Introduction to User Interface Design

CS 401

Material adapted from Saul Greenberg, Univ. of Calgary

User Interfaces

- "Today, user needs are recognized to be important in designing interactive computer systems, but as recently as 1980, they received little emphasis." J. Grudin

- "We can't worry about these user interface issues now. We haven't even gotten this thing to work yet!" Mulligan

Why is usability important?

- poor usability results in
  - anger and frustration
  - decreased productivity in the workplace
  - higher error rates
  - physical and emotional injury
  - equipment damage
  - loss of customer loyalty
  - costs money

What is usability?

Usability is a measure of the **effectiveness**, **efficiency** and **satisfaction** with which specified users can achieve specified goals in a particular environment.
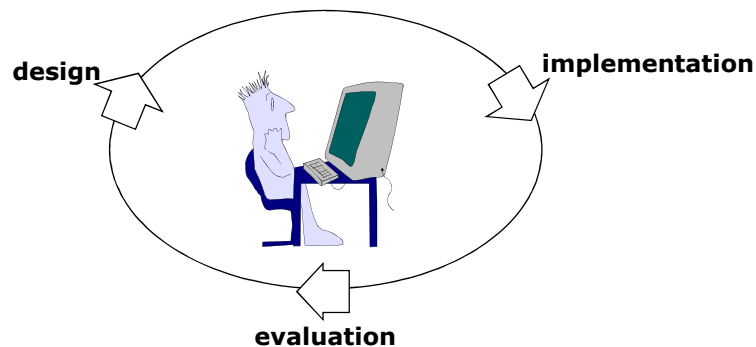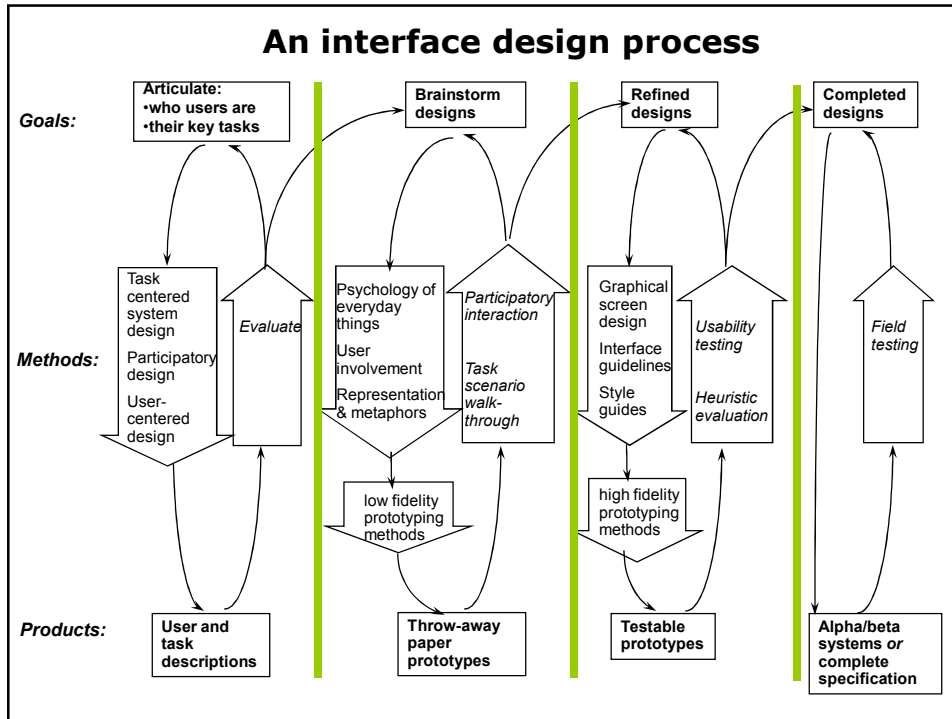
- ISO 9241

UI

- The User Interface today is often one of the most critical factors regarding the success or failure of a computer system
- Good UI design:
  - Increases efficiency
  - Improves productivity
  - Reduces errors
  - Reduces training
  - Improves acceptance
- Approach: The UI is the system
  - Design with the UI in mind
- Things to consider
  - Technical issues in creating the UI
  - User's mental model
  - Conceptual model

Human Computer Interaction

- A discipline concerned with interactive computing systems for human use

design

implementation

evaluation

An interface design process

Goals:

| Articulate:
•who users are
•their key tasks | Brainstorm designs | Refined designs | Completed designs |

Methods:

Task centered system design

Participatory design

User-centered design

Evaluate

Psychology of everyday things

User involvement

Representation & metaphors

Participatory interaction

Task scenario walk-through

Graphical screen design

Interface guidelines

Style guides

Usability testing

Heuristic evaluation

Field testing

low fidelity prototyping methods

high fidelity prototyping methods

Products:

| User and task descriptions | Throw-away paper prototypes | Testable prototypes | Alpha/beta systems *or* complete specification |

User and Task Descriptions

- First Goal: Articulate who the users are and what their tasks are
- We will discuss this to some degree – it is the same problem of collecting **requirements**
- Methods
  - Task Centered Design
  - Participatory Design
  - User-Centered Design

Design

- Poor UI design can make an otherwise well-written system unusable
  - Pathological designs
  - Many human errors result from design errors
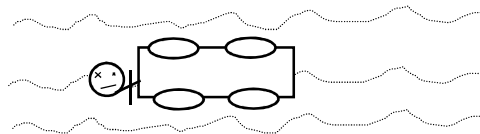 - Designers help through a good conceptual model

Early tractors

- Original design

Terrain
  - un-surfaced
  - rough
  - hilly

high center of gravity

narrow wheel base
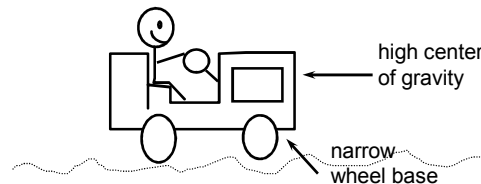
Result

Used to be called **driver's error** *but*
accidents now infrequent as designs now have
low center of gravity, wider wheel bases

Lessons Learned

- Lesson 1
  - Most failures of human-machine system are due to poor designs that don't recognize peoples' capabilities and fallibilities
  - This leads to apparent machine misuse and "human error"
- Lesson 2
  - Good design always accounts for human capabilities.

Psychopathology of everyday things

- Typical frustrations
  - The engineer who founded DEC confessed at the annual meeting that he can't figure out how to heat a cup of coffee in the company's microwave oven
  - How many of you can program or use all aspects of your
    - digital watch?
    - DVR/DVD Player?
    - answering machine?
    - stereo system?
    - cell phones?
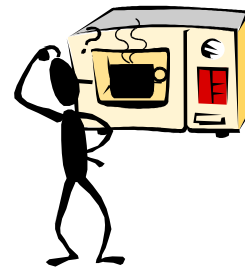
• Slide idea from Donald Norman

Other pathological examples:

- Remote control from Leitz slide projector
  - How do you forward/reverse?
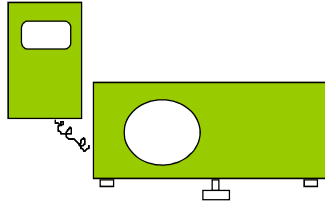
- Instruction manual:
  - *short press*: slide change forward
  - *long press:* slide change backward


Still more pathological examples

- Modern telephone systems
  - standard number pad
  - two additional buttons * and #
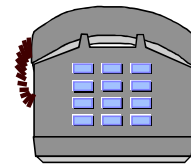
- Problem
  - many hidden functions
  - operations and outcome completely invisible
    - *72+number = call forward
      - can I remember that combination?
      - if I enter it, how do I know it caught?
      - how can I remember if my phone is still forwarded?

