

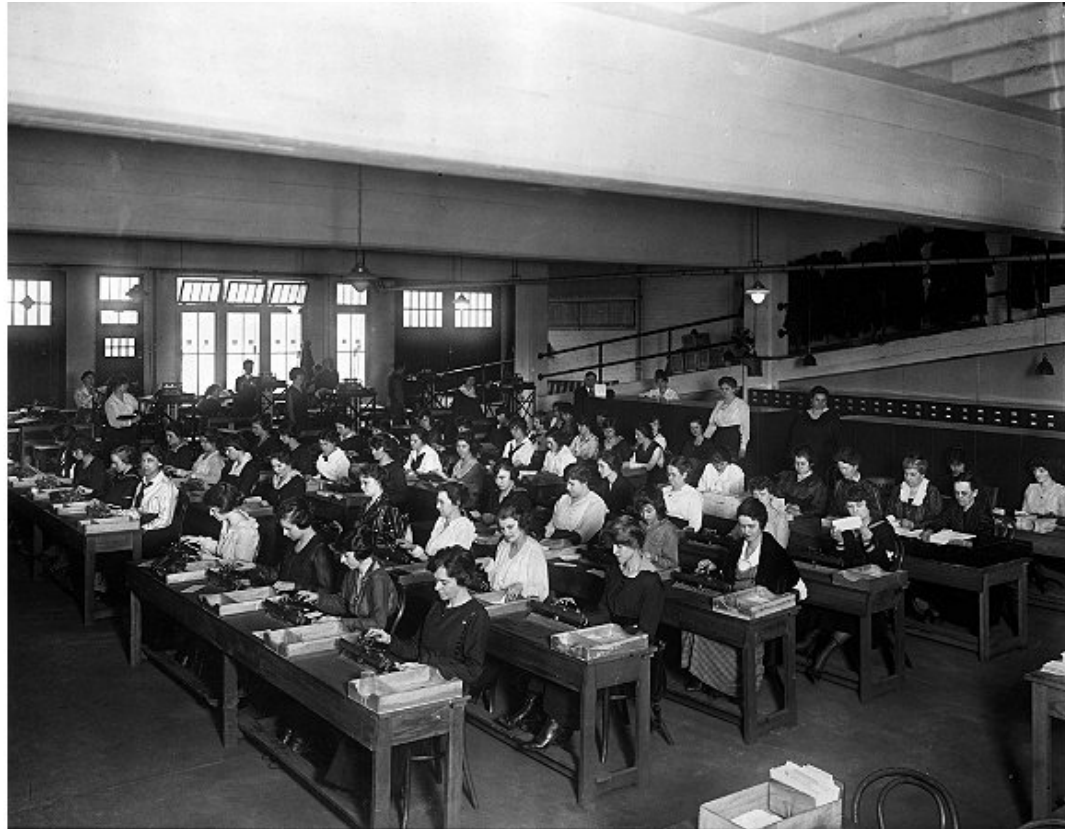
**MIS 3534 Spring 2015 –
Strategic Management of
Information Technology**
Week 14 – IT and Your Career

Min-Seok Pang

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Fox School of Business, Temple University
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Apr. 22nd, 2015

Women Mathematicians at World War II

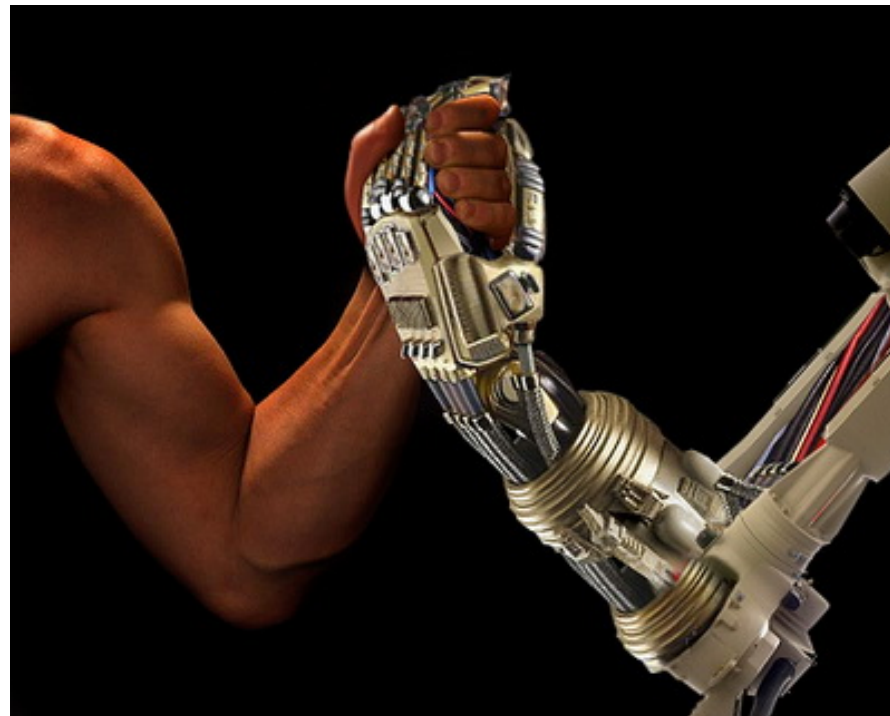


who were called “Computers.”

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

This Week's Question

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



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

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

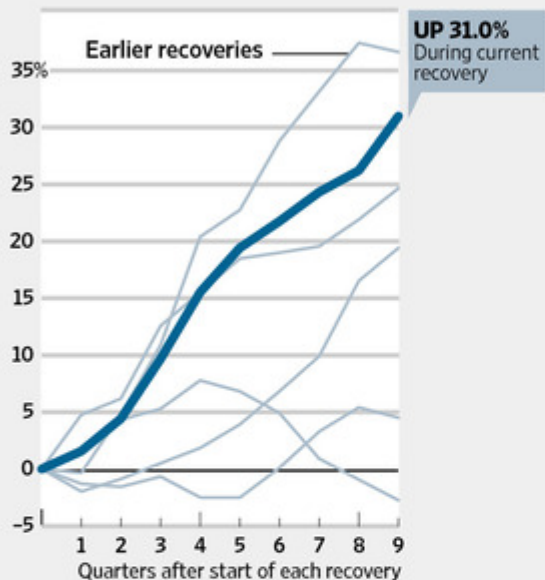


The Economist

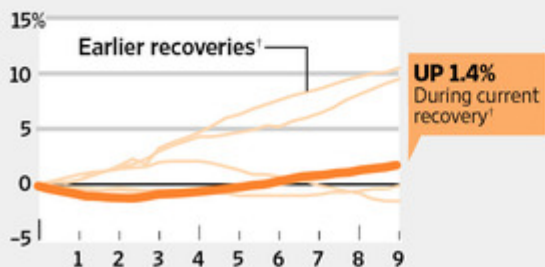
Spending Spree | Businesses splurge on machines, not muscle

