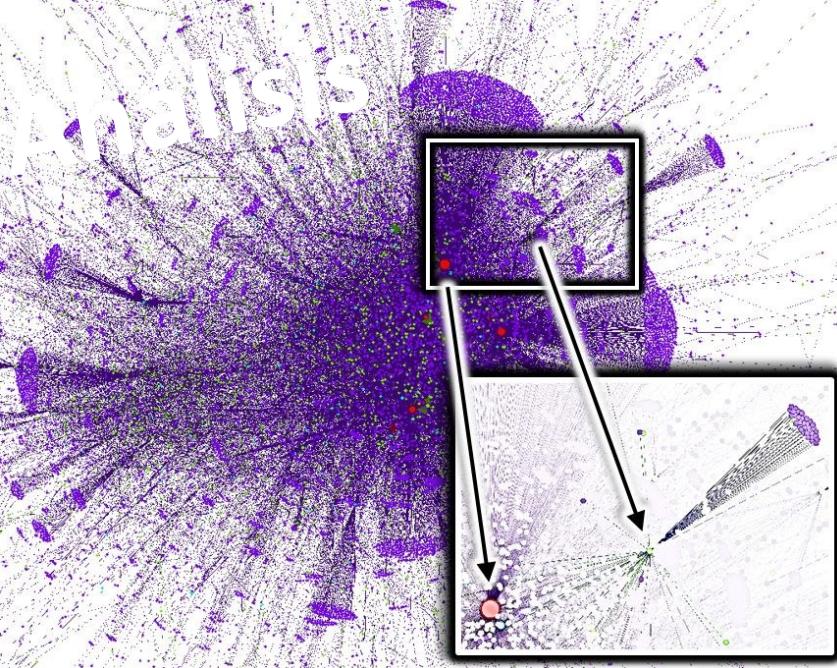


Data



Analysis

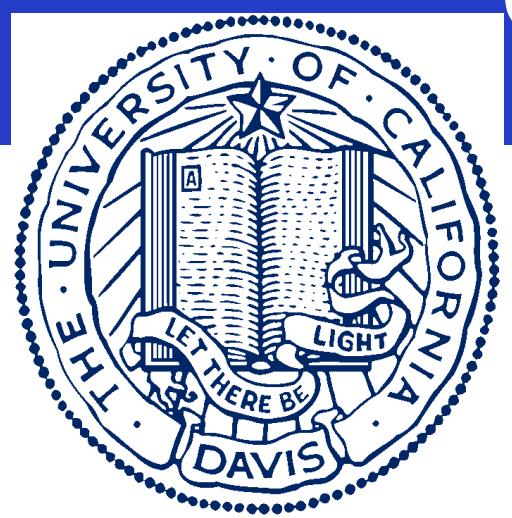


Teoría



Entendiendo el Comportamiento Humano al Nivel de “una Ciencia”

# *Ciencia Social Computacional*



**UCDAVIS**  
UNIVERSITY OF CALIFORNIA

**Martin Hilbert** (Prof; Dr; PhD)  
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# FORTUNE 500

1955-2005 ▾

A database of 50 years of FORTUNE's list of America's largest corporations

View by year: 1955 ▾

View by company: A ▾

Full List

Companies

Profits

Assets

Current FORTUNE 500

## 1955 Full list

Current View: 1-100 ▾

Rank	Company	Revenues (\$ millions)	Profits (\$ millions)
1	<a href="#">General Motors</a>	9,823.5	806.0
2	<a href="#">Exxon Mobil</a>	5,661.4	584.8
3	<a href="#">U.S. Steel</a>	3,250.4	195.4
4	<a href="#">General Electric</a>	2,959.1	212.6



Value Rank

▼

Company

Market Value

Sector

Revenues (Bil)

F500 Rank

## FORTUNE 500

A database of 50 years of FORTUNE's list of America's largest corporations

View by year: 1995 ▾

View by company: A ▾

Full List

Companies

Assets

Current FORTUNE 500

## 1995 Full list

Current View: 1-100 ▾

Rank	Company	Revenues (\$ millions)	Profits (\$ millions)
1	<a href="#">General Motors</a>	154,951.2	4,900.6
2	<a href="#">Ford Motor</a>	128,439.0	5,308.0
3	<a href="#">Exxon Mobil</a>	101,459.0	5,100.0
4	<a href="#">Wal-Mart Stores</a>	83,412.4	2,681.0
5	<a href="#">AT&amp;T</a>	75,094.0	4,676.0
6	<a href="#">General Electric</a>	64,687.0	4,726.0
7	<a href="#">Intl. Business Machines</a>	64,052.0	3,021.0
8	<a href="#">Mobil</a>	59,621.0	1,079.0
9	<a href="#">Sears Roebuck</a>	54,559.0	1,454.0
10	<a href="#">Altria Group</a>	53,776.0	4,725.0



Value Rank

▼

Company

Market Value

Sector

Revenues (Bil)

F500 Rank



1

Apple

\$921 bil.

Technology

\$229 bil.

4

a

2

Amazon.com

\$765 bil.

Retailing

\$178 bil.

8



3

Alphabet

\$750 bil.

Technology

\$111 bil.

22



4

Microsoft

\$746 bil.

Technology

\$90 bil.

30



5

Facebook

\$531 bil.

Technology

\$41 bil.

76



6

Berkshire Hathaway

\$492 bil.

Financials

\$242 bil.

3



7

JPMorgan Chase & Co.

\$388 bil.

Financials

\$114 bil.

20



8

Exxon Mobil

\$349 bil.

Energy

\$244 bil.

2



9

Johnson & Johnson

\$332 bil.

Health Care

\$77 bil.

37



10

Bank of America Corp.

\$315 bil.

