

# Maker Culture와 알고리즘 사회

강정수

---

# Making Culture

---

---

# Panoramas & Concepts

---

**Internet, Digital Technologies**

**다양한 시도/개념/현장**

---

# Maker Culture

---

생산의 힘

생산의 힘을 우리의 손에

기술 기초 DIY Culture

---

# **Maker Culture**

---

**metalworking, woodworking, handicraft**

**electronics, robotics, 3-D printing**

**Hackerspaces, Fab Labs**

---

# Maker Culture

---

**Learning-through-Doing, 구성주의 (constructivism)**

**technical skills**

**participation**

---

# **Big Data / Open Data**

---

**빅데이터: 데이터 지배**

**Edward Snowden: the end of naivety**

**open data: algorithmic regulation**

---

# **Filter Bubble by Algorithms**

---

**News Values , Agenda Setting**

**Search Algorithms**

**Facebook Newsfeed Algorithm**

---

# **Network Society**

---

**(Social) Networking, women-networking**

**social movement**

**hate culture**

---

# **Uberification of everything**

---

**Software as a Service**

**Platform Business: Two-Sided Markets**

**Disruptive Technologies**

---

# BUT

---

“밖에 있는 사람들”

**Big Data와 Open Data의 차이는?**

**앞서 설명한 개념/프로그램을 어떻게 실현할 것인가?**

---

# **Get Real**

---

**밖에 있는 사람들**

**Inclusion**

**diversity**

---

# **Get Real**

---

**risks**

**“밖에 있는 사람들”의 “참여를 가능케 해야”**

**making culture**

---

# **Digital Infrastructure**

---

**Open Internet, Net neutrality**

**Open Standard**

**User-Rights**

# **Digital Infrastructure**

= 디지털 사회의 전제 조건

= 참여의 전제 조건

---

# Open participative Network

---

Q?

네트워크 사회에서 사회/정치 참여는 어떻게 이뤄낼 것인가?

다양한 사회계층의 ‘접근’이 이뤄지고 있나?

---

# **Open participative Network**

---

**Access!**

**It's not only a technical infrastructure.**

**Access to/for diverse social groups!**

---

# **blind-deaf / deaf-blind**

---

## **Lorm Language**

**사회적 소외**

## **intelligent Designing**

---

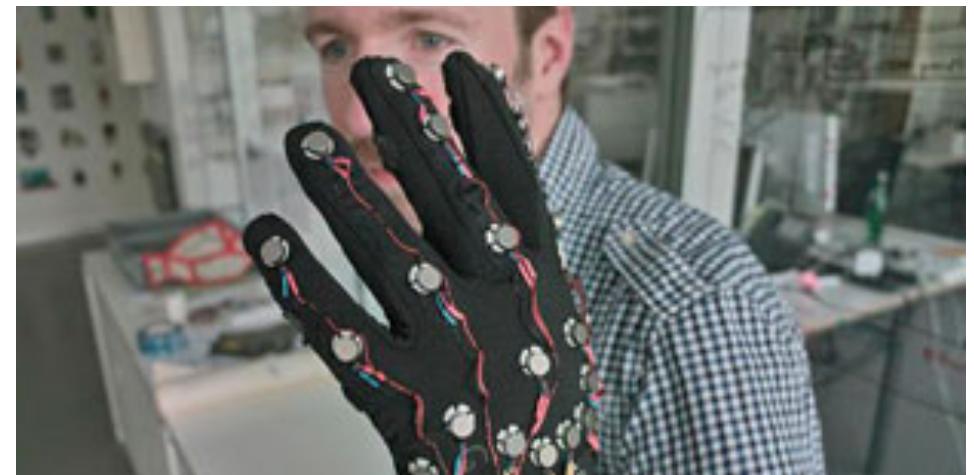
# **net-access for blind deaf**

---



**Mobile Lorm Glove**

**Design Lab Berlin**



# inclusive designing

트윗 354 사진/동영상 14 팔로잉 327 팔로워 187 관심글 299 더 보기 ▾

트윗 트윗과 답글

LormHand 님이 리트윗함  
Design Research Lab @DRLab\_Berlin · 9월 2일  
Radio Interview @lormhand Ohrfunk 90,8 MHz  
soundcloud.com/tom-bieling/ra... #taubblind #inklusion #interaction  
#design #forschung #lormen

SoundCloud

initiative des Bundesminister

---

# **Designing for diversity**

---

**not (only) for Digital Elites**

**Network(-ing) 의미는?**

**Net Access 의미는?**

---

# **Designing for diversity**

---

**digital divide**

**participative platform**

**more access!**

---

**more access**

---

**more accesses for the analog world**

**senior computer clubs**

**interfaces between offline and online**

# ‘넷으로 연결된 이웃들’ 프로젝트 by SCC Berlin



hybrid letter box

오프라인과 온라인의 연결



# e-textile

## Swatchbook Exchange

The Swatchbook Exchange provides a platform for exchanging E-Textile samples between practitioners in the field. Everybody who participates in the exchange by submitting a unique swatch design of their own, receives a compiled collection of everybody else's swatches. This means that everybody participating needs to make as many multiples of their swatch as participants. There are no guidelines defining what these samples could or should be, only that they relate to the field of E-Textiles. Preferably each swatch should be able to mount on a 13x16cm area, and while flat swatches lend themselves well to the book format, 3D swatches are also welcome.

## Maurin Donneaud & Laurent Malterre: Matrix



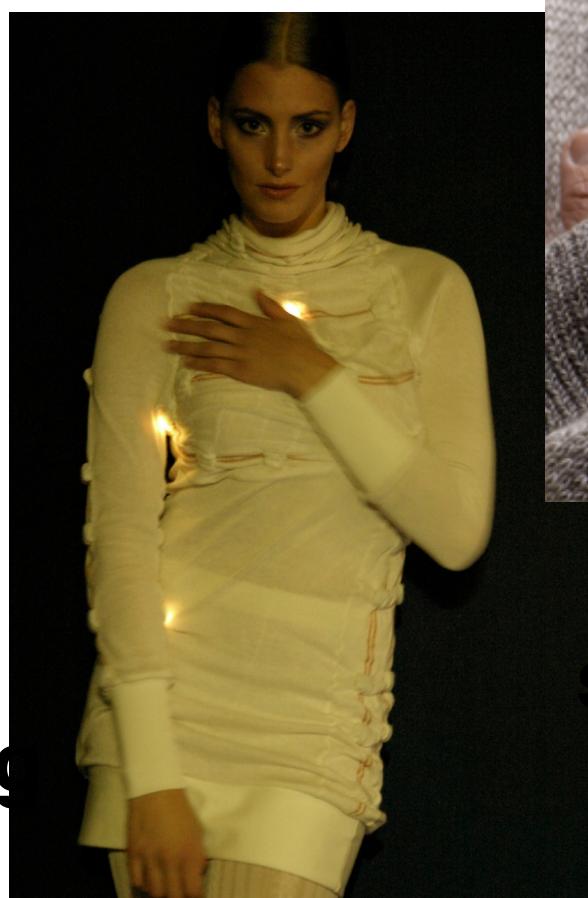
Credits: Maurin Donneaud & Laurent Malterre Year: 2012 References: <http://tapiton.drone.ws/fr/index.html> Links: <http://maurin.donneaud.free.fr/?-Keyboard-Materials> polyester, copper thread coated with silver. Techniques: knitting Dimensions: 20 x 20 Description: This knitting textile is made of two layers of fabric that incorporate conductive threads. ... [Continue reading →](#)

## Jie Qi: LED Color Graph



Credits: Jie Qi Year: 2012 video: <http://youtu.be/hlZOExfOXIA> Photos: <http://www.flickr.com/photos/jieq/sets/72157634587082013/> Materials: Copper tape, conductive fabric tape, solder, 1206 surface mount LEDs in red, yellow, pink, blue and white, magnets for

swatch book  
24명 디자이너  
knowledge sharing



knit alarm  
smart senior project

---

# **Making Culuture / Maker Culture**

---

**co-creation of communities**

**R&D, 연구소, 대학교**

**knowledge sharing**

---

# Making Culuture / Maker Culture

---

#learn2code, 2014년 10월 11일-17일

**internet = co-creatable**

---

# 도전

---

**not only digital elites**

**inclusive access**

**interface bw. analog & digital**

---

# 디지털 사회

---

참여사회?

명암

기술능력이 적은 사람을 배제하는 사회?

