

 UBS Center
for Economics in Society

at the University of Zurich



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Can Technological Progress Build Shared Prosperity?

*Lessons from
Power and Progress: Our 1000-Year
Struggle Over Technology & Prosperity*

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*UBS Center Lecture, Zürich
January 2025*

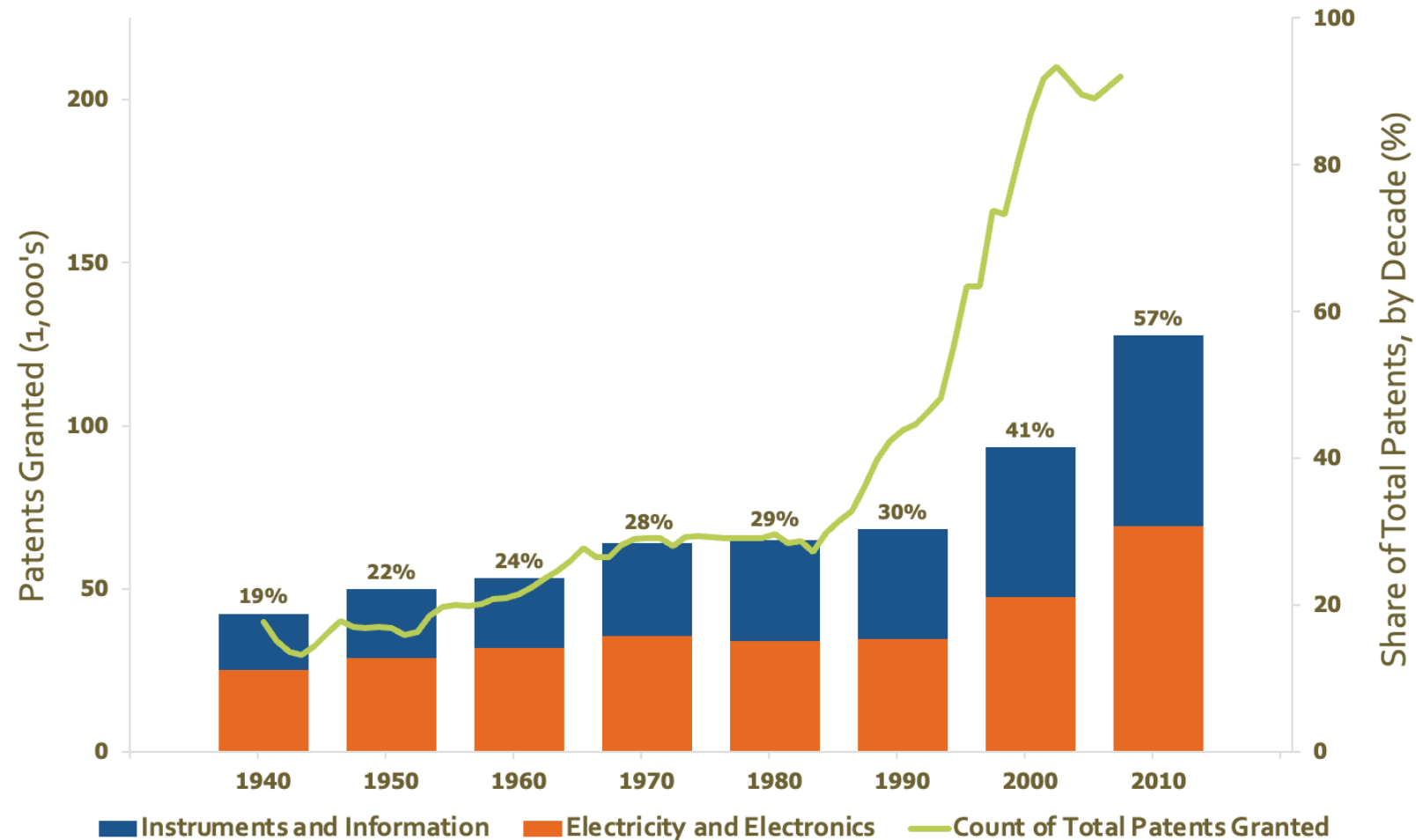


An “Age of innovation”?

We are going through a period of rapid invention, by several metrics: many new widgets and apps, with a tremendous increase in patenting, especially from the electronics and IT sectors.

And now, (generative) AI.

Total patents granted (left) and Electronics or Information patent shares (right) 1940–2010



Source: Acemoglu, Daron, David Autor, and Christina Patterson. 2023. “Bottlenecks: Sectoral Imbalances and the US Productivity Slowdown.” NBER Chapters, in: NBER Macroeconomics Annual (38).

But who will benefit? What will happen to shared prosperity?

Or will generative AI serve only a technological elite?

Who decides? Who controls information, and who controls innovation?

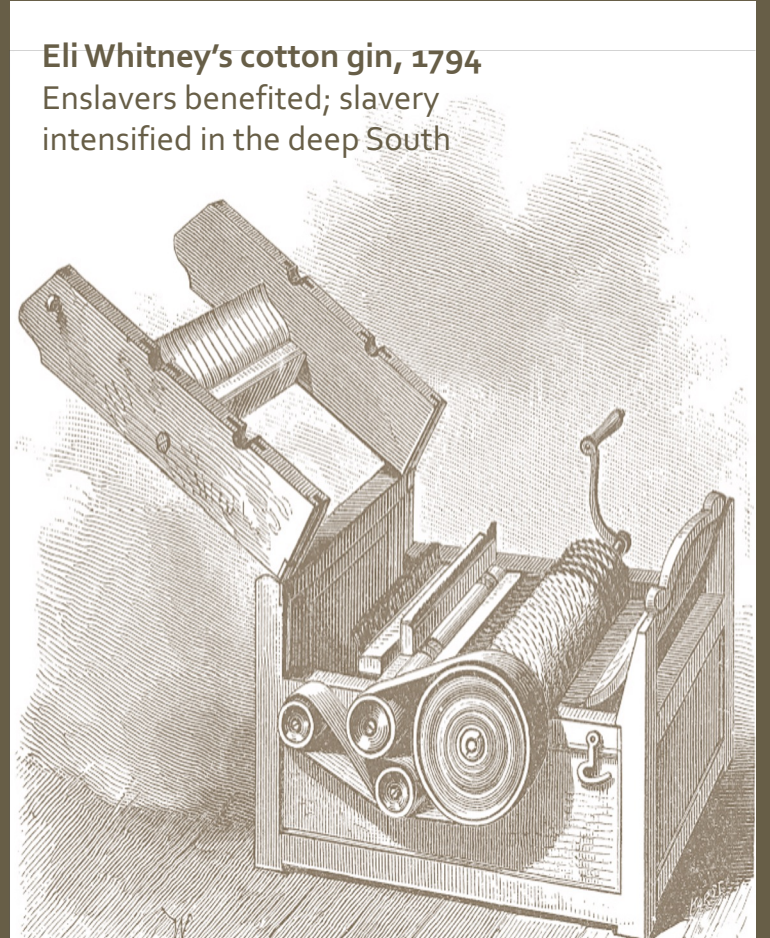
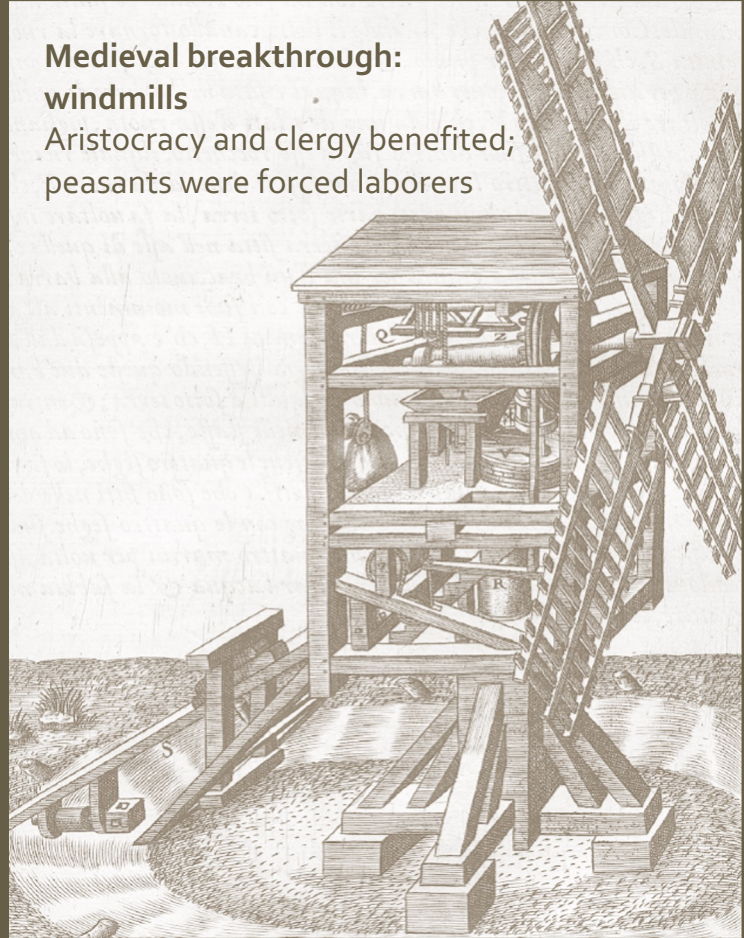
Will widespread benefits follow automatically from technological progress?