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

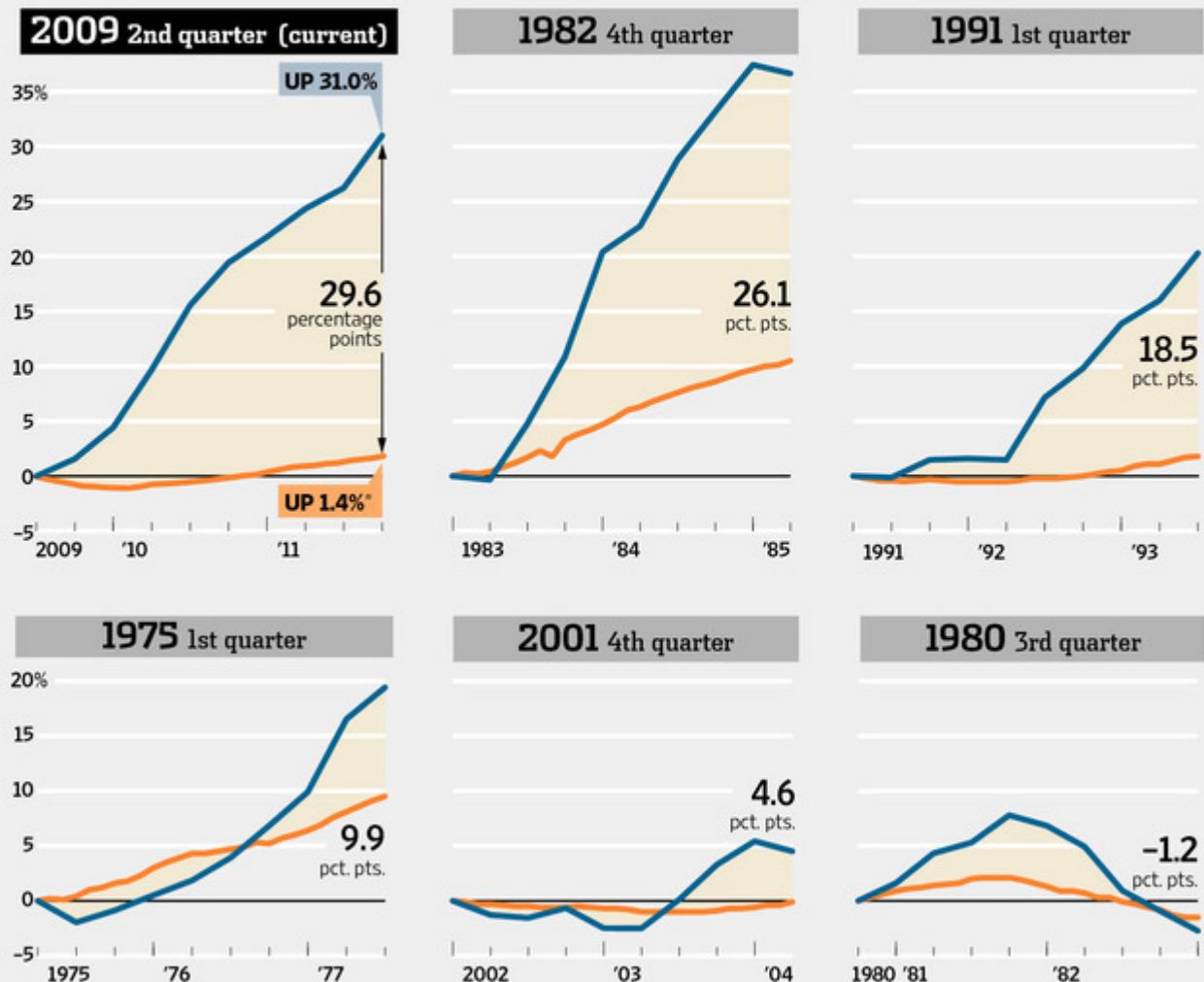
In the current recovery, **business spending on equipment and software** has rebounded faster than usual...



...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.



[†]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.

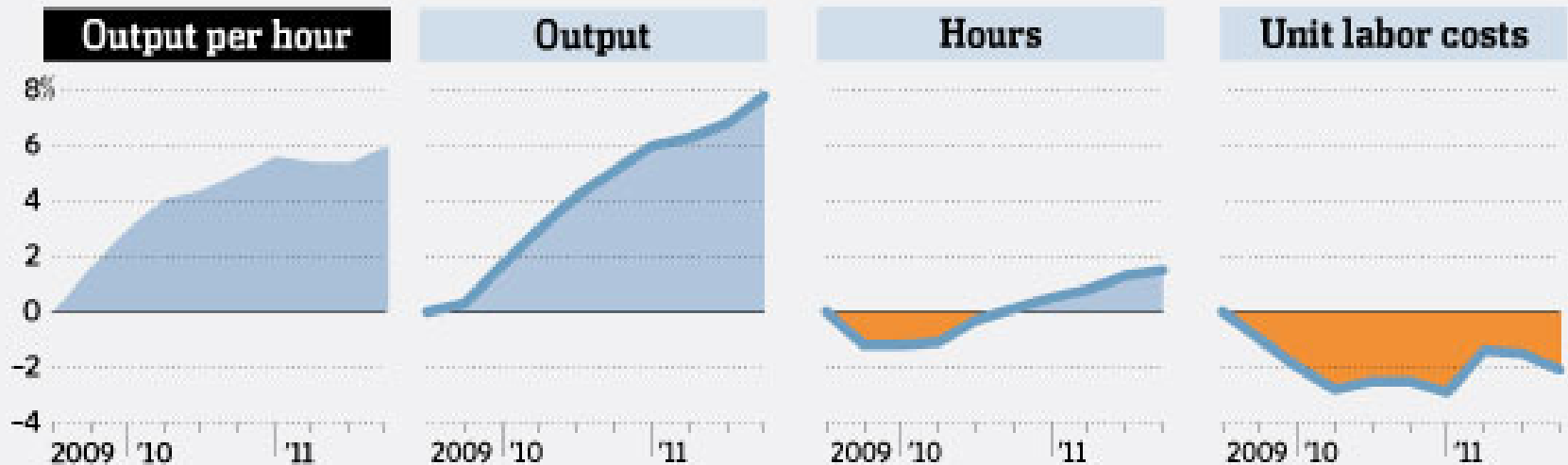
Sources: Commerce Department; Labor Department

What does this mean and *Why?*

More Bang for the Buck

The value of goods and services produced for every hour worked has grown sharply in the nonfarm business sector during this recovery—while the total number of hours worked is up only a bit. The upshot: The ratio of compensation to productivity, or unit labor costs, has been falling.

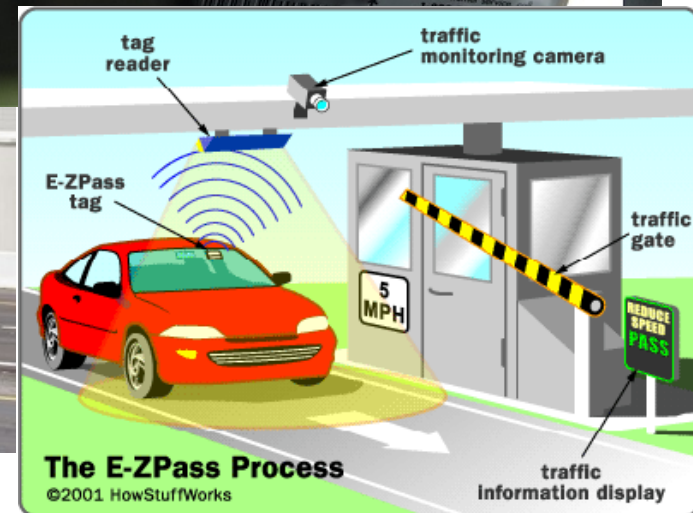
Change since the recovery's start in:



Source: Labor Department

Pat Minczeski/The Wall Street Journal

Why Jobless Recovery? – Automation (1/2)



<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://auto.howstuffworks.com/e-zpass2.htm>

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://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

