Knowledge Sharing Media For Group Memory And Collaborative Brainstorming

Mark A. Foltz
MIT Artificial Intelligence Lab
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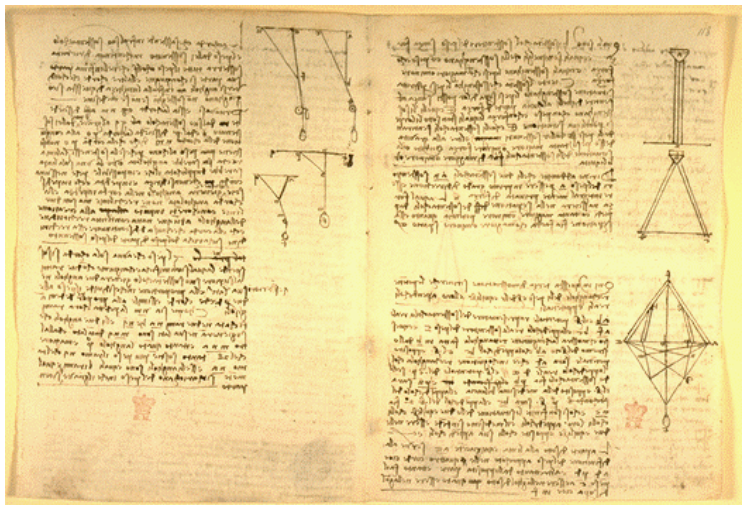
 mfoltz@ai.mit.edu

Outline

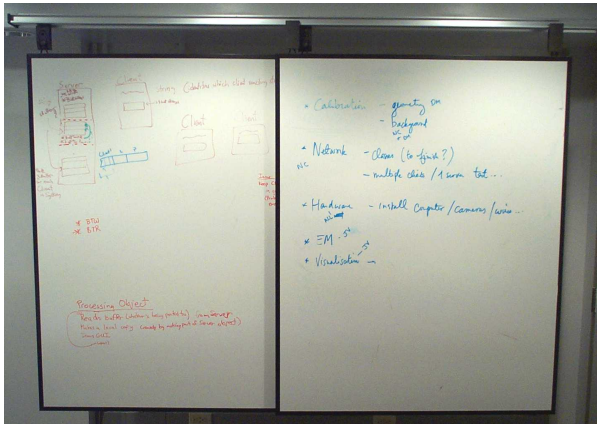
- **Introduction: Knowledge Sharing Media**
- **Plexus: Questions and Answers**
  - **Navigating the space**
  - **6.034 as an example**
- **Whimsy: Brainstorming**
  - **Liberating ideas from the whiteboard**
  - **Five design goals**
- **Conclusion: Design rationale capture**

What are knowledge sharing media?

Tools for exchanging knowledge: Preservation and communication



Leonardo: Codex Arundel



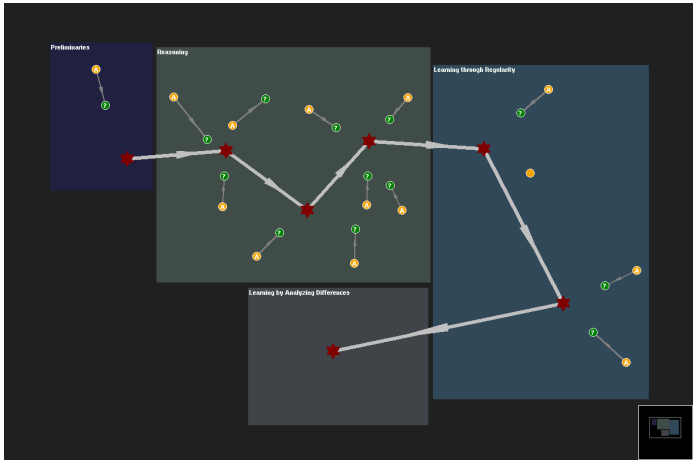
Digital knowledge sharing media

- **Mutability**
- **Searchability**
- **Navigability and visualization**
- **Intelligent use of contents**

