

Science, Technology, and Society in the “Modern American Industrial Strategy”

Alondra Nelson
Science, Technology, and Social Values Lab
Institute for Advanced Study

New Thinking in Industrial Policy
Columbia University
November 1, 2024

“Modern American Industrial Strategy”

“a strong animating vision that unifies these laws... It identifies areas where relying on private industry, on its own, will not mobilize the investment necessary to achieve our core economic and national security interests. It then uses public investment to spur private investment and innovation... It encourages that investment to reach all regions and communities. And it invests in workers—the people who will generate all this productivity and innovation”

--Brian Deese, NEC Director, 2022

“Modern American Industrial Strategy”

Advanced Research Projects Agency-Health (ARPA-H) Act

Inflation Reduction Act (IRA)

CHIPS and Science Act

targeted public funding | infrastructure investment | technology

AUGUST 10, 2009

Health Care Special Report

TIME



HEALTH CARE
SPECIAL REPORT

Paging Dr. Obama

- Exclusive Interview
- Where's his prescription?
By Karen Tumulty
- Why Congress can't get it right
By Joe Klein
- PLUS A one-stop graphic guide
to how a new plan would affect you

www.time.com

BUILD THE FUTURE

POPULAR
SCIENCE

MARCH/APRIL 2010

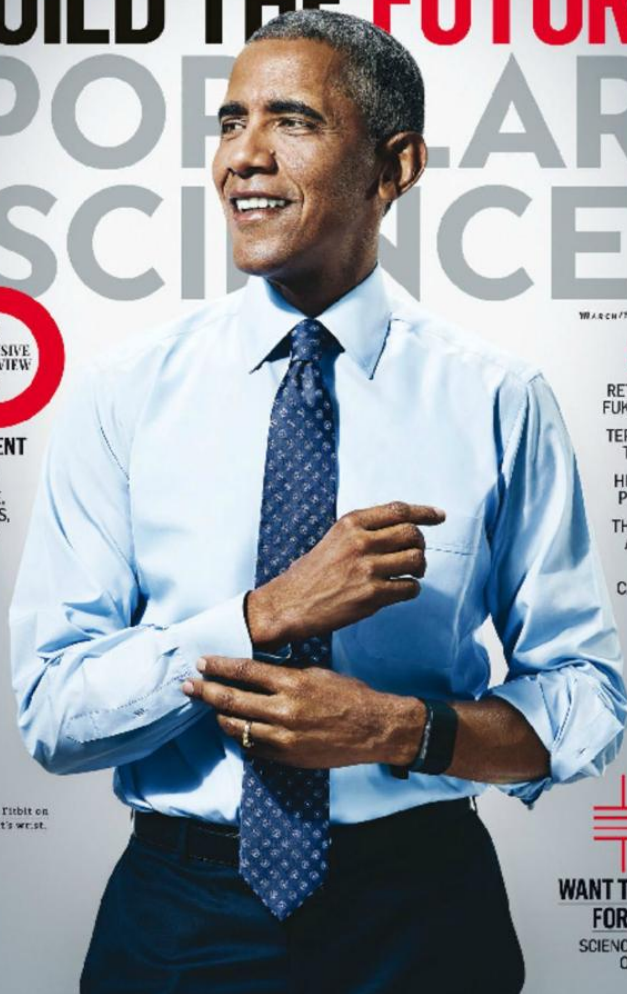


PRESIDENT OBAMA

ON SPACE,
STARTUPS,
AND WHY
NERDS
WILL
RULE
THE
WORLD

Pg. 40

Yup, that's a Fitbit on
the president's wrist.



PLUS!

RETURN TO
FUKUSHIMA
TERROR ON
TWITTER
HUNT FOR
PLANET X
THE YIZZIE
AWARDS
360°
CAMERAS



WANT TO LIVE
FOREVER?

