

Leadership in an Age of AI and Robotics

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Twitter: @INVENIAM

What we are doing today

Our Agenda:

- A quick poll about automation and AI
- A look back + where are we now?
- What are centaurs?
- What do centaurs mean for leadership?

Technological Anxiety?

SALON

NEWS POLITICS ENTERTAINMENT LIFE BUSINESS

FRIDAY, JAN 17, 2014 06:44 AM CST

Robots are stealing your job: How technology threatens to wipe out the middle class

Machines are replacing workers at an alarming pace. Here's how to avoid a middle-class robot apocalypse

ANDREW LEONARD

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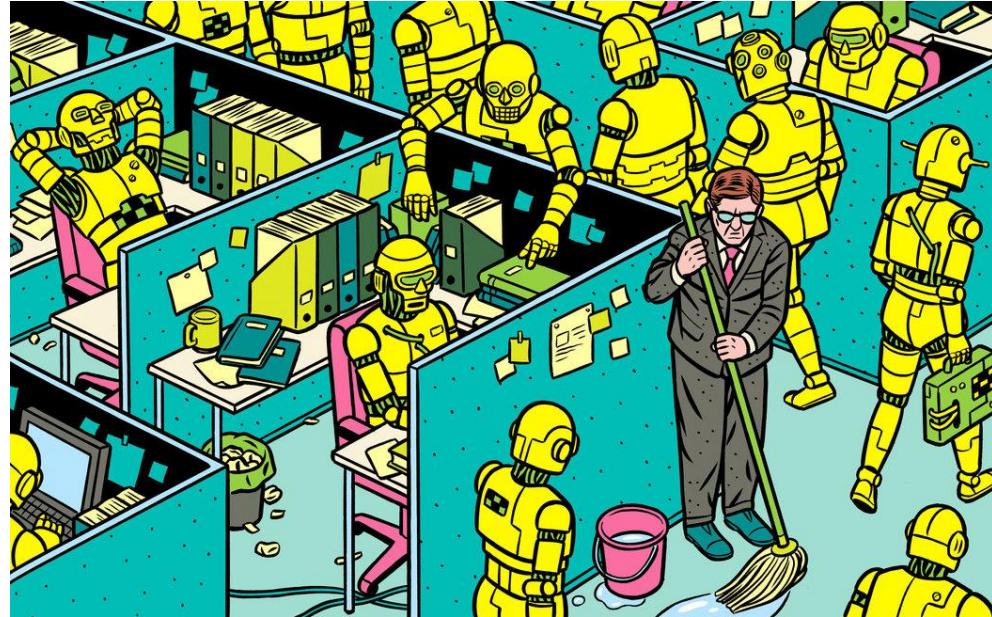
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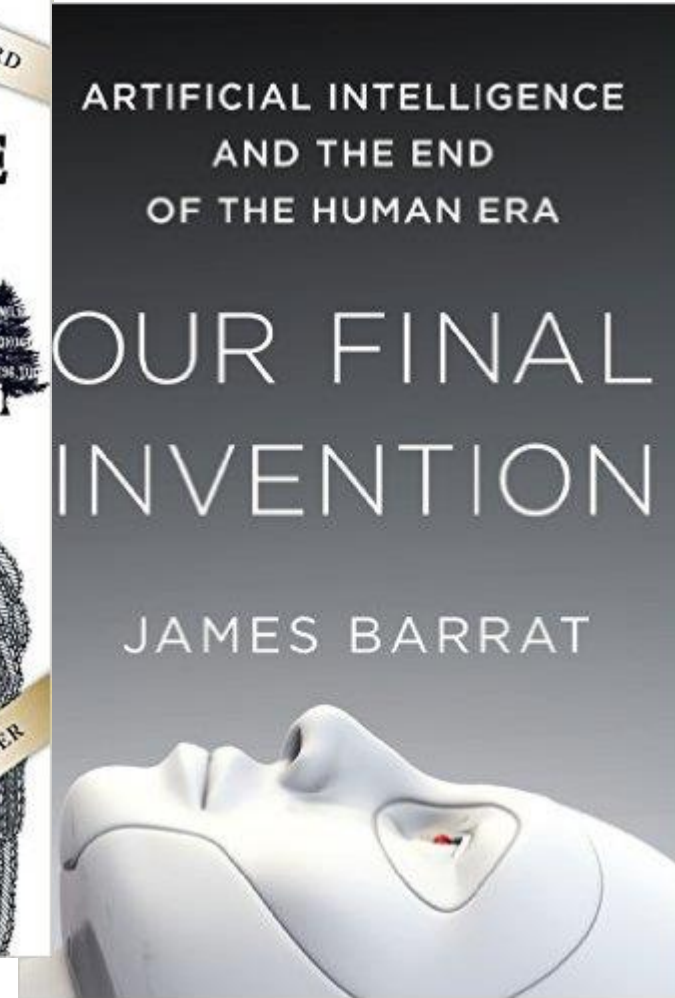
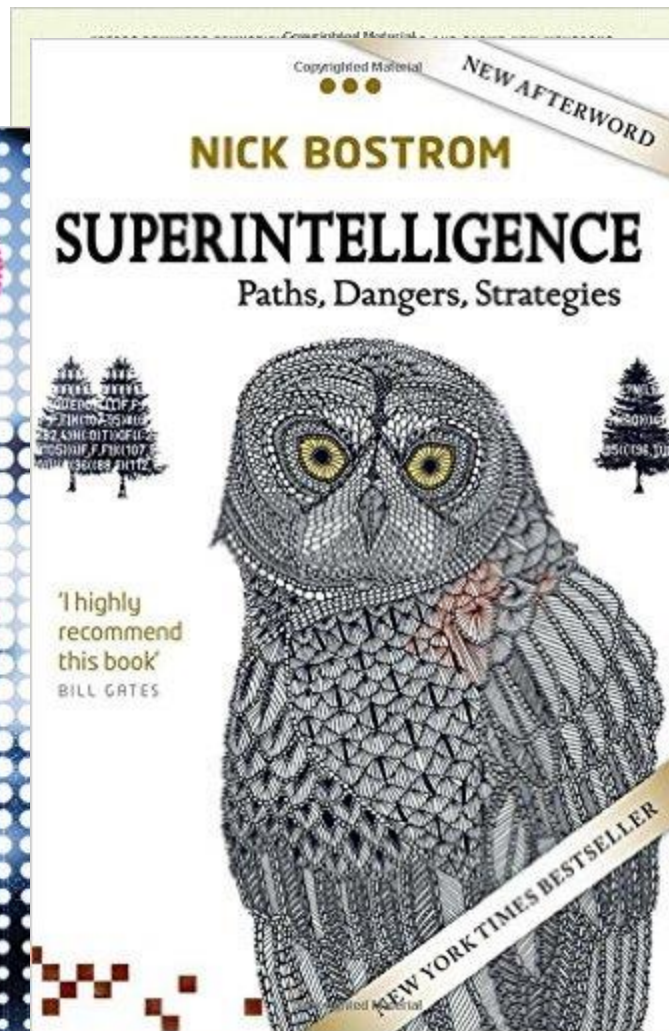
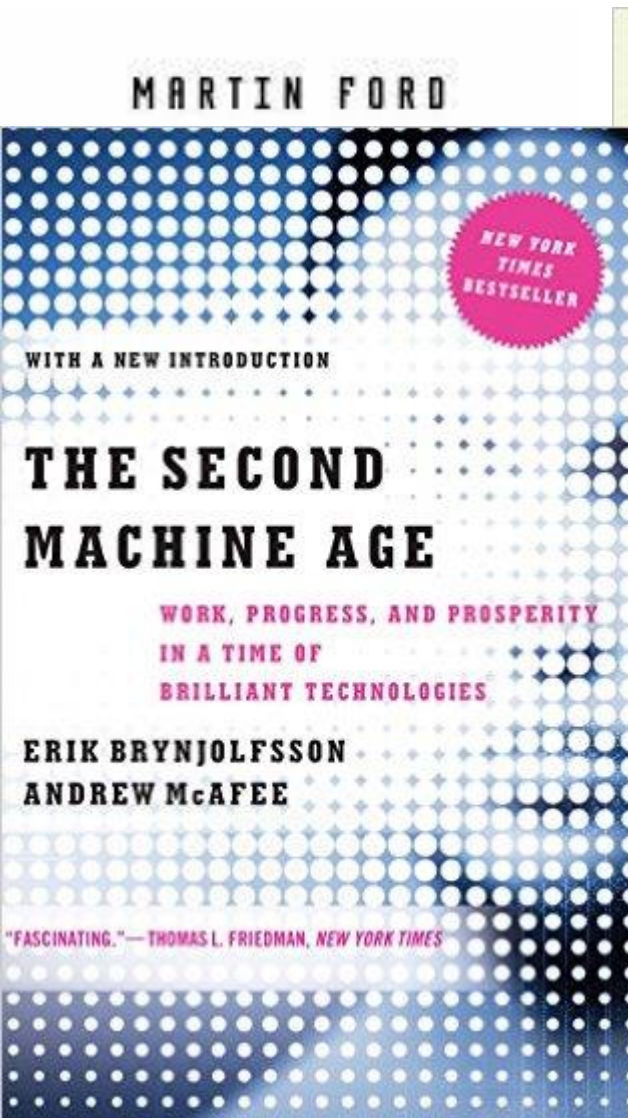
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TOPICS: AUTOMATION, BIG DATA, CAPITALISM, INCOME INEQUALITY, MIDDLE CLASS, ROBOT APOCALYPSE, THE SECOND MACHINE AGE, INNOVATION NEWS, TECHNOLOGY NEWS, BUSINESS NEWS, POLITICS NEWS



Technological Anxiety?



