Examples of (Mostly Bad) Interaction Design

Anthony Hornof
October 22, 2014
Three main points on the design of visual information

• Make sure the information that the user will need is readily available.

• Organize the information so that it is presented in a manner that is easy for the user to access (given fundamental perceptual-cognitive-motor abilities).

• Always keep in mind what is the user’s task, and how it will unfold over time.
Task: Put a textbook on reserve. Fill out all the red blanks.

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**University of Oregon Library System**

**Reserve Orders**

UO Faculty and GTFs: If the library does not own an item you need for your course reserves one will be ordered for you from the information using the following form. Books will be rush-ordered, but please plan on 60-90 days for delivery.

The Library does not add course textbooks to the Library Collection. If you'd like to place a copy of your course textbook on reserve you may personal copy.

**Notes:**

- If you are requesting a videocassette or film, please use the [Acquisition Request Form for Videos or Films](#).
- Please contact Leslie Bennett, (lbennett@oregon.uoregon.edu, (541)346-1930) for requests to purchase music or materials for the Drama Room, and Christine Sundt, (csundt@oregon.uoregon.edu, (541)346-2209) to obtain slides for use in the image reserve at the Visual Collection.

Order one item per form. Items shown below in red font are required. Items listed in black font will help us process your order more quickly.

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<tr>
<th>Instructor</th>
<th>Office phone</th>
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<tbody>
<tr>
<td>Anthony Hornof</td>
<td>346-1372</td>
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<tr>
<th>Email address</th>
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<tr>
<th>Dept/Course</th>
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<tr>
<td>CIS 443/543 User Interfaces</td>
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<th>Course title</th>
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<tr>
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<th>Title</th>
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<td>A Guide to usability: human factors in computing</td>
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<th>Author/Editor</th>
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<td>Jenny Preece</td>
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If you are ordering from a catalog, please provide the name and date of the catalog. Please include the catalog item number.

<table>
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<th>Catalog</th>
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To send your request click the "submit" button below. To make another request after submitting the first, return to this page, click the "clear form" use this form to provide information for the next order request.

[Submit] [Clear Form]
Thank you

Your email address or comments appear to be blank, and thus were not sent to knires@oregon.uoregon.edu. Please re-enter your comments. You can return to the form using your browser's BACK command or button (or return to http://libweb.uoregon.edu/acs_svc/reserveorders.html if you want.).
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Instructor: ___________________________ Office phone: _______________________

Email address: ___________________________ Term/Year: _______________________

Dept/Course: ___________________________ # students: _______________________

Course title: ___________________________ Loan Period: 2 Hour

Location for this reserve material: ___________________________

Select from this list of reserve units: ___________________________

Title: ___________________________

Author/Editor: ___________________________

Publisher: ___________________________

(& date &location): ___________________________

Series: ___________________________

ISBN/ISSN/Musici#: ___________________________
Ten Guidelines for Interaction Design
(from the “heuristic evaluation” method)  (Nielsen, 1994)

• Use simple and natural dialog.
• Speak the users’ language.
• Minimize memory load.
• Be consistent.
• Provide feedback.
• Provide clearly marked exits.
• Provide shortcuts.
• Provide good error messages.
• Prevent errors.
• Include good help and documentation.
Conducting a “Cognitive Walkthrough” Can Reveal Some Interaction Problems

- Part of a “cognitive walkthrough” includes “walking” through the interface to pursue a specific goal.
- At every step or prompt, stop and consider:
  1. Will the user know the correct subgoal or subtask? Example: Print or select printer first?
  2. Will the user know that the correct action is available? Example: Any clues for how to print?
  3. Will the user associate the correct action with the subgoal? E.g.: Type “lp” or find in menu?
  4. If the correct action is performed, will the user know that progress is being made toward the goal? Example: Is it being printed?
Example: Downloading a Printer Driver
The task: Download a printer driver for the Dell 1720 laserprinter. First Step 1: Find the driver on the internet. Google “dell 1720 printer driver”. Click on the first link.
It appears that progress has been made, but...
Welcome to the Dell website.
We value your feedback!

