A Writing Support Tool for Distance Students

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Abstract: This paper describes SuperText, a computer program designed to support productive expository writing processes among students at a distance teaching university. Being able to write well is an important communication skill, and the writing process can help to build and clarify the writer's knowledge. Computers can support this by providing a medium to externalise and record the writer's cognition. Appropriate representations for such externalisation are uninstantiated idea labels, instantiated text units, and a variety of relationships between these items. SuperText uses these representations to support a range of writing styles. It provides several independent 'Views' that represent the structure of the evolving document through expanding hierarchies, each with a variety of presentations. Allied to these Views is a text work space providing access to a database of continuous text nodes. Taken together, these provide an ability to represent global and intermediate structures of the document well beyond that of conventional editors. These aspects were all rated highly by students participating in a series of field trials of SuperText.

Why address student writing?

- **Communication skills**
- **Knowledge building**

Computer support for writing

- **Externalise cognition**

Knowledge representation and manipulation

- **Support *process***

Not just product

Knowledge structures in writing

- **Idea labels**

  Uninstantiated items

- **Continuous text units**

  Instantiated items

- **Relationships**

  Free

  Network

  Hierarchical

  Linear

Classical writing process (1)

Flower & Hayes

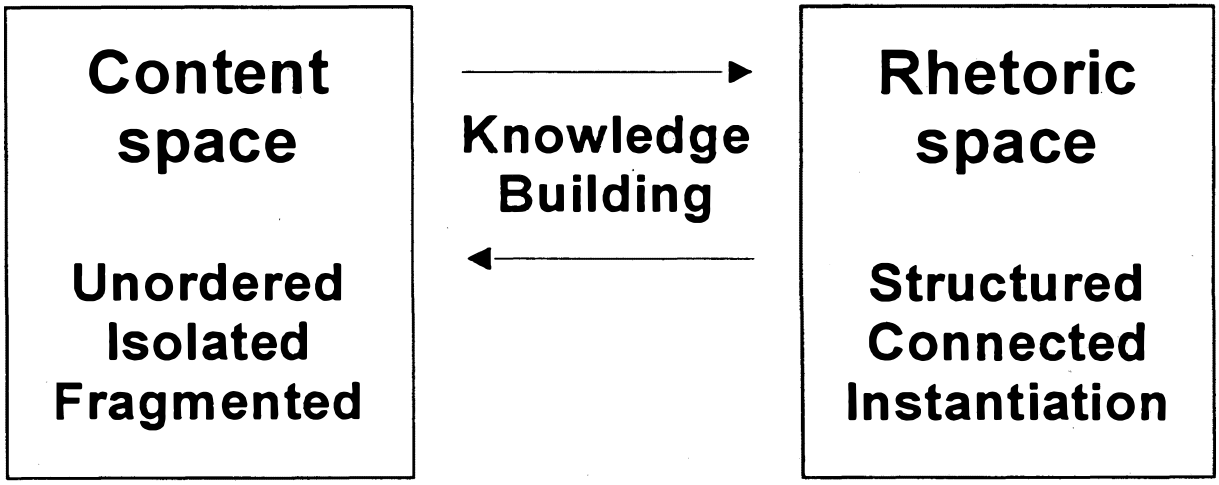
- Many constraints at different levels
- Constraint management through task partitioning
- Goal-directed planning
- Progression from freedom to constraint
- Series of representations

Classical writing process (2)

