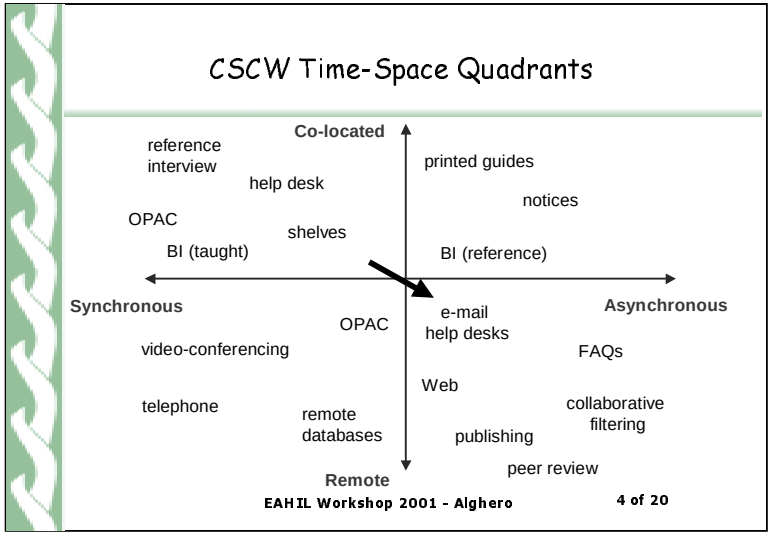
I am still connected to Lancaster University in the UK where most of the work I talk about was conducted. Next month I will be joining the University of Illinois at Urbana-Champaign.

Overview

- Background
  - libraries & digital libraries
- The CSCW approach
  - observations of collaborative activities
- 3 scenarios for CSCW & libraries
  1. remote reference
  2. collaborative searching
  3. integrating user feedback & material
- Conclusion

Background

- Physical libraries are designed for individual users
  - silence does not easily support working in groups
- Library systems (e.g. OPACs) only represent single users
- Digital libraries (in general) are not being designed for groups
  - copying existing single-user interaction styles from:
    - OPACs, Web browsers, databases
- CSCW is the study of systems that support groups
  - **C**omputer **S**upported **C**ooperative **W**ork



BI = Bibliographic Instruction

OPAC = Online Public Access Catalogue

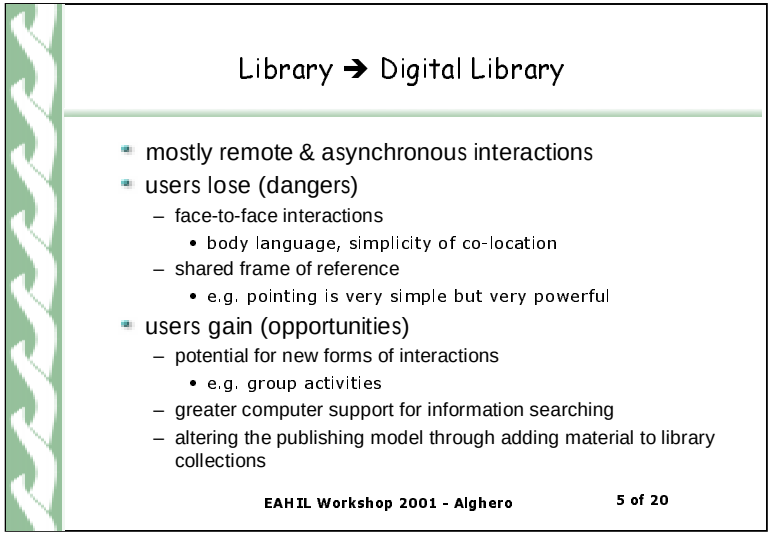
FAQ = Frequently Asked Questions

This is a common CSCW framework for categorizing systems - it is not perfect (email can sometimes be nearly synchronous) but works well in many cases.