---

# **디지털 사회**

---

**maker culture = 하위문화?**

**maker culture: 전통 노동질서의 붕괴**

**technology for yourself**

---

# **디지털 사회**

---

**chance, gender, diversity**

**knowledge sharing**

**digital elites**

---

# 디지털 사회

---

새로운 정치 패러다임

**포함 vs. 배제 (inclusion vs. exclusion)**

---

# **알고리즘과 노동사회 재편**

---



## Langsamer!

Downloaden Sie MacKeeper  
beschleunigen!

## OP-ED CONTRIBUTORS

## Jobs, Productivity and the Great Decoupling

By ERIK BRYNJOLFSSON and ANDREW McAFFEE

Published: December 11, 2012

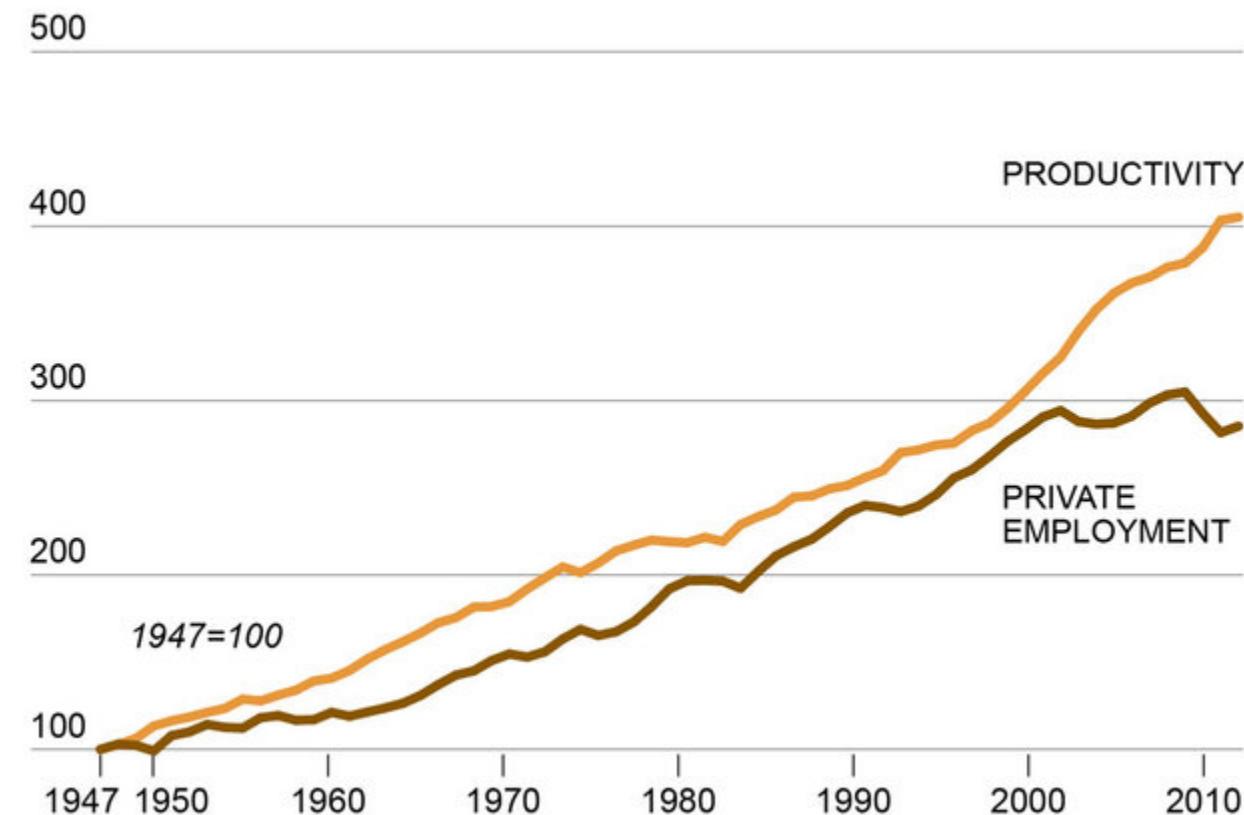
Cambridge, Mass.



A WONDERFUL ride has come end. For several decades after W War II the economic statistics w care most about all rose togethe here in America as if they were tightly coupled. G.D.P. grew, ar

