## UNDERSTANDING INFORMATION RESEARCH TO DEVELOP NEW INFORMATION TOOLS

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#### Outline

- Observations from several recent user studies
  - Social networks and user generated content
  - Experienced researchers' information research process
- What implications do you see for our virtual libraries? Have you learned something different from other studies? What other questions should be explored?
- 3. Observations on user study methodologies

#### Context

- Ontario Council of University Libraries Scholars Portal
  - □ Ejournals (14million articles, 8400 journals), ebooks, numeric data, geospatial data...
    - Aggregated search opportunities?
    - Linkage opportunities?
    - XML-encoded digital objects Potential beyond the traditional form? Which familiar mental models need to be retained as innovative features are introduced?
    - Features of ideal online research environment?
  - □ Public Services Advisory Group & Usability Matters

- Discovery layers, next generation catalogues
  - McMaster, Toronto, Ottawa Endeca
  - □ Queen's BiblioCommons
  - Tri-Universities Group (Guelph, Laurier, Waterloo)Primo
  - □ York VuFind
- Virtual environment development
  - e.g. Guelph, Queens, Western





What are the similarities and differences between different user spaces and different use cases?

### User studies, culture of assessment

- Jakob Nielson and discount usability engineering (1994-)
- Digital Library Federation: Denise Troll Covey, Usage and Usability Assessment: Library Practices and Concerns (2002)
- □ University of Rochester anthropologist! (2004)
- ARL Effective, Sustainable and Practical Assessment (2005-)

### Some interesting user studies

OCLC, College Students' Perceptions of Libraries and Information Resources, 2007

Proquest (John Law), Observing Student Researchers in their Native Habitat (presentation), 2007

Research Information Network

Researchers and discovery services: Behaviour, perceptions, needs, 2006 Researchers use of academic libraries and their services, 2007 Discovering physical objects: Meeting researchers' needs, 2008

University of Rochester (Nancy Fried Foster and Susan Gibbons)

Understanding Faculty to Improve Content Recruitment for Institutional Repositories, 2004
Studying Students: The Undergraduate Research Project at the University of Rochester, 2007

University of Minnesota Libraries
A Multi-Dimensional Framework for Academic Support, 2006

Understanding Research Behaviors, Information Resource and Service Needs of Scientists, 2007

### What might we learn?

Librarians	Undergrads
Want the power of comprehensive command-line query syntax	Try keywords then reformulate queries via back button and trying new terms (without ORing, truncation or wildcards)
Value subject headings	Find subject heading links in records confusing and avoid them
Think direct export to RefWorks is a high priority	Often reject RefWorks and manage and format citations manually
Want to help	Tend not to ask for help, especially from librarians

Observations from Steve Toub, BiblioCommons' focus groups at Queen's, March 20

### Social Networking

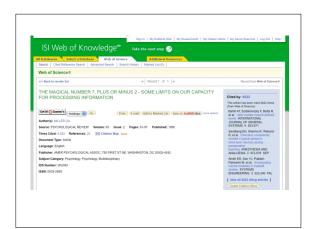
- 2007 University of Guelph student survey (2700 respondents, average age 21.6 years) followed by focus groups
- Objectives: learn about students' use of technology and expectations of online services
- Open-ended question about how online social communities could be useful for academic work (1500 responses)
- Students could imagine communicating and collaborating with group members, e.g. Google Docs; exchanging information about courses, professors, jobs; selling textbooks; brainstorming
- But mostly prefer to use online social networks (OSNs) for social purposes
- Guelph's conclusion: developing services for OSNs may be premature now
- ProQuest study (also 2007): How social networking sites factor into student research? For sthe most part the video of monst focus groups: "don't harsh my

In the flow... the learning and research flow
elegant organization
social discovery

### Social discovery

- Social: considering the judgements and insights of others
- Discovery: getting answers to questions you don't know how to ask and finding gems you don't know exist