Optimistic take: The productivity bandwagon:

In reality it depends on **power** and the nature of technology.



The Industrial Revolution:

The nature of technology: automation

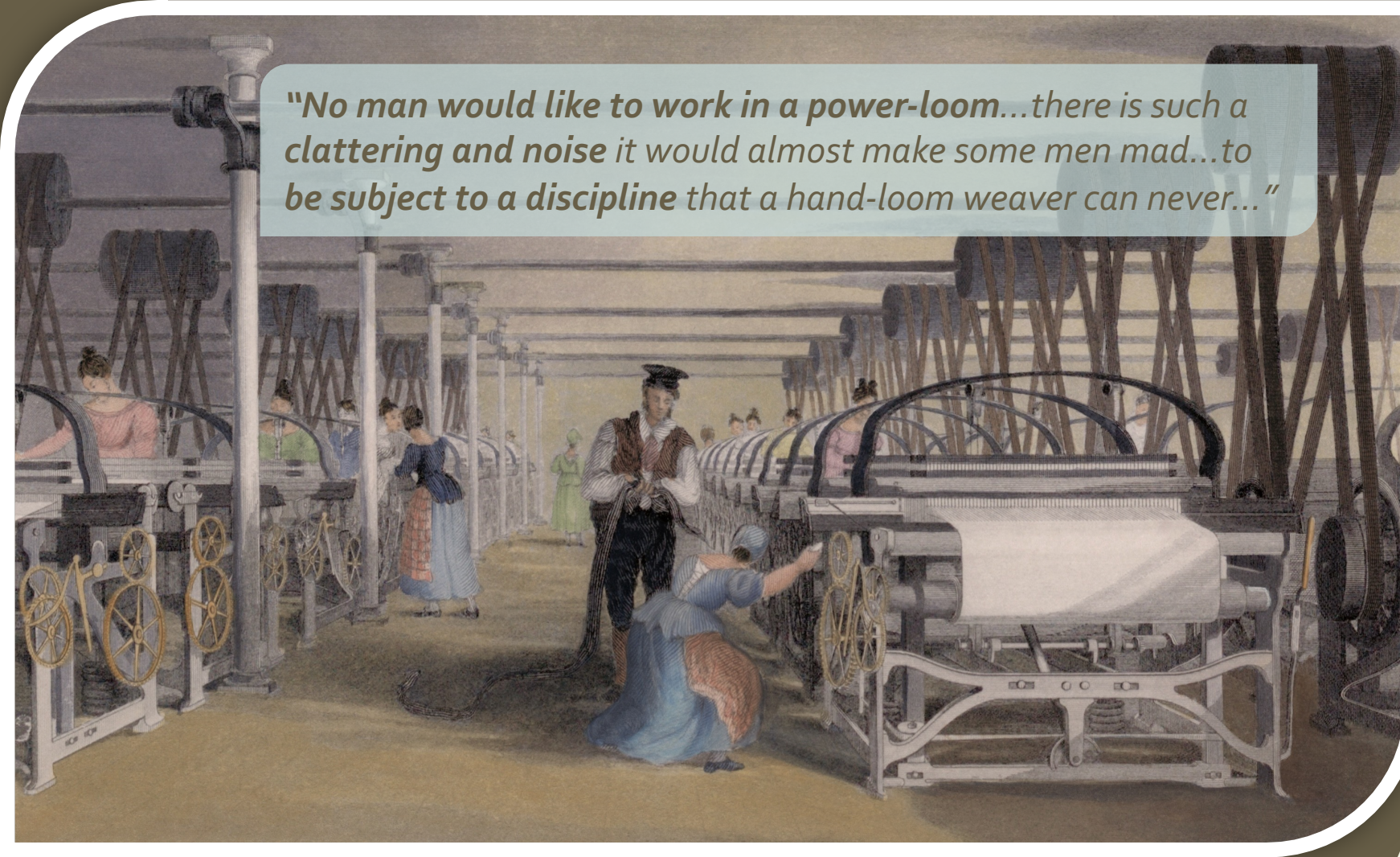
Automation can break the productivity bandwagon. Why?

As machines displace labor, average productivity increases, but marginal productivity of labor may not, especially if there are no new tasks created for workers.

No incentives for firms to hire more workers or pay them more.

In the early 19th century, power looms automated the work of hand-weavers.

Working conditions worsened. Wages were low and did not increase.

