

# Technology and Collaborative Writing

March 11 Presentation

CSCW Class

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# Learning outcomes

- After attending this lecture, you should be able to:
  - Explain the issues surrounding writing and collaborative writing
  - Understand what people want from a collaborative writing groupware
  - Describe how modern word processing tools support the process of collaboration

# Widespread

- People have been writing in groups for a long time
- Many research papers are written in groups

# *Writing*

- A complex cognitive task
  - That has no well defined goal
  - And no formal intermediate steps
- (Sharples et al., 1991, Sharples, 1993, 1996)

# No defined goal

- ~~The~~ Any ~~last~~ final version of a ~~document~~ text could be ~~replaced with~~ changed to ~~a wide variety~~ an infinite number of versions that ~~mean the same thing~~ are just as appropriate

# No formal intermediate steps

- Plan at the start, or start writing, then sketch a plan, or just write without a plan, or any other variant
- Writing can be done in any order:
  - Start at the beginning and go to the end
  - start with the end and go back to the beginning (lots of mysteries are written this way)
  - Jump from start directly to end, go to middle, back to start, back to middle...

# Constraints

- Due-by date
- Type of writing (novel, technical paper, newspaper article)
- Subject

# Collaborative writing

- Introduces the complexity of group work to an already complex task
  - How to share the task at hand?
  - How to keep track of everyone's work?
  - How to communicate between members?
  - How to guide the group from start to finish?



# Time and space in groupware

|           | Synchronous        | Asynchronous         |
|-----------|--------------------|----------------------|
| Colocated | Interactive tables | Large public display |
| Dispersed | Videoconferencing  | Wikis, email         |

# Synchronous editing issue

- What if two people attempt to edit the same text at the same time?
  - Lock: Text (part or all) only accessible to one person at a time
  - Social: Let users negotiate beforehand
  - Automated: Computer calculates and decides order of edition

# Awareness

- Know who is in the group
- Know what they are doing
  - Can help reduce social loafing
- Know what is happening to the text
  - So that work is not duplicated
  - To know why text was removed/added

# Version control

- As text evolves, people may want to or need to access a past version:
  - Corrupted version
  - Previously removed text may need to be reinserted
- How does groupware take charge of version control?

# Collaborative Writing

- Have you written a document with a group?
- What problems did you encounter?
- What did you appreciate about group writing?
- What tools did you use?

# Early interviews

- Posner and Baecker 1993
  - 10 participants
  - Academics, writers, reporters
- Beck 1993
  - 23 participants
  - Academics
- Kim and Severinson Eklund 1998
  - 11 participants
  - Academics

# Group composition

- In general, groups are small: 2, 3 people
- A group's membership can change over time: people are added, people leave
- Groups often persist through several projects
- When there is a leader:
  - Either selected in advance
  - Or proposes self

# Roles

- Various roles for writing
  - Writer
  - Consultant
  - Editor
  - Reviewer
- One person can assume several roles
- Roles can change over time

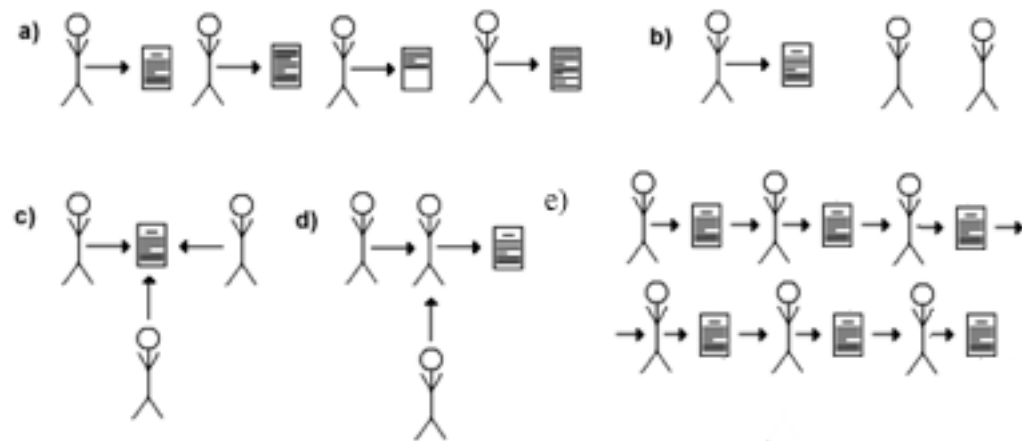


# Writing sub-tasks

- Brainstorm
- Research
- Plan
- Write
- Edit
- Review

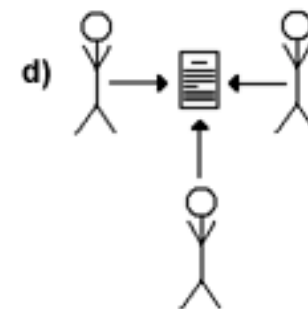
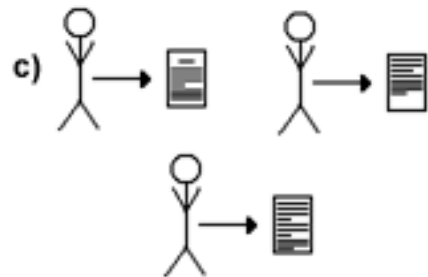
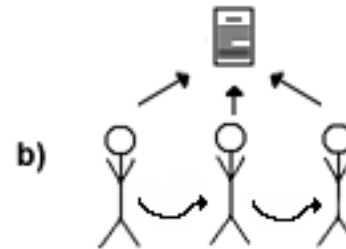
# Writing strategies

