Human-Computer Interaction

”Perception, Representation & Windowing Design and Graphics Design in CHI”

BSc/CQU

Lecture 4

(December 27, 2001)

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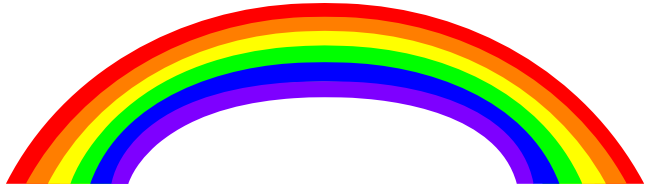
Outline



- ✓ Quick Review of Lecture 3
- ✓ Assignment 1 Class Presentation by Group B
- ✓ M8. Perception, Representation and Windowing
- ✓ M9. Design and Graphics Design in Computer Human Interaction
- ✓ Class Activity 1: Reading
- ✓ Class Activity 2: Assignment 3 Discussion
- ✓ Additional Handouts for L4
- ✓ What's in Store for Lecture 5

Quick Review on Lecture 3

- ✓ M5. Interaction Styles
- ✓ M6. Multimedia, Hypertext and The WWW
- ✓ Assignment 1 Class Presentation by Group B
- ✓ Class Activity 1: Reading
- ✓ Class Activity 2: Critical Analysis
- ✓ Class Activity 3: Reading

Students' Assignment 1 Presentation

Format of Presentation

- ✓ **Presentation** (**Content** 70%, **Delivery** 15%, **Q&A** 15%) by presenting Group
- ✓ **Q&A Session**
  - o **One Question** from each **reviewing group** (round-robin basis, eg. B, C)
  - o **Another Question** from each **reviewing group** (round-robin basis)
  - o **Open Q&A**, question(s) from any reviewer
- ✓ **Conclusion** from presenting group
- ✓ **Offline**: **1-pg constructive critique** from reviewing team by Wed (MSWord)

- ✓ **27th December 2001, Presentation by Group B**

Modules for Lecture 4

Corresponding chapters in Textbook/Resource Book

M8.	Perception, Representation and Windowing	Chapter 4, 14
M9.	Design and Graphics Design in Computer Human Interaction	Chapter 22, 23

M8: Perception, Representation and Windowing
Lecture 1 Revisit

- ✓ Important aspects of Perception and Representation were covered in a paper introduced in Lecture 1 titled “Using Theories of Perception in Computer Design”

Using Theories of Perception in Computer Design

Introduction

How can designers use theories of perception? I think the first question we should ask is - what are they trying to produce? The focus in this essay will be on designing for the computer but I am taking a broad view of design, where the purpose of the designed thing may be concrete such as a map or abstract, e.g. a piece of art. The aspects of research into perception we find interesting and useful will largely depend on what we're trying to create.

The next question is - which theory of perception? There are many theories and there are huge differences between them in terms of what they attempt to explain and how they were arrived at. I think the main issue for both the theorists and designers is one of problem definition. Just as the question for the designers is - what are we trying to make? - for the theorists it is - what are we trying to explain? An acceptable solution will necessarily depend on how the problem is defined. It seems to me that both theorists and designers can benefit from the other group's discoveries and questions (and

http://www.geog.le.ac.uk/argus/people/Kath_Stuff/VisEssay.html

M8: Perception, Representation and Windowing

Introduction to Windowing

- **Rectangular** area of visual display
- **Border**
- Contains **independent view** of data
- Way of **partitioning** the computer screen

M8: Perception, Representation and Windowing

Benefits of Windowing Systems

- ✓ **Optimisation** of limited display space
- ✓ Interaction of **multiple views**
- ✓ Use of **one set** of **input devices**
- ✓ **Different mouse actions allowed**
- ✓ **No complex** command languages
- ✓ **Standardised** interface across applications

M8: Perception, Representation and Windowing

Basic Windows Components

- ✓ Windows
- ✓ Menus
- ✓ Controls and Cursors
- ✓ Dialogue boxes

M8: Perception, Representation and Windowing

Basic Windows Components: Window

- ✓ Rectangular areas of display that can be **moved**, **sized** and **rendered independently**
- ✓ **Subpane - subdivide a single window**, but cannot be moved independently

M8: Perception, Representation and Windowing

Basic Windows Components: Menus

- **Explicit Pop-Up Menus -** triggered by **clicking on appropriate interface component**.