BiblioCommons



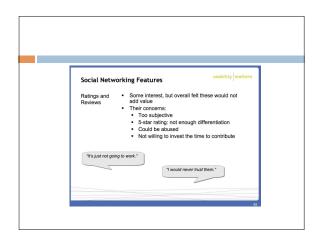




Recommender systems
e.g. bX
Curation or user-generated content
Lists
Ratings
Reviews
Tags

### UGC – as an element of a study

- 2007 Queen's University, 4 focus groups, 6-8 participants each: 1<sup>st</sup> and 2<sup>nd</sup> year undergrads, 3<sup>rd</sup> and 4<sup>th</sup> year undergrads, graduate students, faculty
- Objectives: learn more about user expectations for the library website and elicit ideas for new website features and services, including social networking features





### UGC – as the focus of a study

- □ 2008 BiblioCommons, 9 one-hour sessions
  - 8 undergraduates (1 first year, 2 second year, 3 fourth year)
  - 2 graduate students in the same session
- Objectives: learn about students' motivations to use and contribute user-generated content in an academic library context

(thanks to Steve Toub for all of this section)

### Discussion tools

- Websites they've used to make product choices (e.g. Restaurantica.com, RateMyProfessors.com)
- Their university library webpage and catalogue, and MTagger in the University of Michigan Library catalogue
- On-screen mock-ups of ways they could contribute UGC in a library context
- Paper mock-up of a course-related hub page
- List of possible motivations for contributing UGC



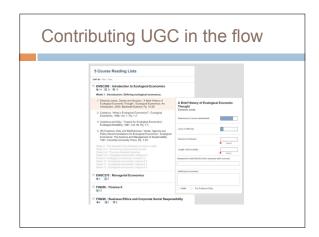
This age group of consumers exhibits a strong reliance on others' comments to aid in the selection and evaluation of items

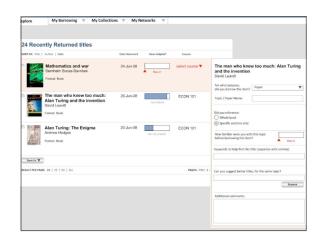
"I don't necessarily want the opinion of a professor - I'm looking for people who are as incompetent as I am."

L\_\_\_\_, 2<sup>nd</sup> year, U. Western Ontario

# Tagging? MTagger, University of Michigan Library

What is this? "I'm not entirely sure... I would like to assume... some sort of user feedback...but I don't why they'd say "tag" ... but if you were a student there you'd probably know what it was..." Have you ever heard of tagging? "No." Have you ever tagged on Facebook? "Of course. That's with photos. They have it for text – but no one uses it." \_\_\_, graduated 4th year, entering FIS





### Most important data elements

- Relevance to course
  - A lot of "Is it going to be on the test?"
  - Some nuances to explore further:
    - "How related is this reading is to other readings?" or "How related this reading is to the lecture?"
- Clarity [level of difficulty] was second most popular data element

### Mechanics of UGC data entry

- Most said they might not fill out more than 1-2 data elements.
- $\hfill\Box$  The "sliders" represented in the mockups tested well.
- Anonymity, i.e., having the ability to choose a username that isn't personally identifiable, will make contributions more likely
- Most wanted other students to view their comments.
- Even the person least likely to contribute (when we first saw the concept, her reaction was, "Why would I do that?") in the end said she would be willing to share comments with others if she only had to fill in 1-2 things for each item and if her comments were anonymous.

### Likeliest opportunities to contribute

- The course reading context seems the likeliest opportunity to contribute
  - Solicitation in this context only works if the syllabus were online and the student is looking at the syllabus online rather than a paper copy
  - When using the syllabus online, if they were looking at what to read for Week
     2, they wouldn't mind an invitation to comment on the readings for Week 1
  - They would like the ability to edit their comments later on
- Soliciting contributions from a "recently returned" also well received
  - □ Mixed reaction on email solicitations on "recently returned"
    - Need to probe further on how to make emails palatable. Several said they
      didn't want email at all. One person said that if she'd much prefer email but no'
      on each recently returned item but only if she got a single email once a month.