- A: Parallel; B: single author; C: Collaborative; D: scribe; E: Sequential



# Management strategies

- A: Central; B: Relay; C: Independent; D: Shared



# Project

- Word processor determined in advance
  - Issues with going from one OS to another
  - Formatting can be lost
- Communication tools
  - Choice of medium: email, face-to-face...
  - Bandwidth

# Early design requirements 1

Posner & Baecker, 1993

- Group issues
  - Preserve identities
  - Make roles explicit
  - Number of writers (one, many)
- Communication
  - Annotations
  - Asynchronous and synchronous

# Early design requirements 2

Posner & Baecker, 1993

- Variety of tasks
  - Brainstorming
  - Research
  - Planning (outline)
  - Writing
  - Editing, reviewing
- Transitions between activities
- Various access methods
  - Write
  - Read only
  - Comment

# Early design requirements 3

Posner & Baecker, 1993

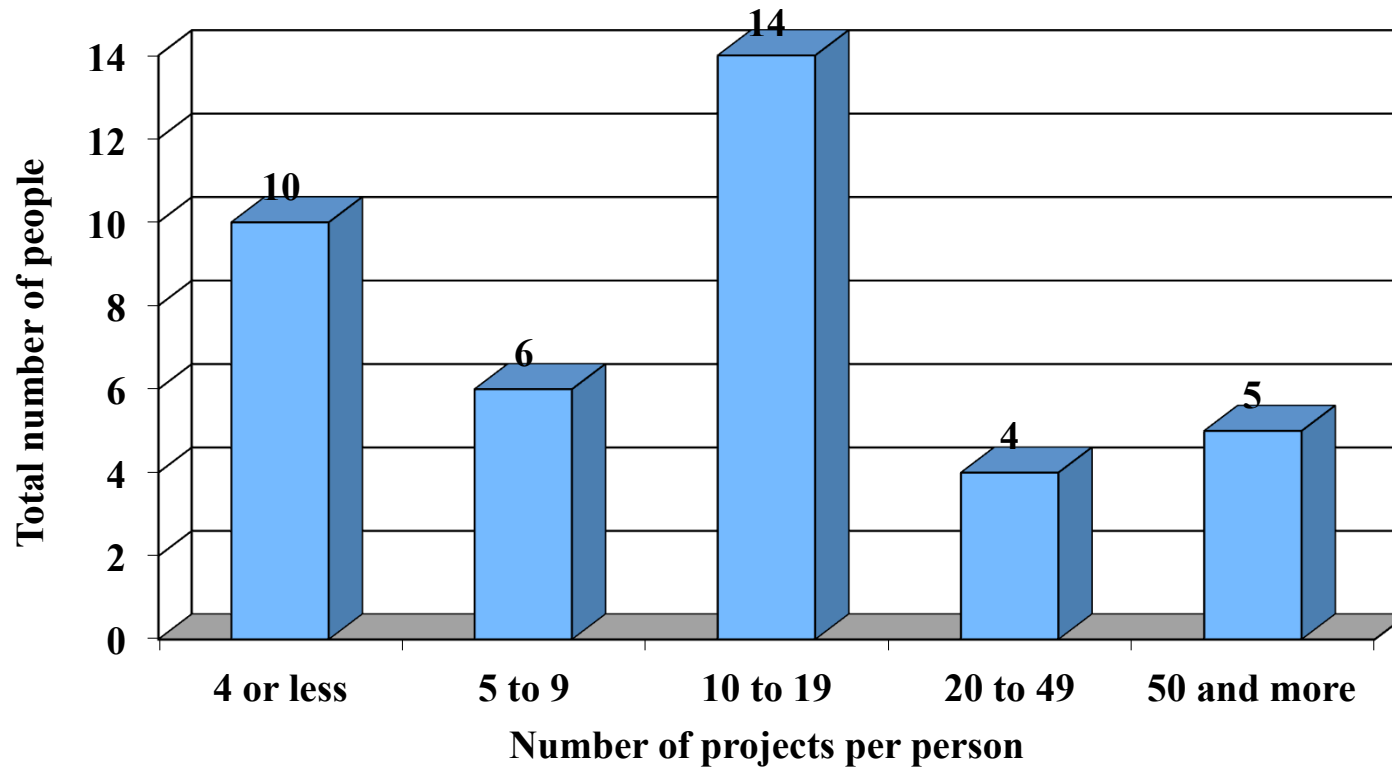
- Help early stages
  - Access to relevant information
  - Make plans explicit: process and outline plans
- Offer variety of writing approaches
  - Synchronous, asynchronous
  - Access document synchronously, sequentially
- Offer version control mechanisms

# My 2004 study

- 41 respondents



# Collaborative writing experience



# Technology used

- Only 3 respondents mentioned using a groupware tool
- Majority of people used Microsoft Word (83%)
- Variety of communication tools

