Web 2.0, Library 2.0 and the Future for Library Systems

Steve Thomas
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A brief history of the Web

• Back in 1980, Tim Berners-Lee decided that what the world (or at least his team) needed was a way to link together all their documentation.

• What he came up with ...
A concept map from Tim Berners-Lee's original proposal, a hypertext system called the "Mesh", presented in 1989.
A brief history of the Web

- The web was born, an idea so good and useful that it could not help but catch on.
- By 1995 the web took off, helped by two things ...
Release of the Mosaic browser

Discovery of Cave paintings in France, 1995
A brief history of the Web

• The Web was widely embraced by academia, and librarians especially, who recognise a great information delivery system when they see it, and was rapidly growing.
A brief history of the Web

• Business started to look at this new phenomenon, and began to ask the obvious question for business:

   How can we make money out of this?

• Thus was born the dot-com boom, followed shortly thereafter by ...
A brief history of the Web

• ... the dot-com bust.

• Lots of people lost their shirt.
A brief history of the Web

• For a time following the bust, the web was, in commercial terms, on the nose. People had been burned, they couldn’t see any way to make money from it, and the web looked like it might slip back to being just a boringly useful content management system.

• But, some people had other ideas ...
• Against the odds, Amazon continued almost alone of the dot-com era companies to prosper, if not exactly profit.
A brief history of the Web

• Google of course demonstrated a whole new paradigm shift in making money from advertising, without annoying people with intrusive banner ads.
A brief history of the Web

• And a number of interesting sites (Blogger, Flickr, del.icio.us, ...) sprang up to fill the void with strange new concepts in marketing and use.
Search

We found 461 photos about pictureaustralia.

View: Most relevant • Most recent • Most interesting

Sydney Opera House - No. 1
Uploaded on 21 May 2005
By Rubik's...
See more photos, or visit his profile.

city, pool, night, interesting ...

Cloud Reflection
Uploaded on 29 April 2006
By Barrie_5
See more photos, or visit his profile.
sunset, color, colour, clouds ...

The Storm is Coming
 Uploaded on 19 May 2006
A brief history of the Web

• These sites are all examples of Web 2.0 in action, so …

• What is Web2.0? …. 
What is Web 2.0?

- Web2.0 is **not** a software package, nor even a collection of programs

- It is a set of principles and practices

- A significant shift from the old paradigms : Version 2.0
What is Web 2.0?

Here’s a definition of sorts from Wikipedia:

• “Web 2.0 generally refers to a second generation of services available on the World Wide Web that let people collaborate, and share information online. …”
This “mind map” is intended to summarise the key aspects of Web2.0 in a visual way, using colour and text size to indicate importance.
“Web 2.0 generally refers to a second generation of services available on the World Wide Web that let people collaborate, and share information online. …”
-- http://en.wikipedia.org/wiki/Web2.0
Web 2.0

Definition

Architectural

"The Lightweight Application model"

"Data inside"

"Joy of Use"

Business

Social
The Lightweight Application model

- Think Services not Applications.
- Don't package everything into one system.
- Assemble systems from distributed, independent components
- Use Open source software;
- Aim for Continuous improvement.
The Lightweight Application model

• The traditional software model is to build complex packages which provide a massive level of functionality (most of which most us never understand, use or even know of.)
  – MS Office.
  – Photoshop.
  – ILMS
The Lightweight Application model

- In contrast, Web 2.0 thinks in terms of **services** rather than applications.
- Whatever complexity may exist behind the scenes, the user ideally will see something simple, something that does just one thing and does it superbly well. Think Google search.
The Lightweight Application model

• The lightweight application strategy makes it much easier to release new features, more frequently.
The Lightweight Application model

• Something as complex as Office requires enormous amounts of testing before a new version can be released. Any single new feature may have any number of unintended side effects on seemingly unrelated parts of the package. So getting a new release out can (and does) take years.
The Lightweight Application model

• With a lightweight system, on the other hand, a new “release” can be brought out much more rapidly, new features may be added on a frequent basis, usually without prior announcement, and often as “beta” or trial versions.
The Lightweight Application model

• Instead of a development *cycle*, development becomes a continuous process of *incremental improvement*.
The Lightweight Application model