Two Knowledge Media

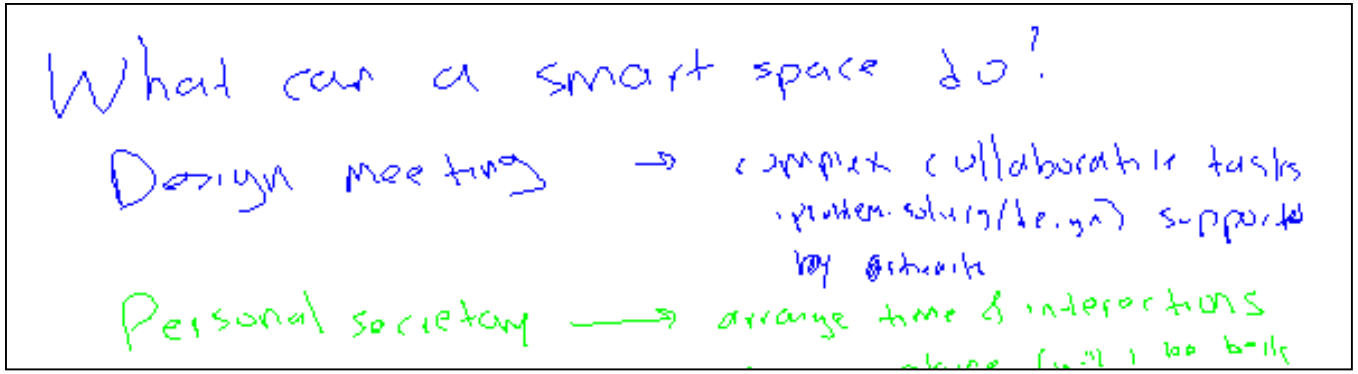
- **Questions and answers**

  Plexus: Exploring a spatial metaphor for group memory



- **Brainstorming results**

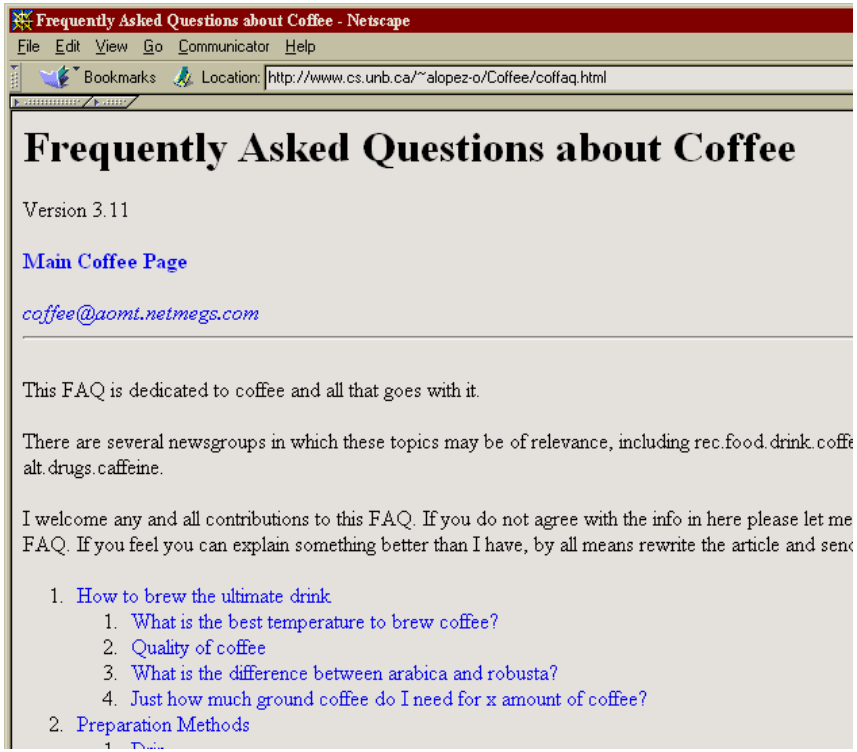
  Whimsy: Capturing and archiving ideas



Questions and Answers

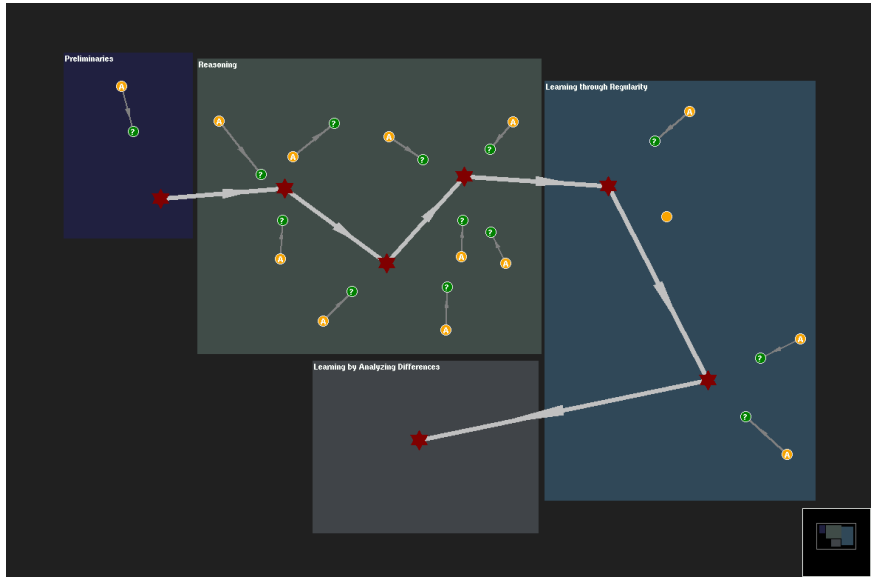
- **When a question arises:**
  - **Has it been asked before?**
  - **Whom to ask?**
  - **How to save the answer?**
  - **How to find it afterwards?**

- **Preventing "getting lost"**



Plexus: The Spatial Metaphor

- **Provide a shared, visual information space to structure this dialogue**
- **Proximity implies relevance**
- **Architect space with relevant navigation affordances**