Technological Anxiety?



A Look Back

Technological Anxiety? 16th C.



- In 1589, William Lee invented the stocking frame knitting machine
- He demonstrated it for Queen Elizabeth I, hoping to obtain a patent
- Elizabeth refused, fearing it would create unemployment
- William ended up fleeing England!

Technological Anxiety? 19th C.



- Luddites?
- The Luddites are named after Ned Ludd, who smashed two stocking frames in 1779
- The name evolved into the imaginary “General Ludd” or “King Ludd”
- Ned Ludd supposedly lived in Sherwood Forest (Just like Robin Hood!)

Sabotage?



Technological Anxiety? 1920s

THE NEW YORK TIMES, SUNDAY, FEBRUARY 26, 1928.

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3

MARCH OF THE MACHINE MAKES IDLE HANDS

By EVANS CLARK.

A FEW days ago the General Motors Corporation reported the largest peace-time earnings ever made by a single concern in the history of America. Three days later Governor Smith made public a report from the New York Industrial Commissioner which called public attention to serious unemployment throughout the State; not since the depression of 1921, it was disclosed, have conditions been as bad.

The people of the United States—in the shadow of a Presidential election—are presented with a social

Prevalence of Unemployment With Greatly Increased Industrial Output
Points to the Influence of Labor-Saving Devices as an Underlying Cause



have gone far to make construction a machine industry instead of a collection of hand trades. One gasoline crane takes the place of ten or twelve laborers. The hod-carrier has disappeared before the invasion of the material hoist. In concrete construction building materials are mixed, like dough, in a machine and literally poured into place without the touch of a human hand. The Ohio figures record these results: with 35 per cent. fewer men employed, contractors put up 11 per cent. more square feet of finished buildings last year than in 1923.

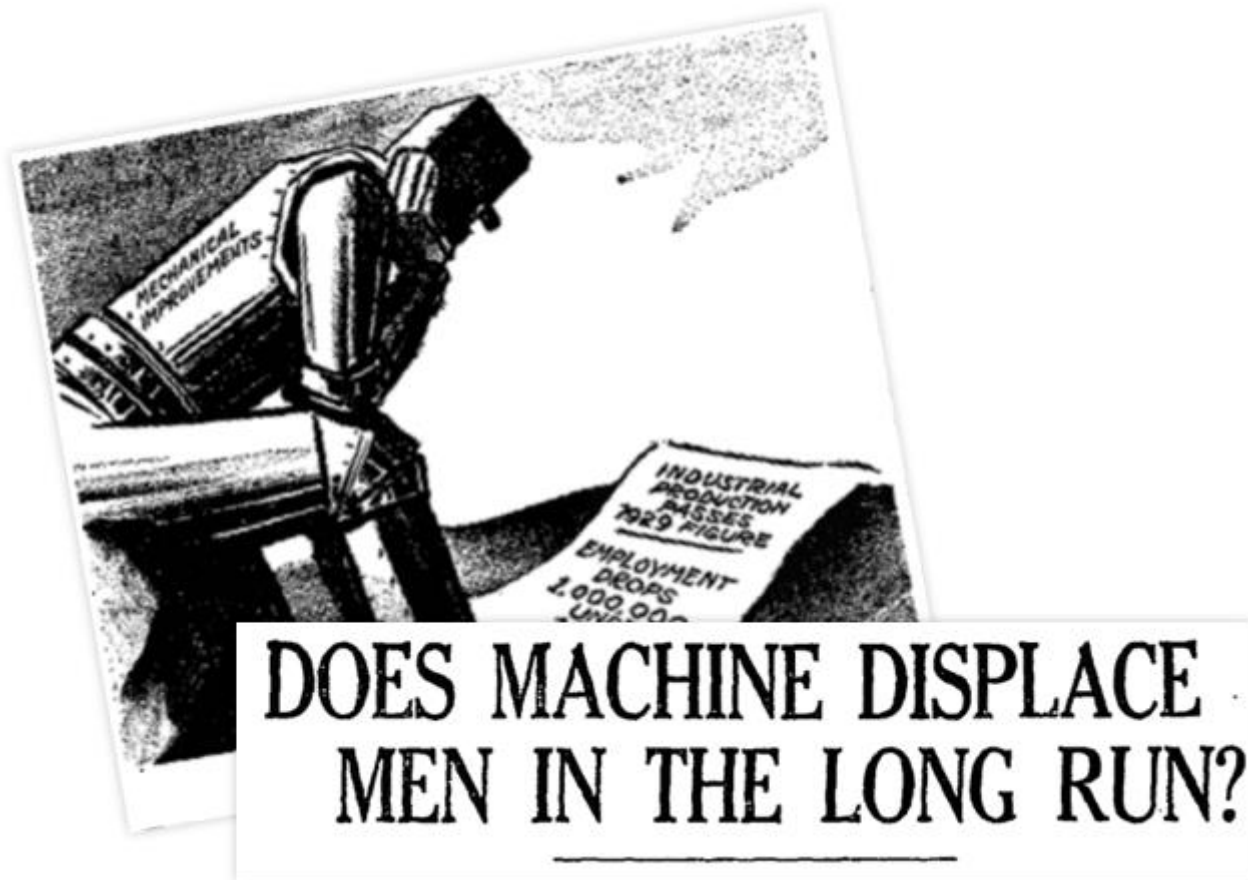
Coal Mined by Machines.

Technological Anxiety? 1930s

- John Maynard Keynes coined a new phrase “We are being afflicted with a new disease...”
- “Technological unemployment.”

***World Ills Laid to Machine
By Einstein in Berlin Speech***

Technological Anxiety? 1940s



Technological Anxiety? 1950s

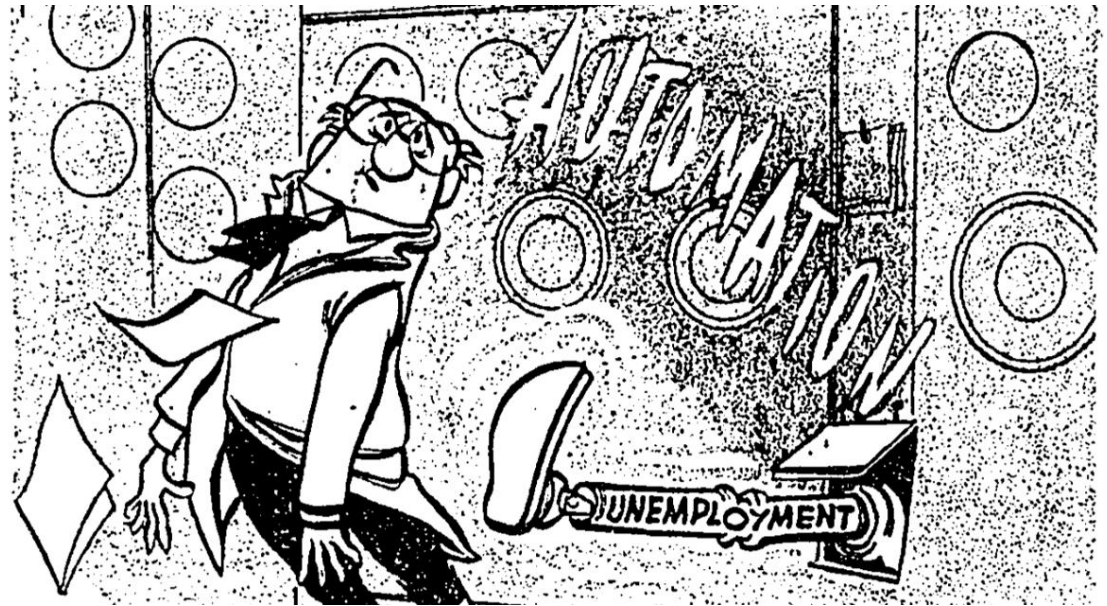
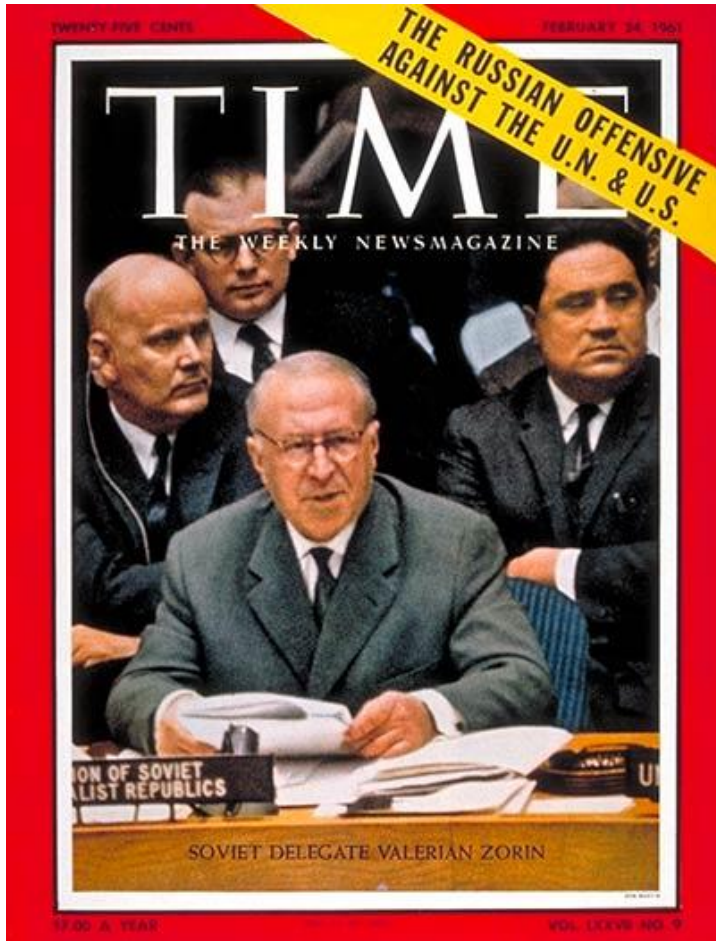
AUTOMATION IN BRITAIN STIRS UNREST IN LABOR