Financials

\$100 bil.

24

As of 5/21/2018

SOURCE: [Fortune 500](#)

# The 10 Most Valuable Companies on the Fortune 500

While Walmart is king on the Fortune 500, which ranks by revenue, investors see more promise in tech firms—bestowing Silicon Valley with some of the highest market values out there.

FORTUNE

# ...aren't we all social scientists...?

2005



2005 announcement of  
Pope Benedict XVI



2013

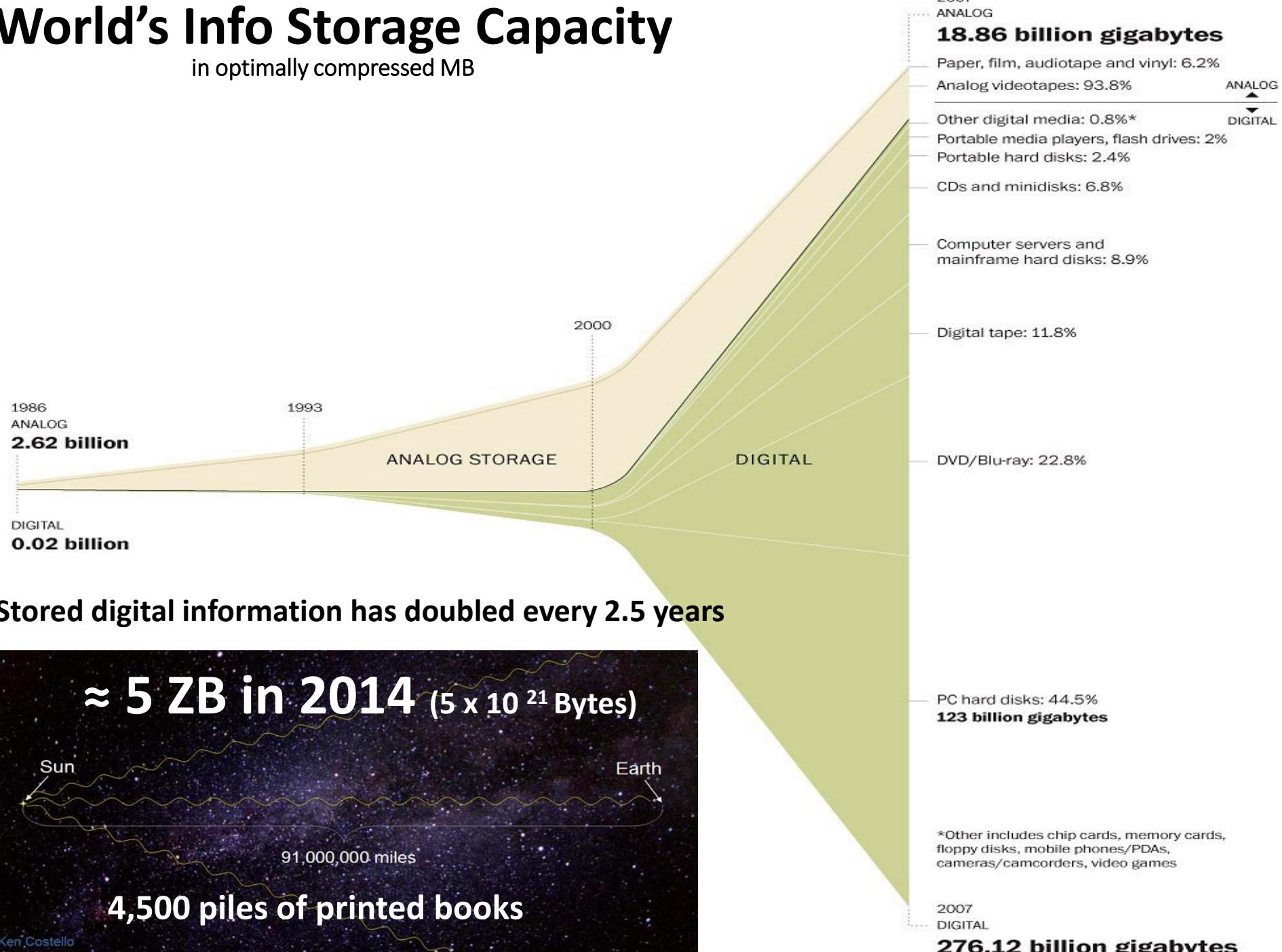


2013 announcement of  
Pope Francis



# World's Info Storage Capacity

in optimally compressed MB



Hilbert & López (2011).  
The world's technological capacity to store, communicate and compute information.