    - Ok, I'll read the manual
      - but what does *call park* mean? what's a link?
      - where is that manual anyway?

Getting serious about design
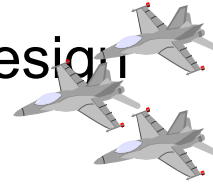
- World War II
  - complex machines (airplanes, submarines...)
    - taxed people's sensorimotor abilities to control them
    - frequent (often fatal) errors occurred even after high training

  - example airplane errors:
    - if booster pump fails, turn on fuel valve within 3 seconds
      - test shows it took ~five seconds to actually do

    - Spitfire: narrow wheel base
      - easy to do violent ground loops which breaks undercarriage

    - Altimeter gauges difficult to read
      - caused crashes when pilots believe they are at a certain altitude
- Result
  - human factors became critically important

•Slide ideas from David

What's the altitude?
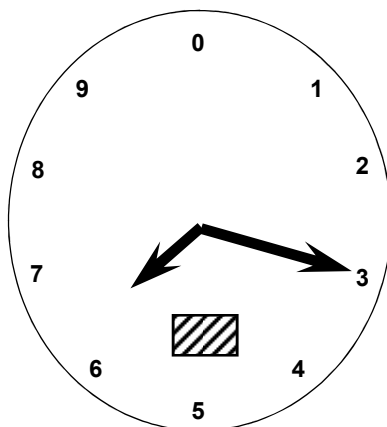
- Early days (< 1000'):
  - only one needle needed

- As ceilings increased over 1000'
  - small needle added

- As they increased beyond 10,000'
 - box indicated 10,000' increment through color change

  < 10,000'

  > 10,000'

Tape altimeter

14000	900
	000
15000	100
	200
16000	300
	400
17000	500
18000	600

reference line

independent movement
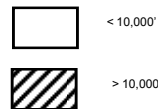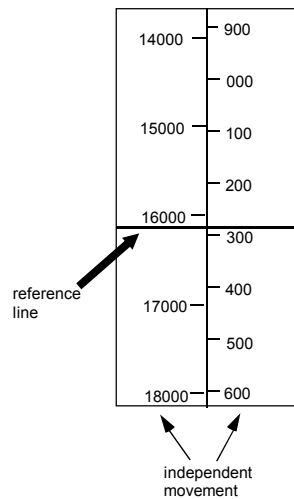
- Human factors test showed:
  - eliminated reading errors
  - was faster to read

- But not in standard use! Why?

The Psychopathology of computers

- Britain 1976
  - Motorway communication system operated 40% of it's highways
  - police controlled it in real time to
    - change lane signs, direction signs, speed limits, etc

  - On December 10th, police failed to change the speed limit signs when fog descended
    - 34 vehicles crashed
    - 3 people killed
    - 11 people injured and trapped in their vehicles
    - motorway closed for 6.5 hours

40 km
Slow Down!
Fog Ahead
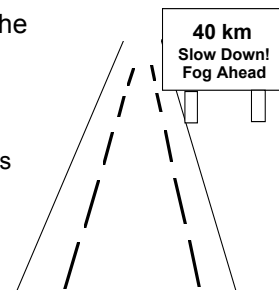
•Slide ideas from David

Some quotes

- Police (at inquest)
  - "The system did not accept the instruction"

- Dept of Transport (after examining computer logs)
  - "There is no evidence of technical failure"

- System designers
  - after emphasizing that they have no responsibility for the system
    - "We supplied it over 5 years ago and have never been called to look at that problem"

Not me!

- The Coroner's court
  - judged it as "operator error"
    - the police operator:
      "failed to follow written instructions for entering the relevant data"

-

Where have we heard this before?

Example problems

- cryptic input codes
  - XR300/1: change (X) sign 300 on highway M5 (R) to code 1
  - i.e. change particular sign to indicate fog condition

- no feedback
  - operator entered command, no visible effect of system response

- cryptic error messages
  - "Error code 7"

-

  teletype machine was old, text illegible
  - people could not see what they typed or system's reply

- operator overloaded with other chores
  - also handled radio and telephone traffic

Design of everyday things

- Summary so far:
  - many so-called human errors are actually errors in design
  - human factors became important as human performance limitations reached when handling complex machinery
- What are Don Norman's principles and how do they apply to the design of everyday things?
  - affordances
  - causality
  - visible constraints
  - mapping
  - population stereotypes
  - conceptual models
  - individual differences
- How can we apply Norman's principles to the design of computer interfaces?

Visual Affordance

- the perceived and actual fundamental properties of the object that determine how it could be used
  - Appearance indicates how the object should be used
    - chair for sitting
    - knobs for turning
    - slots for inserting things into
    - buttons for pushing
  - Just by looking the user should know
    - State of the system
    - Possible actions
    - Don't violate these principles to make something "look good"!
  - Complex things may need explaining but simple things should not
    - when simple things need labels & instructions, then design has failed
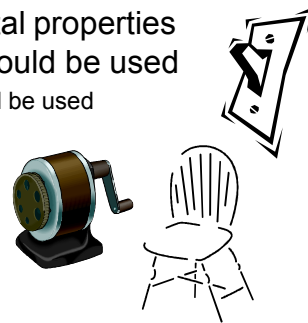
Many ideas in this deck are adapted from Don Norman's book: The Design of Everyday things

11

Poor Visual Affordance

- Trapped between doors!
- Handles **afford** pulling
- Using a flat plate would **constrain** the user to push

How fast are we going?

The well-trodden path

Please Push Slowly!

- Wonder why doors have windows?

Evidently someone was smacked…

The case of the mistaken urinal

THIS IS A MOP SINK

Visual affordance

- needs familiar idiom and metaphor to work

sliders for sliding

dials for turning

are these buttons?

what does this button do?

Visual affordance problems

Is this a graphic or a control?

A button is for pressing, but what does it do?

Visual affordances for window controls are missing!

Dial number

Name1	Name6	1	2	3
Name2	Name7	4	5	6
Name3	Name8	7	8	9
Name4	Name9	*	0	#
Name5	Name10	Flash	Mute	Redial
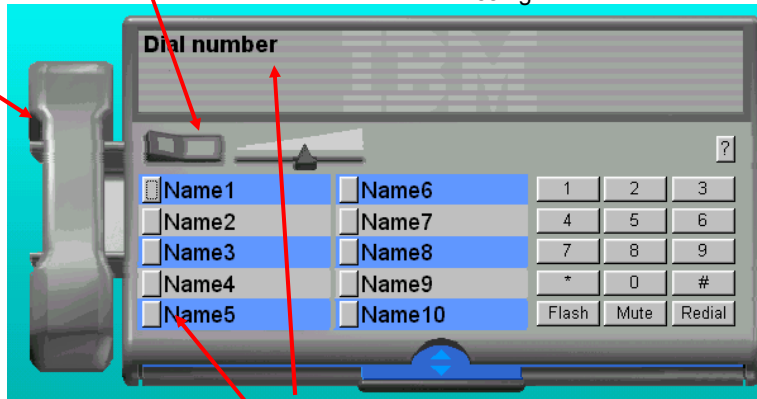
IBM Real Phone

text is for editing, but it doesn't do it.

Visible constraints

- limitations of the actions possible perceived from object's appearance
  - provides people with a range of usage possibilities
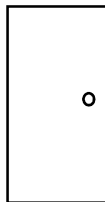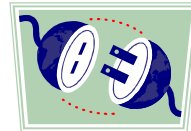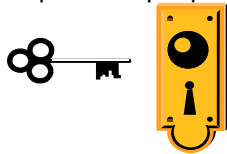
Push or pull?
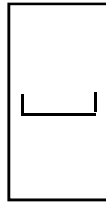
Which side?