**Bloomberg
Businessweek**

2 of 19 ◀ ▶

Inside the iPhone Maker



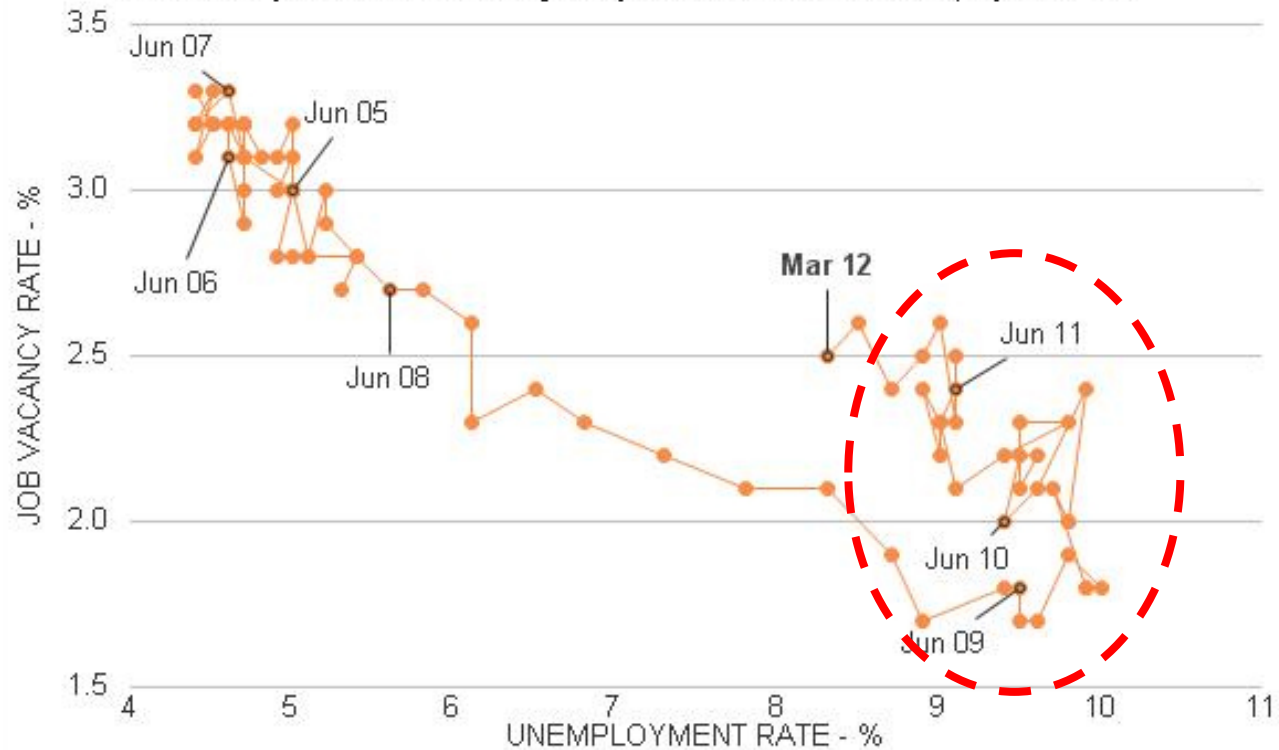
PHOTOGRAPH BY TONY LAW FOR BLOOMBERG BUSINESSWEEK

http://www.businessweek.com/magazine/content/10_38/b4195058423479.htm
http://images.businessweek.com/ss/10/09/0909_foxconn/2.htm

Why Jobless Recovery? – Skill Mismatch (1/2)

U.S. Beveridge Curve

Job vacancy rate tends to be negatively correlated with the unemployment rate

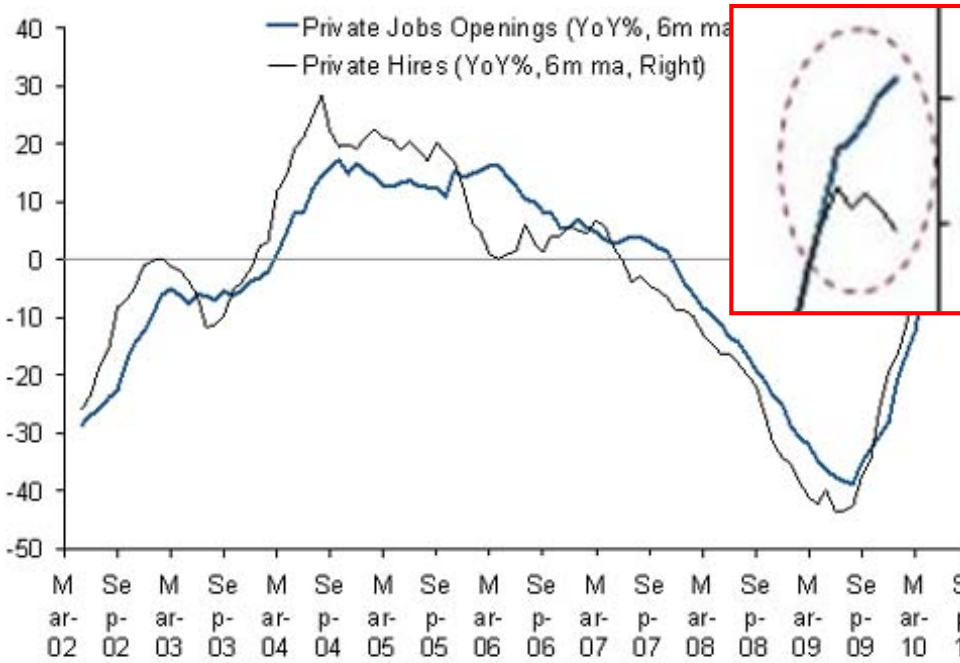


Source: Thomson Reuters Datastream

Reuters graphic/Van Tsui 3/26/2012

<http://alphanow.thomsonreuters.com/2012/01/the-%E2%80%9Cbeveridge-curve%E2%80%9D-signals-a-possible-skills-mismatch-in-job-market/>

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



There are jobs, but they are not filled.

Most job growth in mature economies involves complex interactions, not routine production or transaction work

New jobs created in the United States, 2001–09
Million employees



Interactions

Exchanges involving complex problem solving, experience, context (e.g., lawyer, nurse)

4.8



Transactions

Exchanges that can be scripted, routinized, automated (e.g., bank teller, retail cashier)

-0.7



Production

Process of converting physical materials into finished goods (e.g., factory worker, farmer)

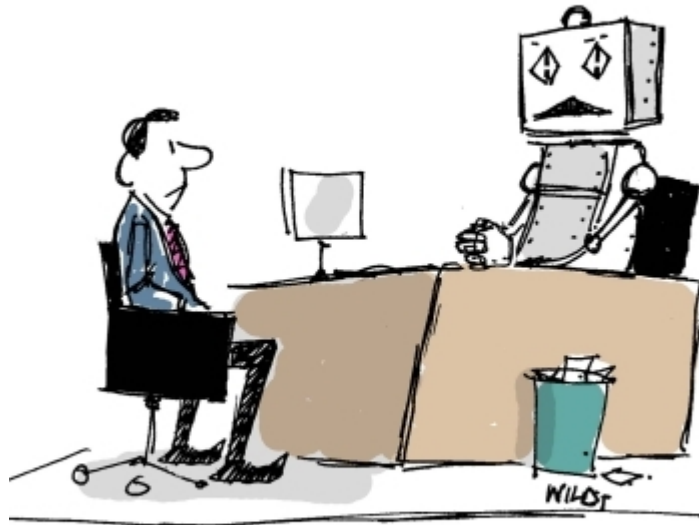
-2.7

SOURCE: US Bureau of Labor Statistics; McKinsey Global Institute analysis

<http://economix.blogs.nytimes.com/2011/02/08/still-nearly-5-unemployed-workers-for-every-opening/>
http://www.foreignpolicy.com/articles/2012/03/16/help_wanted?page=full

