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

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<table>
<thead>
<tr>
<th>The Matrix</th>
<th>Facebook</th>
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<tbody>
<tr>
<td>Advanced technology</td>
<td>Advanced technology</td>
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<tr>
<td>harvests human energy</td>
<td>harvests human attention</td>
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<tr>
<td>to feed machine masters</td>
<td>to feed shareholders</td>
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<tr>
<td>while offering illusion of pleasant life.</td>
<td>while offering illusion of pleasant social life.</td>
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“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)
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.
“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
“Technology is... a game-changer we desperately need to both improve achievement for all and increase equity.

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.

Sources: https://hbr.org/2015/09/whos-benefiting-from-moocs-and-why
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 networks are making governments more accountable.”

– Hillary Clinton (2011)

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?
Political Polarization in the U.S.A.
Rate of Charitable Giving in the United States as Percentage of GDP (1971-2012)

Source: https://www.philanthropy.com/article/The-Stubborn
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Disconnect between productivity and a typical worker’s compensation, 1948–2014

1948–1973:
Productivity: 96.7%
Hourly compensation: 91.3%

1973–2014:
Productivity: 72.2%
Hourly compensation: 9.2%

Note: Data are for average hourly compensation of production/nonsupervisory workers in the private sector and net productivity in 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.
Speak out about limits of technology and against poor uses of computing.

Photo: https://medium.com/@cshirky/why-I-just-asked-my-students-to-put-their-laptops-away-7f5f7c50f368
When engaging in social issues, make sure your training data is a representative sample.

- 7.1 billion people on the planet
- 320 million Americans
- People in this room
- Silicon Valley leaders
Apply progressive policies as educators.

Average SAT scores vs. parental income

Encourage students to study broader questions of technology and society.
Ensure good policies for issues relevant to technology, even if only distantly so.
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.
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