- **Implicit Pop-Up Menus -** can be **made to appear** without having to take the cursor to any particular labeled object.

M8: Perception, Representation and Windowing

Basic Windows Components: Controls and cursors

- **Controls** - Interface components such as sliders, buttons, check boxes, etc.

- **Cursors**
  - Mouse - shows current position
  - Text - where input will be directed

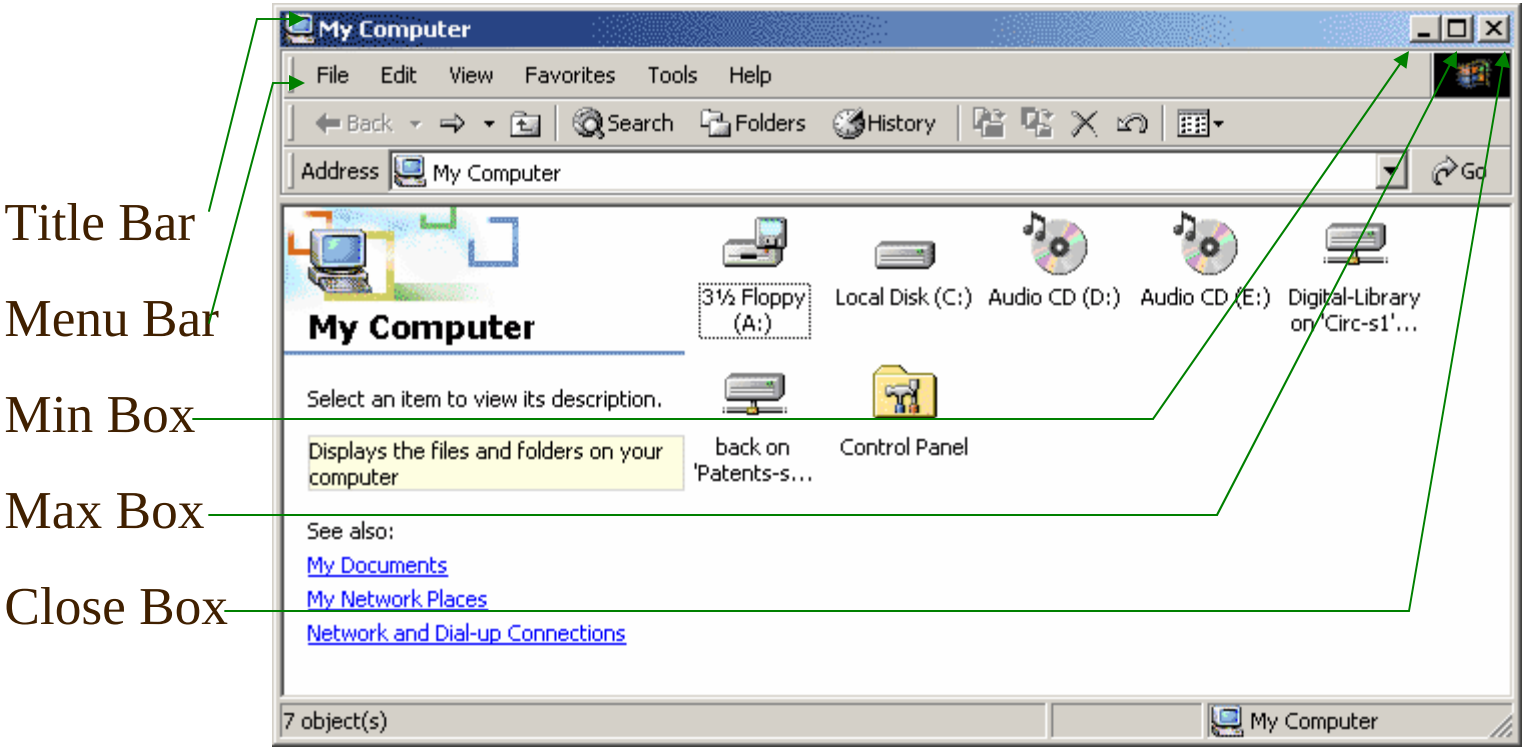
M8: Perception, Representation and Windowing