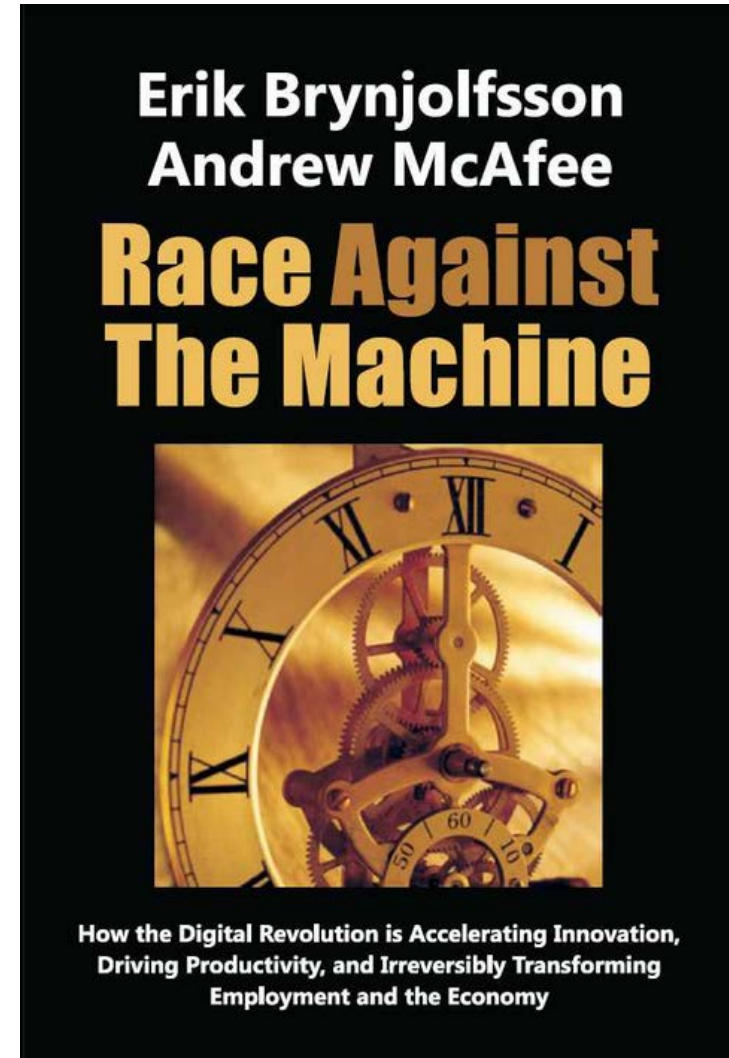
Race Against the Machine

© Original Artist
Reproduction rights obtainable from
www.CartoonStock.com



search ID: cwln2663

"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

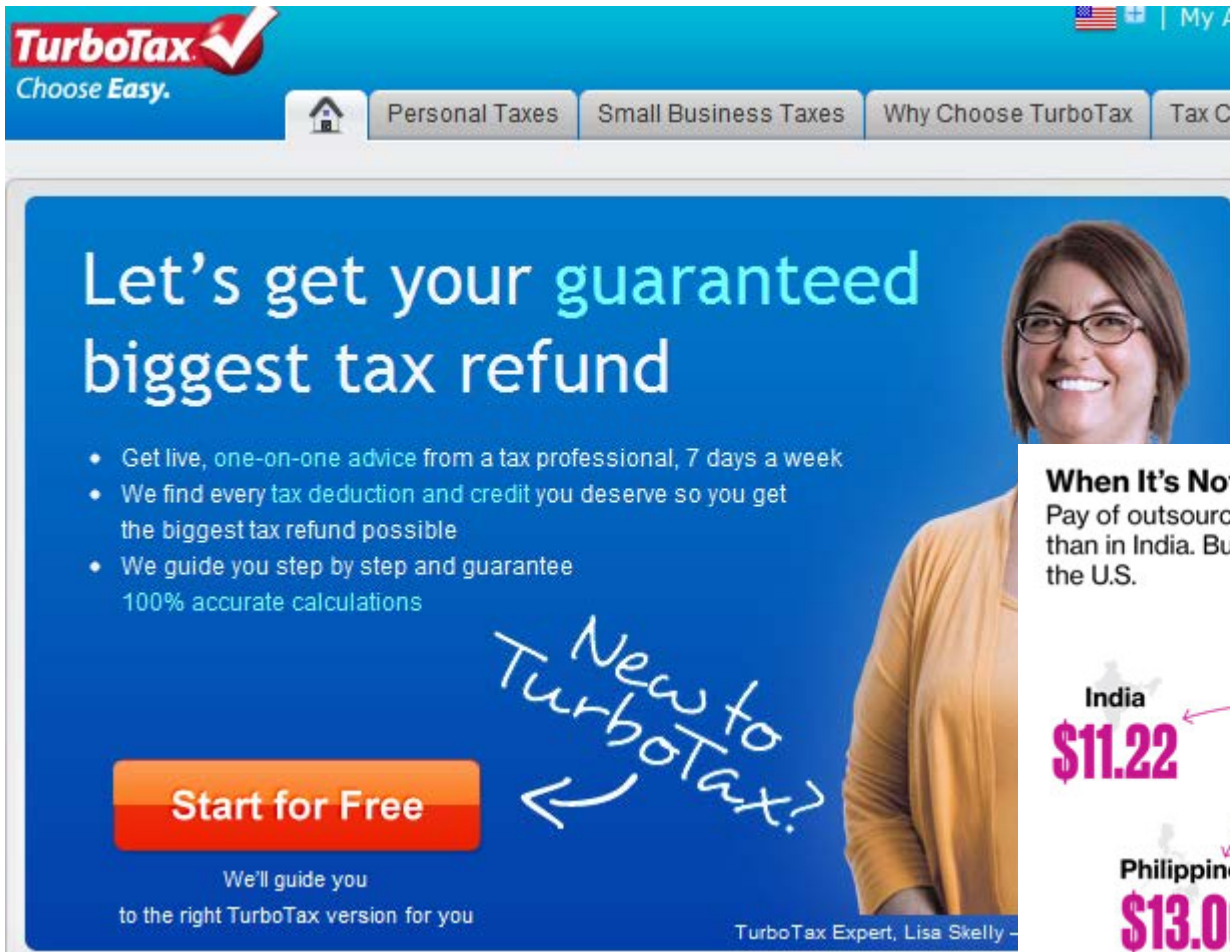
Photo illustration by 731; Trading floor: Jin Lee/Bloomberg; Monitors: Oleksiy Maksymenko/Alamy

Swaps

Computers Elbow Swaps Traders Aside

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

Accountants vs. the Machines



TurboTax
Choose Easy.

Personal Taxes | Small Business Taxes | Why Choose TurboTax | Tax Ca

Let's get your guaranteed biggest tax refund

- Get live, one-on-one advice from a tax professional, 7 days a week
- We find every tax deduction and credit you deserve so you get the biggest tax refund possible
- We guide you step by step and guarantee 100% accurate calculations

New to TurboTax?

Start for Free

We'll guide you to the right TurboTax version for you

TurboTax Expert, Lisa Skelly

When It's Not All About Wages
 Pay of outsourced entry-level accountants in Argentina is higher than in India. But they still earn less than the \$23 hourly wage in the U.S.



Doctors vs. the Machines (1/2)

- Wikipedia now has the biggest source of medical info.

Hypertension

From Wikipedia, the free encyclopedia

This article is about arterial hypertension. For other forms of hypertension, see [Hypertension \(disambiguation\)](#).


