Web 2.0 Community Building Strategies: The World of Science 2.0

John Dupuis
Steacie Science & Engineering Library
York University

Ontario Library Association Superconference
January 29, 2009
ARE YOU COMING TO BED?

I CAN'T. THIS IS IMPORTANT.

WHAT?

SOMEONE IS WRONG ON THE INTERNET.

http://xkcd.com/386/
It's about building, facilitating and engaging in
Communities
For our patrons and ourselves.
It's about learning from others which strategies have worked
And which haven't.
Nothing is sadder than an empty social network.
Some thoughts
The internet offers us the first major opportunity to improve [the] collective long-term memory [of science], and to create a collective short-term working memory, a conversational commons for the rapid collaborative development of ideas.

-Michael Nielsen
The process of scientific discovery - how we do science - will change more over the next 20 years than in the past 300 years.

-Michael Nielsen
This change will not be achieved without great effort. From the outside, scientists currently appear puzzlingly slow to adopt many online tools.

-Michael Nielsen
What is missing to make the vision a reality: integration between data and publication, integration of authoring and publication, traditional publications being associated with podcasts and video, professional networking akin to social networking?

-Cameron Neylon
(on FriendFeed)
What kind of website do you wish there was that would help you with your work? What sorts of tools and features would it have? What parts of your work/job would be greatly helped by a well designed website?

-Corie Lok
(on Nature Network)
Writing papers in a fast and easy way is what scientists want, and if that happens to come with tagging and showing their collection of papers to the whole world, they’ll do that too. Once that happens, the concept of sharing will become more mainstream, and opening lab notebooks and data sharing can follow.

-Eva Amsen
(on Nature Network)
Any contradictions and challenges apparent from the preceding quotes?
Definitions -- what it's all about

- Web 2.0
- Community
- Science 2.0
Some other helpful definitions

- eScience
- Open Access (green/gold/libre/gratis)
- Open Science
- Open Source
- Computational Science
- Cyberinfrastructure
- Open Peer Review
- Data Curation
- Cloud Computing
- Any others?
FIELDS ARRANGED BY PURITY

MORE PURE

SOCIOCY IS JUST APPLIED PSYCHOLOGY

PSYCHOLOGY IS JUST APPLIED BIOLOGY.

BIOLOGY IS JUST APPLIED CHEMISTRY

WHICH IS JUST APPLIED PHYSICS. IT'S NICE TO BE ON TOP.

OH, HEY, I DIDN'T SEE YOU GUYS ALL THE WAY OVER THERE.

SOCIOLGISTS  PSYCHOLOGISTS  BIOLOGISTS  CHEMISTS  PHYSICISTS  MATHEMATICIANS

http://xkcd.com/435/
A very selective tour of Science 2.0

- **Blogging**
  - ScienceBlogs
  - Scientific Blogging
  - Nature Network
  - Stanford Blog Directory
  - Discover Blogs

- **Social Bookmarking & Citation Management**
  - Connotea
  - 2collab
  - Delicious
  - CiteULike
  - Mendeley
  - Zotero
- **Social Networks**
  - [Nature Network](https://nature.com)
  - [FriendFeed](https://friendfeed.com)
  - [FaceBook](https://www.facebook.com)

- **Repositories**
  - [arxiv](https://arxiv.org)
  - [Nature Precedings](https://www.nature.com)

- **Open Notebook Science**
  - [Useful Chemistry](https://www.usefulchemistry.com)
  - [Cameron Neylon](https://www.neylon.org)

- **Open Access**
  - [PLoS](https://www.plos.org)
  - [BioMedCentral](https://www.biomedcentral.com)
● Outreach
  ○ Inside Duke Medicine
  ○ MST Visions
  ○ Planet York
● Video
  ○ SciVee
  ○ Journal of Visualized Experiments
● Open Peer Review
  ○ PLoS ONE
  ○ Nature experiment
● Conferences
  ■ SciFoo
  ■ ScienceOnline
• Wikis
  o WikiProteins
  o Deferential Geometry