# Communication tool

| Communication method | N  | Mean | SD  |
|----------------------|----|------|-----|
| Email                | 39 | 1,5  | 0,6 |
| Face-to-face         | 28 | 1,6  | 0,8 |
| Phone                | 26 | 2,6  | 0,8 |
| Online chat          | 8  | 2,8  | 0,7 |
| Fax machine          | 4  | 3,5  | 1,0 |
| Videoconference      | 2  | 3,0  | 1,4 |
| Mail                 | 1  | 3,0  | -   |

# Tool according to activity

| Reason                     | N  | Email   | Meeting | Phone/Other |
|----------------------------|----|---------|---------|-------------|
| Discuss document content   | 38 | 1 (34%) | 2 (32%) | 3 (25%)     |
| Discuss document structure | 35 | 2 (35%) | 1 (38%) | 3 (19%)     |
| Discuss work division      | 33 | 2 (38%) | 1 (40%) | 3 (23%)     |
| Write text                 | 31 | 1 (50%) | 2 (21%) | 3 (17%)     |
| Edit text                  | 36 | 1 (50%) | 2 (23%) | 3 (14%)     |
| Resolve conflicts          | 33 | 2 (33%) | 1 (37%) | 3 (17%)     |

# Collaborative writing

- Positive aspects
  - Better end result
  - Make task easier
  - Social benefits
- Negative aspects
  - Task may be more difficult
  - Management problems
  - Social conflicts

# Tips to people starting a collaborative writing project 1

- Work method
  - Create a work plan
  - Keep track of versions
  - Use drafts
- Project management
  - Select a leader
  - Make clear everyone's responsibilities

# Tips to people starting a collaborative writing project 2

- Tools
  - Select a good word processing tool
  - Choose the communication tools for your needs
- Group
  - Select members carefully
  - Have face-to-face meetings

# Ideal groupware writing tool?

- Synchronous access
- Communication tools
- Comments different from text
- See changes made to text
- Easily create a schedule
- Express ideas
- Tool sends notices and warnings
- Note-taking tool



# Early writing groupware

- Quilt, 1988
- PREP, 1990
- Aspects, 1990
- ShrEdit, 1992
- SASSE, 1994

# Quilt

A.

|   |   |
|---|---|
| This is the introduction to a document. It has annotations, like this one ****, added to it. The originator, type **** and date of the annotation are given in the side window. | Anne Comment Oct. 22<br>Bob Private Oct. 30 |
|---|---|

B.

|   |   |  |
|---|---|--|
| This is the introduction to a document. It has annotations, like this one ****, added to it. The originator, type **** and date of the annotation are given in the side window. | Anne Comment Oct. 22<br>Bob Private Oct. 30 | <i>Anne Comment Oct. 22</i><br>The type is one of the ones defined in the collaboration style. |
|---|---|--|




C.

|  |   |  |
|--|---|--|
| This is the introduction to a document. It has annotations, like this one ****, added to it. The originator, type **** and date of the annotation are given in the side window. <input type="checkbox"/> | Annotation Type<br>Comment<br>Revision<br><b>Directed Message</b><br>Private Note | <i>Directed Message from Bob to Anne Oct. 31</i><br>We should remember to point out that the comment is inserted at the current cursor location. |
|--|---|--|

# Quilt

- Asynchronous
- Colocated or dispersed
- Use any word processor
- Roles and collaboration style on creation
- Communication: notes, email, conference system
- Awareness: view others' activities
- Management: creator in charge