SCIENCE TAKES
ON AGING

SPACE AGE MANAGEMENT

THE LARGE-SCALE APPROACH

JAMES E. WEBB

McKINSEY FOUNDATION LECTURE SERIES
SPONSORED BY THE GRADUATE SCHOOL OF BUSINESS
COLUMBIA UNIVERSITY

SPACE AGE MANAGEMENT

The Large-scale Approach

JAMES E. WEBB

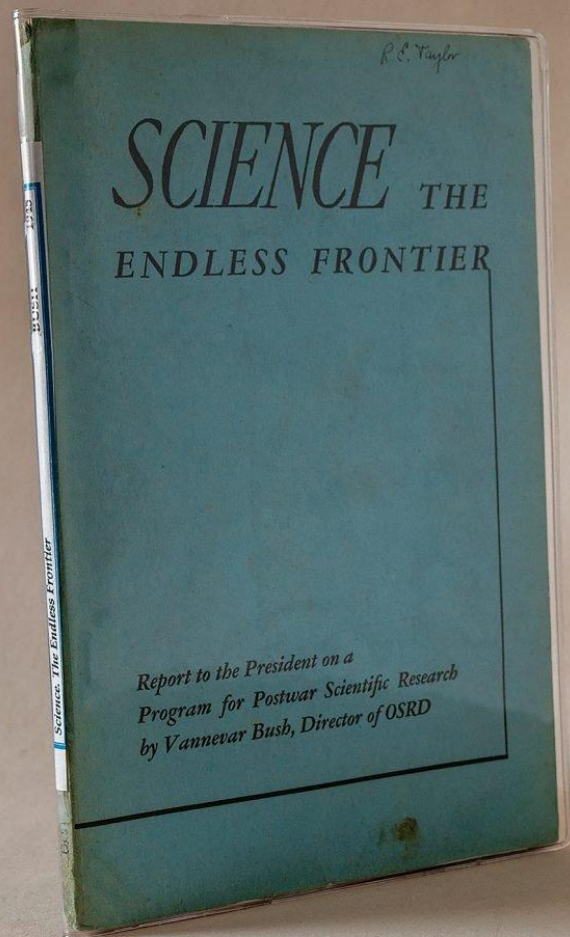
Administrator
National Aeronautics and Space Administration, 1961-1968

McGraw-Hill Book Company

NEW YORK TORONTO LONDON SYDNEY

“a fundamental question about large-scale endeavors: Is it necessary to proceed in the blind, as it were, with regard to their possible second- and third-order effects?”

--James E. Webb, 1969: 112



1945

What Makes the iPhone so Smart?

