited hundreds of women to work as "computers" and calculate these tables. It would take about 20 hours for a human computer to calculate one 60-second trajectory. With six or more requests every day, even with hundreds of workers, the demand was overwhelming. The Army needed to **innovate** and find a faster way to win the war.

To solve this problem, the Army turned to its Ballistic Research Laboratory. Captain Paul Gillion led a team of engineers, mathematicians, and scientists in developing an all-electronic calculating machine. The finished machine, known as the Electronic Numerical Integrator and Computer (ENIAC), filled a large room. Its 18,000 vacuum tubes consumed enough electricity to dim lights across Philadelphia. ENIAC promised to solve complex equations at an unimaginable speed.

ENIAC performed calculations by routing electrical pulses through connected circuits. A web of cables connected electronic adding machines and other units. Mathematicians entered equations onto punch cards, which stored numbers in binary code. ENIAC translated into electrical pulses that moved across ring counters. Each pulse activated numbers on the counters, working like the wheels of a mechanical adding machine. By counting pulses, ENIAC could add, subtract, multiply, and divide at electronic speed. Creating



Two people (Left: Glen Beck, Right: Frances Elizabeth "Betty" Snyder Holberton) stand beside ENIAC, one of the world's first electronic computers, inside the room where its massive panels and wiring once filled an entire space. United States Army Photo, from K. Kempf, *Electronic Computers Within the Ordnance Corps*.

4 "The Attack on Pearl Harbor," National Museum of the U.S. Army, accessed December 15, 2025, https://www.thenmusa.org/articles/attack-on-pearl-harbor/.

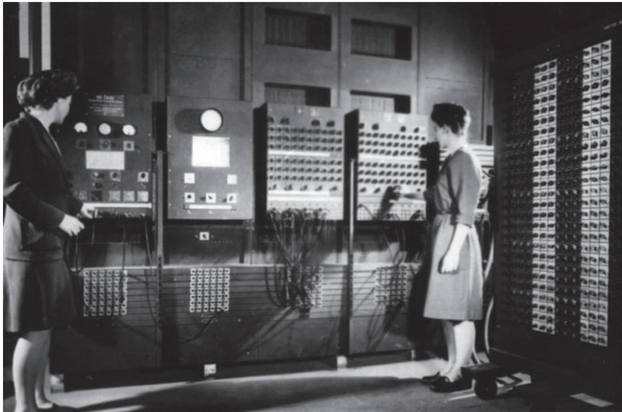
5 "The Accomplishment of the ENIAC and the Women Computing Pioneers, U.S. Army Museum," posted December 15, 2023, by the National Museum of the United States Army, YouTube, 46 min., 39 sec., https://www.youtube.com/watch?v=DljI9cs_9mU.

the technology to do electronic calculating was only half the battle; developing protocols and practices for operating ENIAC was another.

ENIAC's engineers handed it over to six members of the Army's human computer pool. Mathematicians Kay McNulty, Betty Jennings, Betty Snyder, Marlyn Meltzer, Fran Bilas, and Ruth Lichterman embraced the challenge.[6] At a time when women had few career options, Kay McNulty remembered being eager to join the project. She recalled, "They announced . . . that anybody that would want to work on this new machine called the ENIAC to come . . . anybody could apply. Well, I never had any idea what it was but I knew it wasn't pushing a Monroe calculator."[7]

While McNulty and her colleagues would eventually program ENIAC to solve equations for trajectories, weather prediction, and atomic energy, they first had to learn how the machine worked.

The engineers who built ENIAC did not write an instruction manual. Betty Jennings explained afterwards, "There were no manuals, no instructions. We had to figure out how to make this machine work by studying its wiring diagrams and experimenting." Kay McNulty agreed, adding, "We worked our way through these things to find out what every tube would do."[8] As they experimented, these **innovative** programmers built logic sequences, developed shortcuts, and wrote the very first programs. They transformed ENIAC from a collection of machines into a working computer. Once their programming was complete, they reduced the time to compute a firing table trajectory from 20 hours to 30 seconds. This leap in capability not only **impacted** military operations but also the future of technology.



Two women operating the ENIAC's main control panel while the machine was still located at the Moore School. United States Army Photo, from the archives of the ARL Technical Library.

In 1946, engineers completed ENIAC, making it the world's first electronic, general-purpose computer. Although it was not put to use during World War II, its **impact** was far-ranging. Universities, businesses, and governments began building computers. The women who programmed ENIAC, whose technological and historical contributions are often overlooked, were true pioneers of computer science. Their work laid the foundation for programming languages and software development. Today, computers are everywhere, from smartphones to space probes. ENIAC's legacy is the digital world we live in.