# PREP

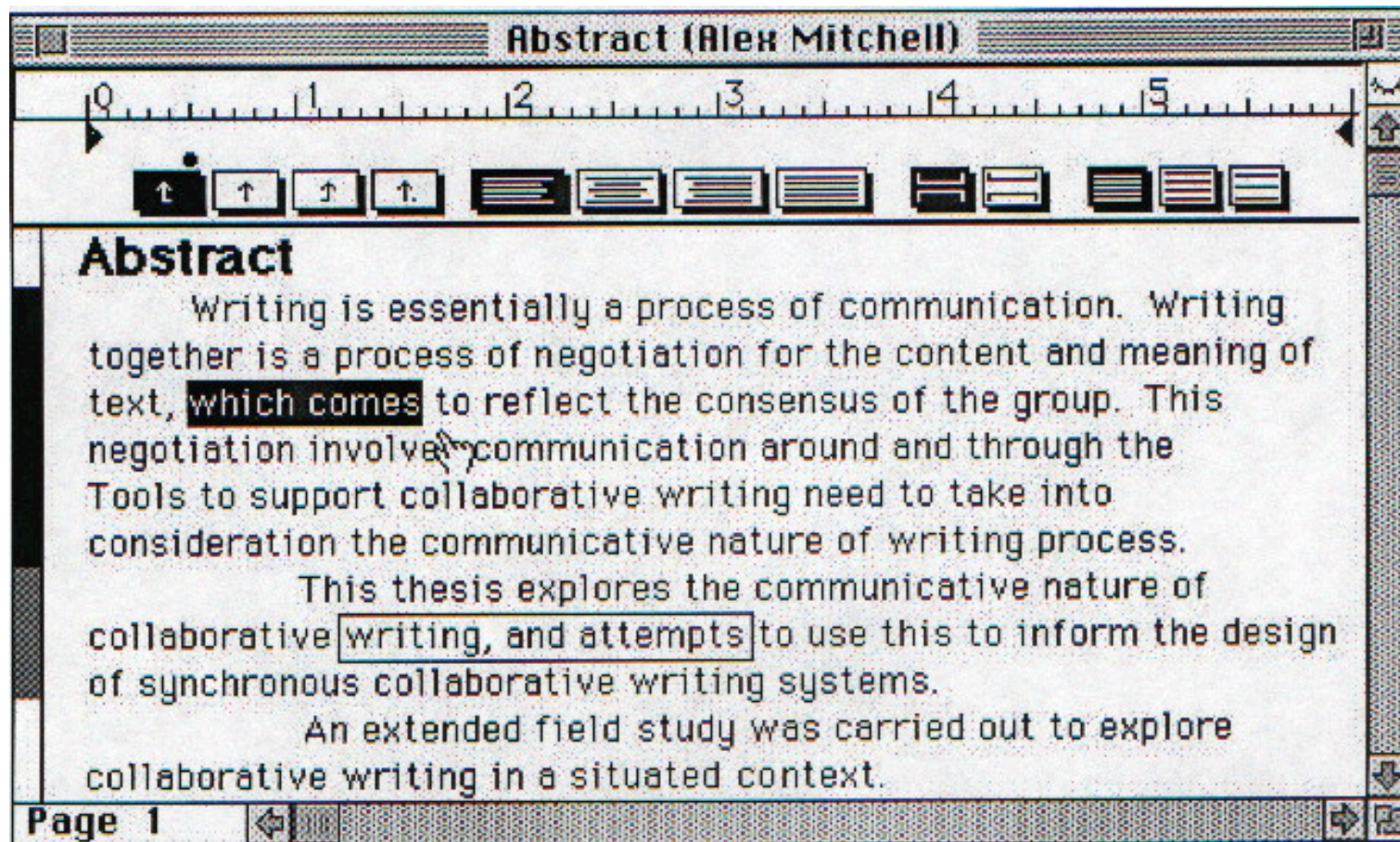
|  Plan (Content)   |  Content   |  Phil's comments   |
|--|---|---|
| <p>In the title I want to stress that we have spent time discovering, sometimes the hard way, when structure editors are effective and when they are annoying.</p> | <h2 data-bbox="835 565 1213 711">Structure Editors:<br/>Evolving towards<br/>appropriate use</h2> <hr/> <p data-bbox="810 748 1262 1019">Started with very rigid structure editors, no pointing devices, no textual entry except at terminals (ALOE). Added some tools to that environments, make it more palatable to the novice</p> | <p data-bbox="1318 748 1598 927">ALOE problems- 1. had a single, hierichical method to traverse and view progs 2. white space had meaning</p> <p data-bbox="1318 964 1556 1029">Hand coded semantic analysis was helpful.</p> |
| <p data-bbox="474 1062 737 1230">Introduction: give our history of involvement with structured editing environments</p>  | <p data-bbox="810 1062 1241 1328">Then moved to Macintosh and concentrated on flexible interface - incremental parsing via hand coded parsers, more smooth transitions and less modal. Strong emphasis on</p>   | <p data-bbox="1318 1073 1577 1279">Multiple views were very helpful. Outline, Design, Call Stack are tied to structure editor and pedagogically important.</p>  |

# PREP

- Asynchronous
- Colocated or dispersed
- Communication: comments, annotations
- Word processor: no
- Roles: Yes
- Awareness: column structure