Workers See 'Robot Revolution'
Depriving Them of Jobs



Technological Anxiety? 1960s

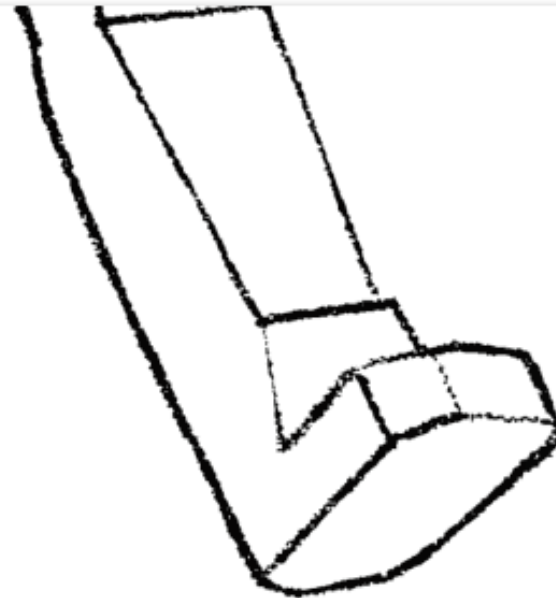
- 1961 - “The Automation Jobless”



Technological Anxiety? 1970s & 80s

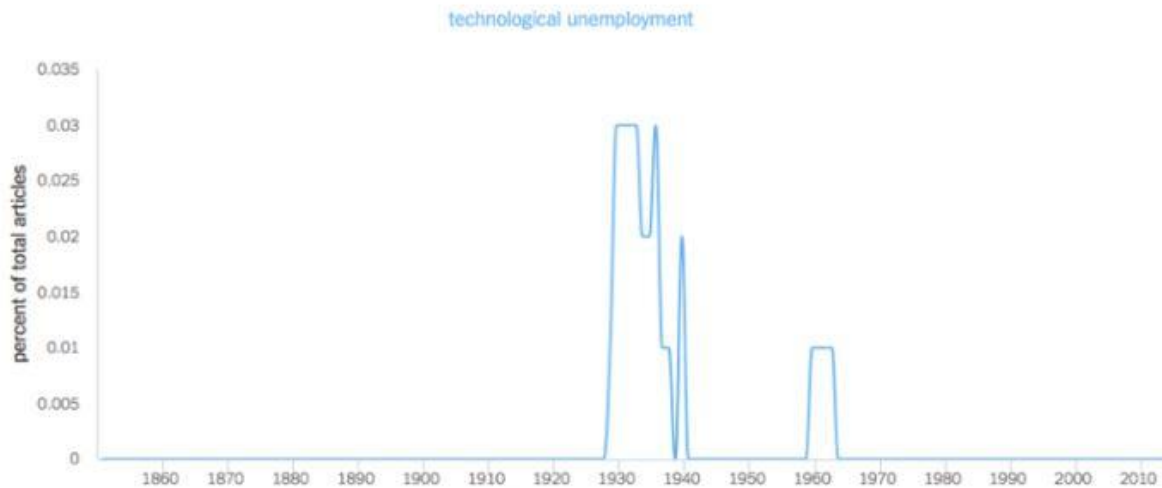
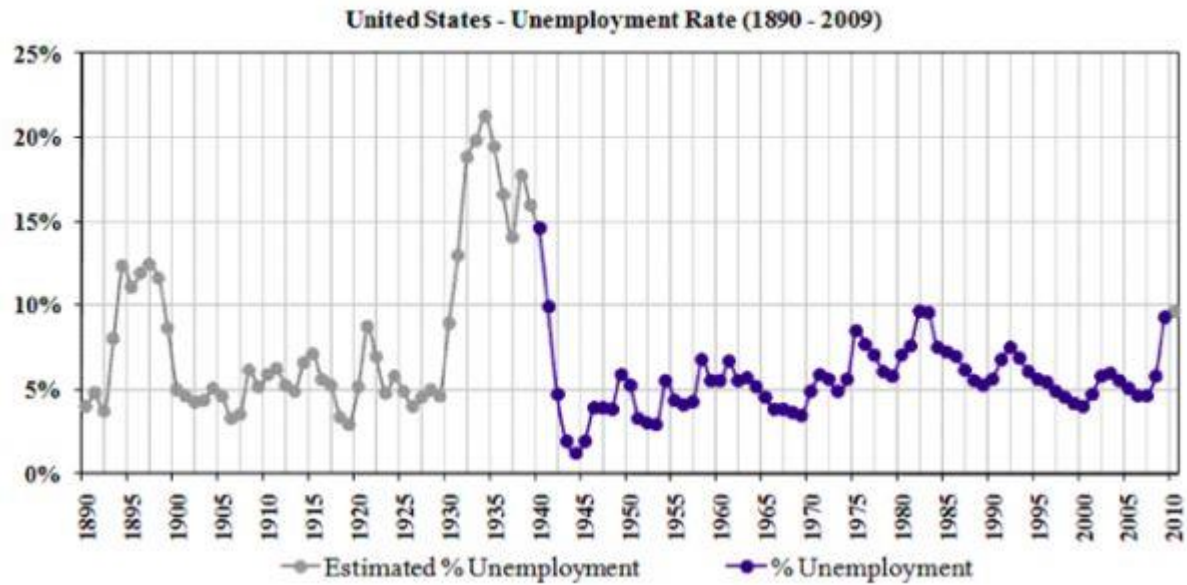


DETROIT — Technological innovation is widely billed as a miracle cure for the United States' economic doldrums. Its aftereffects, however, may be far from benign. The introduction of revolutionary new technologies such as robots — versatile computer-controlled mechanical arms — raise two painful possibilities: sizeable losses of jobs and a deteriorated quality of working life.



A Robot Is After Your Job

Cycles?



The Big Question...

Is this time different?



Lump of Labor Fallacy



Lump of Labor Fallacy

“Economics is about the long run...”



“but in the long run we are all dead.” - Keynes

?

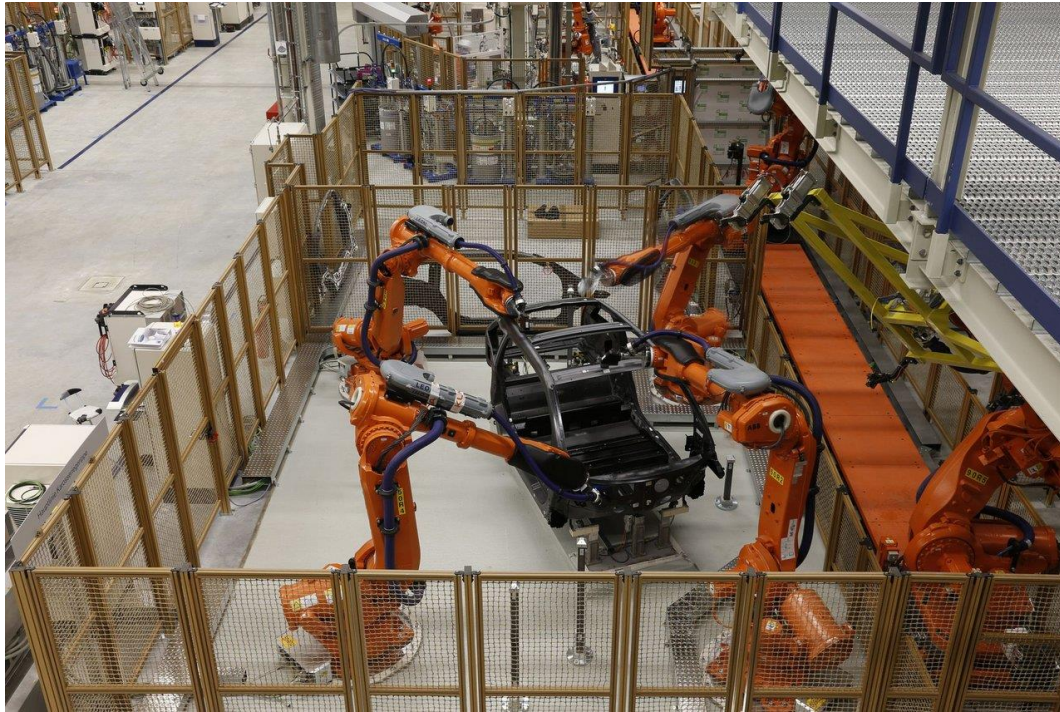


Is this time different?