### Possible motivations to contribute

- Earn Campus Credits (Chances to win prizes, \$ off fines, bookstore, foodservices, "Printer Points", Charitable contributions)
- Opportunity to give feedback / Have my say (Tell the library or my professors which online articles, library materials or course readings are useful; which are not)
- Contribute / Give back to my university...the library (Help build a richer, more useful catalogue / database.)
- Get recommendations, suggestions for materials I might not have otherwise found
- Help others/everyone get to useful resources faster (More time thinking – less time finding)
- Quid pro Quo (I earn rights to ask others questions when I answer some myself)

### The #1 motivation

- Helps [others] get to useful resources faster Help us be more helpful to you
- Strong sense of
  - □ Pay it forward
    - "If I do it now, it will help others later"
    - "If others do it, it will help me when I need it"
  - Empty restaurant syndrome
    - Some fears of being the first to contribute: if they did not see evidence that others were doing the same
    - Stronger indication they'd contribute: if they saw that everyone else was doing it

### Also a high motivator: \$

It seems pretty easy to "buy" student participation:

Even the one student who had consistently said she wouldn't be likely to contribute quickly checked off all 4 "Campus Credit" concepts as motivating

### Primary barriers to contributing

- Many (but not all) are unwilling to support freeloaders
  - However, they do like being able to freeload themselves and do see the connection that someone must contribute for others to freeload
- Worried about being accused of plagiarism makes students reluctant to share with peers
  - Course-related sharing may need to be sanctioned by the professor of that course to allay these fears

### Is the glass half-empty of half-full?

Not a slam dunk
Pleasantly surprised by the fact that
everyone was willing to contribute to some
degree

Tailor to the learning and research flow

### Search behaviours

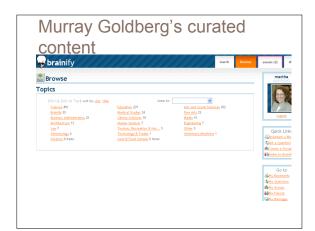
- Skeptical of the Internet as a whole for use in university assignments (echoes ProQuest study and Queen's study)
- □ Broad topics (e.g. Biology) are not usually perceived as relevant
- Focus is on the particular search terms they have in mind at the moment for the finegrained topic

### Reactions to course hub mockup

"That would be amazing!"

"That would become my new first place to go to start my searches."

L\_\_\_\_, completed 2<sup>nd</sup> year at Western







### Social thoughts? questions?

- Does all this ring true?
- What have you learned about social networks and user generated content from other studies?
- What implications do you see for virtual libraries?

### Search behaviours - experienced

- OCUL Scholars Portal User Study, May 2008, with Usability Matters
  - Primary Objective: Understand the information research processes of experienced researchers in a variety of disciplines; gather insights that may impact the vision of Scholars Portal
  - Methodology: 6 collaborative design sessions with 8-10 participants each, in 3 discipline areas: Arts & Humanities, Social Sciences, Sciences (Natural, Applied, Health, etc.)
- OCUL Scholars Portal Ejournals Search Interface User Testing, February-April 2009, with Usability Matters
- University of Toronto and McMaster University: observations in Endeca implementations

### Information Research Framework

"Discover, Gather, Create, Share"

- A Multi-Dimensional Framework for Academic Support, June 2006, University of Minnesota Libraries funded by Mellon Foundation\*, building upon John Unsworth's concept of scholarly primitives: "basic functions common to scholarly activity across disciplines, over time, and independent of theoretical orientation."\*\*
- \* http://www.lib.umn.edu/about/mellon/UMN\_Multi-dimensional\_Framework\_Final\_Report.p
- \*\*John Unsworth. "Scholarly Primitives: What Methods do Humanities Researchers Have in Common and How Might Our Tools Reflect This?" Humanities Computing, Formal Methods, Experimental Practice Symposium, Kings College, London, May 13, 2000. http://jeffersov.ulige.ur/giniz.ac/ur/junz/prik/gss\_2-Op/prinitives.html

