

# **MIS 5302 Spring 2017 – Managing Technology & Systems**

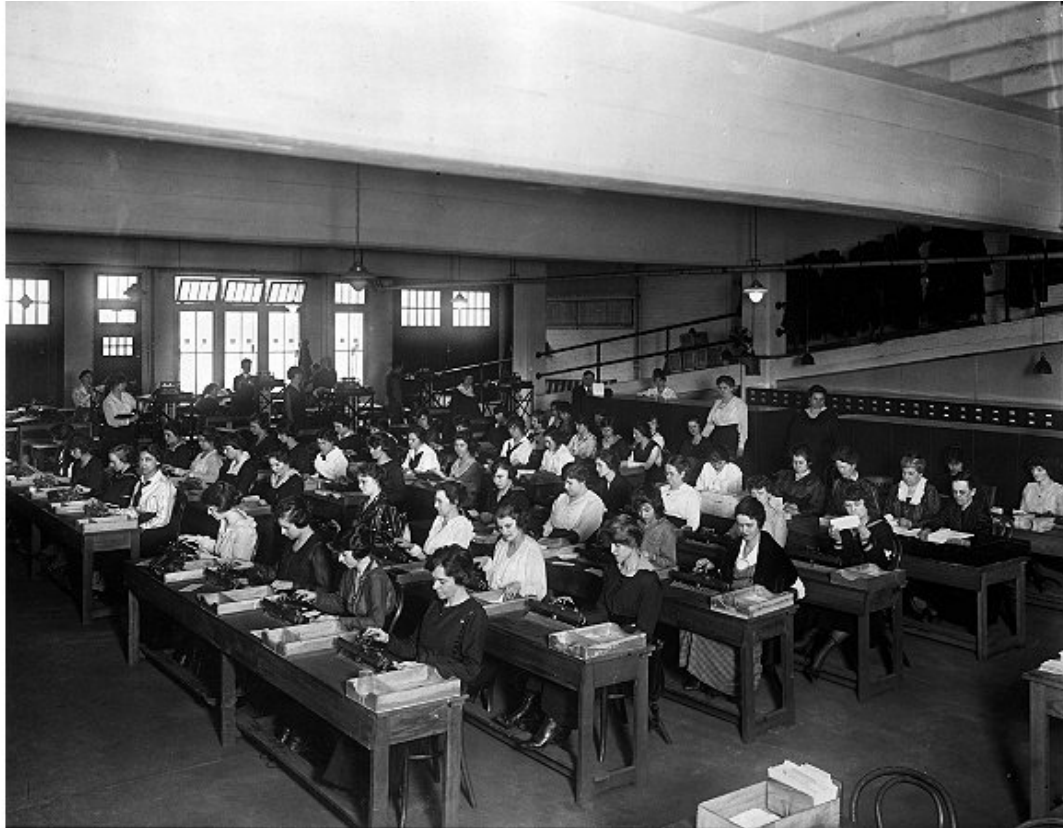
## ***Session 6 – IT and Your Career***

**Min-Seok Pang**

**Management Information Systems  
Fox School of Business, Temple University  
minspang@temple.edu**

***Apr. 25<sup>th</sup>, 2017***

## Women Mathematicians at World War II

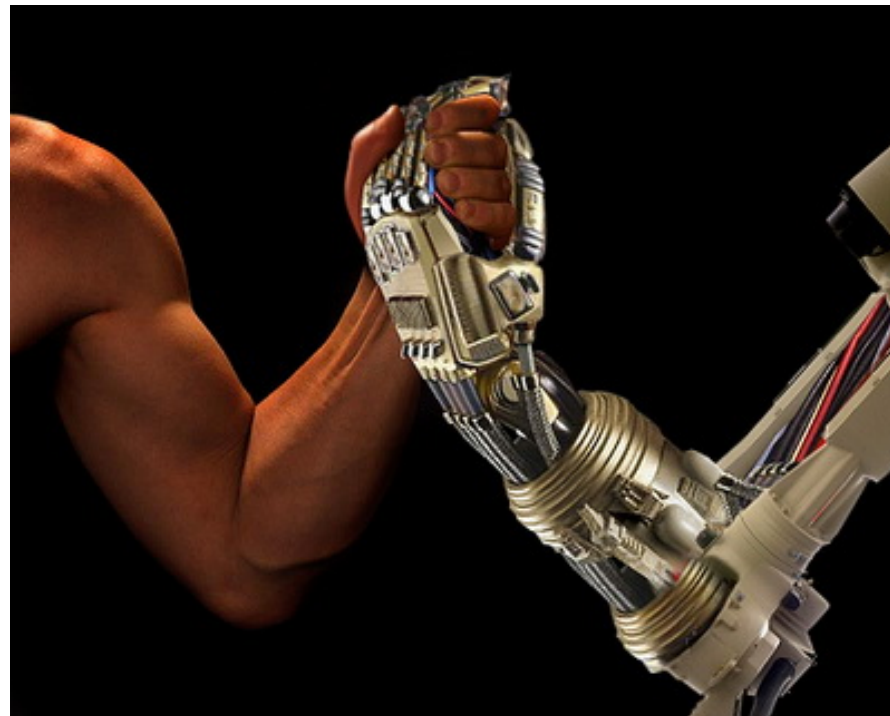


**who were called “Computers.”**

<http://www.theatlantic.com/technology/archive/2013/10/computing-power-used-to-be-measured-in-kilo-girls/280633/>

## In this session, we will discuss

- How to *survive* in the job market and *thrive* in your career by *winning* the battle against the machine?



# A Good but Not-So-Good News – Jobless Recovery

September 5, 2009

## The New York Times

### In Unemployment Report, Signs of a Jobless Recovery

BUSINESS | January 17, 2012

## THE WALL STREET JOURNAL.

### Man vs. Machine, a Jobless Recovery

*U.S. Companies Are Spending to Upgrade Factories but Hiring Lags; Robots Pump Out Sunny Delight*

AROUND THE STREET November 6, 2009, 10:19AM EST

## Bloomberg Businessweek

### October Data Point the Way to a 'Jobless Recovery'

American unemployment

### Forgotten men

The jobless recovery, long prophesied, is here

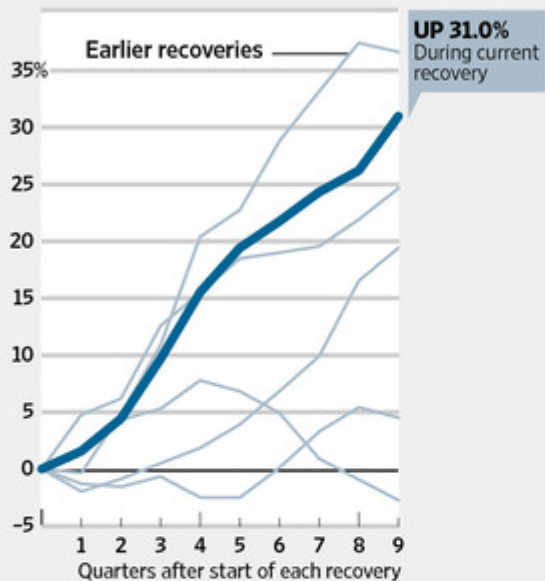


## The Economist

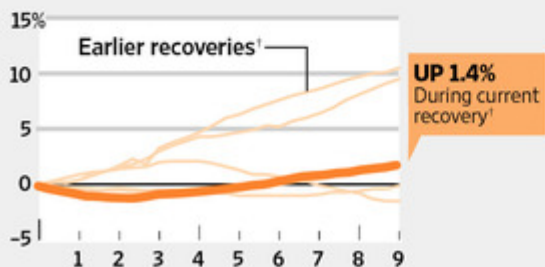
# Spending Spree | Businesses splurge on machines, not muscle

Change since each recovery began in ■ spending by business on equipment, software; adjusted for inflation\* ■ the number of private-industry jobs