- Maybe the pace of change has accelerated?
- Maybe the scope of technological change is increasing?
- Maybe the benefits of technological change are more highly concentrated than in the past?

Is this time different?



Cobots; Trainable; Open Source



Innovation ecosystems forming

SEWBO

CAREERS PRESS KIT

Sewbo, Inc. is pleased to announce that it has used an industrial robot to sew together a T-shirt, achieving the long-sought goal of automation for garment production.

Sewbo's technology will allow manufacturers to create higher-quality clothing at lower costs. It will shorten supply chains and lessen the long lead times that hamper the fashion and apparel industries, helping to reduce the complexity of today's intricate global supply network.

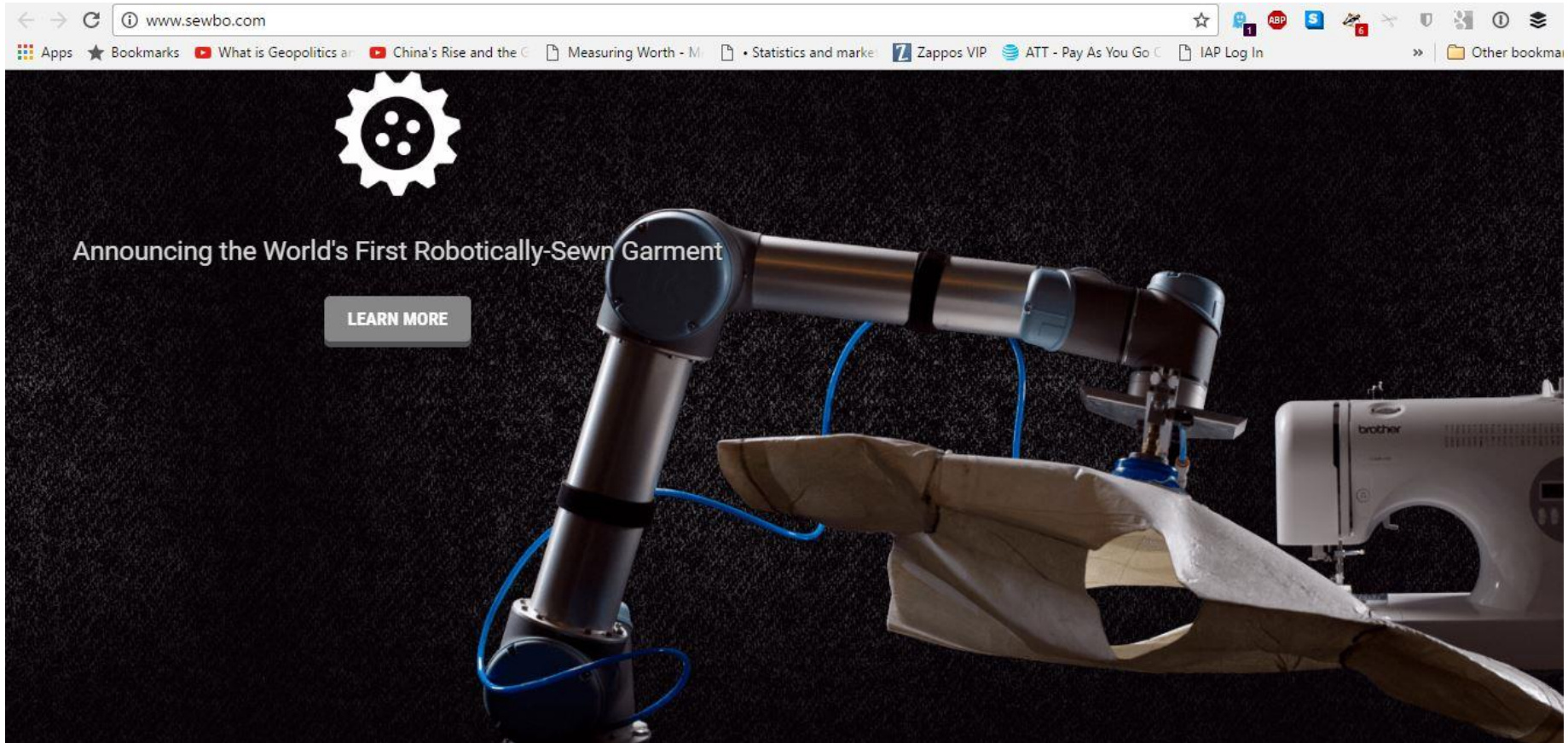
How it Works

Despite widespread use in other industries, automation has made little progress in clothing manufacturing due to the difficulties robots face when trying to manipulate limp, flexible fabrics.

Sewbo avoids these hurdles by temporarily stiffening fabrics, allowing off-the-shelf industrial robots to easily build garments from rigid cloth, just as if they were working with sheet metal. The fabric



Innovation ecosystems forming



“Uncaged” and free to roam?



NEXT TWO: AUTONOMOUS AND CONNECTED PROTOTYPE

AUTONOMOUS VEHICLE

Automated valet parking: 1, 2, 3, 6, 7, 13
Autonomous driving mode: 1, 2, 3, 6, 7, 9

CONNECTIVITY

Video-conference: 6, 8, 10, 11
Multisensorial well-being: 11, 12
Augmented reality: 4, 6, 8, 11
Contextual navigation and multimodality: 6, 8, 11, 13



1 Radar

2 Ultrasonic sensors (front / rear)

3 Front camera for autonomous driving mode

4 Front camera for navigation and augmented reality

5 Rear camera

6 Multiband antenna: GPS, Wi-Fi, Wave, 2G to 4G

7 Control Units for autonomous driving mode management

8 Secured modem

9 Automated vehicle's operating controls (steering, pedals ...)

10 Video-conference camera

11 Distributed HMI: semi-transparent mirror for augmented reality, large tactile multifunction display, customisable instrument panel

12 Connected messaging seat

13 Driver's smartphone

“Uncaged” and free to roam?



Department of Motor Vehicles
Official Website of the State of Nevada

ADA Americans with Disabilities Act

Home About Us Driver License Registration License Plates Business Forms Offices



Autonomous Vehicles

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The Nevada Legislature and the Department of Motor Vehicles have enacted legislation and regulations to enable the testing and operation of autonomous vehicles in the Silver State.

Currently, the DMV is accepting applications for testing only. Autonomous vehicles are not available to the general public.



Application for Testing

[Top ↑](#)

Manufacturers, software developers and others interested in testing their vehicles in Nevada must submit an application to the Department along with proof that one or more of your autonomous vehicles have been driven for a combined minimum of at least 10,000 miles, a complete description of your autonomous technology, a detailed safety plan, and your plan for hiring and training your test drivers. Additional requirements and information are detailed in the application packet.

As of August 8, 2016, the Department made a policy decision to remove the formal drive demonstration requirement prior to issuing an autonomous test license. The Department has made changes to the application packet (OBL 326) to ensure the company provides a sufficient overview of the technology's capabilities and limitations. Due to the changes to the application packet, the drive demonstration requirement has been removed. However, the Department will hold the right to request a formal drive demonstration if the technology described in the application is unique or unusual, and would require a demonstration to ensure the vehicle can safely operate on our highways.