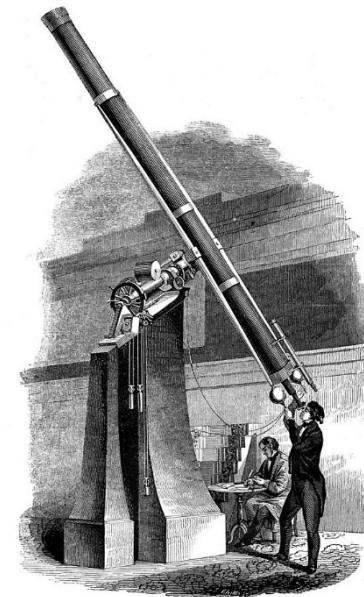
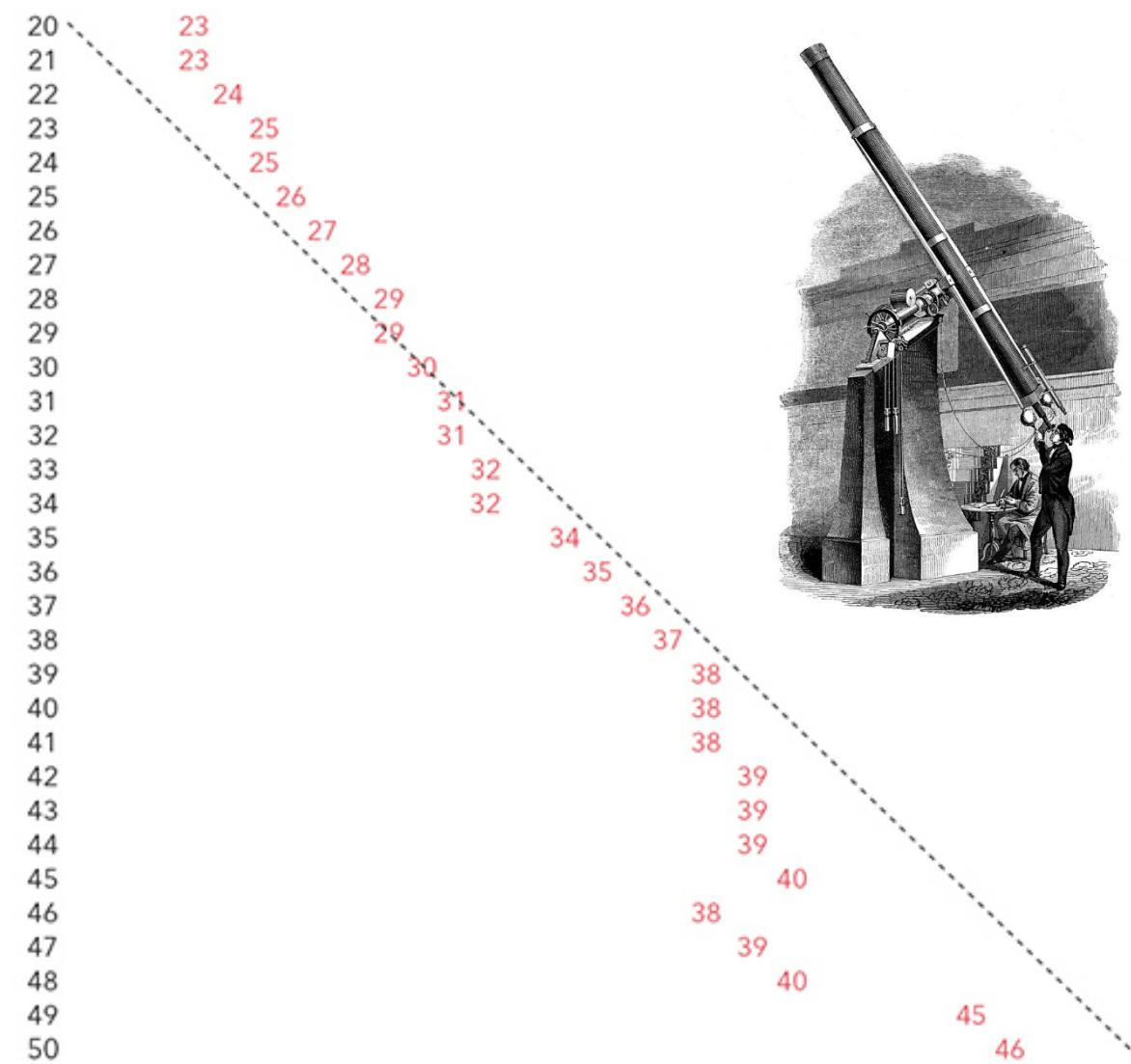
*Science*, 332, 6025, 60-65

[www.martinhilbert.net/WorldInfoCapacity.html](http://www.martinhilbert.net/WorldInfoCapacity.html)

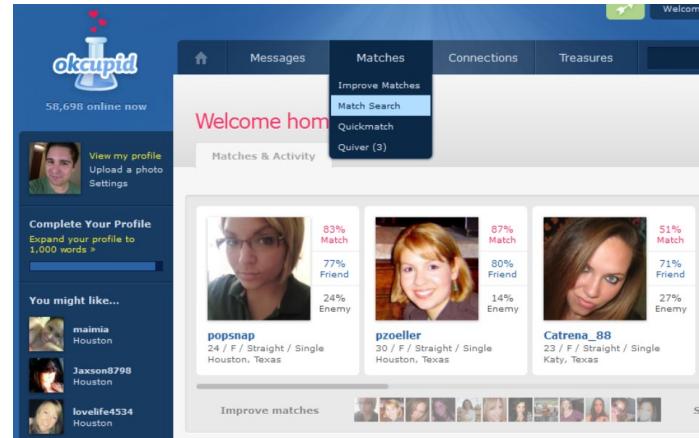
Source: Stephens-Davidowitz, S. (2015). Searching for Sex. *The New York Times*.  
2015, January 24. Rudder, C. Dataclysm: Who We Are. (Crown, 2014).

# social *science*

*a woman's age vs. the age of the men who look best to her*



*a man's age vs. the age of the women who look best to him*



Data



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# *Ciencia Social Computacional*