Can only push, side to push clearly visible

On which side does the door open?
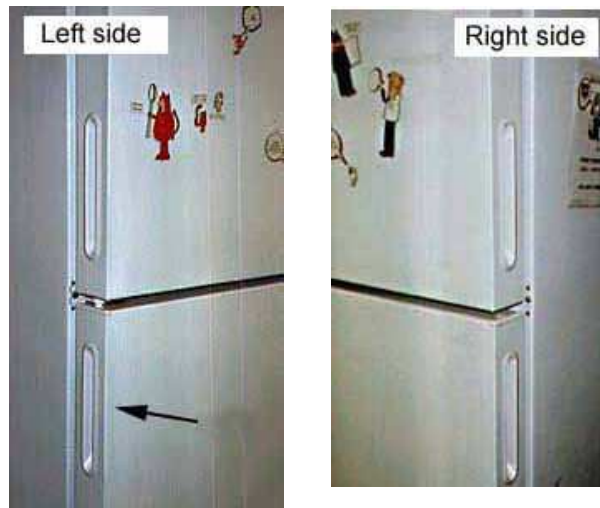
How do you open this package?

- If you are like me, by ripping it open

But that will dry out the wet pack – the proper way is to use the flap

Remove tearable perforations at top, add hand or more attention to location of flap

Visible constraints: Entering a Date

Controls constructed in Visual Basic

Mapping

- Controls and displays should exploit natural mapping
- Natural mapping takes advantage of physical analogies and cultural standards
  - Physical: Steering wheel
  - Cultural: red means stop, green means go

Mouse or Keyboard?
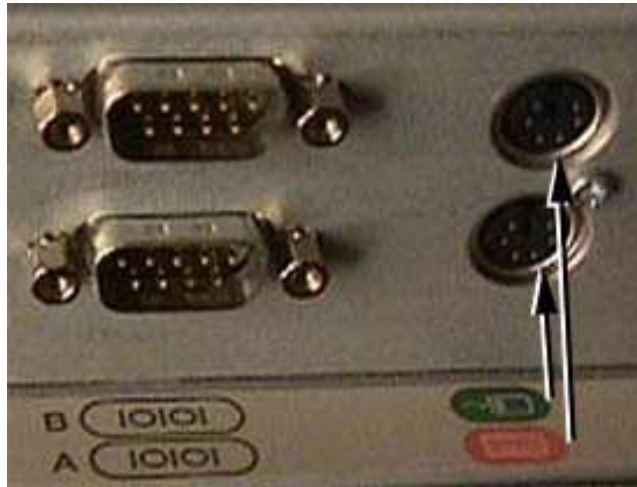
What Knob Goes Where?

Exploiting Natural Mapping

Yellow Street Lights

- Possible to confuse with stoplight
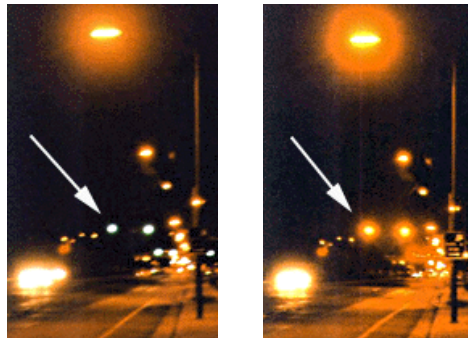
How do you play the CD?
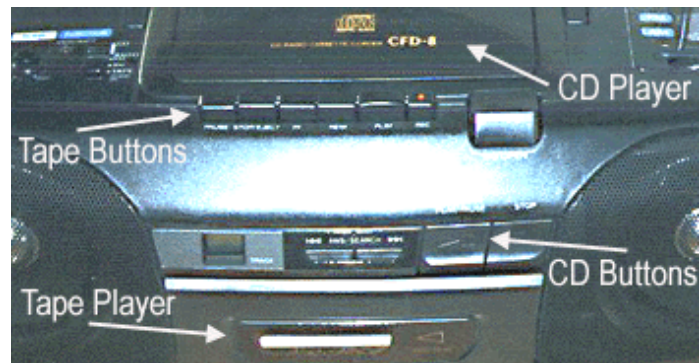
How do you turn on the shower?

- Must reach down where the water comes out and pull down!

Instructions!

Mapping of Selected Mode to Icon

Only active palette items visible

Cursor re-enforces selection of current item

Depressed button indicates current mapped item

Microsoft Paint
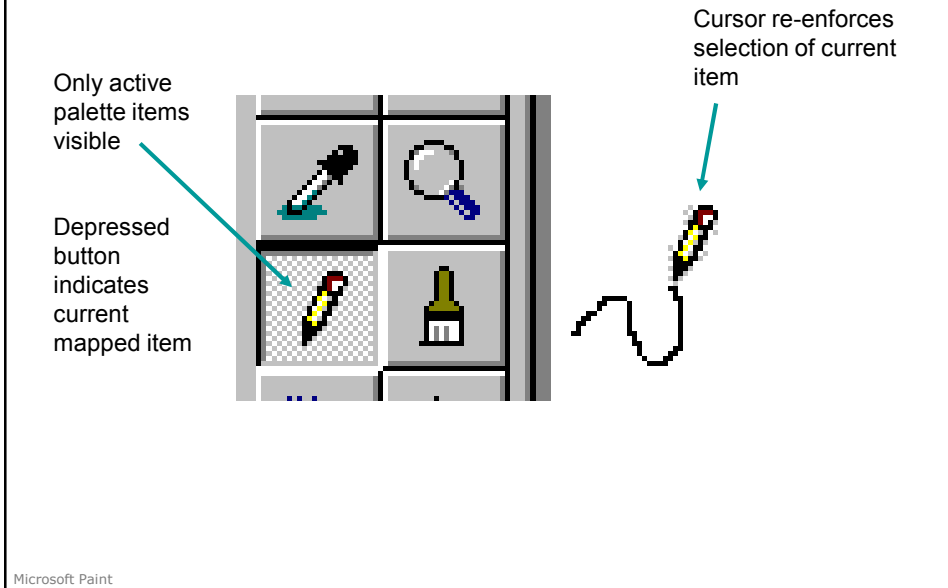
Causality

- the thing that happens right after an action is assumed by people to be caused by that action
  - interpretation of "feedback"
  - false causality
    - incorrect effect
      - invoking unfamiliar function just as computer hangs
      - causes "superstitious" behaviors
    - invisible effect
      - command with no apparent result often re-entered repeatedly
      - e.g., mouse click to raise menu on unresponsive system

Feedback Examples

- Telephone button press tones
  - Telephone clicks
- Buzz typing virtual keys on a slate/tablet
- Clicker on your turn signal
- Animated icon while waiting for a web page to load

VCR Feedback

- Did I really set it correctly to record at 8PM on Tuesday?
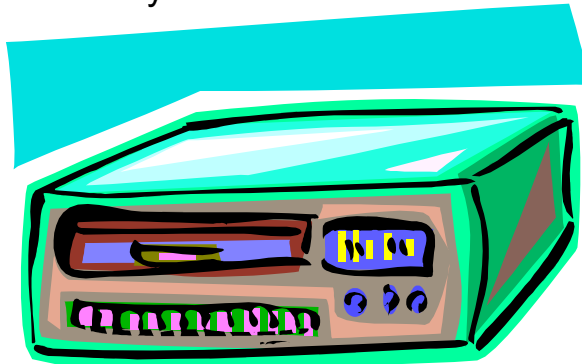
More or Less Coffee?