# Aspects

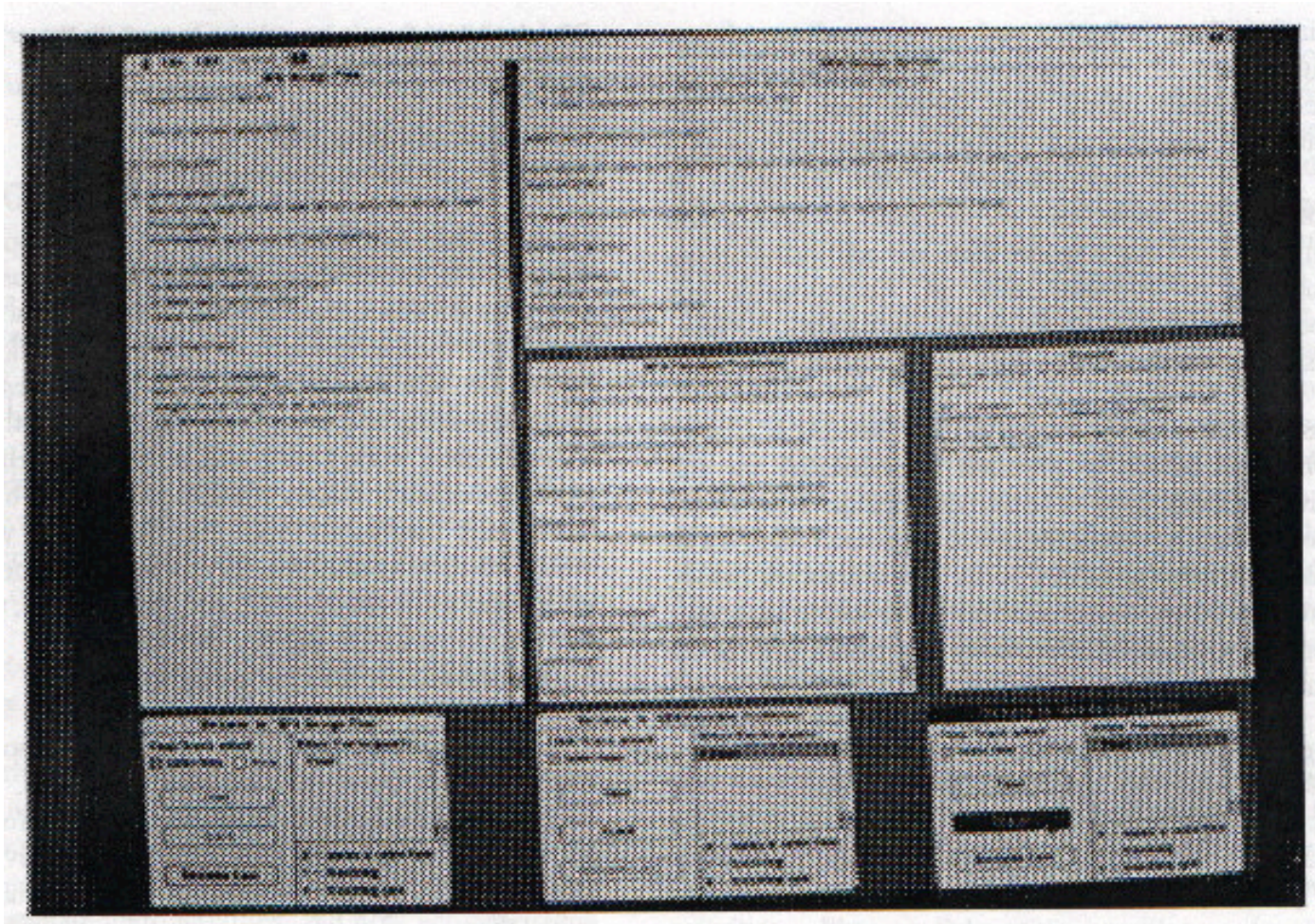


# Aspects

- Synchronous
- Colocated or dispersed
- Writing style: single author, relay, collaborative
- Roles: no
- Conflicts avoided through paragraph locking
- Communication: chatting
- Awareness: telepointer-cursor