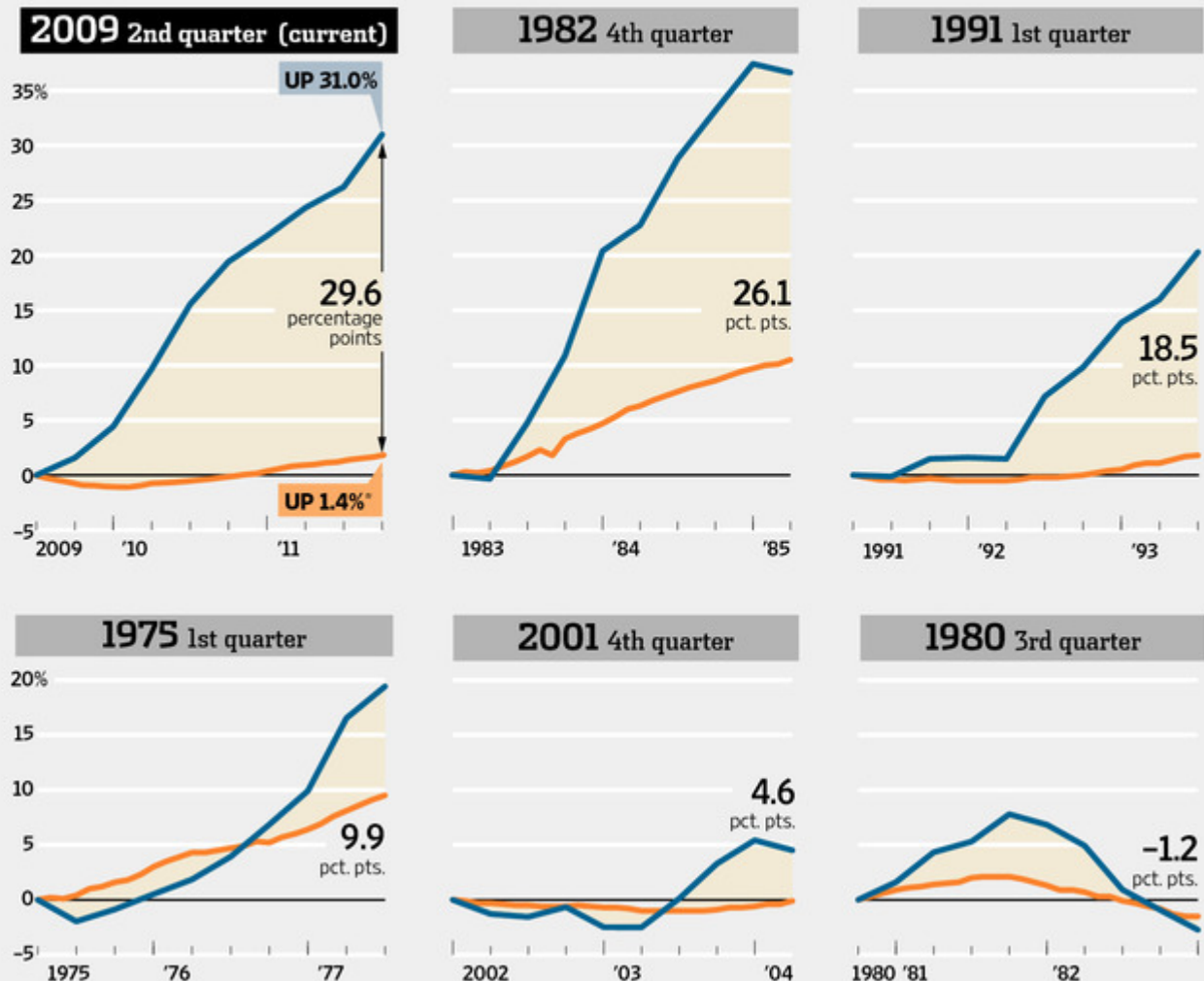
In the current recovery, **business spending on equipment and software** has rebounded faster than usual...



...while **private-industry jobs** have been relatively slow to return...



The **difference** between the speed of the rebound in business investment in equipment and software and that in private-industry hiring is **the widest in decades**, as a result.



<sup>†</sup>The 1991 recovery was so similar to the current one that the lines overlap.

\*Through September because latest figure available for nonresidential fixed investment in equipment and software is for the third quarter of 2011. As of December, the number of private-industry jobs had risen 1.8% from the June 2009 level

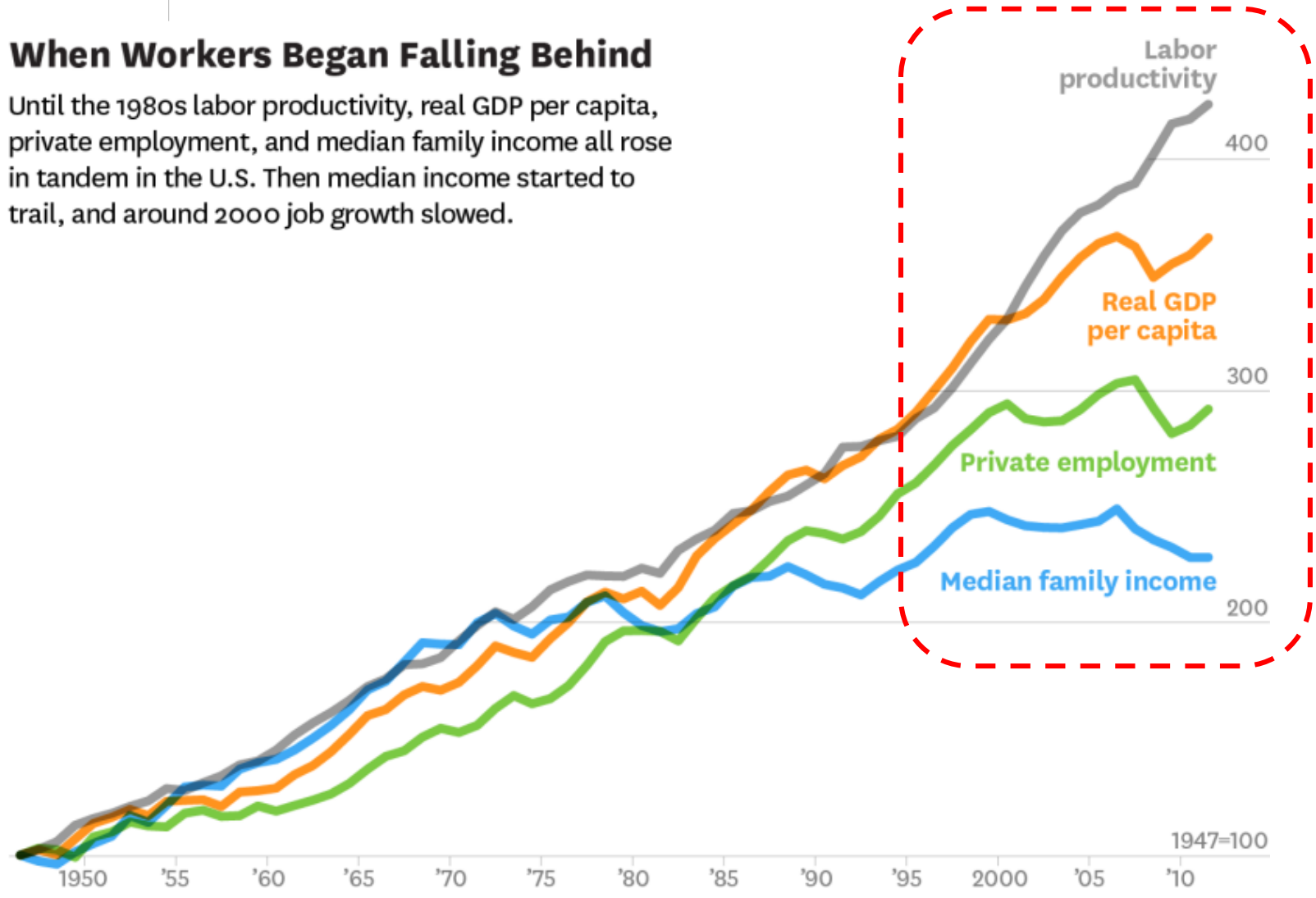
Note: Start date for each chart is the first full quarter of each recovery as defined by National Bureau of Economic Research.

Sources: Commerce Department; Labor Department



### When Workers Began Falling Behind

Until the 1980s labor productivity, real GDP per capita, private employment, and median family income all rose in tandem in the U.S. Then median income started to trail, and around 2000 job growth slowed.



SOURCE FEDERAL RESERVE BANK OF ST. LOUIS; ERIK BRYNJOLFSSON AND ANDREW MCAFEE  
FROM "THE GREAT DECOUPLING," JUNE 2015

© HBR.ORG

# Why Jobless Recovery? – Automation (1/2)



## Pennsylvania Turnpike to test out cashless interchanges next year

*E-ZPass and license plate-scanner program will be rolled out at Beaver Valley Expressway and Delaware River Bridge*

UPDATED 11:51 AM EDT Sep 28, 2015

Text Size: A A A



<http://www.washingtonpost.com/blogs/dr-gridlock/wp/2012/10/31/beltway-express-lanes-to-open-before-thanksgiving-operators-say/>

<http://stormhighway.com/blog/july2109a.shtml>

<http://www.wtae.com/news/pennsylvania-turnpike-to-test-ez-pass-cashless-interchange-at-beaver-valley/35527534>



## Why Jobless Recovery? – Automation (2/2)



***What if every item in a grocery store has an EZPass (an RFID chip)?***

[http://www.flickr.com/photos/whole\\_foods/4495467654/](http://www.flickr.com/photos/whole_foods/4495467654/)  
<http://earthpulse.nationalgeographic.com/earthpulse/focus-us-text>



# Why Jobless Recovery? – Outsourcing

## The Man Who Makes Your iPhone

Foxconn founder Terry Gou might be regarded as Henry Ford reincarnated if only a dozen of his workers hadn't killed themselves this year. An exclusive look inside a postmodern industrial empire