Hypertension (HTN) or **high blood pressure**, sometimes called **arterial hypertension**, is a [chronic medical condition](#) in which the [blood pressure](#) in the [arteries](#) is elevated. This requires the heart to work harder than normal to circulate blood through the blood vessels. Blood pressure involves two measurements, systolic and diastolic, which depend on whether the heart muscle is contracting (*systole*) or relaxed between beats (*diastole*). Normal blood pressure at rest is within the range of 100-140mmHg systolic (top reading) and 60-90mmHg diastolic (bottom reading). High blood pressure is said to be present if it is persistently at or above 140/90 mmHg.

Hypertension is classified as either [primary \(essential\) hypertension](#) or [secondary hypertension](#); about 90–95% of cases are categorized as "primary hypertension" which means high blood pressure with no obvious underlying medical cause.^[1] The remaining 5–10% of cases ([secondary hypertension](#)) are caused by other conditions that affect the kidneys, arteries, heart or endocrine system.

Hypertension is a major [risk factor](#) for [stroke](#), [myocardial infarction](#) (heart attacks), [heart failure](#), [aneurysms](#) of the arteries (e.g. [aortic aneurysm](#)), [peripheral arterial disease](#) and is a cause of [chronic kidney disease](#). Even moderate elevation of arterial blood pressure is associated with a shortened [life expectancy](#). Dietary and lifestyle changes can improve blood pressure control and decrease the risk of associated health complications, although drug treatment is often necessary in people for whom lifestyle changes prove ineffective or insufficient.

Hypertension

Classification and external resources



Automated arm [blood pressure meter](#) showing arterial hypertension (shown a systolic blood pressure 158 mmHg, diastolic blood pressure 99 mmHg and heart rate of 80 beats per minute).

ICD-10	I10 ↗ , I11 ↗ , I12 ↗ , I13 ↗ , I15 ↗
ICD-9	401 ↗
OMIM	145500 ↗
DiseasesDB	6330 ↗

Doctors vs. the Machines (2/2)



Diagnostic Imaging
November 2003

COVER STORY

Globalization comes to radiology

Global nighthawks thrive while outsourcers hire foreign-trained radiologists to read for U.S. imaging practices

On most weekday mornings, Dr. Arjun Kalyanpur can be found in his Bangalore, India, office performing imaging diagnoses for dozens of hospitals in the U.S. CT and ultrasound studies from as many as 35 hospitals flash across his workstation screen.

With a fellowship in abdominal imaging from Cornell University and another in neuroradiology from Yale, Kalyanpur is well qualified to perform these preliminary interpretations. He has done preliminary studies for Logic Radiology, a group practice in Atlanta, GA, for nine months without a single notable discrepancy.

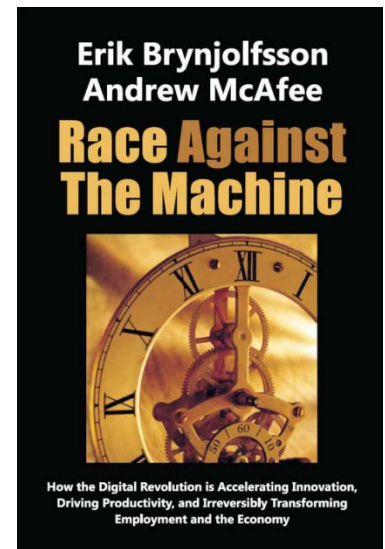
"He is probably the best imager in my group," said Dr. Garrett Ward, the group's president.

Elsewhere in Bangalore, Indian-trained radiologists contracted by Wipro HealthScience are performing similar tasks. Unlike Kalyanpur and his partner, who trained at Baylor University, the 12 radiologists employed in Wipro's global radiology reading room do not possess American Board of Radiology certification. They are not licensed to practice in any state, nor are they credentialed to practice in any U.S. hospital. Only two are qualified to call themselves radiological subspecialists, but their advanced training was received in India.

<http://web.mit.edu/outsourcing/class1/DI-radiology-1.htm>

<http://www.cedarparkregional.com/Our%20Services/Pages/Diagnostic%20Imaging.aspx>

Lawyers vs. the Machines



In January, for example, Blackstone Discovery of Palo Alto, Calif., helped analyze 1.5 million documents for less than \$100,000. ...

"From a legal staffing viewpoint, it means that a lot of people who used to be allocated to conduct document review are no longer able to be billed out," said Bill Herr, who as a lawyer at a major chemical company used to muster auditoriums of lawyers to read documents for weeks on end.

"People get bored, people get headaches. Computers don't."

The computers seem to be good at their new jobs. ... Herr ... used e-discovery software to reanalyze work his company's lawyers did in the 1980s and '90s. His human colleagues had been only 60 percent accurate, he found. "Think about how much money had been spent to be slightly better than a coin toss," he said.

Pilots vs. the Machines



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

AIN AIR TRANSPORT PERSPECTIVE » SEPTEMBER 10, 2010

by CHARLES ALCOCK

September 10, 2010, 7:26 AM



Where did he go?

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

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

SMARTER THAN YOU THINK

Google Cars Drive Themselves, in Traffic

The New York Times



Dmitri Dolgov, a Google engineer, in a self-driving car parked in Silicon Valley

By JOHN MARKOFF

Published: October 9, 2010

Robot drivers react faster than humans, have 360-degree perception and do not get distracted, sleepy or intoxicated, the engineers argue. They speak in terms of lives saved and injuries avoided — more than 37,000 people died in car accidents in the United States in 2008. The engineers say the technology could double the capacity of roads by allowing cars to drive more safely while closer together. Because the robot cars would eventually be less likely to crash, they could be built lighter, reducing fuel consumption. But of course, to be truly safer, the cars must be far more reliable than, say, today's personal computers, which crash on occasion and are frequently infected.

<http://www.nytimes.com/2010/10/10/science/10google.html?pagewanted=all>

Min-Seok Pang – Apr. 22, 2015

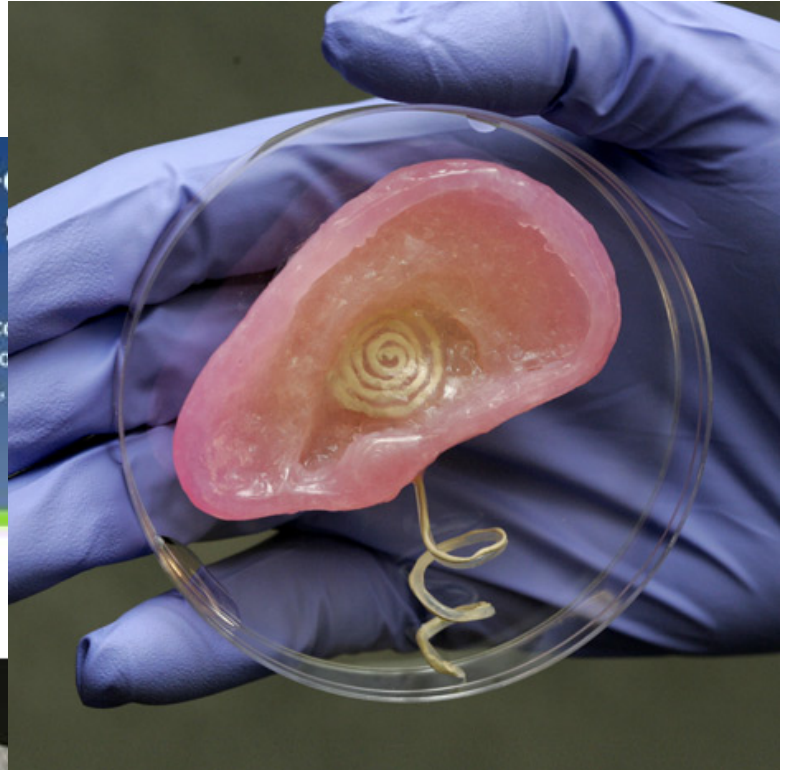
Subway Conductors vs. the Machines



- A new 10.7-mile subway line with no conductor

<http://dragonphoto.tistory.com/535>
<http://m.blog.daum.net/el-tor/8446015>

3D Printer vs. who?

