Wisdom is not the product of schooling
but the lifelong attempt to acquire it.
- Albert Einstein

Cultures of Participation, Long Tail Learning, and
Energy Sustainability

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AERA’2011 Presidential Session “Design Research Exploring Transformative
Frameworks for Learning and Education”
## Transformational Frameworks for Learning and Education

<table>
<thead>
<tr>
<th>Existing Framework</th>
<th>Complementing New Framework</th>
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<tbody>
<tr>
<td>school learning</td>
<td>lifelong learning</td>
</tr>
<tr>
<td>consumers</td>
<td>active contributors <em>(cultures of participation)</em></td>
</tr>
<tr>
<td>teacher driven (curriculum)</td>
<td>learner-driven (idiosyncratic interests: <em>long tail</em>)</td>
</tr>
<tr>
<td>learning when the answer is known</td>
<td>learning when no one knows the answer (education research for the public good: <em>energy sustainability</em>)</td>
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</table>
Fundamental (?) Transformations
—
many new approaches are too timid and not thinking radically enough

- by accepting too many established approaches — e.g.: a theory of human learning based solely on school learning is too limited

- by seeing “schools” as a “God-given” or “natural” entity rather than a social construct

- by not embracing new learning opportunities — e.g.: exploiting the unique opportunities of social production in which all learners can act as active contributors in personally meaningful problems
Cultures of Participation

**consumer cultures**

**focus:** produce finished goods to be consumed passively

\[\downarrow\]

**cultures of participation**

**focus:** provide all people are with the means to participate actively in personally meaningful problems
Examples of Environments Created by Cultures of Participation

<table>
<thead>
<tr>
<th>Site</th>
<th>Objectives and Unique Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scratch</td>
<td>creating, remixing, and sharing programs to build creative communities in education (<a href="http://scratch.mit.edu">http://scratch.mit.edu</a>)</td>
</tr>
<tr>
<td>Instructables</td>
<td>user-created and shared do-it-yourself projects involving others users as raters and critics (<a href="http://www.instructables.com/">http://www.instructables.com/</a>)</td>
</tr>
<tr>
<td>PatientsLikeMe</td>
<td>real-world experiences enabling patients suffering from diseases to connect (<a href="http://www.patientslikeme.com/">http://www.patientslikeme.com/</a>)</td>
</tr>
<tr>
<td>Stepgreen</td>
<td>library of energy saving actions, tips, and recommendations by citizen contributors (<a href="http://www.stepgreen.org/">http://www.stepgreen.org/</a>)</td>
</tr>
</tbody>
</table>
The Envisionment and Discovery Collaboratory
The Long Tail Framework

- **theory of the Long Tail (originated in the business world):** our culture and economy is increasingly shifting away from a focus on a relatively small number of “hits” (mainstream products and markets) at the head of the demand curve and toward a huge number of “niches” in the tail.

- **examples** from the business world:

  - Amazon: 2.3 mil books
  - Barnes & Noble: 130,000 books*
  - Netflix: 25,000 DVDs
  - Blockbuster: 3,000 DVDs*

- **our objective:** understanding, fostering, and supporting interest-driven and passion-based learning.
The Long Tail Framework in Learning and Education

- learn about **exotic but personally important topics** outside the mainstream education curriculum

- communicate with people who **share similar niche interests** anywhere in the world

- **contribute your own knowledge** to evolve and enrich living, open information spaces
Basic Beliefs

- the participatory Internet ("Web 2.0") supports the design requirements for a Long Tail inspired view of learning and education

- most people are interested / feel passionate about something (which maybe be very idiosyncratic, locally sparse, but world-wide there maybe still some niche communities) → examples:
  - astronomy, casino games, Viking Ships. Model trains, wines, jewelry, carpets
  - urban planning, 3D models, open source, energy sustainability

- people are getting engaged in thousands of cultural tribes of interest, connected less by geographic proximity than by shared interest
A Reinterpretation of the Long Tail for Learning and Education

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Web-Based Businesses</th>
<th>Learning and Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>content of the head</td>
<td>megahits</td>
<td>core curriculum</td>
</tr>
<tr>
<td>content of the tail</td>
<td>niche markets</td>
<td>unique topics, niche communities</td>
</tr>
<tr>
<td>major limitation</td>
<td>many interesting books, movies,</td>
<td>many interesting topics and ideas will not</td>
</tr>
<tr>
<td>without support for the long tail</td>
<td>songs will not enter the marketplace</td>
<td>be taught in formal learning environments</td>
</tr>
<tr>
<td>coping with infinite choice</td>
<td>recommendation systems</td>
<td>user and task models for personalized learning paths</td>
</tr>
<tr>
<td>structures and interdependencies</td>
<td>individual objects are mostly independent</td>
<td>prerequisite structures may exist</td>
</tr>
</tbody>
</table>
Energy Sustainability
Education Research for the Public Good

- energy sustainability is one of the most fundamental problems facing our societies

- new technologies are necessary, but not sufficient

- required: change in human understanding and human behavior (at the individual and collective level)
Understanding and Behavior towards (Electrical) Energy

- “I use energy (at home, at work) but it’s invisible. I don’t consume it directly but only via things I want like light, heat and refrigeration.”

- “The amount of energy I use is registered on a meter that’s out of sight, unintelligible, and read by someone else.”

- “At work, I get no feedback at all — which does not worry me because I do not pay the bill anyway.”

- “Even when I understand the information, I rarely act.”
Learning and Understanding with New Designs

**Personally**

Example: a power cord which indicates by its color the power consumption

**Globally**

Example: annual carbon emissions by region
The Core Objective of my Professional Life

to create socio-technical environments (a design activity) in which people of all ages (lifelong learning)

want to learn

rather than

have to learn