Chapter 2. Issues in Multimedia Authoring

- *Reference:* Arch, C. Luther, "Authoring Interactive Multimedia", *AP Professional*, 1994.
- *Reference:* Chapters 5-8 in D.E. Wolfgram, "Creating Multimedia Presentations", *QUE*, 1994.

Multimedia Authoring Metaphors
Content Design
Visual Design
Technical Design

2.1. Multimedia Authoring Metaphors

- *Authoring* -- the process of creating multimedia applications

- *Authoring metaphor*, also known as *authoring paradigm*, is the methodology for authoring multimedia applications.

  The following are some of the common ones:

1. **Scripting Language Metaphor**
   - use a special language to enable interactivities (button, mouse, etc), and to allow conditionals, jumps, loops, functions/macros
   - e.g., OpenScript in Toolbook by Asymetrix

2. **Slide Show Metaphor**
   - by default a linear presentation
   - e.g., PowerPoint, ImageQ

3. **Hierarchical Metaphor**
   - organized into a tree structure
   - seen often in menu-driven applications

4. **Iconic/Flow-control Metaphor**
   - graphical icons and flow chart to help authoring
   - e.g., Authorware by Macromedia

5. **Card/Scripting Metaphor**
   - index-card structure, good for hypertext/hypermedia
   - e.g., SuperCard, HyperCard by Apple

6. **Cast/Score/Scripting Metaphor**

- with cast members, music scores, and scripting language; many synchronous horizontal "tracks" simultaneously shown in vertical columns;
- e.g., Director by Macromedia (it uses Lingo as its scripting language)

2.2. Content Design

- What to say, what vehicle to use.

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"In multimedia, there are five ways to format and deliver your
 message.  You can write it, illustrate it, wiggle it, hear it,
 and interact with it."                  -- D.E. Wolfgram
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2.2.1 Scripting (*writing*)

Rules for good writing:

1. Understand your audience and correctly address them.

2. Keep your writing as simple as possible.
   -- e.g., write out the full message(s) first, then shorten it.

3. Make sure technologies used complement each other.

2.2.2 Graphics (*illustrating*)

- Make use of pictures to effectively deliver your messages.

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                                    -- "A picture is worth ten-thousand words."
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- Create your own (draw, (color) scanner, PhotoCD, ...), or keep "copy files" of art works.