Inside the iPhone Maker

**Bloomberg  
Businessweek**

2 of 19 

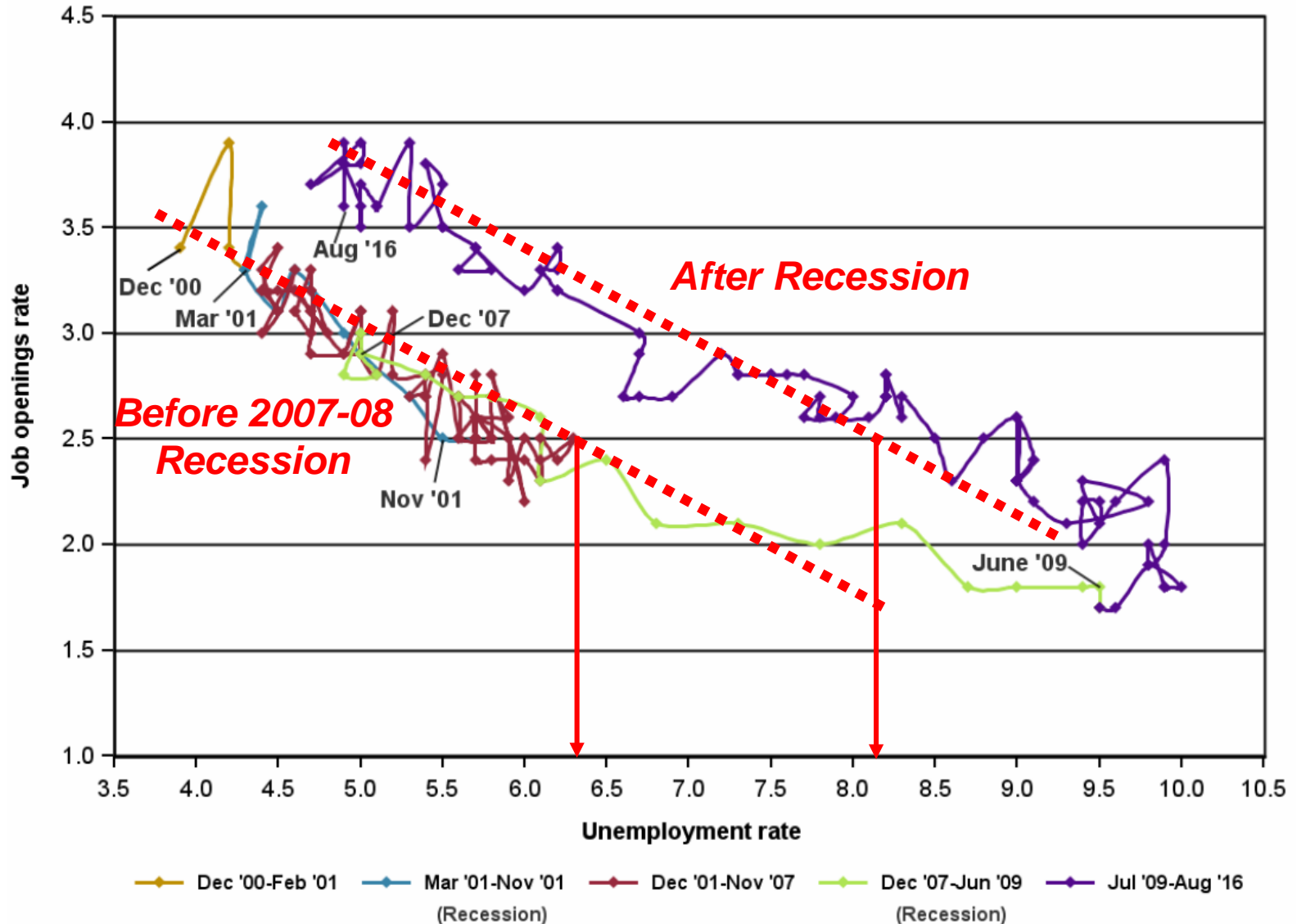


PHOTOGRAPH BY TONY LAW FOR BLOOMBERG BUSINESSWEEK

[http://www.businessweek.com/magazine/content/10\\_38/b4195058423479.htm](http://www.businessweek.com/magazine/content/10_38/b4195058423479.htm)  
[http://images.businessweek.com/ss/10/09/0909\\_foxconn/2.htm](http://images.businessweek.com/ss/10/09/0909_foxconn/2.htm)

# Why Jobless Recovery? – Skill Mismatch (1/3)

Chart 4. The Beveridge Curve (job openings rate vs. unemployment rate)  
Seasonally adjusted

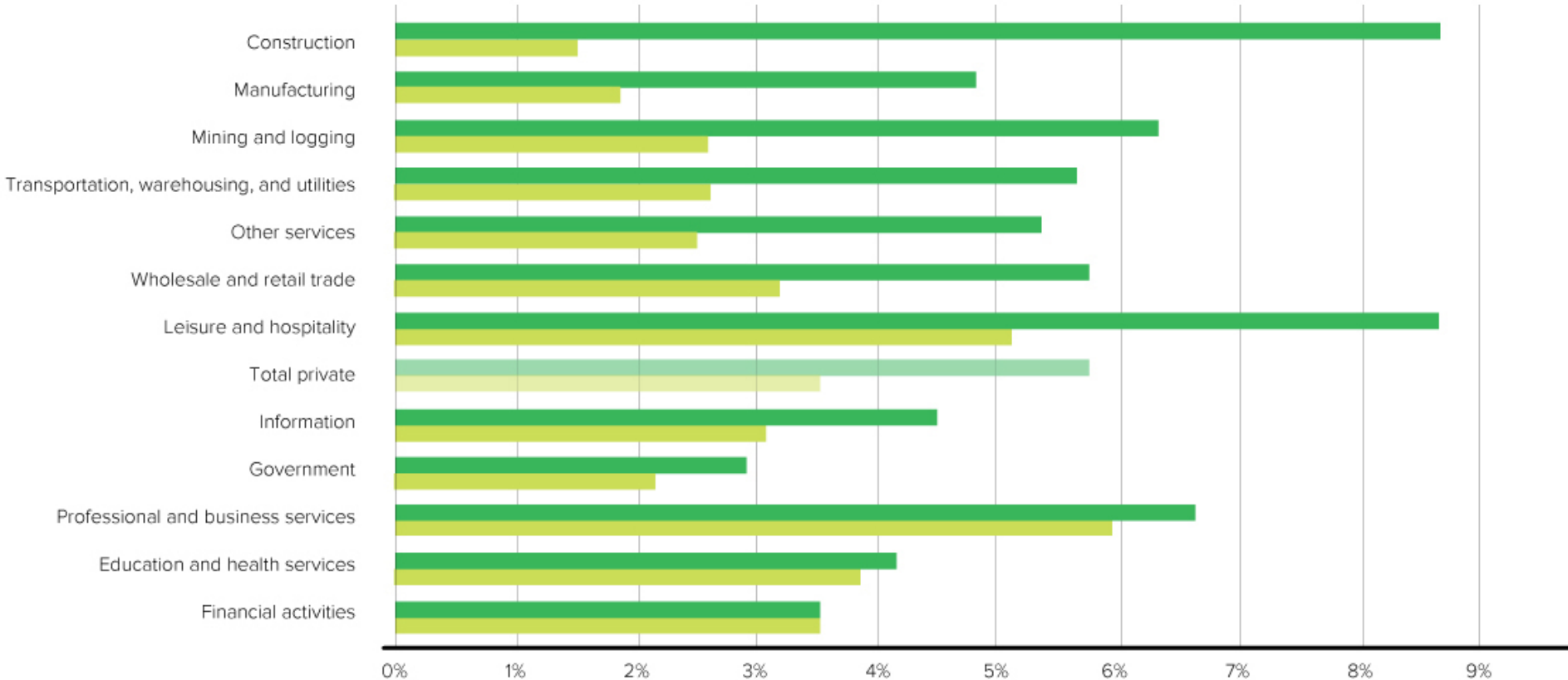


# Why Jobless Recovery? – Skill Mismatch (2/3)

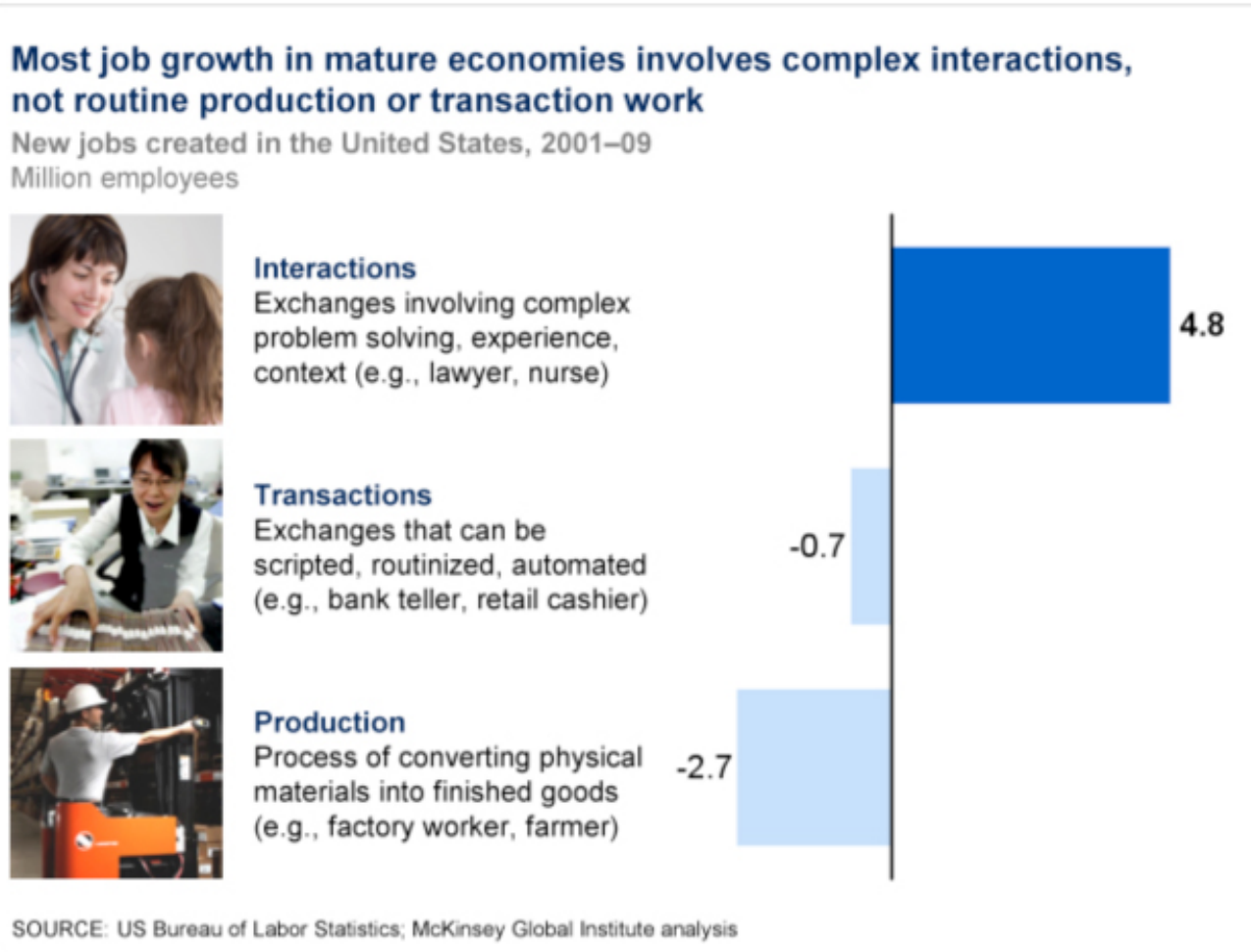
## JOB OPENINGS RATE AND UNEMPLOYMENT RATE, BY INDUSTRY