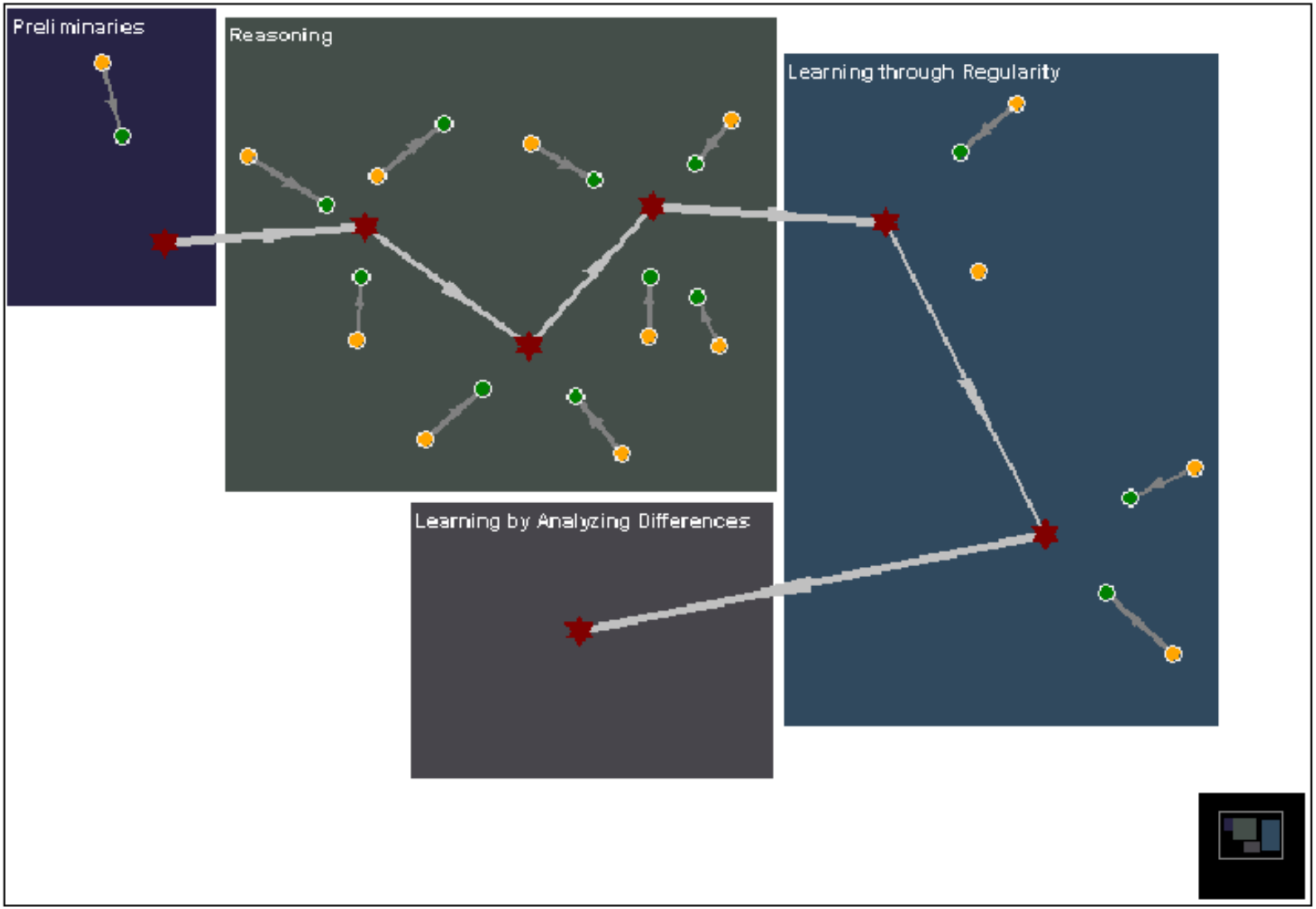


Why spatial Q's and A's?

- **Through proximity, askers know where to find relevant and related questions**
  - **Looser notion of relevance than a hierarchy**
- **Experts can find questions they can answer**
- **Overview of what prompts the most questions**
- **Cognitive mapping: Engaging spatial memory**