- Does the light on the bottom indicate 4-max cups, or min-3 cups?
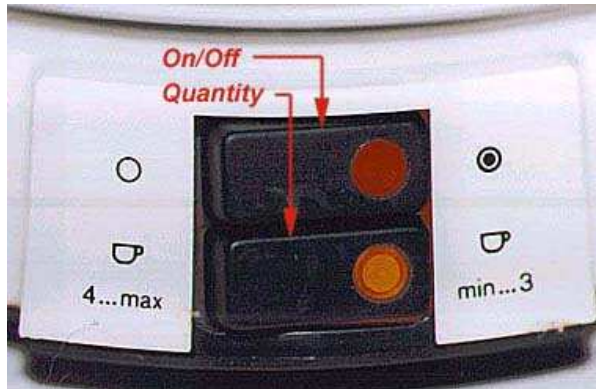
On=min to 3

Poor Feedback in LViewPro

Effects visible only after Exec button is pressed
- Ok does nothing!
- awkward to find appropriate color level

LViewPro
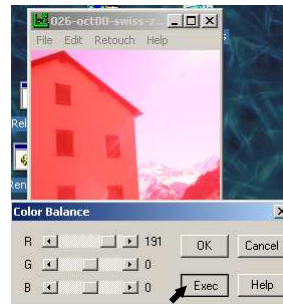
Transfer effects

- people transfer their learning/expectations of similar objects to the current objects
    - positive transfer: previous learning's also apply to new situation
    - negative transfer: previous learning's conflict with the new situation
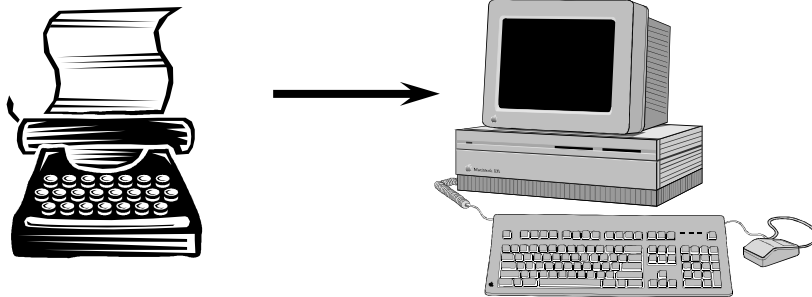
Population stereotypes and idioms

- Populations learn idioms that work in a certain way
    - red means danger
    - green means safe

    - Idioms vary in different cultures

        - Light switches
            - America: down is off
            - Britain: down is on

        - Faucets
            - America: anti-clockwise on
            - Britain: anti-clockwise off
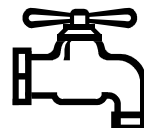
Cultural associations

- Because a trashcan in Thailand may look like this:

  a Thai user is likely to be confused by this image popular in Apple interfaces:

- Sun found their email icon problematic for some American urban dwellers who are unfamiliar with rural mail boxes.

Conceptual model

- People have "mental models" of how things work, built from
  - affordances
  - causality
  - constraints
  - mapping
  - positive transfer
  - population stereotypes/cultural standards
  - instructions
  - interactions
- models allow people to mentally simulate operation of device
- models may be wrong
  - particularly if above attributes are misleading

Good example: Scissors

- affordances:
  - holes for something to be inserted

- constraints:
  - big hole for several fingers, small hole for thumb

- mapping:
  - between holes and fingers suggested and constrained by appearance

- positive transfer and cultural idioms
  - learnt when young
  - constant mechanism

- conceptual model:
  - implications clear of how the operating parts work
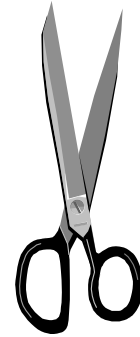
Bad example: Digital watch

- affordances:
  - four push buttons to push, but not clear what they will do

- constraints and mapping unknown
  - no visible relation between buttons, possible actions and end result

- transfer of training
  - little relation to analog watches

- cultural idiom
  - somewhat standardized core controls and functions
  - but still highly variable

- conceptual model:
  - must be learnt

Designing a good conceptual model

- communicate model through visual image
  - visible affordances, mappings, and constraints
  - visible causality of interactions
  - cultural idioms, transfer
  - instructions augments visuals

    all work together to remind a person of what can be done and how to do it
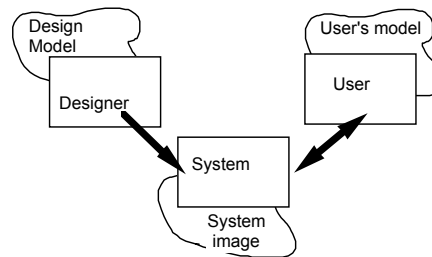
Graphical Screen Design

- **C**ontrast
  - make different things different
  - brings out dominant elements
  - mutes lesser elements
  - creates dynamism

- **R**epetition
  - repeat design throughout the interface
  - consistency
  - creates unity

- **A**lignment
  - visually connects elements
  - creates a visual flow

- **P**roximity
  - groups related elements
  - separates unrelated ones

Original

Proximity

Alignment

Contrast

Beyond Layout - Representations

- Representations
  - formal system or mapping by which information can be specified (D. Marr)
  - a sign system in that it stands for something other than its self.
- for example:
  - decimal: 34,
  - binary: 100010,
  - roman: XXXIV
- different representations reveal different aspects of the information
  - decimal: counting & information about powers of 10,
  - binary: counting & information about powers of 2,
  - roman: counting
- presentation
  - how the representation is placed or organized on the screen

34, **34**, <u>34</u>

Representations

- Solving a problem simply means representing it so as to make the solution transparent

    (Simon, 1981)

- Good representations
    - allow people to find relevant information
        - information may be present but hard to find

    - allow people to compute desired conclusions
        - computations may be difficult or "for free" depending on representations

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Which is the best flight?

- length
- stop-overs
- switches...

		depart	*arrive*
AC 117	Vancouver - Calgary	7:00	9:00
Cdn 321	Vancouver - Calgary	9:00	12:00
Cdn 355	Calgary - Montreal	13:30	19:30
AC 123	Calgary - Toronto	12:30	16:30
AC 123	Toronto - Montreal	16:45	17:30

*time zone: +1 van-cal, +2 cal-tor, mtl
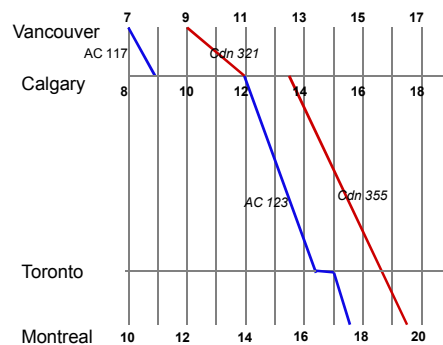
When do I take my drugs?

•10 - 30% error rate in taking pills, same for pillbox organizers

•Inderal   -   1 tablet 3 times a day
Lanoxin   -   1 tablet every a.m.
Carafate   -   1 tablet before meals and at bedtime
Zantac   -   1 tablet every 12 hours (twice a day)
Quinag   -   1 tablet 4 times a day
Couma   -   1 tablet a day

	Breakfast	Lunch	Dinner	Bedtime
Lanoxin	O			
Inderal	O	O	O	
Quinag	O	O	O	O
Carafate	O	O	O	O
Zantac		O		O
Couma				O

Breakfast	Lunch	Dinner	Bedtime
Lanoxin			
Inderal	Inderal	Inderal	
Quinag	Quinag	Quinag	Quinag
Carafate	Carafate	Carafate	Carafate
	Zantac		Zantac
			Couma

Which representation is best?