Percentage of the labor force, three-month-averages, Aug-Oct 2014

■ Openings ■ Unemployment



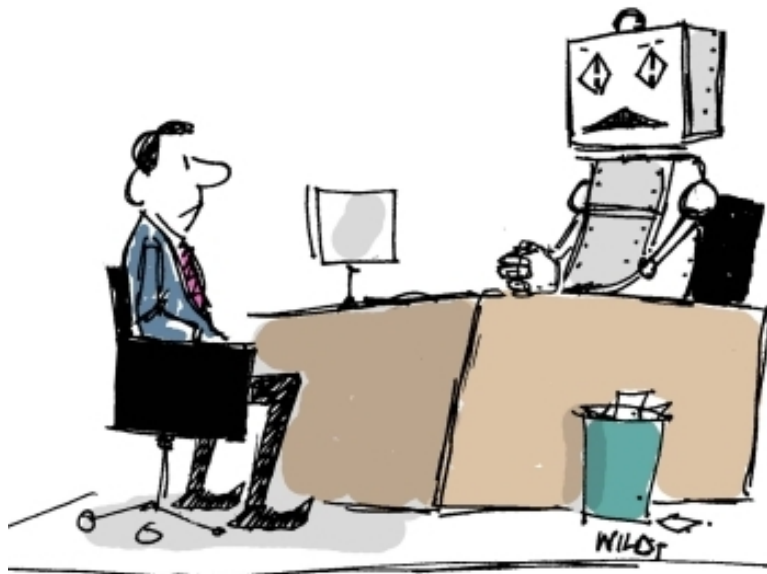
# Why Jobless Recovery? – Skill Mismatch (3/3)





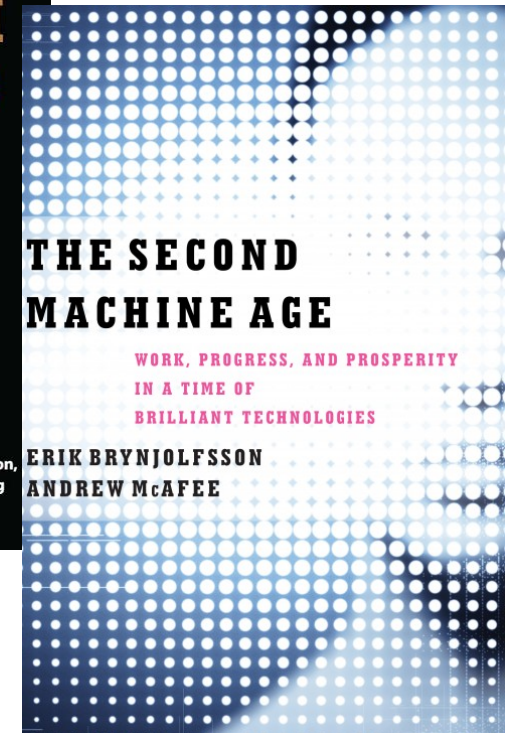
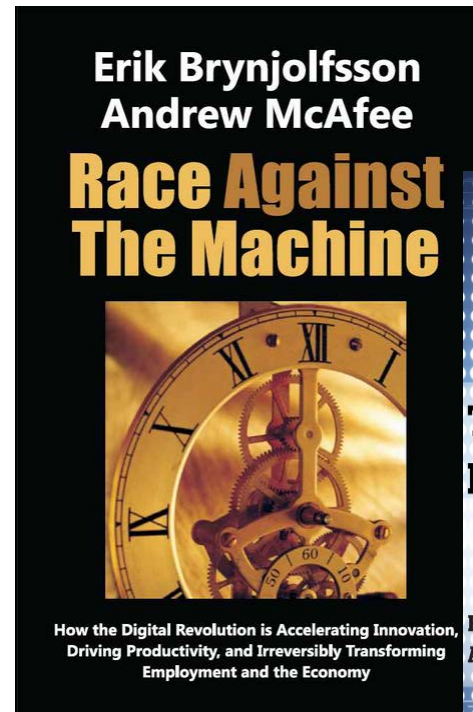
# Race Against the Machine

© Original Artist  
Reproduction rights obtainable from  
[www.CartoonStock.com](http://www.CartoonStock.com)



search ID: cwin2663

"You're hired, but remember, you can be replaced by a machine...believe me."



# Wall Street Bankers vs. the Machines



**BloombergBusinessweek**  
**Markets & Finance**

Wall Street banks are replacing people with computers to trade financial instruments that once generated some of their biggest profits. Late last month, UBS (UBS), Switzerland's biggest bank, fired its head of credit-default swap index trading, David Gellers, and replaced him with computer algorithms that trade using mathematical models, according to two people familiar with the matter

Photo illustration by 731; Trading floor: Jin Lee/Bloomberg; Monitors: Oleksiy Maksymenko/Alamy

Swaps

## Computers Elbow Swaps Traders Aside

<http://www.businessweek.com/articles/2012-11-15/computers-elbow-swaps-traders-aside>

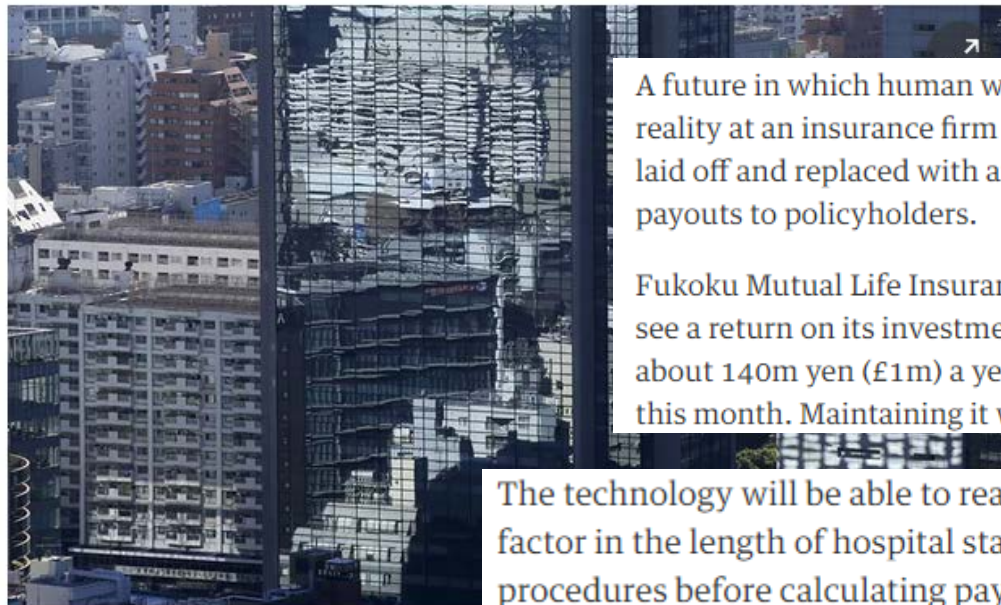


# Insurance Assessors vs. the Machines

## Japanese company replaces office workers with artificial intelligence

*Is your job safe?*

Insurance firm Fukoku Mutual Life Insurance is making 34 employees redundant and replacing them with IBM's Watson Explorer AI



A future in which human workers are replaced by machines is about to become a reality at an insurance firm in Japan, where more than 30 employees are being laid off and replaced with an artificial intelligence system that can calculate payouts to policyholders.