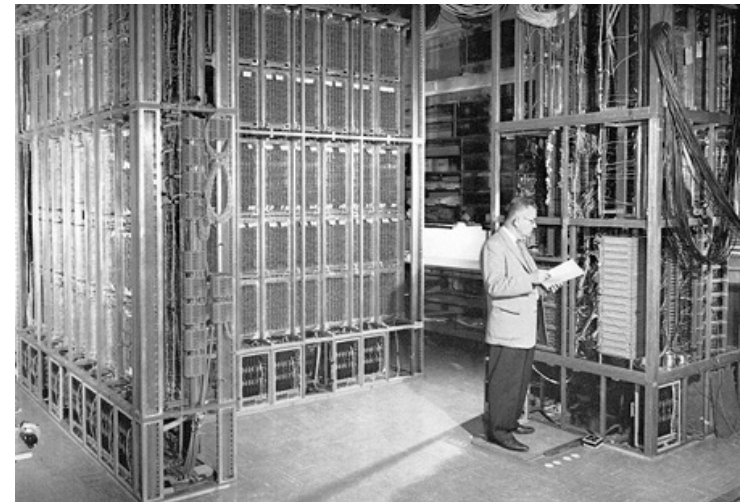


Whose job is in danger if every household has one of these?

<http://www.itechdiary.com/desktop-factory-125ci-3d-printer-3d-printer-is-a-small-and-cheap.html>
<http://www.dezeen.com/2013/05/03/scientists-3d-print-bionic-ear-hears-beyond-human-range/>

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 50 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.
- 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/

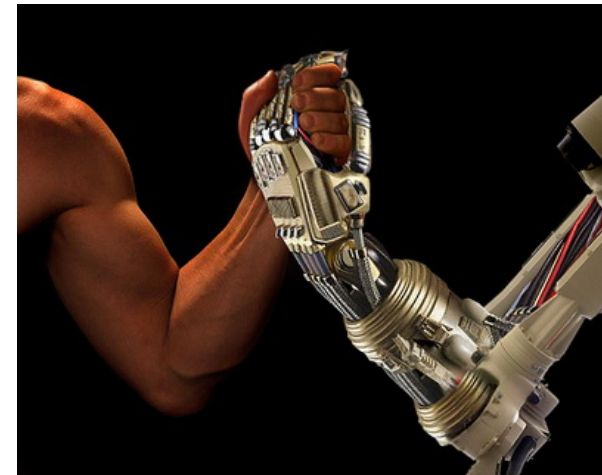
Let's discuss.

- 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>

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.
- If you can survive in the waves of new technologies, you'll 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))

How to survive? – Be Ambidextrous

- You'll need to develop multiple skills and abilities to survive.
- Having one major may not be enough.
- Double major or graduate degree in a *distant* field
- so that, when you lose a job, you can jump into another occupation right away.

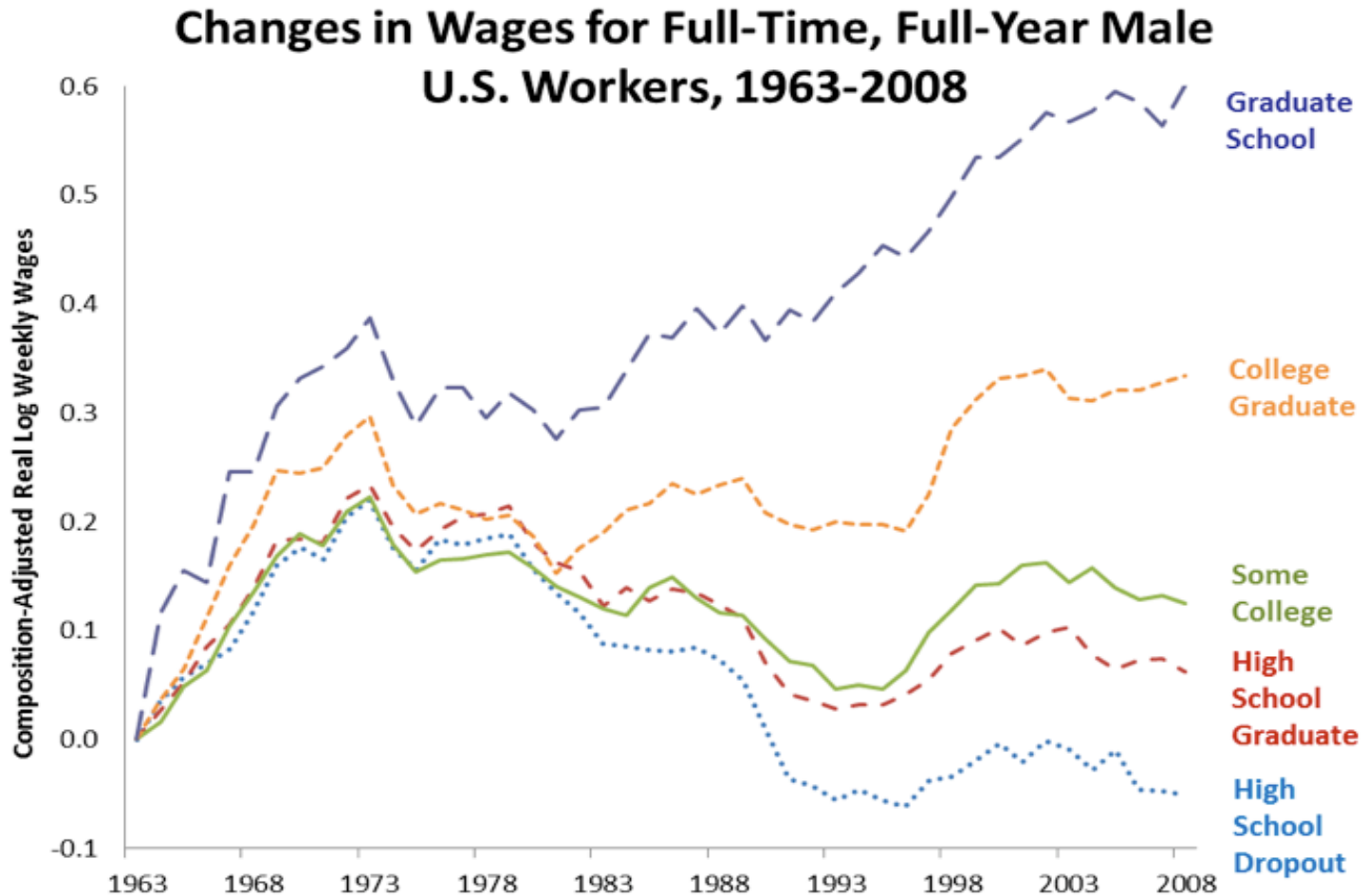


Figure 3.5: Wages have increased for those with the most education, while falling for those with the least. Source: [Acemoglu and Autor](#) analysis of the Current Population Survey for 1963-2008.

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.