**Martin Hilbert** (Prof; Dr; PhD)

Dpt. of Communication

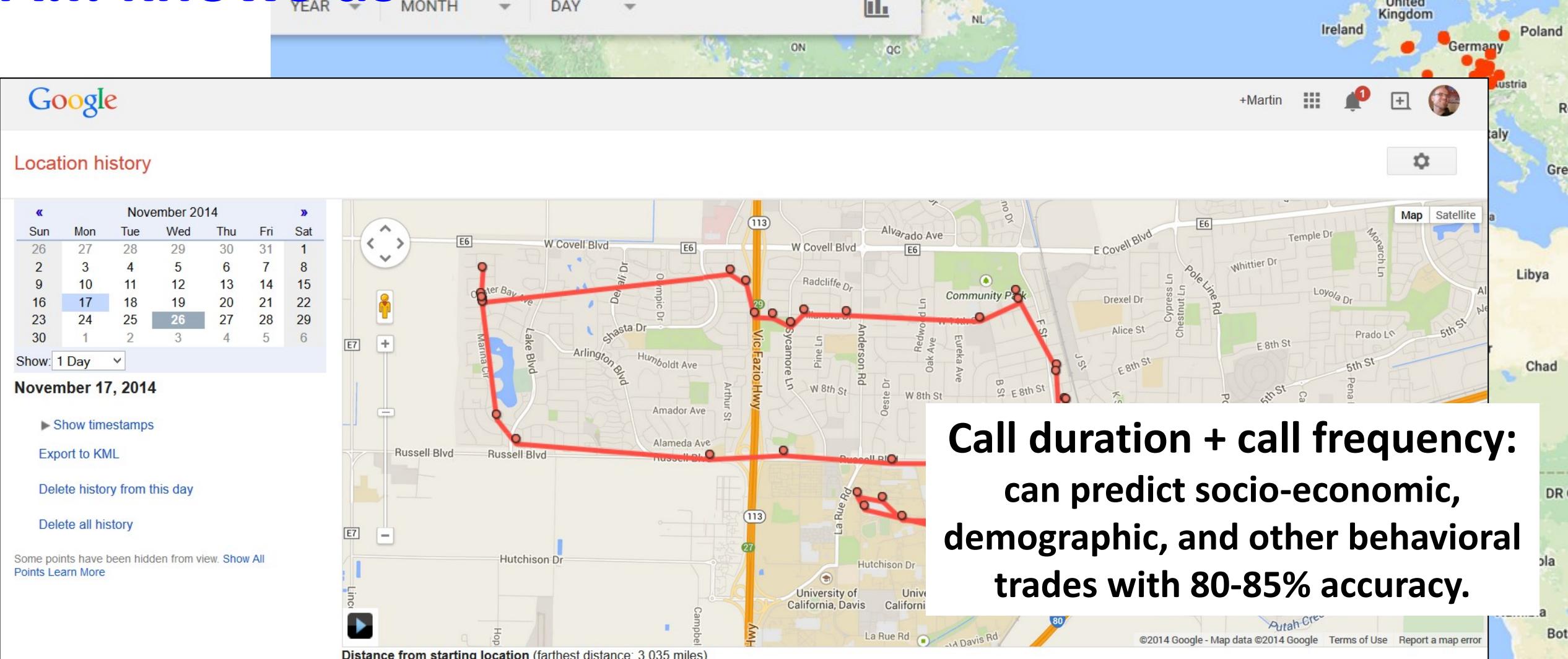
[www.MartinHilbert.net](http://www.MartinHilbert.net)

[hilbert@UCDavis.edu](mailto:hilbert@UCDavis.edu)

# A.I. knows us

Timeline

<https://maps.google.com/locationhistory>



Sources: Raento, M., Oulasvirta, A., & Eagle, N. (2009). Smartphones: An Emerging Tool for Social Scientists. *Sociol. Methods & Research*, 37(3), 426–454.

Frias-Martinez, V., & Frias-Martinez, E. (2014). Spectral clustering for sensing urban land use using Twitter activity. *Engin. Appl. of Artificial Intell.*, 35, 237–245.

Frias-Martinez, V., & Virseda, J. (2013). Cell Phone Analytics: Scaling Human Behavior Studies into the Millions. *ITID*, 9(2), pp. 35–50.

Frias-Martinez, V., Frias-Martinez, E., & Oliver, N. (2010). A Gender-centric Analysis of Calling Behavior.... AAAI 201 Artificial Intelligence for Development.

Blumenstock, J. E., Gillick, D., & Eagle, N. (2010). Who's Calling? Demographics of Mobile Phone Use in Rwanda. AAAI 201 Artificial Intelligence for Development.