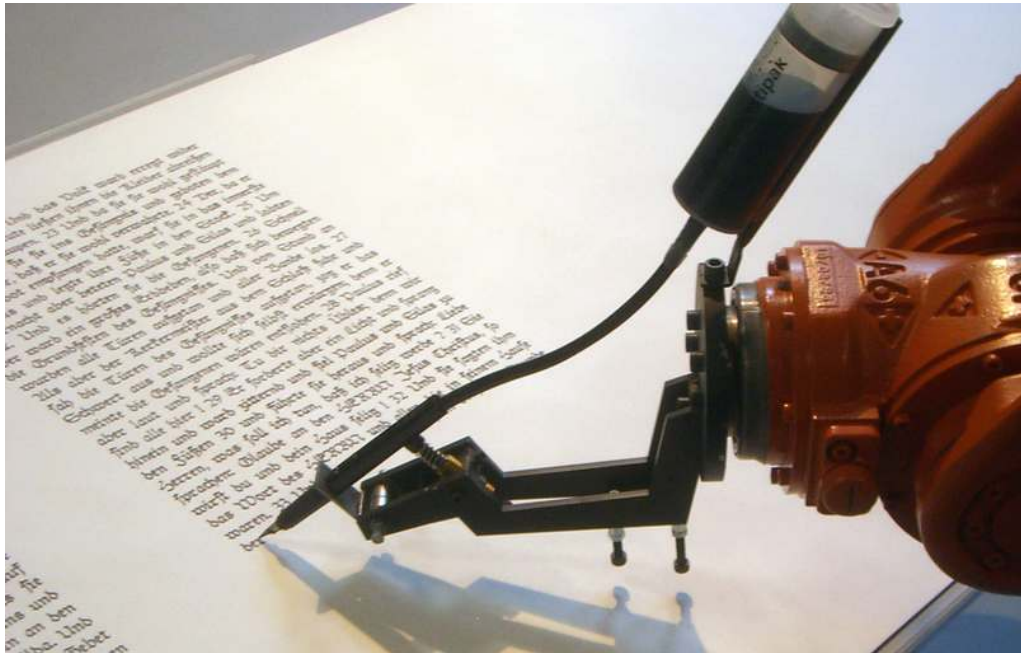
Fukoku Mutual Life Insurance believes it will increase productivity by 30% and see a return on its investment in less than two years. The firm said it would save about 140m yen (£1m) a year after the 200m yen (£1.4m) AI system is installed this month. Maintaining it will cost about 15m yen (£100k) a year.

The technology will be able to read tens of thousands of medical certificates and factor in the length of hospital stays, medical histories and any surgical procedures before calculating payouts, according to the Mainichi Shimbun.

 Fukoku Mutual Life Insurance believes it will increase productivity by 30% Photograph: Toru Hanai/REUTERS

<https://www.theguardian.com/technology/2017/jan/05/japanese-company-replaces-office-workers-artificial-intelligence-ai-fukoku-mutual-life-insurance?>

# Journalists vs. the Machines



AP News

## McCormick beats Street 3Q forecasts

October 02, 2014



SPARKS, Md. (AP) — McCormick & Co. (MCK) on Thursday reported profit of \$122.9 million in its fiscal third quarter.

The Sparks, Maryland-based company said it had profit of 94 cents per share. Earnings, adjusted for non-recurring costs, came to 95 cents per share.

The results topped Wall Street expectations. The average estimate of analysts surveyed by Zacks Investment Research was for earnings of 81 cents per share.

### VIDEO: Adobe 3Q Sales Miss Estimates Amid Shift to Cloud

The spices and seasonings company posted revenue of \$1.04 billion in the period, which also topped Street forecasts. Analysts expected \$1.03 billion, according to Zacks.

McCormick expects full-year earnings in the range of \$3.30 to \$3.37 per share.

McCormick shares have declined nearly 5 percent since the beginning of the year, while the Standard & Poor's 500 index has increased slightly more than 5 percent. The stock has increased 1 percent in the last 12 months.

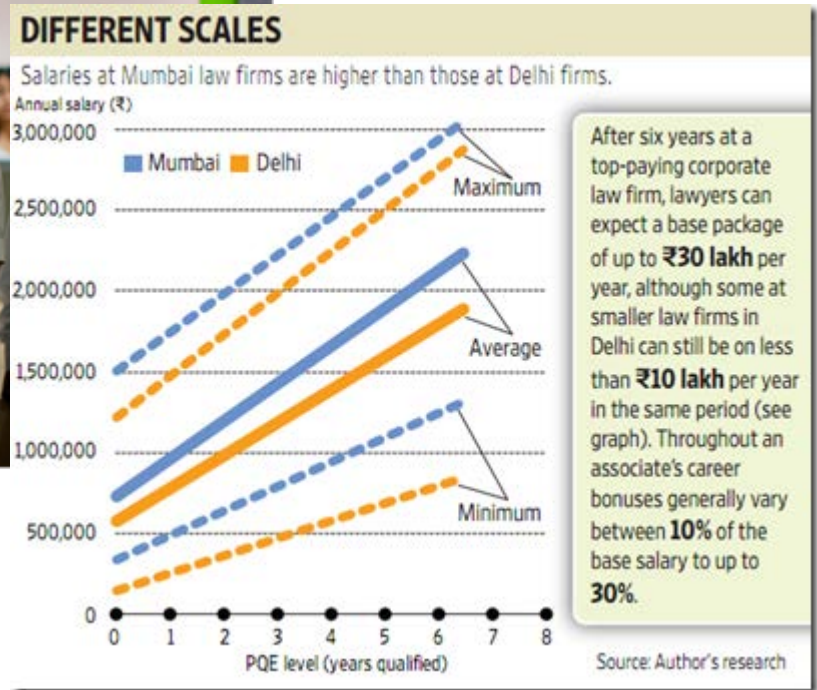
### VIDEO: H&M 3Q Gross Margin 58.3%; Est. 58.4%

This story was generated automatically by Automated Insights  
(<http://automatedinsights.com/ap>) using data from Zacks Investment

<http://www.dailydot.com/technology/robot-journalism-automated-insights-algorithm/>



# Lawyers vs. the Machines



[http://www.nytimes.com/2010/08/05/business/global/05legal.html?\\_r=0](http://www.nytimes.com/2010/08/05/business/global/05legal.html?_r=0)  
<http://www.legallyindia.com/201111252419/Analysis/>

# Pilots vs. the Machines

## Ryanair's O'Leary Calls for Single-Pilot Commercial Flights

AIN AIR TRANSPORT PERSPECTIVE » SEPTEMBER 10, 2010

by CHARLES ALCOCK



Where did he go?

Ryanair chief executive Michael O'Leary indicated that he will start to purchase 300 new aircraft but whether the carrier enters the competition for the fleet renewal remains a matter of speculation.  
(Photo: Matt Banks)

September 10, 2010, 7:26 AM

Ryanair chief executive Michael O'Leary is pushing for single-pilot commercial aircraft operations. In a September 8 interview with the *Financial Times*, O'Leary argued that copilots are essentially redundant in modern airliners because "the computer does most of the flying." The Ireland-based low-cost carrier subsequently confirmed that it initiated a dialogue with aviation authorities regarding the possibility of legalizing single-pilot operations, but in a statement made clear that the proposal remains at an early stage. "No formal approach has been

made, but we are starting the debate so that we can look to reduce costs without compromising safety," Ryanair said in the statement. "Given the sophistication of our aircraft we believe that one pilot flying can operate safely on short routes and reduce fares for all passengers."

<http://www.airfield-ghent.be/documents1/index.html>

<http://www.ainonline.com/aviation-news/ain-air-transport-perspective/2010-09-10/ryanairs-oleary-calls-single-pilot-commercial-flights>



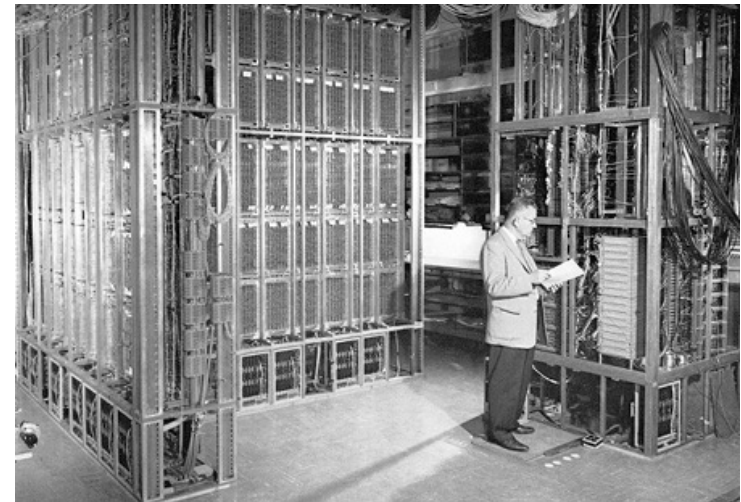
## Drivers vs. the Machines



<http://bits.blogs.nytimes.com/2014/05/13/a-trip-in-a-self-driving-car-now-seems-routine/>  
<http://www.bbc.com/autos/story/20140926-mercedes-self-driving-truck>

## How long do you want to live?

- How long do you think you'll live?
- Then, when do you have to retire if you want to live up to 100 years?
- What kind of technology breakthroughs will take place *for the next 30 years*?



<http://physics.illinois.edu/history/timelines/1960s.asp>



## Let's face it.

- Automation and outsourcing are irreversible trends.
- No occupation is immune to this trend (including college professors)!
- New technologies will continue to emerge for our lifetime and *fundamentally transform* the society and the job market (probably faster and faster).