• Virtual Worlds
  o Second Nature
  o International Spaceflight Museum

• Collaboration Markets
  o Innocentive

• Licensing
  o Science Commons

• Microblogging
  o Friendfeed (YorkU)
  o Twitter (Yale)
Case Study: FriendFeed

- Lifestream aggregator
  - blog posts
  - Twitter & microblogging
  - Del.icio.us & other book marks
  - Amazon, YouTube and other favourites
- Most amazing as a comment & conversation aggregator and instigator
Laura Harris

"Yesterday, I wanted to search MeLCat, a consortial catalog. I knew there was a link on the "no results" page of OUR catalog, so I purposely typed a random string of characters in as a search query. Got the link to MeLCat, which then searched for that random string. It actually brought something up."

1 hour ago - Comment - Like - Hide - More

Sir Shuping liked this

(For reference, the string was something like hjk;) I e-mailed the library and suggested that perhaps they didn't mean that hjkkkkkkkkk was an alternate title for the Muppet Sing-Along DVD. - Laura Harris

4 more comments

DJF, you are in a maze of twisty little databases, all alike. - Phoney Steve

Steve: the best part is that one actually finds things if that string is used in the right place. - DJF via twirl

Bora Zivkovic - A Blog Around The Clock

On a crusade to save us from bad statistical errors

44 minutes ago - scienceblogs.com - Comment - Like - Hide - More

Ladybug Heather liked this

Vince DeGeorge (Hutch Carpenter liked this)

"Twitter is failing me BIG TIME today. Trying to set up something for work for weather alerts and continue to get the fail whale. FAIL. FAIL. FAIL."

10 minutes ago - Comment - Like - Hide - More

Hutch Carpenter and AJ Batac liked this

Dion Hinchcliffe (Hutch Carpenter liked this) - Twitter
"Learning activities for basic research classes. What are yours? We mostly do lecture/demonstration and questions from students. That bores me."

October 27 at 11:09 am - Comment - Like - More

Stephanie_IsSoVeryHopeful, jokrausdu, Stephen Francoeur and 3 other people liked this

Meg, what about brief demo, then break students into groups, have them explore, look for something and report back out - what they liked, didn't like - each group could use a diff database/library catalog/free internet? - L0C

If subject based, I'll pull a few dozen subject encyclopedias into the room and have them find/read article on their topic, pulling out keywords/search vocab and also use the "for further research" bibliography. Ideally, a cold search before, and an informed search after, but I never get all that... (did that make sense?) - RudolfRajan

I have them do a search exercise to show them how AND works. I change the search topic all the time depending on the class and what's in the news. Example here: http://docs.google.com/Doc?id=... - Stephen Francoeur

I also give them 3 citations and ask them to identify what kind of source is being cited (and how they know that to be true). One citation is for a book, another for a scholarly journal article, a third for a magazine article. I don't teach them anything about citations prior to this exercise; they learn as they go (or as they guess, I suppose). - Stephen Francoeur

I usually do topic development with them. Ask for a volunteer from the class willing to talk about his/her research topic. Then I ask the student questions to help narrow the topic down, reveal different facets (subjects) of it, identify any words related to the topic, and list potential info producers on that topic (e.g., psychologists, legal scholars, economists, etc.) I can share the handout for that if anyone is interested. - Stephen Francoeur

I would *love* a handout, Stephen. Thanks everyone for your suggestions! I'm excited to get beyond the talking head. - Meg version M.0
"Request for assistance:

April 11 at 5:53 am - Comment - Like - More

Hutch Carpenter liked this

I'm trying to build a model of the calcium gated potassium channel MthK using the PDB files 1lnq and 2fy8. MthK has a gating domain (rck domain) and a transmembrane domain and works as a tetramer of full length proteins with a tetramer of just rck domain. So I can build the ligand bound (open conformation) from 1lnq by removing residues 19-98 from chains A, B, C, and D. The closed conformation is harder. 2fy8 has the rck domain in the closed conformation but the deposed structure is the asymmetric unit and not the biological unit. What I need to do is build the rck octamer in the closed conformation and then to put that back on top of the transmembrane domain tetramer. Swiss pdb viewer which isn't really cutting the mustard. If anyone can help us by building the models that would be brilliant. Our aim is to determine the structure of these molecules in solution (with detergent) by small angle scattering so good models to compare with data are crucial. Authorship on papers a given - can't offer any money - Cameron Neylon

How fast that needs to be done? I think I can help, but I can start in the middle of the next week. - Pawel Szczesny

Different things for different times. We're putting in the beamtime application next week (Wed) so having a model that we can use to predict scattering would be useful (but not critical) for that. Beamtime won't be until second half of the year at earliest and data analysis will be later again. So if it were possible to get something rough next week that would be brilliant but beyond that it's a moderately long term thing. - Cameron Neylon

I cannot promise it's going to be ready for Wed, but if it's only a rough model/picture at least I will try. - Pawel Szczesny

The resolution of SAS is quite low so for prediction something that's just got the shape right is fine. Details of interactions are not so important. The detail can be pinned down later when we have high quality data to compare to.
Case Study: ScienceBlogs

● Community of 70+ bloggers
● All science disciplines are represented
● Vibrant and interesting, lots of comments
● A bit cliquish, but not too much
● About more than just science, politics and culture too
The Questionable Authority
Archives • About • RSS

No, Children, "They're Doing It, Too," Is Not An Excuse. I might have mentioned this before, but it's worth mentioning again: if you want to know what got me actively working on a political campaign last year, it was the cumulative "final straw" effect of some Congressional Republicans who...

Terra Sigillata
Archives • About • RSS

Lesson 1: Homeopathy is NOT herbal medicine (repost) This article yesterday in the Wall Street Journal has led me to revisit and repost an old essay I had at the old place on 6 January 2006. The article addresses Oscillococcinum, an extract of the liver and heart of...

The Intersection
Archives • About • RSS

On The Road By the time this post publishes, I'll be on the open road somewhere between the Atlantic and Pacific. I'm leaving NC a couple months to circle the states for meetings, talks, and some fun along the way. Stopping soon at...

Pure Pedantry
Archives • About • RSS

Dennis Overbye on Science and Democracy Dennis Overbye at the NYTimes somewhat unintentionally answers the "what is science's rightful place?" question in his column. He emphasizes the similarity and symbiosis between science and...
Case Study: Nature Network

- Facebook for scientists
- Encompasses several modules
  - blogs
  - forums
  - groups
  - job sites
  - hubs: London, Boston, New York
Case Study: Useful Chemistry

- Jean-Claude Bradley's Open Lab Notebook
- Uses a wiki as a platform, fully indexed and searchable by Google
- Details of all his lab's experiments
- Another well known advocate is Cameron Neylon
List of all experiments

