When the only tool you have is a hammer, you tend to see every problem as a nail.

-- Abraham Maslow

Myth: getting price on the net

- Myth
  - Where to sell, when to sell, extract fair prices from middlemen
- Reality
  - Depends on many other factors: transport, number of available middlemen, whether goods are perishable, storage capacity, need for cash
  - Many farmers get decent price info over old technologies already
  - The question: cost/benefit analysis

Myth: newer is better

- Myth
  - Always need real time interactivity
- Reality
  - Radio, television, print materials have important roles even in richest countries
- Novel ways of combining new and old technologies
  - Kothmale (Sri Lanka): Internet over radio
  - Us: combine the net and TV (not WebTV)
  - Us: Internet over the postal system
Myth: selling indigenous crafts

• Promise
  – Global market for crafts
  – Aggregate supply and demand

• Reality
  – Success limited in scale
  – Difficult: shipping goods and payment exchange
  – Global market for crafts is small
  – Not enough profit to be sustainable business models

But you could do even worse…

• See every problem as a nail
• Worse: just build the hammer and declare victory…

Outline

• Myths
• Guiding principles
• Promises and caveats
• Broader challenges
Poor people need medicine and not computers.

-- Bill Gates

Key Message

- **Infrastructure** is useless by itself
  - Infrastructure: devices, connectivity…
- Need to solve real problems
  - Need to concentrate on **applications**
  - **Software** is the key (so is content)
  - The software we need largely does not exist
  - Invest in software
- “Build it (infrastructure) and they will come?”
  - No, we have to do it (applications) ourselves!
    - With collaborators

Poverty has many causes

- Complex interdependent causes
- Unicausal approaches don’t work

Poverty has many causes

- Lack of material and financial resources
- Lack of opportunities of converting limited resources into income
- Lack of information
- Lack of communication opportunities
- Lack of access to education and knowledge
- Lack of access to capital
<table>
<thead>
<tr>
<th>Poverty has many causes (cont.)</th>
<th>Poverty has many causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lack voice and power in established institutions</td>
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<tr>
<td>• Poorly equipped to handle shocks</td>
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<tr>
<td>• Compounded at societal level</td>
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<tr>
<td>• Compounded at international level</td>
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<tr>
<td>• Effect of “poverty traps”</td>
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<tr>
<td>• Potential ICT component of each of these issues, but…</td>
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<tr>
<td>• ICT is no panacea</td>
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<table>
<thead>
<tr>
<th>Guiding principles</th>
<th>Strategic priorities</th>
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<tbody>
<tr>
<td>• Digital divide a symptom, not a diagnosis</td>
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<tr>
<td>• ICTs enable change; they do not create it</td>
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<tr>
<td>• ICTs only effective when linked with broader strategies</td>
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<tr>
<td>• Newer not always better</td>
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<tr>
<td>• ICTs need to be adapted to social contexts</td>
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<tr>
<td>• Need priority setting in allocating resources</td>
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<tr>
<td>• Absorb old lessons</td>
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<tr>
<td>• Deeper analysis of ICT-dimensions of poverty</td>
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<tr>
<td>• Honest assessment of experience</td>
<td></td>
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<tr>
<td>• Strategic focus on levers of change</td>
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<tr>
<td>• More rigorous priority-setting</td>
<td></td>
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<tr>
<td>• Cooperation and information-sharing</td>
<td></td>
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<tr>
<td>• Support for pro-poor innovations</td>
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</tr>
<tr>
<td>• Focus on MDGs, not ICTs</td>
<td></td>
</tr>
<tr>
<td>– MDGs unlikely to be met</td>
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</table>
Millennium Development Goals

“We will spare no effort to free our fellow men, women, and children from the abject and dehumanizing conditions of extreme poverty, to which more than one billion of them are currently has subjected.”

--United Nations Millennium declaration, September 2000

MDG (cont.)

• Eradicate extreme poverty and hunger
• Achieve universal primary education
• Promote gender equality and empower women
• Reduce child mortality
• Improve maternal health
• Combat HIV/AIDS, malaria, and other diseases
• Ensure environmental sustainability
• Develop a global partnership for development

Extreme Poverty and Hunger

Halve the proportion of people living on less than one dollar per day in low and middle income economies, between 1990 and 2015 – from 29% to 14.5%

• In the 1990s, global poverty rates fell 20%, but growth was uneven

Universal Primary Education

Ensure that all children will be able to complete primary schooling, by 2015

• 2/3 of illiterates are female, ½ of all women in developing countries are illiterate
• MDG reset the earlier targets from 2000 to 2015

Source: MDG
Outline

- Myths
- Guiding principles
- Promises and caveats
- Broader challenges

Education: potentials and caveats

- Crucial for opening up opportunities
  - More important in new sectors of economy
- Low government budgets
  - Largely pay teachers’ salaries
  - No money for infrastructure, teacher training, books, curricular materials, school supplies
- Few teachers:
  - Poor quantity and poor quality
  - Acute lack of primary school teachers
- Parents can’t afford to send kids to schools
  - Expenses
  - Need children to help with work
- Need to prioritize and do cost/benefit analysis

Education: potentials and caveats (India: budget priorities)

a government school in Bhopal

Education: potentials and caveats (India: budget priorities)

a government school in Patna
Education: potentials and caveats  
(India: budget priorities)

• Karnataka government schools  
  – 79% no toilet facility  
  – 49% no drinking water  
  – < 10% has electricity  
  – < 50% has play area  
• Schools in Bihar, Madhya Pradesh, U.P., and Rajasthan  
  – 63% has leaking roofs  
  – 52% has no playground  
  – 58% no drinking water  
  – 89% no functioning toilet  
  – 27% no blackboards  
  – 2% has all the above  
  – 8% has none of the above  
• Question: how should we spend our resources?  
  – Weigh ICT priority, and ICT cost, against ICT potential  
  – Is the ICT solution going to be self-sustainable?