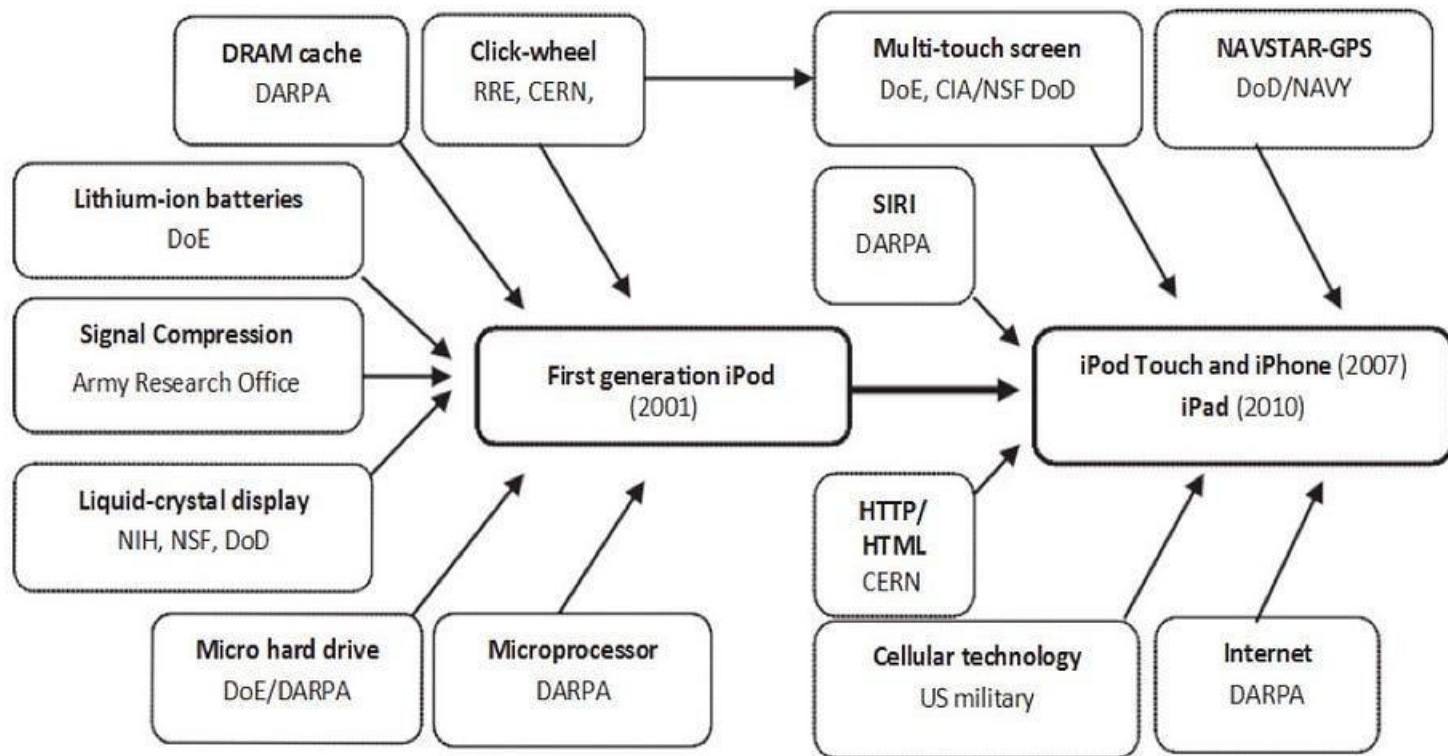
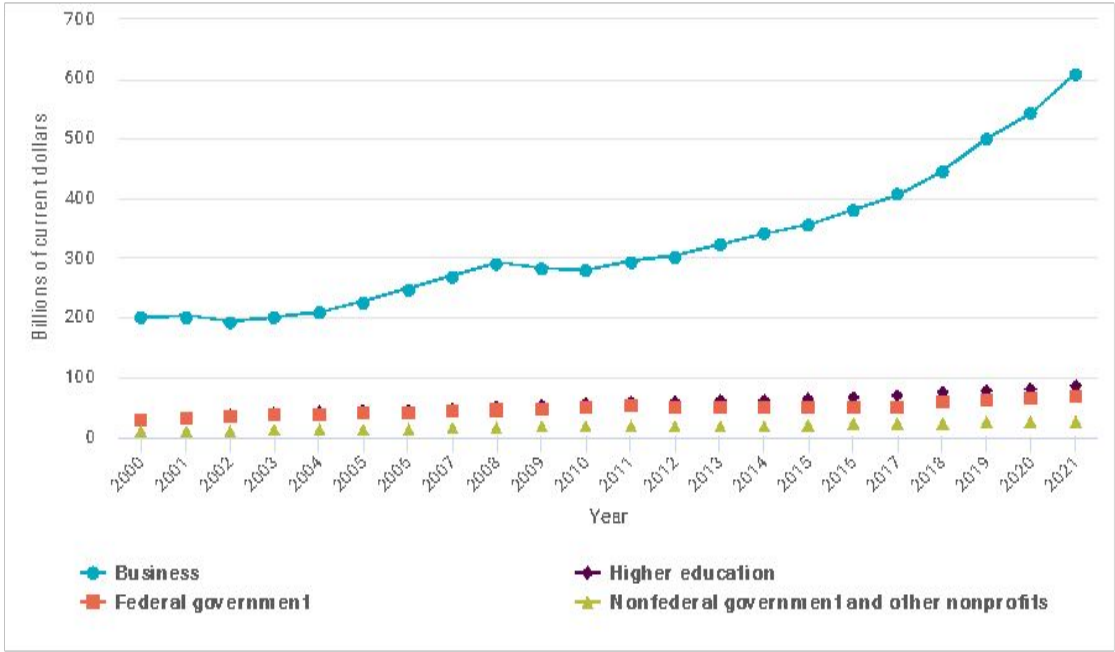


