Author(s): Joyojeet Pal, 2011

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ICTs and Development in Community Informatics

Joyojeet Pal
Community Informatics Seminar, Oct 8, 2010
Why the topic within CI?

- The idea that information leads to development hotly contested:
  - What constitutes a community?
    - Jensen case
    - Vijaywada case
    - Open universities
  - What constitutes development?
    - Who chooses IT as the frame of reference?
    - How does aspiration play in?
- Natural extension of ‘digital divide’
A brief game...

On visual information and “development”
A Map of the World
Global Wealth Distribution: circa 1500

Worldmapper, "Wealth Year 1500", Worldmapper, http://www.worldmapper.org/display.php?selected=160, (C) Copyright SASI Group (University of Sheffield) and Mark Newman (University of Michigan), CC: BY-NC-ND
Global Wealth Distribution: circa 1900

Worldmapper, "Wealth Year 1900", Worldmapper, http://www.worldmapper.org/display.php?selected=161, (C) Copyright SASI Group (University of Sheffield) and Mark Newman (University of Michigan), CC: BY-NC-ND
Global Wealth Distribution: circa 1960

Global Wealth Distribution: circa 1990

Global Wealth Distribution: circa 2015

Worldmapper, "Wealth Year 2015", Worldmapper, http://www.worldmapper.org/display.php?selected=164, (C) Copyright SASI Group (University of Sheffield) and Mark Newman (University of Michigan), CC: BY-NC-ND
Global Economic Growth since 1975

Global Economic Decline since 1975

Worldmapper, "Wealth Decline", Worldmapper, http://www.worldmapper.org/display.php?selected=172, (C) Copyright SASI Group (University of Sheffield) and Mark Newman (University of Michigan), CC: BY-NC-ND
Cellular Subscribers 2002

Can we explain development?

- Congo / Korea roughly comparable in 1960s
  - Congo higher GDP than Botswana, China, India, Indonesia
- Both countries had
  - High population growth, military regimes, cold war aid
- Explanations
  - Population diversity
  - Natural wealth
  - State formation and capacity
  - Political and economic “neighborhood”
  - Civil War driven by greed, than grievance
  - ...and
  - Technology
For instance... is Aid good?

Despite failures, aid shows poverty reduction

- Augments low savings & therefore adds capital stock
- Raises worker productivity
- Serves as a conduit for technology transfer

Bloats bureaucracies, weakens democracy

- Reduces savings (by lowering interest rates)
- Limited absorptive capacity of receiving nations
- Damages local industry (raises exchange rates, farm prices)

Jeff Sachs, Joseph Stiglitz, Dems

Cited Success Domains
- Agriculture: Green Rev
- Healthcare: Vaccination

Cited Failure Domains
- Infrastructure

Cited Success Nations
- Botswana
- Indonesia

Cited Failure Nations
- DRC
- Papua New Guinea

Major Donors
- Scandinavia: Norway, Denmark, Sweden (%)
- US, Japan, Germany, UK (Net)
- US >> Egypt, Israel, Iraq, Afghanistan
- Japan >> China, Vietnam
- China >> Cambodia, Mongolia
- France >> Francophone Africa
- Libya >> Sudan, Mali

Major Aid-Recipients
- Very small nations (Sao Tome, Central America)
- Strategically important low-income (B’desh, Vietnam)
- Large Developing nations (China, India)
Information Technology and Development in US acad

- NSF research in 2004 starting point for engineers in ICTD
  - Driven by anti-terror argument
  - SV funded and staffed initially
- Initial technological research drivers
  - Low-cost computing
  - Long-distance networking and communications
  - HCI
- Action research approach
  - Social scientists often working on engineers’ agenda
  - Technical research frequently with the intent of productization
Origins

- **Initial push in late 1990s/early 2000s**
  - Driven by SV boom, later arguments such as anti-terror/poverty, neo-lib
  - Initial technological research drivers
    - Low-cost computing
    - Long-distance networking and communications
    - HCI
  - Action research approach
    - Social scientists often working on engineers’ agenda
    - Technical research frequently with the intent of productization

- **Academic Departments**
  - NYU, MIT, Univ. of Colorado, Michigan, CMU, Several UK, India, Middle-East universities

- **Industrial Research**
  - Microsoft Research, HP, IBM, Intel each have small ICTD teams

- **Philanthropy / International Agencies**
  - Gates Foundation / IDRC, WorldBank, UN-GAID

- **Products**
  - Digital Green, Simputer, Grameen Foundation, OLPC
ICTD Engineering domain areas

