

Computing Alone Doesn't Solve Social Problems. So, What Next?



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The Matrix

Advanced
technology

harvests human
energy

to feed
machine masters

while offering
illusion of
pleasant life.

Facebook

Advanced
technology

harvests human
attention

to feed
shareholders

while offering
illusion of
pleasant social life.



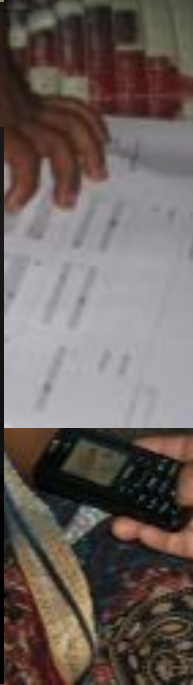
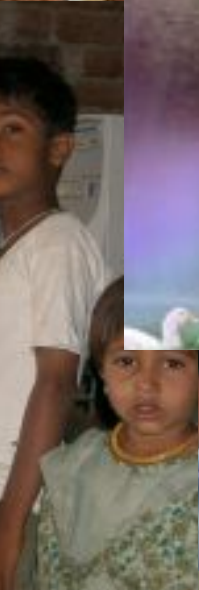


“The richest 500 million [people] have way more money than the next six billion combined. You solve that by getting everyone online.”

– Mark Zuckerberg (2015)

Source: <http://www.wired.com/2013/08/mark-zuckerberg-internet-org/>

Photo: <http://www.bittimes.com/zuckerberg-tells-mobile-carriers-internetorg-will-get-people-paying-data-once-they-1833250>

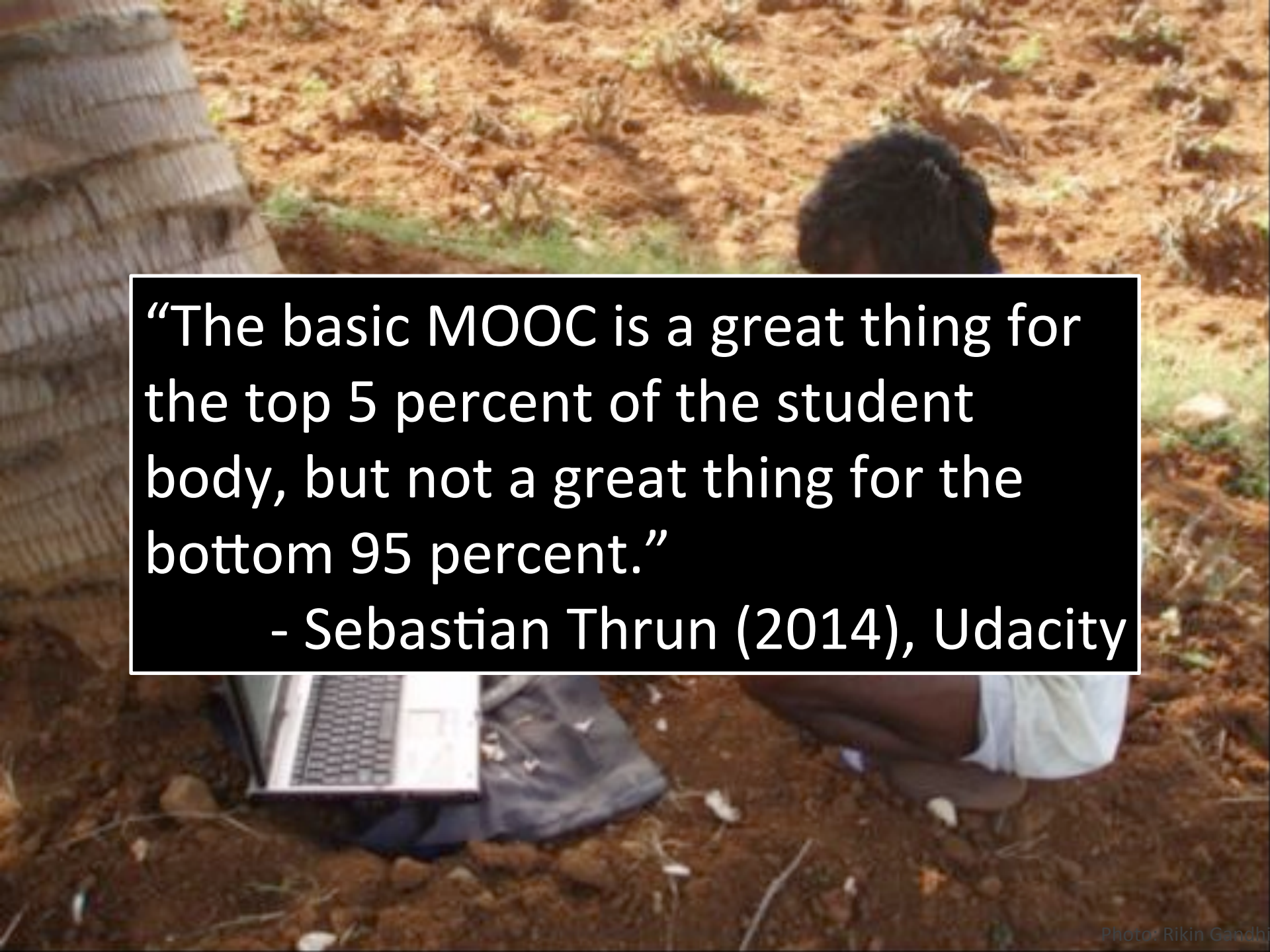




For the most part,
technology *amplifies*
underlying human forces.