# A.I. knows us *in real-time*

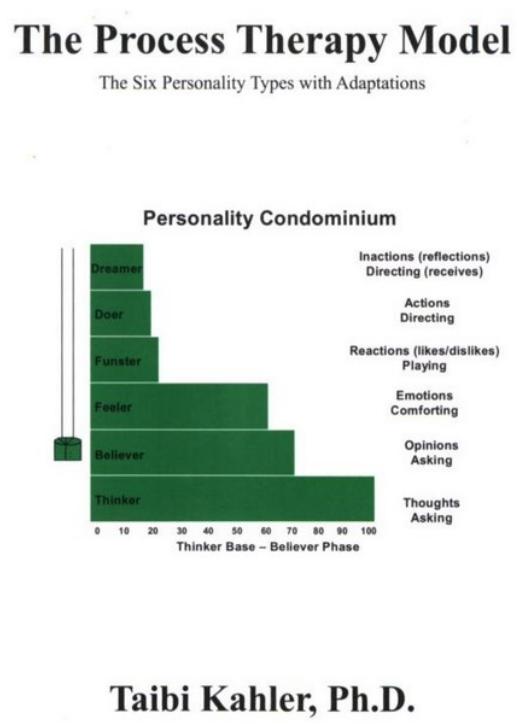


## Matching Personality Types:

- ✓ Call average from 10 min to 5 min
- ✓ Customer Satisfaction from 47 % to 92%

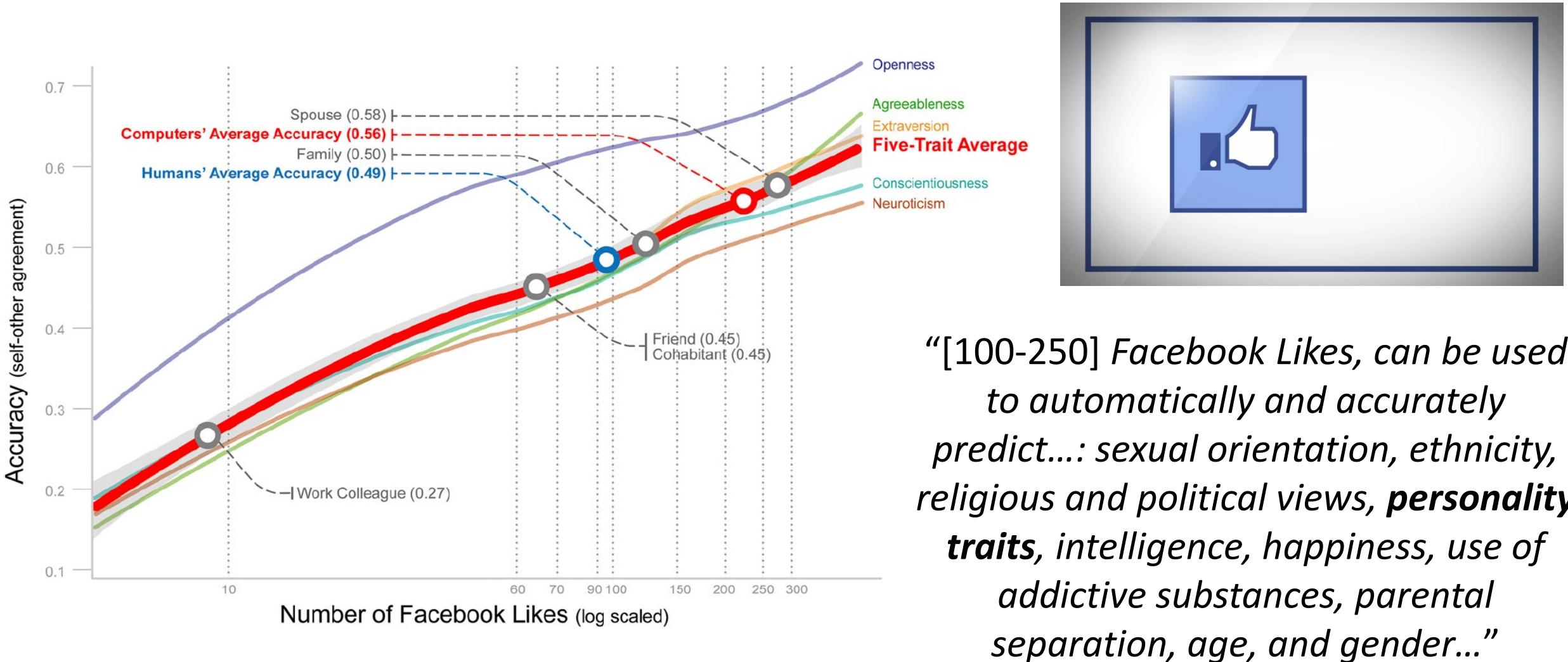
**Population driven by:**

- **EMOTIONS (30%)**
- **THOUGHTS (25%)**
- **REACTIONS (20%)**
- **OPINIONS (10%)**
- **REFLECTIONS (10%)**
- **ACTIONS (5%)**



*"This call might be recorded for quality and training purposes."*

# A.I. knows us *in real-time* better than we ourselves



Source: Youyou, W., Kosinski, M., & Stillwell, D. (2015). Computer-based personality judgments are more accurate than those made by humans. *PNAS*, 201418680.  
Kosinski, M., Stillwell, D., & Graepel, T. (2013). Private traits and attributes are predictable from digital records of human behavior. *PNAS*, 110(15), 5802–5805.



Cambridge  
Analytica



The Power of Big Data and Psychographics

3<sup>rd</sup> TV debate: 175,000 variations of Trump's arguments  
...differences in title, subtitle, color, picture, video, etc.



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# DELETE facebook

*“When you visit a site or app that uses our services, we receive information even if you’re logged out or don’t have a Facebook account. This is because other apps and sites don’t know who is using Facebook”*

<https://newsroom.fb.com/news/2018/04/data-off-facebook/>

I don't have a Facebook account and would like to request all personal data stored by Facebook.

Computer help Mobile help ▾

Share article

If you'd like to request more information about personal data stored by Facebook, please fill out this form from a computer.

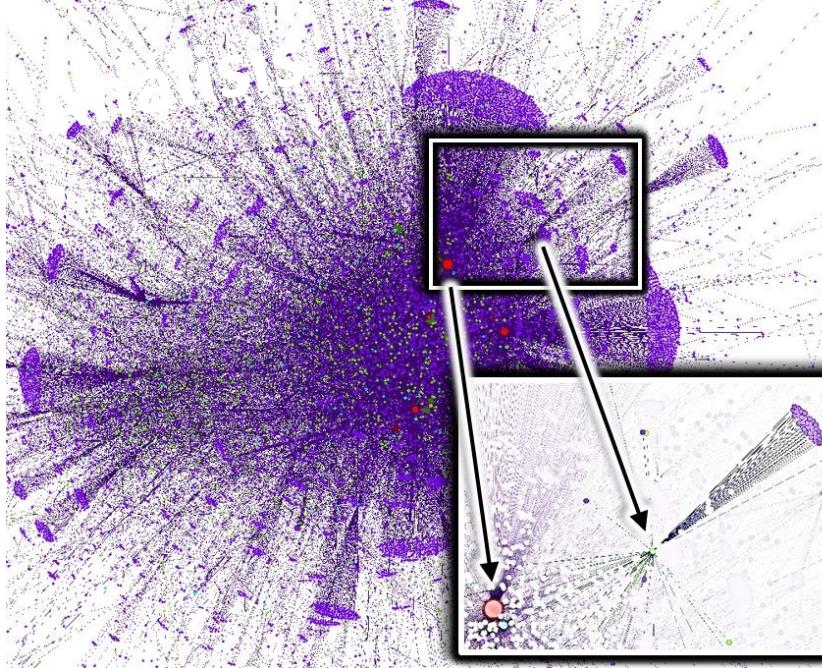
Additionally, if you don't have a Facebook account, you can opt out of receiving emails from Facebook by clicking the link at the bottom of any invitation email.