Figure 13 from *The Entrepreneurial State: debunking public vs. private sector myths* (2015, p. 116)

Figure 13
U.S. R&D expenditures, by performing sector: 2000–21



Note(s):
Some data for 2021 are preliminary and may be revised later.

Source(s):
NCSES, National Patterns of R&D Resources (2021–22 edition).

Indicators 2024: R&D

WIRED

BY STEVEN LEVY BACKCHANNEL MAR 28, 2024 6:00 AM

8 Google Employees Invented Modern AI. Here's the Inside Story

They met by chance, got hooked on an idea, and wrote the “Transformers” paper—the most consequential tech breakthrough in recent history.



“Modern American Industrial Strategy”

Advanced Research Projects Agency-Health (ARPA-H) Act

Inflation Reduction Act (IRA)

CHIPS and Science Act

targeted public funding | infrastructure investment | technology



BUILDING A CLEAN ENERGY ECONOMY:

**A GUIDEBOOK TO THE INFLATION
REDUCTION ACT'S INVESTMENTS
IN CLEAN ENERGY AND
CLIMATE ACTION**



CHIPS and Science Act



CHIPS and Science Act, 2022

- \$52 billion dollars
- Incl \$39 billion (mostly incentives) to fund the construction of new and expanded manufacturing facilities
- \$11 billion to support research into new chip technologies

and Science

- Congress has approved, but still has not appropriated, most of the “and Science” part of the CHIPS and Science Act
- \$13 billion for science, technology, engineering and mathematics (STEM) education and workforce development, including \$2 billion to minority-serving institutions
- Rural STEM Education Act to break down barriers to education via National Science Foundation grants
-
- \$10 billion regional technology and innovation hubs

To Tap Federal Funds, Chip Makers Will Need to Provide Child Care

The move seeks to help more women join the work force as industry leaders complain of labor shortages.

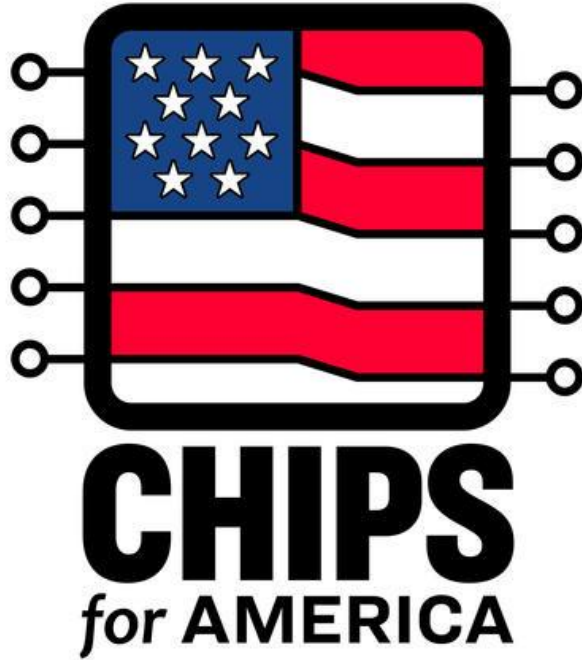


Share full article



528





"We will be requiring all applicants who are seeking more than \$150 million in direct funding to submit as part of their workforce plan, a plan for how they will provide affordable and accessible accessible childcare for their workers... We right now lack affordable childcare, which is the single most significant factor keeping people especially women out of the labor force. And so we need to see how these companies are going to be meeting their labor force needs."