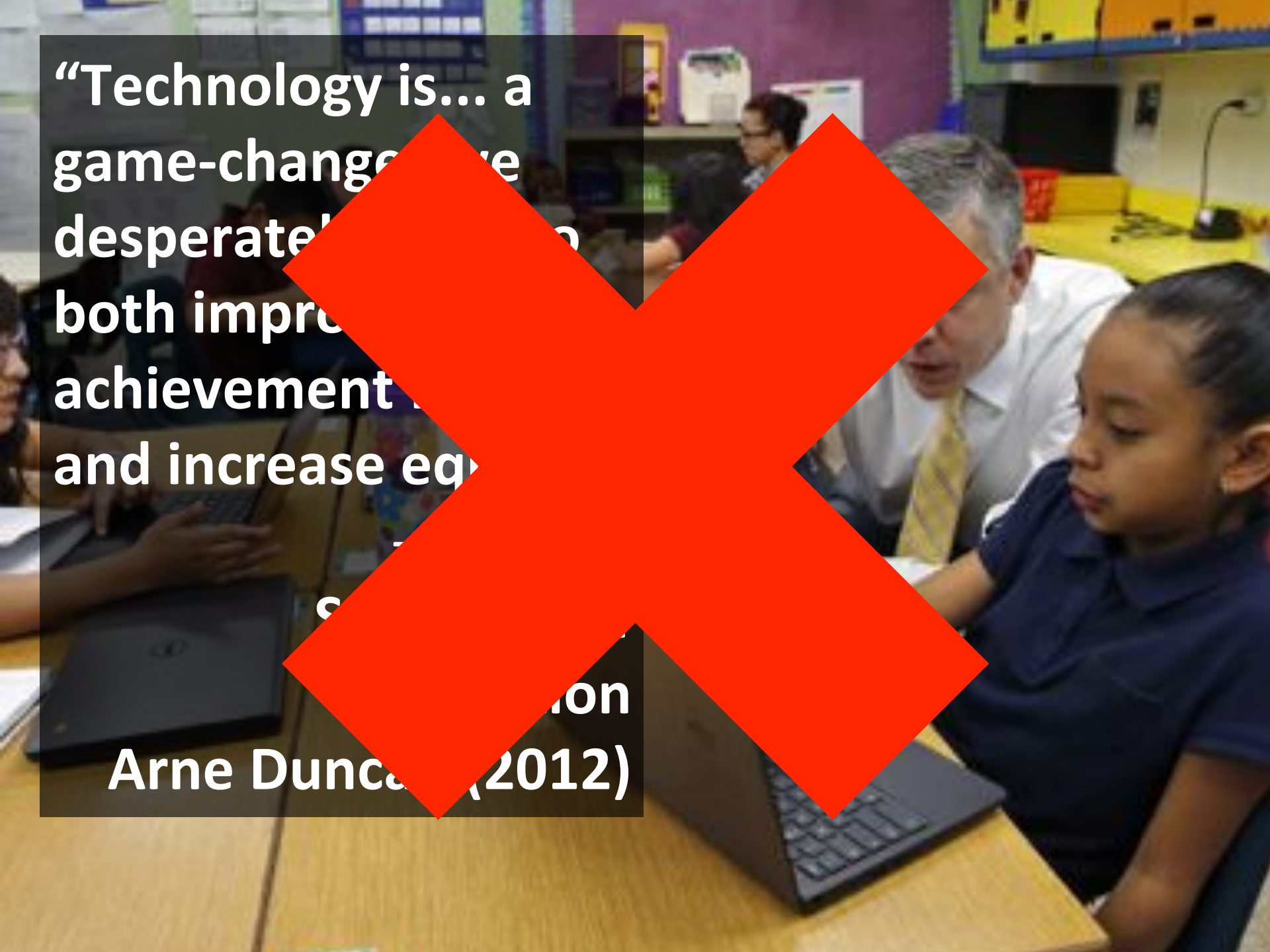
Imagine you are the chair of the lowest-ranked computer/information science program in the country. Of the following options, which is most likely to improve your standing?

- a) Have a faculty task force implement a new strategy.
- b) Poach strong faculty from top schools.
- c) Cut distractions, and focus on your strengths.
- d) Buy the latest iPads for all faculty and students.
- e) Provide intelligent software to your grants office staff.
- f) Use a data dashboard to track department activity.

A photograph of a person sitting on the ground in a rural, arid environment, using a laptop. The person is wearing a white shirt and dark pants. The ground is dry and dusty, with some sparse vegetation. A thatched roof is visible on the left side of the frame.

“The basic MOOC is a great thing for the top 5 percent of the student body, but not a great thing for the bottom 95 percent.”

- Sebastian Thrun (2014), Udacity

A photograph of a classroom setting. In the foreground, a young girl with dark hair, wearing a dark blue polo shirt, is seated at a wooden desk and looking at a laptop. A man in a white shirt and yellow tie is leaning over her, looking at the screen. In the background, other students are visible at their desks. A large, bright red 'X' is superimposed over the center of the image. A semi-transparent dark grey box contains white text on the left side.

**“Technology is... a
game-changer we
desperately need
both improve
achievement
and increase equi**

Arne Duncan (2012)

“The basic MOOC is a great thing for the top 5 percent of the student body, but not a great thing for the bottom 95 percent.”

-- Sebastian Thrun (2014), Udacity

“Large-scale, ‘low-touch’ learning platforms will have sectors and niches where they are very useful and others where they are less so.”

-- HarvardX and MITX (2015)

“[The] sweet spot for MOOCs is far less inspirational and compelling. The courses have become an important supplement to classroom learning and a tool for professional development.”

-- Jeffrey Selingo (2014), author of *MOOC U*

Claim: “Within developing countries, tangible career benefits are most likely to be reported by people with lower levels of education and lower socioeconomic status.”

Data: “Less-advantaged groups are more likely to report educational benefits. Eighty-seven percent of non-student education seekers from non-OECD countries report educational benefits compared to 80% from OECD countries; 91% with low socioeconomic status report educational benefits, compared to 86% with high socioeconomic status; and 92% without a post-secondary degree report educational benefits, compared to 86% with a post-secondary degree.”