- depends heavily on task
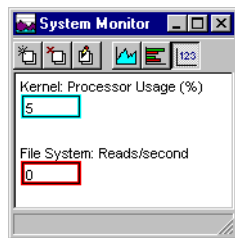
What is precise value?
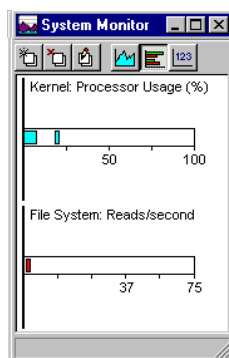
How does the performance now compared to its peak?
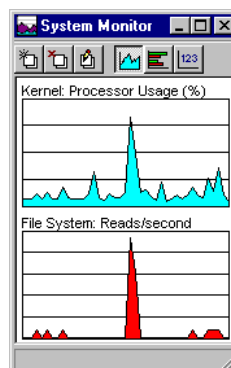
How does performance change over time?

Which folder has the most documents?

Windows 95 File Viewer
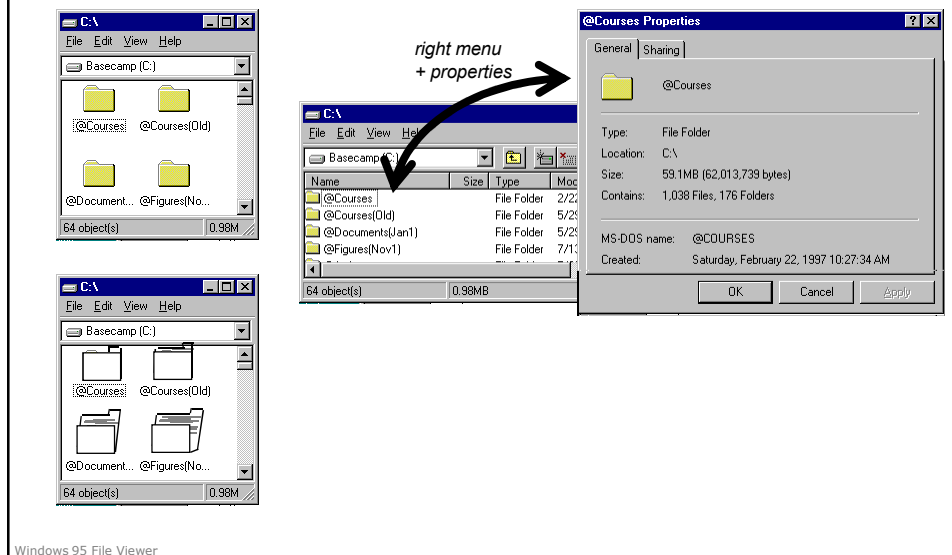
Information Visualization

- Graphics should reveal the data
  - show the data
  - not get in the way of the message
  - avoid distortion
  - present many numbers in a small space
  - make large data sets coherent
  - encourage comparison between data
  - supply both a broad overview and fine detail
  - serve a clear purpose

E. Tufte
Visual Display of Quantitative Information

many examples on the following slides are taken from Tufte's books

Chart Junk: Cotton production in Brazil, 1927
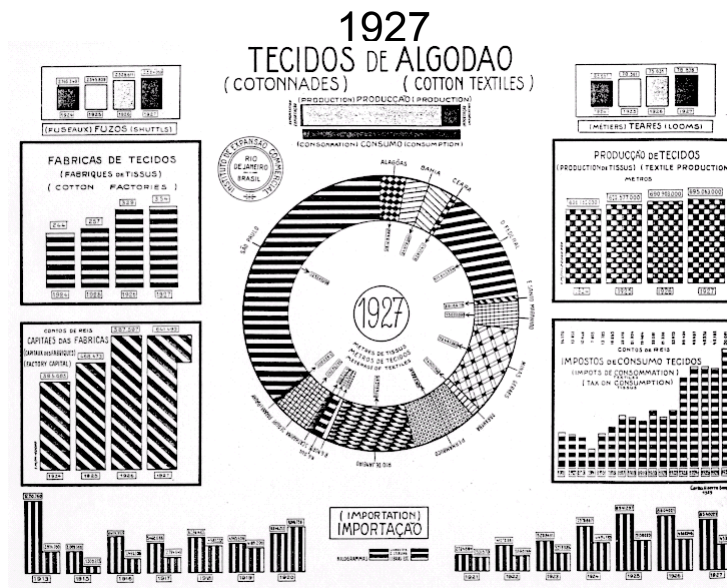
E. Tufte Visual Display of Quantitative Information

Chart Junk: Removing deception and simplification
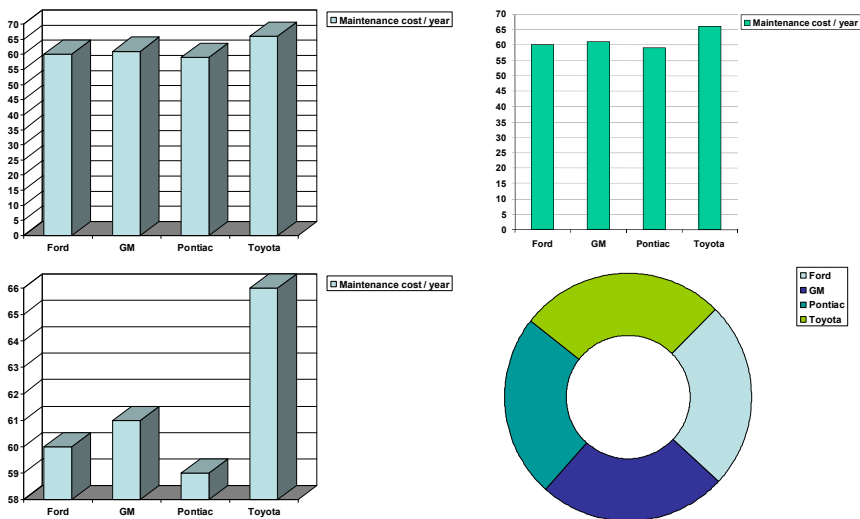
Lessons on Representation

- Good representations
  - captures essential elements of the event / world & mutes the irrelevant
  - appropriate for the person, their task, and their interpretation

- Information visualization
  - Tufte's principles
  - overview first, zoom and filter, then details on demand
  - many techniques now available

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1 Simple and natural dialogue

- use the user's conceptual model
- match the users' task sequence
- minimize mapping between interface and task semantics
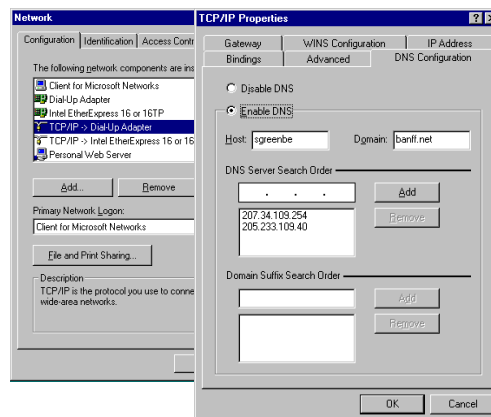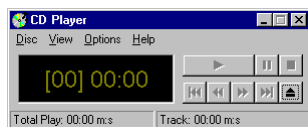
From Microsoft applications

1 Simple and natural dialogue

- Present exactly the information the user needs
  - less is more
    - less to learn, to get wrong, to distract...