[Autonomous Vehicle Business License Application Packet \(OBL 326\)](#)

Please mail the completed application to:

Nevada Department of Motor Vehicles
Directors Office
555 Wright Way
Carson City, NV 89711-0900

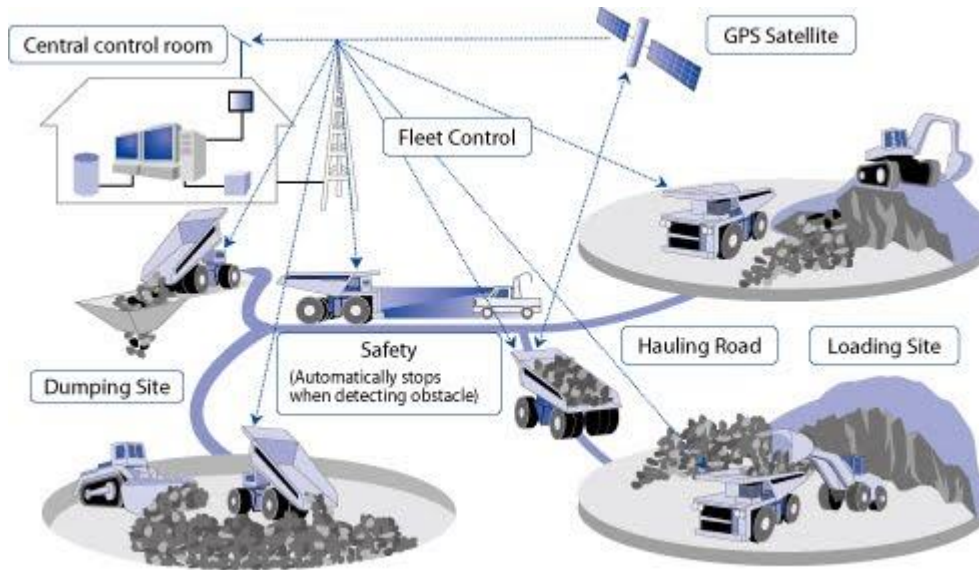
For questions regarding the autonomous application packet please contact:

[Natalie Vargas-Murray](#), Manager, Occupational Business Licensing
(775) 684-4672

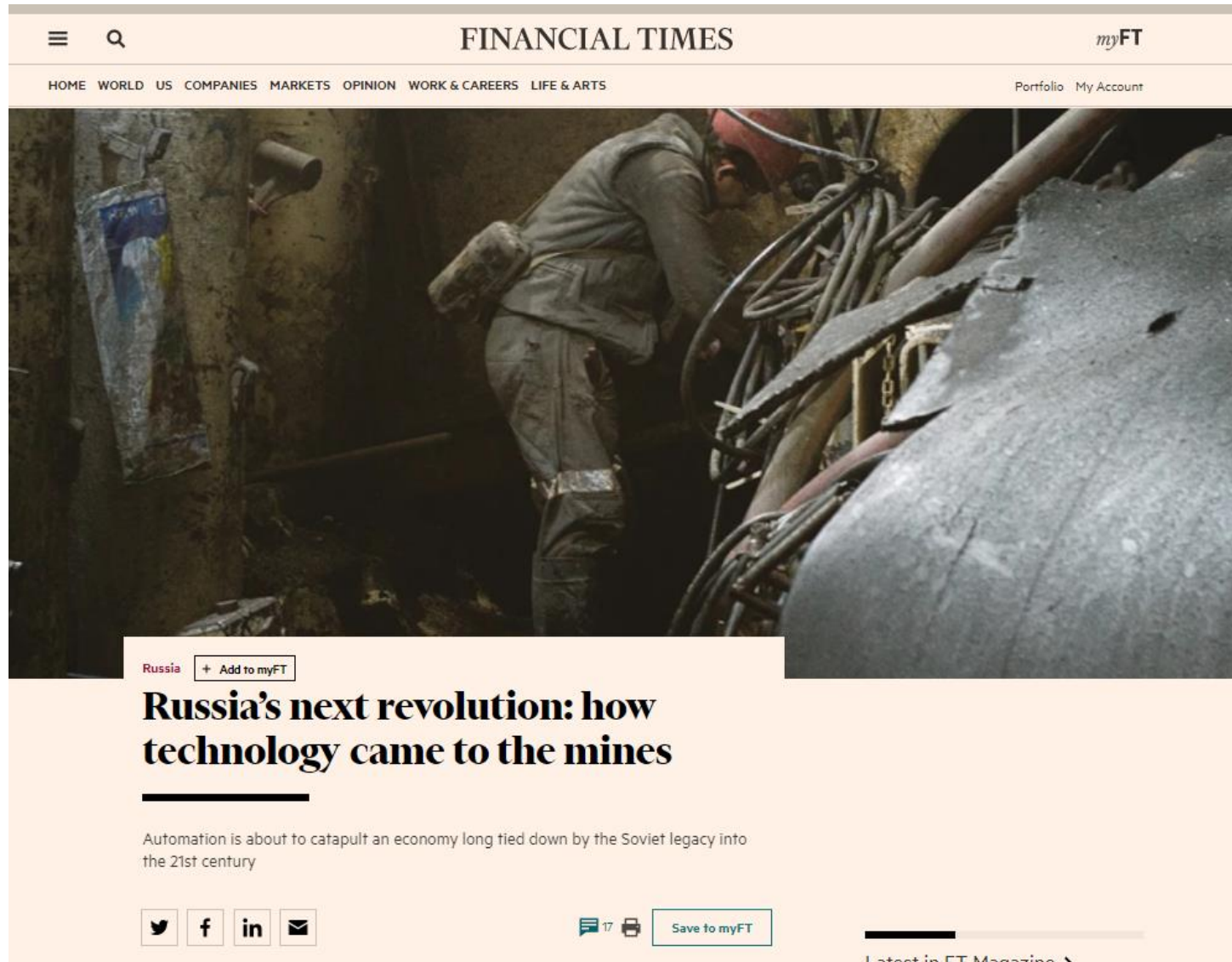
Once an application is approved, the DMV will issue a testing license along with sets of red license plates for the vehicles.



“Uncaged” and free to roam?



“Uncaged” and free to roam?



The screenshot shows the Financial Times website interface. At the top, there is a navigation bar with the FT logo, a search icon, and the text "FINANCIAL TIMES". To the right of the logo is the "myFT" link. Below the navigation bar is a secondary bar with links to "HOME", "WORLD", "US", "COMPANIES", "MARKETS", "OPINION", "WORK & CAREERS", and "LIFE & ARTS". On the right side of this bar are links for "Portfolio" and "My Account". The main content area features a large, dark photograph of a person in a mining environment, wearing a red helmet and a grey protective suit, working with large machinery. Below the photograph, the article title "Russia's next revolution: how technology came to the mines" is displayed in a large, bold, black font. To the left of the title, there is a small red box with the word "Russia" and a button labeled "+ Add to myFT". Below the title is a short paragraph of text: "Automation is about to catapult an economy long tied down by the Soviet legacy into the 21st century". At the bottom of the article preview, there are social media sharing icons for Twitter, Facebook, LinkedIn, and Email. To the right of these icons is a button labeled "Save to myFT" and a small icon indicating 17 comments. At the very bottom right, there is a link labeled "Latest in FT Magazine >".

myFT

HOME WORLD US COMPANIES MARKETS OPINION WORK & CAREERS LIFE & ARTS Portfolio My Account

Russia + Add to myFT

Russia's next revolution: how technology came to the mines

Automation is about to catapult an economy long tied down by the Soviet legacy into the 21st century

Twitter Facebook LinkedIn Email 17 Save to myFT


Latest in FT Magazine >

Is this time different?

- Business process automation is spreading



Is this time different?

-  **WorkFusion** sells software to automate non-routine tasks previously performed by office workers
- The software divides the job into smaller tasks and automates the routine work
 - Then Work Fusion recruits freelancers through crowdsourcing platforms for non-routine work
 - The software then monitors those workers...
 - And learns from them, so it can automate more non-routine tasks!
- Basically, **Work Fusion freelance workers train the system to replace themselves!**

Is this time different?

The Future of Finance is Automated

Like the article you just read.

How AP Automates Earnings Stories

The Associated Press, working with Automated Insights and Zacks Investment Research, uses automation technology to write earnings stories. Previously, AP's reporters wrote such stories. AP now produces nearly 3,700 quarterly earnings stories for US and Canadian companies, over 12 times the number that AP reporters and editors produced manually.

Every story starts with data. Zacks Investment Research provides corporate financial results and Wall Street estimates for measures such as earnings per share, net income and revenue. AP staffers contribute data including business descriptions.

Next, Automated Insights uses algorithms in its Wordsmith software to transform the data into earnings stories based on AP's style and content preferences. The stories are then sent to AP and published to the wire with a tagline indicating that the story was generated by Automated Insights using data provided by Zacks.

Is this time different?