-- Chen Zhenghao et al. (2015), *Coursera / UPenn / UW*

Flaw: These studies don't take into account that along each dimension, a proportionally much smaller – and self-selected – fraction of the less advantaged groups take MOOCs in the first place, compared with more advantaged groups. The comparisons that should be made are among people reporting educational benefits from MOOCs *as a proportion of the total population in each category*. If these proportions were taken into account, MOOCs would be seen to have *even more unequal impact* than currently reported, because, for example, people with bachelors' degrees are a minority in the population, even as a larger proportion of them make up MOOC students.

In which of the following countries is democratic free speech most available online for faculty and students?

- a) North Korea
- b) China
- c) Russia
- d) United States





**“Information works are making
governments more accountable.”**

– Hillary Clinton (2011)

Source: Clinton, Hillary. (2010). Remarks on Internet Freedom. <http://www.state.gov/secretary/rm/2010/01/135519.htm>
Photo: <http://www.northcountrypublicradio.org/news/npr/174858681/pri-137/birthday-is-twitter-still-the-free-speech-party>

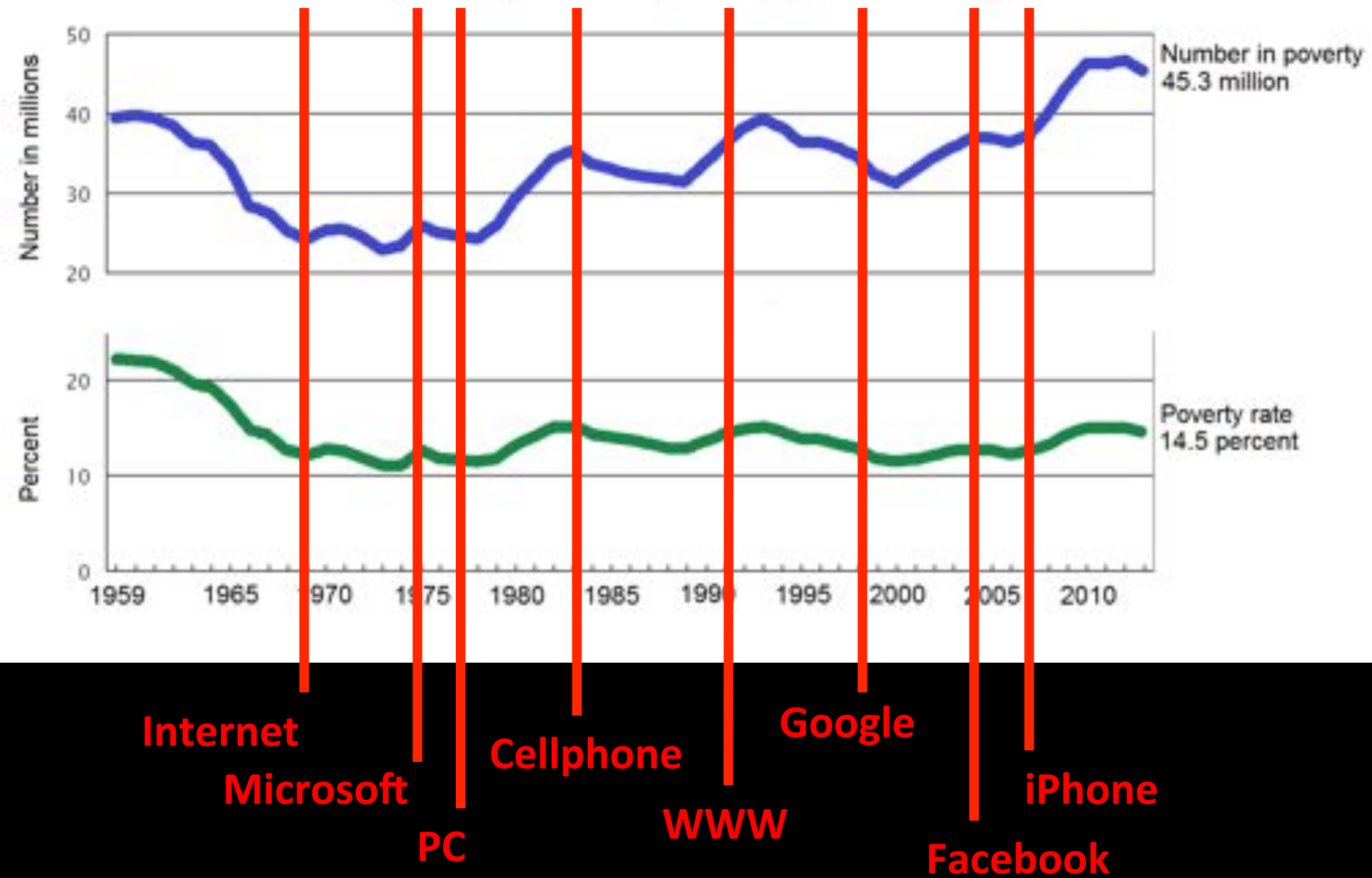
You and a first-year PhD student are each asked to raise as much money for the research project of your choice, and to do so using free, unlimited, high-bandwidth access to the Internet over the period of one month.

Who would be able to raise more money?