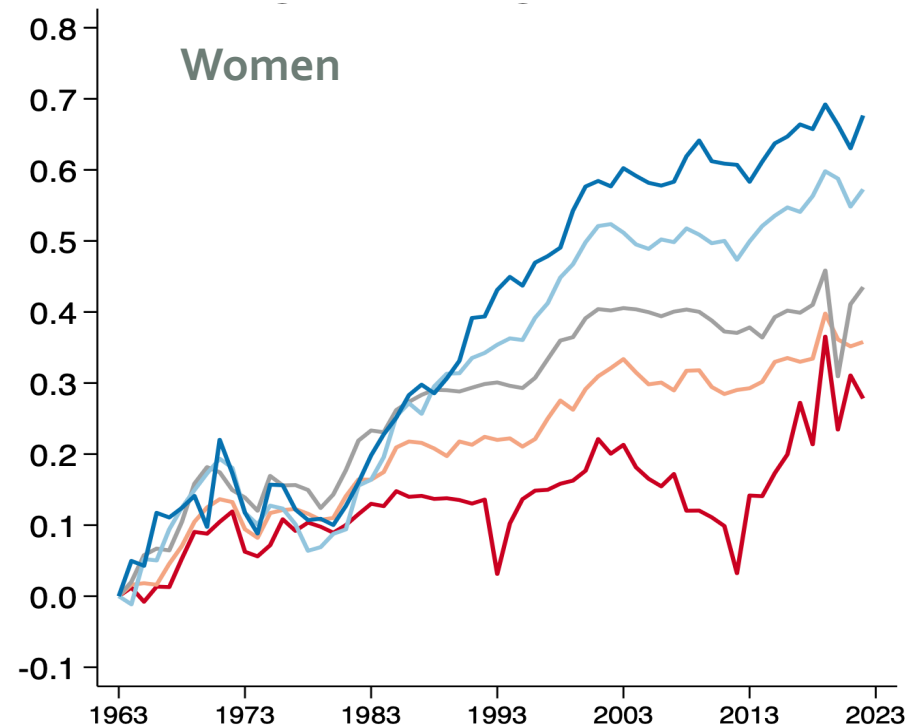
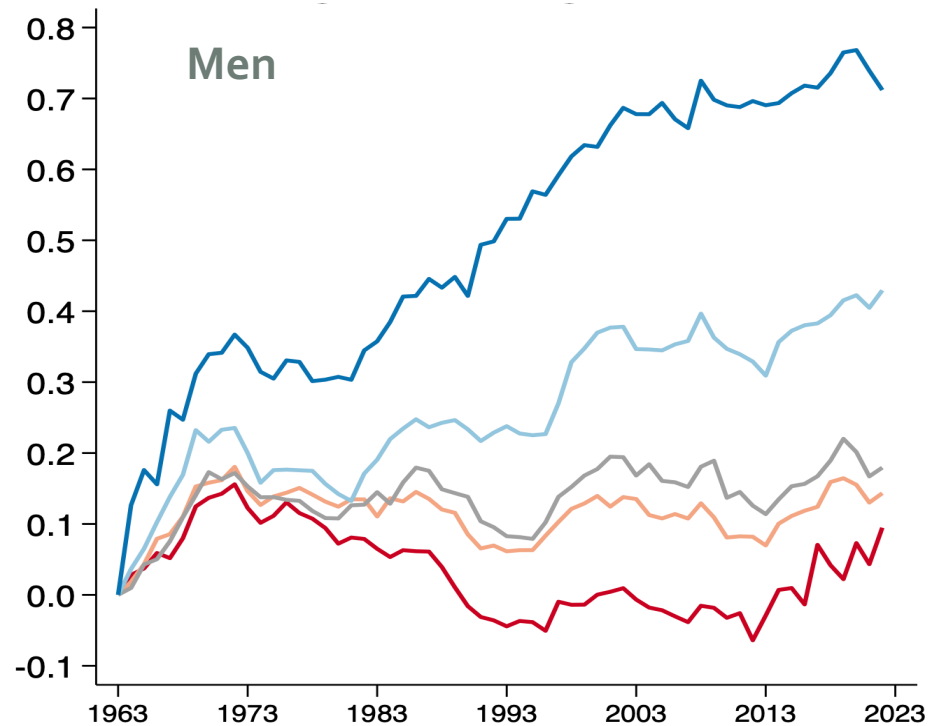


"No man would like to work in a power-loom...there is such a clattering and noise it would almost make some men mad...to be subject to a discipline that a hand-loom weaver can never..."

Modern times are different... right?

Shared growth and prosperity following WWII, but a growing divergence over the past 40 years

The change in real (log) weekly earnings, since 1963
Working age adults, ages 18–64



— High School Dropout — High School Graduate — Some College — Bachelor's Degree — Graduate Degree



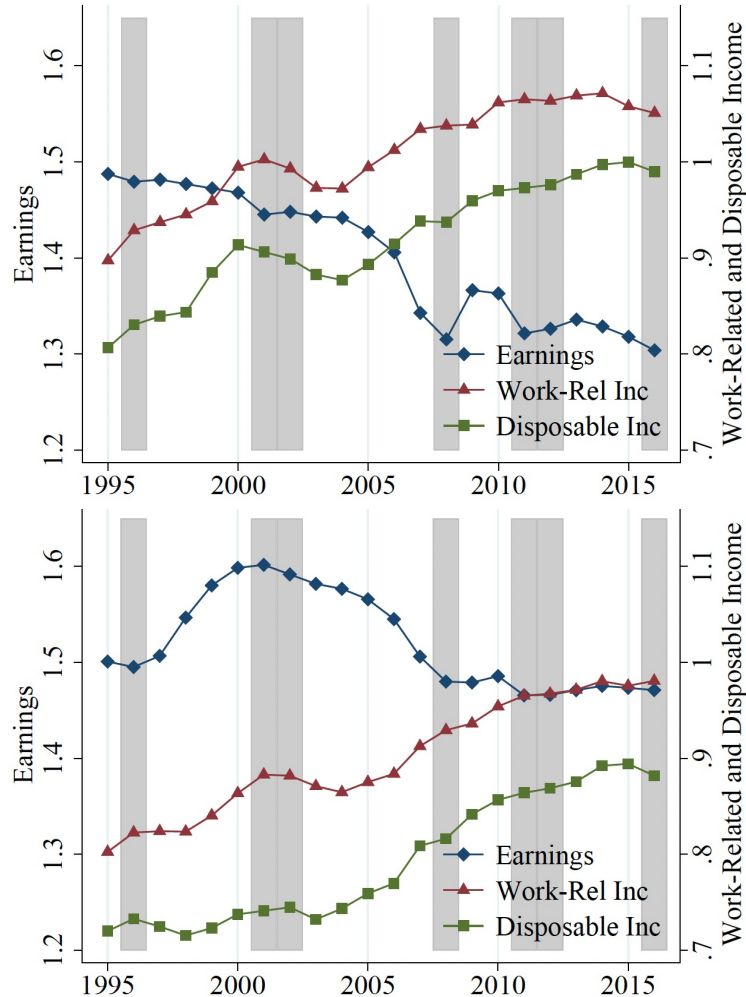
MIT

Data source: IPUMS Current Population Survey (CPS), Annual Social and Economic Supplement (ASEC). Methodology builds from Autor, David. 2019. "Work of the Past, Work of the Future." AEA Papers and Proceedings, 109: 1–32. Composition-adjusted (by sex-education-experience) mean log wages for full-time, full-year workers, aged 16 to 64.