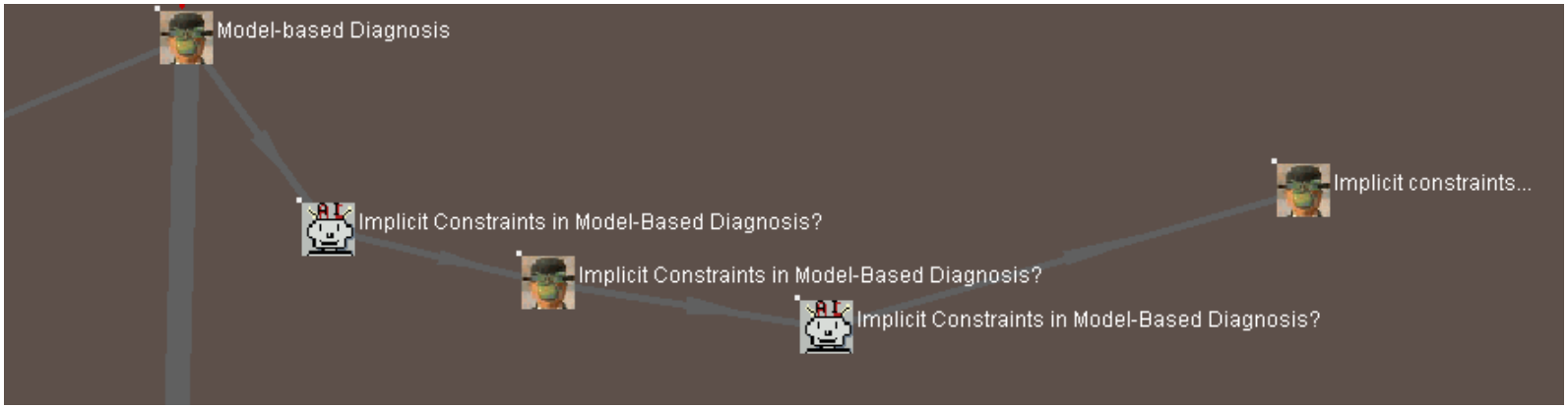
6.034: Information Architecture

Landmarks, paths, regions (Lynch 60, Neveitt 00)



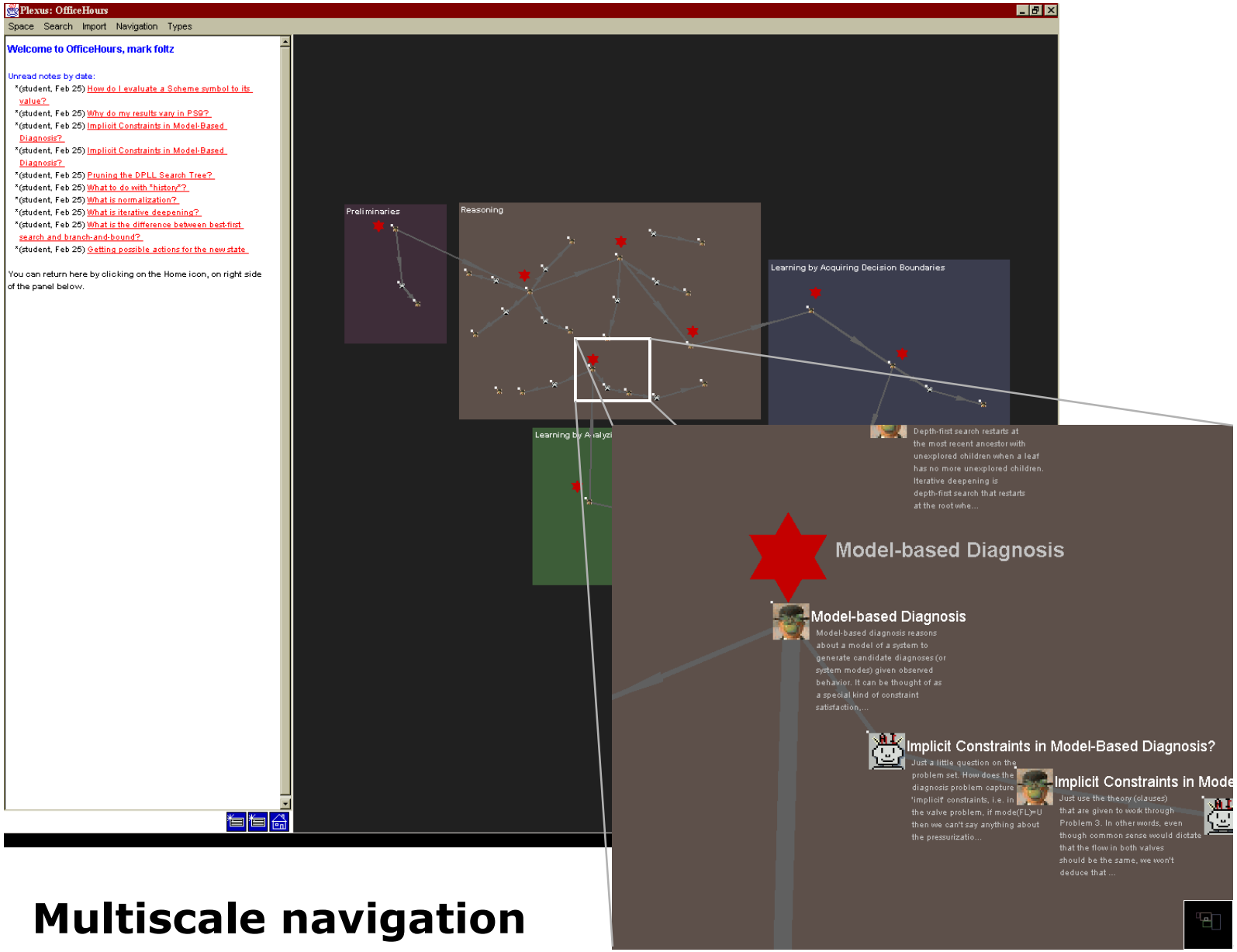
6.034: Rules of Discourse

- **Students post questions**
- **Questions are anonymous to other students**
- **Teaching Assistants post answers**
- **Answers may prompt more questions**



- **Teaching Assistant may rearrange space**

Plexus Interface



Multiscale navigation

Plexus: Spatial vs. Hypertext Views

- **Asking: Placement in context vs. appending to a list**
- **Answering: "Regions of expertise"**
- **Searching: Navigation vs. hierarchical browsing**

Related work

- **Answer Garden (Ackerman et al. 90, 94, 98)**
  - **Hypertext-based FAQ builder**
- **Abuzz.com and similar sites**

Plexus: Evaluation and Future Work

- **Used for two weeks by 6.034 students**
  - **Limited usage, positive feedback**
- **Course-long study**
- **Spatially organize existing Web FAQs**

Will placement of contributions be consistent?

