Social Navigation

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Where we are?

	Search	Navigation	Recommendation
Content-based			
Semantics / Metadata			
Social			

Social Navigation in Real World

"…without knowing much, we joined the longest existing queue formed for a sushi restaurant. looking at faces of people (both young and old) filled with expectations despite the long wait in the cold weather, we were sure that the food would be worth every minute of waiting time. well, it was". (A comment on Flickr image, used in Rosta Farzan's Thesis)

Social Navigation in Real Life

What would you do…?

- Walking by the cinema you feel like watching a movie, but none of the movies seems familiar
- You missed a lecture and want to do your readings. You have a textbook and 100 assigned pages to read, but do not know what was most important in the lecture and what can be skipped
- You are hiking along a trail to a famous waterfall. You reached an unmarked road split and you have no map

Social Navigation

- Natural tendency of people to follow each other
  - Making use of “direct” and “indirect cues about the activities of others
  - Following trails
    - Footsteps in sand or snow
    - Worn-out carpet
  - Using dogears and annotations
  - Giving direction or guidance
- Navigation that is conceptually understood as driven by the actions from one or more advice provider

What do you do?

Social Navigation vs. General Navigation

Walking down a path in forest

Walking down a road in a city

Reading a sign at the airport to find the baggage claim

Talking to a person at the airport help desk to find the baggage claim

The Lost Interaction History

- What is the difference between walking in a real world and browsing the Web?
  - Footprints
  - Worn-out carpet
  - People presence
- What is the difference between buying and borrowing a book?
  - Notes in the margins
  - Highlights & underlines
  - Dog-eared pages
  - Opens more easily to more used places

Social Navigation in Information Space

Synchronous
Communication in real time

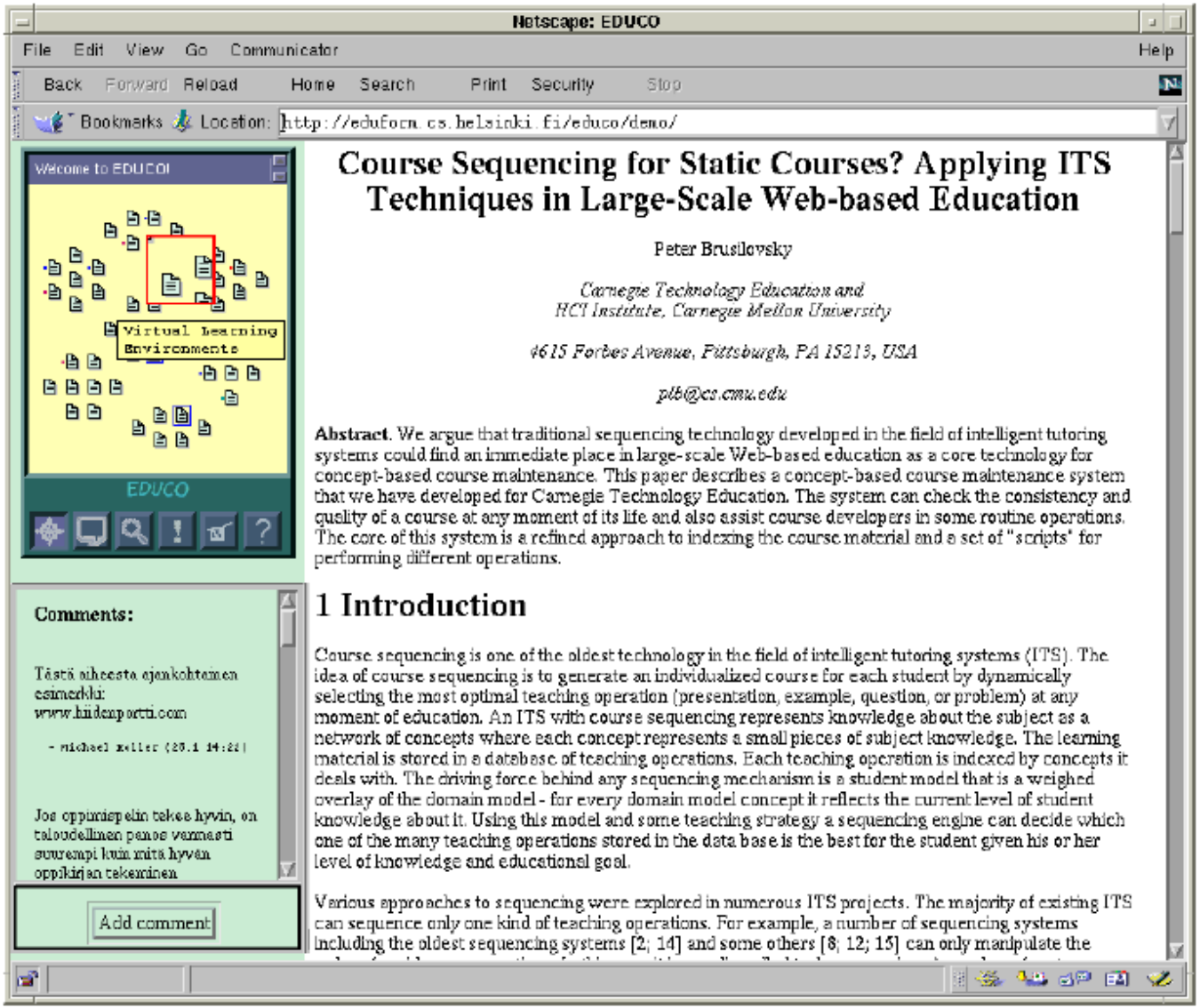
Asynchronous
Using the Interaction of past users

Direct
Direct communication between people

Indirect
Relying on user presence and traces of user behavior

	Synchronous	Asynchronous
Direct	Chats	Forums
Indirect	Presence of other people	History-enriched environments