  - information should appear in natural order
    - related information is graphically clustered
    - order of accessing information matches user's expectations

  - remove or hide irrelevant or rarely needed information
    - competes with important information on screen

  - remove modes

  - use windows frugally
    - don't add unneeded navigation and window management

2 Speak the users' language

2 Speak the users' language

- Terminology based on users' language for task
  - e.g. withdrawing money from a bank machine
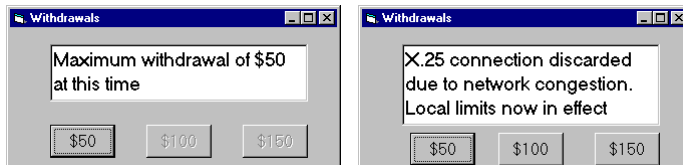
- Use meaningful mnemonics, icons & abbreviations
  - eg File / Save
    - Ctrl + S   (abbreviation)
    - Alt FS   (mnemonic for menu action)

3 Minimize user's memory load

- Computers good at remembering, people are not!
- Promote recognition over recall
  - menus, icons, choice dialog boxes vs. commands, field formats
  - relies on visibility of objects to the user (but less is more!)
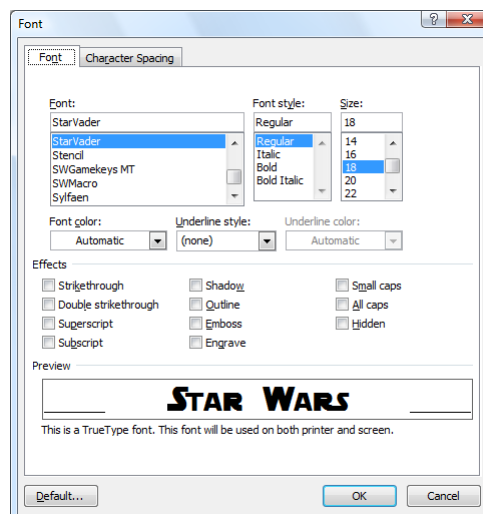
From Microsoft applications

3: Minimize user's memory load

- Small number of rules applied universally
  - generic commands
    - same command can be applied to all interface objects
      - interpreted in context of interface object

    - copy, cut, paste, drag 'n drop, ... for characters, words, paragraphs, circles, files

    - context menus

3: Minimize user's memory load

JavaScript

⚠ Thank you for your interest in browsing out catalog! It's Easy and it's Efficient! Adobe Acrobat Reader 4.0 uses a 'Pointing Finger' with a 'W' for a mouse pointer whenever you encounter an area where a 'Selection' can be made. When the catalog index page appears, you will notice that the 'Pointing Finger' will appear when you pass over an index item (Product Type) that is selectable. If you click on an item, the pages related to that product will be downloaded to you. Each page has been modularized so that typical download times with a V.90 modem will not exceed 60 seconds with the average download time less than 20 seconds. Depending on your Browser, you may not see a time line, just be patient and the pages will appear. In some cases another index page will appear requiring further selection. The same process should be followed. Using the pager in Acrobat Reader is easy and efficient and in a short time you will be an expert at it. To return to the previous index, simply click your Browser 'Back' button. Two other configurations of mouse pointers are also used by Acrobat Reader. An 'Open Hand' for moving the page around and a 'Magnifier' for zooming in and out while viewing the page. You may select either one from the tool bar at the upper part of the screen. Please carefully jot down the Model Numbers of interest so that they can be entered accurately in the on-line ordering system.

OK

4: Be consistent

- Consistent syntax of input

- Consistent language and graphics
  - same visual appearance across the system (e.g. widgets)
  - same information/controls in same location on all windows

| Ok | Cancel | Cancel | Ok | Ok | Accept | Dismiss |

| Cancel |
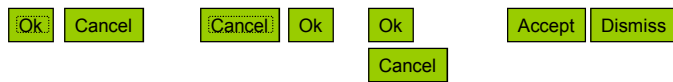
- Consistent effects
  - commands, actions have same effect in equivalent situations
    - predictability

5: Provide feedback

- Continuously inform the user about
  - what it is doing
  - how it is interpreting the user's input
  - user should always be aware of what is going on

What's it doing?

> Doit

> Doit
This will take
5 minutes...

Time for coffee.
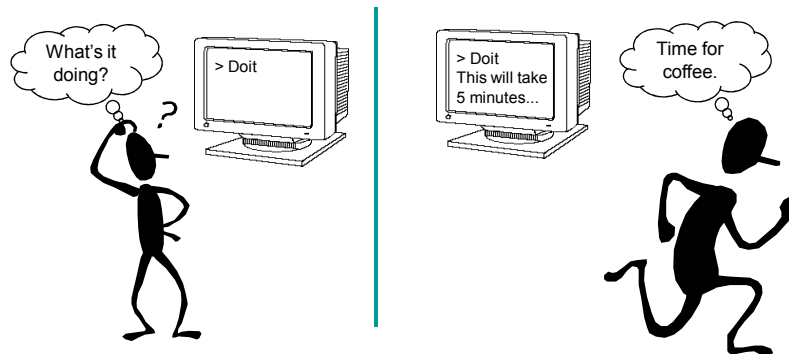
5. Provide feedback

- Be as specific as possible, based on user's input
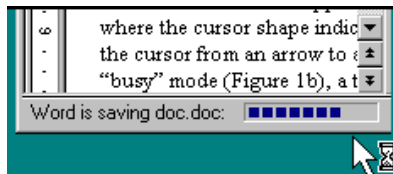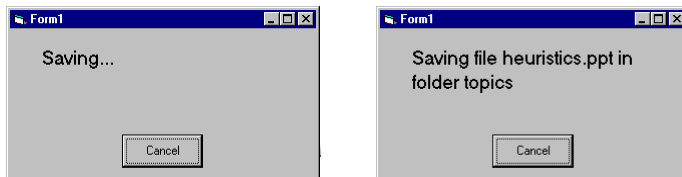
Best within the context of the action

Provide feedback

Multiple files being copied, but feedback is file by file.
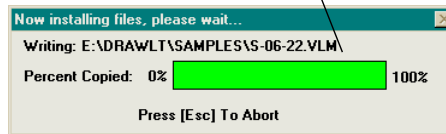
Drawing Board LT

5. Provide feedback

- Response time
  - how users perceive delays

    <0.1s   perceived as "instantaneous"

      1s   user's flow of thought stays uninterrupted, but
            delay noticed

     10s   limit for keeping user's attention focused on the dialog

  > 10s   user will want to perform other tasks while waiting

5. Provide feedback

- Dealing with long delays

    - Cursors
      - for short transactions

    - Percent done dialogs
      - time left
      - estimated time

    Transfer Status
    Sending BINARY file grapdesn.rtf (15517 bytes)
    65%
    10240 : 2.33 Kbytes/s : 0:02   Cancel
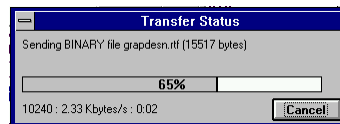
    - Random
      - for unknown times

    Contacting host (10-60 seconds)

    cancel

6. Provide clearly marked exits

---
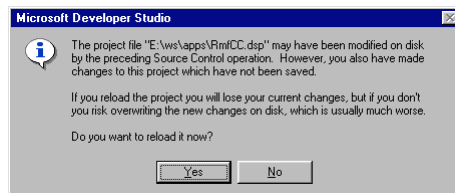
6. Provide clearly marked exits

- Users don't like to feel trapped by the computer!
  - should offer an easy way out of as many situations as possible

- Strategies:
  - Cancel button (for dialogs waiting for user input)
  - Universal Undo (can get back to previous state)
  - Interrupt (especially for lengthy operations)
  - Quit (for leaving the program at any time)
  - Defaults (for restoring a property sheet)