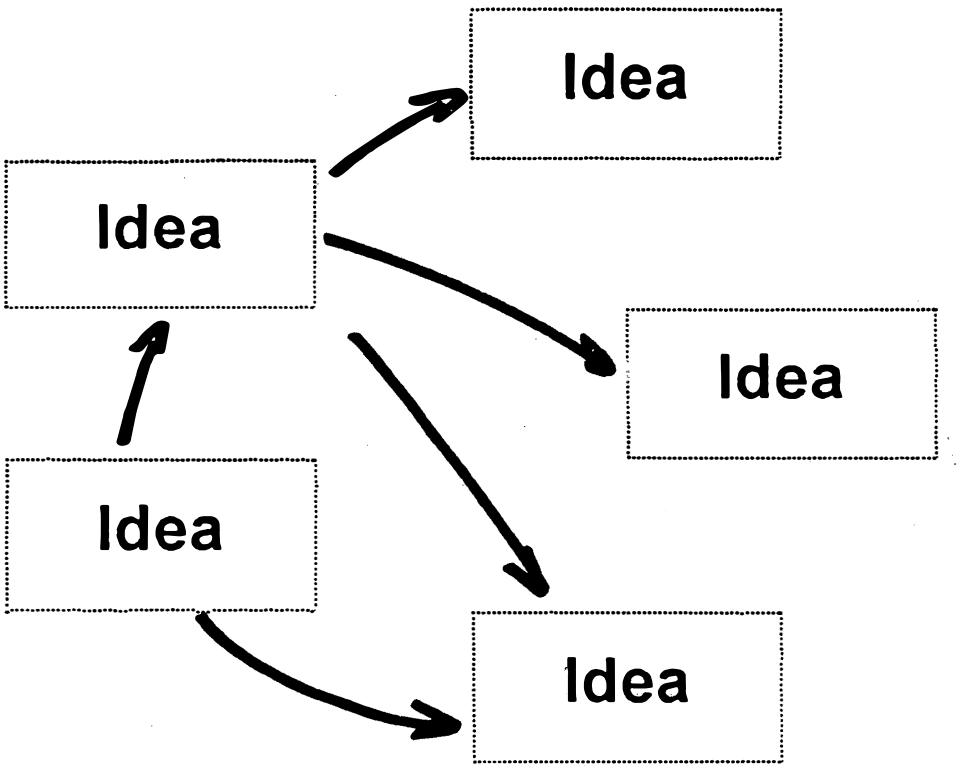
Scardamalia & Bereiter

Two models:

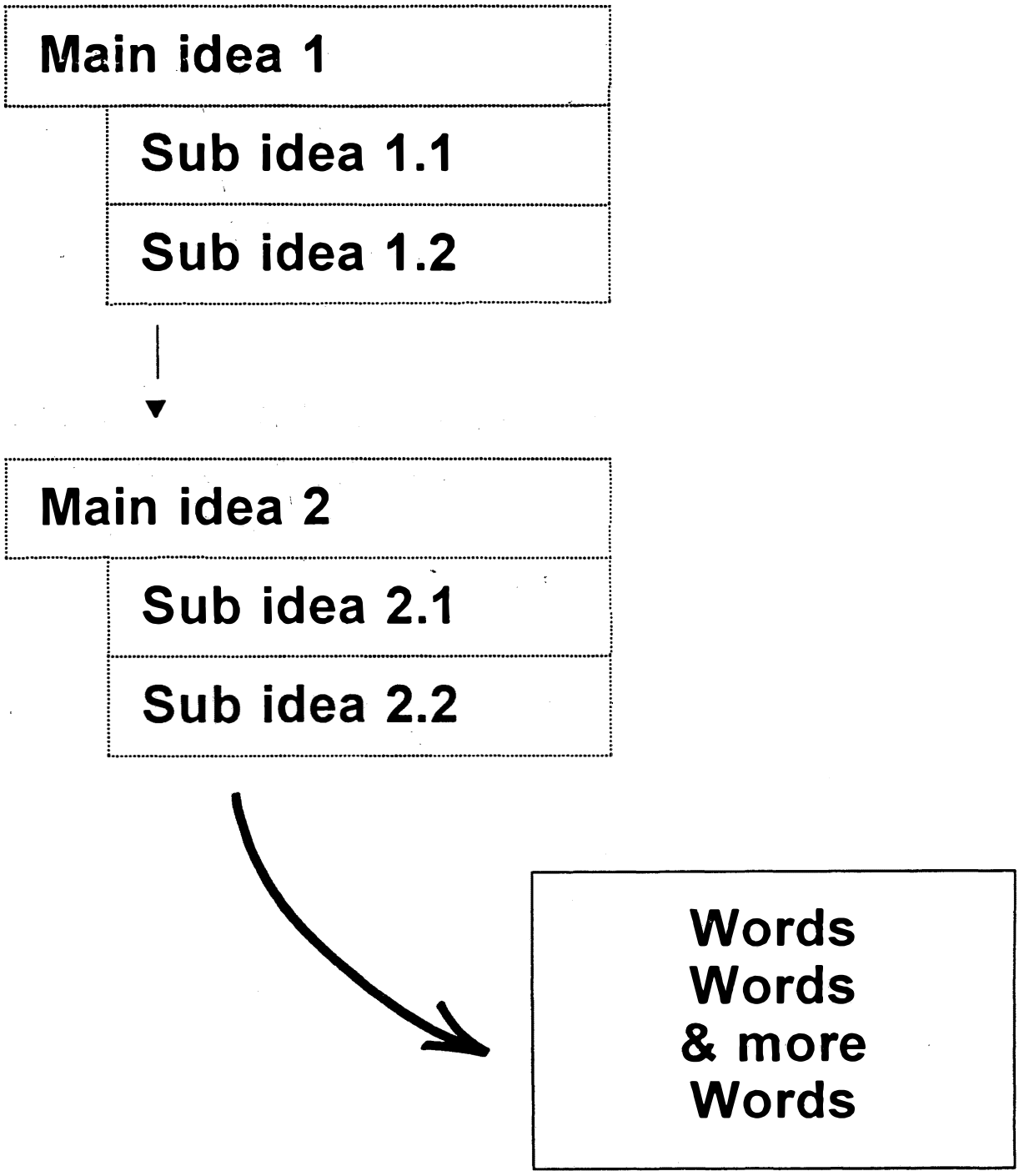
- ***"Easy"*** **- Knowledge Telling as an extension on conversation**
- ***"Hard"*** **- Knowledge Transformation through tension between content space and rhetoric space**
- **Series of representations**