Education: potentials and caveats  
(India: lack of teachers)

• Teacher vacancies unfilled  
  – Bihar and Bengal state governments choose not to recruit teachers  
• High rates of teacher absenteeism  
  – Teachers often assigned other jobs  
• Shortage of trained, motivated teachers  
• Many fraudulent private schools  

• Crucial for opening up opportunities  
  – More important in new sectors of economy  
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  – Need children to help with work  
• Need to prioritize and do cost/benefit analysis  

• Question: what role can ICT play to address the teacher shortage?  
  – Complement their limited expertise while harvesting their human intelligence  
  – Maximize utilization of good teachers  
  – Harvest global volunteer force (and open-source model)  
  – Teacher training  
  – Flexible time and location commitment to balance regional differences  
  – Compete against quacks
Education: potentials and caveats

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Education: potentials and caveats

(India: financial burden on parents)

- Slogan: Education for All (Sarva Shiksha Abhiyan)
- Myth: public schools are free
  - Varies...
    - Karnataka---rural: Rs.800, urban: Rs.1200 per year
- Private schools
  - Varies but more expensive...
    - A Bihar case, A farmer’s annual income: Rs.12000 ($260), spends Rs.2200 ($50), on one son
    - A case in the Dharavi slum of Bombay, an illiterate plumber: monthly income: Rs.3000, spends Rs.400 on one son, plus, Rs.200 on tutoring

Education: potentials and caveats

(India: financial burden on parents)

- Question: can ICT help to lessen the financial burden?
  - More opportunities and more access
    (competition against quacks)
  - More efficiency and more specialization
  - Keep down material cost
  - Reduce needs for transportation
  - More flexible study times

Education: potentials and caveats

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  - More important in new sectors of economy
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<thead>
<tr>
<th>Health care: potentials and caveats</th>
<th>The environment: potentials and challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Potentials</strong></td>
<td><strong>Potentials</strong></td>
</tr>
<tr>
<td>– Control spread of disease</td>
<td>– Sensing and networks: early warning system for emergencies</td>
</tr>
<tr>
<td>– Disseminate info on hygiene and healthy behavior</td>
<td>– Monitor abuses</td>
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<tr>
<td>– Improve capacity and effectiveness of health care providers</td>
<td>– Disseminate good practices</td>
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<tr>
<td>– Broaden access to healthcare (remote diagnosis)</td>
<td><strong>Challenges:</strong></td>
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<tr>
<td><strong>Challenges</strong></td>
<td>– Problems rooted in persistent poverty</td>
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<tr>
<td>– Lack affordable access to medicine and vaccines</td>
<td>– Need national consensus on sustainable growth</td>
</tr>
<tr>
<td>– Health problems tied to persistent poverty</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Enhancing government: potentials and challenges</th>
<th>Strengthening civil society: potentials and challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Potentials</strong></td>
<td><strong>Potentials</strong></td>
</tr>
<tr>
<td>– Make governments more efficient and accountable</td>
<td>– Multi-directional communication, debate, info-sharing, and collaboration</td>
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<tr>
<td>• “Dis-intermediate” via automation</td>
<td>– Sources of ideas and innovations</td>
</tr>
<tr>
<td>– Citizens better informed of their rights and services</td>
<td>– Check on governments</td>
</tr>
<tr>
<td>– Outlets for citizens to express their concerns</td>
<td><strong>Dangers</strong></td>
</tr>
<tr>
<td><strong>Challenges:</strong></td>
<td>– Rise of private media monopolies, global media conglomerates</td>
</tr>
<tr>
<td>– ICTs do not create broader institutional reform</td>
<td>– Diversity of sources leads to reduction of trust</td>
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<td></td>
<td>– “Online mob”</td>
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</table>
Outline

• Myths
• Guiding principles
• Promises and caveats
• Broader challenges

Broad challenge: policies

• Liberalizing telecomm sectors
• Need legal and regulatory mechanisms
• Complementary public investments
• Support for business planning

Broad challenge: ensuring access for all

• The poor spends disproportionately more on communication
• Challenges in rural and urban slums
  – Expensive to reach (not commercially viable)
• Approaches
  – Cross-subsidies
  – Taxes
  – Demand aggregation to lower cost
• Identify two categories:
  – Commercially viable targets: previous slide
  – “Beyond market:” this slide

Broad challenge: social inclusion

• ICTs can deepen existing economic, political, and social inequalities
• Can deepen gender inequality
Summary

- Infrastructure alone goes nowhere
- Focus on real-world problems, applications, software
- ICT has promises in improving education, health care, environment, government, civil society, but…
- ICT just a tool, and needs to be weighed against other ways of spending resources, and…
- Need broader and deeper solutions