How to survive? – Continue to Learn

- Some of the things you are learning here will probably be *obsolete* in the next couple of decades.
- New knowledge keeps produced in an increasingly faster rate.
- Will need to know not only how to use certain software tools (Excel, Tableau), but also how to learn new technology that is not invented yet.
- Will need to be flexible and to transform yourself anytime with new knowledge and skills
- Always be vigilant over and aware of technology trends and take advantage of them

ANALYTICS

Data Scientist: The Sexiest Job of the 21st Century

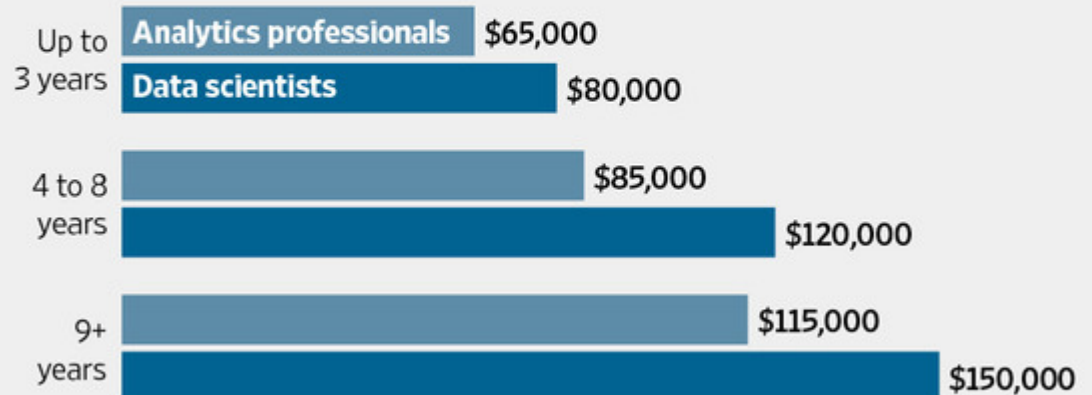
Harvard
Business
Review

by Thomas H. Davenport and D.J. Patil

FROM THE OCTOBER 2012 ISSUE

Big Data, Big Paycheck

Median salary for analytics professionals and those specifically within data science, by level of experience.



Note: Data do not include managers Source: Burtch Works

The Wall Street Journal

<https://hbr.org/2012/10/data-scientist-the-sexiest-job-of-the-21st-century/>
<http://www.wsj.com/articles/SB10001424052702304819004579489541746990638>

How to survive? – Be valuable, differentiated, and irreplaceable

- According to the five-forces model, differentiated and unique products/services can
 - lessen rivalry among existing competitors and
 - lower bargaining power of buyers.



Why should we hire you? (1/2)

- How would you answer? How would you sell yourself?



<http://www.cnn.com/2009/LIVING/worklife/07/20/cb.why.should.hire.you/>

If the interviewer asks what you've learned here, what would you say?

Week	Topic	Cases
1	Introduction	IVK
2	IT and Competitive Strategy (I)	Otis Elevator
3	IT and Competitive Strategy (II)	Wyndham International
4	Business Value of IT	San Francisco Airport, San Diego Schools
5	Cost of IT	IVK
6	Control of IT Budget	IVK
7	IT and Board of Directors	IVK
8	Standard and Platform	IVK
9	Enterprise Resource Planning	Cisco
10	Strategic IT Outsourcing	IVK
11	IT Risk Management	IVK
12	IT-Driven Competitive Strategy	ITC eChoupal

Why should we hire you? (2/2)

- There are three finalists for one job position. Only ONE will be hired.
- Explain why you should be the one to be hired to your interviewer. Sell yourself!



https://twitter.com/CentricaGrad_FE
http://polycentric.csupomona.edu/news_stories/2011/06/compsci-grad-tackles-complex-code.html
[http://commons.wikimedia.org/wiki/File:Uncle_Sam_\(pointing_finger\).jpg](http://commons.wikimedia.org/wiki/File:Uncle_Sam_(pointing_finger).jpg)

Job Offers to Mr. Barton

- What are the three choices to Mr. Barton?
- Which opportunity would you advise Mr. Barton to take? Why?
- Can he become a CEO someday? Is he a good CEO material, compared to other executive candidates?
- Remember *“IT department is positioned to understand how the business works better than any other department”* (p. 11)?





More CIOs Are Gaining Stature As Business Strategists

CIOs are earning business credibility, sharpening their strategic profile, according to our 2013 State of the CIO

CIOs Share How They Made the Leap to CEO

CIO Pay Tied to Overall Earnings

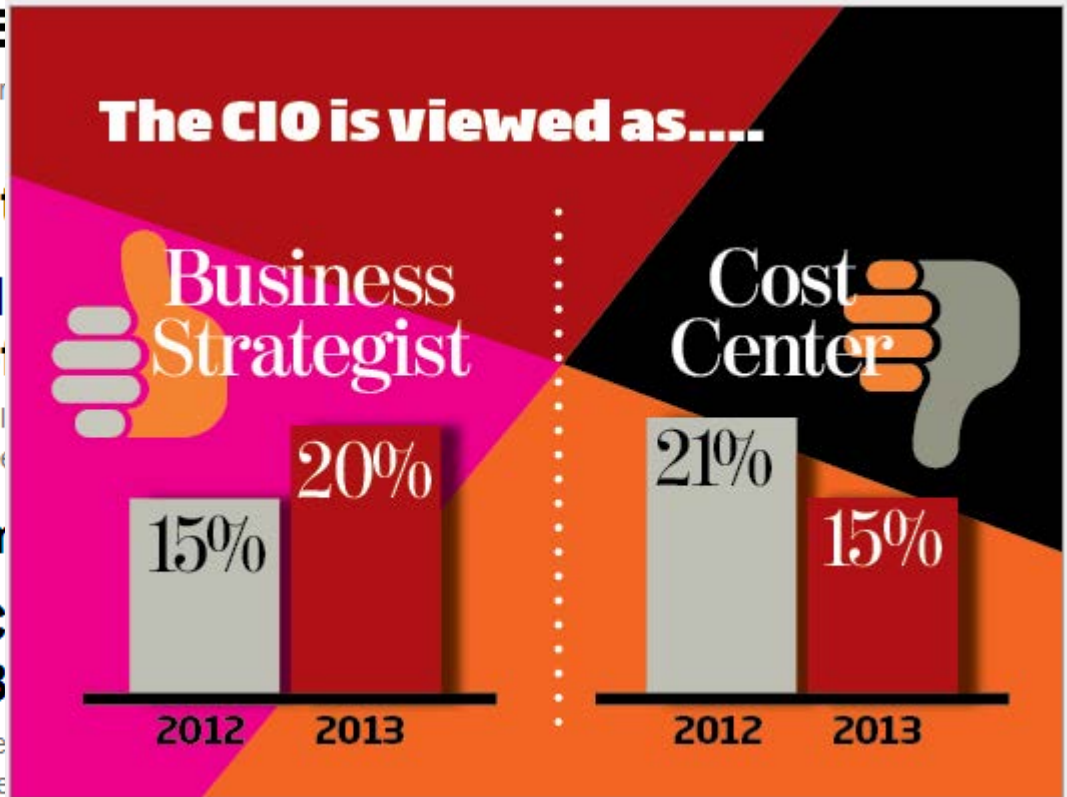
Our exclusive research reveals how much top-tier CIOs are paid with their companies' fortunes.

Innovative CIOs Show How to Succeed With IT

A select few CIOs are generating cold hard cash through IT. We rounded up examples of CIOs who generate revenue through sales or developing a product or service sold externally.

CIO Helps Civil War-Era Company Embrace Digital Future

Western Union has survived dramatic business upheavals. How can this venerable company survive the digital payments revolution?



give their home companies a competitive edge.

Do you want to become like Mr. Barton?