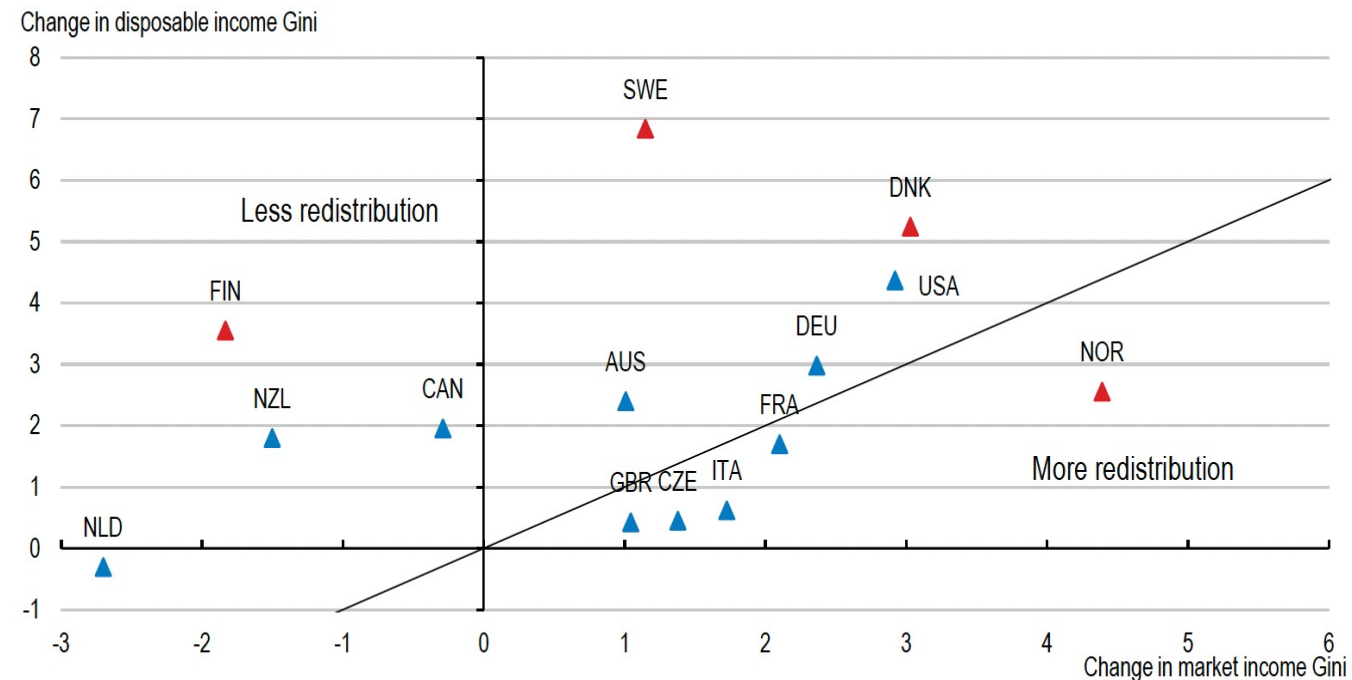
The US story is not universal

A very different picture for wage inequality in Sweden, though disposable income, inclusive of transfers and capital income, is becoming more unequal in Sweden as well. Global forces?

Income inequality trends differ by measure
Men (above) and women (below), 90–10 ratios, 1995–2016



Market income versus disposable (post-transfer) income Gini coefficient changes, 1990s–2010s



Sources: (left) Fredrich, Laun, Meghir, 2021. "Income Dynamics of Immigrants and Natives in Sweden, 1985–2016." (right) Nordic Council of Ministers, "Economic Policy Review 2018."

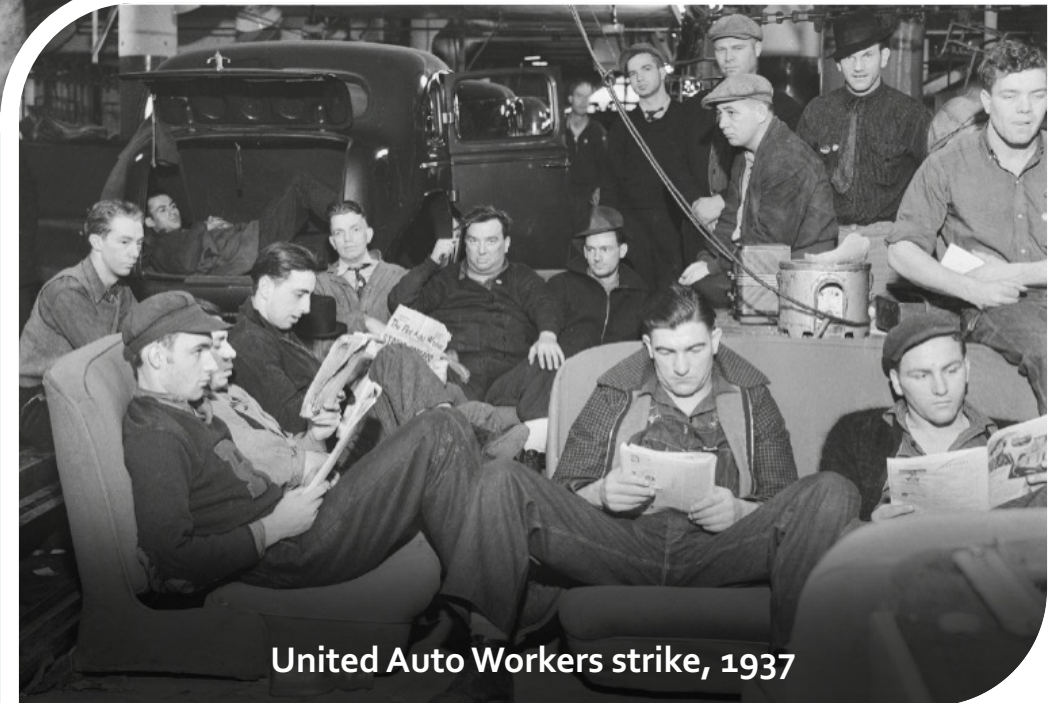
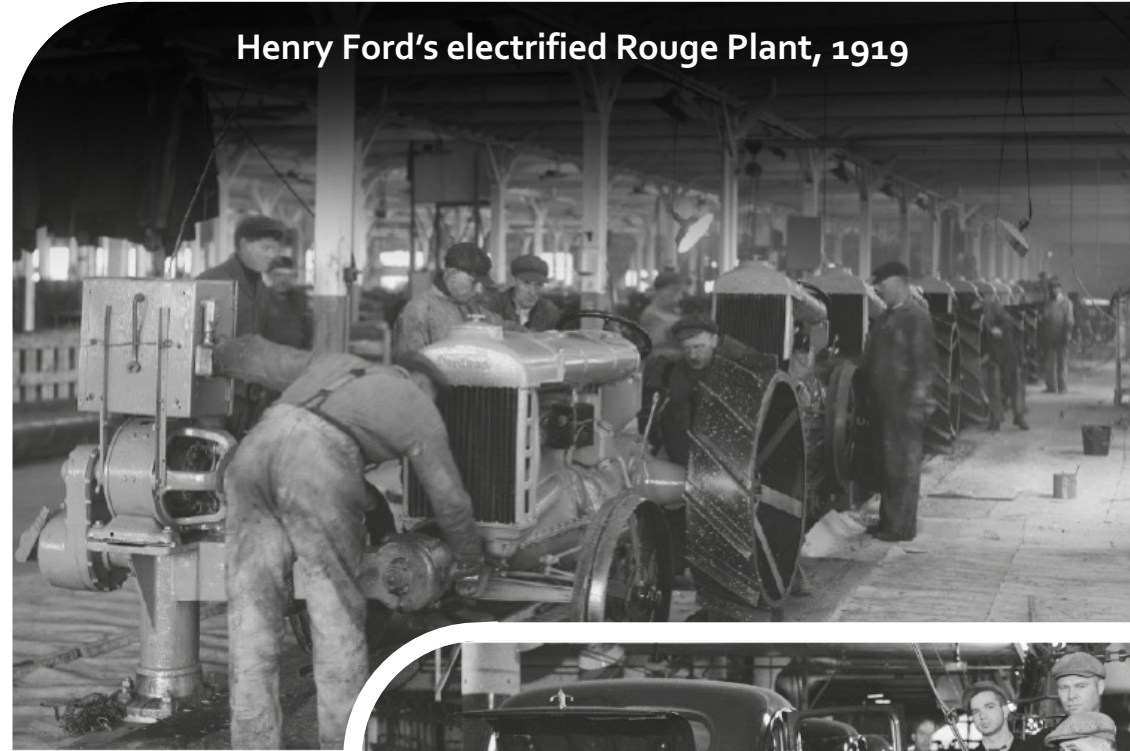
When does technological progress deliver shared prosperity?