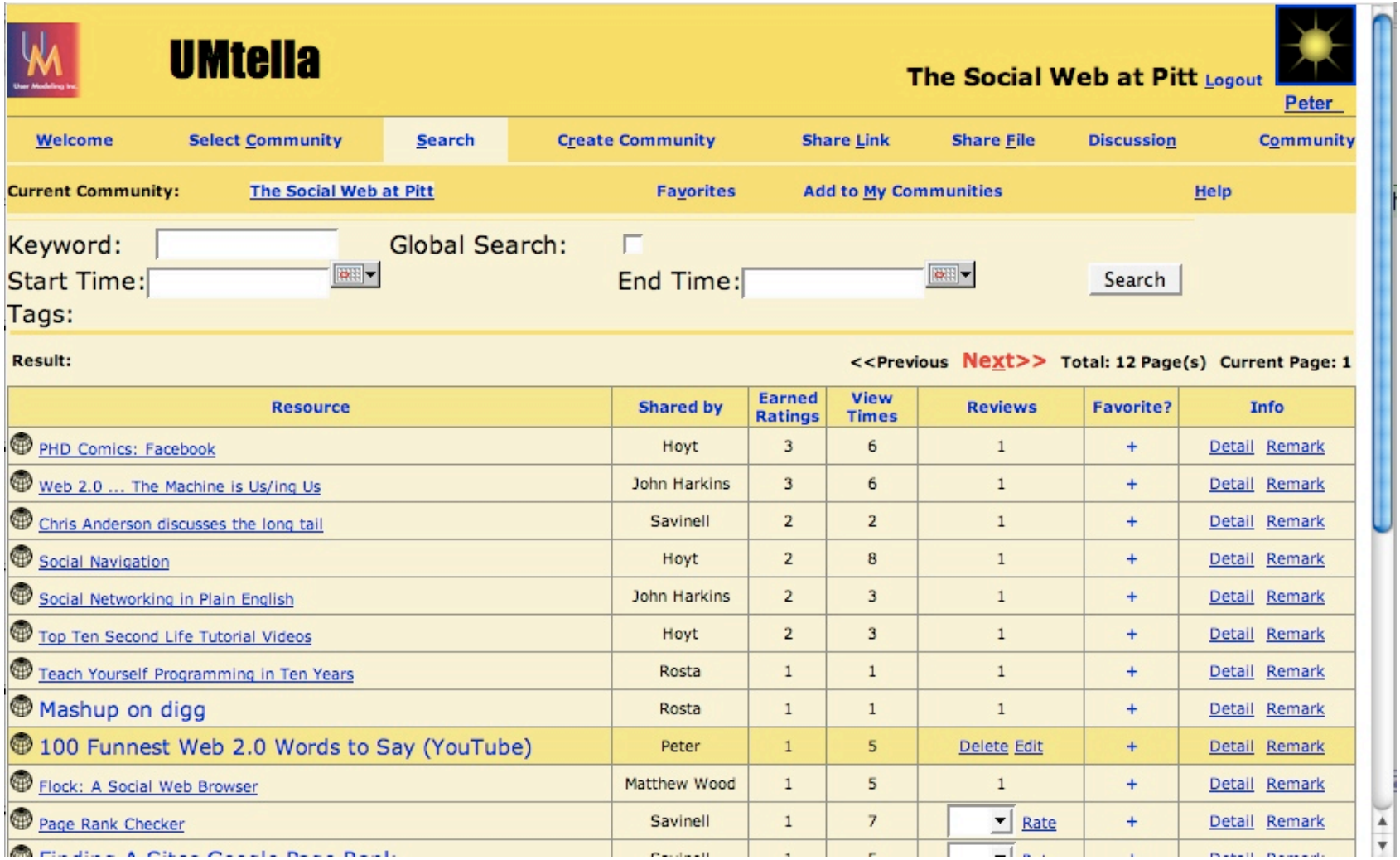
EDUCO: Synchronous, Indirect SN



Direct Asynchronous SN

- Asynchronous discussion forums
- Recommending information to friends and community
- Directly asking questions for getting information
- Sharing bookmarks with others

Umtella: Direct Asynchronous SN



CoMeT: Indirect, Asynchronous

CoMeT

Collaborative Management of Talks

Bookmark Talks, Share with Friends, and We Recommend More!

Welcome peterb Log out

ALL | Search | Advanced Search | Post New Talk

Home | Calendar | Series | Groups | My Account

« | Day | Week | Month | »

Week 4 of March: March 18 - 24, 2012

Monday, Mar 19

1 bookmark, 2 emails, 23 views
Crowd-Powered Systems Bookmark
By: **Michael Bernstein** , Computer Science and Artificial Intelligence Lab,Massachusetts Institute of Technology on: **10:00 AM - 11:00 AM**
Location: **6115 Gates and Hillman Centers**
Posted to groups: Human-Computer Interaction Social Web
Bookmarked by: chirayu

9 views
Common Sense, Uncommon Practice: A Socio-Structural View of Resistance to Interorganizational Collaboration Bookmark
By: **Stanley E. Fawcett** , Air Force Institute of Technology on: **10:30 AM - 12:00 PM**
Location: **115 Mervis Hall, Katz Graduate School of Business**
Series: Supply Chain Management Seminar Series Subscribe

3 emails, 5 views
SafeSlinger: Applied Ad-hoc Smartphone Trust Establishment Bookmark
By: **Michael Farb** , Research Programmer,CyLab on: **12:00 PM - 1:00 PM**
Location: **Distributed Education Center1201 Lobby Level Collaborative Innovation Center**
Series: CyLab Seminars Subscribe

18 views
Trade with China and Job Displacement in US Manufacturing Recommended Bookmark
By: **Gordon Hanson** , University of California, San Diego on: **12:00 PM - 1:20 PM**
Location: **Hamburg Hall 1502**

17 views
Thesis Oral: Learning Generative Models of Microtubule Distributions Bookmark
By: **Aabid Shariff** , Joint Carnegie Mellon University/,University of Pittsburgh Ph.D. Program, in Computational Biology on: **1:30 PM - 2:30 PM**
Location: **Reddy Conference Room4405 Gates and Hillman Centers**

10 views
The Rise of Type Theory: From Principia Mathematica to Constructive Type Theory, circa 1910-2010 Bookmark
By: **Robert L. Constable** , Professor,Department of Computer Science,Cornell University on: **2:00 PM - 3:00 PM**
Location: **3305 Newell-Simon Hall**
Series: Computational Modeling and Analysis for Complex Systems Seminar (CMACS) Subscribe

< **March 2012** >

S	M	T	W	T	F	S	W
26	27	28	29	1	2	3	W1
4	5	6	7	8	9	10	W2
11	12	13	14	15	16	17	W3
18	19	20	21	22	23	24	W4
25	26	27	28	29	30	31	W5

1 - 5 | 6 - 10 | 11 - 20 | 21+

Feed

RSS ATOM ICAL

SN in Information Space:The History

History-enriched environments

- Edit Wear and Read Wear (1992)
- Social navigation systems
  - Footprints, Juggler, Kalas

Collaborative filtering

- Manual push and pull
  - Tapestry, LN Recommender
- Modern automatic CF recommender systems

Social bookmarking

- Collaborative tagging systems

Social Search

Properties

Proxemic

Transparent space in that signs and structures can be easily understood

Passive

Allowing passive collection of history without interfering users' tasks

Rate/form of change

Summarizing what has happened

Degree of permeation

Separating interaction history from the object

Social

"we all benefit from the experience, preferably someone else's"

Kind of information

What

- Searching for value
- Giving guidance

Who

- Doing things with friends
- Doing things with people who are similar to me
- Establishing authority and authenticity

Why

- Doing similar things
- Discovering similar goals
- Explanation and learning

How

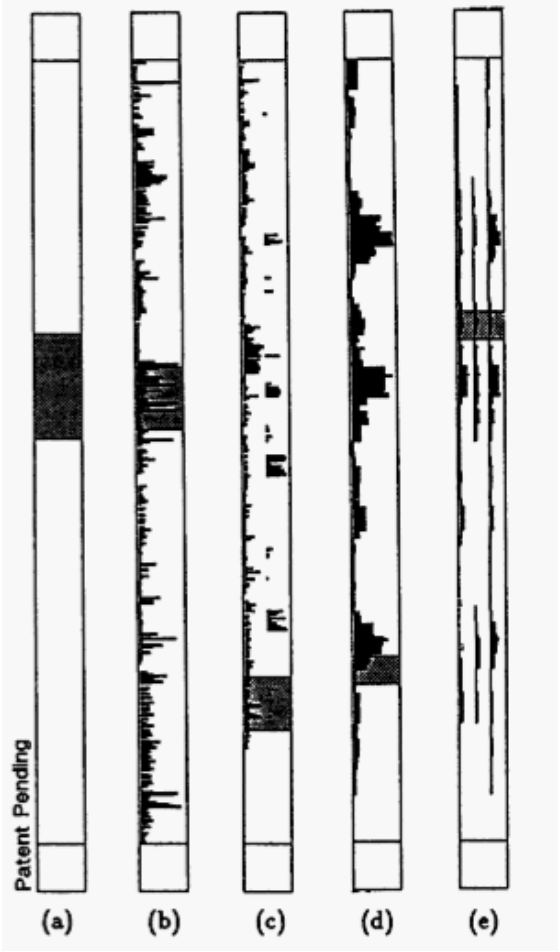
- Showing how to do things

Edit Wear and Read Wear (1992)