# ShrEdit

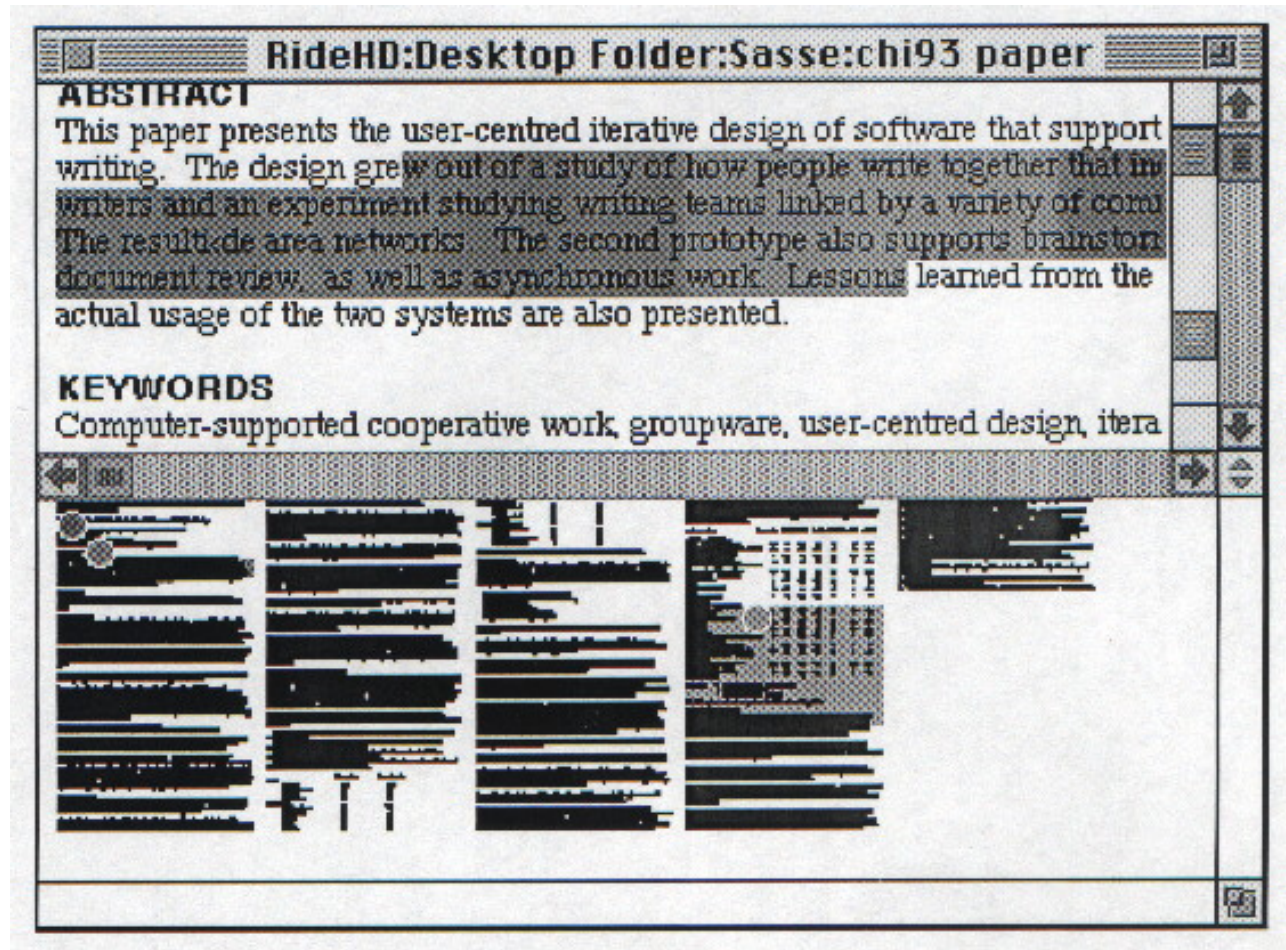




# ShrEdit

- Synchronous
- Place: colocated (meeting room)
- Communication: no
- Word processor: yes
- Roles: no
- Lock down selection
- Awareness: user names, “see” what other user is seeing

# SASSE



# SASSE

- Synchronous and asynchronous
- Colocated or dispersed
- Roles: no
- Communication: no
- Word processor: yes
- Awareness: gestalt view, colors to distinguish users, telepointer cursors

# Modern writing groupware

- Wikis
- Google Docs
- Microsoft Word

# Wikis



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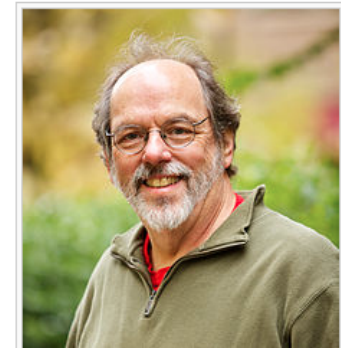
## History of wikis

From Wikipedia, the free encyclopedia

The **history of wikis** dates from 1994, when [Ward Cunningham](#) invented the concept and gave it its name (he gave the name "[WikiWikiWeb](#)" to both the wiki, which ran on his company's website at c2.com, and the [wiki software](#) that powered it). c2.com thus became the first [wiki](#), or a website with pages that can be edited via the browser, with a version history for each page. Before 1994, however, there were several historical antecedents to wikis, including [Vannevar Bush](#)'s proposed "[memex](#)" system in 1945, the collaborative hypertext database [ZOG](#) in 1972, and the [Apple](#) hypertext system [HyperCard](#) in 1987; though the creation of true wikis only became possible with the development of the [World Wide Web](#) in the early 1990s.

Cunningham created the first wiki in 1994, and released it in 1995, in order to facilitate communication between software developers. He chose "[WikiWikiWeb](#)" as the name based on his memories of the "[Wiki Wiki Shuttle](#)" at [Honolulu International Airport](#), and because "wiki" is the [Hawaiian](#) word for "quick". The website met with success, and began to spawn alternative wiki applications and websites over the next five years. In the meantime, the first wiki, now known as "[WardsWiki](#)", evolved as features were added to the software and as the growing body of users developed a unique "wiki culture". By 2000, WardsWiki had developed a great deal of content outside of its original stated purpose, which led to the spinoff of content into sister sites, most notably [MeatballWiki](#).

The website [Wikipedia](#), a free content encyclopedia, was launched in January 2001, and quickly became the most popular wiki, which it remains to this day. Its meteoric rise in popularity (it entered the top ten most popular sites in 2007) played a large part in introducing wikis to the general public.<sup>[*[citation needed](#)*]</sup> There now exist at least tens of thousands of wiki websites, and they have become increasingly prevalent in corporations and other organizations.<sup>[*[citation needed](#)*]</sup>



Ward Cunningham, the developer of the first wiki software, [WikiWikiWeb](#)

# Wikis

## Editing Collaborative writing (section)



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== Collaborative writing patterns ==

There are several of degrees of collaboration in authoring. At one end of the range is a single author who through discussion with and review by colleagues produces a document. The other end of the spectrum is a group of writers who jointly author a document. The article by Lowry et al. identified five coordination strategies for group writing: single-author writing, sequential single writing, parallel writing, reactive writing and mixed mode. Each strategy has inherent advantages and disadvantages. For each methodology, the key issue is how the work is divided.

Based on the results of the study conducted by Ede and Lunsford,<ref>Ede L. and Lunsford A. Singular Text/Plural Authors: Perspectives on Collaborative Authoring. Southern Illinois University Press, Carbondale, 1990.</ref> there are seven organizational patterns for collaborative authoring:

- # The team plans and outlines the task, each writer prepares his or her part, and the group compiles the individual parts and revises the whole document as needed;
- # The team plans and outlines the writing task, one member prepares a draft, and the team edits and revises the draft;
- # One member of the team plans and writes a draft, then the group revises the draft;
- # One person plans and writes the draft, then one or more members revise the draft without consulting the original authors;
- # The group plans and writes the draft, one or more members revise the draft without consulting the original authors;
- # One person assigns the tasks, each member completes the individual task, and one person compiles and revises the document;
- # One dictates, another transcribes and edits.

