

Chapter 5 Summary

Do unto others...

Do you remember learning the Golden Rule when you were in grade school? Well, user interface design has three golden rules, around which several principles revolve:

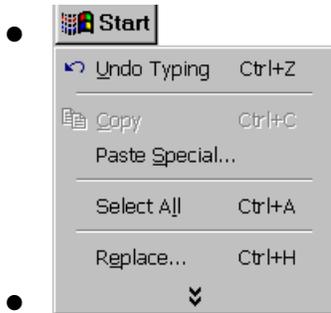
- place users in control
- reduce users' memory load
- make the interface consistent

Place users in control

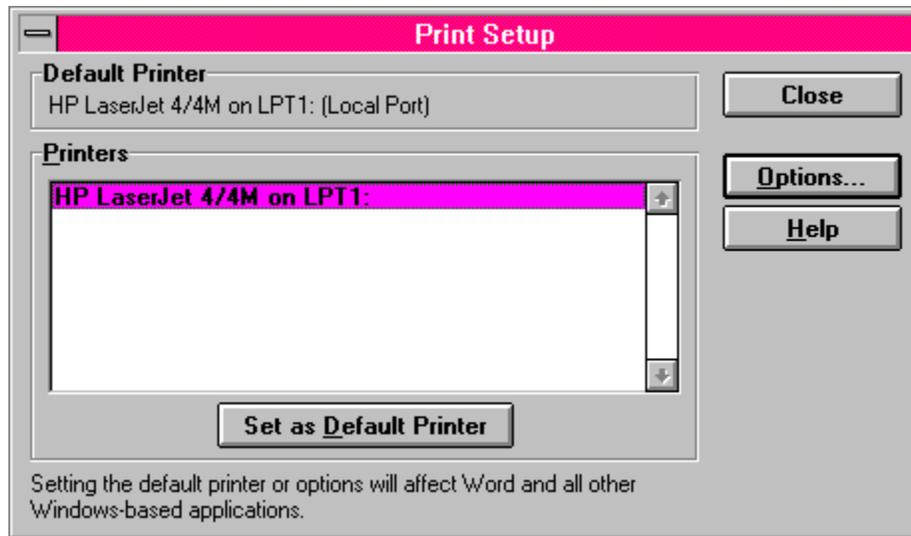
Placing users in control means giving them choices, flexibility, and support. To facilitate this rule, Web sites should:

- ◆ use modes judiciously (modeless)
 - VCR
 - Toolbox in drawing
 - Word Processor – insert vs. overwrite
 - Modal vs. System dialog box. Print vs. Spell
 - If modes are natural, they are fine, its only a problem when they are distracting.
- ◆ allow users to use either the keyboard or mouse (flexible)
 - How to bold in word
 - All that mouse clicking is hard on the hand/wrist
 - Old laptop mice
 - New laptop pad/point
- ◆ allow users to change focus (interruptible)
 - What do you do when the boss interrupts you
 - Or a telephone
 - OR its 5PM
- ◆ display descriptive messages and text (helpful)
 - We saw some fabulous examples of bad work already.
- ◆ provide immediate and reversible actions, and feedback (forgiving)

- In Shrek we see the waiting line to the castle, a la Disney 45min from here.
- Lack of feedback causes *superstitious behavior*
- ◆ provide meaningful paths and exits (navigable)



- Lost in hyperspace
- ◆ accommodate users with difference skill levels (accessible)
 - Physical handicaps
 - Left handed
 - Old
 - Experts
 - Touch typists
- ◆ make the user interface transparent (facilitative)
 - Mac Trash Can
 - Sync with users' mental model.
 - Ctrl-Alt-Del
 - Windows is trying to be like the Mac where the user seldom had to deal with settings.
- ◆ allow users to customize the interface (preferences)



Why

- Pink?
- Visual Basic
- Toolbars
- MSVC Toolbars and Modes
- ◆ allow users to directly manipulate interface objects (interactive)
 - Drag and Drop
 - Piers Anthony formats a disk.
 - Properties
- ◆ At least they think they are in control
 - People are about as happy as they make up their mind to be - Lincoln

Reduce users' memory load

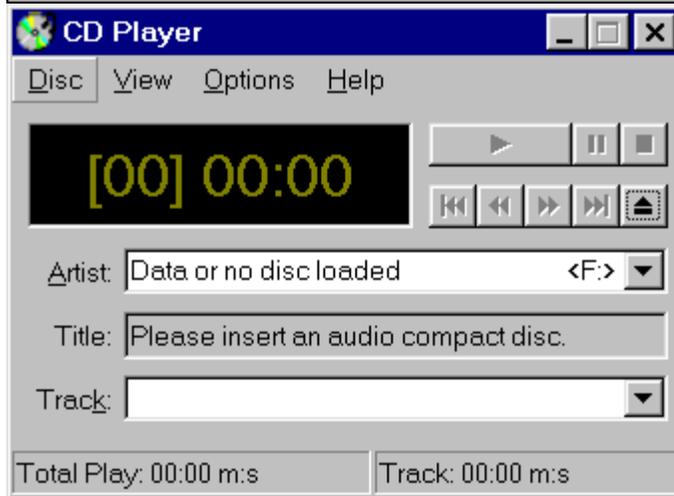
Reducing users memory load means taking into account the capabilities and limitations of the human memory system.

Humans' memory strengths include pattern recognition, selective attention, capacity to learn, and infinite-capacity long term memory storage.

Human memory weaknesses lie in low-capacity and fast-decaying short term memory, slow processing, proneness to err, and unreliable access to long term memory.

