DEPARTMENT OF COMPUTER SCIENCE
UNIVERSITY OF TORONTO

CSC318S

THE DESIGN OF
INTERACTIVE COMPUTATIONAL MEDIA

Lecture 4 — 21 January 1998

USER-CENTRED DESIGN; ITERATIVE DESIGN

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4.1 User-centred design

Requires an early focus on users and their tasks *prior to* system design

User diversity
　　　Not to be underestimated
　　　Not to be overestimated

Need to *understand* potential users
　　　Not just identifying and characterizing them

Do this through direct contact with users
　　　Surveys, questionnaires, and interviews
　　　Observations of current work
　　　Task analysis
　　　User(s) on design team

User-centred vs. *user-involved* or *user-directed*

Participatory design (Scandinavia)
　　　Developers and users: equal partners on design team

Read BGBG Chapter 2 and Gould paper in BGBG

4.2 Iterative design

Talk is not enough

Need to prototype, evaluate, revise, evaluate, etc.
　　　Design-->Prototype-->Evaluate
　　　-->Redesign-->Implement-->Evaluate
　　　-->Redesign-->Revise implementation-->Evaluate-->etc.

Need tools for rapid prototyping

Evaluation through empirical observation and measurement
    More about this later in the course

4.3 Example 1 — Movie Authoring Technology Concept

Hierarchic, outline-based script and movie organization

Top design design, bottom up implementation of movie

Integration of multiple media
    Text (Script)
    Voice, music, and sound effects
    Sketches (Storyboard)
    Recorded Video

Playback of "approximate" movie at any time

Collaborative design — multiple views and representations

4.4 Movie Authoring System Design Process

Will sketch history of the project over 6 years

1991?: AJR takes film production class at OCA, creates movie called
    How To Hyoop

Nov. 91: Diagram of hierarchic movie organization (Fig. 4.1)

Figure 4.1 Hierarchic movie organization "sketch"

Mar. 92: Sketch of script, expanded script, and movie playback (Fig. 4.2)

Apr. 92: Canned demo, prototype in Macromind Director

May 92: First C implementation of Movie Authoring and Design (MAD) System

June 92: Prototype of outliner control strategies in Director

92-93: Further development of C implementation, first demos to interested people

Sep. 93: First full-scale use in authoring SASSE movie for CHI'94 Conference (Fig. 4.3)