Think About It:

- Why did the Army invest in an electronic solution rather than expanding the capabilities of human computing alone?
- How did the work of ENIAC's programmers influence future technology?
- How does ENIAC's legacy connect to the way we live and work in a digital world?

FLIGHT AS A STRATEGIC ADVANTAGE

The dream of flight is as old as humanity. In 1903, the Wright brothers solved "the problem of flight." A few years later, the Army helped turn that dream into a practical reality.

Why was the U.S. Army interested in flight? The Army saw its potential to improve information gathering and communication. During the Civil War, Union forces sent Soldiers up in balloons to keep an eye on enemy positions from above.[9] Heavier-than-air flying machines promised even greater mobility. A significant **innovation** in controlled flight would give the Army a tactical advantage in future wars.

Experiments in heavier-than-air flight made this idea seem possible. Inventors like Otto Lilienthal proved gliders could work, and Samuel Langley's Aerodrome No. 5 flew successfully in 1896. Encouraged, the Army funded Langley's effort to build a manned aircraft. Unfortunately, Langley's Aerodrome crashed spectacularly into the Potomac River in 1903. Disappointment soured the Army's enthusiasm for aviation. Still, these **influential** trials demonstrated how flight could become a powerful military tool and paved the way for the Army's partnership with the Wright brothers. Their success would transform aviation into a core piece of military strategy.

6 "ENIAC," National Museum of the U.S. Army, accessed December 15, 2025, https://www.thenmusa.org/armyinnovations/innovationeniaccomputer/.

7 "ENIAC Programmers: Kathleen McNulty Mauchly Antonelli, Jean Jennings Bartik, Frances Snyder Holberton, Marlyn Wescoff Meltzer, Frances Bilas Spence, and Ruth Lichterman Teitelbaum." WITI Hall of Fame, accessed December 15, 2025, https://www.witi.com/halloffame/298369/ENIAC-Programmers-Kathleen-McNulty/.

8 ENIAC Programmers.

9 Christopher R. Gabel, "The 'Infernal' Balloon: Union Aeronautics during the American Civil War," *Army History*, no. 93 (Winter 2015): 6-15.

While the Army was watching Langley's failures, two brothers from Ohio quietly changed everything. Orville and Wilbur Wright solved the problems of lift, propulsion, and control, making the first powered flight at Kitty Hawk, North Carolina, in 1903. In 1905, Wilbur Wright wrote to the Army, offering to sell the Wright Flyer. Leaders, still skeptical after Langley's crashes, dismissed the idea. Undeterred, the Wrights traveled to Europe to sell their machine. They demonstrated their Flyer in France in 1908, impressing foreign militaries and proving its value. Their success caught the Army's attention. Army officers stationed abroad watched the demonstrations and sent back enthusiastic reports to Washington. These observed achievements had a significant **impact** and prompted the Army to reconsider powered flight.

In 1908, the Army issued Specification No. 486, a detailed request for a heavier-than-air machine, worded with the Wright Flyer in mind.[10] The aircraft had to carry two people, fly at least 40 miles per hour, stay airborne for an hour, and land safely in an open field. During trials at Fort Myer, Virginia, the Wright brothers met every requirement. In 1909, the Army purchased its first airplane, the Wright Model A, the world's first military aircraft.

The Wright brothers test fly their aircraft on Fort Myer's parade field. This series of test flights resulted in the Army purchasing its first aircraft. In the first flight, Sept. 9, 1908, Orville Wright kept the plane aloft 71 seconds. National Archives and Records Administration (6641435).

The Wright Brothers at Ft. Myer - July 30, 1909 by artist John McCoy depicts The Wright brothers and Army Signal Corps soldiers completing their final tests of the Wright Military Flyer at Fort Myer, Virginia, July 30, 1909. U.S. Air Force Art Collection (840101-F-ZZ999-770D.JPG).

The Army launched flight training at College Park, Maryland, where early pilots like Lieutenant Frank Lahm and Lieutenant. Benjamin Foulois learned to fly. Foulois joked that he trained "by correspondence," receiving instructions from Wilbur Wright through the mail. Lahm recalled, "No question . . . however unimportant it might seem, failed to have careful consideration and a well-thought-out answer."[11] These pioneers laid the foundation for military aviation.

Soon, companies like Curtiss entered the market, sparking competition for Army contracts and rapid advances in aircraft design. This early rivalry marked the beginning of an aviation arms race that would shape future conflicts. Over the next decades, Army aviation evolved in its function, **changing** from observation to combat roles. During World War I, airplanes dropped bombs, photographed enemy positions, and strafed trenches. After the war, the Army invested in technologies such as high-octane fuel, automatic pilots, and improved engines, advances that shaped both military and civilian aviation. By the 1940s, a significant **change** had happened: the Army had made flight central to warfare.