[http://www.bizbash.com/will\\_these\\_tech\\_advances\\_change\\_the\\_future\\_of\\_events/new-york/story/25226/](http://www.bizbash.com/will_these_tech_advances_change_the_future_of_events/new-york/story/25226/)

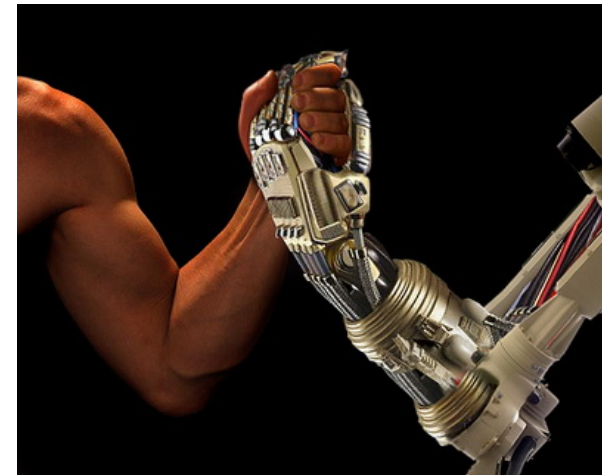
## Let's discuss.

- Which kind of occupation will be neither replaced by the machines nor outsourced for the next 30 years?



## In order not to be replaced, what kind of skills do we need that the machines don't have?

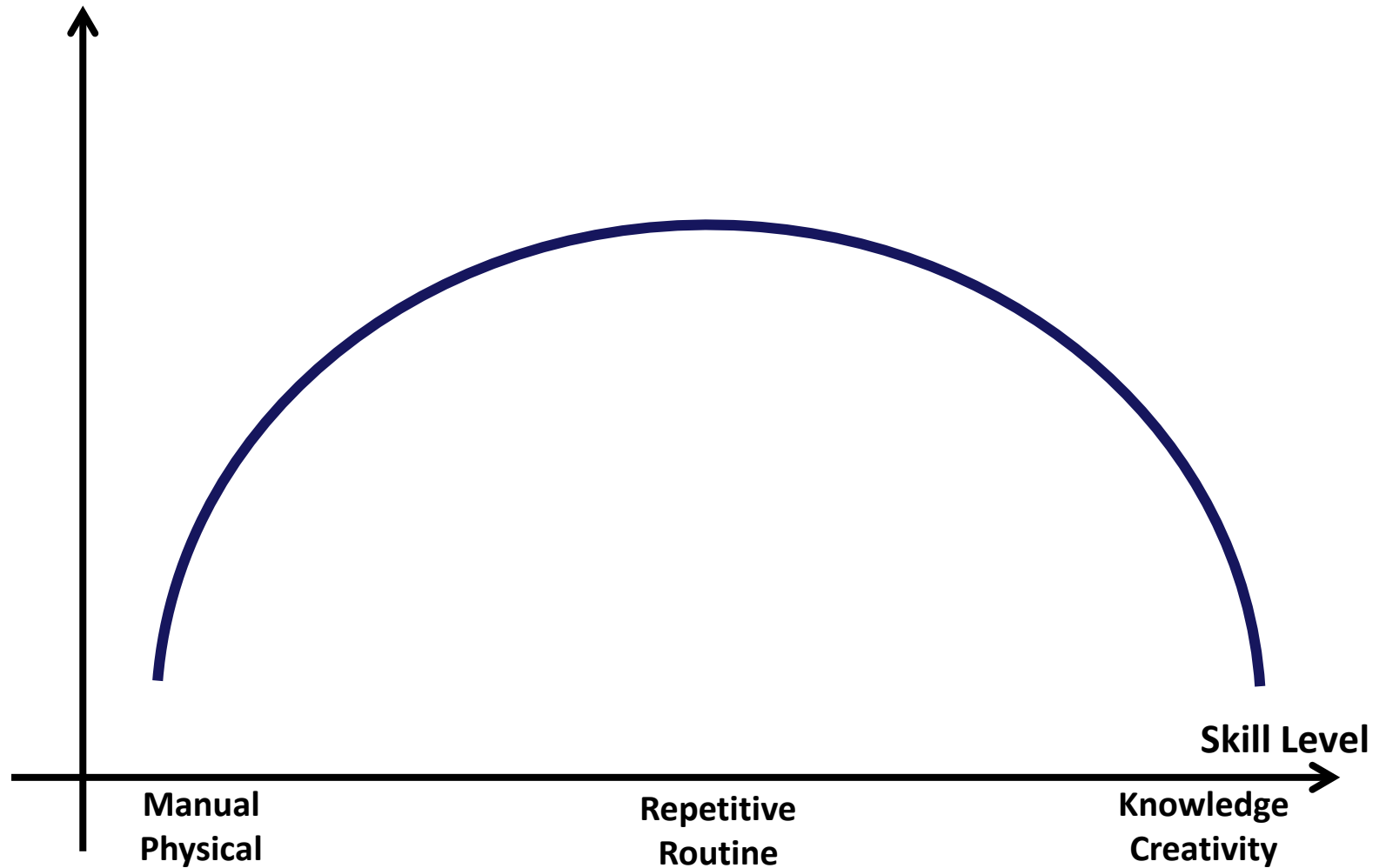
- Creative, innovative, analytic thinking
- Problem-solving skills for complex, unstructured, open-ended, non-routine problems
- Face-to-face, human-touch, communication skills (e.g. negotiation, persuasion, writing)
- Entrepreneurship and leadership
- anything else?



<http://www.kansasbob.com/2011/02/man-vs-machine.html>



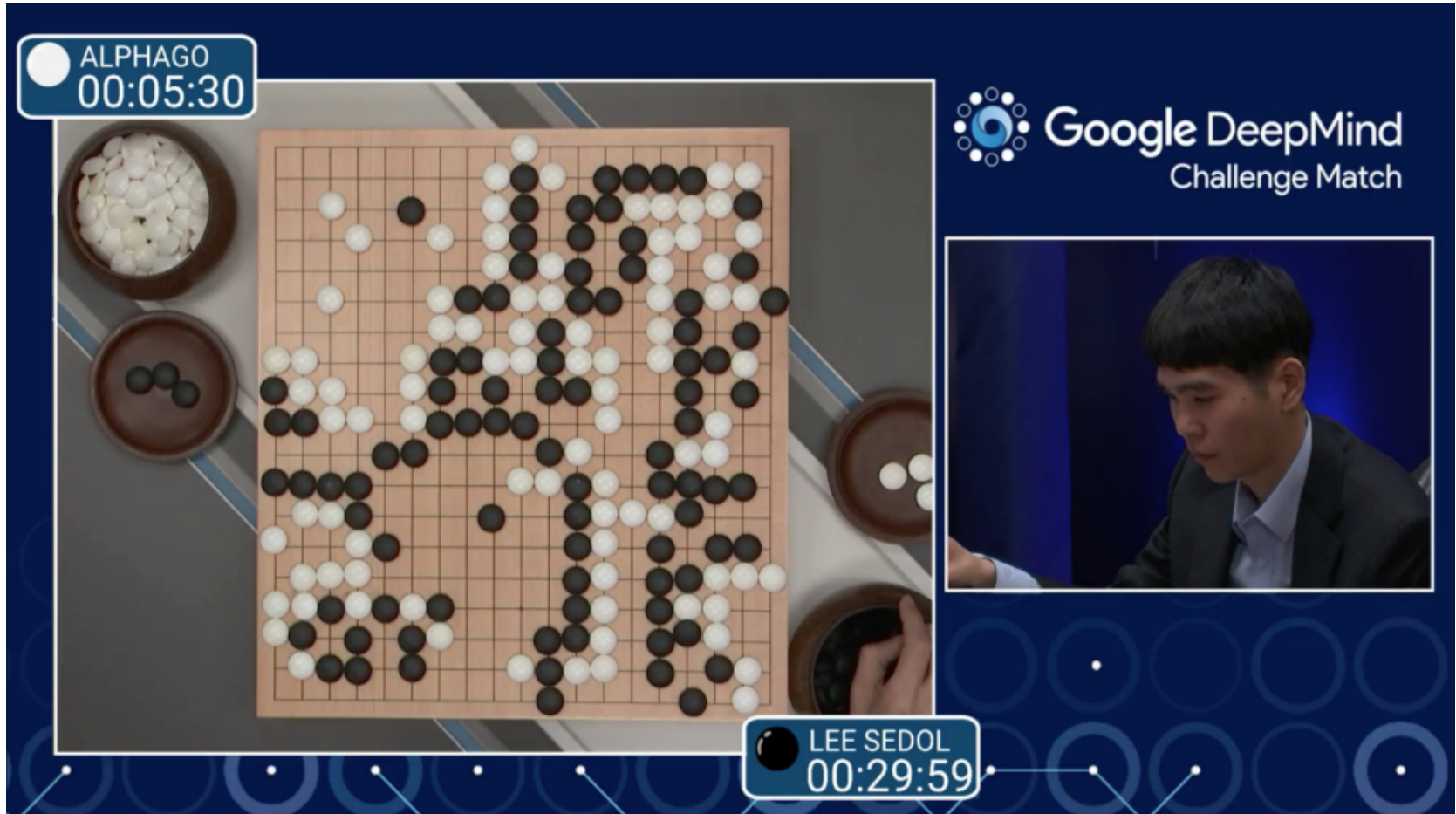
# Impact of Technology Development (1/2)



## What kind of jobs do you want?

- If you want to be a lawyer, what kind of lawyer do you want to be?
- If you want to be a journalist, what kind of journalist do you want to be?
- If you want to work for Wall Street banks, what kind of banker do you want to be?