The pioneer idea of asynchronous indirect social navigation

Developed for collaborating writing and editing

Indicated read/edited places in a large document

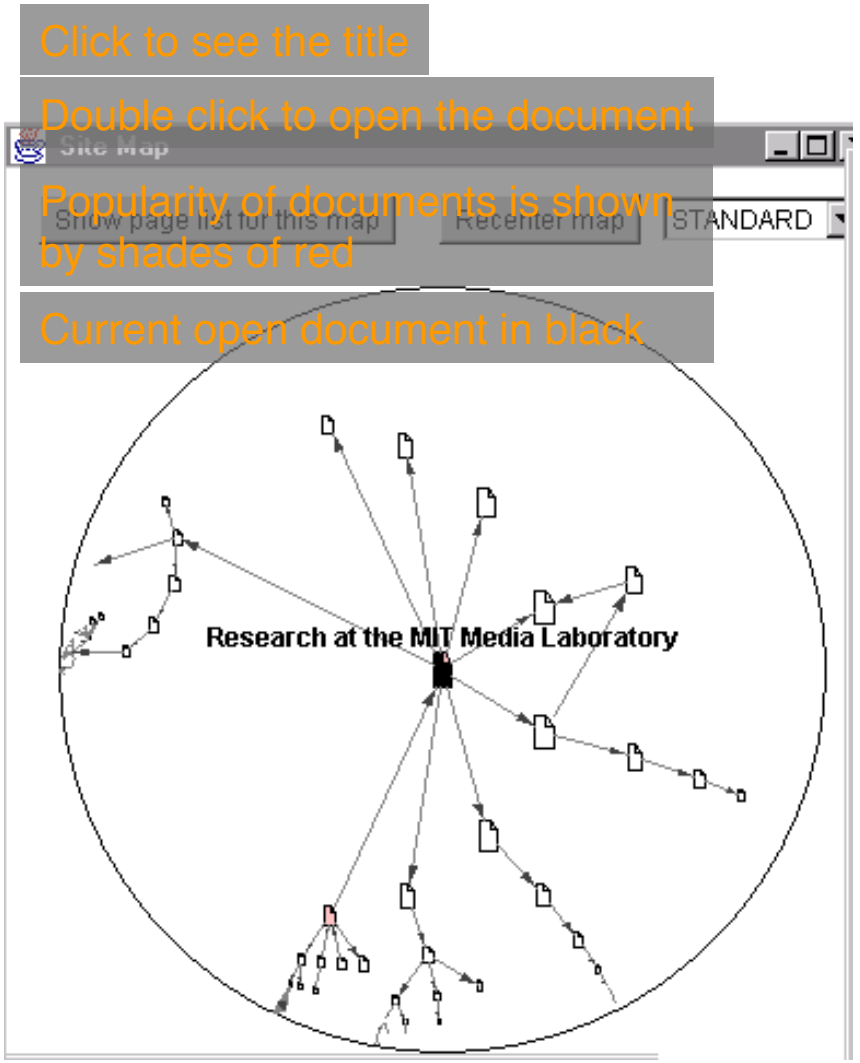


The Pioneers: *Footprints*

- Wexelblat & Maes, 1997
- Allowing users to create history-rich objects
- Providing History-rich navigation in complex information space
- Contextualizing Web pages
  - Maps
  - Path view
  - Annotations
  - Signposts

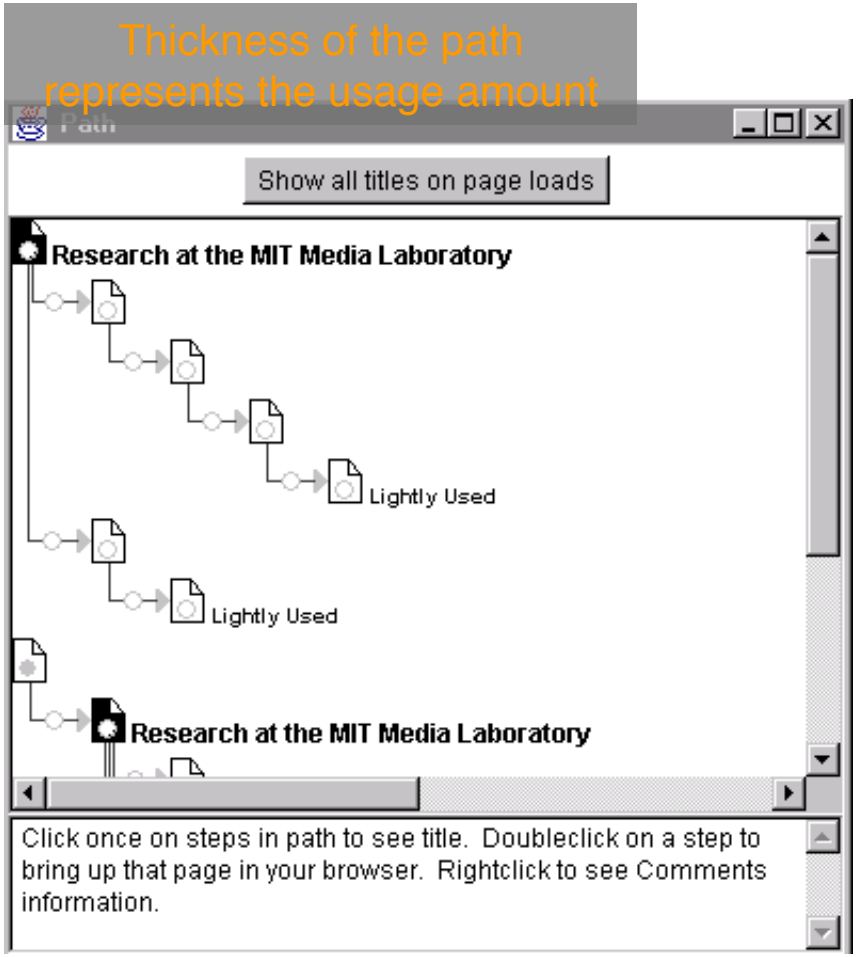
Footprints: Maps

- Showing the traffic through a website
- Nodes
  - Documents
- Links
  - Transition between them
- Tracking transition from all possible sources
  - Selecting a link
  - Typing a URL
  - Selecting a bookmark
- Externalization of users' mental model



Footprints: Path View

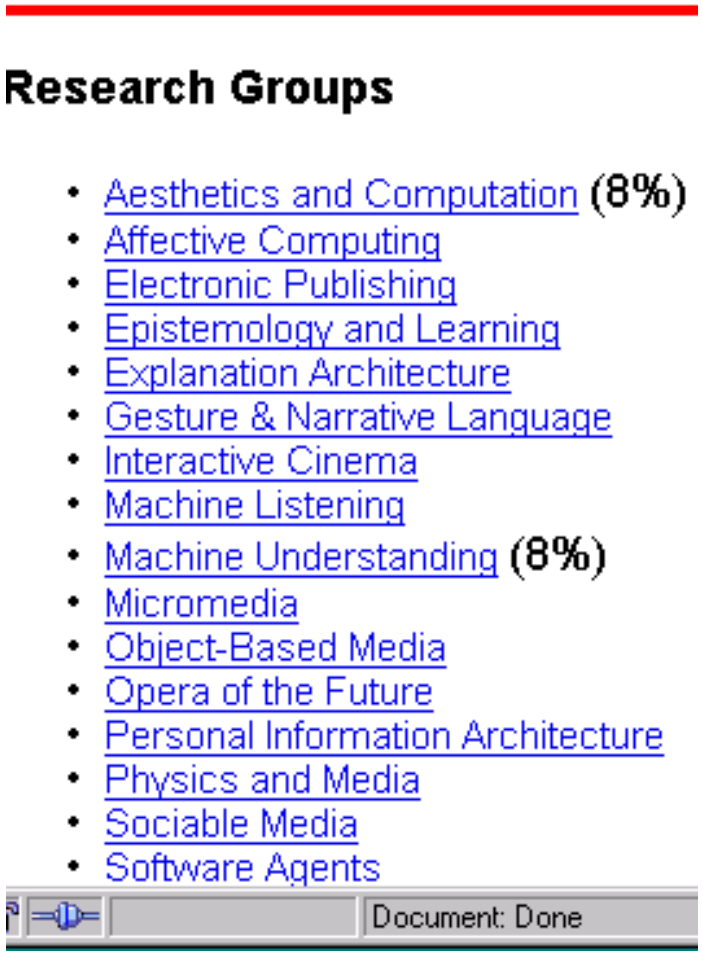
- Lower level view
- What paths have been followed by other people
  - Relevant to current open document
  - Merging path with common starting points
- Matching the framework
  - Social?
  - Passive?
  - Proxemic?
  - Unpermeated?