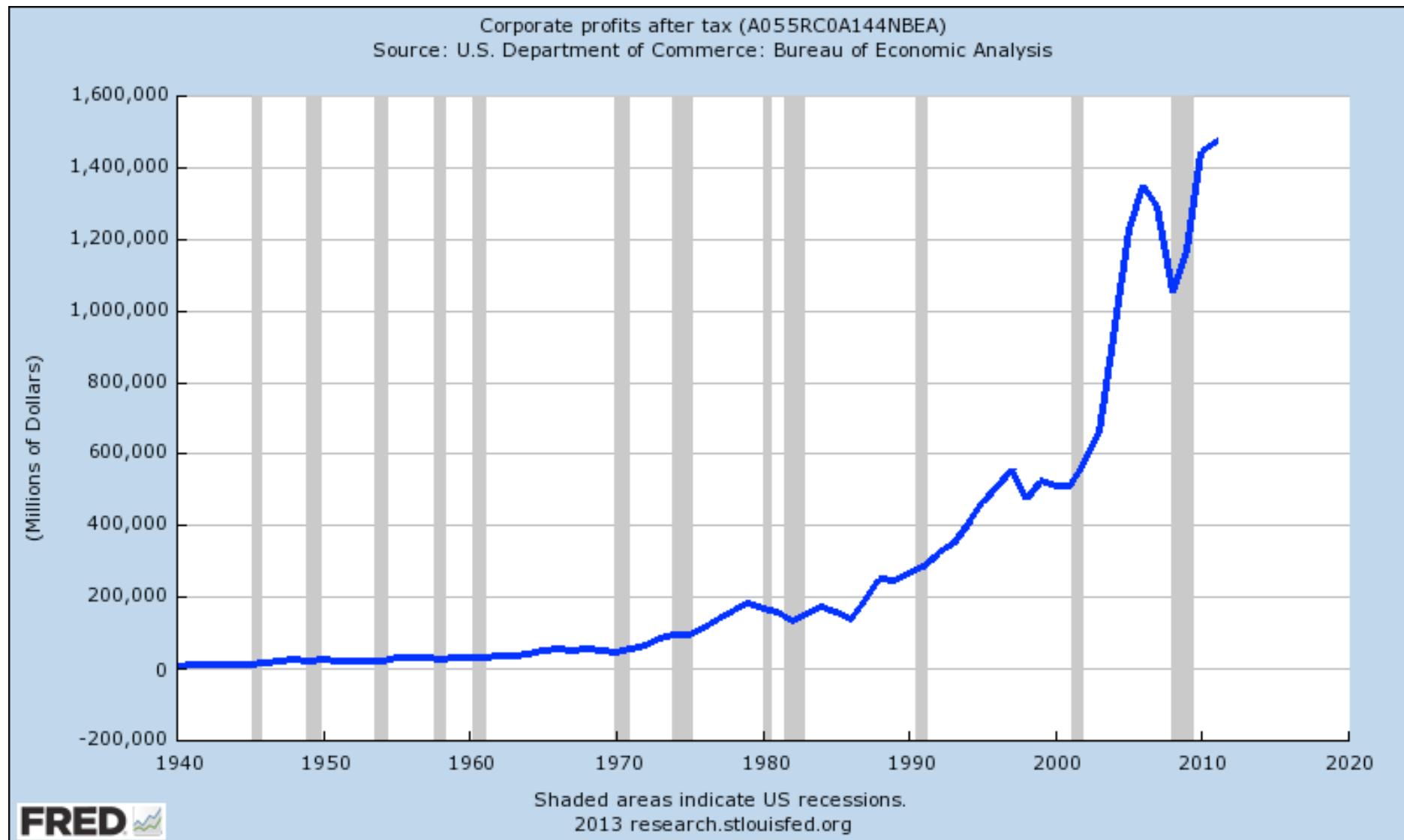
## Decoupling

### Productivity and employment in the United States, 1947-2011

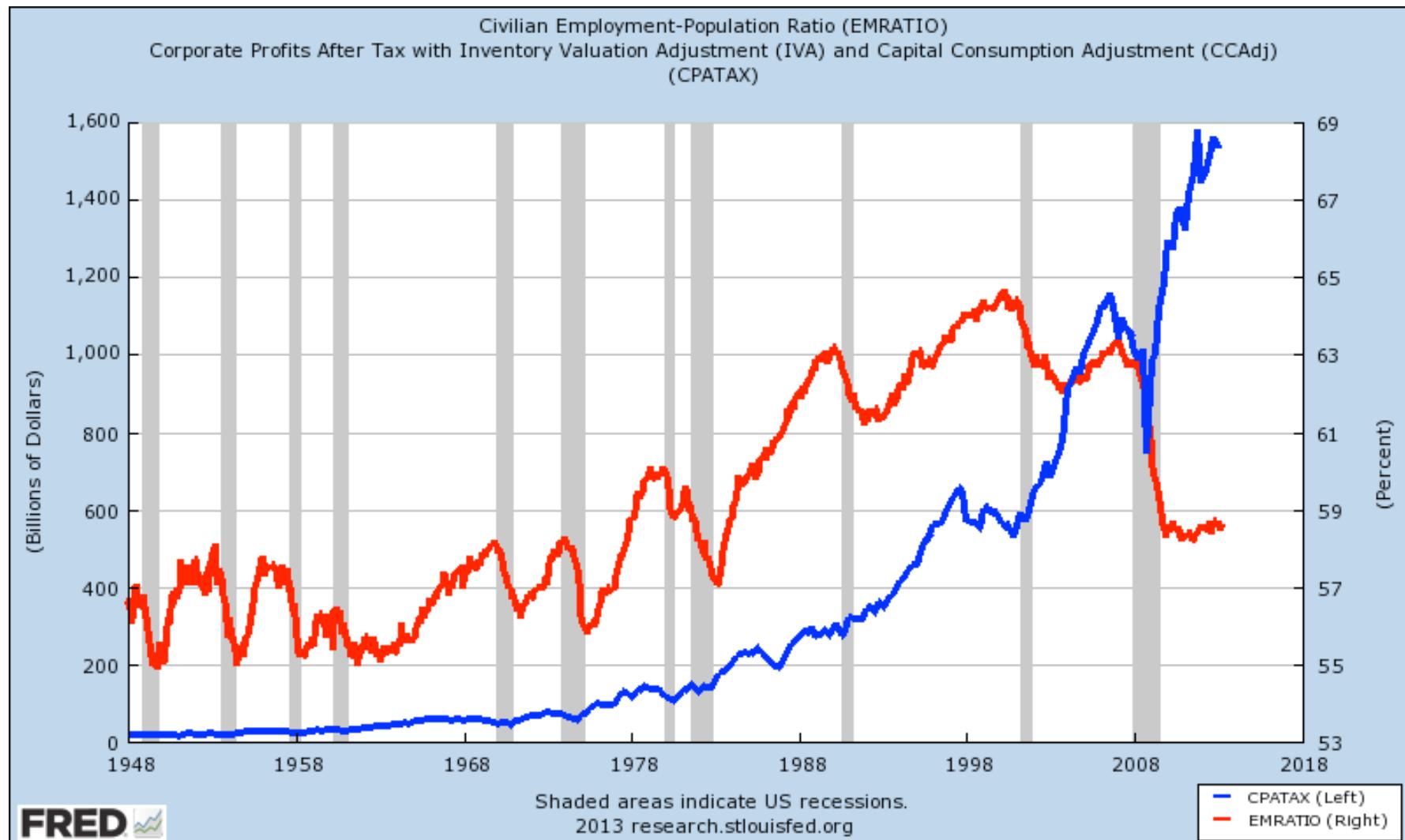


Sources: U.S. Department of Labor, Bureau of Labor Statistics

# 기하급수적 상승: 미국 기업 이익



# 문제점: 이윤 회복율과 일자리 회복율 차이



**MANUFACTURING ENDGAME**

How robots are eating the last of America's—and the world's—traditional...

**SLOW BURN**

Why would-be marijuana moguls have their work cut out for them

4 hours ago

Co-founder Murthy is back, but what troubled Infosys needs most is a break from the past

12 hours ago

Why Better Place failed with swappable batteries—and your cars might just use them one day

**PROCREATION NATION**

By 2050, one in five people in Africa will be Nigerian

Unhappy with its tax bill, Yahoo's CFO hints at rethinking terms of

**MANUFACTURING ENDGAME**

# How robots are eating the last of America's—and the world's—traditional manufacturing jobs

By [Christopher Mims](#) | @mims | February 15, 2013



# Columnists

[Home](#)[UK](#)[World](#)[Companies](#)[Markets](#)[Global Economy](#)[Lex](#)[Comment](#)[Columnists](#)[Analysis](#)[Opinion](#)[The A-List](#)[Editorial](#)[Blogs](#)[Letters](#)[Corrections](#)

Welcome to FT.com, the global source of business news and analysis. [Register](#) or [Log in](#)

February 3, 2013 8:06 pm

## Obama must face the rise of the robots



By Edward Luce

Technology will leave a large chunk of the US labour force in the lurch



©Matt Kenyon

Early in his first term Barack Obama joked that he would "keep an eye on the robots in case they try anything". He should have known resistance is futile. During Mr Obama's presidency, IBM's Watson has proved computers can outfox

The Economist

Log in | Register | Subscribe      Digital & mobile | Events | Topics A-Z | Newsletters

World politics | Business & finance | Economics | Science & technology | Culture | Books

Print edition

## Babbage

Science and technology



Previous | Next | Latest Babbage

Latest from all our blogs

[Artificial intelligence](#)