## Personal data requests

Download your info

To download a copy of your Facebook data:

1. Click ▼ at the top-right of any Facebook page.
2. Choose Account settings.
3. Click Download a copy of your Facebook data at the bottom of the page.

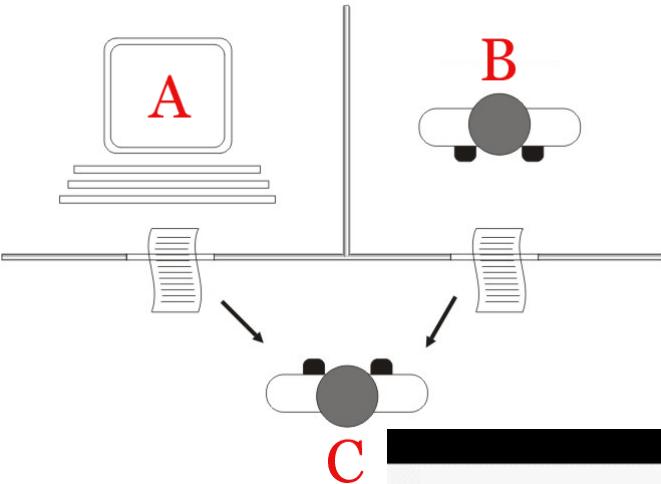


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# Turing Test

M I N D  
A QUARTERLY REVIEW  
OF  
PSYCHOLOGY AND PHILOSOPHY

I.—COMPUTING MACHINERY AND  
INTELLIGENCE

By A. M. TURING

## **Google DeepMind's Deep Q-learning**

**The algorithm will play Atari breakout.**

**The most important thing to know is that all the agent is given is sensory input (what you see on the screen) and it was ordered to maximize the score on the screen.**

**No domain knowledge is involved! This means that the algorithm doesn't know the concept of a ball or what the controls exactly do.**

Wang & Kosinski (2017). **Deep neural networks are more accurate than humans at detecting sexual orientation from facial images.** *PsyArXiv*.

Art. Intl: men 81% ; women 71%  
Human: men 61% ; women 54%



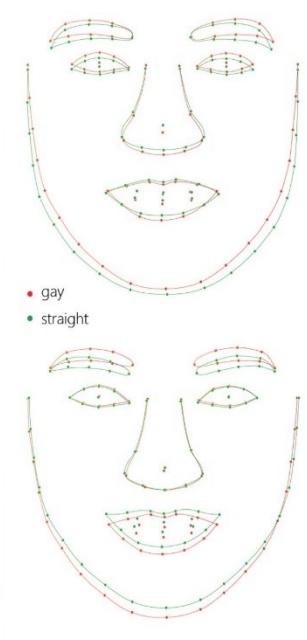
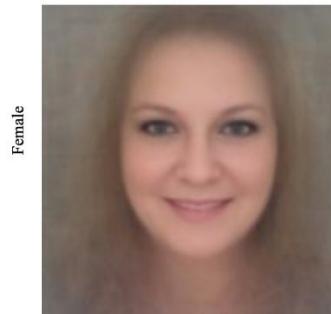
Source: Reddit



Composite heterosexual faces

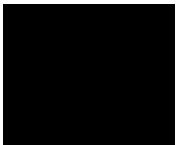
Composite gay faces

Average facial landmarks

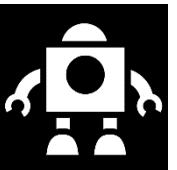


# What is intelligence?

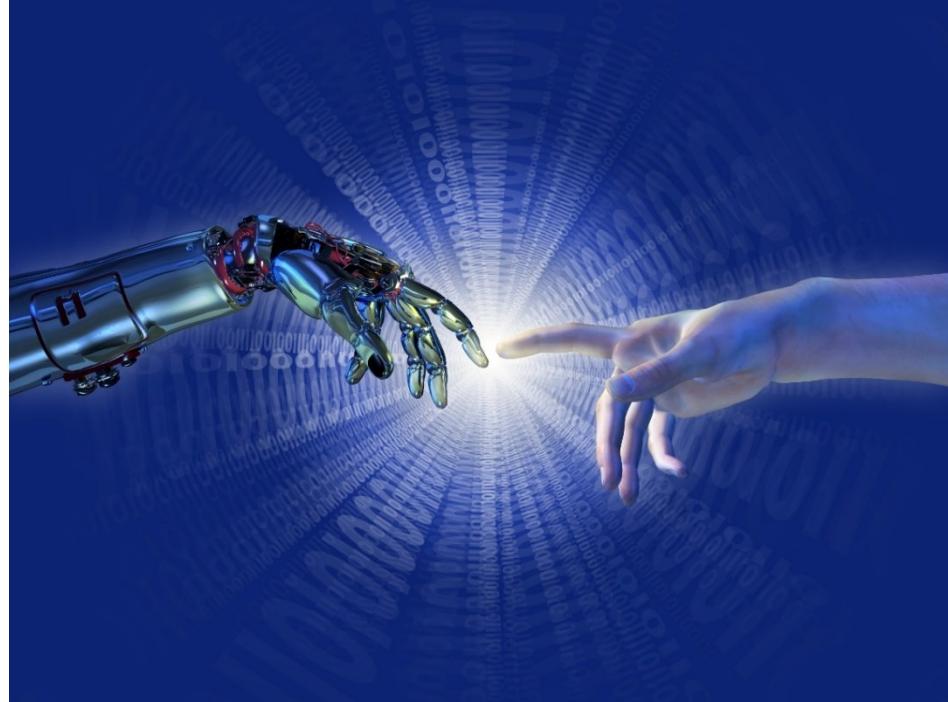
Intelligence:



or



?