To reduce memory load, you should design and architect sites to:

- ◆ relieve short-term memory (remember)
 - What's in the clipboard
 - Winzip loads with all the songs from the last session
 - Find remembers only what you searched for
- ◆ rely on recognition, not recall (recognition)
 - Icons & Toolbars
 - Drop down lists
 - Tooltips
- ◆ provide visual cues (inform)
 - Cursor change
 - Dollar signs
- ◆ provide defaults, undo, and redo (forgiving)
 - here MS sparkles, Word Excel, etc have almost infinite undo.
 - MSVC too!
 - What is today's date
- ◆ provide interface shortcuts (frequency)
 - Bold
 - Right click
 - Toolbars
- ◆ promote an object-action syntax (intuitive)
 - This is semantic-syntactic distance again
 - Grey out those actions that cannot be performed on selected object
- ◆ use real-world metaphors (transfer)
 - Icons!
 - Phone program uses phone-like interface



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- ◆ use progressive disclosure (context)
 - Wizards
 - Expert menus
 - MS use base menus??
- ◆ promote visual clarity (organize)
 - [Yale Style Manual](http://info.med.yale.edu/caim/manual/) http://info.med.yale.edu/caim/manual/



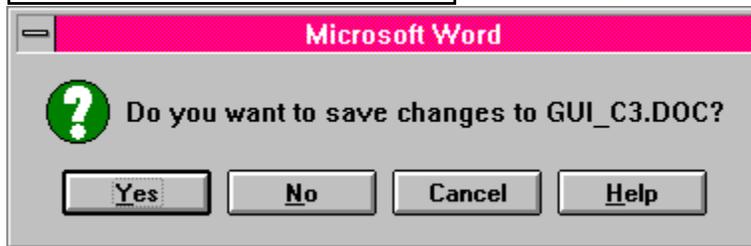
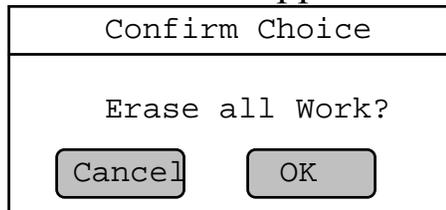
Make the interface consistent

Finally, making the interface consistent means allowing users to transfer their current knowledge, learning, and schemata to something new, to more quickly and easily find, understand, and use information from your site.

To this end, you should adhere to principles such as:

- ◆ sustain the context of users' tasks (continuity)
 - Bad mouse-keyboard-mouse switching
 - Can I drag that there?
- ◆ maintain consistency within and across products (experience)
 - Mac is great
 - MS is not. Toolbar Icon's have many different uses in different products.
 - Win 95
 - 
 - Win 98
 - 

- In OS2/Warp the close button was added on the left, not the right.
- ◆ keep interaction results the same (expectations)
 - Enter repeats last function key
 - Mac Trash Can & floppy disks
- ◆ provide aesthetic appeal and integrity (attitude)



- ◆ encourage exploration (predictability)
 - Users feel rewarded (positive feedback) when they guess right!
 - Do you fear to upgrade?
 - Win 3.1 was more common than Win95 for over 5 years after Win95's release.
 - IT did everything the user needed to do.

Interface Design

8 golden rules

The following eight "golden rules of interface design" have been proposed by Ben Shneiderman.

1 strive for consistency

Most violated rule since there are many forms of consistency

- similar situations should require similar action sequences
- identical terminology
- consistent colour, layout, capitalization, fonts
- exceptions: no echo for password or confirmation of delete command should be comprehensible

2 enable frequent users to use shortcuts

As frequency increases the users desire to reduce the number of interactions to increase speed

- abbreviations, special keys, hidden commands, macro facilities
- short response times
- fast display rates

3 offer informative feedback

For every user action there should be an appropriate feedback

- for frequent and minor actions, response can be modest
- for infrequent and major actions, response should be substantial
- visual presentation of objects of interest are convenient ways to show changes
- visualize the system state

4 design dialogs to yield closure

Sequences of actions should be organized to provide beginning, middle and end

- informative feedback at the completion of a group of actions provides satisfaction to the user, a sense of accomplishment, relief
- it is the signal to drop contingency plans and options
- the way is clear for the next group of actions

5 offer error prevention and simple error handling

Design systems where users cannot make mistakes

- prefer menu selection to form fillin
- do not allow alphabetic characters in numeric entry fields

- if an error is made the system should detect the error
- offer simple, constructive and specific instructions for recovery
- users should only retype the faulty part of a command

6 Permit easy reversal of actions

Permit easy reversal of actions

- actions should be reversible as much as possible
- exploration is encouraged, anxiety is diminished
- different units of reversibility: an action, a data entry task, a name, an address block

7 Support internal locus of control

Support internal locus of control

- users want to feel in charge of the system
- no surprising responses, inability to obtain necessary information, inability to produce the wanted response
- avoid a-causality
- make the user an action initiator instead of a responder to system actions

8 Reduce short term memory load

Reduce short term memory load

- users may remember 7+ objects, 2-info chunks
- displays should be kept simple
- window motion frequency reduced
- sufficient training time allotted for codes, mnemonics, action sequences
- online access to command-syntax forms, abbreviations, codes should be provided

Summary

- The above principles should be interpreted, refined, extended and integrated for each environment
- productivity may be increased by simplifying data entry procedures, making the displays easy to interpret, providing fast feedback
- all the above will enhance the feeling of control for the user