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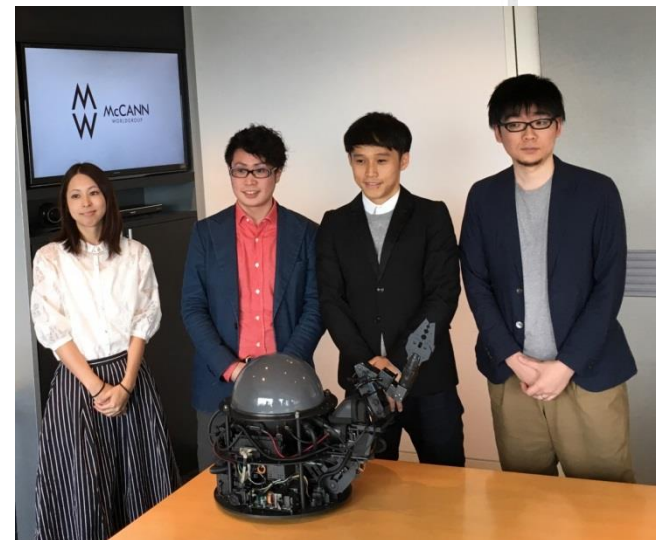
Wednesday, May 04, 2016

Home » Posts tagged with » AI-CD beta

McCann Japan Appoints World's First AI Creative Director

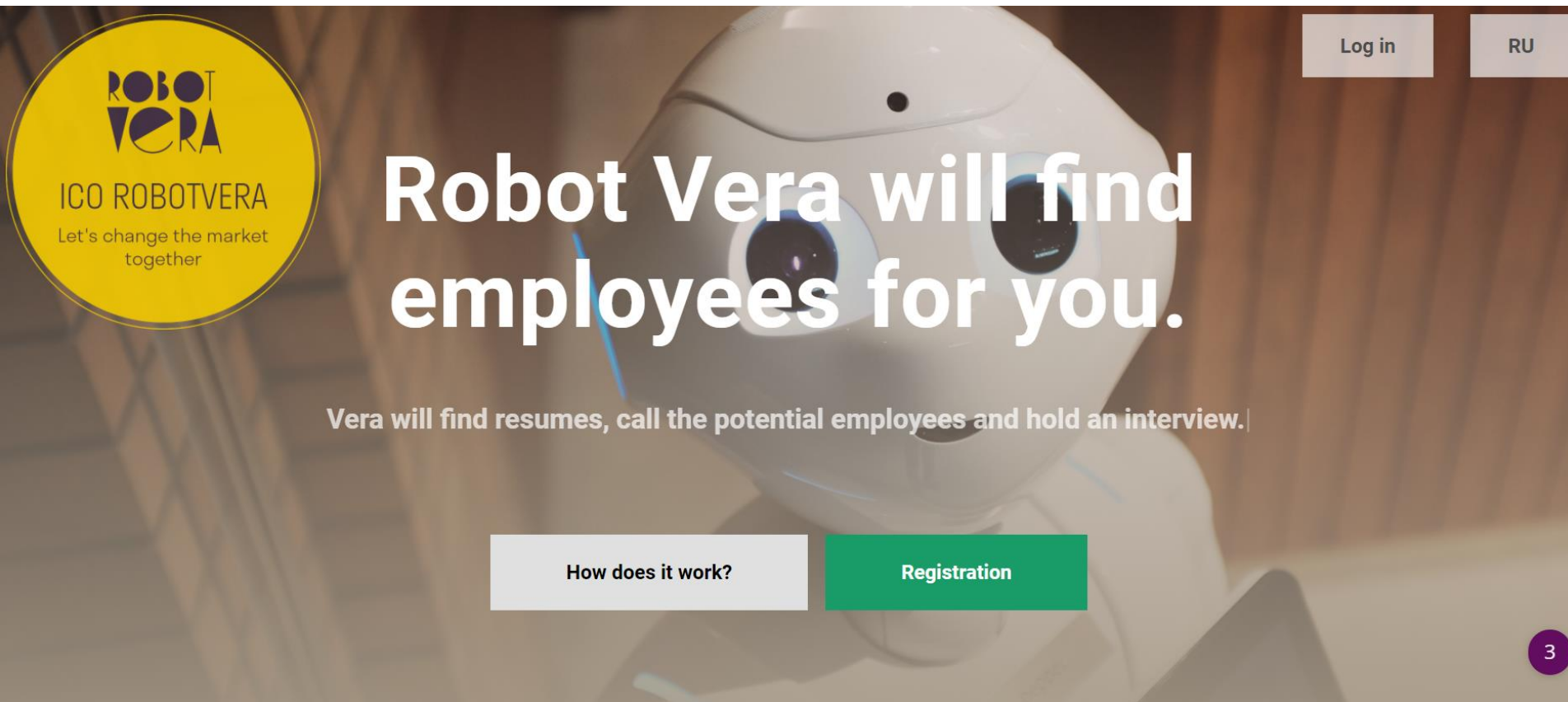


McCann Erickson Japan has announced that AI-CD β (AI-CD beta), the world's first artificial intelligence (A.I.) creative director (according to McCann's research), will be joining the agency. AI-CD β will be attending McCann Worldgroup's new employee welcoming ceremony on April 1st, along with 11 fresh college graduates. AI-CD β was developed through the Creative Genome [...]



Is this time different?

- From HR to “HAIR”?

A promotional banner for 'Robot Vera' featuring a white robot head with large blue eyes. The background is a blurred office setting. On the left, there is a yellow circular logo with the text 'ROBOT VERA' and 'ICO ROBOTVERA Let's change the market together'. On the right, there are 'Log in' and 'RU' buttons. The main text reads 'Robot Vera will find employees for you.' Below this, a smaller line of text says 'Vera will find resumes, call the potential employees and hold an interview.' At the bottom, there are two buttons: 'How does it work?' and 'Registration'. A small purple circle with the number '3' is in the bottom right corner.

ROBOT VERA

ICO ROBOTVERA
Let's change the market together

Log in RU

Robot Vera will find employees for you.

Vera will find resumes, call the potential employees and hold an interview.

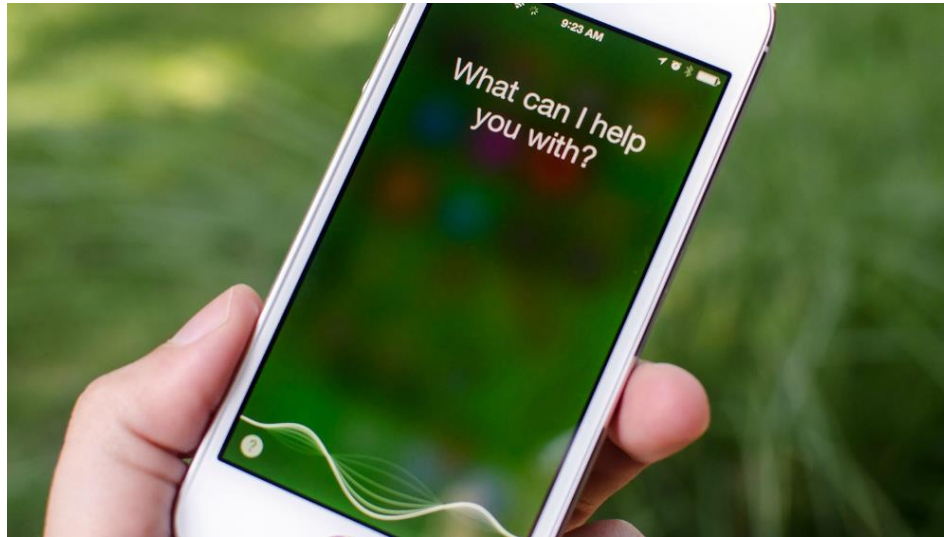
How does it work? Registration

3

Is this time different?



Is this time different?



Ask Google

Google™ Custom Search

"Alexa, turn on
Welcome Home"

"Alexa, turn off my
Bedroom Sonos"

"Alexa, turn on my
Chill Time"

"Alexa, turn on
the TV"



Cortana

Microsoft Corporation Productivity

Everyone

This app is compatible with some of your devices.

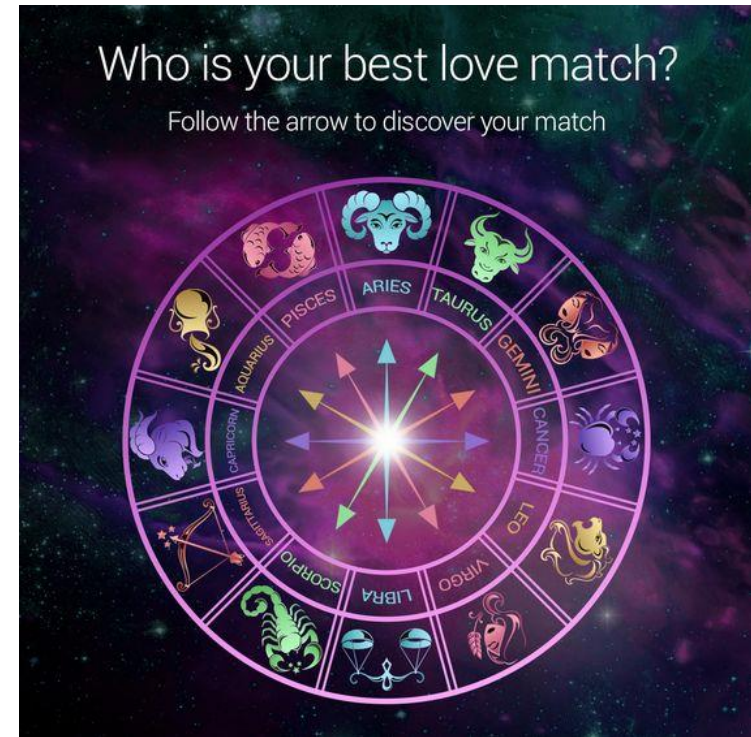
Top Developer

★★★★★ 15,363

Add to Wishlist

Install

Is this time different?



Is this time different?