- Framework resonated well with the participants in the information research context, however they emphasized that
  - □ the process is non-linear
  - steps rarely happen in a specific order
  - steps are often repeated with differing levels of specificity at different stages of the process
- Add 'synthesize' between 'gather' and 'create'
- □ Terms themselves are problematic
- Useful as a design tool, not visible to endusers

### Overarching observations

- Similarities across disciplines
- Interdisciplinarity
- Social aspect of research
- Room for improvement
  - Q: "What would make your information research process easier?"
  - A: "user friendly search engine; actually attending some of the different seminars on web research"

#### Discover

Talk with colleagues keep up with the field attend conferences observe read

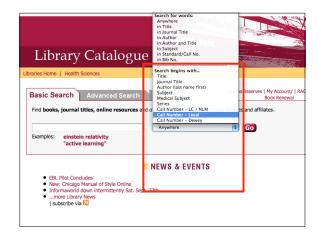
develop questions

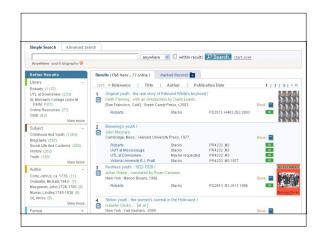
consider one's own personal knowledge and beliefs follow known sources

rediscover things you've found previously search for literature

#### Discover

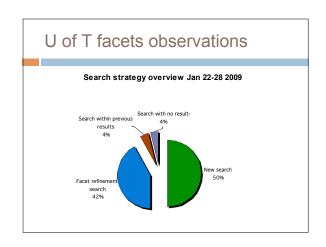
- Use common web tools but also research databases provided by libraries
- Keywords, colleagues and the citation network are all important approaches
- Want expert advice, but want proof of expertise
- Want sophisticated search tools; also noted in
  - McMaster and University of Toronto experiences
  - □ Scholars Portal Ejournal testing experience





### U of T user experience feedback

- □ 169 comments, Sept 08 Jan 09
- 2:1 in favour of the new catalogue interface
- □ 50 comments requesting features (26 ideas)
  - 6 ideas based on old search models6 grads, 3 library staff
  - 6 ideas for new features
    - 4 grads, 2 undergrads, 1 library staff
  - 14 ideas: functionality missed from old system 6 faculty, 12 grads, 12 library staff, 3 undergrads



#### Scholars Portal Ejournal usability testing participant:

Inoticed that in a few of those search options, most specifically in the version of Scholar's Portal that you showed me, an attempt to combine advanced search options and basic search options. For example, in Scholar's Portal, I had one search window, and after I put my search in I had options to refine.

For my purposes, this is unhelpful. When I am researching I am always doing one of two specific tasks (almost without exception), which are common to the majority of graduate and Phd students.

1. I don't know my exact topic and am therefore doing a literature review (seeing what is out there and what people are saying on a general subject- Sudan or Darfur, for example). In which case I am more likely to use a "Basic" search, so I can get huge swaths of information, which I may narrow down.

2. Or, I know my subject, because I have done the above at some previous time or have made a pointed proposal, in which case I want an "Advanced search." boing my advanced search I would want to define (Derfur) and (NCP or Bashir) and (JEM or SLM or SLM or SLM or Jan) awild) and (ICC or UN)... And if I wanted to refine it by time period, I would probably want to choose a range, and do so beforehand.

There is fundamentally different approach, from the general to the specific (which what I saw today was more akin to) vs. the specific to the general (if need be). In the first case... I want general, but not impertinent. In the second, specific... But with sufficient data to work with.

