Synthetic Warfare

Nylon and the WWII Pivot · 1940–1950

GUIDING QUESTION

When World War II turned nylon from a luxury into a strategic material, who gained and who paid?

Teacher notes

Objectives: students will be able to

- Place the chapter's key events, from 1935 to 1946, in order and explain why each mattered.
- Analyze 2 primary sources for context, audience, purpose, and point of view.
- Use the chapter's vocabulary accurately: Polymer, Polyamide, War Production Board, Rationing, Black market.
- Write an evidence-based argument that answers the guiding question.

AP U.S. History
Period 7 (1890–1945), Period 8 (1945–1980)

Standards

D2.His.1.9-12	Explain how events were shaped by their time and place and by broader historical contexts.
D2.His.4.9-12	Analyze the factors that shaped people's perspectives in different eras.
D2.His.10.9-12	Identify the limitations of different kinds of historical evidence.
D2.His.16.9-12	Integrate evidence from multiple sources into a reasoned argument about the past.
RH.9-10.1 / RH.11-12.1	Cite specific textual evidence from primary and secondary sources.
RH.9-10.4 / RH.11-12.4	Determine the meaning of words and phrases as used in historical texts.
RH.9-10.6 / RH.11-12.6	Compare and evaluate authors' points of view on the same events.
WHST.9-10.1 / WHST.11-12.1	Write arguments focused on discipline-specific content.

Pacing

Day 1 (50 minutes)

Day 2 (50 minutes)
5 min · Key terms matching

5 min · Before you read: guiding question and predictions
15 min · Reading and timeline
25 min · Primary source workshop (2 sources)
5 min · Exit ticket
20 min · Corroboration and discussion questions
25 min · Claim, evidence, reasoning paragraph

Teaching hard history

• Never use role-play or simulations of slavery, violence, or other atrocities. Ask students to analyze the testimony and documented choices of real people instead.

• Pair the voices of the people who did the work (enslaved people, children, strikers, immigrants) with the voices of those who profited, and ask whose records survived and why.

• Primary sources are reproduced word for word, including period language and dialect transcribed by interviewers. Before reading, discuss who recorded each source and for whom. Do not ask students to perform dialect aloud.

• Tell students before they see images of injured, captive, or dead people, and give them a way to step back.

• Distinguish what the sources show from what they cannot prove. Several stories in this exhibit correct popular myths; name the myth, then the evidence.

Guidance follows Learning for Justice, "Teaching Hard History: American Slavery" (Southern Poverty Law Center, 2018).

Answer key: key terms

Polymer: C · Polyamide: E · War Production Board: A · Rationing: D · Black market: B

PART 1

Before you read

1. Read the guiding question. Write down what you already know, or think you know, about it.
2. Predict one way your answer might change after reading the sources.

PART 2

Read

World War II pushed the American textile industry from a natural-fiber economy toward a chemical one. Nylon went from stockings to parachutes; the American mill became a front in the war effort and emerged as a foundation of postwar consumer culture.

When the United States froze Japanese assets in the summer of 1941, imports of Japanese silk—the raw material of American hosiery and parachutes—stopped, making synthetic fibers a matter of national security. DuPont's nylon, introduced in women's stockings in 1939–40, was allocated to military use from 1942 and went into parachutes, ropes, tents, mosquito netting, and aircraft tire cord. Cotton mills produced vast quantities of duck, twill, and uniform cloth. The industry that emerged from the war was larger, more chemically sophisticated, and more politically connected than its predecessors—and within a few years it would redirect that wartime technology into the American closet.



Nylon stockings. DuPont put nylon hosiery on national sale on May 15, 1940-"N-Day." Antique Rose, "Nylon stockings" (2006). English Wikipedia, CC BY 2.5, via Wikimedia Commons.

PART 3

Timeline

Students write one sentence on why each event mattered.

1935

Nylon Synthesized

In February, Wallace Hume Carothers's team at DuPont's Experimental Station produces the polyamide later named nylon.

1940

Nylon Day

In mid-May, about four million pairs of nylon stockings reach stores nationwide at about $1.15 a pair and sell out within days.

1942

The War Pivot

Nylon and silk are reserved for military uses such as parachutes, tire cord, and rope; civilian stockings all but disappear.

1946

The Nylon Riots

Postwar shortages bring enormous lines and scuffles; in Pittsburgh on June 12, an estimated 30,000–40,000 women queue for 10,000–13,000 pairs.

PART 4

Key terms

Polymer (answer C)
A large molecule made of many small repeating units linked in a chain; nylon and polyester are polymers.

Polyamide (answer E)
The chemical family of polymers that includes nylon, linked by amide bonds.

War Production Board (answer A)
The federal agency that controlled raw materials and factory production in the United States during World War II.

Rationing (answer D)
Government limits on how much of a scarce product people or businesses may buy or use.

Black market (answer B)
Illegal buying and selling of goods, often scarce or rationed ones, outside official rules.

PART 5

Primary source workshop

These excerpts are quoted word for word, including the spelling and language of their time.