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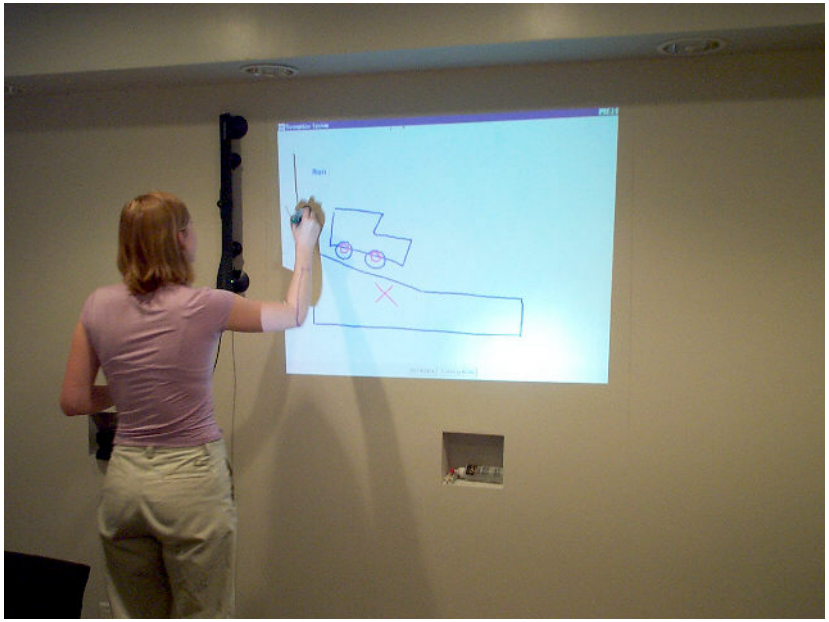
Whimsy: Capturing Ideas



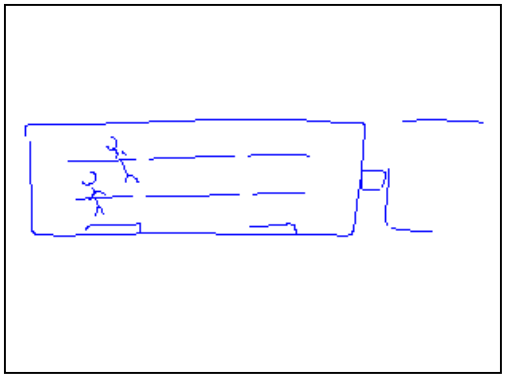
- **Spontaneous interaction**
- **Structured brainstorming meetings**
- **Work in progress**

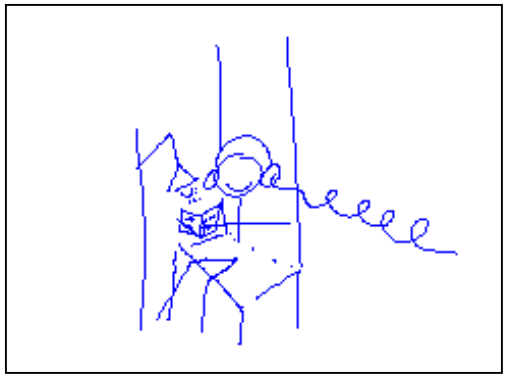
What is Brainstorming?

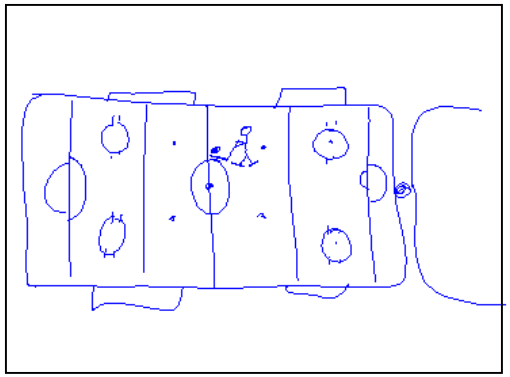
Osborne (1957):

1. **Withhold criticism**
2. **Free-wheeling**
3. **Quantity first**
4. **Combination & improvement**

Q: How can subway cars be improved?







Why a digital medium for brainstorming?