Synchronous = same time

Asynchronous = different times

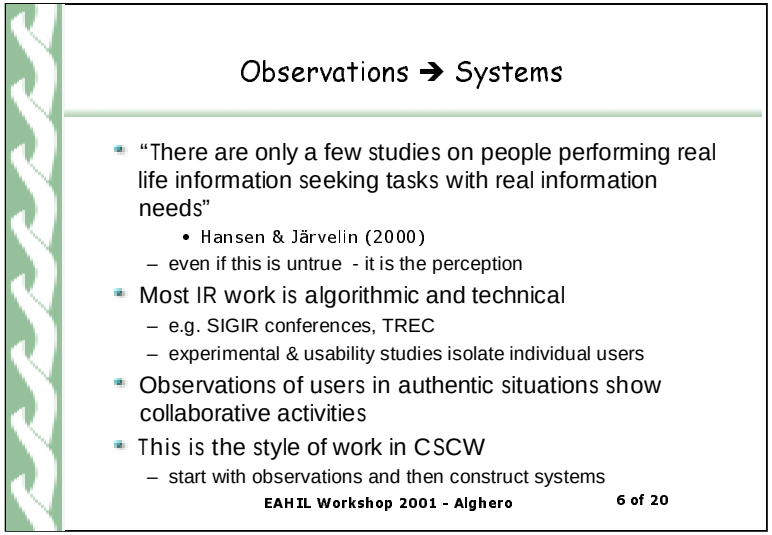
The move from traditional libraries to digital libraries can be interpreted as a move from the upper left quadrant (synchronous and co-located) to the bottom right quadrant (asynchronous and remote).



The move to the digital library offers both dangers and opportunities.

The dangers are that users will lose some of the desirable characteristics of familiar synchronous and co-located interactions.

The opportunities are that new forms of interactions become available - altering the relationships between users - and between users & libraries.



Hansen and Jarvelin are studying patent engineers - but their point extends to information retrieval in general.

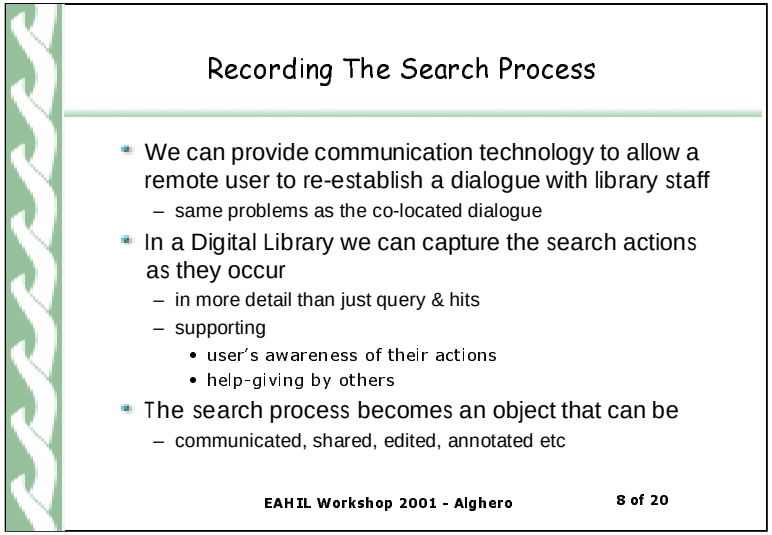
IR = information retrieval, TREC = Text Retrieval Conference, SIGIR = ACM Special Interest Group on Information Retrieval - their conferences are the premier publication forum for information retrieval research

CSCW as a sub-discipline within computer science focuses on understanding users in situ in order to design systems that fit in socially - as well as simply performing their function correctly. Much of this work is concerned with how everyday work patterns are innately social - and how these patterns are changed by the introduction of technology.

The 3 scenarios that I will discuss represent different aspects of this inter-relationship between people and technology. The first, remote reference, is a simple technological change. The second, collaborative searching, is an example of un-realized potential. The third, user contributions, is technically simple but socially complex.