New tasks and worker power

Lessons from the U.S. automobile manufacturing industry:

- I. Electrification and the modern factory dramatically boosted *marginal worker productivity*
- II. Labor organizations became stronger, bolstering *sharing of productivity gains* and *worker voice*

Henry Ford's electrified Rouge Plant, 1919



United Auto Workers strike, 1937

Why did things go wrong in the digital age?

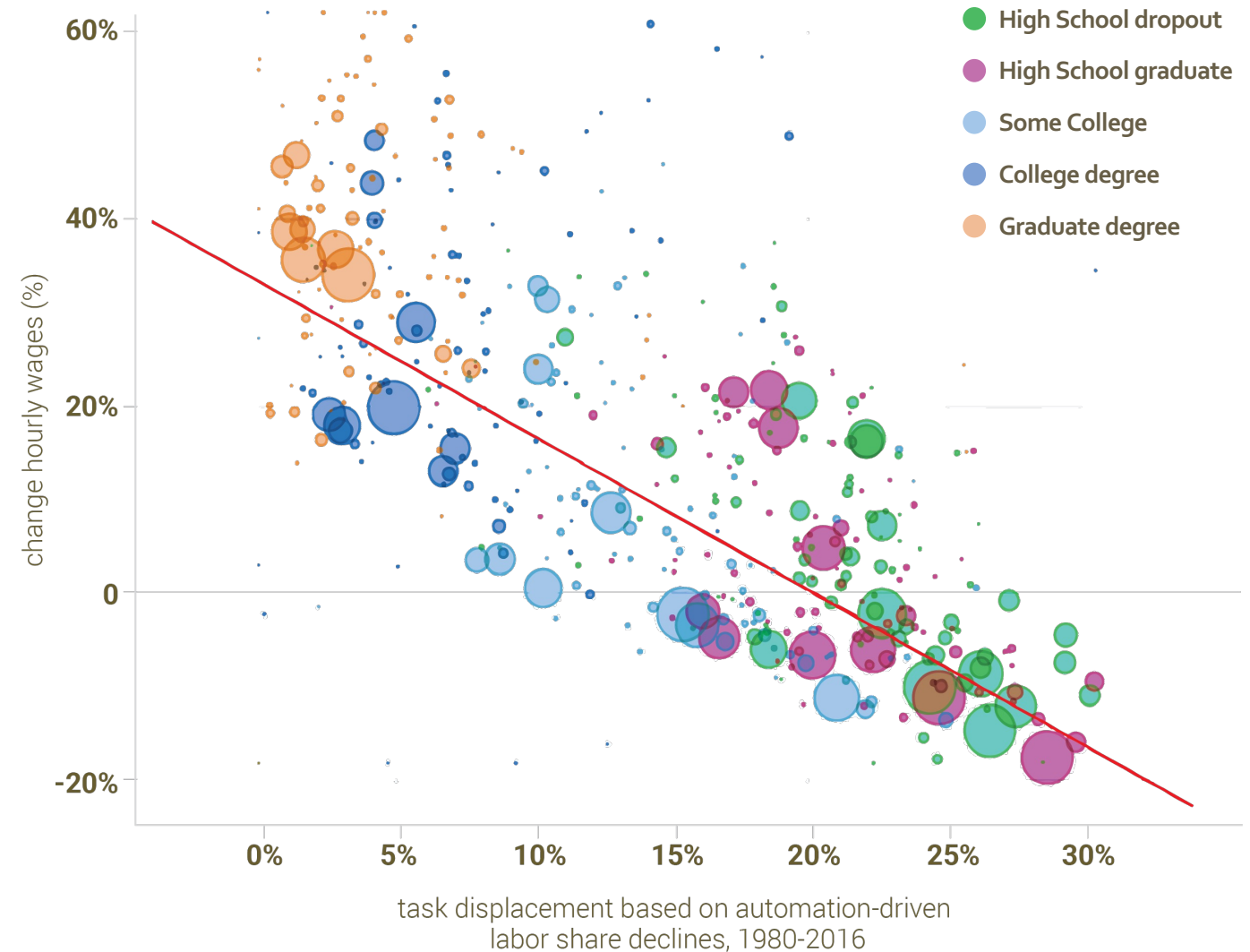
1a *Too much focus on automation, not enough on creating new tasks*



Why did things go wrong in the digital age?