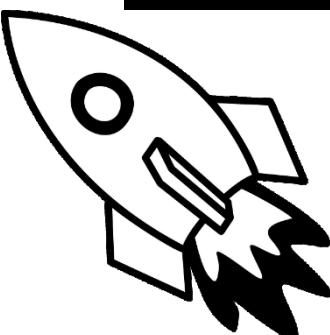
Aerodynamics:



or



?





Entendiendo el Comportamiento Humano al Nivel de “una Ciencia”

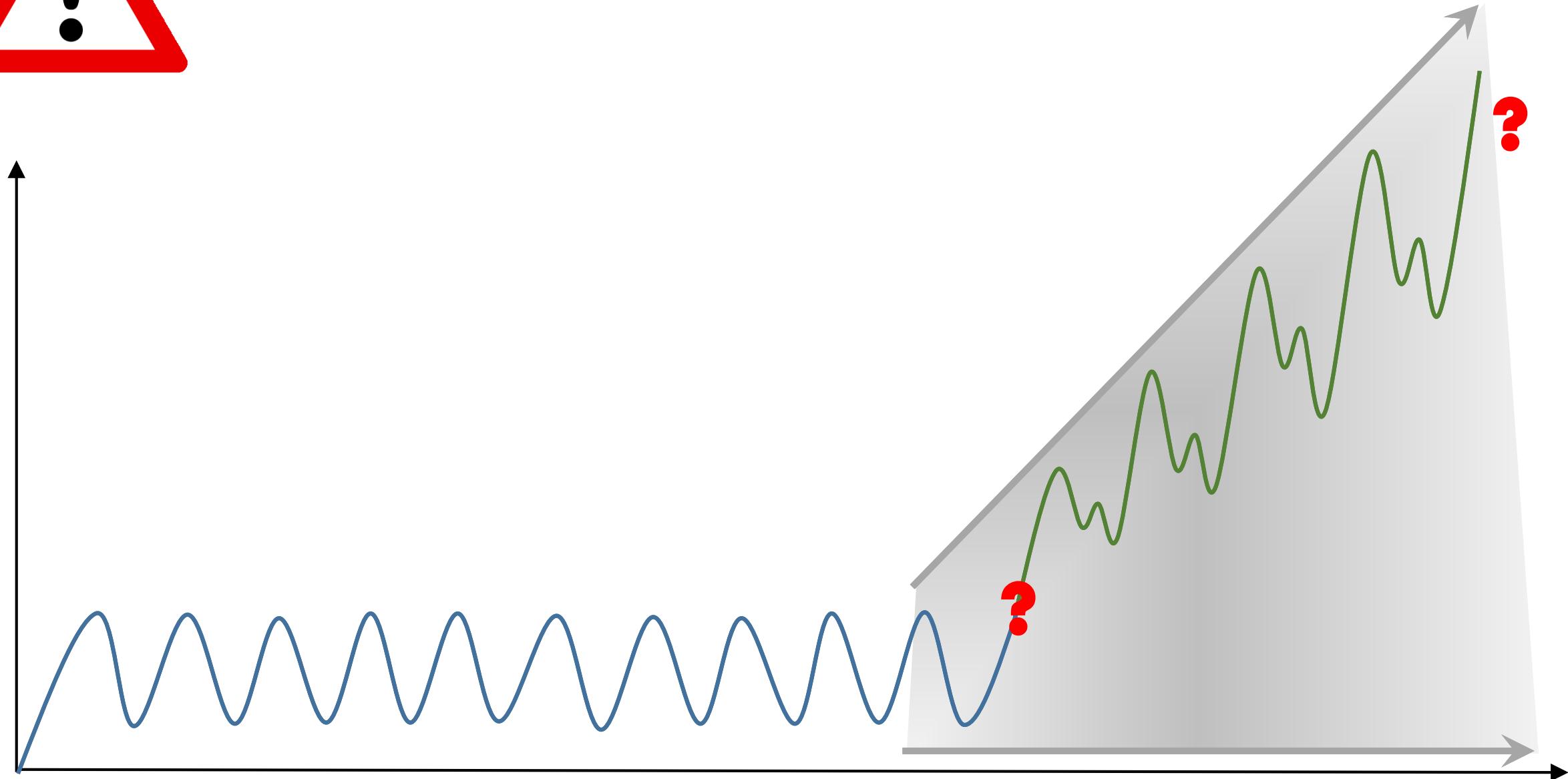
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Past ≠ Future





