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

Cultures of Participation

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Outline

- Basic Message
- Cultures of Participation
- Examples of Innovative Socio-Technical Environments
- Conceptual Frameworks for Cultures of Participation
- Research Challenges
- Conclusions
Basic Message: Beyond the Unaided, Individual Human Mind
Cultures of Participation

Fundamental Challenge and Opportunity

consumer cultures
focus: produce finished goods to be consumed passively

cultures of participation
focus: provide all people are with the means to participate actively in personally meaningful problems
Examples

Warren Miller’s Ski Movie
- [http://www.youtube.com/watch?v=jqBkf5ibktU&feature=related](http://www.youtube.com/watch?v=jqBkf5ibktU&feature=related)
- 3:54 minutes
- 134,671 views + high production values → seen by many more people

Gerhard’s YouTube movie
- [http://www.youtube.com/watch?v=5u3bi9KoDNk](http://www.youtube.com/watch?v=5u3bi9KoDNk)
- 1:37 minutes
- 205 views + low production values → seen by friends + some others???

**use of this movies:**
- to tell others about heli-skiing
- to submit it as “application material”
- to remember the vacation
- personally meaningful

**technologies + knowledge how to use this technologies:**
- camera to record it + uploading it to a computer
- movie editing + uploading it to Youtube
Consumer Cultures

- **Examples:**
  - Television audiences
  - Students in an instructionist classroom
  - RO (= Read Only) culture (Lessig)

- **References:**
Comments about Cultures of Participation

“*The experience of having participated in a problem makes a difference to those who are affected by the solution. People are more likely to like a solution if they have been involved in its generation; even though it might not make sense otherwise*” [Rittel, 1984].

“I believe passionately in the idea that people should design buildings for themselves. In other words, not only that they should be involved in the buildings that are for them but that they should actually help design them” [Alexander, 1984].

“The hacker culture and its successes pose by example some fundamental questions about human motivation, the organization of work, the future of professionalism, and the shape of the firm” [Raymond & Young, 2001].

“Users that innovate can develop exactly what they want, rather than relying on manufacturers to act as their (often very imperfect) agents” [von Hippel, 2005].

“The networked environment makes possible a new modality of organizing production: radically decentralized, collaborative, and nonproprietary” [Benkler, 2006].
Consumer and Designers — Beyond Binary Choices

- **claims:**
  - there is nothing wrong about being a consumer (watching a tennis match, listening to a concert, ...)
  - the same person wants to be a consumer in some situations and in others a designer  $\rightarrow$ consumer / designer is not an attribute of a person, but of a context

  $\text{consumer / designer} \neq f\{\text{person}\} \rightarrow f\{\text{context}\}$

- **problems:**
  - someone wants to be a designer but is forced to be a consumer $\rightarrow$ personally meaningful activities
  - someone wants to be a consumer but is forced to be a designer $\rightarrow$ personally irrelevant activities
Cultures of Participation — Application Domains

- Web 2.0
- Learning 2.0
- President 2.0
- Science 2.0
- Digital Libraries 2.0
- Electricity 2.0 (Smart Grids)
- Health 2.0
- Crisis 2.0 (CNN versus Bloggers, Twitter, ……)
Cultures of Participation — Concepts

- prosumers (= producers + consumers)
- pro-ams (= professionals + amateurs)
- user-generated content
- wisdom of crowds
- crowd sourcing
- long tail

→ What is needed:

*a theoretical model to understand and foster cultures of participation*
Elements of an Analytic Model: Understanding **Strengths**

- to engage the **talent pool of the whole world**
- to put **owner of problems** in charge
- to make **all voices** heard
- to reach **extensive coverage**
- to expose artifacts to **public scrutiny**
Elements of an Analytic Model: Understanding Weaknesses

- collective is not always better
- loss of individuality
- accumulation of irrelevant information
- lack of coherent voices
- companies offload work to customers → drawbacks of “Do-It-Yourself Societies”
- customers lack the experience and the broad background knowledge to do tasks efficiently and effectively
## Environments Created by Cultures of Participation

<table>
<thead>
<tr>
<th>Site</th>
<th>Objectives and Unique Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wikipedia</strong></td>
<td>web-based collaborative multilingual encyclopedia with a single, collaborative, and verifiable article; authority is distributed (<a href="http://www.wikipedia.org/">http://www.wikipedia.org/</a>)</td>
</tr>
<tr>
<td><strong>iTunes U</strong></td>
<td>courses by faculty members from “certified institutions”; control via input filters; material can not be remixed and altered by consumers (<a href="http://www.apple.com/education/itunes-u/">http://www.apple.com/education/itunes-u/</a>)</td>
</tr>
<tr>
<td><strong>YouTube</strong></td>
<td>video sharing website with weak input filters and extensive support for rating (<a href="http://www.youtube.com/">http://www.youtube.com/</a>)</td>
</tr>
<tr>
<td><strong>Encyclopedia of Life (EoL)</strong></td>
<td>documentation of the 1.8 million known living species; development of an extensive curator network; partnership between the scientific community and the general public (<a href="http://www.eol.org/">http://www.eol.org/</a>)</td>
</tr>
<tr>
<td><strong>SketchUp and 3D Warehouse</strong></td>
<td>repository of 3D models created by volunteers organized in collections by curators and used in Google Earth (<a href="http://sketchup.google.com/3dwarehouse/">http://sketchup.google.com/3dwarehouse/</a>)</td>
</tr>
</tbody>
</table>
## Environments Created by Cultures of Participation