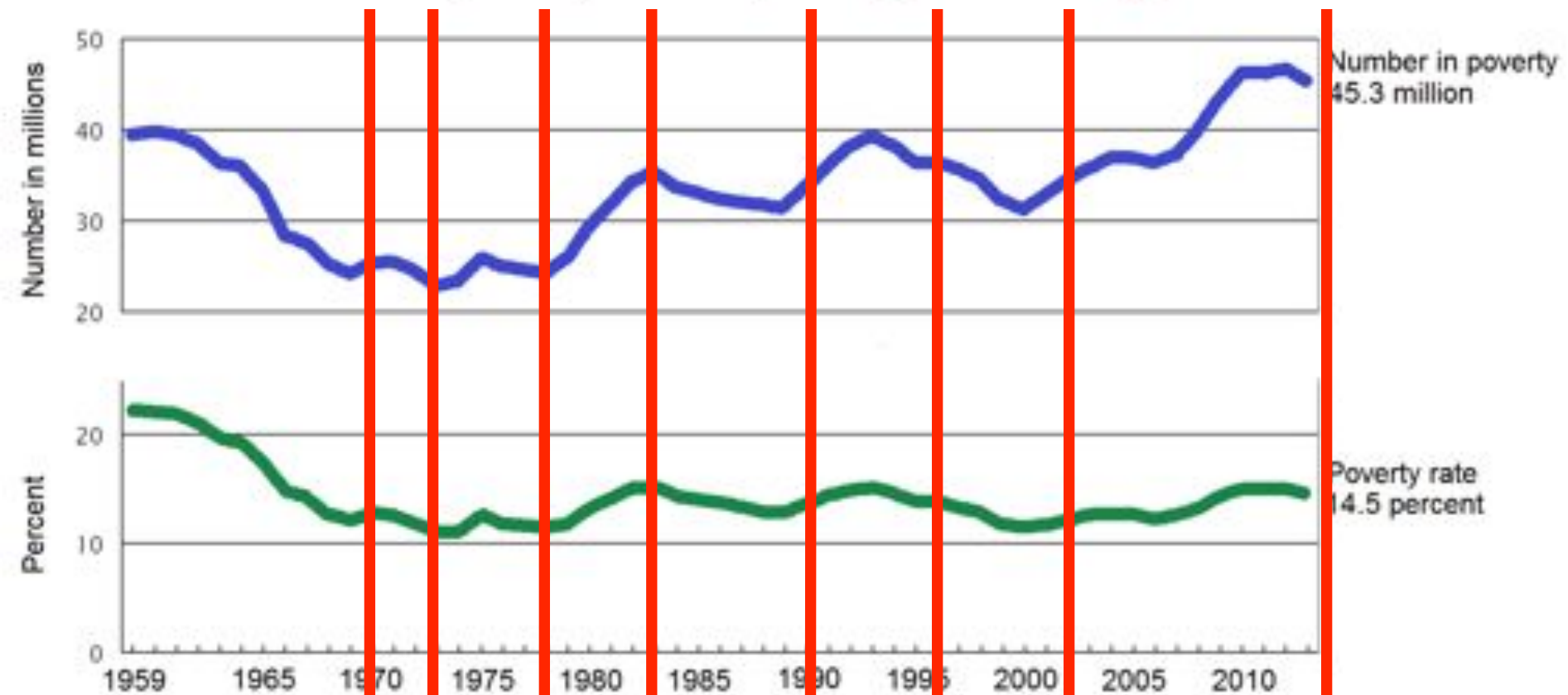


CLINTON GLOBAL INITIATIVE

U.S. Poverty Rate (1959-2013) and Digital Technology



U.S. Poverty Rate (1959-2013) and Digital Technology



UNIX

TCP/IP

RSA

C++

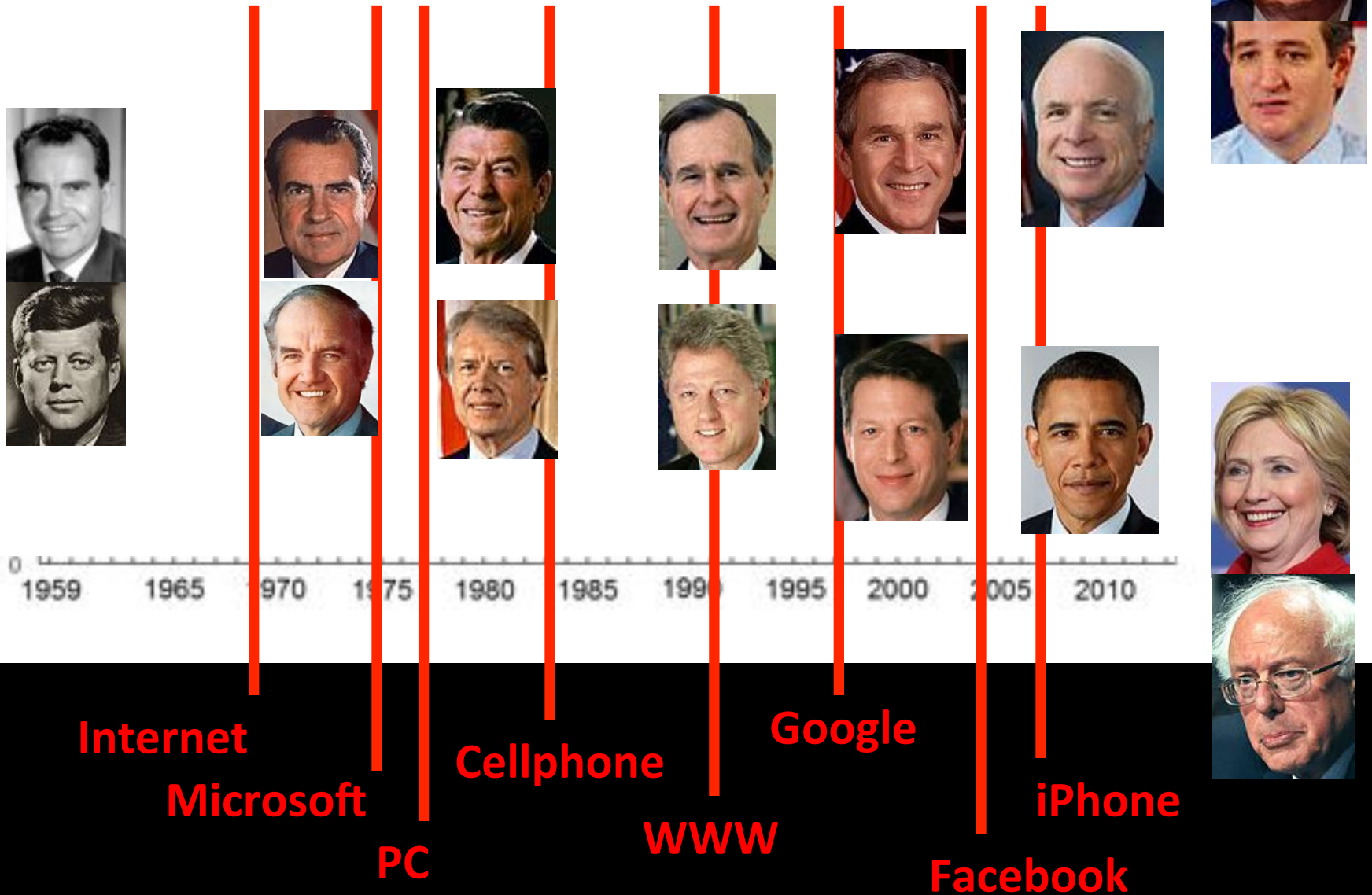
HTML

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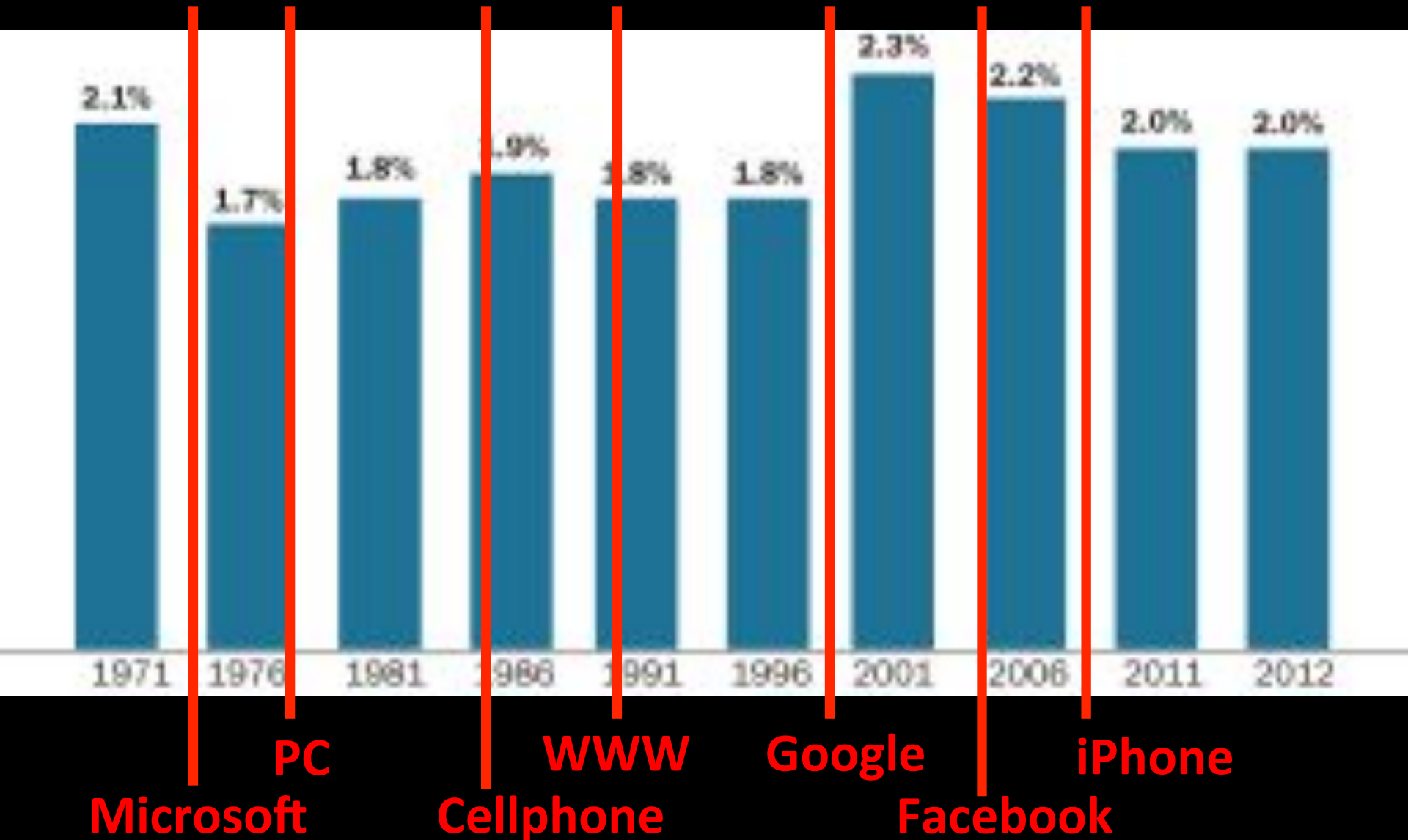
AKS Primality Test

Image Captioning
w/Deep Learning

Political Polarization in the U.S.A.



Rate of Charitable Giving in the United States as Percentage of GDP (1971-2012)





“The [Internet.org] million [people]
have more money than the
[Internet.org] [people]. You
[Internet.org] [people] that by [Internet.org] everyone
online.”

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Source: <http://www.wired.com/2013/08/mark-zuckerberg-internet-org/>

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Disconnect between productivity and a typical worker's compensation, 1948–2014



Note: Data are for average hourly compensation of production/nonsupervisory workers in the private sector and net productivity the total economy. "Net productivity" is the growth of output of goods and services minus depreciation per hour worked.

For the most part,

computing research *amplifies*

underlying human forces.

Social change is
“social-complete.”