Footprints: Annotations

Showing what percentage of users have followed each link

Link-centric social navigation approach



Footprints: Signposts

- Allowing users to enter feedback
  - On pages
  - On paths
    - "go this way for software agents; go that way for artificial life"
- Viewing comments left by other users

How we can classify this social navigation?

The Pioneers: *Juggler*

- Dieberger, 1998
- Textual virtual environment (MOO)
- History-enriched environment
  - Showing access-counter for rooms
- Recognizing URLs in the output of a communication tool
  - Hiding it from user
  - Popping out the page
  - Integrating with social navigation
- Supporting interaction between teachers and students

The Pioneers: *Juggler*

- Pointing out pages
  - While talking to people
  - By saying them
- Looking at people and object
  - Associating URL with people, objects, and locations
- Pointing out button
  - Pointing out (sharing) the current page

Ideas for Social Navigation on WWW

Awareness of presence of other users

- Discussion of an article
- Location attracting large crowds of users

Relevant objects

- Links visited by similar users
- Items appreciated by similar users

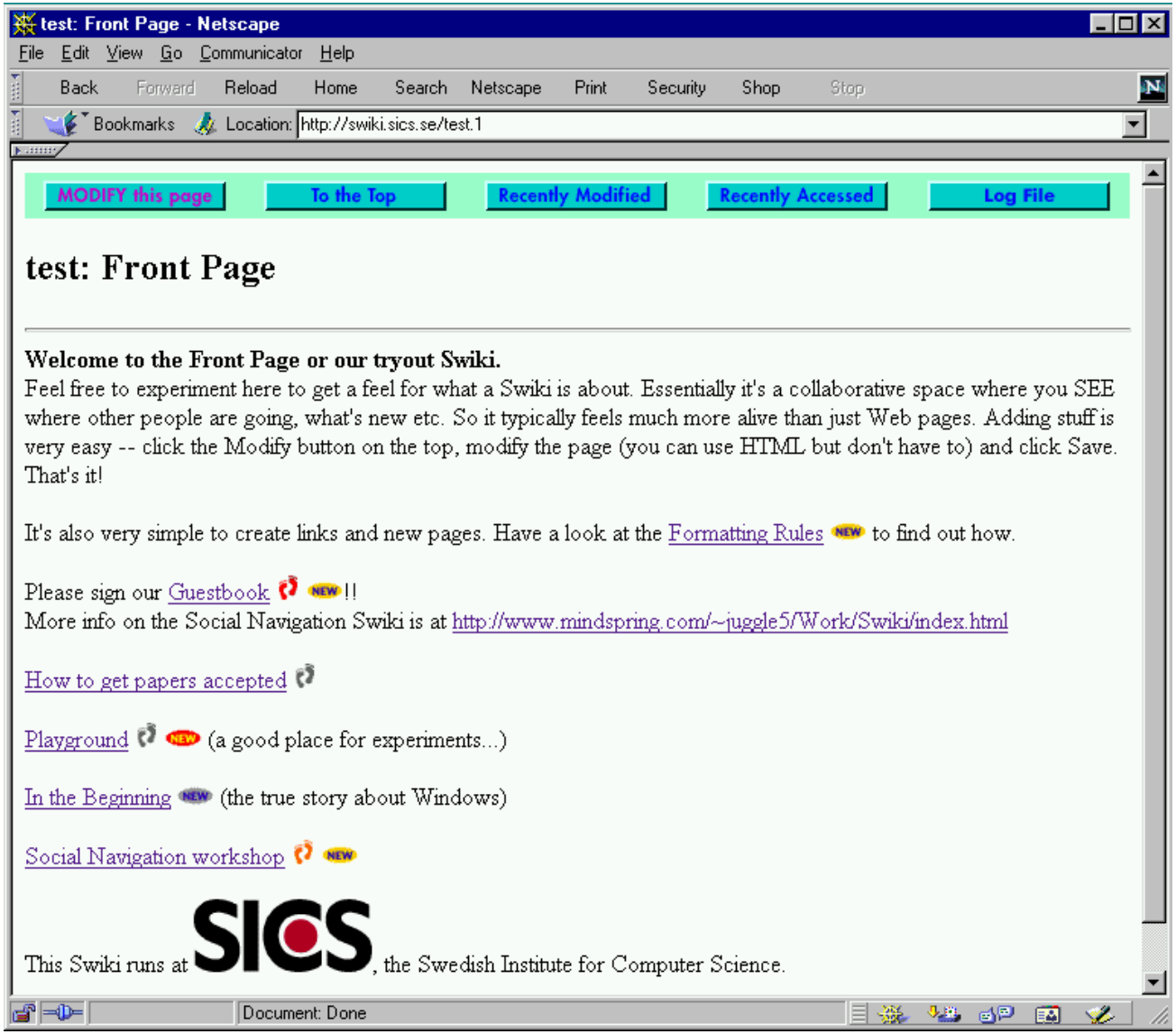
Recency

- How long ago the page was created/visited

Attitude

- What other users did/thought about an item

Example: CoWeb



Advancing SN: Beyond Click

Clicks are not reliable signs of interest!

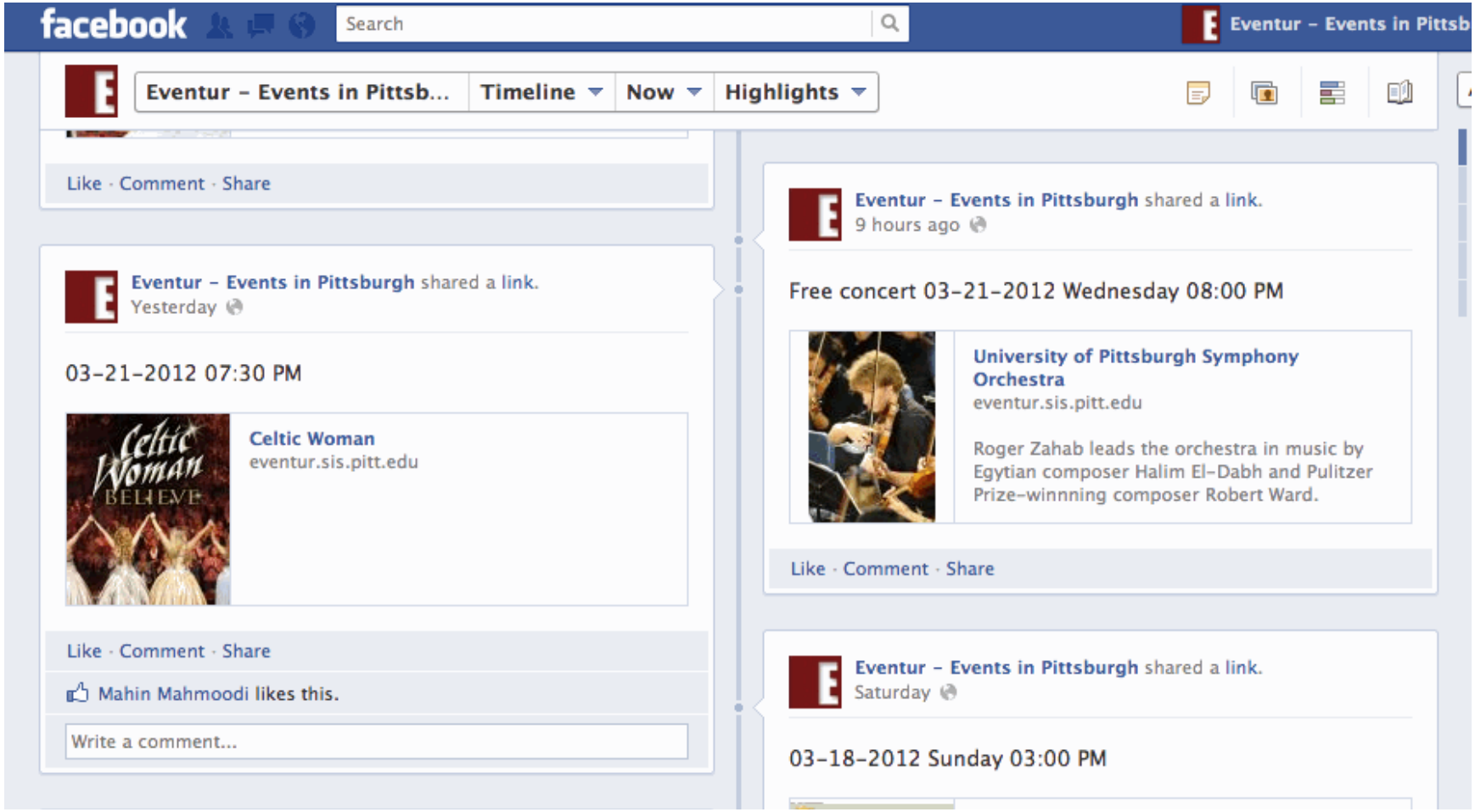
What other kinds of user activities can be tracked?