• As a result the user gets used to seeing regular updates with interesting new stuff in them;
• updates become part of the user experience, and even come to be expected;
The Lightweight Application model

• the user comes to feel like a participant in the development process, and their feedback becomes a vital part of further development. The product may always be in development, or beta, but nobody is unhappy with that, because the users feel they are engaged in the product, rather than merely its victims.
The Lightweight Application model

• Fine examples of this characteristic in action may be seen at Amazon and Google, where new “value added” features appear regularly, and experimentally.
"The Lightweight Application model"

Architectural

"Data inside"

Reuse and remix

Beyond the browser:
Mobile devices

The "Hunter-gatherer" model

Business

"Joy of Use"

Google Maps

Podcasting

RSS feeds

Aggregation
The Web as Platform

• The Desktop is no longer the centre of activity;

• tools and services are provided through the web browser, e.g.:
  – Authoring through blogging
  – Photo management through Flickr
“It’s the data. stupid!”

- In Web 1.0, page hits were important, and therefore much attention was paid to the aesthetics of the page – to web design.
- “Portal” sites were popular, bringing a range of content into one site.
“It’s the data, stupid!”

• In Web 2.0, it’s the content that matters.
• Content may be reused and remixed in different ways by different services.
• Presentation and content are separated.
• E.g. RSS feeds.
Think outside the browser

• the same content may be used on multiple, disparate devices:
  • PC, mobile phone, PDA, iPod, ...
Utility plus Playfulness

• Another common characteristic of Web2.0 is a sense of fun.
• While the service provides something useful, the developers are not above having a little fun at the same time.
• For example ...
Here’s a snippet from an Amazon book page. It provides all kinds of “value-added” data about this book. Is it useful? Maybe, maybe not, but Amazon did it anyway because (a) it might be useful to someone; and (b) because they could; and (c) because it’s fun – for them and for you.
### Text Stats

#### Readability

<table>
<thead>
<tr>
<th>Fog Index</th>
<th>12.0</th>
<th>Easier</th>
<th>Harder</th>
</tr>
</thead>
<tbody>
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<td>Flesch Index</td>
<td>54.9</td>
<td>Easier</td>
<td>Harder</td>
</tr>
<tr>
<td>Flesch-Kincaid Index</td>
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<td>Easier</td>
<td>Harder</td>
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</tbody>
</table>

#### Complexity

<table>
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<th>Complex Words</th>
<th>15%</th>
<th>Fewer</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syllables per Word</td>
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<td>Fewer</td>
<td>More</td>
</tr>
<tr>
<td>Words per Sentence</td>
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<td>Fewer</td>
<td>More</td>
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</tbody>
</table>

#### Number of

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<th>Fewer</th>
<th>More</th>
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<tr>
<td>Words</td>
<td>60,553</td>
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</tr>
<tr>
<td>Sentences</td>
<td>3,931</td>
<td>Fewer</td>
<td>More</td>
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</tbody>
</table>

#### Fun stats

<table>
<thead>
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<th>Words per Dollar</th>
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</thead>
<tbody>
<tr>
<td>Words per Ounce</td>
<td>4,980</td>
</tr>
</tbody>
</table>
Web2.0

Definition

Architectural

Business

Advertising

Google AdSense

Unobtrusive

Directed

The "Long Tail"

Amazon, eBay

Low volume

Niche markets

Social
“The Long Tail”

- Although it generally relates more to opportunities for commercial exploitation, “The Long Tail” needs a brief discussion here, if only because it always surfaces in discussions of Web 2.0.

- Also known as: Pareto’s Principle, 80/20 rule, the vital few v. the trivial many
“The Long Tail”

The traditional business model focuses attention on volume and market size. The bigger the potential sales volume, the larger the customer base, the more attention the subject will receive from business. Think bestsellers.

The “Long Tail” refers to that other portion of the market, involving small volumes and niche markets.
The phrase *The Long Tail* was first coined by Chris Anderson. Products that are in low demand or have low sales volume can collectively make up a market share that exceeds the relatively few high demand/high volume products. The Web provides a distribution channel that is large enough to allow exploitation of the Long Tail.
“The Long Tail”

“We sold more books today that didn't sell at all yesterday than we sold today of all the books that did sell yesterday.”