# Past ≠ Future

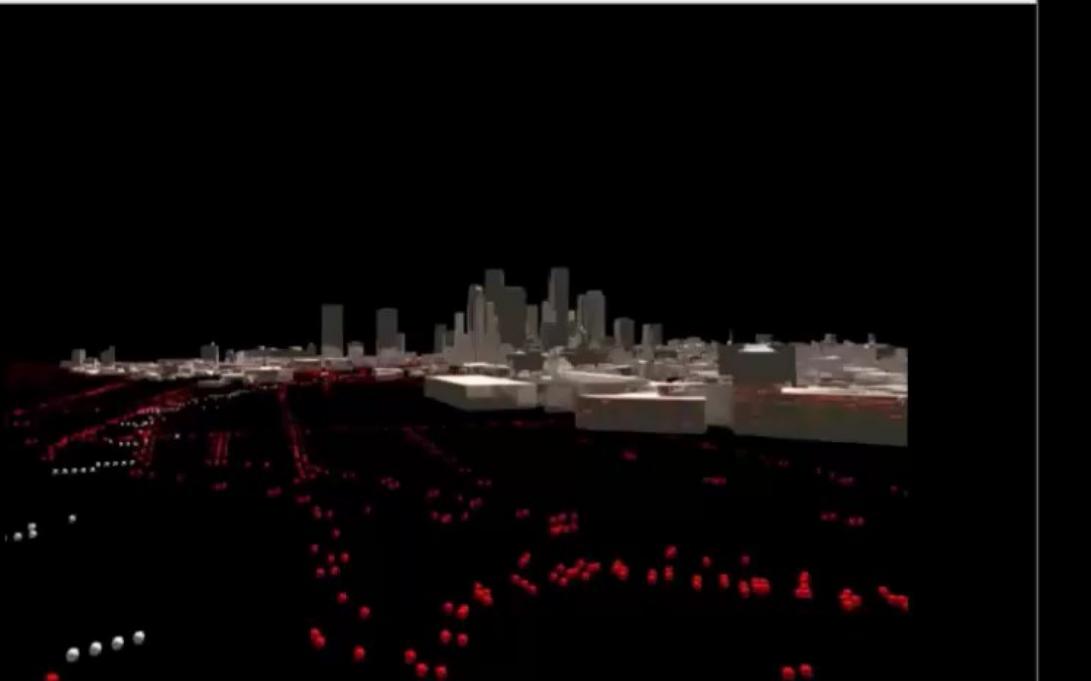
# 1989



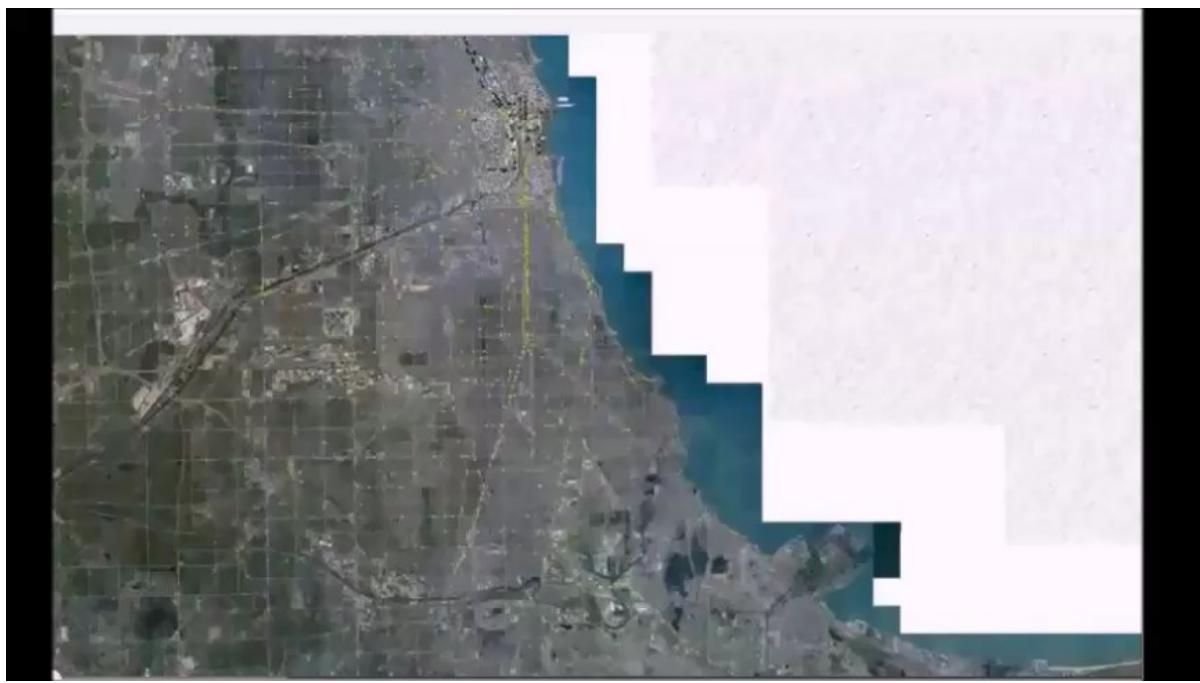
Wikipedia Commons



# SIMCITY edu



Sources: Bohemia Interactive Simulations, <http://youtu.be/G9P9bUTCdpA> ; TRANSIMS: <http://www.youtube.com/watch?v=mN7kq0ITAyS> ; Epstein, <http://www.youtube.com/watch?v=wZZJClGtVkw>



# Computational Social Science

ECONOMETRIC POLICY EVALUATION: A CRITIQUE

Robert E. Lucas, Jr.

“...any change in policy will systematically  
alter the structure of econometric models”  
**(1976)**

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  - > Hilbert & López (2011). The world's technological capacity to store, communicate and compute information. *Science*, 332, 6025, 60-65  
[www.MartinHilbert.net/WorldInfoCapacity.html](http://www.MartinHilbert.net/WorldInfoCapacity.html)
  - > Hilbert (2016). The bad news is that the digital access divide is here to stay: Domestically installed bandwidths among 172 countries for 1986–2014. *Telecommunications Policy*. [www.MartinHilbert.net/the-bad-news-is-that-the-digital-access-divide-is-here-to-stay](http://www.MartinHilbert.net/the-bad-news-is-that-the-digital-access-divide-is-here-to-stay)