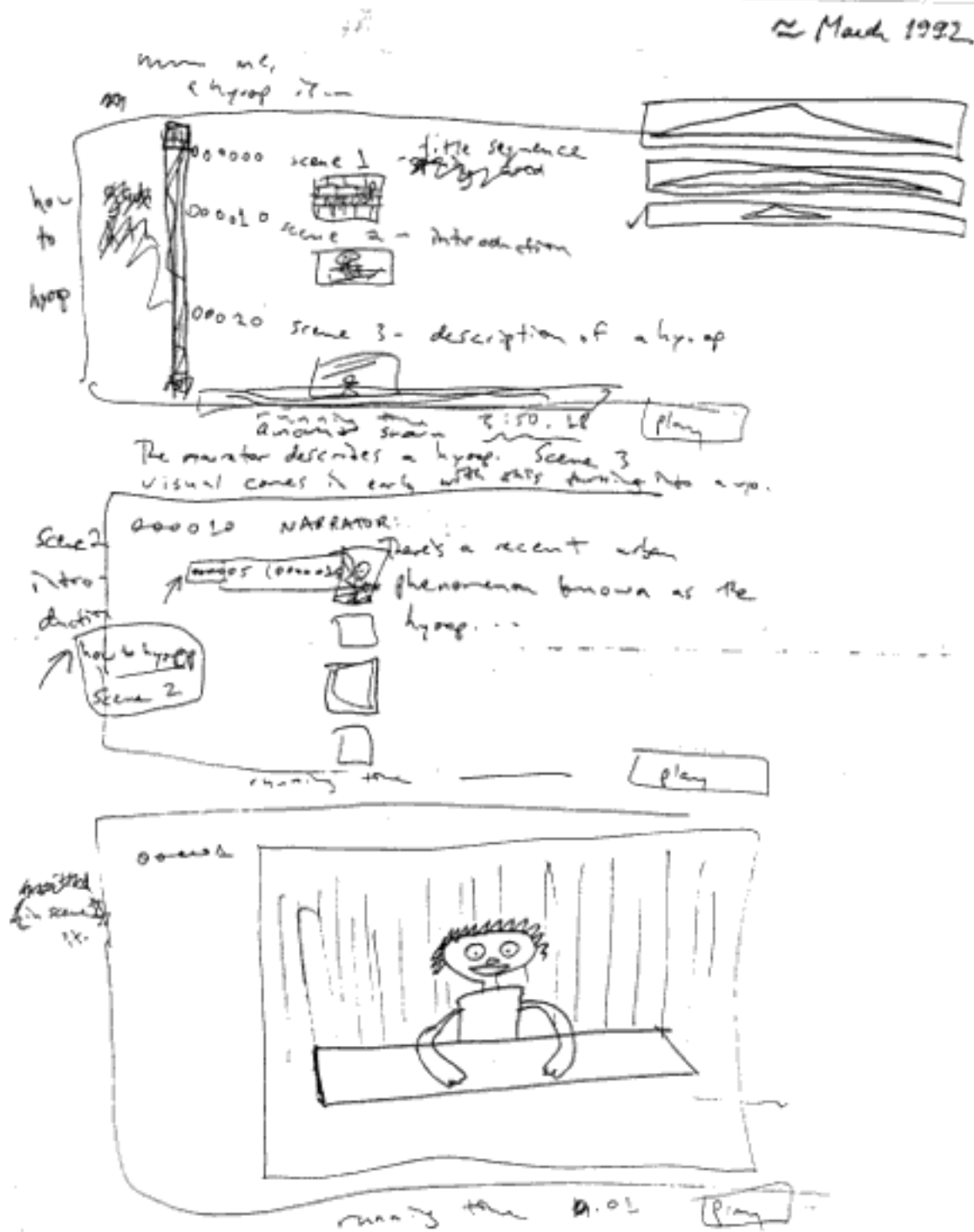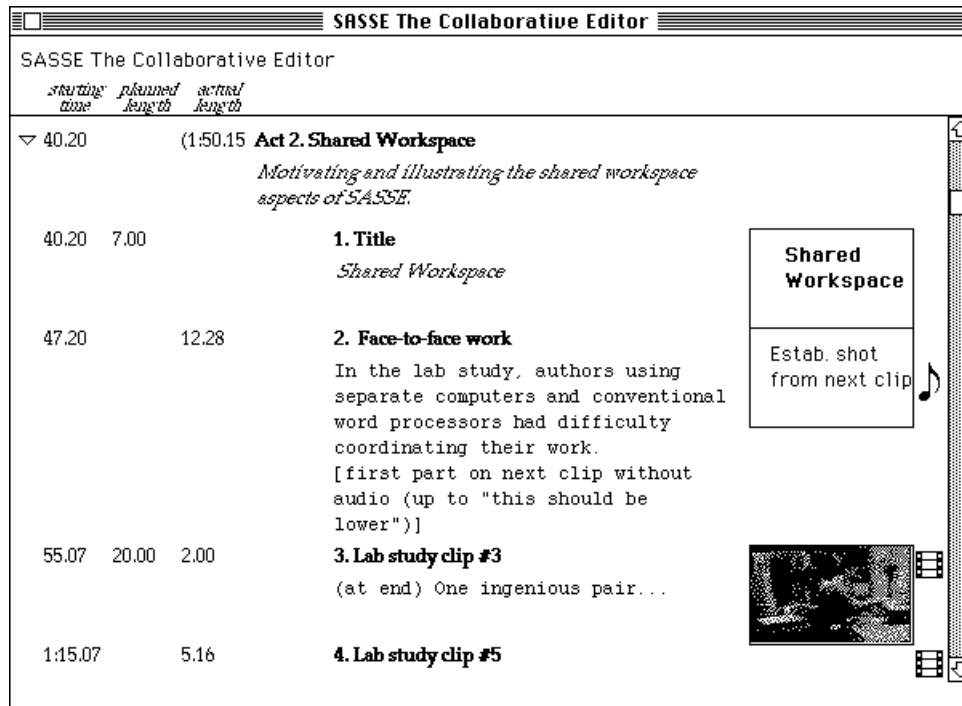*Figure 4.2   First hand-drawn sketch of MAD interface*

Figure 4.3 Working with MAD Version 1 on the movie SASSE The Collaborative Editor

First half of 1994: Use on other small projects, evaluation of use

Summer 1994: Redesign of interface, added functionality

Fall 1994: Implementation of new interface (Fig. 4.4)

Winter 1994-5: First demos to film and video community

1995: Reimplementation in C++ of most significant system classes to allow malleability and further expansion

1995: First rethinking of markets and customers --> kids, amateur filmmakers, education

Figure 4.4 Version 2 MAD Script Interface

1996-7: Continued usage for projects by young adults and children, demonstrations, design discussions, multimedia summer camps (first large scale usage with children)

1996-8: Redesign, with help of a graphic designer (Fig. 4.5); implementation of MAD v. 3 in Java; plans to commercialize

4.5 Movie Authoring Video Demonstration

Live demonstration of current system

4.6 Movie Authoring Current Issues

Need for robustness, evaluation of sustained real use

Extensions for more metaphors, viewpoints, and disciplines

Extensions to collaboration at a distance

Use as a toolkit in various applications

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Figure 4.5 Version 3 MAD Script Interface

4.7 Groupware and CSCW

Groupware — Information technology designed to help people work together

Computer-Supported Cooperative Work (CSCW) — The design science underlying groupware — The study of the use of groupware

Groupware allows people to work together despite the barriers of time and space

4.8 Example 2 — Collaborative Writing System Concept

Synchronous real-time viewing and editing of documents

Support various writing processes
Single writer
Scribe
Separate writers
Joint writing

Continuity with single-user editor

Use over local and wide area networks

4.9 Collaborative Writing Design Process

Interviews

Lab study

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Implementation 1 followed by usability test 1

Implementation 2 followed by usability test 2

Substantive real use and evaluation of use unfortunately crashed during
    Huron School Study

Reimplementation in tcl/tk, but then put on the shelf

4.10 Collaborative Writing Demo Video

Concepts, collaborative writing, system use, current issues

4.11 Collaborative Writing Current Issues

Support of asynchronous as well as synchronous work
      Check in and check out, document splitting and merging, version
      control, change management and display

Relationship to exisiting word processing software, knowledge-building
    software

4.12 Conclusions

Iterative design

User-centred or user-driven design

Multidisciplinary design