### Difference Engine: Luddite legacy

Nov 4th 2011, 16:10 by N.V. | LOS ANGELES

[Like](#) 3.9 [Tweet](#) 1,105



---

# Leontief

---

보다 정교한 컴퓨터의 도입으로 인하여

마치 농경시대에 있어서 말의 역할이

트랙터의 도입에 의해서 제거된 것처럼,

가장 중요한 생산요소로서의

인간의 역할이 감소하게 될 것이다

---

# **Jeremy Rifkin**

---

## **2가지 방향으로 진행**

- 1. 생산기술의 발달로 인해 노동의 필요성 자체가 없어진다**
- 2. 노동에 대한 자리가 없어진다**

---

# **OODA-Loop Framework**

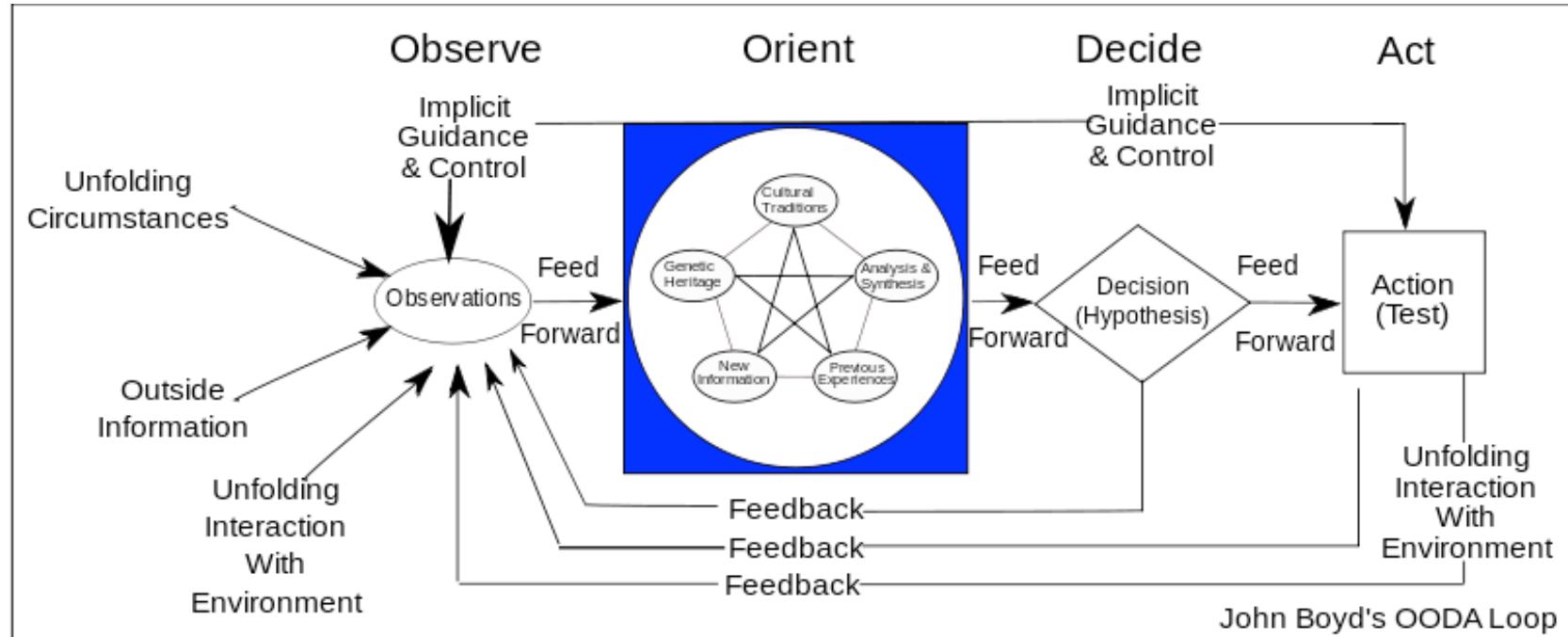
---

**Observe**

**Orient**

**Decide**

**Act**



# 미공군 대령 John Boyd

## 2차대전 경험 기반 1950년대 이론화

---

# 관찰

---

자동화 automation



---

# 관찰

---

관찰에서 중요한 것

‘자동화’에 연상되는 머리 속 그림

로봇이 일자리를 빼앗고 있다는 표현에서  
연상되는 그림은?