Exp213 Solubility of 4-chlorobenzaldehyde in chloroform and methanol by UV spectroscopy - Khalid
Exp212 Solubility measurements of p-nitrobenzaldehyde in different solvents: Tim
Exp211 Solubility estimation by UV-VIS Khalid
Exp210 Solubility estimation in methanol and ethanol Khalid
Exp209 Determination of the time parameter for chloroform containing solutions in speedvac. Khalid/Tim
Exp208 Solubility measurements of 9 aldehydes in 6 different solvents. Khalid/Tim
Exp207 Solubility measurements of boc-gly, vanillin and other compounds in methanol, ethanol and THF JCB
Exp206 Purification of the ugi product - Khalid
Exp205 Solubilities of 10 aldehydes in methanol - Tim and Khalid
Exp204 Determination of solubility of Ugi adduct (99C) in Methanol, Ethanol, Acetonitrile, Tetrahydrofuran, Acetone, Hexane, Chloroform, and Distilled Water - Cedric and Aneta
Exp203 Optimization of a Ugi reaction involving Benzaldehyde, Furfurylamine, Boc-Glycine, and tert-butyl isocyanide - Khalid
Exp202 Optimization of a Ugi reaction involving Benzaldehyde, Furfurylamine, Boc-Glycine and tert-butyl isocyanide - Khalid
Exp201 Optimization of a Ugi reaction involving Benzaldehyde, Furfurylamine, Boc-Glycine and tert-butyl isocyanide - Khalid
Exp200 Optimization of a Ugi reaction involving Benzaldehyde, Furfurylamine, Boc-Glycine and tert-butyl isocyanide (verified by TomO) - Khalid
Exp199 Optimization of a Ugi reaction involving Benzaldehyde, Furfurylamine, Boc-Glycine and tert-butyl isocyanide (verified by TomO) - Khalid
Exp198 Optimization of a Ugi reaction involving Benzaldehyde, Furfurylamine, Boc-Glycine and tert-butyl isocyanide - Khalid
Exp197 Optimization of a Ugi reaction involving Benzaldehyde, Furfurylamine, Boc-Glycine and tert-butyl isocyanide - Khalid
Exp196 Optimization of a Ugi reaction involving Benzaldehyde, Furfurylamine, Boc-Glycine and tert-butyl isocyanide - Khalid
Case Study: Postgenomic & Nature Blogs

- Nature's blog & news aggregator sites
- Top stories float to the top
- Also Scintilla
Welcome to Postgenomic!
Postgenomic collects posts from hundreds of science blogs and then does useful and interesting things with that data.

For Readers
Keep up to date with hot papers. Find new science blogs. Track stories as they break.

For Bloggers
Reach a bigger audience. Enable trackbacks, most popular post widgets and more. Post reviews, research and conference reports.

For Publishers
See which books and papers bloggers are talking about. Find experts.

Hot stories

First Human Embryonic Stem Cell Study Approved
Slashdot: Science
dogmatixpsych writes "The FDA recently approved a privately funded study where human embryonic stem cells will be transplanted into subjects with complete spinal cord injuries. All trials will be paid for and conducted by researchers working for the  [San Diego, CA-based] [LifeCell Corporation](http://www.lifecell.com/), founding a 2-year study of 12 subjects. The subjects will receive transplants of human embryonic stem cells at the [Scripps Institute of ...]"

More stories

MRSA ST398: It's All Tara's Fault...
ScienceOnline'09 - WiSE Lacks Shanties
Friday Hope Blogging
Tracking blogs from nature.com and beyond

Find great science blogs, keep up to date with the latest buzz and read the latest posts from our editorial staff on Nature.com Blogs, Nature Publishing Group's community-run blog tracking and indexing service.

BY NPG STAFF

The Sceptical Chymist
The chemistry blog from the nature.com journals.

The Great Beyond
Our up-to-the-minute digest of what is being reported elsewhere.

Climate Feedback
A forum for debate on climate change.

TOP STORIES TODAY

Geoengineering by the numbers
A very useful paper comes out today in Atmospheric Chemistry and Physics by Tim Lenton and his student Naomi Vaughan...

Gov't Study Shows Climate Change Largely Irreversible
A new scientific study led by the National Oceanic and Atmospheric Administration reaches a powerful conclusion about...

Part 3 of Welcome to MY Brain: How Do We Know When We Know? (continued)

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- Chemistry
- Clinical Practice & Research
- Earth & Environment
- Life Sciences
- Neuroscience
- Physics
- Science and Society

Blogs on nature.com

- By NPG Staff
- On Nature Network
Case Study: JoVE

- Journal of Visualized Experiments
- Video of experiments so other can see exactly what's going on
Visually Mediated Odor Tracking During Flight in Drosophila

Mark A. Frye, Brian J. Duistermars
Department of Physiological Science, University of California, Los Angeles

Here we describe how to optimize the acquired video image for an olfactory magnetic-tether (OMT) apparatus. We also describe two sample experimental protocols for studying visuo-olfactory fusion.