- **Healthcare**
  - Low-cost diagnostics
  - Telemedicine
  - Healthcare informatics
- **Agriculture**
  - Supply chain efficiencies
  - Crafts
  - Crop quality information
  - Geophysical sensing
- **Education**
  - Low cost computing
  - Computer sharing
  - Distance education
- **Governance**
  - Information organization
    - Manpower costs
    - Healthcare informatics
- **Design**
  - Text-free interfaces
  - Assistive technology
- **Financial services**
  - Microfinance information
Digital Green Project: Rikin Gandhi

- **Research Problem**
  - Poor agriculture extension
    - Only works with rich farmers
    - Too expensive, hard to replicate

- **Proposed solution: Digital Green**
  - Mediation / Mediator
  - Highly formatted video content
  - Contextual content
    - Local presenter, not “well-dressed” urban scientist

- **Outcomes**
  - 55% adoption of new practice over 8% in old system
  - Gates Foundation funding
Sample CI project: Education

- **MultiMouse: Microsoft Research / UC Berkeley / UW**
  - Started with ethnographic research on computer use
  - Found high value association with computers
  - Patterns in seating, control, learning
  - After iteration, designed multiple mouse systems

- **Move from Research to Product**
  - Early designs mouse-racing oriented
  - Subsequent work on screen splitting
  - MultiPoint product group at MS
  - Currently in use in over 10 countries
  - Several research groups working on MM projects


Sample UI Project: Education

- Originally the $100 Laptop
  - Later OLPC
  - Finally XO ($399 for 2)
- Technological Innovation
  - Screen (dual-mode display)
  - Casing (ports under wi-fi)
  - Software/interface
  - Power (cooling w/o vents)
- Market approach
  - 1 million orders plus
  - 1 bought, 1 donated
- Learning approach
  - Constructivism
  - Take laptops home, play with them
- Critiques
  - “little or no sustained and scaled effects on teaching, learning, and achievement” Bain and Weston
Looking ahead

- **UNCRPD March 2007**
  - Highest first day signatories in history
  - Currently 144 signatories, about 80 ratifications, 44 OP

- **What does it specify**
  - Defines rights: health, political participation, education, non-discrimination etc
  - Recommends steps for states: endorsements of technologies, support for community groups, peer facilitation, education etc.

- The “cost” of the convention has not been clearly articulated
  - The legislative measures relating to the convention are easier to fix
  - Several recommendations need both significant social and economic investment
  - Legal scholars concerned about the consequences of non-compliance

- Huge opportunity for new Assistive Technology and Accessibility Research
Technology agenda going ahead (vision)

- E.g: Devices & Networks
  - Low-cost screen readers
    - Improvements on NVDA or development
    - Development of web-based systems (WebAnywhere)
    - Language support for screen readers
    - Low-cost Braille displays
  - Cell-phones
    - Basic accessibility features
    - Navigation / low-cost A-GPS
    - Audio interfaces
- E.g: Technology Training
  - Community training centers
    - Braille training centers
    - Screen reader access in libraries
- Rigorous economic analysis of the cost of the convention in terms of AT

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<th>Countries</th>
<th>Blind Population</th>
<th>Total Cost in US$ Million</th>
<th>Cost / GDP (%)</th>
<th>Shared Model Cost in $US Million</th>
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<tr>
<td>Australia</td>
<td>80531</td>
<td>0 - 96.6</td>
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<td>0 - 0.01</td>
<td>0 - 2.92</td>
</tr>
</tbody>
</table>

What does it cost to provide screen readers in…
ICTD: What worked and what did not

• **Pricing**
  o **Fishing case**
    - Are mobile phones good for fisherfolk?
  o **Agriculture case**
    - Are agricultural price kiosks good for farmers?

• **Localization critical**
  o Most listed success projects have major local element
  o Often the need is for engineering, not science

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buhugu.org, "Geoffrey working on the laptop outdoors.", Flickr, CC: BY-NC-SA 2.0
Aspiration....

- Perception as ticket to modernity
- Move from rural to urban aspiration
- Indian IT as global competitor

Office of Governor Patrick, "eClinical Works", Flickr, CC BY-NC-SA 2.0

Steve Wilhelm, "Mobile Information Technology I use Every Day Revisited Again," Flickr, CC BY-NC-SA 2.0
Cinema...
And guess this one...
Thanks

Joyojeet Pal
Additional Source Information
for more information see: http://open.umich.edu/wiki/CitationPolicy


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