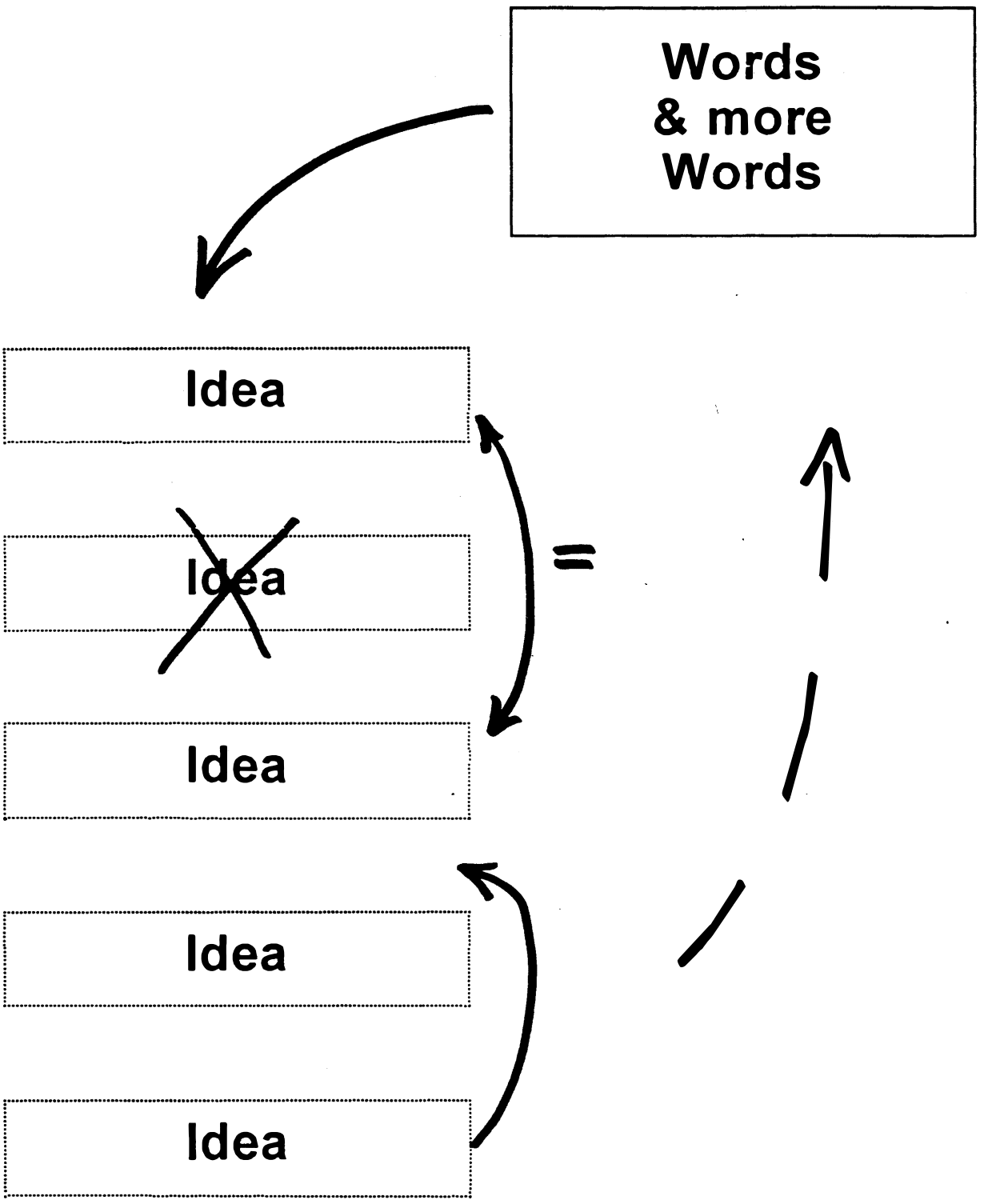
Classical writing representation (1)