- This is not anti-technology. It is anti-technology-hype-and-delusion.
- Technology has positive impact (only) when amplifying social trends or institutions that are already positively inclined.
- Persistent social challenges do not have technology-centric solutions. E.g., socio-economic inequality has no technology solution.

Capitalize on computing community cachet not just as technologists but as concerned citizens.



CRA-W

Computing Research
Association
Women



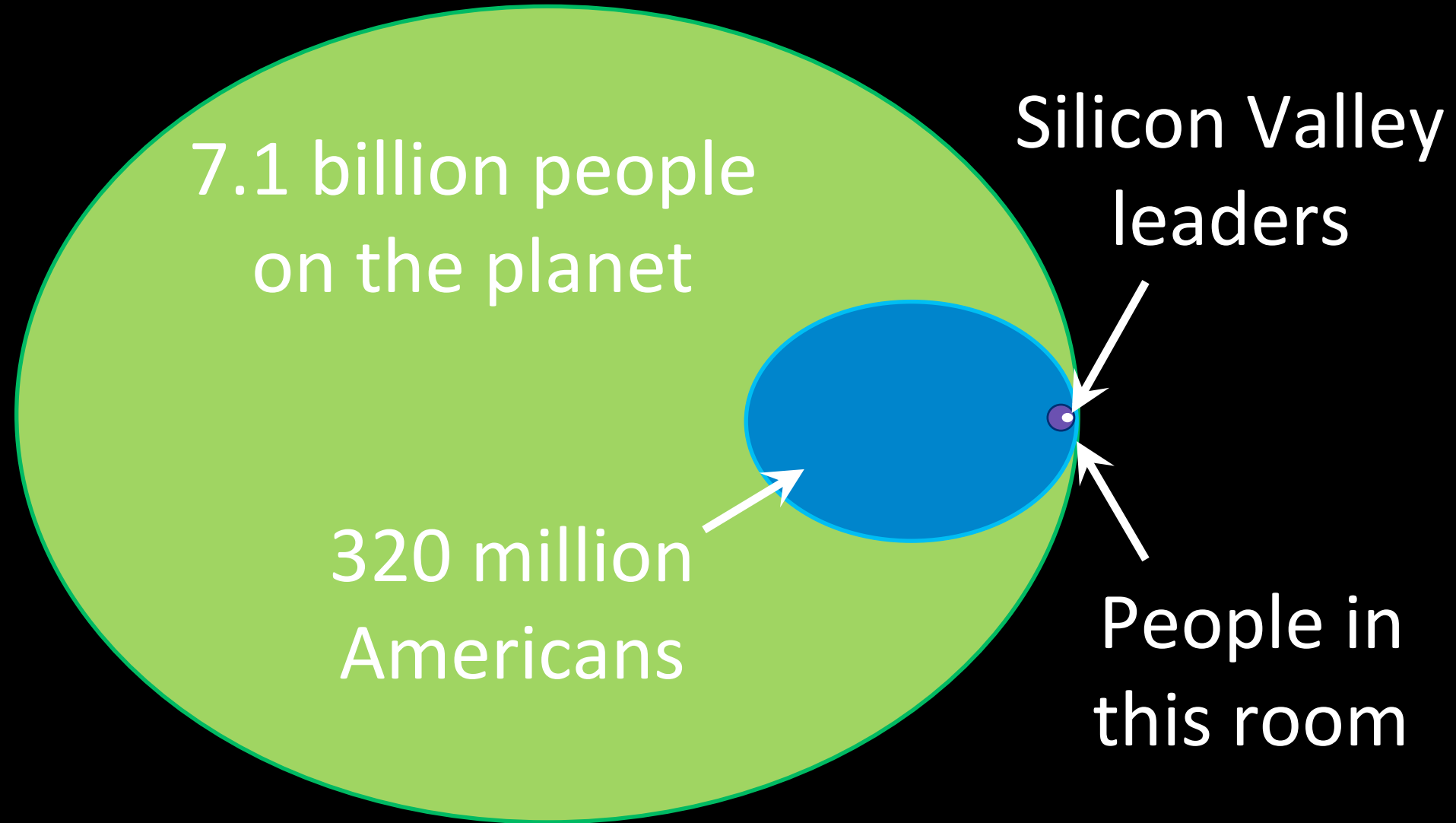
CRA-E

Computing Research
Association
Education

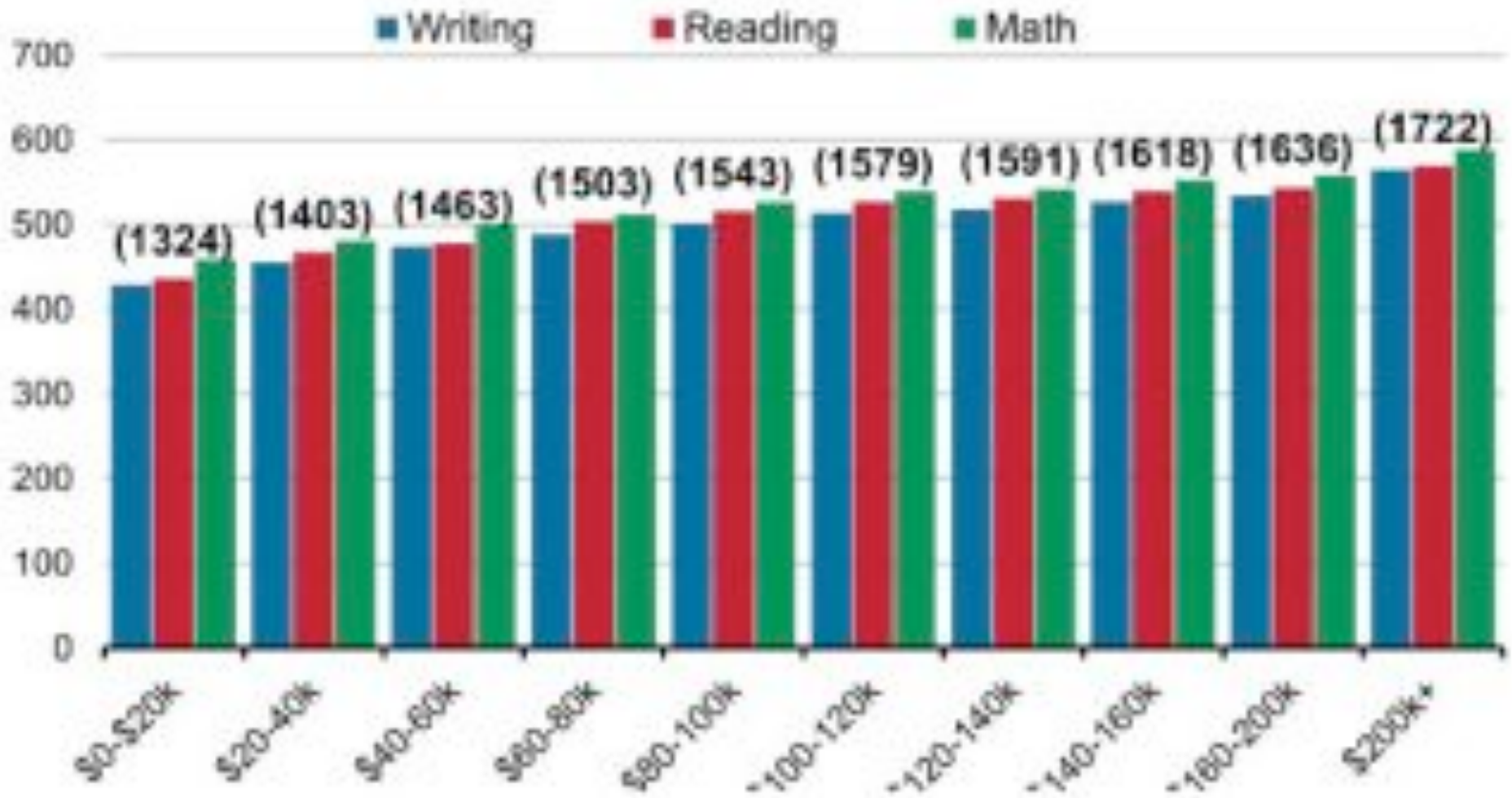
Speak out about limits of technology and against poor uses of computing.



When engaging in social issues, make sure your training data is a representative sample.



Apply progressive policies as educators.



Average SAT scores vs. parental income

Source: <http://changinguniversities.blogspot.com/2015/09/myths-about-college-degrees-and-job>

Encourage students to study
broader questions of technology
and society



TECH NEEDS
GIRLS



Ensure good policies for issues relevant to technology, even if only distantly so.