-- Sec. Raimondo, 2023

COMPANY

Pioneering new semiconductor career pathways with Micron's Registered Apprenticeship Program

Sara Newton-Klitz | November 2023



“Modern American Industrial Strategy” and Governing the Future



The New AI-Powered Bing Is Threatening Users.
That's No Laughing Matter

The Washington Post
Democracy Dies in Darkness

INNOVATIONS

They thought loved ones were calling for help. It was an AI scam.

Scammers are using artificial intelligence to sound more like family members in distress. People are falling for it and losing thousands of dollars.

Will AI Benefit or Harm Workers?

The Washington Post
Democracy Dies in Darkness

ChatGPT invented a sexual harassment scandal and named a real law prof as the accused

'It Can Cause a Lot of Harm': Google CEO Sundar Pichai Warns of Dangers With AI

OpenAI acknowledges new models increase risk of misuse to create bioweapons

Company unveils o1 models that it claims have new reasoning and problem-solving abilities

They fell in love with AI bots. A software update broke their hearts.

Banks told to anticipate risks from using AI, machine learning

By Reuters

The New York Times

Eight Months Pregnant and Arrested After False Facial Recognition Match

[nature](#) > [nature medicine](#) > [perspectives](#) > [article](#)

Perspective | Published: 29 April 2024

The health risks of generative AI-based wellness apps

TIME How AI-Powered Tech Can Harm Children

WSJ PRO

Federal Cyber Chief Tells Agencies to Tap Brakes on AI

U.S. government agencies told to consider the risks of using artificial intelligence before getting carried away


Biden cuts China off from more Nvidia chips, expands curbs to other countries

Democratic lawmaker takes aim at Biden over TSMC chip in Huawei product, letter shows

AI for Good

AI for Science

Highly accurate protein AlphaFold

[John Jumper](#) , [Richard Evans](#), [Alexander Pr](#)
[Kathryn Tunyasuvunakool](#), [Russ Bates](#), [August](#)
[Meyer](#), [Simon A. A. Kohl](#), [Andrew J. Ballard](#), [A](#)
[Nikolov](#), [Rishub Jain](#), [Jonas Adler](#), [Trevor Back](#)
[Zielinski](#), [Martin Steinegger](#), [Michalina Pachol](#)
[Silver](#), [Oriol Vinyals](#), [Andrew W. Senior](#), [Koray](#)

— Show fewer authors

[Nature](#) **596**, 583–589 (2021) | [Cite this article](#)

AI for Accessibility



Navigation to Trust.

Smartphone navigation is essential to city life. Waymap offers a truly inclusive, accessible solution. With Waymap, everyone can make the most of everything their has to offer.

Setting up Waymap for transport networks and cities means more people, travelling more places, more often. Visitors, commuters and those for whom accessibility is an everyday challenge can travel with confidence.

How do
the blind
see a city?



AI for Efficiency

FAST COMPANY

02-28-23

A plant pathologist explains how AI can give us healthier crops

The technology could transform how growers protect their crops by detecting plant diseases very early on. But can those tools be affordable?



[Photo: Siegfried Layda/Getty Images]



BY SAUGAT BOLAKHE—KNOWABLE MAGAZINE 9 MINUTE READ

AI for Good



Not Inevitable

WIRED

BY STEVEN LEVY BACKCHANNEL MAR 28, 2024 6:00 AM

8 Google Employees Invented Modern AI. Here's the Inside Story

They met by chance, got hooked on an idea, and wrote the “Transformers” paper—the most consequential tech breakthrough in recent history.