From Civil War reconnaissance balloons to powered flight to today's drone technology, Army aviation has evolved through constant **innovation**. Each breakthrough answered new tactical challenges. Other nations quickly adopted these ideas, **influencing** global strategy and fueling civilian aviation.

Today, flight shapes almost every part of life. Airplanes make it possible to travel across the world in hours, bringing families together and connecting cultures. They deliver

10 Roger G. Miller, "Signal Corps No. 1: Purchasing and Supporting the Army's First Airplane," *Air Power History*, Fall 1994.

11 Jacek Domański, "2 August 1909 – the world's first military aeroplane," *Afterburner*, August 1, 2024, https://afterburner.com.pl/2-august-1909-the-worlds-first-military-aircraft/.

food and medicine to disaster zones and carry goods that keep businesses running. Aviation has made daily life easier. What began as an Army experiment is now a technology that moves the world.

Think About It:

- How have Army aviation and airborne tactics changed the way wars are fought?
- How was civilian air travel influenced by military **innovations** in flight?
- How did Army advances in flight, from balloons and Wright Flyers to today's drone technology, **change** global society?

CONCLUSION

Innovation is more than invention. It is a journey that begins with a problem and ends by reshaping life. Army **innovations** in rockets, computing, and flight started as urgent solutions during wartime, but grew into forces that **changed** society. From satellites guiding GPS to computers powering the digital age to aircraft enabling global travel, these breakthroughs show how ideas born on the battlefield reach out to **influence** the world beyond. They remind us that creativity and risk can change not only how wars are fought, but also how people live, work, and connect today.

As you begin your National History Day project, think about the connections between the past and the present. How do the **innovations** you study continue to **influence** your world? What lessons can you draw about creativity, risk, and change? Your research can uncover not only what happened, but also why it mattered—and how it still matters today. **Innovation** begins with a question. What question will your project answer?

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NATIONAL HISTORY DAY® LEGACIES: THE PERSONAL AND PROFESSIONAL IMPACT OF NHD

AMANDA MORRISON, National History Day Alum

Each year, over 500,000 students participate in National History Day® (NHD) worldwide. While some students go on to become historians or museum professionals, many students apply the research and writing skills they learned from NHD to the fields of medicine, business, education, theater, music, and more. Whether students created a documentary, website, paper, performance, or exhibit, they continue to use historical inquiry skills in their educational and professional pursuits today. Meet five NHD alums who credit NHD with their success across different disciplines.

DONA MAIFALA

Communications Manager, Office of the Governor of American Samoa

NHD alum and Communications Manager Dona Maifala, 2025. Courtesy of Dona Maifala.

Public service has always been Dona Maifala's passion, but if you knew him as an NHD student, you might think his passion was theater. In 2010, under the theme *Innovation in History: Impact and Change*, Maifala's group performance explored the history and impact of Broadway musicals.

Maifala loved representing American Samoa at the NHD National Contest and meeting students from so many corners of the world. He credits National History Day with laying the foundation for his current work as a Communications Manager for the Governor of American Samoa. He shares, "I still rely on many skills I gained from NHD, including the ability to conduct thorough research, speak confidently in public, and address real issues affecting our communities. These skills have been essential throughout my career in leadership and public service."

In addition to serving his Samoan community through government, Maifala has stayed involved with NHD by mentoring students over the past few years. He loves encouraging students because "learning to analyze historical events and understand their long-term impact continues to inspire my work in public service, especially as I help make decisions that affect the future of our people." He wants the next generation of student historians to "take full advantage of this opportunity to study a topic you truly care about. There is so much we can learn from history, and the lessons you discover now may influence your life and passions in ways you don't expect."

KAYLE MCCORMICK

Middle School Science Teacher

NHD alum and middle school teacher Kayle Lauck, 2025. Courtesy of Kayle McCormick.

South Dakotan Kayle McCormick's NHD teacher in middle school helped her gain confidence in her personal and professional goals. So much so that McCormick is now a middle school teacher herself, so her "students can have the same opportunities I had." McCormick remembers visiting her state's archives as a sixth-grade student and being excited to be surrounded by so much history. "The archivists were so encouraging and inspired me to think about what it could mean to be a historian," she says.

Six years later in 2021, the NHD theme was *Communication in History: The Key to Understanding*, and McCormick's paper that year—her fourth year participating—explored Indian Residential Schools' impact on Native American children. Now, McCormick teaches at the Maȟpíya Lúta Winyan Wakan Owayawa on the Pine Ridge Reservation in South Dakota, a small rural school and former Native American boarding school. The school where she teaches plays an active role in righting historical wrongs through incorporating Lakota culture into the classroom and supporting a Lakota language immersion classroom model for elementary students. Even more impactful, McCormick's great-grandmother attended the same school where she teaches.