- Annotation
- Bookmarking
- Sending e-mail
- Solving a problem
- Downloading
- Purchasing
- Rating and liking

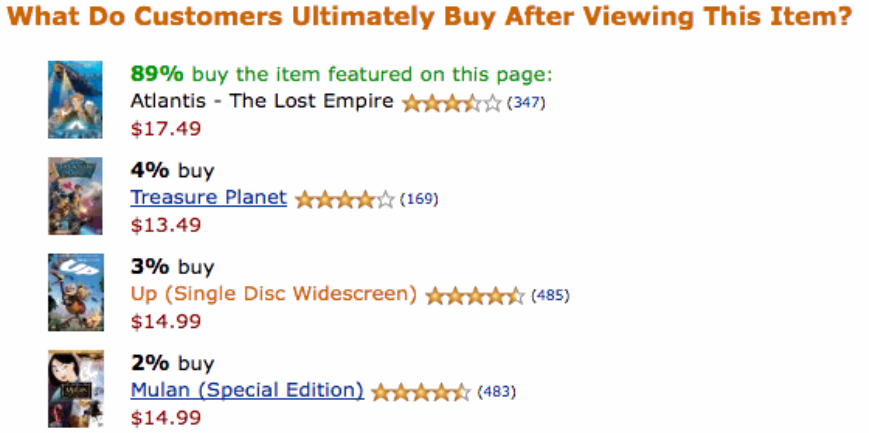
Advancing SN: One Size Fits All?

- Which users' actions are taken into account for social navigation?
  - All users
  - Coherent, like-minded group of users
- Group-level social navigation
  - KnowledgeSea II, Progressor – a class
  - CourseAgent – users with similar goals
  - CoFIND
  - Facebook – social network
  - Amazon - context

Facebook: Propagation of Likes



Amazon: Context-based SN



- Compare with an Amazon review: “the remake of this movie is horrible, I recommend to watch the original version instead”