Embryonic Stem Cell-Derived Endothelial Cells for Treatment of Hindlimb Ischemia

Ilgan F. Huang¹, Hiroshi Iiiyama¹, Abhijit De², Sanjiv S. Gambhir², John P. Cooke¹
¹Division of Cardiovascular Medicine, Stanford University, ²Department of Radiology, Stanford University

The surgical procedure for delivery of embryonic stem cell-derived endothelial cells to the ischemic hindlimb is demonstrated, with non-invasive tracking by a novel method.
Case Study: PLoS One

- Open Access journal
- All articles that represent valid science are published, no filtering for "importance"
- Commenting is encouraged
- There's a community organizer
Can Playing the Computer Game “Tetris” Reduce the Build-Up of Flashbacks for Trauma? A Proposal from Cognitive Science

Emily A. Holmes*, Ella L. James, Thomas Coode-Bate, Catherine Deeprose
Department of Psychiatry, University of Oxford, Oxford, United Kingdom

Abstract

Background

Flashbacks are the hallmark symptom of Posttraumatic Stress Disorder (PTSD). Although we have successful treatments for full-blown PTSD, early interventions are lacking. We propose the utility of developing a ‘cognitive vaccine’ to prevent PTSD flashback development following exposure to trauma. Our theory is based on two key findings: 1) Cognitive science suggests that the brain has selective resources with limited capacity; 2) The neurobiology of memory suggests a 6-hr window to disrupt flashbacks. Thus, we propose the use of computer-based games to help users during this window.
Case Study: MST Visions

- Outreach blog for the Missouri University of Science and Technology | Rolla
- Tells great stories about what their researchers are doing
- More than just press releases
Tune in tonight for TV with a bang

By Andrew Careaga on January 28, 2009 9:31 AM | Permalink | Comments (0) | TrackBacks (0)

Must-see TV: tonight's premiere episode of The Detonators, a new Discovery Channel series featuring our resident explosives expert and one of his former students. The program begins at 7 p.m. Rolla Standard Time (otherwise known as Central Standard Time) today (Wednesday, Jan. 28) and will air every Wednesday at the same time.

So, record American Idol if you must, but don't miss this debut of Paul Worsey and Braden Lusk as they burst onto the television scene.

If you can't wait until the show's premiere, here's a little promo to whet your appetite:

Watch The Detonators blow up a car at the S&T Experimental Mine.

N is for Nowledge, F is for Fisicks

By Lance Feyh on January 23, 2009 9:26 AM | Permalink | Comments (1) | TrackBacks (0)

Dr. Tim Gay is known as the guy responsible for the largest physics classes ever taught. Those classes, which were very short, were held at Memorial Stadium in Lincoln, Neb. A former faculty member at Missouri S&T, Gay is now with the University of Nebraska, where football is Everything and where the N on the helmets stands for Nowledge.

Gay wanted to give some of those knowledgeable, rabid football fans an introduction to physics -- so he made a series of really short, very funny videos that were displayed on the jumbo-tron during Nebraska home games. In this way, he

Search

Research @ S&T

- Searching for pervasive computing's middleware middleman
- New sensors capable of measuring damage to infrastructure
- S&T receives EPA grants for solar research

TechnoFiles @ S&T

- TechnoFiles: October 2008 (Improving armor)
- TechnoFiles: September 2008
- TechnoFiles: August 2008
- TechnoFiles: May 2008 (Formula SAE Team)
- TechnoFiles: April 2008 (Improving armor)

Experience This @
Map of Online Communities and Related Points of Interest

Geographic area represents estimated size of membership.