# Google DeepMind Beats Go Champion!



<http://nerdist.com/google-deepmind-beats-legend-lee-sedol-in-game-one-of-five-game-go-series/>

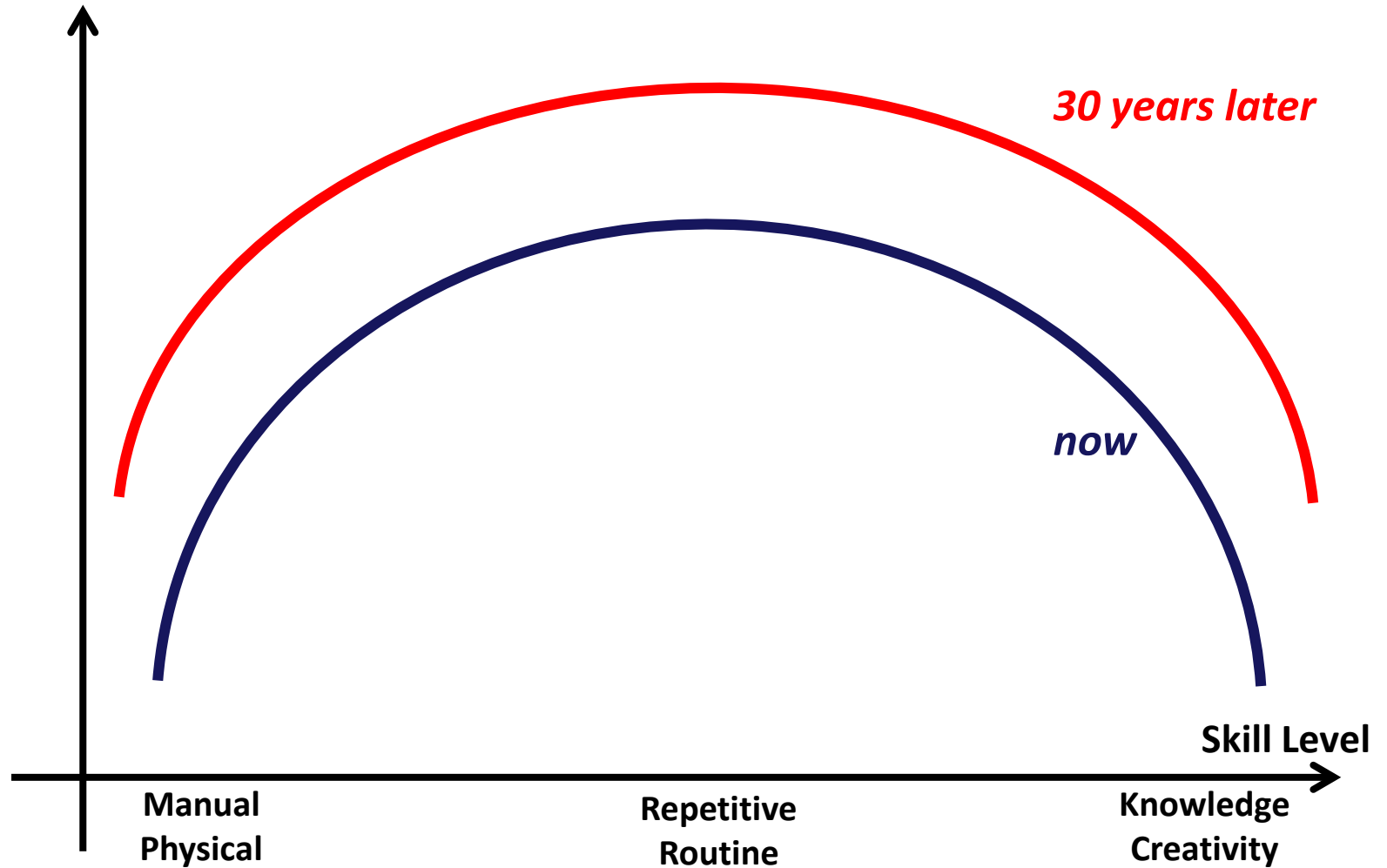


# Google DeepDream Draws Arts!



<https://news.artnet.com/market/google-inceptionism-art-sells-big-439352>

## Impact of Technology Development (2/2)



## We are NOT doomed.

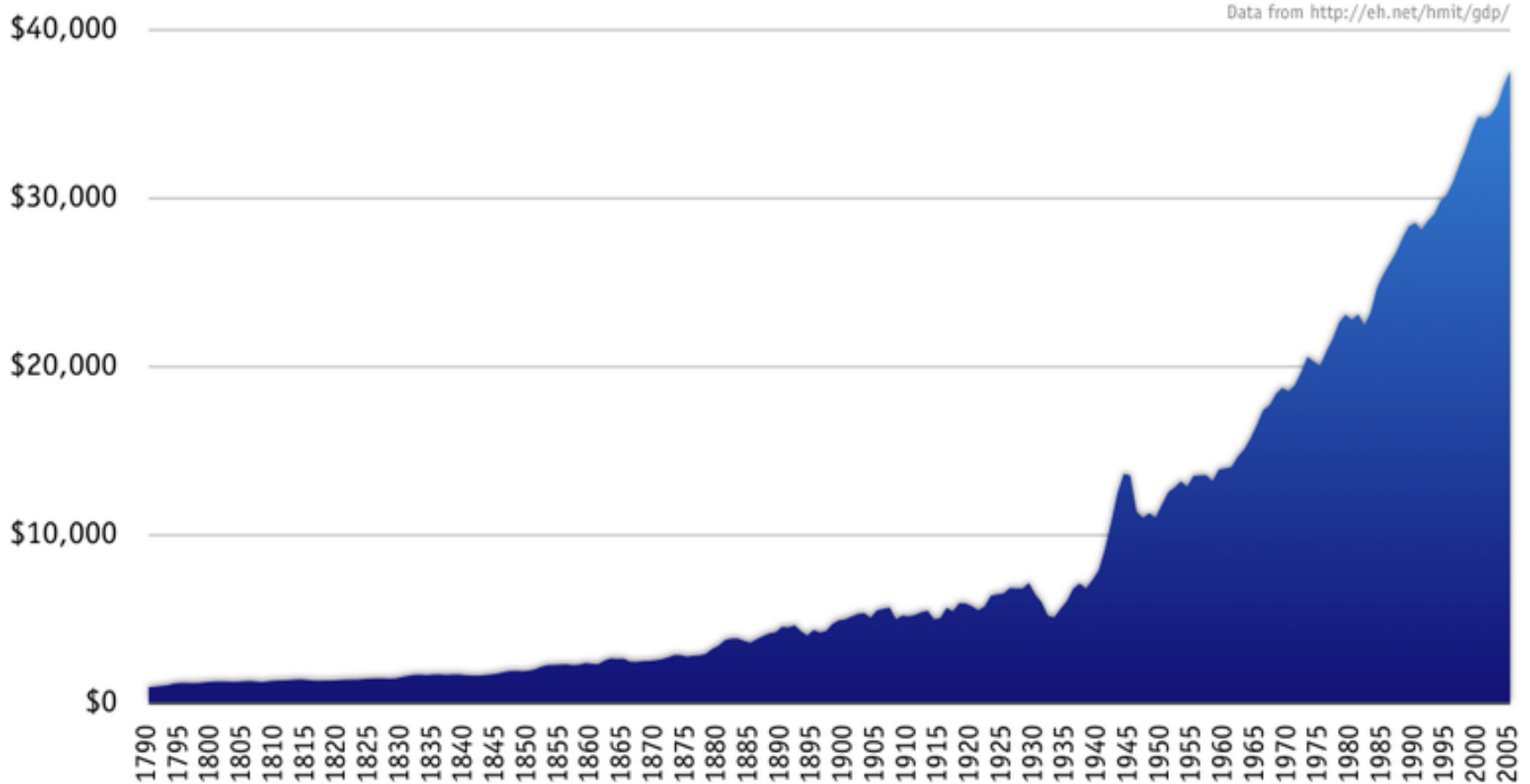
- Advances in technologies are creating new opportunities and increasing demands for different skills.
  - Techs destroy some jobs but create new ones too, with the skills in the previous page.
- Tech developments have historically increased the size of the economies for the last several centuries.
- Survivors in the waves of new technologies will be more thriving than ever before.



[http://en.wikipedia.org/wiki/Survivor\\_\(U.S.\\_TV\\_series\)](http://en.wikipedia.org/wiki/Survivor_(U.S._TV_series))



**Real GDP Per Capita**  
(2000 Dollars)



## MIT Technology Review

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### 10 Breakthrough Technologies

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### Self-Driving Trucks

**Tractor-trailers without a human at the wheel will soon barrel onto highways near you. What will this mean for the nation's 1.7 million truck drivers?**

As long as self-driving trucks require a driver to remain on board, driving jobs seem safe. In some ways those jobs, which pay an average of about \$40,000 a year, could even improve. For one thing, driving a truck 11 hours a day is stressful. “You get physically and mentally tired,” says Mugriyev, the driver in the Texas accident, which occurred in 2013. (He was not found to be at fault.) Besides being able to nap and relax in the cab while Otto does the driving, says Berdinis, drivers could use the time away from the wheel to catch up on trucking’s heavy paperwork, locate a “backhaul” load that would pay for the return trip, chat with family and friends, learn a second trade, or run a business. “And while they’re doing it, the drivers are still getting paid for driving,” he says.