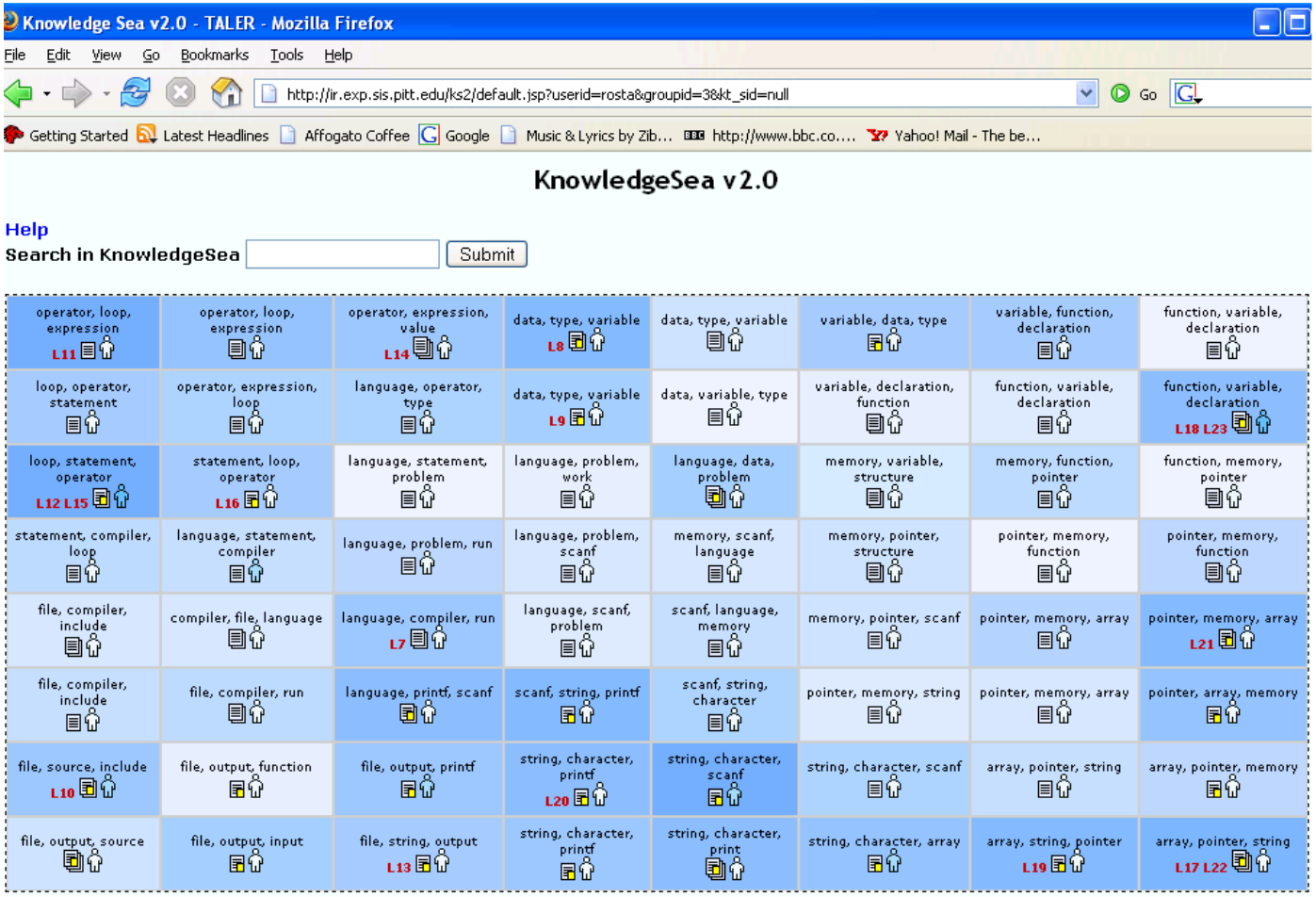
Knowledge Sea II

Assisting students finding educational resources on the web

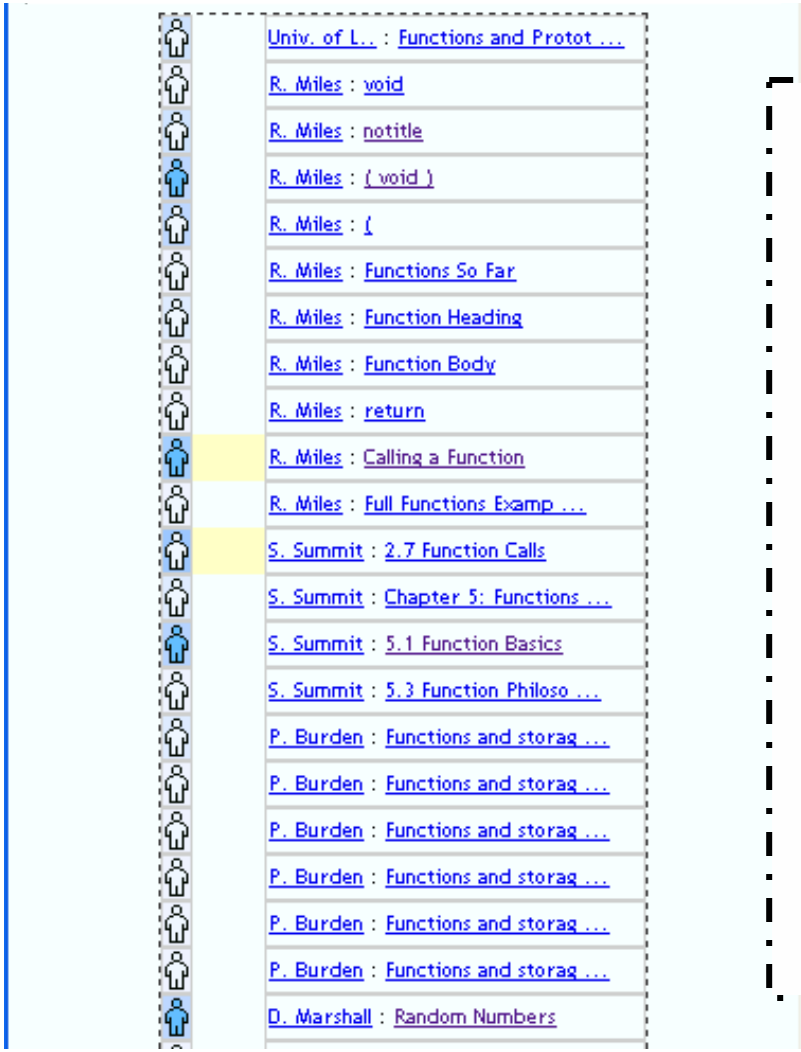
Social Navigation

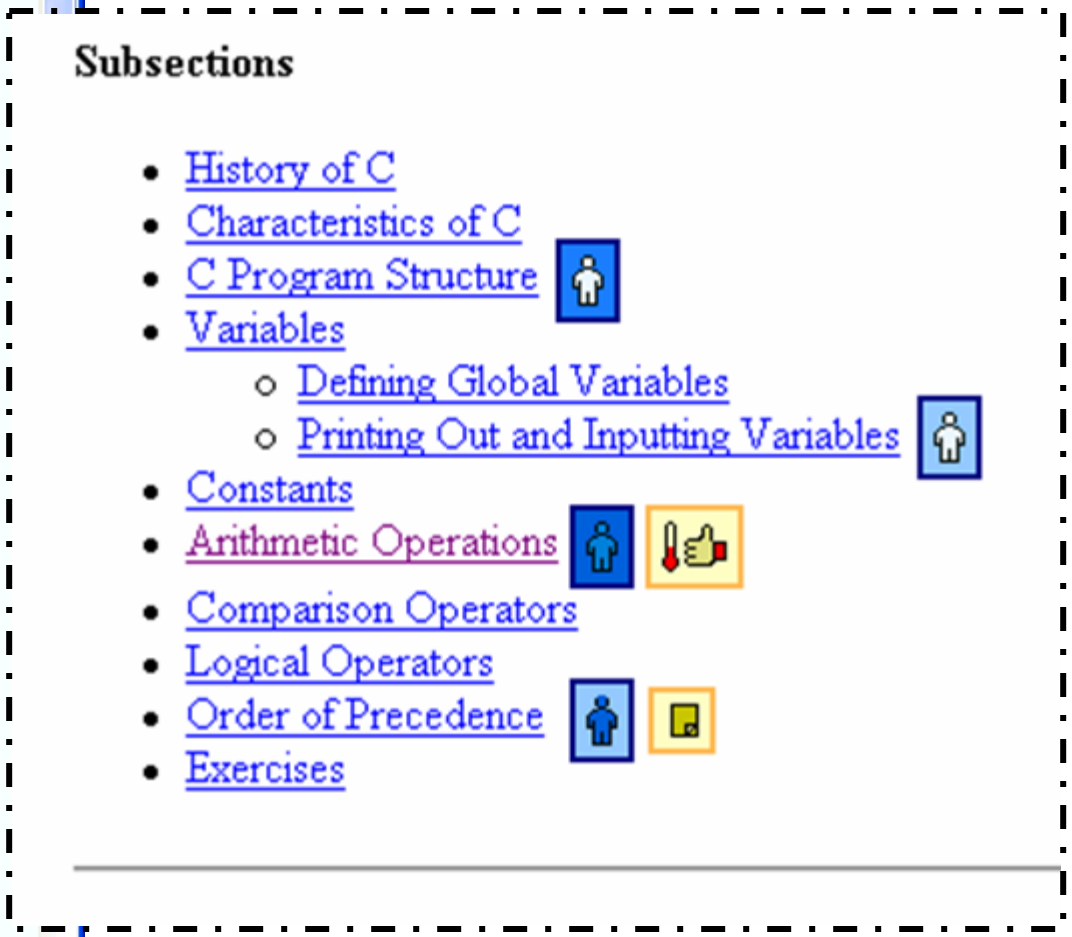
- Traffic based
  - Using intensity of colors to present footprints of other students
    - Distinguishing the most and the least visited pages
- Annotation based
  - Using visual cues to present students' annotation activity
    - magnitude of group annotation activity
    - presence of learners annotation
    - magnitude of individual annotation activity