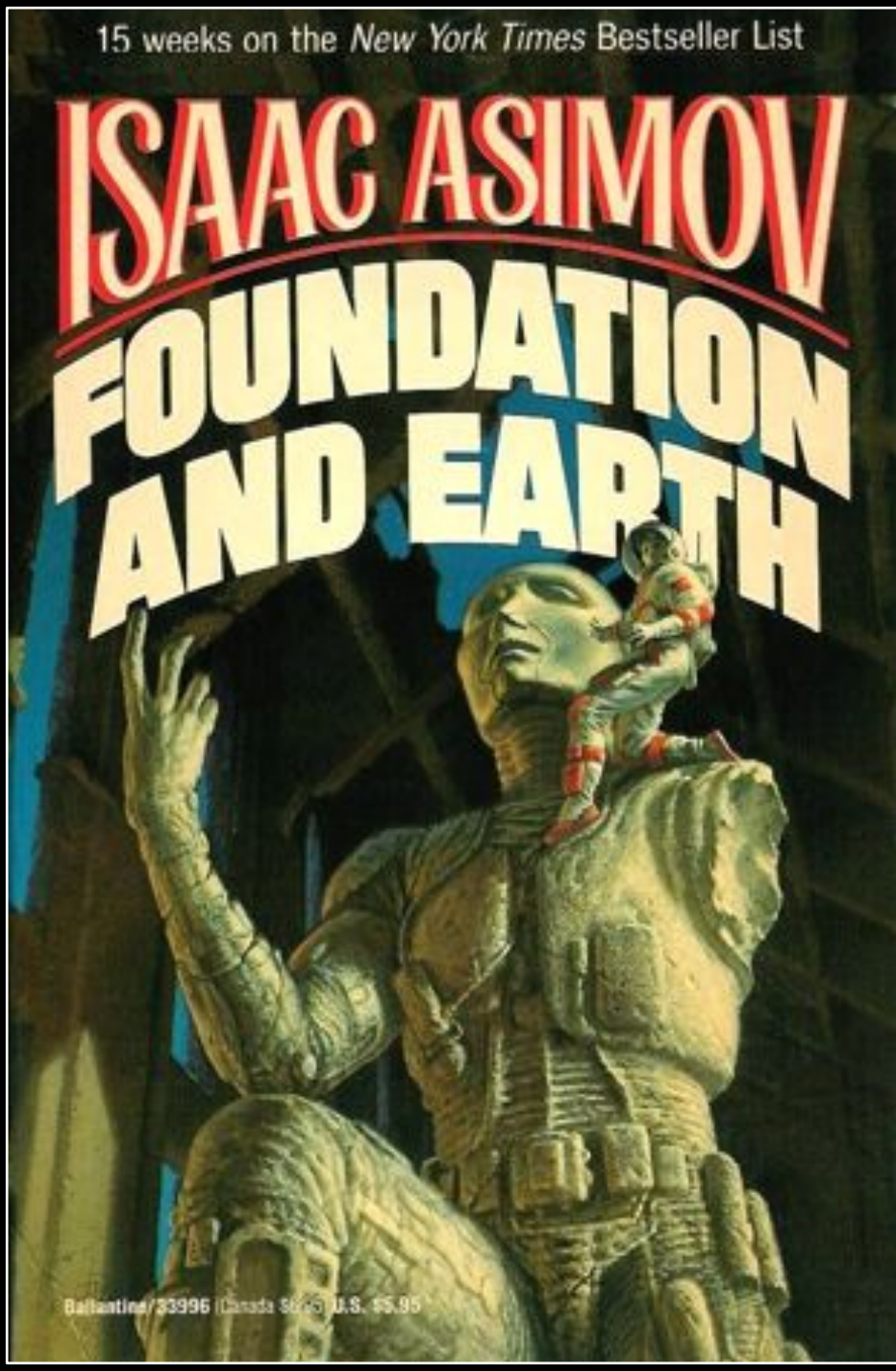


15 weeks on the *New York Times* Bestseller List

ISAAC ASIMOV

FOUNDATION AND EARTH

Ballantine / 33996 / Canada \$8.95 / U.S. \$5.95

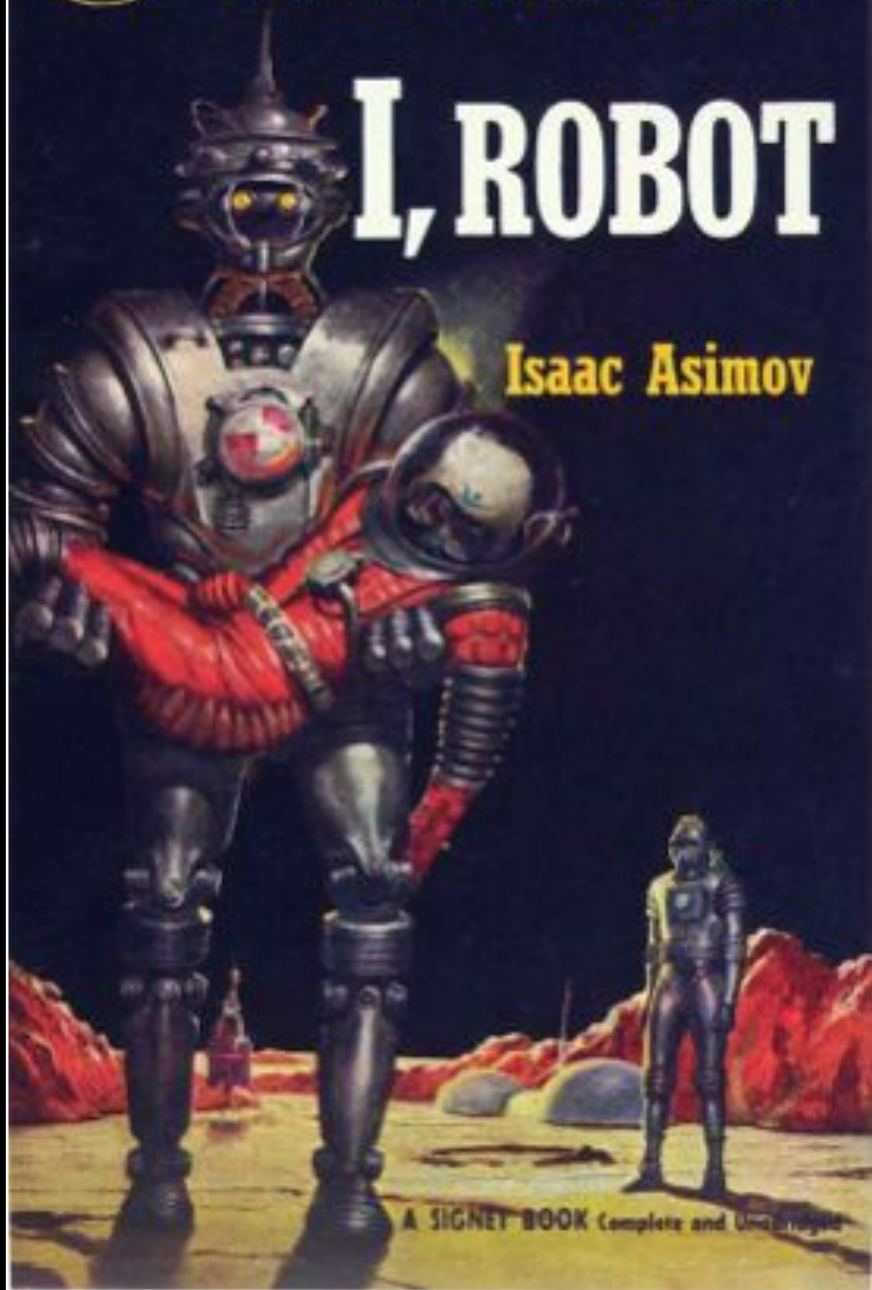


51282
SIGNET
353
BOOKS

MAN-LIKE MACHINES RULE THE WORLD!
Fascinating Tales of a Strange Tomorrow

I, ROBOT

Isaac Asimov



Asimov's First Law of Robotics

A robot may not injure a human being, or through inaction, allow a human being to come to harm.



<http://qz.com/653084/microsofts-disastrous-tay-experiment-shows-the-hidden-dangers-of-ai/>;
 <http://www.theverge.com/2016/5/19/11711890/uber-first-self-driving-car-pittsburgh-ford-fusion>;
 <http://www.telegraph.co.uk/technology/google/11730050/deep-dream-best-images.html?frame=3370412>;
 <http://www.gadgethelpline.com/amazon-to-test-drone-delivery-in-the-states-following-faa-permission/>

Summary

Computing technology by itself doesn't solve social problems.

Technology amplifies underlying human forces.

The computing community has tremendous cachet, and should use it.

Especially in an age of powerful machines, we have a responsibility to engage with society not just as technologists but as concerned citizens.

Thank you!



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<http://geekheresy.org>