# 다른 관찰

## Babysitter



---

# 다른 관찰

---

## Cleaning



# 다른 관찰

## 무인 무기 drones



---

# 다른 관찰

---

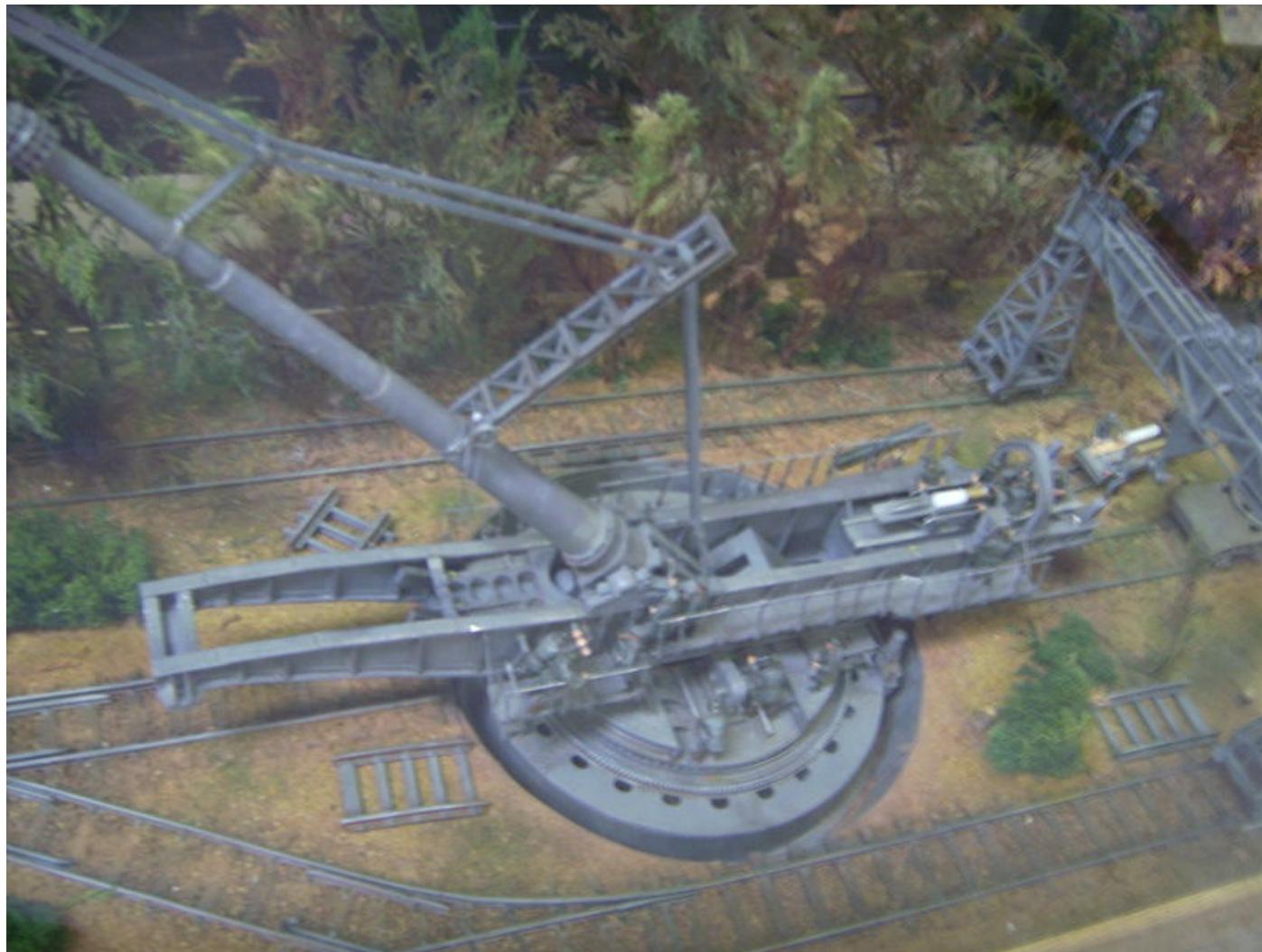
무인 무기 drones



---

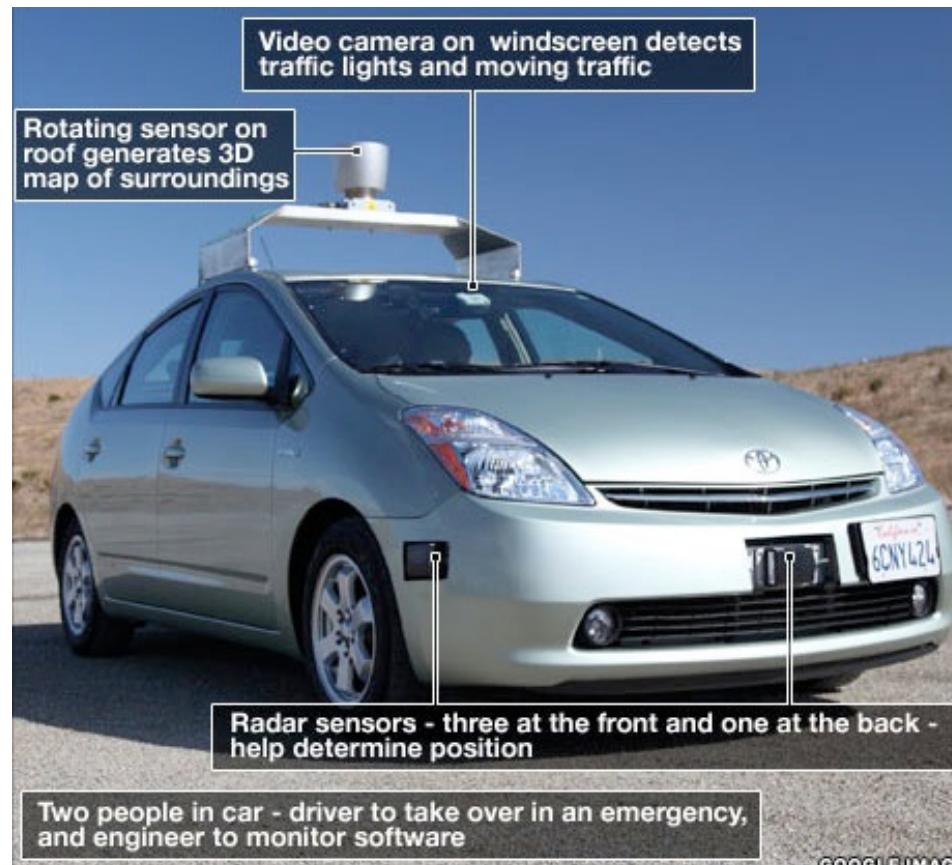
# 무인 무기 = 인간/군인 대체

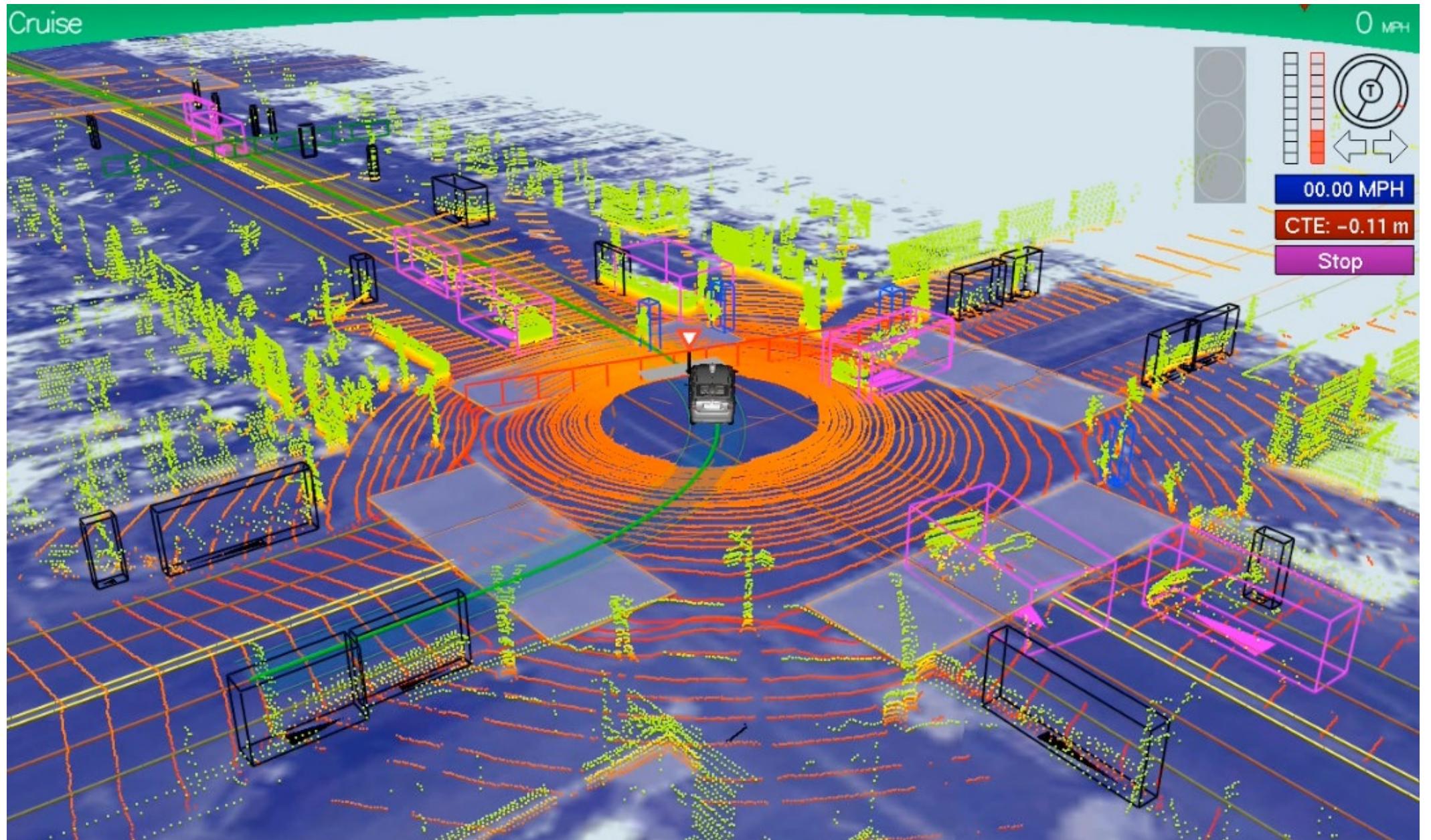
---



# 다른 관찰

## Self-Driving Car: 1 GB pro Second !!!





---

## 결과/영향

---

### **Self-Driving Cars**

**미국, 약 350만 운전 노동자  
(택시 운전자, 리무진 운전자 등)**

---

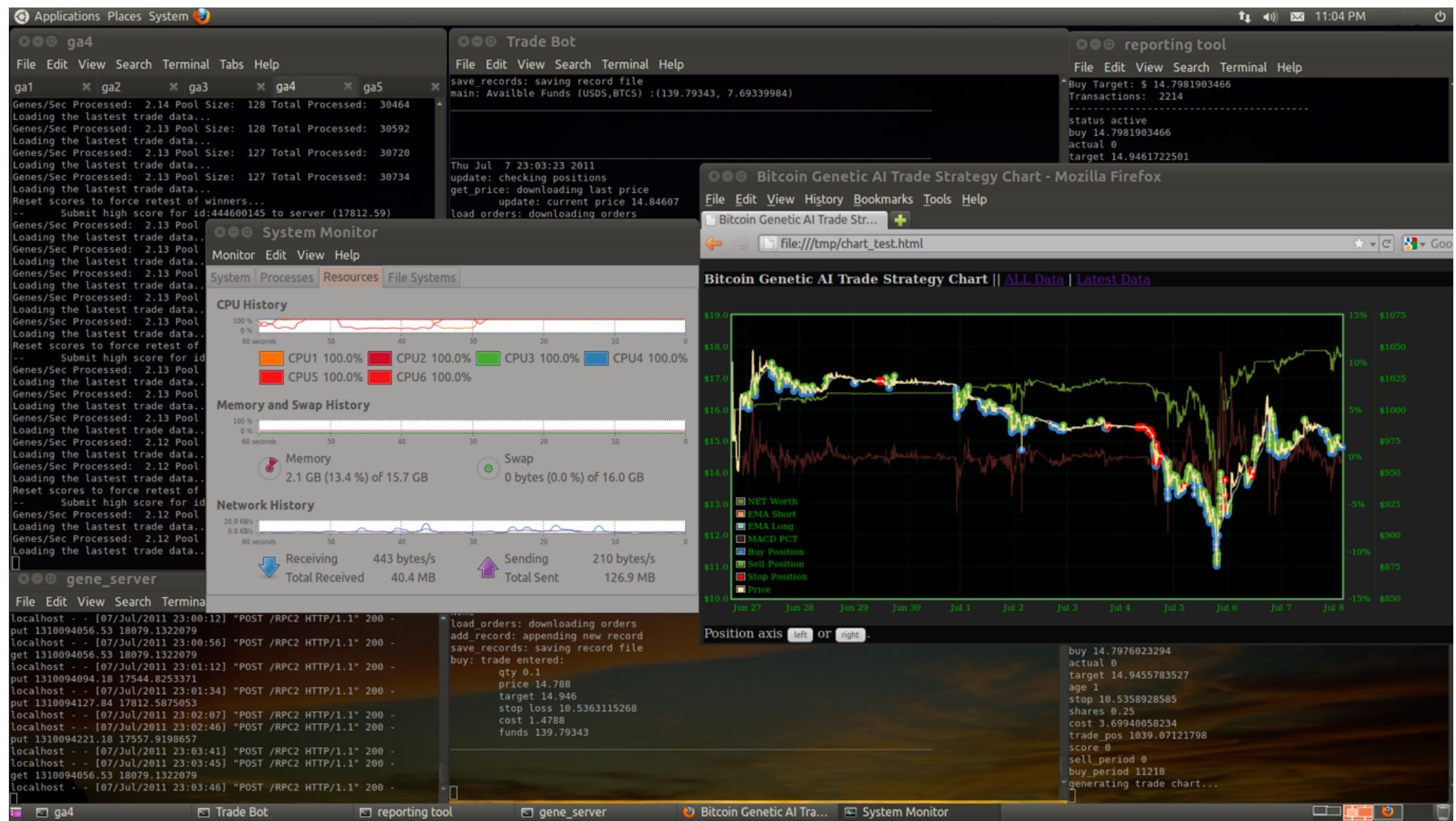
## 다른 관찰

---

지금까지 살펴본 것: 물리적 실체

알고리즘/프로그램

**High Frequency Algorithm**



---

# **High Frequency Trading (HFT)**

---

**2009년 미국 증시 거래량 50%**

**현재 약 80% 추정**

**[http://en.wikipedia.org/wiki/High-frequency\\_trading](http://en.wikipedia.org/wiki/High-frequency_trading)**

# 알고리즘 저널리즘/로봇 저널리즘

## Stats Monkey

### 4 대학생, Northwestern University

The screenshot shows a news article from NPR's website. At the top, there is a navigation bar with the NPR logo and links for 'news', 'arts & life', 'music', and 'listen'. Below the navigation bar, the article title is 'Program Creates Computer-Generated Sports Stories'. Underneath the title, it says 'January 10, 2010 4:00 PM'. To the left of the main content area is a large blue play button icon with a white triangle pointing right. Next to it is the text 'Listen to the Story' and 'All Things Considered'. To the right of the play button are icons for a computer monitor, a download arrow, and a transcript link. Below these icons, the text '3 min 16 sec' is displayed.