- 1.** Return to first principles, including a vision of the public good
- 2.** Recognize that existing laws, rules, norms, and standards apply—and use them
- 3.** Recognize that new laws, rules, norms, and standards may be needed—and craft them

Return to First Principles

OCTOBER 30, 2023

Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence



► BRIEFING ROOM ► PRESIDENTIAL ACTIONS

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

Section 1. Purpose. Artificial intelligence (AI) holds extraordinary potential for both promise and peril. Responsible AI use has the potential to help solve urgent challenges while making our world more prosperous, productive, innovative, and secure. At the same time, irresponsible use could exacerbate societal harms such as fraud, discrimination, bias, and disinformation; displace and disempower workers; stifle competition; and pose risks to national security. Harnessing AI for good and realizing its myriad benefits requires mitigating its substantial risks. This endeavor demands a society-wide effort that includes government, the private sector, academia, and civil society.

Guiding and supporting technologists and entrepreneurs:

- **To empower technologists to promote trustworthy AI**, the Department of Commerce's National Institute of Standards and Technology (NIST) is developing a risk management framework to help technologists incorporate considerations of fairness, safety, and privacy into the design, development, use, and evaluation of AI products, services, and systems. An online Playbook companion to the [AI risk management framework](#) ↗ will also provide users with recommended actions to operationalize these considerations.
- **To shape the long-term future of trustworthy AI**, with over \$700 million in investments annually, the National Science Foundation continues to support AI research, including research into the fairness, security, safety, and trustworthiness of AI systems.

Ensuring fair access to housing:

- **To protect renters**, the Department of Housing and Urban Development will release guidance addressing the use of tenant screening algorithms in ways that may violate the Fair Housing Act.
- **To protect home buyers and owners**, Federal agencies that regulate mortgage financing will include a nondiscrimination quality control standard as part of a forthcoming proposed rule establishing [quality control standards on automated valuation models](#) ↗ so that these models do not rely upon biased data that could replicate past discrimination in housing.

**BLUEPRINT FOR AN
AI BILL OF
RIGHTS**

**MAKING AUTOMATED
SYSTEMS WORK FOR
THE AMERICAN PEOPLE**

OCTOBER 2022



THE WHITE HOUSE
WASHINGTON

Blueprint for an AI Bill of Rights



Safe and Effective
Systems



Algorithmic
Discrimination
Protections



Data Privacy



Notice and
Explanation



Human
Alternatives,
Consideration, and
Fallback

Existing Governance Applies

National Artificial Intelligence Research Resource Pilot



U.S. National
Science
Foundation

The National Artificial Intelligence Research Resource (NAIRR) is a vision for a shared national research infrastructure for responsible discovery and innovation in AI.

The NAIRR pilot brings together computational, data, software, model, training and user support resources to demonstrate and investigate all major elements of the NAIRR vision first laid out by the NAIRR Task Force.



JOINT STATEMENT ON ENFORCEMENT EFFORTS AGAINST DISCRIMINATION AND BIAS IN AUTOMATED SYSTEMS

*Rohit Chopra, Director of the Consumer Financial Protection Bureau,
Kristen Clarke, Assistant Attorney General for the Justice Department's Civil Rights Division,
Charlotte A. Burrows, Chair of the Equal Employment Opportunity Commission, and
Lina M. Khan, Chair of the Federal Trade Commission
issued the following joint statement about enforcement efforts to protect the public
from bias in automated systems and artificial intelligence:*

Our Agencies' Enforcement Authorities Apply to Automated Systems

Existing legal authorities apply to the use of automated systems and innovative new technologies just as they apply to other practices. The Consumer Financial

New Governance May Be Needed



Detroit changes rules for police use of facial recognition after wrongful arrest of Black man

City to pay \$300,000 to Robert Williams, whose driver's license was incorrectly flagged in shoplifting investigation



**The
Guardian**



- Science and technology as the centerpiece of both domestic policy and international policy
- Science, technology, and innovation are both the input and output of “modern American industrial strategy”
- New industrial policy as science and technology policy (e.g., AI governance)
- Government investments and Industrial policy always has so-called “non-economic” impacts – so shouldn’t we have a strategy?

Science, Technology, and Society in the “Modern American Industrial Strategy”

Alondra Nelson
Science, Technology, and Social Values Lab
Institute for Advanced Study

New Thinking in Industrial Policy
Columbia University
November 1, 2024