Knowledge Sea: Map



Knowledge Sea: Cells & Pages

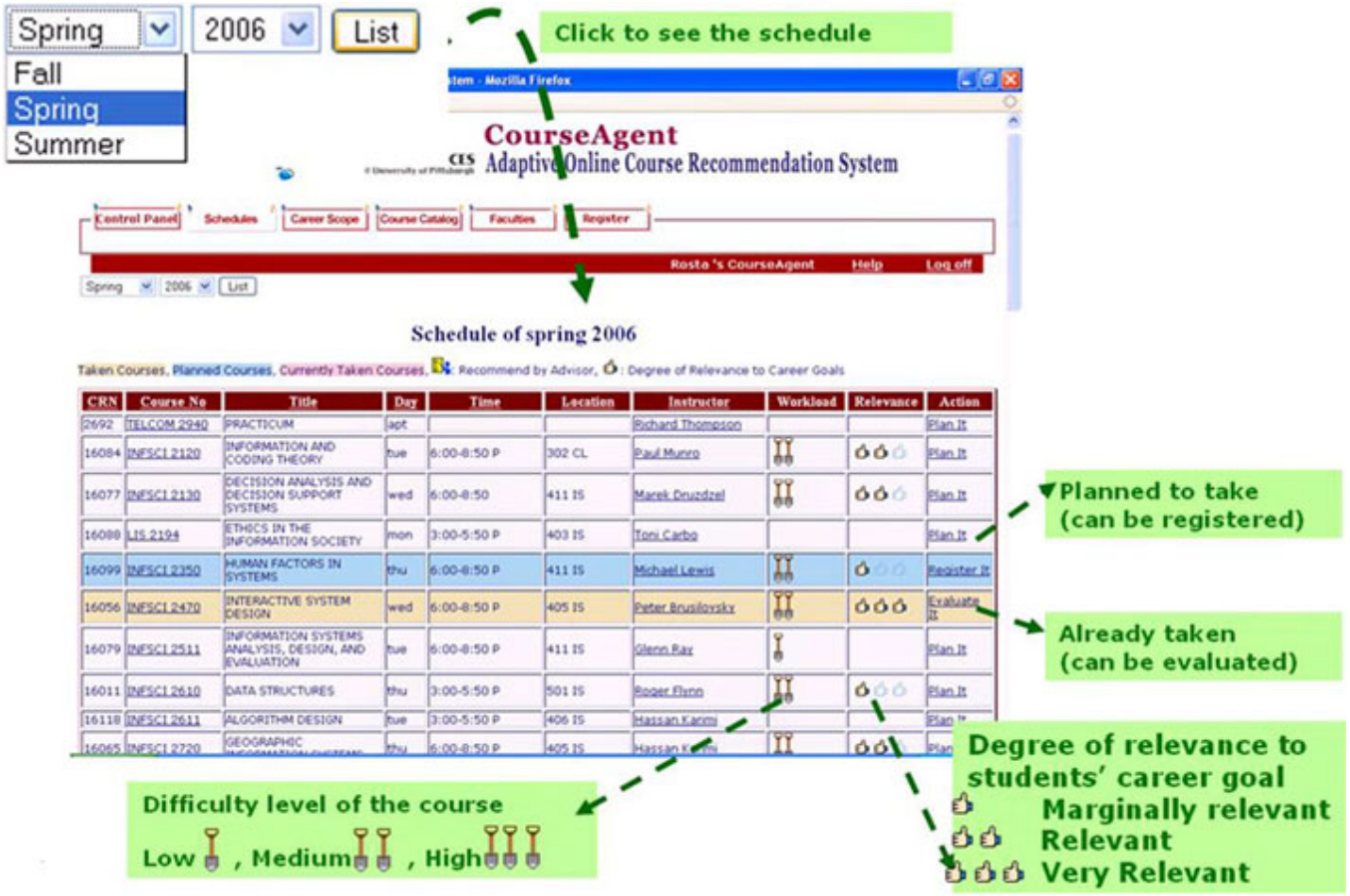




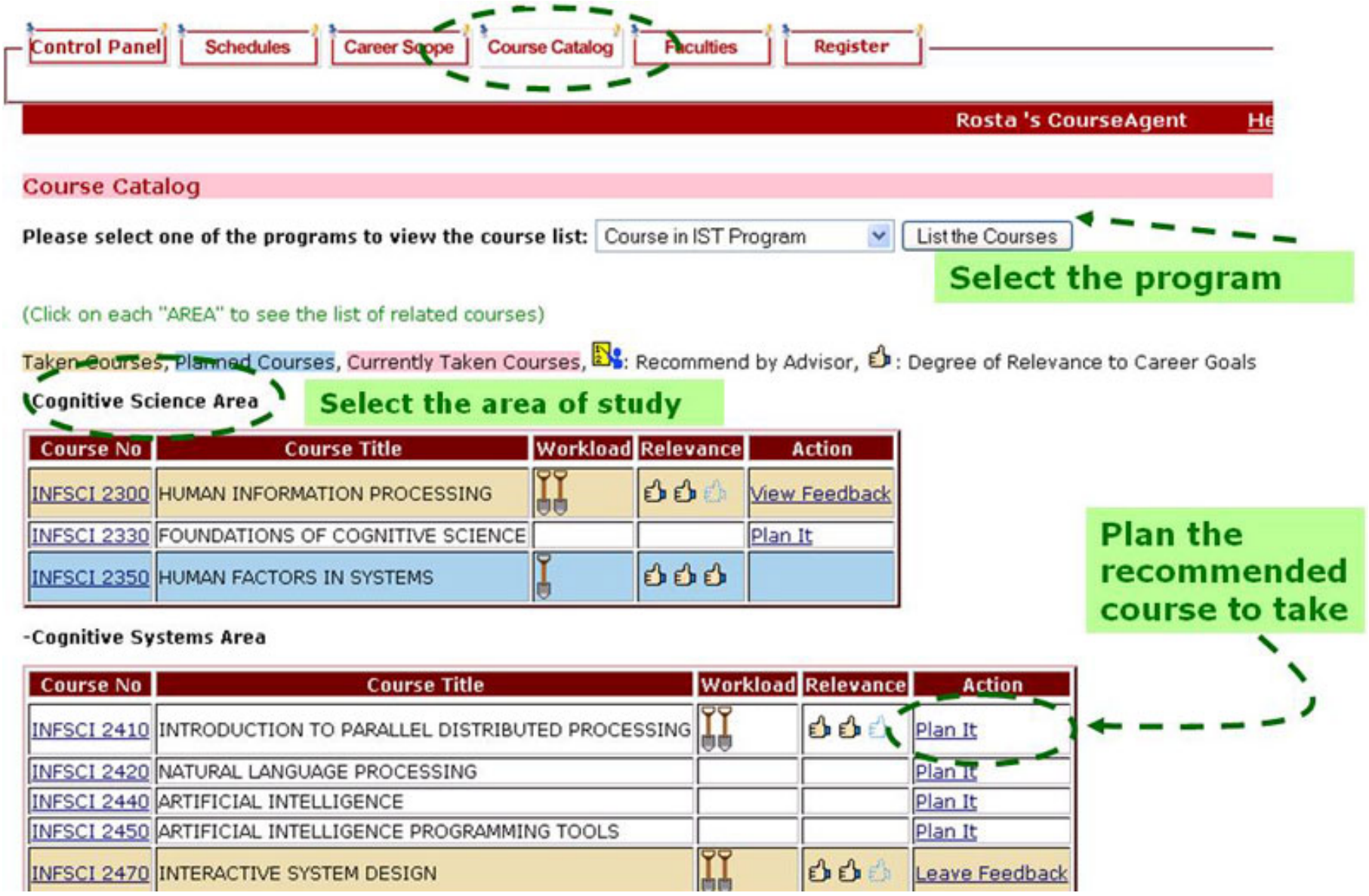
CourseAgent

- Adaptive community based course recommendation system
  - Provides personalized access to course information
  - Provides social recommendation about courses
- Recommendation in the form of in-context adaptive annotation
  - Visual cues
    - Expected course workload
    - Expected relevance to students' career goals
  - Course Schedule
  - Course Catalog