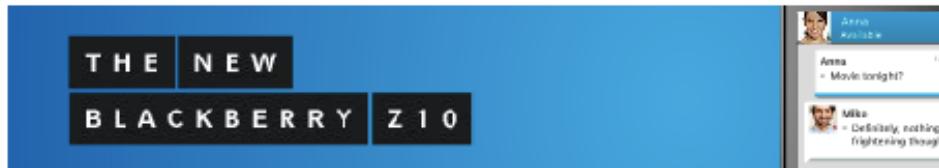
Sportswriters now have new competition — in the form of a computer program called StatsMonkey.

# Business Day

WORLD U.S. N.Y. / REGION BUSINESS TECHNOLOGY SCIENCE HEALTH SPORTS OPINION

AUTOS

Search Global DealBook Markets Economy Energy Media Person



DIGITAL DOMAIN

## When the Software Is the Sportswriter

By RANDALL STROSS

Published: November 27, 2010

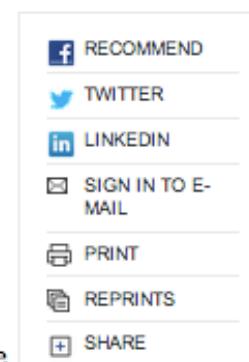
ONLY human writers can distill a heap of sports statistics into a compelling story. Or so we human writers like to think.



The StatSheet site for Ohio State men's basketball. One recent story on the site had 10 sentences and 156 words — written entirely by

StatSheet, a Durham, N.C., company that serves up sports statistics in monster-size portions, thinks otherwise. The company, with nine employees, is working to endow software with the ability to turn game statistics into articles about college basketball games.

Established in 2007, StatSheet.com provides statistical analysis of college football and basketball, Nascar and other sports. It dices data in more ways than any fan



# StatSheet

THE  
NEW  
YORKER  
READERHEALING  
POWERSAn iPad and iPhone collection  
of medical writing from the  
magazine's archive.

DOWNLOAD NOW

GADGET LAB

miscellaneous

## Can an Algorithm Write a Better News Story Than a Human Reporter?

BY STEVEN LEVY 04.24.12 4:46 PM

[Follow @stevenle](#)

# The Atlantic

[Politics](#) | [Business](#) | [Tech](#) | [Entertainment](#) | [Health](#) | [Sexes](#) | [National](#) | [Global](#) | [China](#)

Special Reports Video Photo Ebook Newsletters



Why Do So  
Many People  
Pay for Writing  
School Still?

*Arrested  
Development  
Reality-  
Warping Pow*

JUST IN Who Even Needs the Nation-State in the 21st Century? Er

## Can the Computers at Narrative Science Replace Paid Writers?

JOE FASSLER | APR 12 2012, 8:03 AM ET



793 A look at new software that could transform journalism

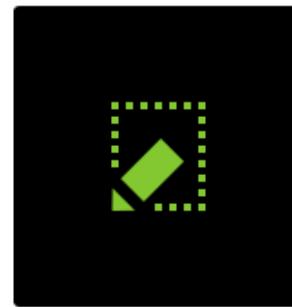
## HOW QUILL WORKS

## Let Quill Do the Writing for You



## Receive Data

Quill imports your data and builds an appropriate narrative structure to meet the goals of your audience.



## Create Story

Using complex Artificial Intelligence algorithms, Quill extracts and organizes key facts and insights and transforms them into stories, at scale.



## Deliver Insight

Quill uses data to answer important questions, provide advice and deliver powerful insight in a precise, clear narrative.

# NarrativeScience

2012년 Kristian Hammond “5년 안에 Pulitzer상 받겠다”

---

## 다른 관찰

---

**Computational Legal Studies,  
Michigan State University**

**ReInvent Law London 2013**

**ReInvent Law New York 2013**

---

## 다른 관찰

---

**Pattern Detection: (Big) Data Mining, Data Analytics**

**법, 의학, 스포츠 저널리즘**

# 다른 관찰

## Outsourcing



HOME STARTUPS MOBILE GADGETS EUROPE ▾  
Video: Spirit of LeMons car-plit

HOT TOPICS YAHOO APPLE FACEBOOK TWITTER GOOGLE MICROSOFT

### Foxconn Allegedly Replacing Human Workers With Robots



JOHN BIGGS ▾

Tuesday, November 13th, 2012



34 Comments

Foxconn [has been planning to buy 1 million robots](#) to replace human workers and it looks like that change, albeit gradual, is about to start.

The company is allegedly paying \$25,000 per robot – about three times a worker's average salary – and they will replace humans in assembly tasks. The plans have been in place for a while – I spoke to [Foxconn reps about this a year ago](#) – and it makes perfect sense. Humans are messy, they want more money, and having a half-a-million of them in one



Services | Database | Markets | Weather | Site Index | RSS | Feedback  
Global Edition | China | World | Business | Culture & Edu | Sports | Entertainment | Sci-News | In-Depth

China

Most Searched: •Affordable homes •China-Russia

### Foxconn to replace workers with 1 million robots in 3 years

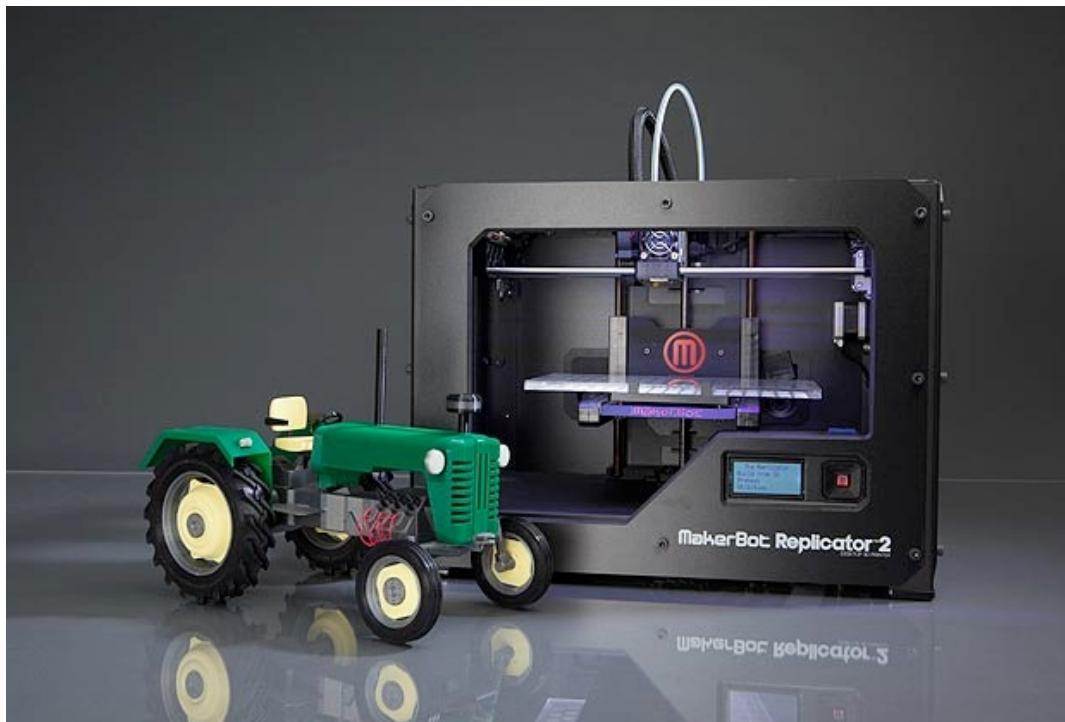
English.news.cn 2011-07-30 01:42:14

✉ Feedback | 🖨 Print | 📻 RSS | 🔍



# 다른 관찰

## 3 D Printer



---

## 반응 관찰

---

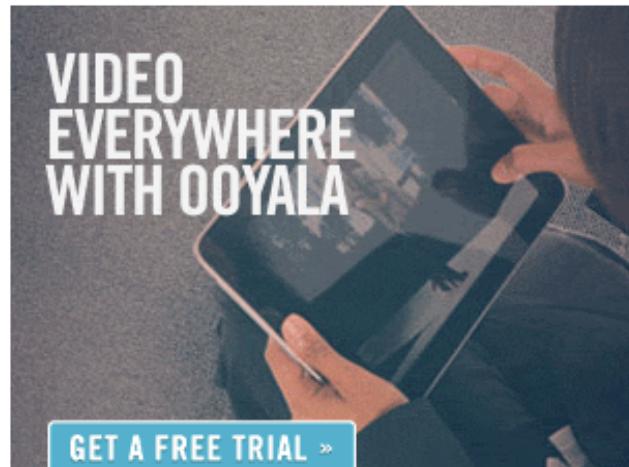
**새로운 흐름 아니다!**  
**새로운 기술은 언제나 일자리를 대체하고**  
**새로운 일자리 만들어 왔다**