Would you help us make our website better?

Yes, I’d like to provide feedback after my visit
No, thanks I don’t want to provide feedback

The power to do more

A second browser window will open on your desktop if you click “Yes”.
Please make sure not to close this window if you wish to participate in the questionnaire.
These intrusions asking for feedback violate all interface design guidelines, and represent a major problem in any analysis of usability. (They do not relate to the user’s task. They are “modal”. They cannot be dismissed with a single keystroke.) If you think that interfaces have gotten better over the last ten or twenty years, I present this as yet another piece of evidence to the contrary. Furthermore, these intrusions represent a tendency to over-rely on “big data”, and are also yet another example of people using computers to coerce other people into doing their bidding.
Okay, where were we? Reload the goals and subtask goals: Download the driver for a Dell 1720 laserprinter. What do I do next?
It is not entirely clear what the user should do next. It’s not entirely clear what is clickable, and there is nothing that clearly indicates “click here for your printer driver.” I do see that Mac OS is indicated, so that seems good, though.
Okay, click on “Printers (2 files)” or the widget to its left. Okay, progress is being made. But two files. Which one?
These drivers match your selections

View by: Category  Importance  Release Date
Show All  |  Hide All

Printers (2 files)

Dell Personal Laser 1720/1720dn, A03 View details

DELL_PERSONAL-LASER-1720-172_A03_R255696.exe  |  Hard-Drive (10 MB)
Printers  |  Release date 19 Jan 2010  |  Last Updated 03 Nov 2011  |  Recommended
Version A03,A03
Download  Add to download list
File

Dell Personal Laser 1720/1720dn, A01 View details

R249481.zip  |  Hard-Drive (449 KB)
Printers  |  Release date 19 Nov 2009  |  Last Updated 03 Nov 2011  |  Optional
Version A01,A01
Download  Add to download list
File

In general, you should take the higher version number, right?
But wait. One is a “.exe” file and the other is “.zip” file. A Mac user with adequate “how it works” knowledge will know that “.exe” file extensions are used on Windows programs but not on Macintosh programs. But this is not really the common “user’s language”.
Click on “Download” for the “.zip” file and you see evidence of progress that your driver is being downloaded. Done.
An easier-to-use website for downloading a printer driver, for the Xerox Phaser 5550. Google “Phaser 5550” and...
Conducting a “Cognitive Walkthrough”

Wharton, Rieman, Lewis, & Polson (1994)

Can Reveal Some Interaction Problems

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The Critical Role of Human Cognitive Strategy in User Interfaces
Cognitive strategies – the conscious or subconscious procedures that people execute to determine how to recruit their perceptual, cognitive, memory, and motor processes to accomplish mental and physical tasks – are a crucial and yet under-appreciated component of cognitive modeling and of human-computer interaction in general.

What is a cognitive strategy?
I would distinguish a cognitive strategy from a task strategy in that task strategies are much more directly observable and describable than cognitive strategies. Cognitive task strategies include mental activities that are not directly observable such as: motor planning and preparation, decision-making, decisions to move things in and out of long term memory, deciding what to say in your phonological loop, and the loading of task strategies into short term memory.
For example: The *task strategy* for using the picklist below might be to select the 29th day. (Assume an expert touch typist.) The *cognitive strategy* could include (a) weighing of the likelihood that pressing the keys “2” and “9” in quick succession could obviate moving the hand from the keyboard to the mouse to scroll through the list, and (b) attempting to predict the future value of having the hand on the mouse to interact with the month and year picklists, which would increase the motivation to move the hand to the mouse for the day.

![Image of form and calendar](image_url)

*Use the form or the calendar to select your date, and then click the available tickets for Goldsmiths, (NIME) University of London.*
In visual search, the *task strategy* is to find an object. The *cognitive strategy* would include decisions such as to only look at objects with known target features.