– Amazon employee
Long Tail implications for culture

• Where the cost of inventory storage and distribution is high, only the most popular products are sold. But where the Long Tail works, minority tastes are catered to, and individuals are offered greater choice.

• E.g. TV stations have limited time slots, so the opportunity cost of each time slot is high; stations therefore choose programs that have the broadest appeal. But as the number of TV stations grows or TV programming is distributed through other digital channels, the choice of TV programs grows and the cultural diversity rises.
“The Long Tail”

• Of course, the Long Tail should be a familiar idea to librarians, as another expression of Ranganathan’s “every reader his book” and “every book its reader”.
Web2.0

Architectural
Business

Social
Definition
Participation
“Some Rights Reserved”
Authority vs. Trust
Social networks

• Web 2.0 is social, collaborative and interactive.
• The ability of “readers” to respond to what they read is a key feature of all Web 2.0 services, from “Comment on this” options, to reader reviews on Amazon to user contributed articles on Wikipedia.
• And this invitation to audience participation adds value to content, by adding information and diversity of opinion.
Participation

- Authoring
  - Blogs → example
- Collaborating
  - Wikis → Wikipedia
- Sharing
  - Flickr → PictureAustralia
- Organising
  - Indirectly through use → "readers who bought x also bought y"
- Recommending
  - "Comment on this"
  - Customer reviews
  - Tagging
    - Tag Cloud → Flickr
    - Folksonomy → "Collective intelligence"
- Bookmarking
  - del.icio.us
  - CiteULike
- Connecting
  - Chat, IM
  - MySpace
The “architecture of participation”

• The phrase “architecture of participation” was coined by Tim O’Reilly to describe systems that are designed for user contribution, such as open source software development, and the Wikipedia encyclopedia project.

• The previous section described the benefits of end-user involvement in the development process. This notion builds on that, but also extends it outside the software arena.
The “architecture of participation”

- In software development, open source means that you have potentially hundreds or thousands of developers working on your system, all looking for bugs and fixing them, or finding interesting new ways to extend functionality. And even better, they are doing this not because they get paid (they don’t) but because they are interested, which is the best of all motives.
The “architecture of participation”

• A similar paradigm can be exploited to develop information systems, the pre-eminent and obvious example being Wikipedia. Rather than employ people to create your encyclopedia entries, why not just invite the general public in to do it for you?
The “architecture of participation”

• This does require a radical shift in our approach to authority and degree of trust (and more about that later), but it is inescapable that at least on some level this process works. Wikipedia now has well over a million separate articles, all donated through this “architecture of participation”, often by experts in relevant fields.
Participation v. publication

- Blogs mean that the user can have their say immediately.
- Blogs provide a platform for everybody (not always a good thing!)
- Blogs allow expert opinion to be promulgated without the long delays and tedious rituals of traditional publication methods.
- The reward comes from recognition.
Recommendation and Collaborative filtering

• Participation may also occur in less obvious, and “involuntary” ways.

• A well-known example is the Amazon “readers who bought x also bought y” paradigm, whereby the usage patterns of users is leveraged through software to provide recommendations to the current user – recommendations which are provided by other users simply by their actions.
Recommendation and Collaborative filtering

• Compare this with the Library Catalogue related works linking, where relationships are defined only narrowly through authorship, or through subject headings assigned by librarians, rather than by other users.

• What if we could create “related works” links defined by lending patterns? How would this affect “reading lists” for courses?
Taxonomy vs. Tagging

• Recommendation can also be done actively by users, by inviting and encouraging the user to tag items with keywords or category labels that they see as appropriate and meaningful.