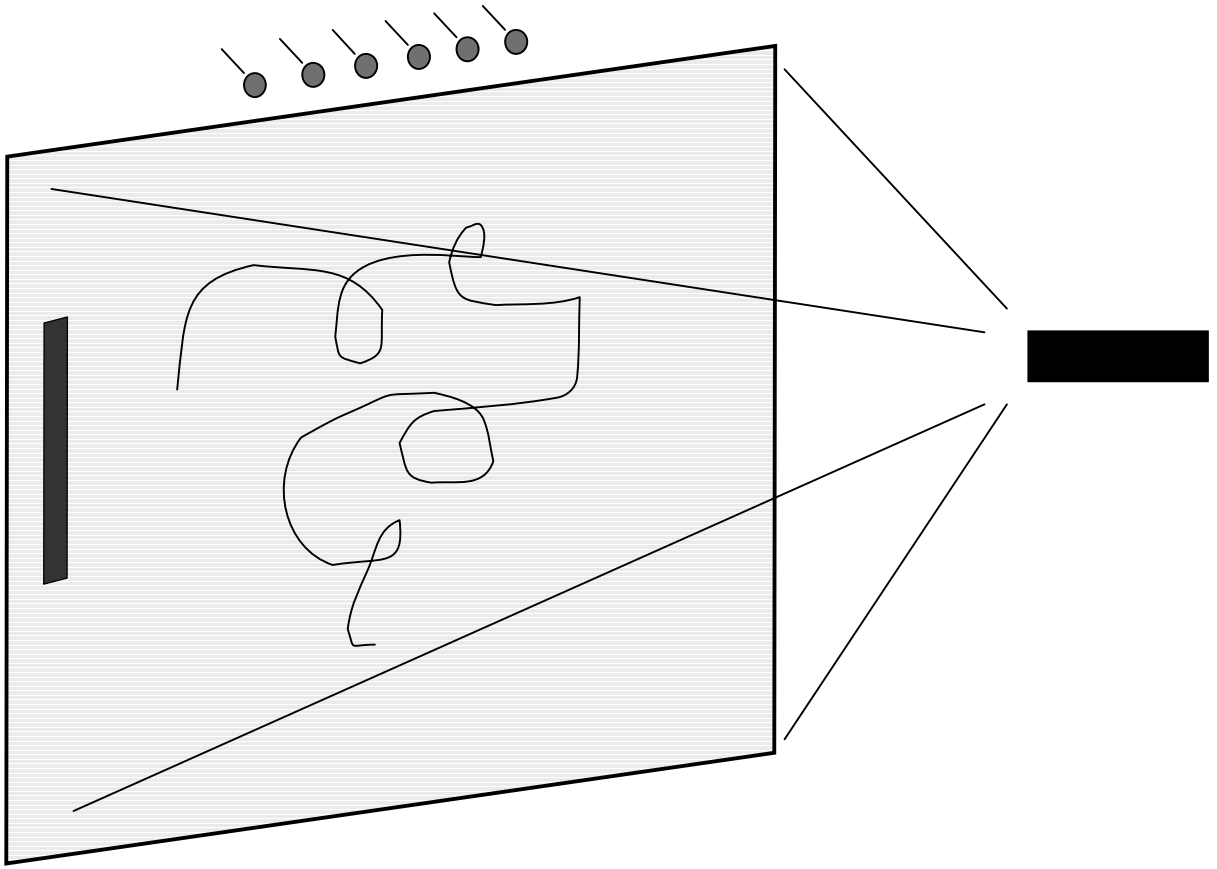
- **Pen and paper is convenient, but**
  - **Napkins are hard to file**
  - **Napkins are hard to photocopy**
- **A digital medium can help**
  - **Ideas are archivable**
  - **Ideas are sharable**

Brainstorming: Five design goals

1. **Expressibility**
   Focus on the idea, not the medium
2. **Accessibility**
   Ideas can occur anywhere
3. **Preservation**
   No good idea should be lost
4. **Reminding**
   "Where were we?"
5. **Individual and Group**
   Personal notebook and shared whiteboard