Results from the study indicated that the percentage of writing groups that use these methods often or very often ranges from 3% (method 5) to 31%.



# Wikis: Version

## Collaborative writing: Revision history

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(cur) = difference from current version, (prev) = difference from preceding version, **m** = *minor edit*, → = *section edit*, ← = *automatic edit summary*

(newest | **oldest**) View (newer 50 | older 50) (20 | 50 | 100 | 250 | 500)

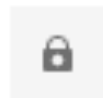
- (cur | prev) ☒ 19:45, 28 February 2013 Valmataro (talk | contribs) **m** . . (13,350 bytes) (-6) . . (→Collaborative writing as an educational tool: grammar) (undo)
- (cur | prev) ☒ 15:57, 28 February 2013 Valmataro (talk | contribs) **m** . . (13,356 bytes) (-26) . . (→Collaborative writing strategies: copy edit and format) (undo)
- (cur | prev) ☐ 15:55, 28 February 2013 Valmataro (talk | contribs) . . (13,382 bytes) (+946) . . (Added new paragraph with source) (undo)
- (cur | prev) ☐ 15:39, 28 February 2013 Valmataro (talk | contribs) **m** . . (12,436 bytes) (+160) . . (formatted reference) (undo)
- (cur | prev) ☐ 15:29, 28 February 2013 Valmataro (talk | contribs) **m** . . (12,276 bytes) (+44) . . (→Collaborative writing strategies: reference format) (undo)
- (cur | prev) ☐ 15:23, 28 February 2013 Valmataro (talk | contribs) . . (12,232 bytes) (+2,849) . . (Added new section) (undo)
- (cur | prev) ☐ 14:05, 28 February 2013 Valmataro (talk | contribs) **m** . . (9,383 bytes) (+3) . . (→Collaborative writing patterns: grammar) (undo)
- (cur | prev) ☐ 14:30, 26 February 2013 Valmataro (talk | contribs) . . (9,380 bytes) (-11) . . (→Collaborative Writing patterns: Formatting for legibility and copy edit) (undo)

48



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**Revision history** ✕

January 15, 8:59 PM  
■ sylvienoel60

**January 15, 7:19 PM**  
■ sylvienoel60  
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■ sylvienoel60

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January 15, 2:27 PM  
■ sylvienoel60

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2:06 PM Jan 10 • [Re-open](#) ✓

Selected text:

\*

Please add a title to this figure. Also reference it in the text please

Reply



**Fabio Morreale** We'll insert labels in the final version, in Latex

4:25 PM Jan 10



**Fabio Morreale** *Marked as resolved*

5:22 PM Jan 10



Adding a comment will re-open this



**Sylvie Noel**

2:04 PM Jan 10 • [Re-open](#) ✓

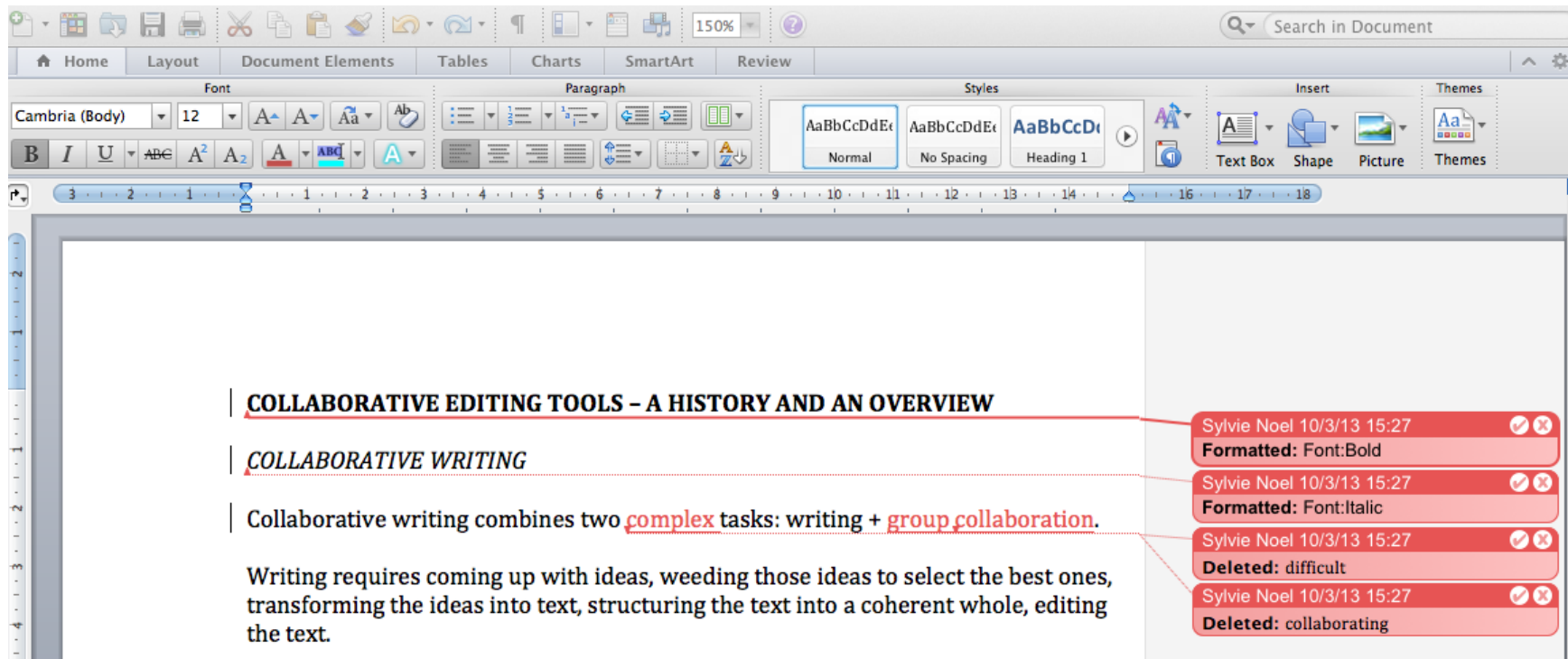
Selected text:

*that takes care of transforming the proxemic*

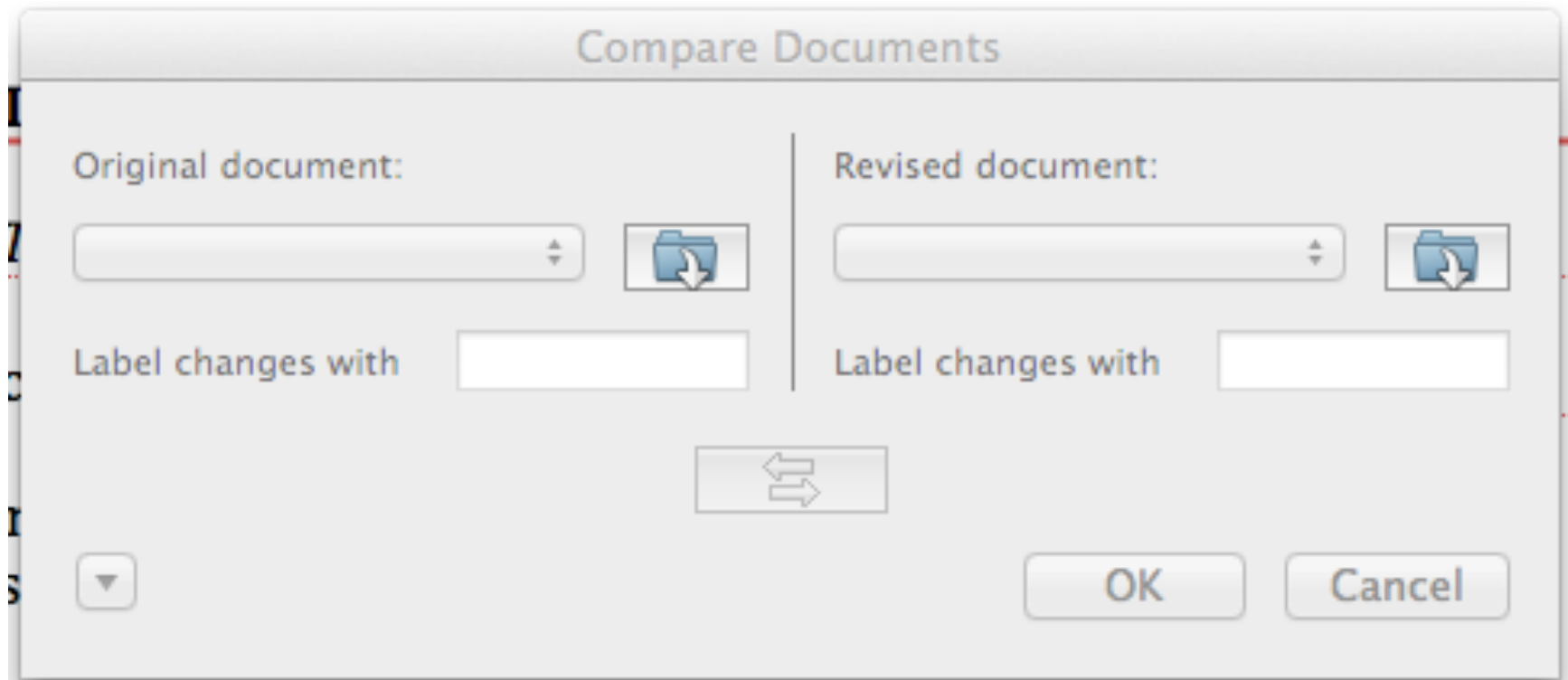
Confusing sentence

Reply

# Microsoft Word



# Microsoft Word



# Downside of working on the web

- Must have an internet connection
- Security, privacy issues associated with storing document in the cloud
- May have issues with formatting

# Other group writing tools

- TitanPad
- Zoho Docs
- Sync.in
- WriteLaTeX
- CollabEdit

# References

- Noël, S., and Robert, J.-M., 2004. Empirical study on collaborative writing: What do co-authors do, use, and like? *Computer Supported Cooperative Work*, vol. 13 (1) pp. 63-89.
- Posner, I.R., and Baecker, R.M., 1993. How people write together. In R.M. Baecker (ed.) *Readings in Groupware and Computer-Supported Cooperative Work: Assisting Human-Human Collaboration*, pp. 239-250.