• The user participates in the creation of metadata.
All time most popular tags

africa amsterdam animal animals april architecture art australia baby barcelona beach berlin birthday black blackandwhite blue boston building bw california cameraphone camping canada canon car cat cats chicago china christmas church city clouds color concert day dc dog dogs england europe family festival film florida flower flowers food france friends fun garden geotagged germany girl graffiti green halloween hawaii hiking holiday home honeymoon hongkong house india ireland island italy japan july kids lake landscape light london losangeles macro march may me mexico moblog mountain mountains museum music nature new newyork newyorkcity newzealand night nikon nyc ocean paris park party people photo portrait red river roadtrip rock rome san sanfrancisco school scotland sea seattle show sky snow spain spring street summer sun sunset sydney taiwan texas thailand tokyo toronto travel tree trees trip uk urban usa vacation vancouver washington water wedding white winter yellow york zoo
Tao (The Way) edit/delete
Quirky modern interpretation of the Taoist classic
to tao taoism ebooks ... saved by 16 other people ... on aug 4

Maze Maker edit/delete
Nice online tool for generating mazes. Fast.
to maze fun ... Saved by 11 other people ... on aug 2

centricle : css filters (css hacks) edit/delete
to css hacks webdesign browsers ... saved by 1563 other people ... on july 25

Caveat Lector » DSpace item title hack edit/delete
How to make DSpace use the item title as the page title
to DSpace repository jsp hacks ... saved by 1 other person ... on july 22

Inside Higher Ed :: New Model for Scholarly Publishing edit/delete
to publishing ebook ... saved by 6 other people ... on july 16

Depth and Breadth of Google Scholar: An Empirical Study edit/delete
This study compares the contents of 47 different databases with that of Google Scholar. Included in this investigation are tests for Google Scholar publication date and publication language bias, as well as a study of upload frequency. Tests show Google S
to Google Scholar ... saved by 760 other people ... on june 27

data visualization & visual culture - information aesthetics edit/delete
Taxonomy vs. Tagging

• While on an individual level this may not always work, the expectation is that over a large enough population, the tagging will become statistically useful, reflecting the conceptual understanding of the users.
Taxonomy vs. Tagging

• This process has been dubbed “folksonomy”, to distinguish it from, and oppose it to the idea of an imposed taxonomy provided by experts.
“Some Rights Reserved”

• Underpinning the architecture of participation is a radical shift in notions of ownership and reward.
“Some Rights Reserved”

• For example:
  • people write quite extensively through blogs, which are entirely free, with no expectation of royalty payment. Their reward comes from recognition, which is a much more powerful motivator than money.
  • Other people post their photos online at Flickr, or post reviews of books they have read at Amazon, and so forth.
“Some Rights Reserved”

- In order that rights not be completely thrown away, while still allowing easy re-use of the author’s material, a new form of licensing has arisen, using the Creative Commons licenses, in which a user may choose a custom made license which reserves some rights (usually to commercial exploitation) while specifying the conditions under which their work can be used (usually freely for non commercial use, with attribution.)
 Attribution-NonCommercial-ShareAlike 2.1 Australia

You are free:

- to copy, distribute, display, and perform the work
- to make derivative works

Under the following conditions:

BY: Attribution. You must attribute the work in the manner specified by the author or licensor.

Noncommercial. You may not use this work for commercial purposes.

Share Alike. If you alter, transform, or build upon this work, you may distribute the resulting work only under a license identical to this one.

- For any reuse or distribution, you must make clear to others the license terms of this work.
- Any of these conditions can be waived if you get permission from the copyright holder.
“Some Rights Reserved”

• Thus while the traditional Copyright statement tends to stymie any and all reuse, the Creative Commons license is designed to allow reuse and remixing of information, under reasonably controlled circumstances, supporting a culture of experimentation, “hackability” and “remixability.”
For most people, this is not a problem: When the likelihood that you’ll get paid for your content is low, most of us will settle for recognition every time. (Which is of course why the ability to post comments, and to cross-link, is key to the success of blogging.)
Web2.0

Social

Participation

“Some Rights Reserved”

Authority vs. Trust

Blogs

Authority and reputation come from citation

Wikipedia

"Radical Trust"

Google PageRank
Authority v. Trust

• The architecture of participation requires a rethink of our notions of trust and authority.

• There is a trade-off between authority and participation: when anyone can “publish”, how do we tell the good from the bad?
Authority vs. Trust

• Web 2.0 has its own unique methods of establishing authority, or reputation, for example through cross-linking and “track-back” of blog entries.

• Well-respected authors tend to be quoted more often and receive more links from others.

• The Web establishes a form of authority which is, in its way, stronger than traditional “peer” review.
Authority vs. Trust

• Accepting that all this will work – that the architecture of participation, folksonomy and so forth will lead to valuable outcomes, requires a rethink of our notions of trust of the users.