Goal 1: Expressibility

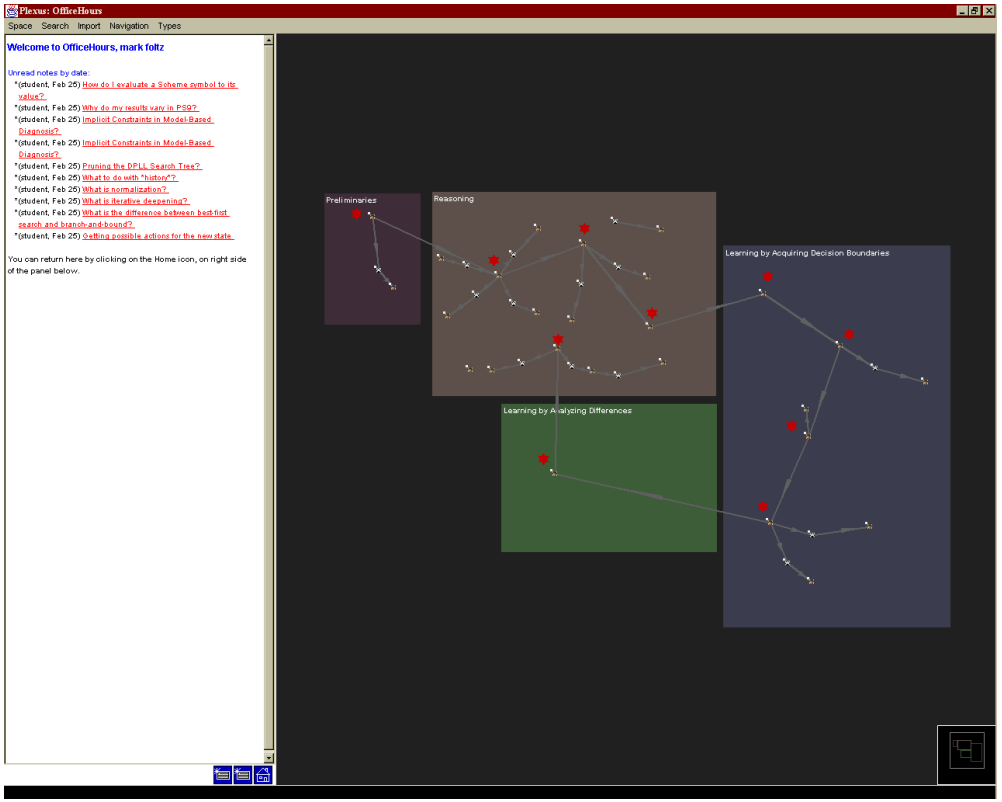
Sketching and explaining



Goal 2: Accessibility
Pick up and use

Goal 3: Preservation

Archiving and navigating, or
How should we structure this information space?



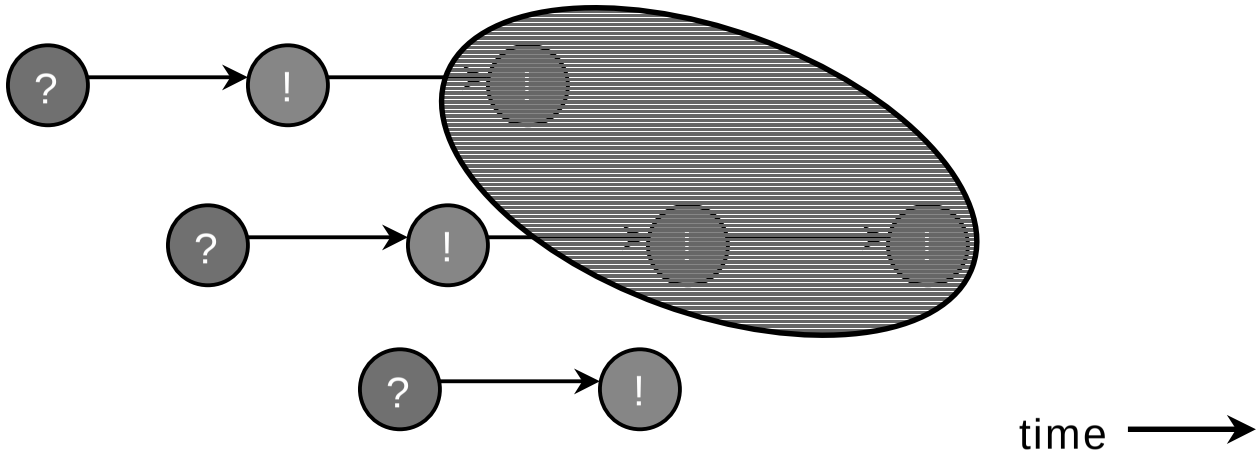
Most effective when domain-specific

- **Relating questions**
- **Ranking ideas later**

Goal 4: Reminding

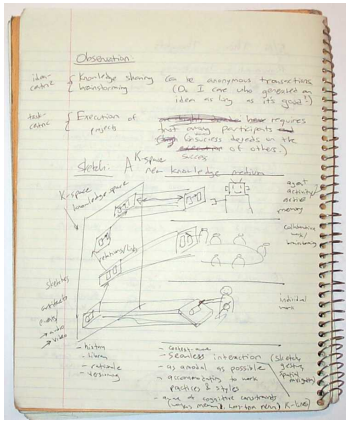
Where were we?

- **Restoring context and frame of mind**
- **Summarization**

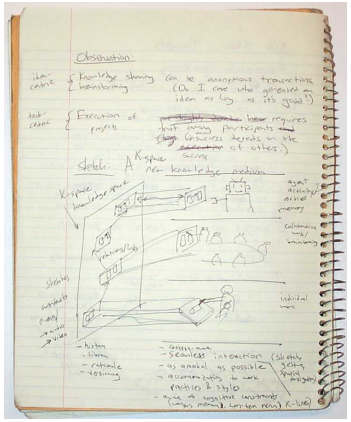


- **Signposts**
  - **"Let's pick up next week with…"**
- **A special case: myself**