These starting points are very important to me... And I imagine other people working from the graduate to phd level. I used to use the "basic" and "advanced" options to capture the different approach, which I find lacking in the examples I was shown.

Also, when refiring, I repeatedly mentioned that the discipline was important, because you have to cater to the discourse. What is equally important is the type of source: newspaper or governmental report (Gery III), versus Academic literature (peer newspaper), and the source of th

### Gather and Synthesize

getting hold of materials downloading printing photocopying weeding sorting filing creating a bibliography reading annotating lightly

organizing thoughts weeding further validating the quality of sources organizing coding sources thematically annotating further reading for detail taking notes extracting quotes

### Gather and Synthesize

- Very few participants consistently use any bibliographic management tools
- Bibliographies are their main organizing method, returning to these when working on subsequent research
- Want
- More electronic resources
- Easier, successive annotation methods
- Ability to display, extract and compare sections

#### Create

Closely associated with the participants' original research and less so with research output such as scholarly papers. Also:

sweat clarify audience
outline
write findings and ideas edit, refine
consider feedback revise
discuss collaborate

#### Create

- □ A few ideas
  - Personalized online whiteboard for organizing materials, with templates, ability to export to PowerPoint, attach references, documents, etc
  - Opportunity to run papers through Turn it in in advance
  - □ Timeline tool to provide a schedule, tell you when it's time to take a break, prevent use of email

#### Share

share with supervisors, colleagues, experts, authors publish submit to online archives (Science) give presentations participate in seminars, conferences, symposia teach

#### Share

- Want submission process improvements, e.g. More standardized and more online processes
- Some interest in tools for facilitating sharing with colleagues, students, advisors
  - Sharing folders and documents
  - Sharing search strategies and results
  - Getting in touch with leading authors and researchers
  - Network of researchers to facilitate communication between learners and experts
- Help identifying potential publishing venues (collected throughout 'discover')
- Alerts regarding who has cited your article and alerts to new research in your area

### Overall

- almost no routine in their processes
- have developed few techniques to assist themselves and have very little awareness of the tools available to help them
- opportunities for improvement in all phases of the information research process, but the ones that engaged participants the most were 'discover' and 'gather'

### Don't throw the baby out with the bathwater



### What do you think?

- What implications do you see for our virtual libraries?
- □ What have you learned from other studies?
- What other questions should be explored?

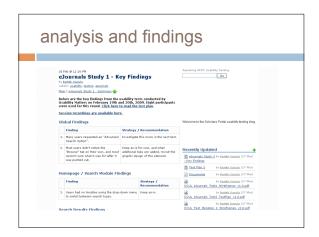
### Observations on methodologies

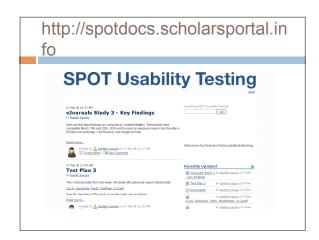
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## interviews, groups, screen capture...

- □ Technical infrastructure
- Facilitation know-how
- Observation and recording
- □ On-the-spot analysis and modifications





### More on the studies discussed today

- Terry Constantino and Martha Whitehead, "Understanding the Information research process of experienced researchers to inform development of a scholars portal" accepted for Evidence-Based Library and Information Practice, June 2009
- Sarah English and Terry Constantino, Usability Matters "User Consultation Report, Queen's University Library" March 2007
- Beth Jefferson and Steve Toub, "Exploratory Research on User-Generated Content (UGC) in Academic Library Catalogs" BiblioCommons, June 2008
- Maryann Kope, Pascal Lupien, Randy Oldham, "If You Build It, Will They Come? Reality-Based Emerging Services Planning for Millennial Students" University of Guelph, Winter 2008
- Martha Whitehead, Tom Adam, Alan Bell, Nora Gaskin, Sian Miekle,
   "Considering New Discovery Layers" OLA SuperConference 2009

### Questions?

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