**과거 90% 노동자는 농업, 현재 2%**

**그럼에도 불구하고 일자리 있어**

You are here: Home > Collections > Jobs

Ads by Google



## Internet creates 2.4 jobs for every job it destroys: McKinsey

May 26, 2011, 03.49pm IST

**Tags:** [united nations](#) | [McKinsey Global Institute](#) | [McKinsey](#) | [Internet](#) | [G8](#) | [China](#)

NEW DELHI: The Internet, which has transformed the way we live, work, shop, socialise and now, is also emerging as a powerful catalyst for job creation, says a survey by global management consultancy McKinsey.

According to a report by McKinsey Global I has "created 2.4 jobs for every job that it ha



0

0



[Tweet](#)

[Recommend](#)

[Submit](#)

McKinsey&Company

McKinsey Global Institute



May 2011



Internet matters: The Net's sweeping impact on growth, jobs, and prosperity



HOME &gt; 뉴스 &gt; 전체기사 RSS

# “10대 업종에 속한 기업들은...~ 매출이 100억원 늘어날 때마다 ~ 6.2명의 일자리 생겨”

산업 매출 100억 늘 때 국내 일자리 6.2명 창출... '고용 없는 성장을 막자'

기사본문

SNS댓글 쓰기

CAR VS CAR 자동차 질문조사 이벤트

입력 2013-06-13 17:17:21 | 정 15 | 6-1 | 03:17:30

기업 공평 평가원 조사

금융위기 전엔 1.4명 불과  
생산성은 임금 상승 못미쳐

2008년 글로벌 금융위기 이후 국내 상장기업의 생산성 향상 속도가 임금 상승에 미치지 못한 것으로 나타났다. 생산성 향상 등에 따른 매출 증가 정도를 반영해 임금이 정해지지 않고 실적과 무관한 요인들이 급여 결정에 영향을 미쳤다는 얘기다.

이상규 경희대 경영학부 교수는 13일 서울 태평로 프레스센터에서 열린 '2013 한국기업 국가·사회 공헌도 콘퍼런스' 주제발표에서 "기업의 매출이 늘면 급여도 높아지게 마련이지만 금융위기 이후 1인당 급여 변화가 노동 생산성 변화에 기초하지는 않은 것으로 나타났다"고 말했다. 이 교수는 한국기업공평평가원, 한국공인회계사회



Google+

지금 바로 만나보세요

Join now

에드인포

광고문의

- 『축객 1은 헤에서 적금들지 마세요!!』
- 『이 일년 PD 가 험적 단식 시작 진짜 이유?』
- 『소중한 눈! 안보이기 전에 광리하자』
- 『...』

# 문제점 1: 중간영역 일자리 상실

지금까지 기술 혁신은 저가 노동력 대체



최근  
중간영역(변호사, 금융인, 기자 등)  
일자리 대체

일자리를 잃은 중간영역은 어디로?

**“It may be hard to believe, but before the end of this century, 70 percent of today’s occupations will likewise be replaced by automation.**

**Yes, dear reader, even you will have your job taken away by machines.**

**In other words, robot replacement is just a matter of time. this upheaval is being led by a second wave of automation, one that is centered on artificial cognition, cheap sensors, machine learning, and distributed smarts.**

**This deep automation will touch all jobs, from manual labor to knowledge work.**

**- Kevin Kelly, Wired, Better than Human 2012**

**<http://www.wired.com/gadgetlab/2012/12/ff-robots-will-take-our-jobs/all/>**

**“In the years ahead, more sophisticated software technologies are going to bring civilisation ever closer to a near-workerless world.”**

**- Jeremy Rifkin, The End of Work, 1995**

---

## 문제점 2: 속도와 노동생산성 차이

---

**“Technology is no longer creating new jobs at a rate that replaces old ones made obsolete elsewhere in the economy.”**

**- The Economist**

<http://www.economist.com/blogs/babbage/2011/11/artificial-intelligence>

**국가별 노동생산성 차이**

**임금하락 압력**



**표준화, 규격화: 노동대체의 기초**

**택배 비용 하락 = 임금 하락**

---

# 방향설정 Orient

---

위에서 관찰한 내용에 어떻게 반응해야하나?

Marshall McLuhan

“There is absolutely no inevitability as long as there is a willingness to contemplate what is happening.”

To Contemplate !

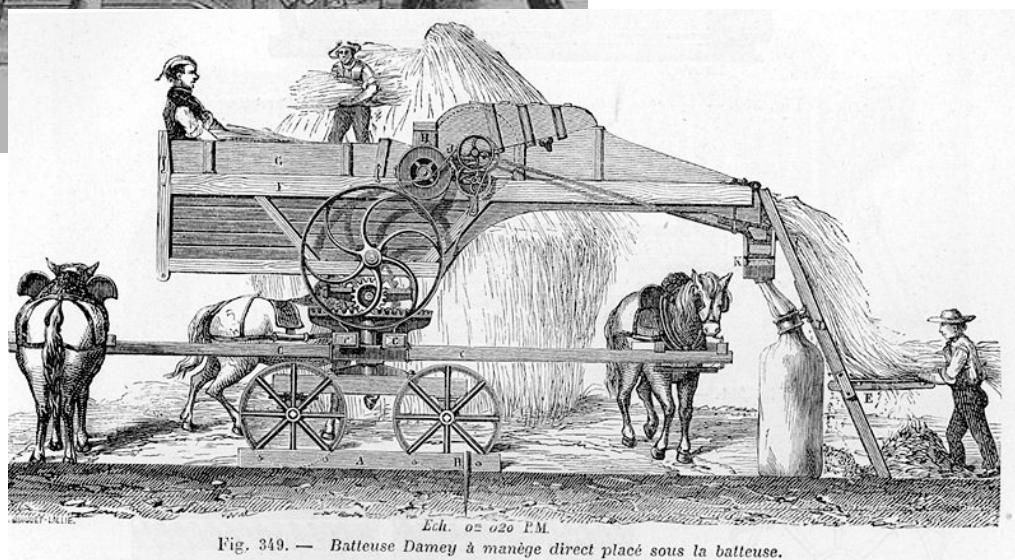
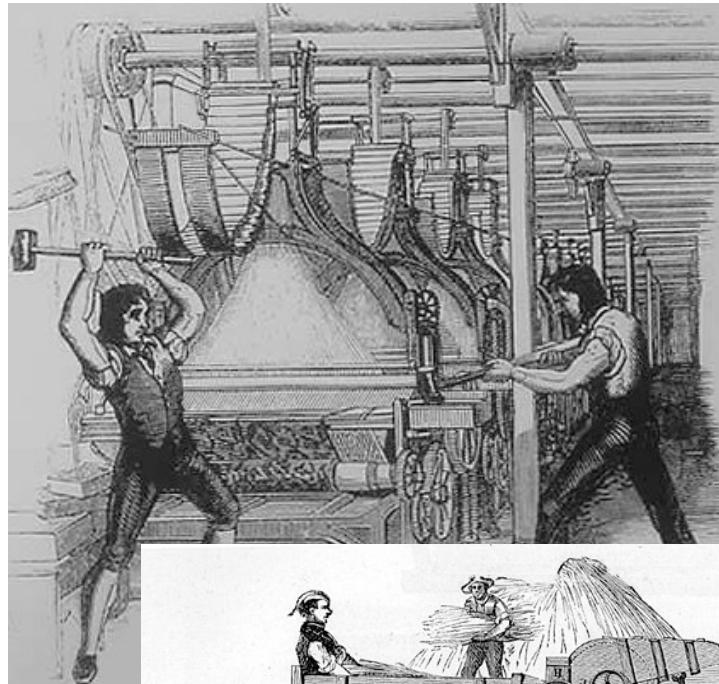
---