1b *Wage and inequality consequences of automation*

Change in real wages due to automation of job tasks
1980–2016



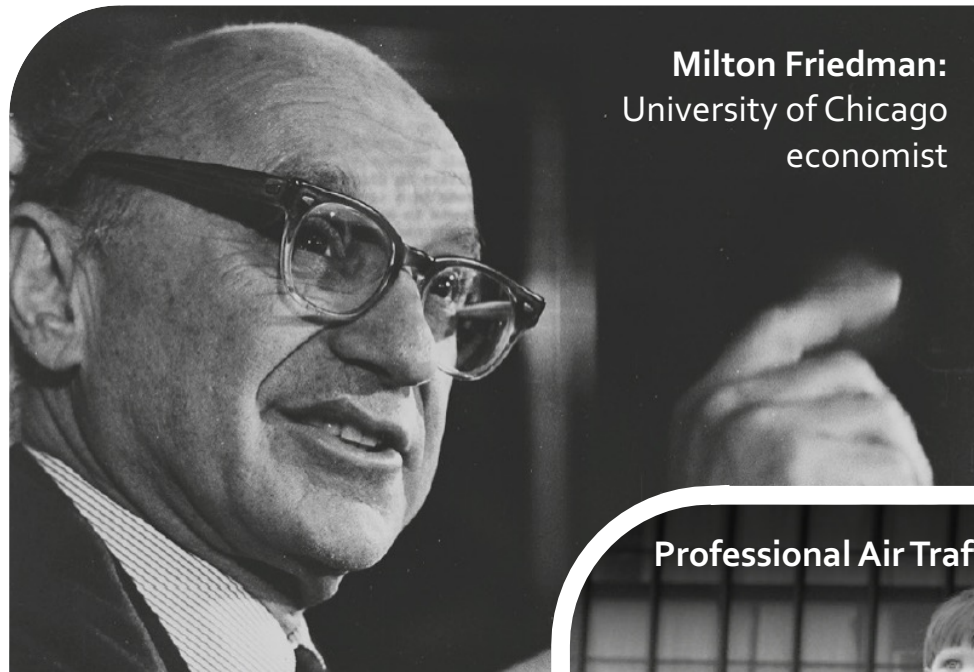
Source: Acemoglu, Daron and Pascual Restrepo. 2022. "Tasks, Automation, and the Rise in U.S. Wage Inequality." *Econometrica*, 90(5): 1973–2016.

Why did things go wrong in the digital age?

2 *New corporate visions and erosion of worker power*

“The social responsibility of business is to increase its profits”

—Milton Friedman, 1970



Milton Friedman:
University of Chicago
economist



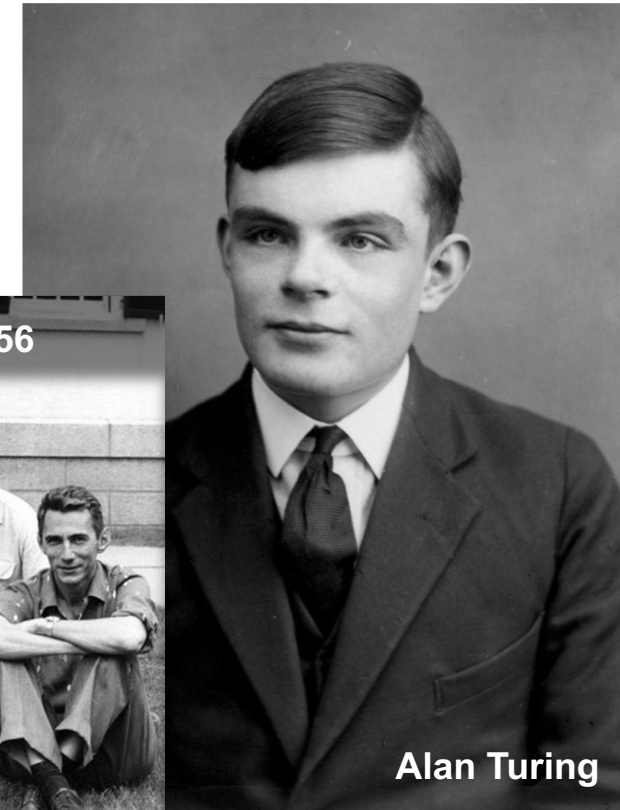
Professional Air Traffic Controllers strike, 1981

It depends on the vision guiding AI

The dominant vision (“ideology”) of AI:

Machines designed to be *smarter and more powerful* than (most) humans.

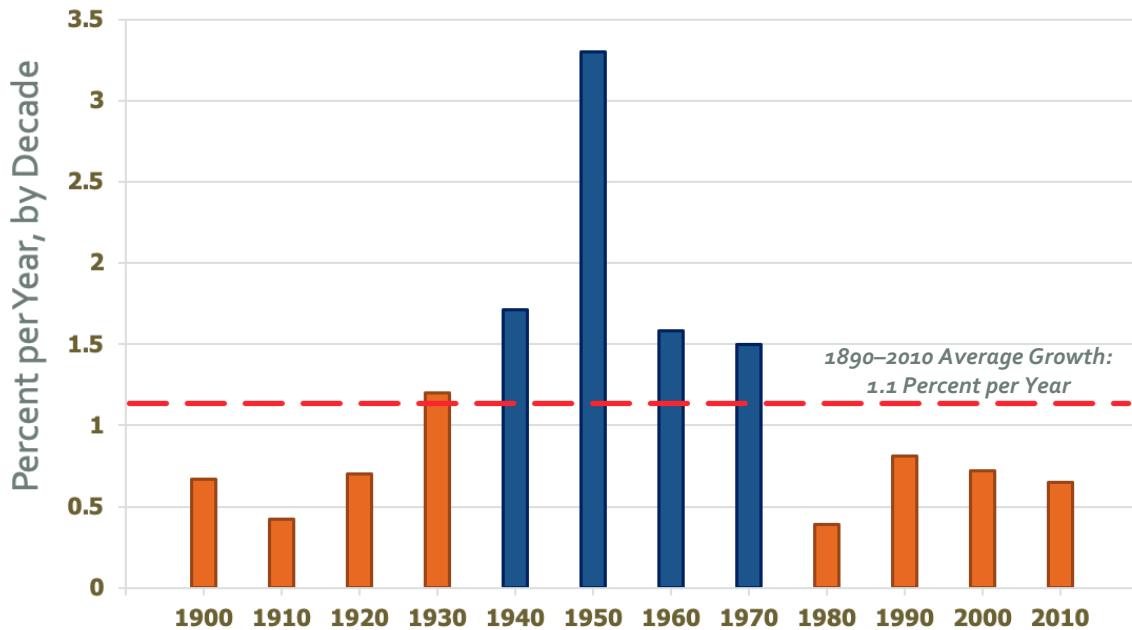
- Views and priorities of powerful actors matter greatly.
- **Machine intelligence** building on Alan Turing’s conceptualization of how the mind works and how computers could imitate and surpass that.
- This vision inexorably leads to a bias towards automation, esp. when coupled with corporate incentives for cost cutting.
- It is not the only game in town, as I will discuss later.
- But it did become the only game in the tech sector over the last several decades.