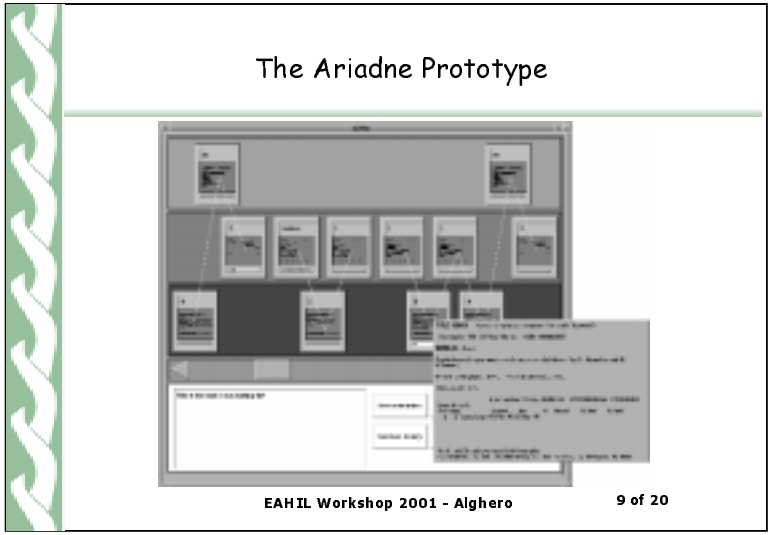
Scenario 1: Remote Help

- How do remote users interact with library staff?
- Specifically, how do users get help when they are not physically in the library?
- It is often difficult to assess a user's problem at a library help desk
  - users have difficulty remembering what they have done
    - forget their actions
    - mis-report their actions
- These problems are much worse for remote users
- What would a remote help desk look like?
  - how can we support the help-giving interaction?



Various remote reference and remote help systems exist in prototypes around the world using a variety of technologies - telephones, video, email etc

The next presentation is a good example.



This is a prototype system to record the whole search process - not just the partial records that most databases support.

The point of this is that most help dialogues between users and librarians spend considerable time re-establishing precisely what it is that the user has just done. Remote dialogues are likely to be even worse in this respect.

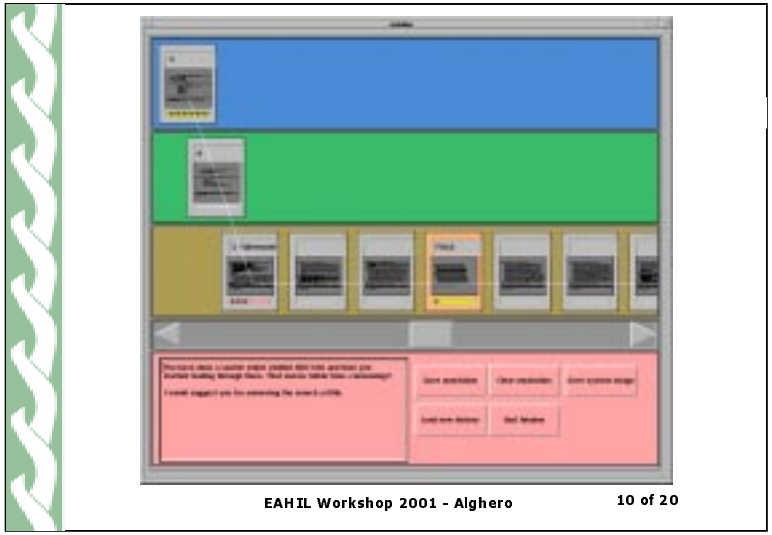
Simply recording information is precisely what computers are good at!

The bottom of the 3 levels represents users reading documents, the middle level specifying searches and the top level switching collections.

Each ‘card’ is a screenshot.

The area at the bottom left is for annotations.

The intention is that users users send this search process visualization with their help request - re-establishing the context that has been lost by being in a remote location.



