

Community Informatics: The 50 Years Ahead

Marc Snir

4/10

What's Community Informatics

“Once the rockets are up, who cares where they come down

That's not my department”

- Community Informatics makes where “IT rockets come down” an integral part of IT research.
 - With a strong belief that IT is/can be/must be a force for good
 - *Democratization of knowledge*
 - *Change in power relations implied by such a democratization*
- Disclaimer: CI is not my main job

My (simplistic) View of the World

- Technology changes society
- IT changes the way we process information – i.e. the way we think
- ☛ It is bound to change society more profoundly than any previous technology revolution
- Industrial revolution has made “hand-made” rarer and more valuable than “machine-made”
- Information revolution will make “brain-thought” rarer and more valuable than “machine-thought”
- This revolution will render many “knowledge workers” obsolete – possibly including university professors
- ***University professors may well lead the Luddite movement of the Information Revolution***

IT Changes the World Economy

- **Organizations:**
 - Lateral flows of information in companies and less hierarchical decision processes
 - Virtual, ad-hoc, continuously changing, geographically spread organizations (e.g., open-source projects)
- **Services:**
 - Self-service replacing service (banks, shopping, health)
 - Not better service, but cheaper and when-you-want, where-you-want
- **Information based economy:**
 - Data is cheap: key skill is not “knowing the data” but “knowing how to find or create the data”

Universities and the Information Revolution

- *Universities are Information organization par excellence*
 - They should be most affected by IT
 - But have not been so far
- Teaching has not changed
 - How we teach (frontal lecture)
 - Whom we teach (mostly teenagers)
- Research has not changed (much)
- Organization has not changed
- **Fundamental assumption:** Professor is in position of authority (wrt students and society at large) because he has knowledge others don't have but need
 - We know what's good for students (we are in loco parentis)
 - We know what's good for society
 - We should be trusted by virtue of our position
- ***IT will change the University and sap professorial authority***

Illustrious CS Alumni



Steve Chen



Jawed Karim

Born 1979

Commencement Speaker in 2007

Founded YouTube at age 26

Became multimillionaire at age 28

Both left department when sophomores

Jawed completed studies and is now PHD student and Stanford

Steve never completed Bachelor

Do we really know what's good for our students?

Half of IT workers do not have an IT related bachelor degree

University Education

- “Education is what remains after one has forgotten everything he learned in school” – A. Einstein.
 - “How - process” matters more than “what - curriculum”
- Education happens mostly out of classroom
 - *Student to student* (Light’s study at Harvard), student with computer, student on her own.
- ***We should use IT to enhance out-of-classroom learning***
 - Collaborative environments (with individual assessment)
 - Integrate the “out-of-ivory-tower” knowledge into teaching
 - Teaching by doing
 - Interdisciplinary project based education

Online Education – an Economic Argument

- Baumol's paradox: productivity of musicians has not improved in centuries
- As applied to education: If quality of education is measured by student/faculty ratio then either cost of education grows faster than inflation or faculty become progressively poorer (or both)
- We either continue providing a good, personalized, dialogue based education to a progressively smaller population or we accept increasing technology use and increasing student/faculty ratios
- *IT and self-service* is a way out of Baumol's disease
 - ***Education available when-needed where-needed, rather than inflexible four year curriculum***
 - ***Professor as guide to knowledge sources rather than as dispenser of knowledge***
 - ***A virtual campus***

Synthetic Science

- Classical model: exclusive data is source of competitive advantage in scientific competition
 - I produce data in my lab and keep it secret until I publish
- New model: massive amounts of data created by large apparatuses (particle accelerators, telescopes, satellites, sensor networks) are rapidly made available to large communities
 - Papers with 100's of authors
- ***Individual science is replaced by community science***
 - Need to deemphasize individual scholarship
 - Need new ways of assessing contributions (impact)

Citizen Science



- Scientific projects that leverage work of large numbers of volunteers
 - E.g. Beespotter project (May Berenbaum)
- IT (Internet) greatly facilitates citizen science projects
- Citizen science has great potential (environment, social sciences, health) – but
 - Volunteer cares about useful outcome, not knowledge per se
 - Scientist implicitly or explicitly commits to work toward this outcome
- ***The acquisition of knowledge and the use of the knowledge cannot be separated anymore***

The University of the Future

- Can be essentially unchanged, serving an increasingly small elite
- Can be fundamentally reinvented, becoming an essential component of the information society
- Community Informatics holds the model for such reinvention