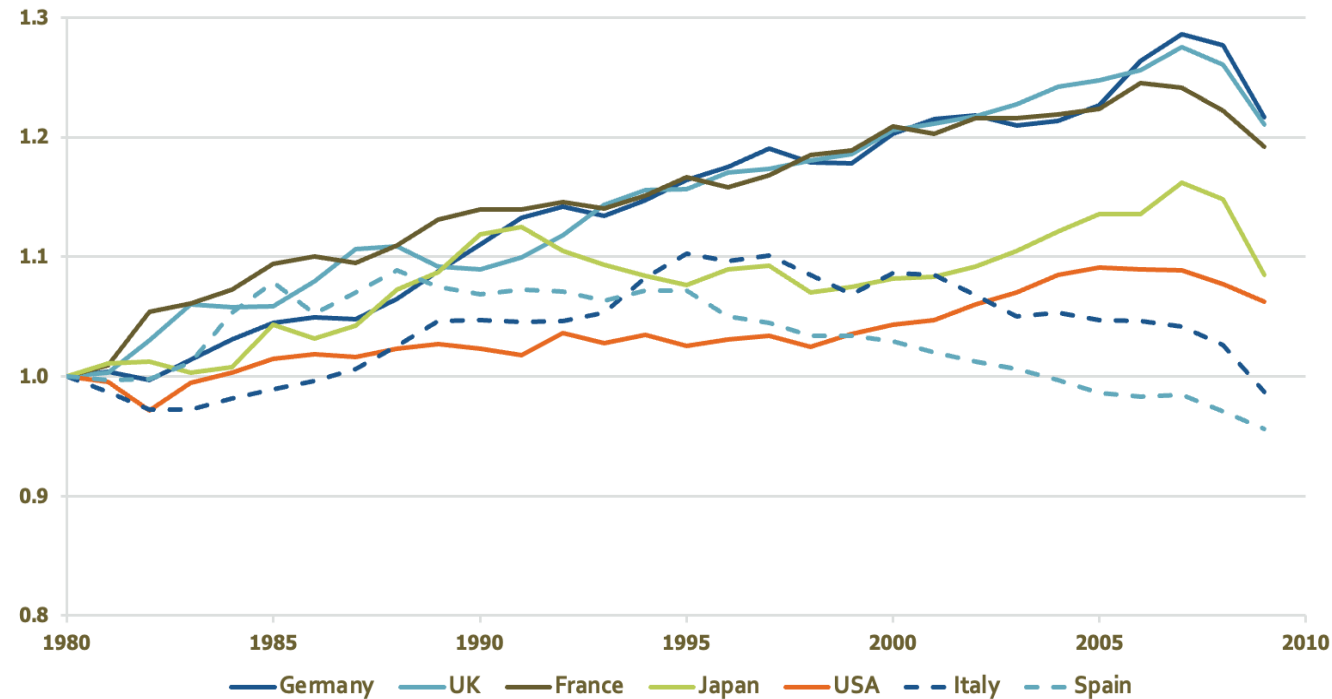
But where is productivity?

Anemic growth in productivity across the industrialized world.

Annual growth rate of total factor productivity (TFP)
Preceding decadal average, 1990–2010



Total Factor Productivity in OECD Countries
Growth over time, 1980–2009



But perhaps this is temporary and—when productivity picks up, with further advances in AI—everybody will benefit.



Missing: Productivity From (autonomous) machine intelligence?

The promise of automation, especially based on machine intelligence, is productivity growth.

But it has repeatedly disappointed in offices, customer service and even in retail. Why?

"So-so automation": Limited productivity benefits if humans are good and machines not as good as sometimes presumed.



Surveillance is also intensifying

Similar trends in both authoritarian and democratic countries.

Centralized control of data does not augur well for the future of democracy.

Worse, as Hannah Arendt foresaw, real danger:

“nobody believes anything any longer.”



Facebook content moderation



Chinese social credit score kiosk

What's wrong with this picture?

Change the narrative away from the desirability of top-down schemes, towards including greater voices in the technology choices.



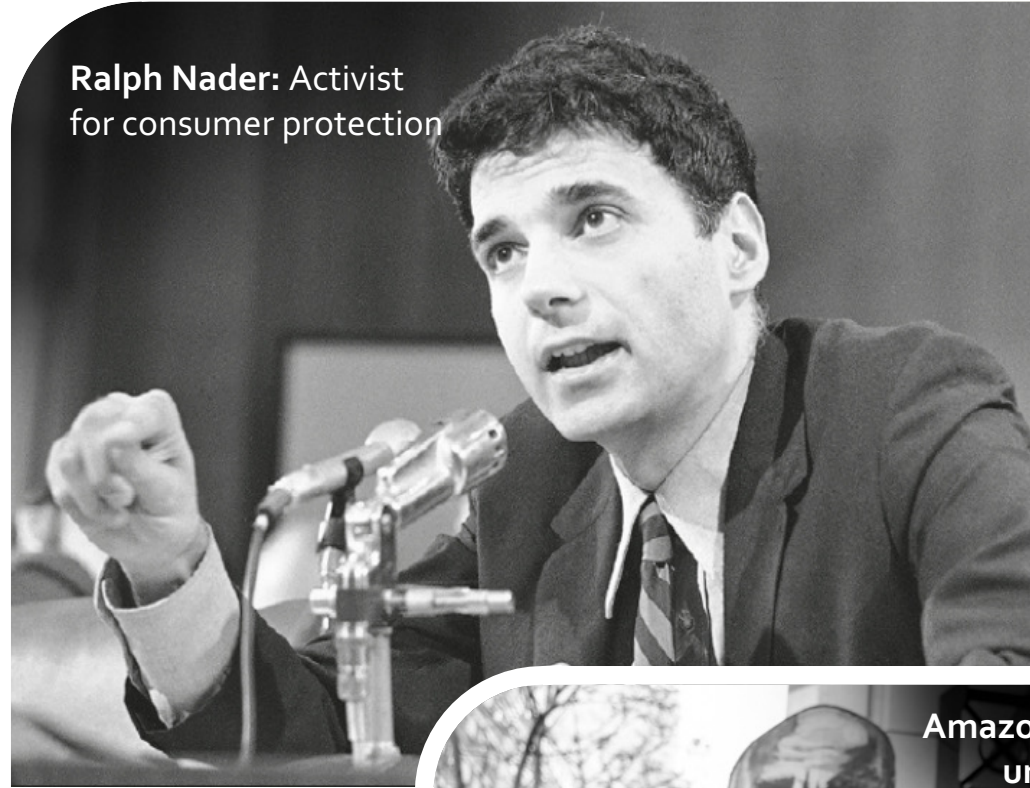
Sam Altman (OpenAI) and Elon Musk

Politics of shared prosperity

Countervailing powers

- Labor movement
- Bottom-up organizations from civil society
- Implementing appropriate regulation (e.g., taxes, antitrust, data, support worker-friendly technologies)

Ralph Nader: Activist
for consumer protection



Amazon Staten Island labor
union organizing, 2021



Key for shared prosperity

Redirect technological change to enhance human capabilities:

- New tasks for greater worker marginal productivity
- Better information for workers and human decision-makers
- Greater worker autonomy
- Empowering citizens
- Why other policies (redistribution, unions, defensive regulations) will not be enough without redirection.



Ted Nelson:
technological pioneer, 1974

“

The public does not have to take what's being dished out...