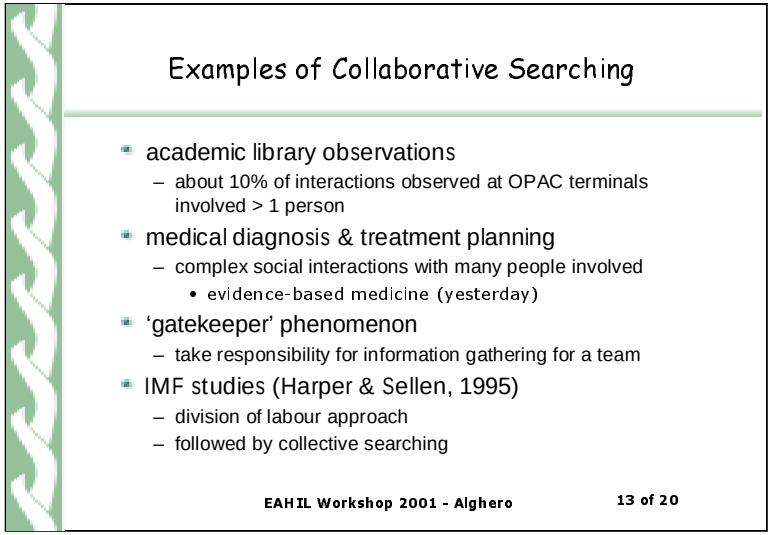
Even with that minimal introduction I'm sure that someone here can tell me what this visualization represents.

A user who is examining every 'hit' returned from a search.

Scenario 2: Collaborative Searching

Why Collaborative Searching?

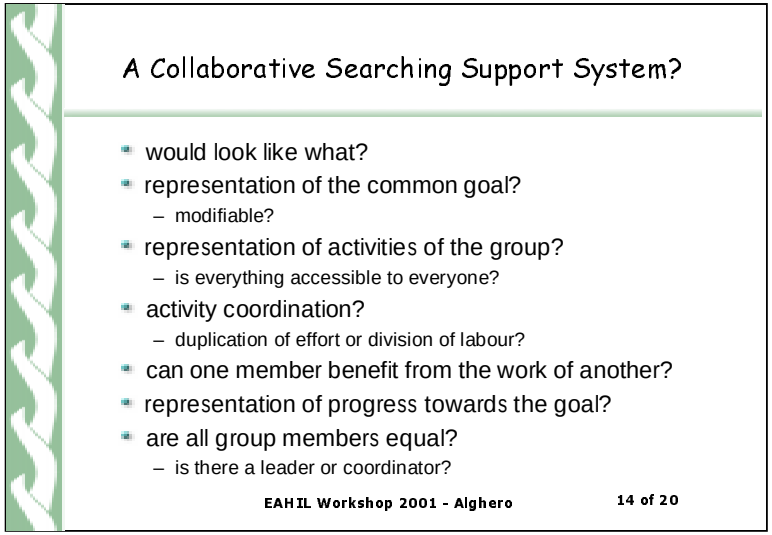
- Natural extension of other forms of team work
  - already occurs using existing technology
    - email URLs & web searches to colleagues
- Help prevent duplication of effort
  - everyone can see the invention of the wheel
- Learn from other's activities
  - search strategies, query terms, exemplar 'hits'
- Utilise different perspectives of group members
  - domain experience
  - database familiarity



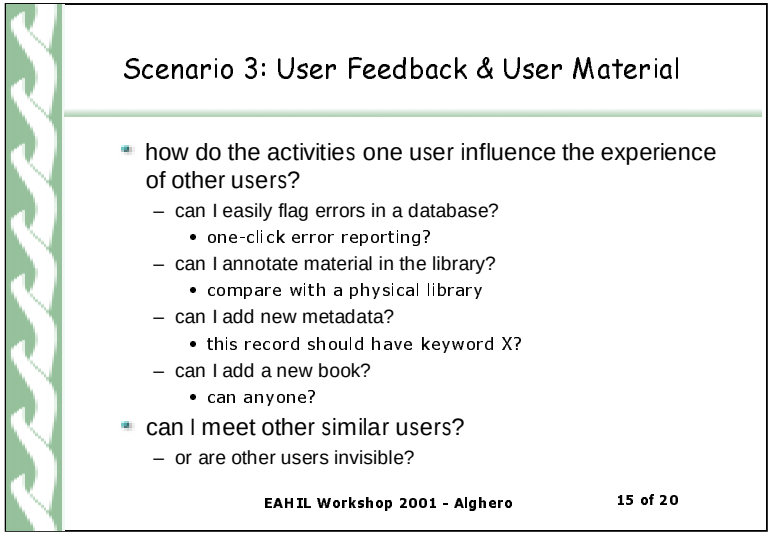
IMF = International Monetary Fund

Studies of real people in their work settings show collaborative activities that current computer systems do not support.