Spring 2007

(Not a complete survey. Sizes based on best figures I could find but involved some guesswork. Do not use for navigation.)
Issues in the community

- Open vs. closed
  - data
  - lab notebooks
  - journals
- Bloggers vs. journalists
- Open Peer Review
- Impact factors / incentives / reward system
- Why is adoption of new tools so slow
What do scientists want

- Solve actual problem better than existing tools
- Simplify current f2f social & collaborative networks
- One stop shopping for recording, processing, analyzing and document preparation
- Data curation
- Integration, integration, integration
What can we give them

He's like SuperLibrarian. Everyone forgets, Willow, that knowledge is the ultimate weapon.

-Xander about Giles (Buffy the Vampire Slayer)
A very provisional list

- Twitter & IM reference
- FriendFeed rooms
- Better information filtering systems
- Build useful, targeted IRs that play well with others
- Integrating/leading the way into social networks such as FriendFeed or Nature Networks
- Hosting wiki, blog or lab notebook software
- Use blogs to help them promote their work
- Raising awareness of other 2.0 tools
The challenge

- Convincing forward thinking members of our communities that librarians are their natural allies
  - Those already engaged in Science 2.0 activities
  - Those that could be easily persuaded to engage
But there's a disconnect
Where to go from here
Tapping the Groundswell

- Listen to your community
- Respond to their feedback
- Empower them to contribute
- Connect them to each other
- Embrace their innovation
Letting the Groundswell transform you

- It's about person-to-person
- Be focused on your community
- Be patient
- Be opportunistic
- Be flexible
- Be collaborative
- Be humble
Five guidelines

1. The tool must solve a problem
2. It must outperform existing tools
3. It must be nearly 100% reliable
4. There must be at least one killer feature
5. You must prepopulate

-Cameron Neylon & Deepak Singh
Some more thoughts
The barriers to full-scale adoption are not only (or even mainly) technical, but rather social and psychological.

-Timo Hannay
The long-term trends are already unmistakable... productivity measures that look beyond journal publication records, a blurring of the boundaries between journals and databases, reinventions of the roles of publishers and editors...

-Timo Hannay
In scientific publishing, we are beginning to see books and electronic journals becoming more integrated with databases, blogs, and other digital media on the Web. **These and other changes could lead to a resurgence in the role of nonprofit professional societies and institutional libraries in the scientific enterprise as the cost of publishing falls.**

- **Duncan Hull et al.**
What is certain is the fact that we can look forward to a digital library that is more integrated, sociable, personalized, and accessible, although it may never be completely “frost-free”. **Ultimately, better libraries will be a massive benefit to science.**

-Duncan Hull et al.
The real challenge is first, creating something that's useful, fun and compelling. The second challenge is to interest people in joining and contributing. The two challenges are related, of course. The degree to which these kinds of initiatives and useful, fun and compelling is directly related to who's involved and how much they contribute.

- John Dupuis
11th-grade activities:

Usefulness to career success:

900 hours of classes
400 hours of homework
One weekend messing with Perl

http://xkcd.com/519/
How to learn more

- Engage in your patrons' online communities
  - FriendFeed, Nature Network, Twitter
- Go to some conferences
  - Meet your users & patrons
- Read a lot of blogs
  - Mostly by your target audience
- Read a lot of books & articles
  - Mostly about social media & trends
We are going to change the way scientists share information; we are going to change the way expert attention itself is allocated, developing new methods for connecting people, for organizing people, for leveraging people’s skills. They will be redirected, organized, and amplified. The result will speed up the rate at which discoveries are made, not in one small corner of science, but across all of science.

-Michael Nielsen
Contact & References

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http://friendfeed.com/johndupuis
http://twitter.com/dupuisj

This presentation: http://tinyurl.com/dupuisola2009

References
http://del.icio.us/jdupuis/science2.0
http://del.icio.us/jdupuis/escience

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