Proceedings of the National Academy of Sciences of the United States of America

PNAS

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↑ > Current Issue > vol. 108 no. 17 > Shai Danziger, 6889–6892, doi: 10.1073/pnas.1018033108



Extraneous factors in judicial decisions

Shai Danziger^{a,1}, Jonathan Levav^{b,1,2}, and Liora Avnaim-Pesso^a

Author Affiliations:

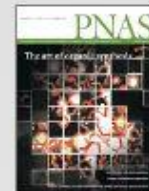
Edited* by Daniel Kahneman, Princeton University, Princeton, NJ, and approved February 25, 2011 (received for review December 8, 2010)

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Abstract

Are judicial rulings based solely on laws and facts? Legal formalism holds that judges apply legal reasons to the facts of a case in a rational, mechanical, and deliberative manner. In contrast, legal realists argue that the rational application of legal reasons does not sufficiently explain the decisions of judges and that

This Issue



April 26, 2011
vol. 108 no. 17
Masthead (PDF)
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Don't Miss

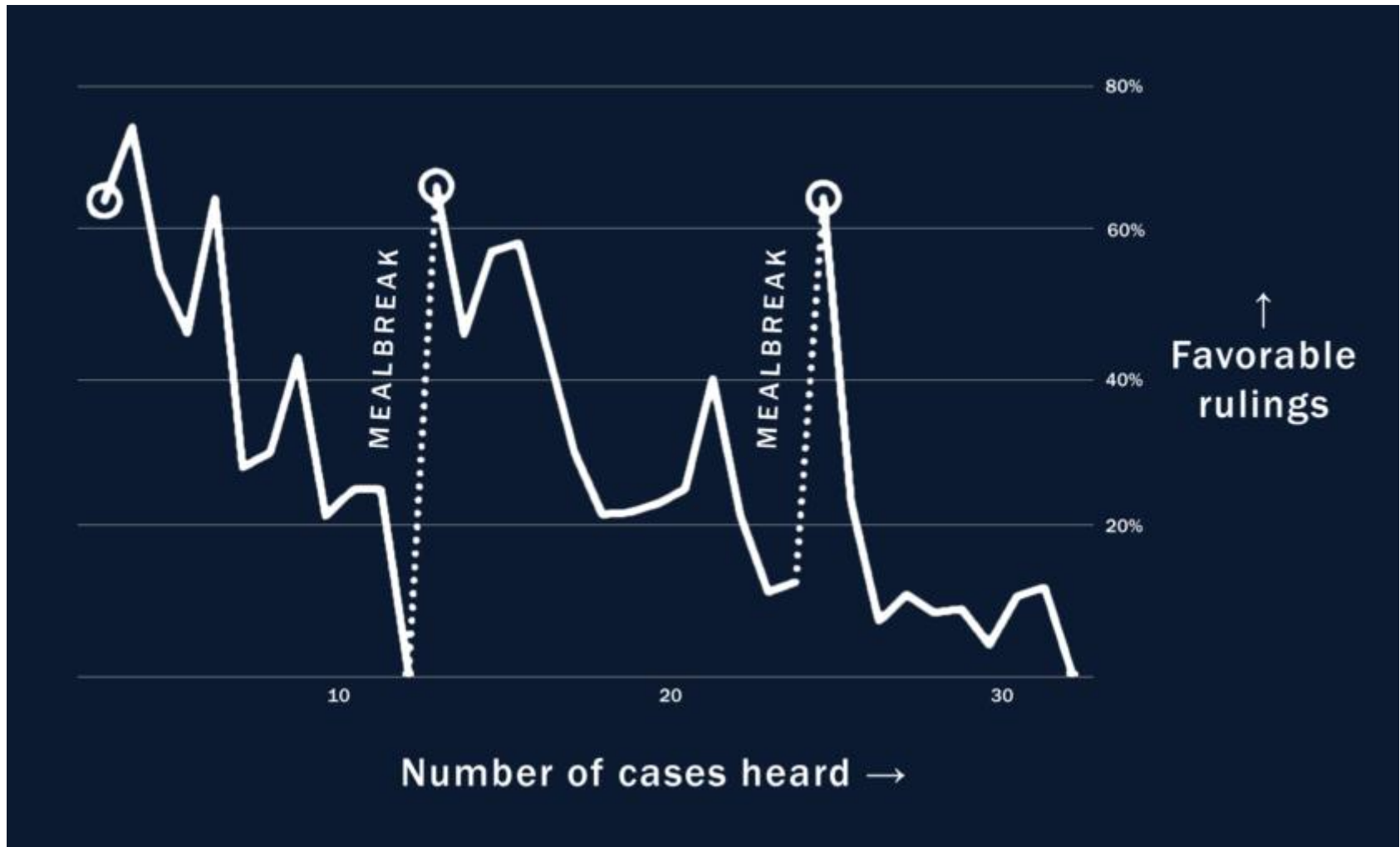


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Is this time different?



What are general consequences for nations and industries?



Consequences?

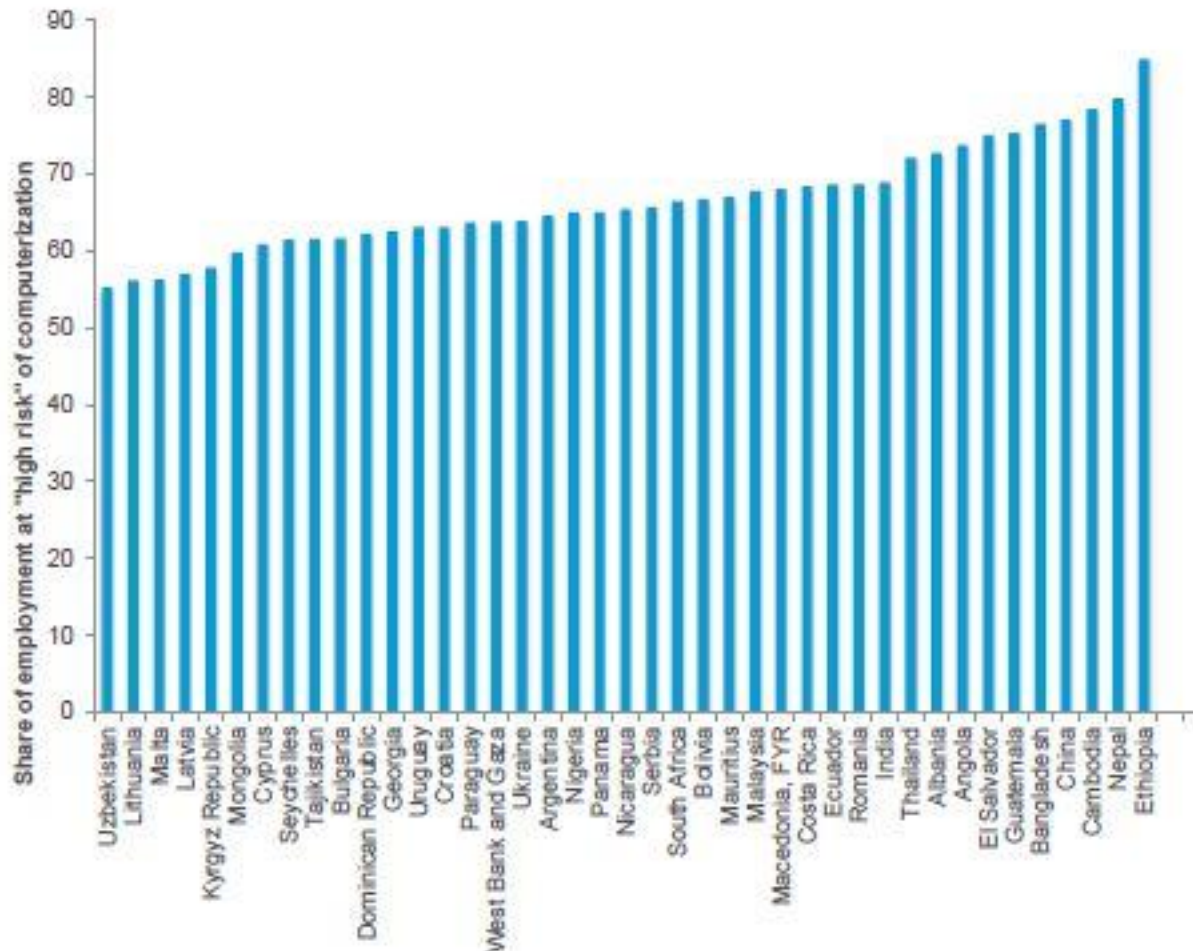
Employment share at risk by industry

	Low Risk (%)	Medium Risk (%)	High Risk (%)
Accommodation & Food Services	2.8%	10.5%	86.7%
Administrative & Support Services	1.6%	36.2%	62.2%
Agriculture, Forestry, Fishing & Hunting	75.6%	12.0%	12.3%
Arts, Entertainment & Recreation	47.9%	12.5%	39.6%
Construction	21.6%	19.8%	58.6%
Educational Services	63.1%	19.7%	17.2%
Finance & Insurance	28.9%	17.3%	53.7%
Government	46.2%	30.6%	23.2%
Health Care & Social Assistance	39.4%	25.0%	35.6%
Information	51.6%	38.3%	10.1%
Management of Companies & Enterprises	82.8%	6.2%	11.0%
Manufacturing	19.9%	18.4%	61.7%
Mining, Quarrying and Oil & Gas Extraction	7.8%	46.3%	45.9%
Other Services (ex Public Admin)	44.9%	24.7%	30.4%
Professional, Scientific & Technical Services	54.0%	10.9%	35.1%
Real Estate and Rental & Leasing	0.7%	32.0%	67.2%
Retail Trade	14.5%	18.9%	66.6%
Self-Employed	60.4%	8.9%	30.7%
Transportation & Warehousing	5.5%	19.4%	75.0%
Utilities	40.3%	27.8%	31.9%
Wholesale Trade	15.9%	18.4%	65.7%

Source: Oxford Martin School

Premature Deindustrialization?