Classical writing representation (2)



Romantic writing representation



Underlying mental models (1)

Storage Models ⟹ Classical Writing

Ideas are distinct entities that can be:
- **stored in long-term memory**
- **manipulated in short-term memory**

Knowledge building occurs by
- **structuring ideas during planning**

Manipulating idea labels (ie, planning)
- **increases efficiency**
- **simplifies reworking**

Underlying mental models (2)

Connectionist Models ⟶ Romantic Writing

Ideas emerge:

- from parallel brain activity
- between many simple elements
- in response to external stimuli

Knowledge building occurs by synthesising a fully expressed and coherent response to a particular stimulus

Attempts to isolate and manipulate ideas are:

- contrived
- interfere with real understanding

SuperText

Goal

Provide passive writing support for students' active knowledge building activities

Subgoals

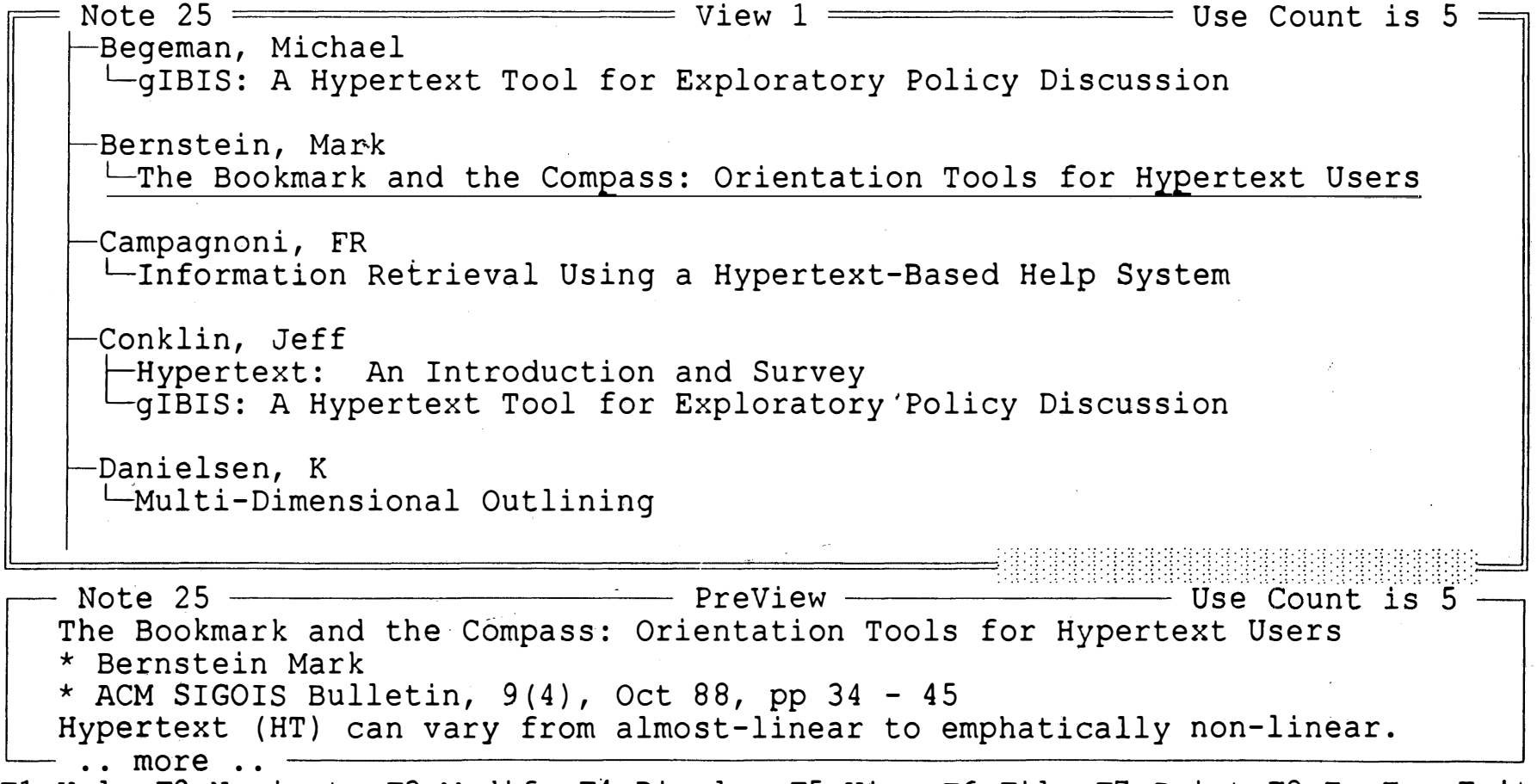
- **Distance learning**
- **Range of writing styles (Classical to Romantic)**
- **Emphasise process (not product)**

Tools

Multiple, linked spaces for:

- **Uninstantiated items (structure)**
- **Instantiated items (continuous text)**
- **Hierarchical relationships**

SuperText tour (1)



SuperText tour (2)

Note 25 — View 2 — Use Count is 5

1. Authoring
   - 1.1. Authoring Considerations for Hypertext
   - 1.2. Reflections on Authoring, Editing, and Managing Hypertext.
   - 1.3. Writing & Reading Hypertext: An Overview

2. Cartographic issues
   - 2.1. Context and Orientation in Hypermedia Networks
   - 2.2. gIBIS: A Hypertext Tool for Exploratory Policy Discussion
   - 2.3. The Bookmark and the Compass: Orientation Tools for Hypertext User

3. Content and structure independence
   - 3.1. A Database Model for Flexible Hypertext Database Systems
   - 3.2. Writing & Reading Hypertext: An Overview