Core Dump
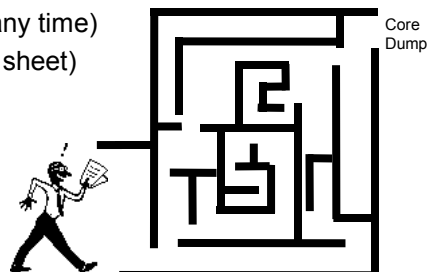
7. Provide shortcuts

- Experienced users - perform frequent operations quickly
- Strategies:
  - keyboard and mouse accelerators
    - abbreviations
    - command completion
    - context menus
    - function keys
    - double clicking vs menu selection

  - type-ahead (entering input before the system is ready for it)

  - navigation jumps
    - e.g., going to window/location directly, and avoiding intermediate nodes

  - history systems
    - WWW: ~60% of pages are revisits

Keyboard accelerators for menus

Customizable toolbars and palettes for frequent actions

Split menu, with recently used fonts on top

Double-click raises toolbar dialog box

Double-click raises object-specific menu

Scrolling controls for page-sized increments

Microsoft Powerpoint
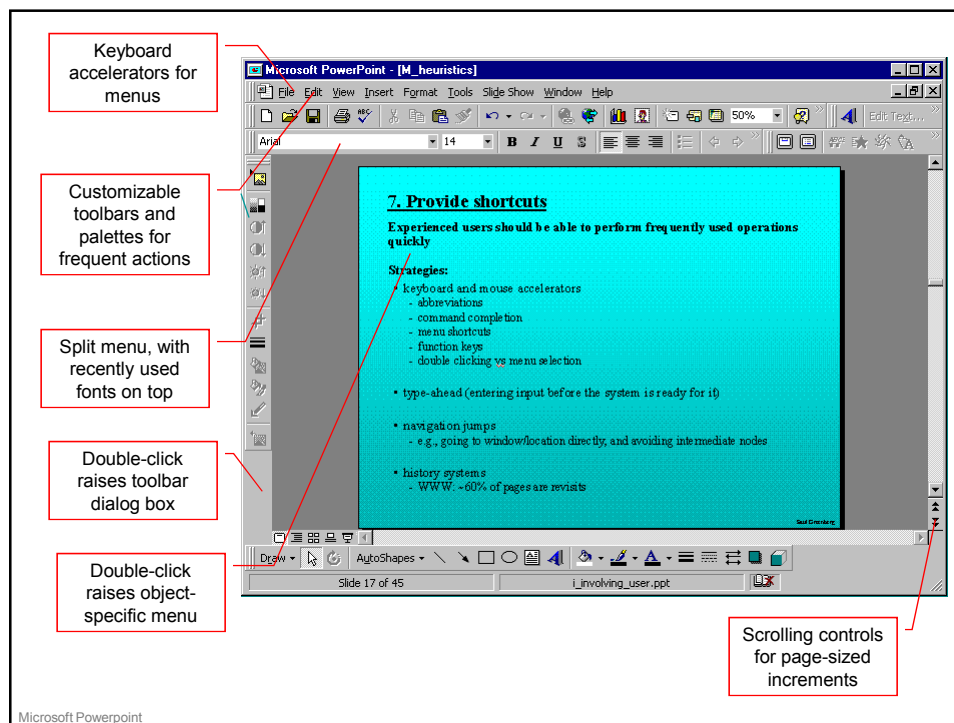
8: Deal with errors in a positive manner

- People will make errors!

- Errors we make
  - Mistakes
    - conscious deliberations lead to an error instead of correct solution

  - Slips
    - unconscious behaviour gets misdirected en route to satisfying goal
      - e.g. drive to store, end up in the office

    - shows up frequently in skilled behaviour
      - usually due to inattention

    - often arises from similar actions

Designing for slips

- General rules
  - prevent slips before they occur
  - detect and correct slips when they do occur
  - user correction through feedback and undo

Types of slips

- Capture error
  - frequently done activity takes charge instead of one intended
  - occurs when common & rarer actions have same initial sequence
    - change clothes for dinner and find oneself in bed (William James, 1890)
    - Confirm overwrite existing file when meant to save to a different file

  - minimize by
    - make actions undoable instead of confirmation
    - allows reconsideration of action by user
      - e.g. open trash to undelete a file
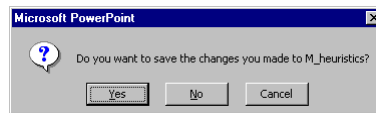
Types of slips

- Description error
  - intended action similar to others that are possible
    - usually occurs when right & wrong objects physically near each other
      - pour juice into bowl instead of glass
      - move file to wrong folder with similar name

  - minimize by
    - rich feedback
    - check for reasonable input, etc.
    - undo

Types of slips

- Mode errors
  - people do actions in one mode thinking they are in another
    - vi command mode vs. edit mode
    - Refer to file that's in a different directory
    - Look for commands / menu options that are not relevant

  - Minimize by
    - Have as few modes as possible (preferably none)
    - Make modes highly visible

Generic system responses for errors

- General idea: Forcing functions
  - prevent / mitigate continuation of wrongful action

- Gag
  - deals with errors by preventing the user from continuing
    - eg cannot get past login screen until correct password entered

- Warn
  - warn people that an unusual situation is occurring
  - when overused, becomes an irritant
    - e.g.,
      - audible bell
      - alert box
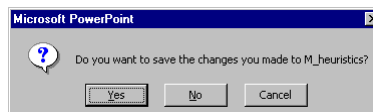
Generic system responses for errors

- Do nothing
  - illegal action just doesn't do anything
  - user must infer what happened
    - enter letter into a numeric-only field (key clicks ignored)
    - put a file icon on top of another file icon (returns it to original position)

- Self-correct
  - system guesses legal action and does it instead
  - but leads to a problem of trust
    - spelling corrector

Generic system responses for errors

- Lets talk about it
  - system initiates dialog with user to come up with solution to the problem
    - compile error brings up offending line in source code

- Teach me
  - system asks user what the action was supposed to have meant
  - action then becomes a legal one

Error Dialog Boxes

- Cooper
  - You should feel as guilty as for using a goto – an admission of failure in design
- Why are they problematic?
- How related to locus of attention?
- What are the alternatives?

8: Deal with errors in a positive manner
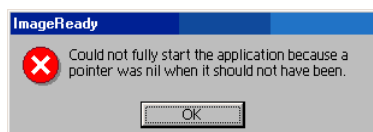
Adobe's *ImageReady*

AutoCAD *Mechanical*
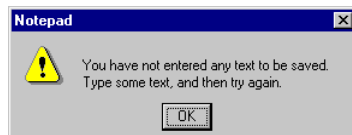
Windows *Notepad*
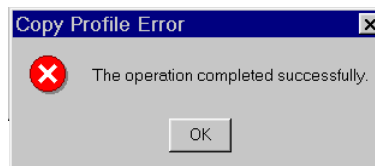
Microsoft's *NT Operating System*

Inane Dialog Boxes

Microsoft Visual SourceSafe

Adding more than 150 files is not recommended. Windows may fail to add all selected files. Continue?

Yes | No | Help
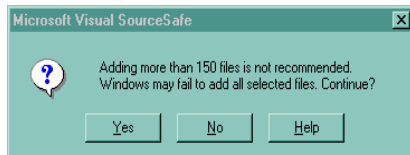
Umm, thanks for the warning, but what should I do?

Copying...

Cancelling... | Cancel

What happens when you cancel a cancelled operation?

A.X.E.