Basic Windows Components: Dialogue boxes

- On screen controls that the system displays to provide **contextual information**.
  - **Modal -** force user to respond before any other action can be taken
  - **Modeless -** offer information and request some action
  - **System initiated -** query/message boxes

M8: Perception, Representation and Windowing
Widget Example

- Standard Window System Components



M8: Perception, Representation and Windowing

Types of Windows

- ✓ Scrollable windows
- ✓ Split windows
- ✓ Tiled windows
- ✓ Overlapping windows
- ✓ Pop-up Windows
- ✓ Floating palette windows

M8: Perception, Representation and Windowing

Tasks in Windowing Systems

- **Managing Input**
  - Mouse actions: point, click, press, drag, and double click
- **Changing Window Focus**
  - Click to Focus
  - Mouse to Focus
- **Managing Single Windows**
  - moving, scrolling resizing
- **Managing Multiple Windows**
  - Iconification, Tiling, and Overlapping

M9: Design and Graphics Design in CHI

Two Good Articles

I'd Rather Play Computer Games Than Do Real Work. Wouldn't You?

Roger Grice
Clinical Assistant Professor
Department of Language, Literature, and Communication
Rensselaer Polytechnic Institute

One place I like to visit if I'm in a shopping mall is the computer store. (The other
places are the book store and the food court, but that's another story.) In the early
mall computer stores displayed a fairly wide range of business-related software—
filled with application packages, media-development software, programming aids,
desktop publishing packages. Probably a fairly representative sampling of the type
software people were buying and using. Visits to the mall computer store today pr
quite a different view of things: the shelves are loaded with computer games in a
array of titles, concepts, and graphics. The "more serious" software is usually fou
back corner.

Why the change? Many saw the initial growth of home computing as an opportun
increased productivity, growth of home business, and heightened education. What
to have happened, however, is that people are spending a large portion of their co
time—the time not spent surfing the Web—playing games.

Strange? Perhaps. But perhaps the choice should not come as a surprise. In this pa
explore the phenomenon of games popularity, including some characteristics of a
learning environment and the similarity to many computer games, some hypothes
game popularity, some studies conducted by students at Rensselaer Polytechnic In
some plans for future studies, and some implications for the design of business so
and distance education courses.

Why Study Games Interfaces?

Instructional Design Lessons Technical Communicators Can Learn From Games

by Rob Houser and Scott DeLoach

Why does it take hours for our users to build up their confidence to approach our products, try to install or use them, consult the manuals in frustration, and finally ask the person down the hall for help? In contrast, why do players of arcade, video, and computer games seem to approach the games without fear, eagerly exploring and learning as they go?

Our research examines the way interface design for applications influences motivation, training, performance, and error correction. In this paper and presentation, we attempt to lay the ground work for additional research by defining the instructional methods used in games and by surveying the literature related to the design of game and business applications.

Introduction: Why study games?

When people sit down to play a game, they are transported to another world where they may get lost or encounter surprises. They usually find this exploration exciting. By contrast, when users get lost in a business application they become frustrated (Carroll, 1982). Games have a way of drawing users to them and keeping them. Perhaps we shouldn't be surprised that the market for game applications is thriving. Its size and success rivals any other product line in the world. Yet in the business environment, games, and business applications that look like games, often are viewed with disdain. Traditionally, people have viewed leisure activities such as games as a separate activity from work; however, activities we do for fun are not necessarily the opposite of work (Blanchard and Cheska, 1985).

In other words, work involving business applications does not have to be difficult to approach, confusing to learn, or frustrating to use.

In *Things That Make Us Smart*, Donald Norman identifies seven basic requirements of a learning environment (Norman, 1993):

- Provide a high intensity of interaction and feedback
- Have specific goals and established procedures
- Motivate
- Provide a continual feeling of challenge, one that is neither so difficult as to create a sense of hopelessness and frustration nor so easy as to produce boredom
- Provide a sense of direct engagement, producing the feeling of directly experiencing the environment, directly working on the task
- Provide appropriate tools that fit the user and task so well that they aid and do not distract
- Avoid distractions and disruptions that intervene and destroy the subjective experience

These requirements are satisfied in most games. So why can't business applications be more like games? They can.