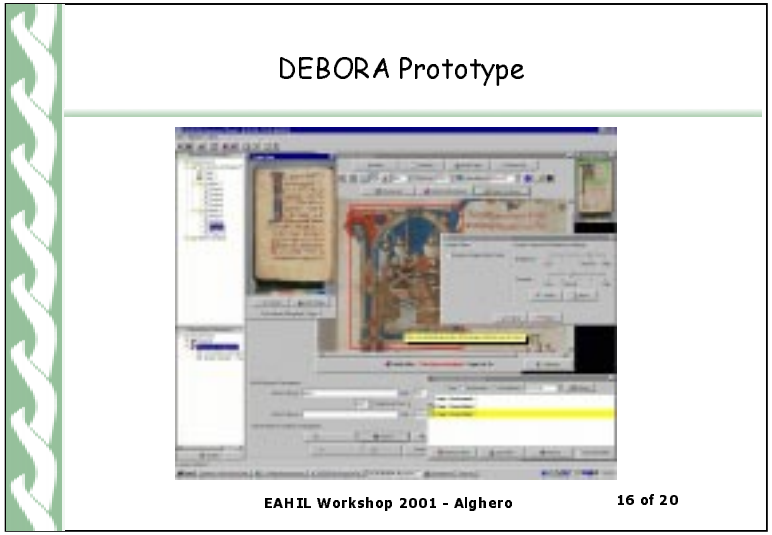
We can view a help dialogue as a special case of collaborative searching.



This topic is the subject of current research - which is why there are lots of questions and few answers!

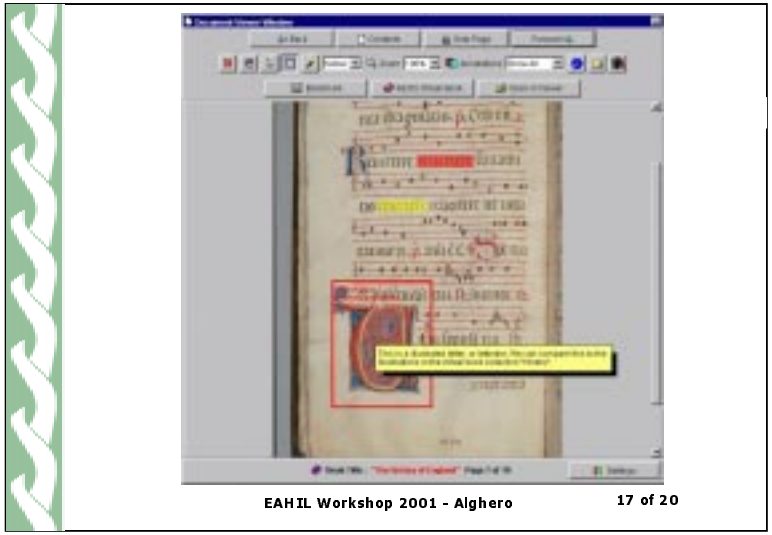


It is interesting that while amazon.com allows one-click shopping most databases do not easily allow their users to signal errors in their material with the same ease.



The DEBORA project aims to make images of Renaissance books widely available - but also to prototype some CSCW technologies.

In the bottom left panel is a list of virtual books - books created by users through connecting existing resources in a new pattern (e.g. showing the development of artistic style by selecting images from different ‘official’ books in the collection).



This screenshot shows a user-supplied annotation on a page of music. Try doing this at your local library!

In many domains users know more about the materials in a library collection than the librarians or indexers.

Conclusion

- Libraries and library systems have supported single users
- Digital libraries can (and should) support groups
- Integration of CSCW & DLs
  - e.g. support for collaborative searching
  - requires a more user-oriented focus than current IR research
- Expect to see a blurring of the distinction between users and contributors
  - users adding annotations, metadata, corrections etc

Further information…

- Most of the work described in this talk is based on the *Ariadne* project based in the Computing Department at Lancaster University, UK.
- Further details, online papers, screenshots, demo, etc.:

www.comp.lancs.ac.uk/computing/research/cseg/projects/ariadne/

www.comp.lancs.ac.uk/computing/research/cseg/projects/debora/