That visit to the South Dakota State Archives over a decade ago cemented McCormick's future as a historian. Once she completes her time teaching with AmeriCorps, she looks forward to pursuing a joint J.D. and Ph.D. in History. Her advice for the NHD students she now teaches? "Don't shy away from projects that are right in your backyard. You, as a student researcher, can be a part of writing history."

DR. JA'CORIE MAXWELL

Instructor at the University of Oklahoma

NHD alum and university instructor Dr. Ja'Corie Maxwell, 2025. Courtesy of Ja'Corie Maxwell.

NHD exhibit and paper student Ja'Corie Maxwell knows a thing or two about research and asking the hard questions. Maxwell currently serves as a faculty member in the Jeannine Rainbolt College of Education at the University of Oklahoma. Previously, he taught high school science, and before that, he was a six-time National History Day competitor who studied diverse topics like the impact of mathematician and scientist Benjamin Banneker and the legacy of the Ku Klux Klan.

Maxwell still remembers what it felt like to participate in NHD for the first time—and take his group exhibit all the way to the National Contest in 2010. "Our school hadn't had any national qualifiers in quite some time," he explains, "so when our names were called, it felt electric. We had poured ourselves into that project and realizing that our work had earned a place on the national stage was surreal. It was one of those moments where our hard work, collaboration, late-night research, and nerves all suddenly felt worth it."

Now, Maxwell's late night research focuses on the experiences of Black students in educational spaces, curriculum studies, and educational equity. His advice for current NHD students is to "find ways to connect your personal interests to the year's theme and to the historical narratives you're exploring. When you care about your topic, the research stops feeling like a chore and starts becoming a genuine adventure. Lean into your curiosity, follow your questions, and let your interests guide you."

MURPHY KING

Historian and Student at Oxford University

NHD alum and historian Murphy King, 2025. Courtesy of Murphy King.

Although button trading was a memorable part of their experience representing Wisconsin at the NHD National Contest in 2013 and 2014, Murphy King says the most impactful part was "sharing my research with my peers from across the country." After studying Rachel Carson and the impact of widespread pesticide use, as well as Karl Landsteiner and the discovery of blood groups' impact on the history of medicine, it is no surprise that King found their way to Oxford University to study the history of science, medicine, and technology.

At Oxford, King says, "I use NHD skills every day. Analyzing and contextualizing primary source documents, being prepared to make historical arguments, and engaging presentist narratives are skills I learned in 2013 and 2014 that drive my passions today." While studying for his Master's degree at Oxford, King has still found time to give back to the NHD community by facilitating documentary rooms at local and state contests in Wisconsin and even judging at the NHD National Contest in 2025. He hopes to return to the United States to pursue a law degree and re-engage with judging and mentoring for National History Day while practicing civil rights law.

King encourages students to keep studying history: "In a time period of massive socio-political change and upheaval, historical literacy is one of the most valuable tools we have. There is so little in our lives that is unprecedented, and building community through NHD, both past and present, offers an unparalleled opportunity."

SIMONNE THIBEAULT

Marine Biology Student and Policy Advocate

NHD alum and Marine Biology student, Simonne Thibeault. Courtesy of Simonne Thibeault.

As Connecticut native Simonne Thibeault cartwheeled across the stage to receive a medal at the 2025 NHD National Contest, she was overwhelmed with gratitude for all she had experienced thanks to National History Day. After placing third in the nation in Group Exhibit, Thibeault says she "walked off of that stage knowing National History Day is the reason I am the person I am today."

NHD means so much to Thibeault that she missed her high school graduation to attend the 2025 National Contest. After participating in NHD for seven years—every year of middle and high school—it felt like the natural choice. Her projects spanned topics such as Mark Twain's views on imperialism, the pioneering British naval vessel the *H.M.S. Challenger*, and the environmental movement. One thing all of these diverse projects had in common was the personal joy it brought her to connect with friends over a shared passion for history. Thibeault explains, "I will always look back and remember the late nights before contests having sleepovers with my friends laughing uncontrollably because of how tired and excited we were."

After graduating from high school in 2025, Thibeault moved from Connecticut to Cornwall, England, to pursue her undergraduate degree in Marine Biology and Biological Oceanography. She hopes to apply the research and writing skills she refined during her NHD years to marine biology research and policy advocacy in the future.

Thibeault encourages current NHD students to "make NHD happen." She says, "No matter what happens, no matter how busy life gets and how impossible completing your project may seem, do it. Find a few minutes in between classes to read new sources."

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