<http://https://www.technologyreview.com/s/603493/10-breakthrough-technologies-2017-self-driving-trucks/>

## What would you say to...

- What would you say to your nephew/niece who is in college or high school?
- What would you say to your children who are in kindergarten or elementary schools?

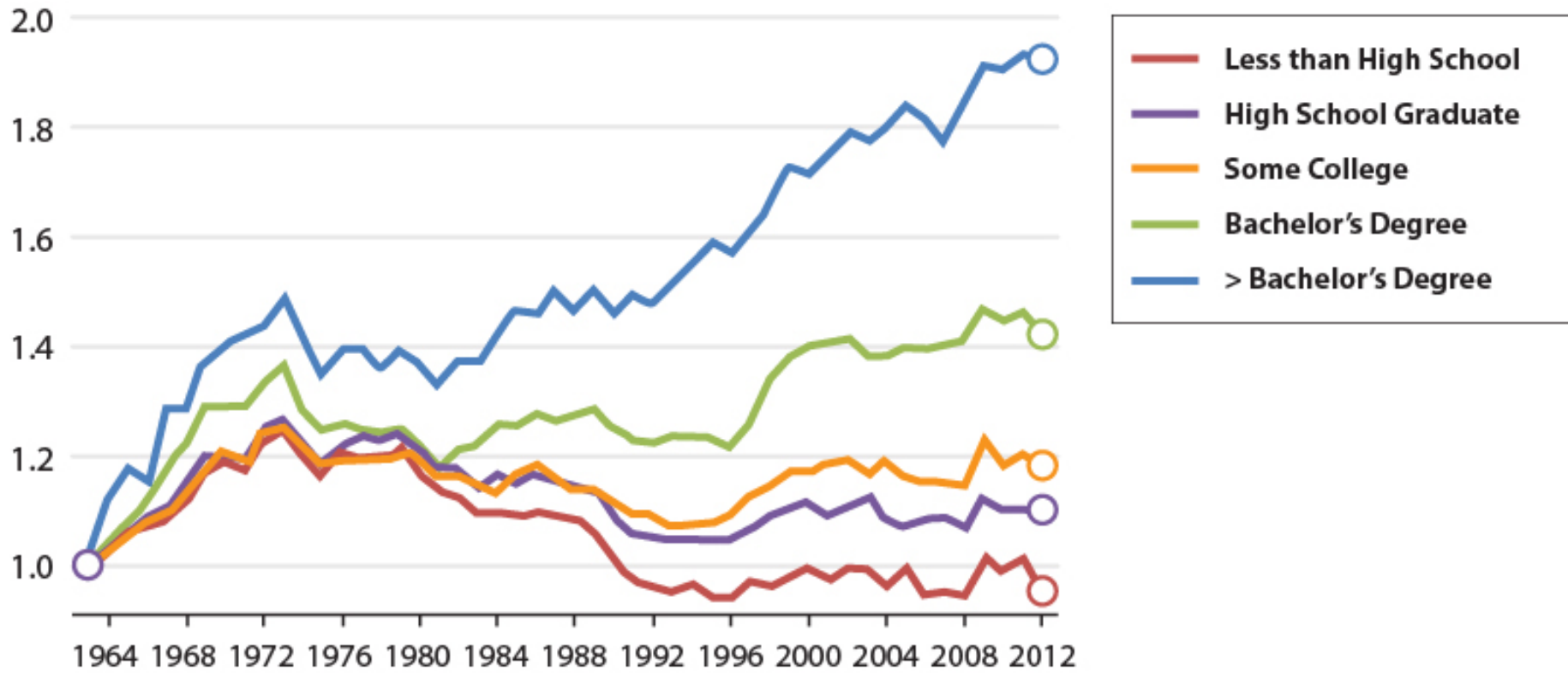


<https://ed.stanford.edu/news/stanford-gse-research-finds-strong-evidence-mental-health-benefits-delaying-kindergarten>



# To make money, go to a graduate school!

**Changes in Wages for Full-Time Male U.S. Workers**



# Why Software Is Eating The World

THE WALL STREET JOURNAL.

Article

Video

Comments (445)



Save



Recommend

18k

By [MARC ANDREESSEN](#)

This week, Hewlett-Packard (where I am on jettisoning its struggling PC business in favor of where it sees better potential for growth. Motorola Mobility's move to a cellphone handset maker Motorola Mobility is also in line with a trend I've seen about the future growth of the American stock market.



In an interview with WSJ's Kevin Delaney, Groupon and LinkedIn investor Marc Andreessen insists that the recent popularity of tech companies does not constitute a bubble. He also stressed that both Apple and Google are undervalued and that "the market doesn't like tech."

Today, the world's largest bookseller, Amazon, is a software company—its core capability is its amazing software engine for selling virtually everything online, no retail stores necessary. On top of that, while Borders was thrashing in the throes of impending bankruptcy, Amazon rearranged its web site to promote its Kindle digital books over physical books for the first time. Now even the books themselves are software.

Today's largest video service by number of subscribers is a software company: Netflix. How Netflix eviscerated Blockbuster is an old story, but now other traditional entertainment providers are facing the same threat. Comcast, Time Warner and others are responding by transforming themselves into software companies with efforts such as TV Everywhere, which liberates content from the physical cable and connects it to smartphones and tablets.

Today's dominant music companies are software companies, too: Apple's iTunes, Spotify and Pandora. Traditional record labels increasingly exist only to provide those software companies with content. Industry revenue from digital channels totaled \$4.6 billion in 2010, growing to 29% of total revenue from 2% in 2004.

Today's fastest growing entertainment companies are videogame makers—again, software—with the industry growing to \$60 billion from \$30 billion five years ago. And the fastest growing major videogame company is Zynga (maker of games including FarmVille), which delivers its games entirely online. Zynga's first-quarter revenues grew to \$235 million this year, more than double revenues from a year earlier. Rovio, maker of Angry Birds, is expected to clear \$100 million in revenue this year (the company was nearly bankrupt when it debuted the popular game on the iPhone in late 2009). Meanwhile, traditional videogame powerhouses like Electronic Arts and Nintendo have seen revenues stagnate and fall.

JUL 29, 2015 @ 09:45 AM 833,901 VIEWS

# That 'Useless' Liberal Arts Degree Has Become Tech's Hottest Ticket

Such creativity can't be programmed. Instead, much of it is minted by one of Slack's 180 employees, [Anna Pickard](#), the 38-year-old editorial director. She earned a theater degree from Britain's Manchester Metropolitan University before discovering that she hated the constant snubs of auditions that didn't work out. After winning acclaim for her blogging, videogame writing and cat impersonations, she found her way into tech, where she cooks up zany replies to users who type in "I love you, Slackbot." It's her mission, Pickard explains, "to provide users with extra bits of surprise and delight." The pay is good; the stock options, even better.

What kind of boss hires a thwarted actress for a business-to-business software startup? Stewart Butterfield, Slack's 42-year-old cofounder and CEO, whose estimated double-digit stake in the company could be worth \$300 million or more. He's the proud holder of an undergraduate degree in philosophy from Canada's University of Victoria and a master's degree from Cambridge in philosophy and the history of science.

<http://www.forbes.com/sites/georgeanders/2015/07/29/liberal-arts-degree-tech/>

## What would you say to him?

- What would you say to President Trump? (Topic #8)
- or to your senators or your representatives?



[https://www.washingtonpost.com/opinions/congratulations-trump-welcome-to-hell/2016/12/20/5dbcb166-c6e7-11e6-bf4b-2c064d32a4bf\\_story.html](https://www.washingtonpost.com/opinions/congratulations-trump-welcome-to-hell/2016/12/20/5dbcb166-c6e7-11e6-bf4b-2c064d32a4bf_story.html)



## What would you say to yourself and your classmates?

- Looking at a mirror, what would you say to yourself?
- What is your survival plan for the next 30 years?



<http://www.christianity.com/christian-life/spiritual-growth/preaching-to-ourselves.html>

## The Five Forces and You

- How would you become competitive in the job market?
- How would you lower the bargaining power of buyers?
- How would you lessen rivalry among existing competitors?



## A Few Final Suggestions (1/2)

- You need to be differentiated and irreplaceable.
  - Find a “core competency” that no one else has.
- You need to be ambidextrous by having multiple skills.
  - If one of your skills becomes obsolete, you will survive with your other skills.
  - Become an expert in multiple subject areas.
- You will need to continuously learn.
  - Fox GMBA cannot be your final education!



<http://aprilseventheblog.blogspot.com/2015/08/what-you-didnt-know-about-ambidextrous.html>

## A Few Final Suggestions (2/2)

- Keep your curiosity and willingness to try something new and innovate.
  - Don't be afraid to try something new, to yourself, to your company, to your colleagues.
  - Be an early adopter, an innovator, and a change leader.
  - ***Let's not be Borders or Blockbusters!***





## Technology News Sites to Recommend

- MIT Technology Review (<http://www.technologyreview.com/>)
- Bloomberg Technology  
(<https://www.bloomberg.com/technology>)
- CIO Magazine (<http://www.cio.com/>)
- InformationWeek (<http://www.informationweek.com/>)
- ZDNet (<http://www.govtech.com/>)

**The illiterate of the 21st century  
will not be those who cannot read  
and write, but those who cannot  
learn, unlearn and relearn.**

**- Alvin Toffler**



# GOOD LUCK

to your career and future endeavors!