• Quoting Darlene Fichter ...
Radical Trust

• “Radical trust is about trusting the community. We know that abuse can happen, but we trust (radically) that the community and participation will work. In the real world, we know that vandalism happens but we still put art and sculpture up in our parks. As a online community we come up with safeguards or mechanisms that help keep open contribution and participation working.”

http://library.usask.ca/~fichter/blog_on_the_side/2006/04/web-2.html
Web 2.0 generally refers to a second generation of services available on the World Wide Web that let people collaborate, and share information online. ...

Web 2.0

Architectural

Definition

Social

Participation

Business

"Some Rights Reserved"

*Radical Trust*

Wikipedia

Google PageRank

Authority

Authority vs. Trust
So what is Library 2.0?
Library 2.0 Meme Map

1. User-centricity
2. Technology-savvy environment
3. Reaching of the patrons long tail
4. Content for more than one device
5. Component-based software, not monolithic ILS
6. Constant change
7. Use of Web 2.0 apps and services
8. Open standards

Library that LETS
- The library invites participation
- OPAC - Federated search
  - RSS for cataloging records & search results
  - Records tagging
  - User reviews

Library is a framework for integrating change into all levels of library operations

The library is human
- The library is everywhere
- Patron 2.0 = from content consumer to content creator

The library uses flexible, best-of-breed systems

Social computing apps to meet users' need when, where and how they need it

Integration with (e)learning environment

http://www.flickr.com/photos/42538191@N00/113222147/
So what is Library 2.0?

• The world is undecided about what it is:
  e.g.
  - [Defining Library 2.0: Is it More than Technology?](#)

• The more common view seems to be that it is more than technology, and reflects changing attitudes to library service delivery.
What is Library 2.0?

- **Keywords:**
  - Participation; integration; flexibility; fun

- **Changes to information access & delivery:**
  - Comments; tagging; RSS feeds

- **Physical space:**
  - Group study places; mobile phones; ...
The Web as Platform

• The web-accessible OPAC is still quite new – less than a decade – and there is still room for improvement.

• Catalogues are usually part of the “dark web” – inaccessible to search engines. Meaning that the user is confined to using the Catalogue for information discovery.

• Ideally, we need more flexible information delivery. RSS feeds are one possibility, but we still need smarter and more open catalogue systems.
The Lightweight Application model

• Library 2.0 favours Open Source software. This allows the Library to participate directly in the development process, and allows for faster development.

• It also permits continuous improvement -- the Perpetual Beta:
  – Constant change instead of lengthy upgrade cycles;
  – Rapid deployment of enhancements;
  – Incremental improvements
User participation

• Library users should be able to craft and modify library provided services:
  – Tagging and comments;
  – Wikis? Blogs?

• We will need to trust our users more than at present.
Library 2.0

• In general terms, we need to be willing to harvest and integrate ideas and products from other fields into library service models
• This will demand greater flexibility.
• We must continue to examine how we do things and be willing to replace them with newer and better services.
The Future of Library Systems
The Integrated Library Management System

• Existing ILMS systems are monolithic – single package providing “all” functions needed to support core library activities.
Typical Multi-Tier Library System Architecture

**Client or Desktop layer**
- Acquisitions
- Cataloguing
- Circulation

**Applications (server) layer**
- Acquisitions
- Cataloguing
- Circulation
- OPAC

**Database**

**Operating System**
The Integrated Library Management System

Trade-off:

• Dependence on Vendor
• Slow delivery of enhancements tied to release schedules
• Difficult to add functionality or cooperate with other systems
The Dis-Integrated Library Management System

- Design based on services model
- Use Open Source components.
- Pick and choose components to suit our needs.
- Use existing services: don’t duplicate data
Circulation function

- Who
  - Identity
- Where
  - Holdings
- How
  - Authorization
- What
  - Bibliographic
The Dis-Integrated Library Management System

- There is no reason why these four services, who what where and how, need come from the same system:
  - Identity could come from Peoplesoft
  - Authorization from LDAP.
- One could build a custom-made Library “system” using existing services from a variety of sources.
Thanks!
References

• Librarycrunch (blog) http://www.librarycrunch.com/2005/10/working_towards_a_definition_o.html