Task: Find the small orange circle that is labeled “98”.

The cognitive strategy would include moving the eyes to each of the orange objects (and to none of the non-orange objects), and stopping when you see the label “98”.
How can you identify task strategies?

In general, they cannot be directly observed and must instead be inferred through analyses such as:

- Cognitive task analysis.
- Mental chronometry.
- Eye movement analysis.
- Brain imaging analysis.
- By encoding competing strategies into a computational cognitive architecture that lends itself to broad exploration of different strategies for a task, and promoting cognitive strategies that are plausible, comparably parsimonious, and that explain the human data, and demoting those that do not do these things.
It would seem that many user interface problems can be traced to inadequate consideration of how an interface will support the execution of concise and accurate cognitive strategies, or inadequate programming options to support effective task strategies.
Task: Enter the country “U.S.A.” into a web form.

The expert user sees the country picklist and wants to enter “U.S.A.” The user first sees that “U.S.A.” is not the default or near the top of the list. The user knows that different country picklists behave differently, and so it is difficult or impossible to predict a task strategy that will get him or her through the list with as minimal ocular and manual motor processing.

The user might determine the list is alphabetical, and scroll to the bottom of the list with an <End> keystroke, hoping that “U” countries might appear, scan the first letters, and see that they do not appear close enough to the bottom of the list to be visible.

The user might try typing “USA” or “U.S.A.” The user visually inspects the alphabetical list as it changes and determines that “U.S.A.” is not in the list, but does see “United States”.

The user can move their hand to their mouse to click on “United States”, thus slowing performance, or might start typing “United States” while visually monitoring the progress of the highlighted country as it moves down the list (thus yoking their eyes to their hands).
Relatively simple tasks end up requiring somewhat complex highly-interactive task strategies. Partly because it is easy to program. But partly because it is much easier to see and analyze a visual display than it is an interactive task, and thus to articulate the task strategy required. Partly of course because of a profit motive.
Task: Speak to a travel or ticket agent.

- Automated telephone systems are especially bad at supporting the development of effective cognitive strategies. Rather than improve the ability of users to develop and execute effective cognitive task strategies, system designers actively prevent it, such as by disabling the option of pressing “0” to speak to a human.

- System designers do everything they can to require the user to listen to long, slow text before selecting a menu item, and creating tricks and roadblocks to force compliance. “Be sure to listen to the entire message because our options have changed.”

- The NSF travel agent requires us to listen to 35 seconds of recorded text before telling the caller to press “2” if this is an emergency. Pressing “0” causes the system to hang up on the caller.
Supporting effective cognitive strategies will help people with computer tasks, whether your task is to:

- Register for a conference.
  - Enter your country of residence while registering.
- Figure out on what day flights are cheapest.
  - Select a range of dates as part of looking at fares.
- Any number of travel-related tasks that require you to speak to a human ticket or travel agent
- Recommend a therapy to a patient with cancer.
  - Confirm that the AI agent understands the case.
Still to add to this slide deck:

- add “adding keynote to ipad”
- add examples of putting a book on reserve. Search on “UO Library - Reserve Order 1”
- add “dominion electric”
- add centurylink
- add occu credit card payment flaws
- add walgreens
Xcode provides everything developers need to create great applications for Mac, iPhone, and iPad. Xcode has unified user interface design, coding, testing, and debugging all within a single window. The Xcode IDE analyzes the details of your project to identify mistakes in both syntax and logic, it can even help fix your code for you.

What's New in Version 5.1.1
Includes SDKs for OS X 10.9 Mavericks, OS X 10.8 Mountain Lion, and iOS 7.1.

Category: Developer Tools
Updated: Apr 10, 2014
Version: 5.1.1
Price: Free
Size: 2.18 GB
Language: English
Seller: Apple Inc.
© 1999-2013 Apple Inc.
Rated 4+ Compatibility: OS X 10.8.4 or later