**COMPUTER POWER TO
THE PEOPLE!**

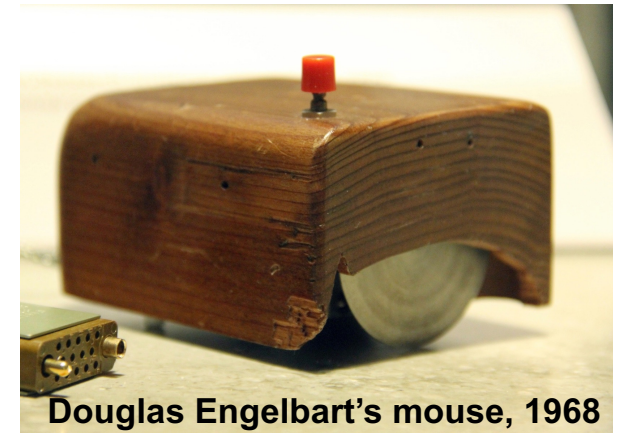
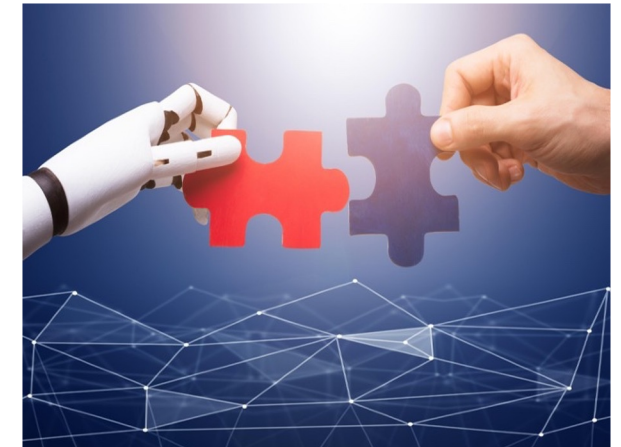
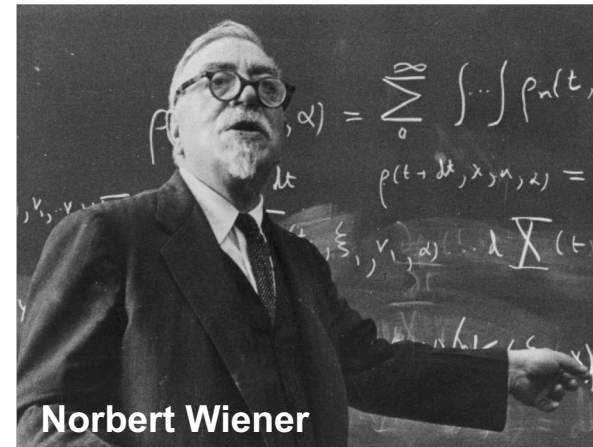
***DOWN WITH
CYBERCRUD!***”

Better AI

We already have the beginning of a different vision for AI

Machines designed to *complement* human abilities.

- Alternative to machines designed to be smarter and more powerful than humans.
- This alternative vision — let's call it **machine usefulness** or "**pro-human AI**" — starts with Norbert Wiener.
- Articulated and put into practice by computer scientists, such as JCR Licklider and Douglas Engelbart, "**human-machine symbiosis.**"
- It implies a focus on better information and new tasks for workers in the production process and better tools controlled by humans in communication.

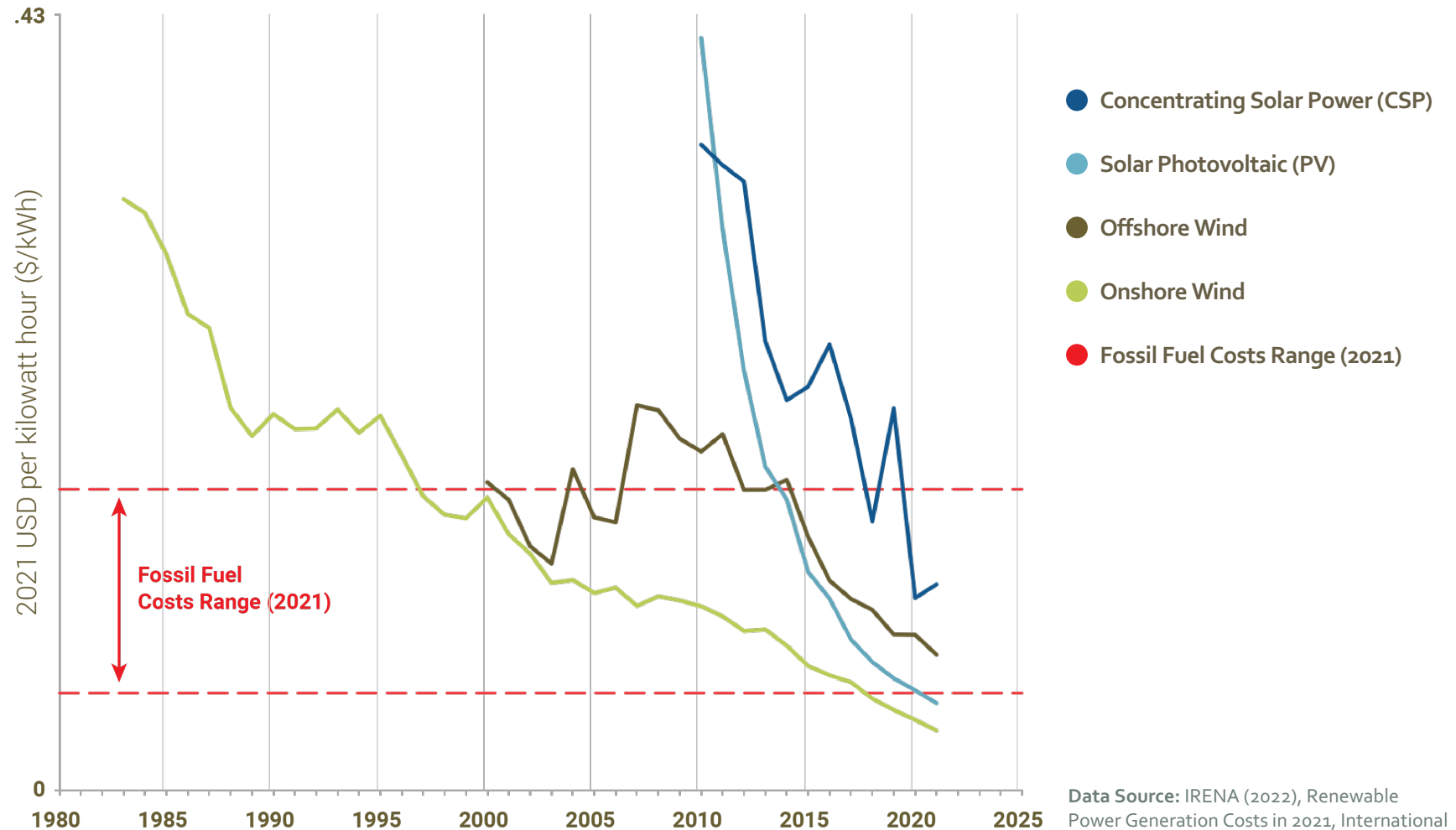


Source: Ben Shneiderman

Can we actually redirect technology?

Yes, investment in the right technologies can be achieved by societal mobilization and government policy

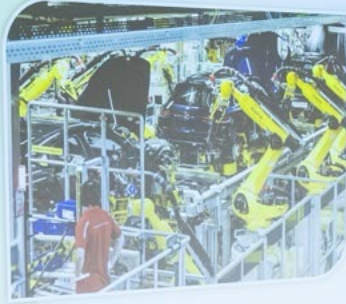
Cost of generating renewable electricity
1980's–2021, various utility-scale sources




Data Source: IRENA (2022), Renewable Power Generation Costs in 2021, International Renewable Energy Agency, Abu Dhabi.

Why did things go wrong in the digital age?

- 1a *Too much focus on automation, not enough on creating new tasks*



Watch **replay** on  **YouTube**