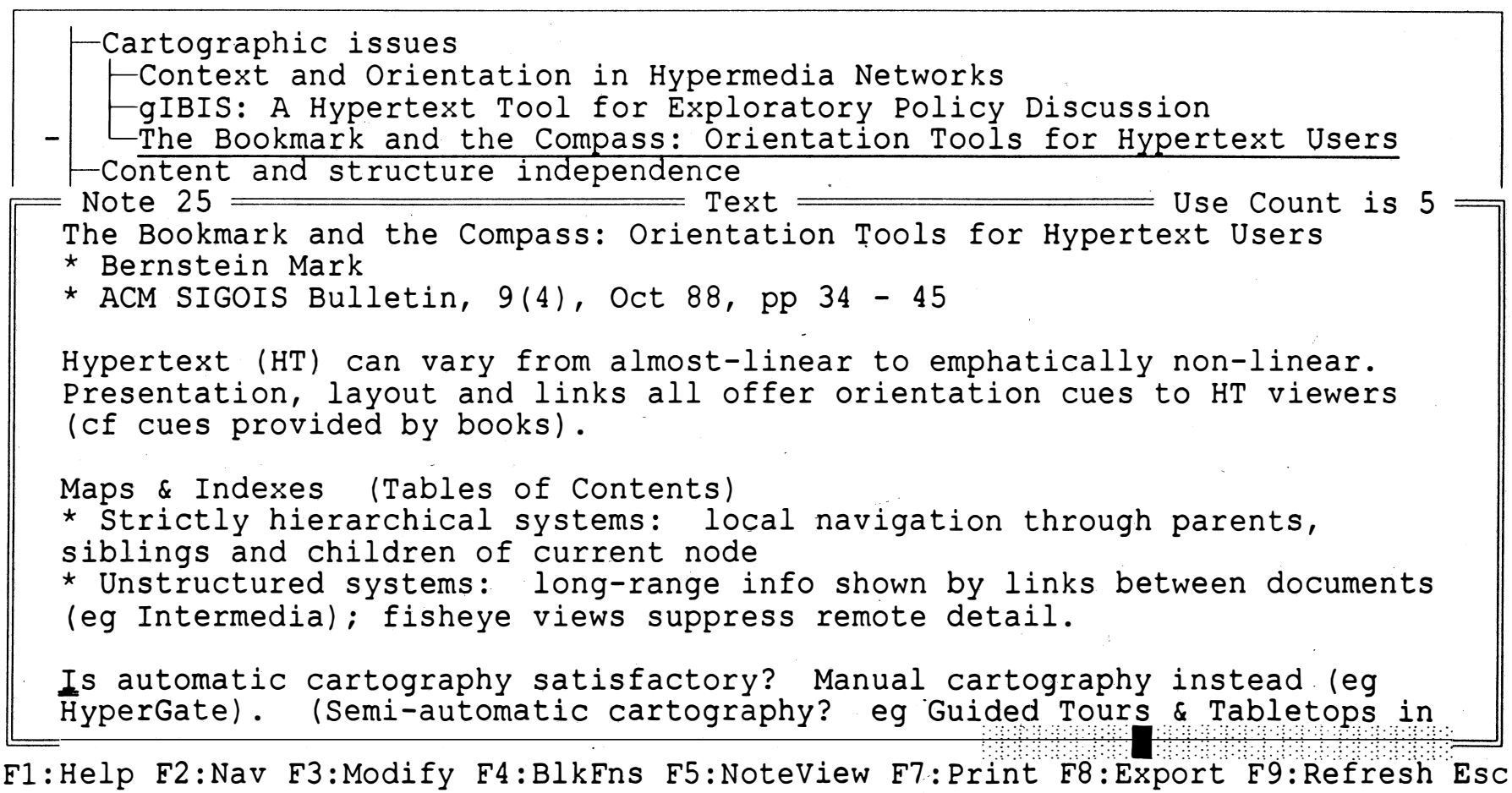
4. Hierarchies and heterarchies
   - 4.1. Context and Orientation in Hypermedia Networks

Note 25 — PreView — Use Count is 5

The Bookmark and the Compass: Orientation Tools for Hypertext Users
* Bernstein Mark
* ACM SIGOIS Bulletin, 9(4), Oct 88, pp 34 - 45
Hypertext (HT) can vary from almost-linear to emphatically non-linear.
.. more ..

F1:Help F2:Navigate F3:Modify F4:Display F5:View F6:File F7:Print F8:Ex Esc:Exit

SuperText tour (3)



Experimental Results

Rank	*Mean*	*Deviation*	*Result*
1st	0.95	0.12	Strong agreement: the different hierarchical representations are very useful.
2nd	0.87	0.16	Strong agreement: the multiple views are very useful to quite useful.
3rd	0.85	0.17	Strong agreement: the expandable hierarchies are very useful to quite useful.
5th	0.84	0.17	Strong agreement: the user prompts are very useful to quite useful.
7th	0.74	0.19	Strong agreement: SuperText is quite reliable.
7th	0.73	0.21	Fair agreement: using SuperText to represent one's thinking about a topic is easy to very easy.
20th	0.64	0.35	Some agreement: the SuperText method will be quite helpful in future essay preparation.