| **Scratch** | Learning environment for creating, remixing, and sharing programs to build creative communities in education ([http://scratch.mit.edu](http://scratch.mit.edu)) |
| **Instructables** | Socio-technical environment focused on user-created and shared do-it-yourself projects involving others users as raters and critics ([http://www.instructables.com/](http://www.instructables.com/)) |
| **PatientsLikeMe** | Collection of real-world experiences enabling patients who suffer from life-changing diseases to connect and converse ([http://www.patientslikeme.com/](http://www.patientslikeme.com/)) |
| **Stepgreen** | Library of energy saving actions, tips, and recommendations by citizen contributors for saving money and being environmentally responsible ([http://www.stepgreen.org/](http://www.stepgreen.org/)) |
Examples

Encyclopedia of Life

Sketch-Up and 3D Warehouse

The CreativeIT Wiki

Energy Sustainability

Courses-as-Seeds
Encyclopedia of Life

Oenothera humifusa Nutt.
Seabeach evening-primrose

Gnaphosa montana (L.
Koch, 1866)

Cnephasia incertana
Treitschke 1835
Light grey tortrix

Cataulacus tenuis Emery,
1899
SketchUp — a high-functionality 3D Modeling Environment
3D Warehouse: a Web 2.0 Environment

http://sketchup.google.com/3dwarehouse/

- **features:**
  - search, share, and store 3D models created in SketchUp
  - models include: buildings, houses, bridges, sculptures, cars, people, pets, …
  - download the 3D models to be modified in SketchUp
  - if the model has a location on earth → download it and view it in Google Earth

- **challenges:**
  - what will motivate people to participate?
  - participation requires acquiring skills in using SketchUp → create learning environments for SketchUp
3D Warehouse

3D Building Collections
- Featured Google Earth Modelers
- Help Model a City
- Featured Google Earth Collections

Featured Collections
- Google Earth - Ocean Layer
- SketchUp Components
- Interior Furnishings

Popular Models
- Egg Chair by Mart
- Chair by Yeroc
- People by Graphic Sketchbook
CU Boulder in 3D
Downtown Denver in 3D
A Tiny Percentage of a Huge Population → Large Number of Participants
The CreativeIT Wiki — http://l3dswiki.cs.colorado.edu:3232/CreativeIT/
Example: Energy Sustainability

- energy sustainability = a theme of national and worldwide importance

- technical innovations:
  - Smart Grid + Smart Meters
  - advanced metering infrastructures

- challenges of harvesting the benefits of technical innovations:
  - most citizens are unaware of new technological developments ("energy illiteracy")
  - information presentation is poorly designed
  - feedback alone is not persuasive enough to change human behavior

- claim: all of these challenges are grounded in the intersection of human behavior (at individual and social levels) and technology

- compare:
  - "Uncovering practices of making energy consumption accountable. A phenomenological inquiry" — Tobias Schwartz, Gunnar Stevens, Leonardo Ramirez, Volker Wulf, FIT and University of Siegen
Feedback Mechanisms

- “feedback mechanisms can influence energy consumption and can increase the potential of energy savings by 10%-15%” (Schwartz et al)

- what kind of feedback, given when?

- feedback:
  - critiquing systems (Fischer, G., Nakakoji, K., Ostwald, J., Stahl, G., & Sumner, T. (1998) "Embedding Critics in Design Environments." In M. T. Maybury, & W. Wahlster (Eds.), Readings in Intelligent User Interfaces,
  - energy as an entity of the natural world (e.g. measured in physical terms like ‘kW’) energy as part of an intentional world, where it carries a meaning (e.g. given and judged in normative terms like ‘wasting’ or ‘sparing’ (Schwartz et al)
Socio-Technical Environments for Energy Sustainability

**Electric Grid** → **Smart Grid** → **Human Grid**

- *electrical grid*
- *information and communication technologies:*
  - smart grid + smart meters + advanced smart infrastructure
- *social environment:*
  - energy illiteracy + control + intrinsic motivation + social norms + changing human behavior + eco-arts
Learning from and Being Motivated by other’s Experiences
Conceptual Frameworks for Cultures of Participation

- meta-design = design for designers

- seeding, evolutionary growth and reseeding (SER) model

- authoritative versus democratic models of knowledge accumulation, sharing, and dissemination

- richer ecologies of participation
Meta-Design: Design for Designers

- **meta-design explores:**
  - cultures in which participants can *express themselves* and engage in personally meaningful activities

- **meta-design requires**
  - designers giving up some *control* at design time to contributors at use time

- **meta-design raises research problems**
  - new *design methodologies*
  - a new understanding of *collaboration, motivation, and creativity*