You are about to overwrite the original file. Go ahead?
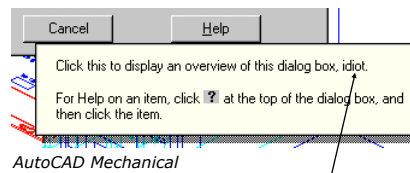
OK
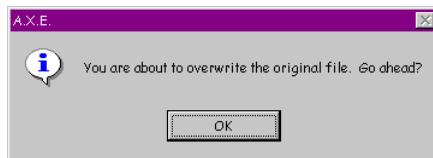
Do I have any choice in this?

Ok to not save game?

OK | Cancel | Save

Uhhh... I give up on this one

Inane Dialog Boxes

- These are too good not to show

Revision Master

Failed to check out file. An error occurred while accessing the library. The error was: No error occured. Try again?

Yes | No

Dialog

CuteFTP is currently working. If you press Disconnect, the session will be interrupted. Do you want to disconnect?

☐ Don't show this dialog again

OK | Help

NetInfo Error

NetInfo read failed! (Operation succeeded)

OK

Inane Dialog Boxes

Battery Empty Warning ✕

⚠ The battery is detected will be run out in several minutes or not present!

If battery is not plugged-in now, you can disable the battery diagnosis in <Battery> page of Configure Notification.

Please click the tray icon and select <Diagnosis Report> mente

[Close]

Diff Merge ✕

❓ The objects being compared are identical. Do you want to continue the comparison?

[Yes]   [No]

ClearCase, source-code control Rational Software

Opt Out Confirmed

You should receive no further eMail from Parsons Technology. A confirmation eMail will be sent to your eMail address.

[Undo]   [Continue]

Information ✕

ⓘ Spell check cancelled

[OK]
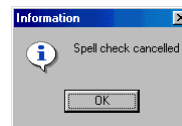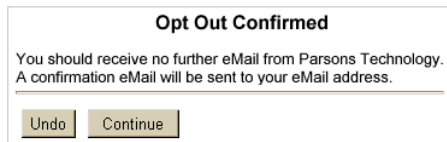
After clicking "Cancel" on *Allaire's HomeSite 4.0*

Error Deleting File ✕

❌ Cannot delete 016: There is not enough free disk space.

Delete one or more files to free disk space, and then try again.

[OK]
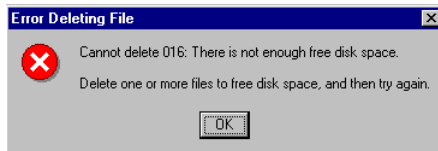
•Some of these interfaces were posted on Interface Hall of Shame

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8: Deal with errors in a positive manner

- Provide meaningful error messages
  - error messages should be in the user's task language
  - don't make people feel stupid

  Try again, bonehead!

  Error 25

  Cannot open this document

  Cannot open "chapter 5" because the application "Microsoft Word" is not on your system

  Cannot open "chapter 5" because the application "Microsoft Word" is not on your system. Open it with "Notepad" instead?

9. Provide help

- Help is not a replacement for bad design!

- Simple systems:
  - walk up and use; minimal instructions

- Most other systems
  - feature rich
  - simple things should be simple
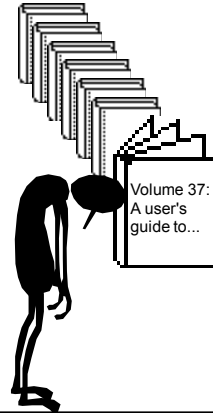 - learning path for advanced features

Volume 37:
A user's
guide to...

Documentation and how it is used

- Many users do not read manuals
  - prefer to spend their time pursuing their task

- Usually used when users are in some kind of panic
  - paper manuals unavailable in many businesses!
    - e.g. single copy locked away in system administrator's office
  - online documentation better
  - good search/lookup tools
  - online help specific to current context

- Sometimes used for quick reference
  - syntax of actions, possibilities...
  - list of shortcuts ...

Types of help

- Tutorial and/or getting started manuals
  - short guides that people are likely to read when first obtaining their systems
    - encourages exploration and getting to know the system
    - tries to get conceptual material across and essential syntax

  - on-line "tours", exercises, and demos
    - demonstrates very basic principles through working examples
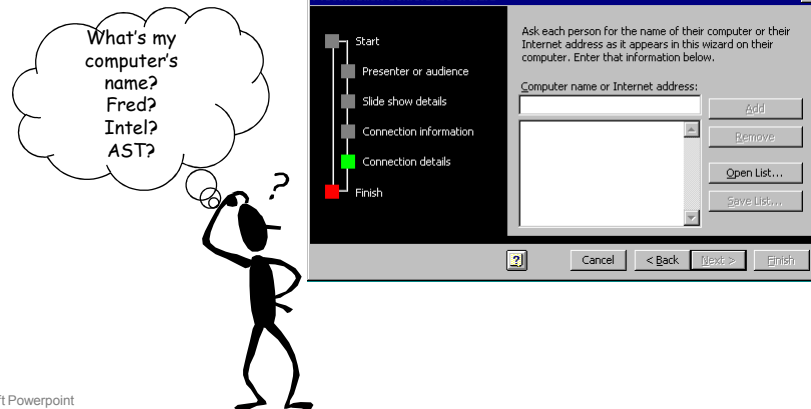
Types of help

- Reference manuals
  - used mostly for detailed lookup by experts
    - rarely introduces concepts
    - thematically arranged
  - on-line hypertext
    - search / find
    - table of contents
    - index
    - cross-index
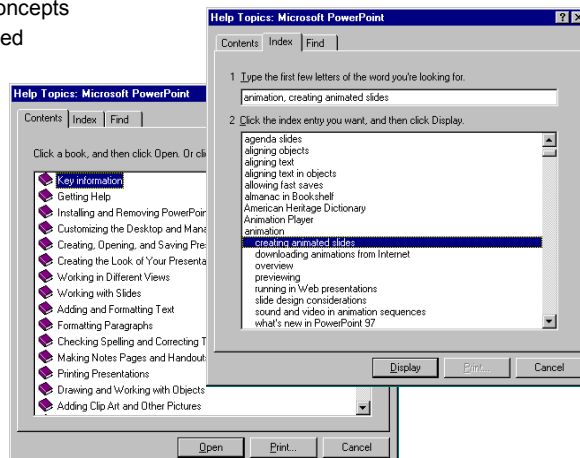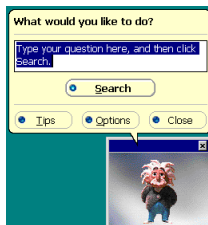
Microsoft Help

Types of help

- Wizards
  - walks user through typical tasks
  - *but* dangerous if user gets stuck

What's my
computer's
name?
Fred?
Intel?
AST?

Microsoft Powerpoint

Presentation Conference Wizard

Start
Presenter or audience
Slide show details
Connection information
Connection details
Finish

Ask each person for the name of their computer or their Internet address as it appears in this wizard on their computer. Enter that information below.

Computer name or Internet address:

Add
Remove
Open List...
Save List...

Cancel   < Back   Next >   Finish

You now know

- Nine principles of design
  - Simple and natural dialog
  - Speak the user's language
  - Minimize user's memory load
  - Be consistent
  - Provide feedback
  - Provide clearly marked exits
  - Provide shortcuts
  - Deal with errors in a positive manner
  - Provide help

Summary

- UI Design is a creative process, with many options
- Your design should reflect
  - The results of the interviews, task analysis
  - Existing conventions when applicable
  - Design guidelines when applicable
- Usability testing helps you decide which of several options to pursue

References

- The Design of Everyday Things
  - By Donald Norman
- Bad Design Studies
  - http://www.baddesigns.com
- Usability Studies
  - http://www.useit.com/

Sources for examples:
  Sachen Macdonald, Univ. of Victoria
  Dey Alexander, Monash University