How do people use applications?

As an introduction, consider the following two scenarios of how people use game and business applications:

Class Activity 1: Reading

“Web Pages That Suck”

Web Pages That Suck

Chapter 2: Site Design and Navigation

Class Activity 2: Assignment 3
Discussion

Assignment 3 (2000): Software Prototype and Report

Due Date: Monday, Week 15 (9 October 2000)

Penalties will apply to late assignments unless an extension is obtained from the lecturer.

Weighting: 50%

Project:

Students are asked to develop an executable prototype. The topic of the prototype is the student's choice. All students may choose either internal or external mode. Internal mode will present their team effort to class for review and discussion. As such, this presentation will be formally marked (10%), with review (5%). Visual Basic version 6.0 can be used, and it is expected that each project will include at least one scanned image or picture and one sound message.

Topic suggestions include:

(a) Application using a database

In the past students have submitted prototypes to explore family heritage, hotel accommodation, orientation packages, testing systems (multiple choice quiz) and so on.

One interesting site on the web is http://www.idrink.com/

(b) *Kiosk systems*

This is another area that is popular with students, particular students from the Multi-Media courses. Areas include tourist systems, banking systems, building design shows, trade show exhibitions, work placement systems etc. Internally, at a local level, we will be exploring a kiosk system developed for Beef 2000, by the interactive multimedia unit on campus. Links needed for this kiosk included cattle exhibitions, cultural exhibitions, tours, social and entertainment, food activities, conference and seminars. A map for each activity was a must, as well as time and date of activity. eg. http://www.LondonTown.com/

(c) Other

Other packages included instructional systems, eg "How to buy a PC" educational package, or marketing package for an organisation.

Important: There is a large number of students so we must be able to run your program easily. Make sure all files needed are on disk(s) or a CD ROM disk. It must run "stand–alone". We might have a different version of the language from you. Ensure operating instructions are very clear.

Submission requirements

You are to submit (hardcopy and zipped softcopy via email to tralvex@acm.org):

- an operational version of the program
- an evaluation of the program using five target users of the package
- a report including :

1. Table of contents
2. Executive summary
3. Introduction
4. System requirements (description, how determined, user analysis, task analysis)
5. System Design (how the requirements are meet by the designer)
6. Testing (especially useability, who tested it, how, data gathered)
7. Known limitations (include hardware and interface design)
8. Operating instructions (ie, how does the CUU marker load and run the programs – installation and user guide)
9. Discussion and conclusions (what you learned, how you would improve the system, comments on the development process).

The preferred length for Sections 1 to 8 is 2000 words, excluding tables, figures, appendices and references. Please put the word count on the front cover sheet. Section 9 is suggested to have a length of 250-500 words.

For both the report and the program I will be looking at quality rather than quantity. You do not necessarily have to submit a fully completed program. Parts of the program might just be a stub, with a message indicating this when you run the program, for example, *This section not completed yet*. However, at least ten (10) different screens must be fully completed.

All sections are to be completed by the individual student.

Marking

Marks (Total 50%) will be allocated as follows:

1. Software Program 30%
2. Report + User evaluation 20 %

Note that when marking the program, the contents of the report may be taken into account, for example, known limitations, usability testing.

Additional Handouts for Lecture 4

- ✓ 1. “Web Pages that Suck”
- ✓ 2. “I’d Rather Play Computer Games Than Do Real Work. Wouldn’t You?”
- ✓ 3. “Instructional Design Lessons Technical Communicators Can Learn From Games”
- ✓ 4. Games Interface – 3D Pinball; Starcraft; and Hockey

What's in Store for Lecture 5

- ✓ M10. User Support and Online Information
- ✓ M11. Guidelines, Standards, Prototyping and GUI Software and Support Tools
- ✓ Assignment 1 Presentation - Group C

End of Lecture 4

Good Night.