- **meta-design** provides a theoretical framework for *Web 2.0 technologies*
Design Time and Use Time

- **Key**
  - system developer
  - user (representative)
  - end user

- **Time**
  - design time
  - use time

- **World-as-Imagined**
  - prediction
  - planning

- **World-as-Experienced**
  - reality
  - situated action
Meta-Design
and
Designing for Accountability in the Energy Domain
(Schwartz et al)

- making computational support adaptable — why? \(\rightarrow\) value systems are highly dynamical and change from situation to situation

- addressing adaptability \(\rightarrow\) meta-design / End User Development (EUD) = the creation of tools and techniques to allow users to re-define the behavior of the system and to tailor it to their needs
  - the importance of mechanisms used by people in making their own consumption processes accountable and explainable
  - providing feedback mechanisms supporting people in creating methods to configure their energy consumption

Model Authoritative underlying Consumer Cultures

“filter and publish”

- Strong Input Filters, Small Information Repositories, Weak Output Filters
- **Limitation:** Making All Voices Heard
Model Democratic underlying Participation Cultures

“publish and filter”

- Weak Input Filters, Large Information Repositories, Strong Output Filters
- **Limitation**: Trust and Reliability of Information
Rich Ecologies of Participation

- **in the past:**
  - software developers and users
  - producers and consumers
  - professionals and amateurs

- **in the future: more roles — beyond** passive, undifferentiated consumers
  - producers, raters, taggers, curators, stewards, active users, passive users

- **roles are distributed in communities:**
  - power users, local developers, gardeners

- **challenge:** support migration paths with “low threshold, high ceiling” architectures
Richer Ecologies of Participation:
Consumer → Contributor → Collaborator → Meta-Designer

Transitions:
Role-0: Unaware consumers
Role-1: Consumers aware of possibilities
Role-2: Collaborators
Role-3: Designers
Role-4: Meta-designers

Becoming aware of possibilities
Sharing information, learning from others
Creating novel artefacts
Extending the range of the environment
Ecologies in Open Source Communities

- Project Leader
- Core Members
- Active Developers
- Peripheral Developers
- Bug Fixers
- Bug Reporters
- Readers
- Passive Users
Research Challenges for the Future

Cultures of Participation and

A Long Tail Framework for Learning and Education


- **theory of the Long Tail**: 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

- **main opportunity — digital artifacts**: computer programs, movies, books, 3D models of buildings, …. → as the costs of production and distribution fall, there is less need to lump products and consumers into one-size-fits-all containers

- **hypothesis**: without the constraints of physical shelf space and other bottlenecks of distribution, narrowly-target goods and services can be as economically attractive as mainstream fare
Exploiting “Long Tail” Opportunities in Business
Specific Examples of the Long Tail

**TOTAL INVENTORY**

* inventory in a typical store

<table>
<thead>
<tr>
<th>Store</th>
<th>Inventory Type</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhapsody</td>
<td>Songs</td>
<td>735,000</td>
</tr>
<tr>
<td>Wal-Mart</td>
<td>Songs*</td>
<td>39,000</td>
</tr>
<tr>
<td>Amazon</td>
<td>Books</td>
<td>2.3 mil</td>
</tr>
<tr>
<td>Barnes &amp; Noble</td>
<td>Books*</td>
<td>130,000</td>
</tr>
<tr>
<td>Netflix</td>
<td>DVDs</td>
<td>25,000</td>
</tr>
<tr>
<td>Blockbuster</td>
<td>DVDs*</td>
<td>3,000</td>
</tr>
</tbody>
</table>
Castles in Northern Germany in the 3D Warehouse

- **the current environment:**
  - 14 models (4 of them shown)
  - contributed by: 6 contributors
  - owner of the collection serves as curator
Design Trade-Offs for Cultures of Participation

- **advantages of cultures of participation**
  - extensive coverage of information
  - creation of large numbers of artifacts
  - creative chaos by making all voices heard
  - reduced authority of expert opinions

- **disadvantages**
  - participation overload
  - accumulation of irrelevant information
  - lack of coherent voices
  - fragmented culture based on too many idiosyncratic voices (a modern version of the “Tower of Babel”)
Drawbacks of Cultures of Participation:
Engaging People in Personally Irrelevant Activities

- we have all become
  - telephone operators and travel agents
  - check-in clerks (at airports) and check-out clerks (in supermarkets)
  - file expense reports and typeset our papers
  - """"many more things ................>

- drawbacks:
  - we (e.g., as faculty members) are paid more money per hour than staff members being experts in these activities
  - we are not particularly skillful doing these activities (doing them only very rarely)

- questions:
  - who are the winners (e.g.: companies off-loading work to us)?
  - are these additional burdens only felt by the “non-digital natives”)?
  - are our systems supporting us in these activities still too inefficient?
Conclusion
—
Cultures of Participation

represent opportunities and challenges to provide all citizens with the means to become co-creators of new ideas, knowledge, and products in personally meaningful activities
Relevant Perspectives for Cultures of Participation


References for Cultures of Participation (L3D)