Developing Countries Susceptibility to Automation



Source: World Bank Development Report 2016; based on Frey and Osborne (2013) methodology, Citi Research

Activities versus Jobs/Occupations?

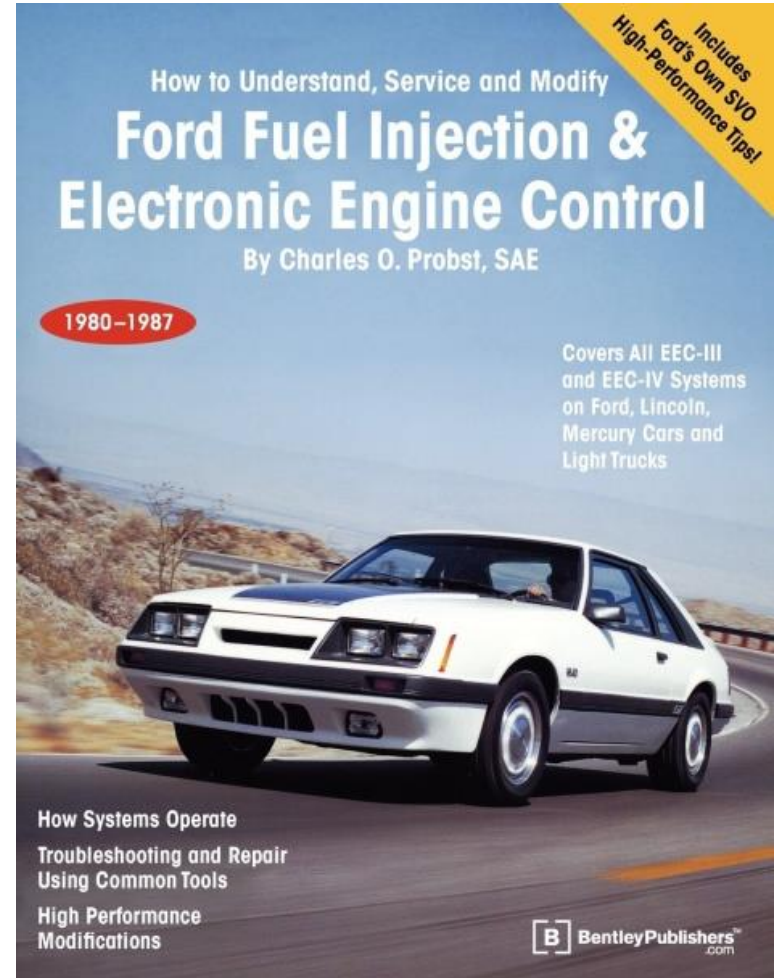
- Automation will change activities **within** many occupations



- 40 years later, by making branches cheaper to open, the number of tellers has only now started to decline

Activities versus Jobs/Occupations?

- A more sad story



1967 – MQ: “The manager and the moron”



- “The stupider the tool, the brighter the master has to be—and this is the dumbest tool we have ever had.”

2015

NOVEMBER 2015

McKinsey Quarterly

Four fundamentals of workplace automation

“The ability to staff, manage, and lead increasingly automated organizations will become an important competitive differentiator.”

What are centaurs?



1997



2011



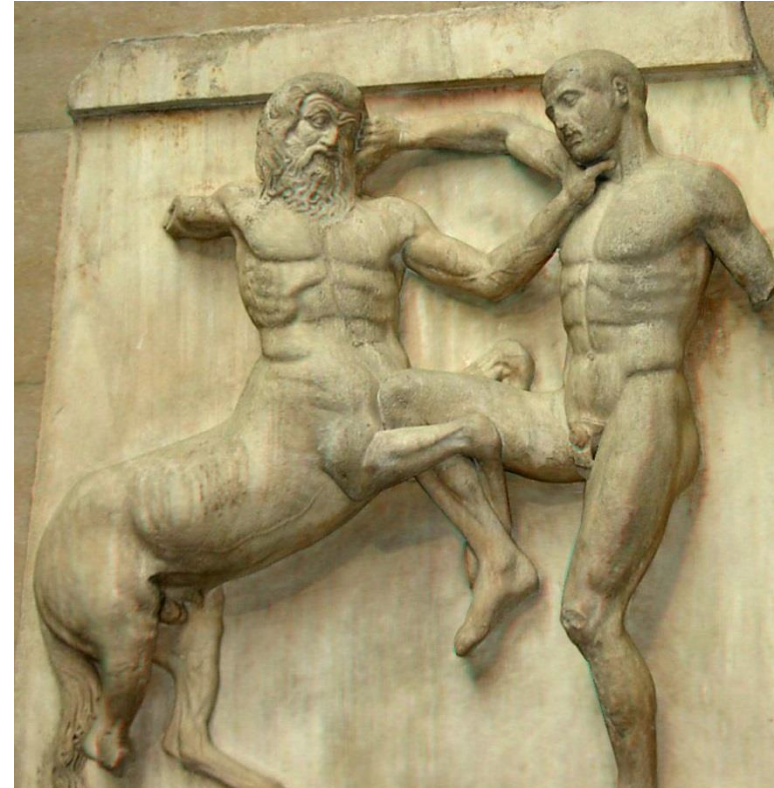
2016 & 2017



Chess and Centaurs



Chess and Centaurs



Leading (and battling) centaurs

- “A weak human + a machine + a good process is superior to...
- To a strong computer alone and...
- (more remarkably)...
- To a strong human + a machine + an inferior process.”

Garry Kasparov

“The Chess Master and the Computer”

What do centaurs mean for *your* leadership?



Leadership Implications

- AI will be most definitive on relatively small questions
- Leadership will be needed **when algorithms disagree!**



Leadership Implications

- Remove friction between your team and their machine assistants!



- Design processes to create data sets worthy of intelligent machines: **polluted or suspect data wastes everyone's time!**

- Leaders also need to realize that AI-based decisions are not automatically equitable just because they are the products of complex processes
- Procedural consistency is not equivalent to objectivity!
- In other words, AI may be mathematically optimal but ethically problematic

Leadership Implications

- What makes people happy?



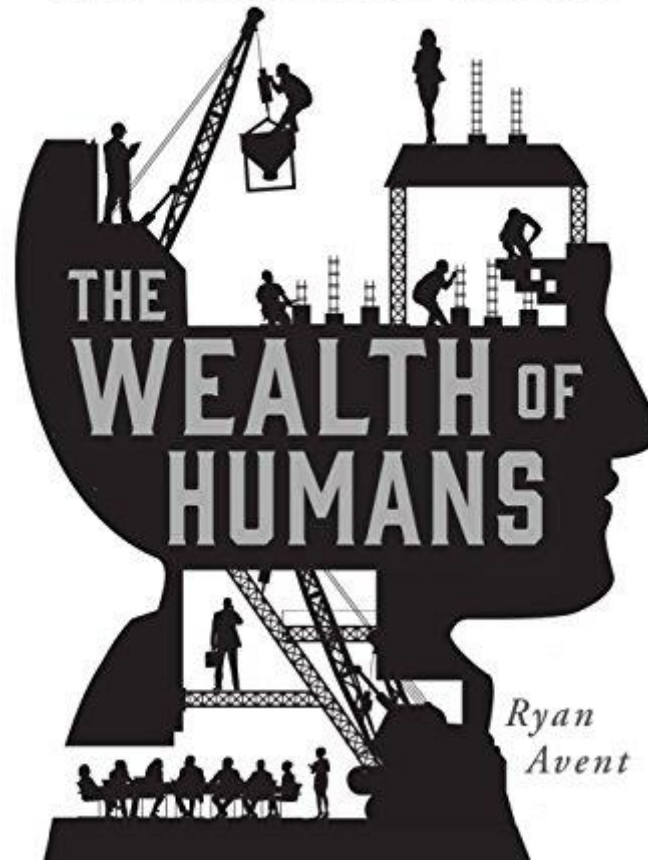
Leadership Implications

- Leaders will tell coherent stories



To learn more...

*WORK, POWER and STATUS
in the TWENTY-FIRST CENTURY*



Thank you!

Please Connect: mjones@faculty.ie.edu

LinkedIn: <https://www.linkedin.com/in/inveniam>

Twitter: <https://twitter.com/Inveniam>