DOCUMENT A

U.S. Patent No. 2,130,948: Synthetic Fiber

Wallace H. Carothers, assignor to E. I. du Pont de Nemours & Company, September 20, 1938

> This invention relates to new compositions of matter, and more particularly to synthetic linear condensation polyamides and to filaments, fibers, yarns, fabrics, and the like prepared therefrom. This invention has as an object the preparation of new and valuable compositions of matter, particularly synthetic fiber-forming materials. Another object is the preparation of filaments, fibers, and ribbons from these materials. A further object is the manufacture of yarns, fabrics, and the like from said filaments.

Context: Carothers led the DuPont research team that invented nylon; this patent, granted after his death in 1937, covered nylon fibers. Within four years nearly all nylon production was diverted from stockings to parachutes, tow ropes, and other military uses.

Source: Wallace H. Carothers. US2130948A: Synthetic fiber. United States Patent Office (via Google Patents). 1938. https://patents.google.com/patent/US2130948A/en

Historical context
What was happening when and where this was created?

Intended audience
Who was meant to read, hear, or see it?

Purpose
Why was it created? What did its creator want to happen?

Point of view
Whose perspective does it show, and whose is missing?

DOCUMENT B

United States v. Schautz (quoting War Production Board Orders M-356 and L-274)

U.S. District Court for the District of New Jersey, 1946

> General Conservation Order M-356, which provides in its pertinent part as follows: (b) (1) "No person shall sell or deliver nylon except as specifically authorized in writing by the War Production Board." (b) (2) "No person shall knowingly purchase, accept delivery or commercially use nylon contrary to any restriction of the War Production Board." and General Limitation Order L-274, which in part reads as follows: (c) (1) "On and after May 15, 1943, no person shall put into production women's full-fashioned plain-knit hosiery, women's seamless, circular-knit hosiery, men's hosiery, or misses', children's or infants' hosiery except in accordance with Schedules A, B, C, and D ..."

Context: This federal court decision involved charges of illegally diverting nylon yarn during the war. The wartime orders it quotes show how tightly the government controlled synthetic fiber and how valuable nylon became on the black market.

Source: United States v. Schautz. CourtListener, Free Law Project. 1946-
. https://www.courtlistener.com/opinion/8903609/united-states-v-schautz/

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Corroborate
Compare "U.S. Patent No. 2,130,948: Synthetic Fiber" (Wallace H. Carothers, assignor to E. I. du Pont de Nemours & Company, September 20, 1938) with "United States v. Schautz (quoting War Production Board Orders M-356 and L-274)" (U.S. District Court for the District of New Jersey, 1946). Where do they agree, where do they differ, and what might explain the differences?

PART 6

Discuss

1. What does Carothers's patent list as its "objects," and what properties of the new fiber does it highlight?
2. A patent is written to secure a company's legal rights. What does this patent reveal, and what does it conceal, about DuPont's plans for nylon?
3. The War Production Board banned selling nylon without written permission. Why would the government control a stocking fiber, and what does the Schautz case suggest about black markets during the war?
4. During the COVID-19 pandemic, the federal government used the Defense Production Act to direct production of masks and protective gear. Should government have the power to take control of civilian materials in a crisis? Compare with 1942–1945.

PART 7

Write: claim, evidence, reasoning

Answer the guiding question in one paragraph, using the documents and the reading.

Claim	Answers the guiding question directly in one or two sentences.
Evidence	Cites at least two primary sources by name and at least one fact from the reading.
Reasoning	Explains how each piece of evidence supports the claim.
Sourcing	Notes at least one limitation of a source: who made it, when, and why.

PART 8

Exit ticket

1. In one sentence, how would you answer the guiding question now?
2. What piece of evidence would most change your mind?

Keep exploring

MATERIAL CULTURE

The Nylon Riots

When stockings were worth standing in line all day.

https://www.threadingamerica.com/topics/nylon-riots

BIOGRAPHY

Wallace Carothers, Inventor of Nylon

The brilliant chemist who did not live to see his invention reach the public.

https://www.threadingamerica.com/topics/wallace-carothers

MATERIAL CULTURE

Rosie's Coveralls and the Cotton Duck Mills

American mills as a logistical front in the war.

https://www.threadingamerica.com/topics/rosie-and-cotton-duck

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SOURCES AND CREDITS

Wallace Hume Carothers. Science History Institute-. https://www.sciencehistory.org/education/scientific-biographies/wallace-hume-carothers/

Emily Spivack. Stocking Series, Part 1: Wartime Rationing and Nylon Riots. Smithsonian Magazine. 2012-. https://www.smithsonianmag.com/arts-culture/stocking-series-part-1-wartime-rationing-and-nylon-riots-25391066/

Susannah Handley. Nylon: The Story of a Fashion Revolution. Johns Hopkins University Press. 1999

Image: Antique Rose, "Nylon stockings" (2006). English Wikipedia, CC BY 2.5, via Wikimedia Commons.

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