# 방향설정 Orient

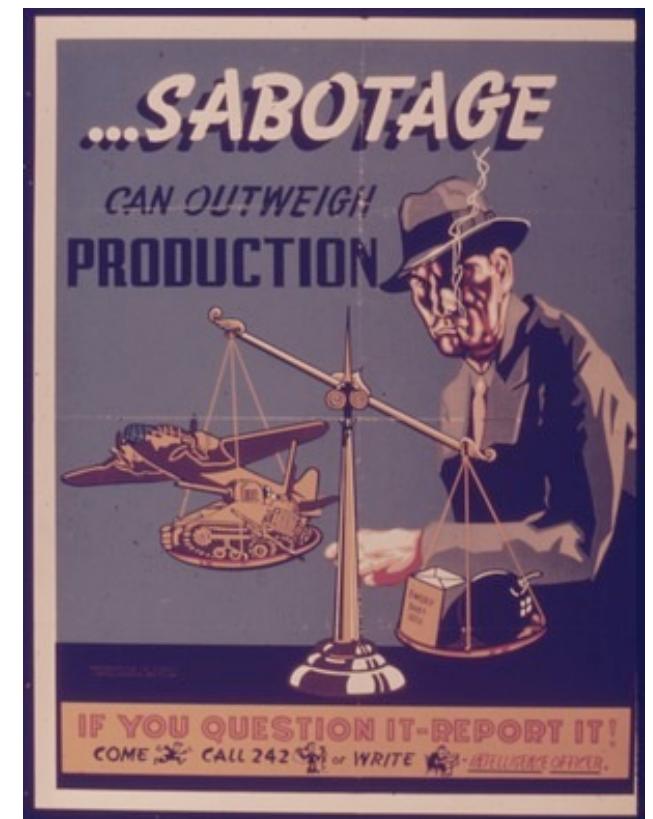
---

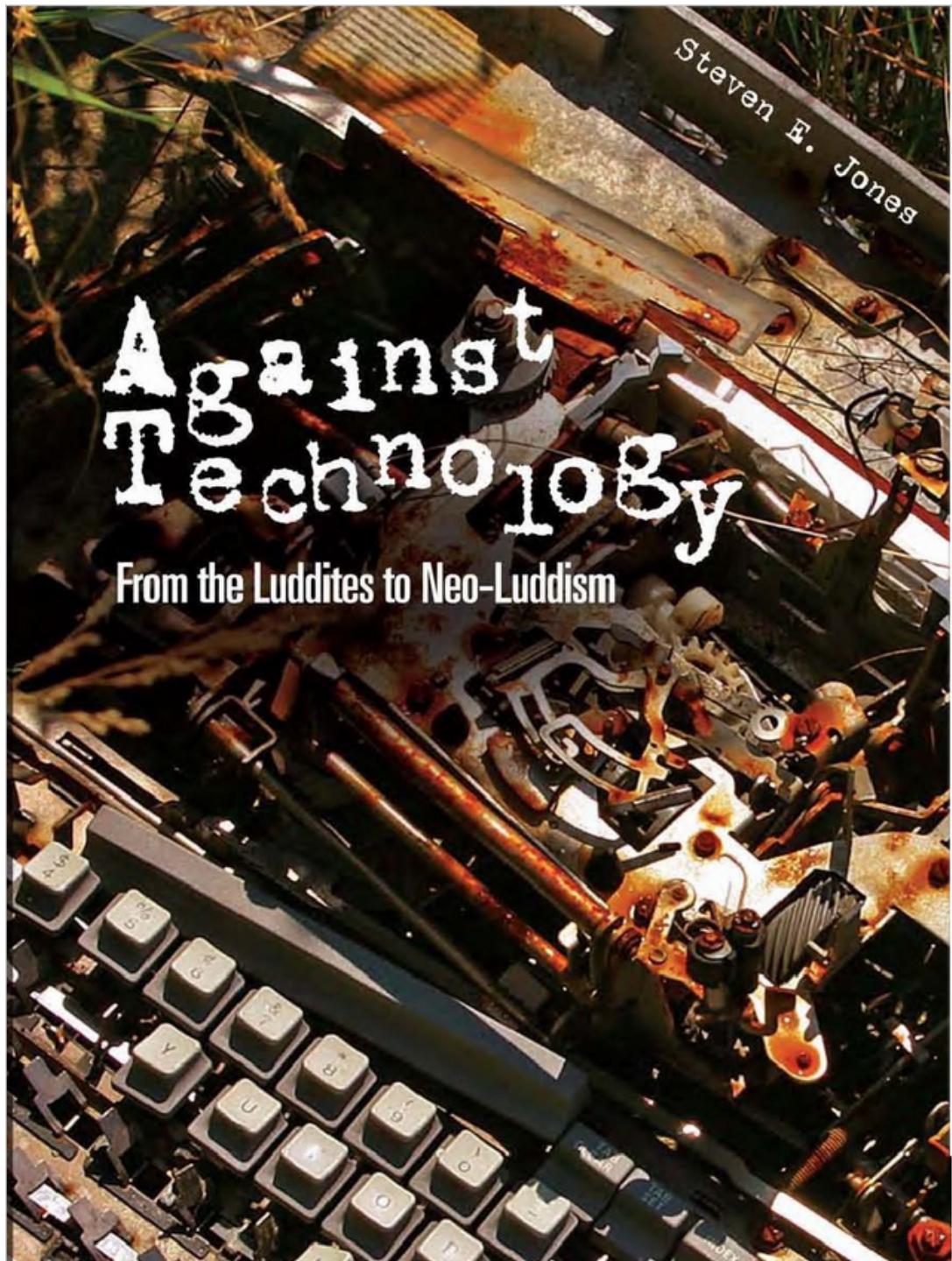
## 두 개의 극단적 반응

# “Luddite(1811-1812)”, “Swing Riots(1830)”



## Sabotage





**Steven E. Jones, 2006**

# 방향설정

## Dystopia

Bloomberg Businessweek  
Companies & Industries

 135k 

Global  
Economics

Companies &  
Industries

Politics & Policy

Technology

Markets &  
Finance

Innovation &  
Design

Lifestyle

Labor

### Tesco Monitors Employees With Motorola Armbands

By Claire Suddath

 Follow @clairesuddath

February 13, 2013

 Share

 Tweet

 in

 g+





#### Related



There's a fine line between micromanaging and house arrest, and British grocery store chain Tesco (TSCO) seems determined to cross it. According to the *Irish Independent*, employees at the company's Dublin distribution center are forced to wear armbands that measure their productivity so closely that the company even knows when they take a bathroom break.

**“On the eve of the greatest industrial revolution in history, no sign and portents were forthcoming. Capitalism arrived unannounced. No one had forecast the development of a machine industry; it came as a complete surprise.”**

**- Karl Polany, The Great Transformation: The Political and Economic Origins of Our Time, 1944, p. 89)**

**“capitalism arrived unannounced!”**

---

## 또 다른 극단적 반응

---

기술이 우리를 구원할 것이다!

### Borg Complex

**“A Borg Complex is exhibited by writers and pundits who explicitly assert or implicitly assume that resistance to technology is futile.”**

- Michael Sacasa



WE ARE THE  
**BORG**  
RESISTANCE IS FUTILE

JAMES T FAZAR - 03.30.99

**실리콘밸리/VC 관계자  
“우리에게는 다른 선택권이 없다.”**

**이 또한 매우 위험한 선택**

---

# 방향설정

---

**“The goal of the future is full unemployment, so we can play. That’s why we have to destroy the present politico-economic system.”**

**- Arther C. Clarke (1960’s)**

**Utopia? “so we can play”**

**digital Athens?  
인간: 정치, 문화, 역사  
기계: 노예 노동**

---

# 방향설정

---

극단적 가능성에 대한 우려  
다양한 선택 가능성에 대한 논의

한쪽에는 혁신이 일어나고  
다른 한쪽에서는 일자리 줄어들고 있어

생산성이 뛰어난 기계/알고리즘은 더욱 많아진다

---

# 산업혁명

---

## 기술 혁신

## 노동의 재조직

## 사회의 재조직

---

# 방향설정 = Act

---

인간과 기계/알고리즘이 함께 할 수 있는 것은?

출발점:

무엇이 일어나고 있는지를  
모든 각도에서 검토하고 연구하는 것,  
사회적 ‘이해도’를 높이는 것

“To understand a thing is to gain the power to  
change it.”

- Ramez Naam, Nexus