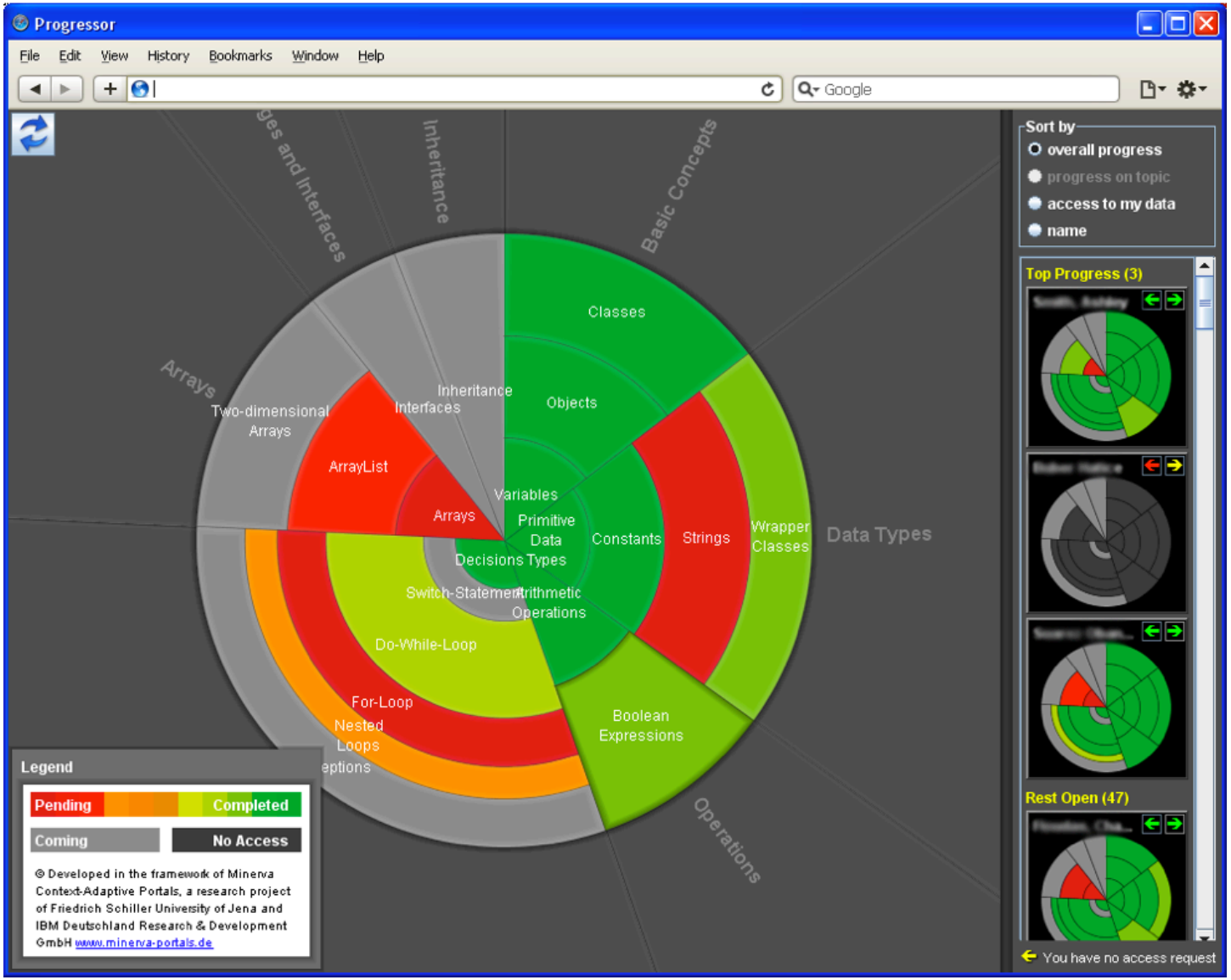
Course Schedule



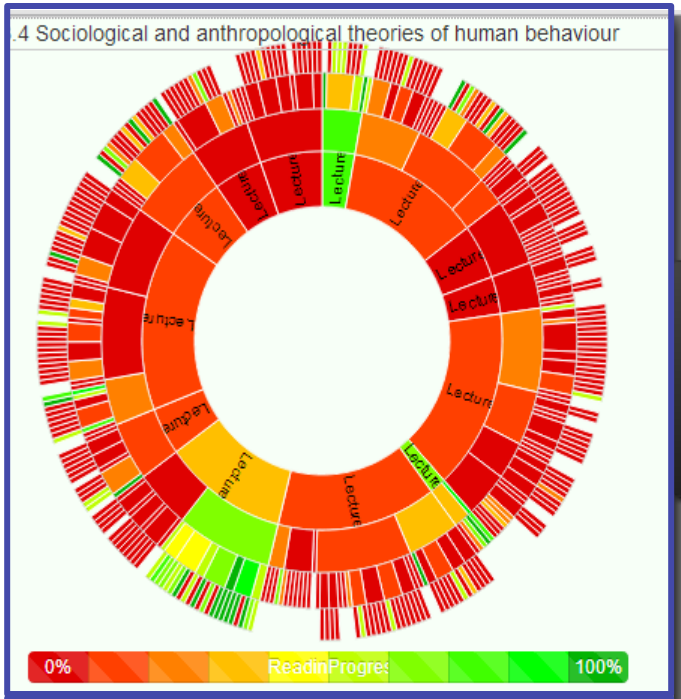
Course Catalog

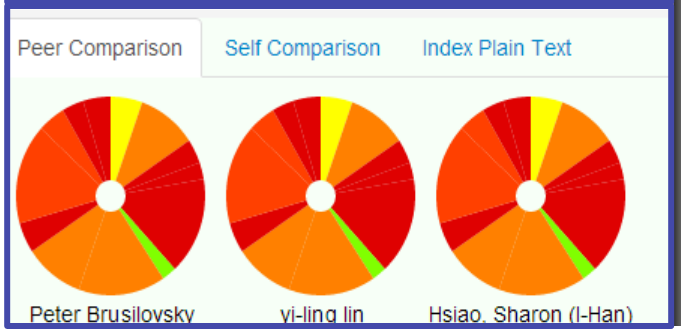


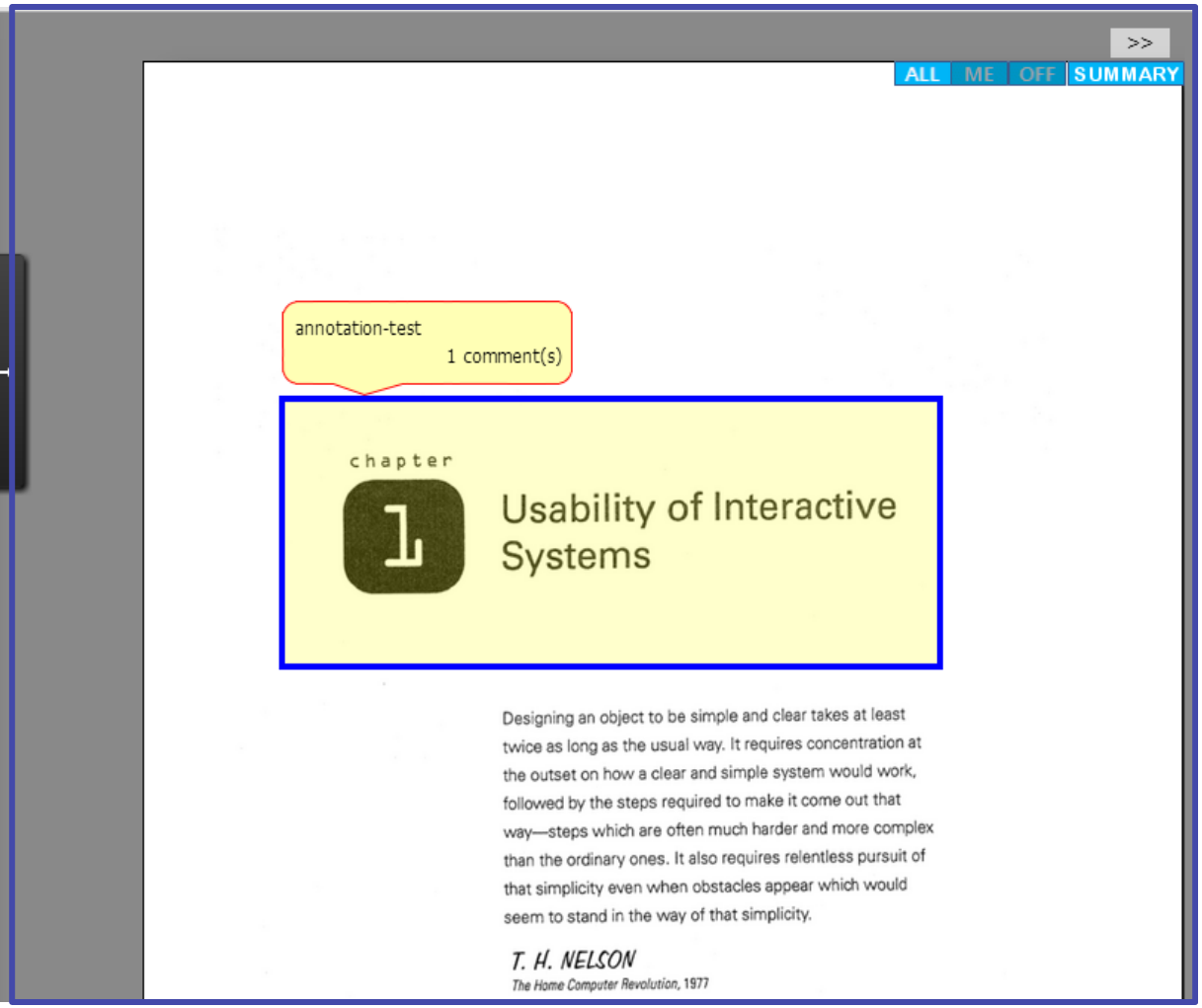
Social + Progress-based Navigation in Progressor



Social + Progress-based Navigation in Reading Circle







CoFIND

- Collaborative bookmark database
- Self-Organized Database of Resources
  - Combination of usage and explicit ratings causes the system to dynamically and continuously reorganize its resources.

Stigmergy

Communication via the environment

Nature

- Ant trails
  - leave a trail of pheremones when find food and return to the nest
  - The trail gets stronger, attracting more ants

CoFIND

- Successful topic groups, topics, qualities and resources tend to grow more successful, influencing patterns of behavior for all users of the system

Challenges

Concept drift

Snowball effects

Bootstrapping

Concept Drift

- Old history information becomes less relevant
  - History decay
    - different for a very popular and a less popular information
- Shift of Interest

Snowball effect

Just one visit before the current visit can turn the page into ‘hot’

- The page could be useful or useless
- Next users follow the same path

Bootstrapping

Social navigation works with many users

- What if there are very few users?
- How to match a new user against already populated system?
- How to encourage users to leave their trails (commenting, …)?
- How to make the new information visible in already populated system?