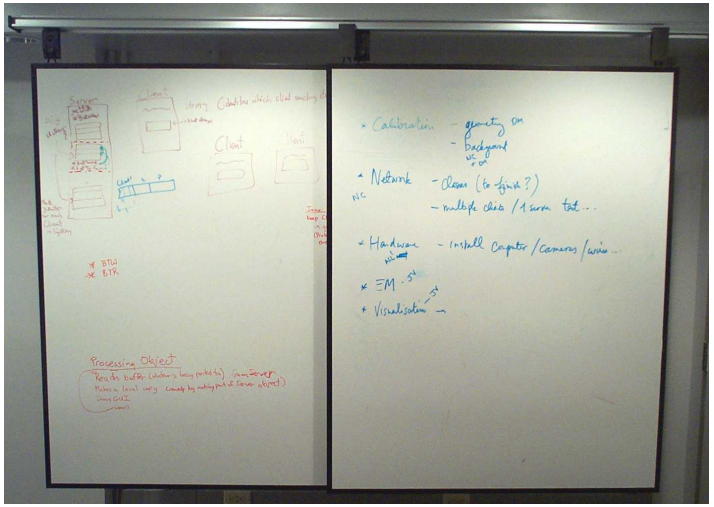
Goal 5: Group and Individual



Mark's



Mike's



Whimsy: Some Hard Problems

- **Context capture and representation**
- **Multimodal segmentation and indexing**
  - **Domain knowledge can help**

- **Interfaces for adding and navigating ideas**
  - **Tivoli (Moran, Chiu, van Melle 97)**
- **Usability and evaluation**

Whimsy: Research Approach

1. **Understand brainstorming activity**
   Cognitive and social aspects

2. **Understand brainstorming facilitation**
   What do experts do?

3. **Pick a domain**
   User interface design

4. **Intermediate goals**
   User-assisted segmentation first

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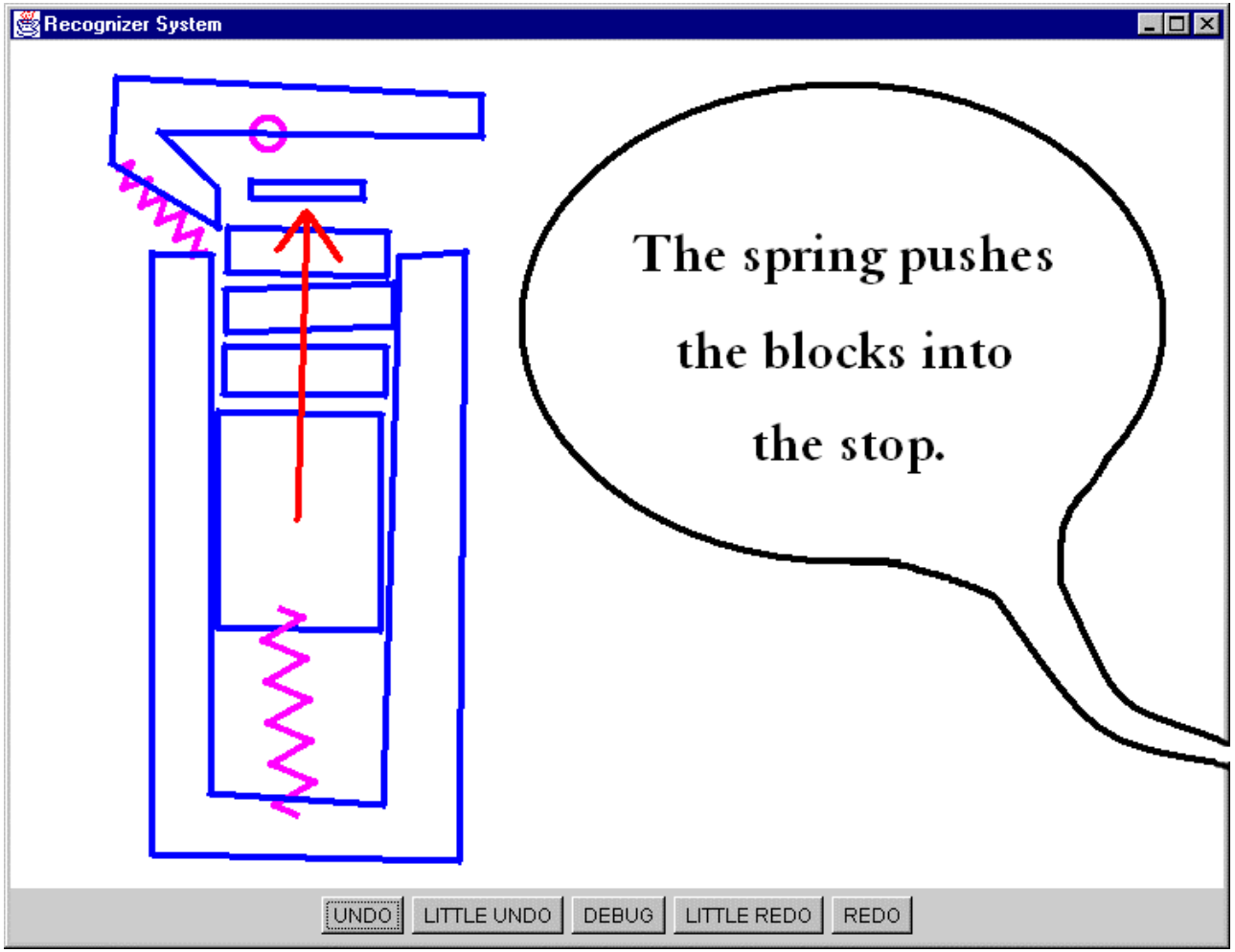
Design Rationale Capture



Weisman 99, Alvarado 00, Oltmans 00

Summary

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