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                                    -- "Cavemen did it first."
```

- Color Themes -- be consistent with the contents
  - pastels
  - earthtones
  - metallic colors
  - primary colors
  - neon colors

2.2.3 Animation (*wiggling*)

Types of Animation

- Character Animation -- humanize an object

  e.g., a toothbrush, a car, a coke bottle, etc.

  Factors in choosing a character

  - Emotion -- Is it happy, sad, funny, sloppy, ...?
  - Movement -- Is it fast, slow, bumpy, ...?
  - Visual style -- Is its color/texture consistent with the rest?
  - Copyright -- "Don't use Mickey before checking with Walt."
  - Adequacy -- e.g., Does it provide various poses (can't make a broomstick sit!)

- Highlights and Sparkles

  e.g., to pop a word in/out of the screen, to sparkle a logo

  `--> to draw attention`

- Moving Text

  e.g., put up one character at a time like a typewriter
  e.g., "pulsing" -- the word grows/shrinks (or changes color) a few times

  Note: Do not slowly move entire line of text, they are not readable. Instead, for example, slide the bullets in and out.

- Video -- live video or digitized video

  +: more powerful than still images
  +: often easier to obtain than graphics animation
  -: takes a lot of disk space
  -: sometimes needs special hardware

2.2.4 Audio (*hearing*)

Types of Audio in Multimedia Applications:

- Music -- set the mood of the presentation, enhance the emotion, illustrate points

- Sound effects -- to make specific points, e.g., squeaky doors, explosions, wind, ...

- Narration -- most direct message, often effective

2.2.5 Interactivity (*interacting*)

- interactive multimedia systems!

- people remember 70% of what they interact with (according to late 1980s study)

Some Common Types of Interactive Multimedia Applications:

- Menu-driven programs and presentations
- Hypermedia
- Simulations / Performance-dependent Simulations
  e.g., Games -- SimCity, Flight Simulators
- Video-conferencing (NetMeeting, etc.)

2.3. Visual Design

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1. **Themes and Styles**

   -- A multimedia presentation should have a consistent theme/style, it should not be disjointed and cluttered with multiple themes.

   -- The choice of theme/style depends on the styles and emotions of your audience.

   Some Possible Themes:

   - Cartoon theme

     +: interesting / entertaining
     -: must be consistent with the character's personality

   - Traditional theme -- straightforward marketing pieces

     +: simple, often informative
     -: not as interesting

   - High tech theme -- contemporary computer art work (morphing, texture mapping, metal texture, explosions, ...)

     +: attractive, easy to animate

   - Technical theme -- include blueprints, 3D models of the product, ... e.g., start with a drawing, then transformed into a rendered image.

     +: shows adequate technical information
     +: gives impression of solid design and construction

2. **Graphics Styles**

- *Reference:* R. Vetter, C. Ward and S. Shapiro, "Using color and text in multimedia projections", *IEEE Multimedia*, Vol. 2, No. 4, pp. 46-54, 1995.

    - Some *color schemes* (e.g., natural and floral for outdoor scenes) and *art styles* (e.g., oil paints, watercolors, colored pencils, pastels) are best combined with a certain theme/style.

Color Principles and Guidelines

- Do not use too many colors !
- Be consistent with the use of color
- Use colors to separate ideas and signal changes

Fonts

- Size: -- e.g., Use 14 to 24 points, no more than 6 lines per screen
- Style: -- e.g., serif vs. sans serif

3. **When to Animate**

> "A leaf doesn't flutter if the wind doesn't blow."

Only animate when it has a specific purpose

- Enhance emotional impact

  e.g., dove softly flapping its wings --> peace
  e.g., air bag explosion + dummy movements --> car crash.

- Make a point

  e.g., show insertion of a memory chip onto the motherboard (much better than a diagram)
  e.g., Microsoft Golf (instructional)

- Improve information delivery

  e.g., "pulsing" words (in and out of screen) adds emphasis

- Indicate passage of time

  e.g., clock/hourglass --> program still running
  e.g., animated text --> to prompt for interaction/response

- Provide a transition to next section

- Wipes -- e.g., L-to-R, T-D, B-U, diagonal, iris round, center to edge, etc.
- Dissolve -- the current image distorts into an unrecognizable form before the next clear image appears, e.g., boxy dissolve, cross dissolve, etc.
- Fade -- a metaphor for a complete change of scene
- Cut -- immediate change to next image, e.g., for making story points using close-up

4. **Pace and Running length**

   A few guidelines:

   - Allow a block of text to be slowly read twice.
   - Transition time should be an indication of real-time.
     - dissolve -- time delay, scene change
     - cut -- two views of same scene at same time, or abrupt scene change
   - Running length
     - self running presentation: 2-3 minutes
     - limited interaction: 5-6 minutes
     - complete analytical, hands-on demo: < 15 minutes
     - with questions, discussions: > 30 minutes

   ** build in breaks for long presentations

5. **Basic Layout**

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(a) Title
(b) Action area
(c) Narration
(d) Dialog
(e) Interactive controls
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   - make sure that the information delivery path in the layout is smooth, not irregular/jumpy
   - use headlines/subtitles, additional shapes, buttons, fonts, backgrounds and textures to enhance the visual appearance.

2.4. Technical Design

- Technical parameters that affect the design and delivery of multimedia applications

Video Mode	Resolution	Max # Colors
CGA	320 x 200	4
EGA	640 x 350	16
VGA	640 x 480	16
	or 320 x 200	256
SVGA	640 x 480	16.7 million *
SVGA	800 x 600	16.7 million *
SVGA	1,024 x 768	16.7 million *
SVGA	1,152 x 864	16.7 million *
SVGA	1,280 x 1,024	16.7 million *
SVGA	1,600 x 1,200	16.7 million *
	...	

```
* The actual number of colors displayed may be smaller, it depends
  on the amount of video memory on the graphics card.

   8-bit color -->    256 colors
  16-bit color --> 65,536 colors
  24-bit color --> 16.7 million colors
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1. **Video Mode and Computer Platform**

   PC <--> Macintosh

   There are many "portable", "cross-platform" software and "run-time modules", but many of them lose quality/performance during the translation.

2. **Memory and Disk Space Requirement**

   Rapid progress in hardware alleviates the problem, but software is too "greedy", especially the multimedia ones.

3. **Delivery**

   - Live Presentation
   - Delivery by diskette

     -: Small in size, slow to install

   - Delivery by CD-ROM

     +: Larger capacity
     -: Access time of CD-ROM drives is longer than hard-disk drives

- Electronic Delivery (Netshow/Streaming-video, etc.)

  -- depends on baud rate, network connection, and monthly bill

Further Exploration

- Animation on the Web: From Server-Push to Java (Presentation slides)

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Top | CMPT 365 Home Page | CS