- Would you like to be a successful executive like Mr. Barton in the future?
- If you do, what would it take to be a great CIO?



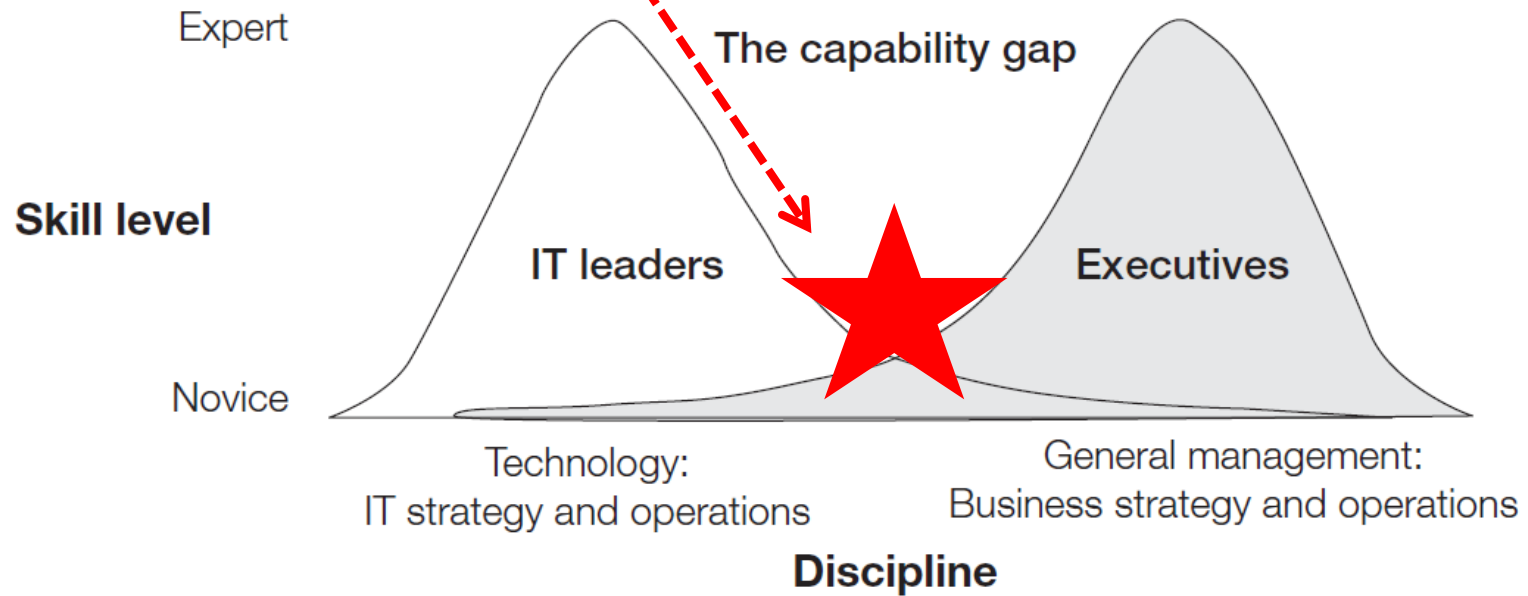
<http://www.fastcompany.com/1790016/inspired-facebook-nation-obamas-chief-disruptor-brings-startup-culture-govt>

<http://www.techweb.com/news/47903044/wal-mart-s-way.html>

http://www.memphisbioworks.org/bionotes/summer10_MCAN.html

Are you here?

The IT leader/general manager capability gap



Are you ready to be...?

- A capable *business leader* specialized in technologies who speaks in business languages and can explain to anyone
 - How IT management should be aligned with competitive strategies
 - How IT helps firms create business opportunities and achieve sustainable competitive strategies
 - How IT resources contribute to value creation in the business and government sectors
 - How to lead organizational transformation and innovation with IT
 - How to manage risks borne out of IT that firms depend on

Risks to MIS Majors

- A recruiter might say,

Well, she/he knows a little bit about business and a little bit about IT too. I get that, which is fine. But I don't think she/he knows either deep enough. I would rather hire a real business major or a real engineering major.

- What would you say to this recruiter?
- If you don't want to hear this, what should you do?



<http://findtheclient.com/2012/02/how-to-win-skeptical-clients/>

What's in your competitive advantages?

- What should be your competitive advantages as an MIS major
 - that differentiate yourself from other majors?
- What should be your core competencies
 - that you can do better than anyone else?
 - Core competencies have to be valuable and inimitable.


Knowing that both business and IT,

- What can you do?
- What *specific skills* do you have?
 - a translator between business people and IT people
 - an ability to translate business problems to technical requirements
 - an ability to use IT to discover new opportunities
 - understanding of finance/accounting
 - understanding of managerial implications of IT (e.g. tradeoff in IT risk management)
 - drawing diagrams

CIOs Struggle with the Great Talent Hunt

Finding IT pros with business skills has always been a bear. So award-winning CIOs are taking radical steps to train, recruit or grow the hybrid staff they covet. (Plus: Meet the new members of the CIO Hall of Fame and the Ones to Watch winners.)

By Stephanie Overby
Wed, May 01, 2013

 4 Comments




"Business savvy comes from years of experience working on the business side, generally at a level high enough to have a broad cross-functional perspective," says Dave Smoley, a 2013 CIO Hall of Fame inductee. "Because technical competence comes from years of experience working and training in math, science and technology, it is rare to find both in one individual." Smoley, until recently the CIO of Flextronics International, joined pharmaceutical company AstraZeneca as CIO on April 15.

"It's hard for tech people--even middle managers on up to senior managers--to think the way that the business thinks," says [Teri Takai, CIO for the Department of Defense](#) and a 2013 CIO Hall of Fame inductee. "They tend to explain things from their own perspective."

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At the DoD, Takai's lieutenants excel at highly technical projects, but she reminds them that their technical solutions are only as good as their ability to communicate them to senior defense leaders. "I tell them you have to use Aunt Linda language," she says. "How would you explain this to your mother, assuming she's no expert. Or your neighbor?"

At SquareTwo Financial, it took time for IT employees to get comfortable with business discussions. "It's difficult for a developer to stand up say, 'I'm going to show you what my product does and do it in a way that a business person can understand it.' Not, 'Hey, I wrote this code this way and here are my SQL statements,' but, 'Here's the business value of why I designed this the way I did,'" Weeks says.

My Suggestions (1/3)

- You have to be an expert in two areas.
- It is easy to find an expert in one area, but not in two or more.
- An expert in at least one technology area
 - database, business intelligence, system analysis and design, security, project management, and so forth
- An expert in at least one functional area or one industry
 - Finance, accounting, marketing, management, strategy, or operations
 - Retail, manufacturing, hospitality, finance, government, healthcare, and so forth

My Suggestions (2/3)

- What should differentiate you from engineers?
- Communication skills
 - a translator between business-side and technology-side
- Finance / accounting
 - Will this technology create value to my customers and company?
- Understanding of customers and competitors
 - What do customers want?
 - What would competitors do?

My Suggestions (3/3)

- What should differentiate you from business managers?
- Knowledge on current, up-to-date technologies
 - What you have learned here will be obsolete in a matter of years. DO NOT stop reading technology news or magazines.
- 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.

Technology News Sites to Recommend

- MIT Technology Review (<http://www.technologyreview.com/>)
- BusinessWeek (<http://www.businessweek.com/technology>)
- CIO Magazine (<http://www.cio.com/>)
- InformationWeek (<http://www.informationweek.com/>)
- Government Technology (<http://www.govtech.com/>)
- ZDNet (<http://www.govtech.com/>)
- NextGov (<http://www.nextgov.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!