Web-based Presentation of Information: The Top Ten Mistakes and Why They Are Mistakes

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Abstract

This paper describes ten of the most common mistakes, from a human-factors or usability perspective, in presenting information on the web. The ten mistakes are: (1) burying information too deep in a website, (2) overloading pages with too much material, (3) providing awkward or confusing navigation, (4) putting information in unexpected places on the page, (5) not making links obvious and clear, (6) presenting information in bad tables, (7) making text so small that many users cannot read it, (8) using color combinations for text that many users cannot read, (9) using bad forms, and (10) hiding (or not providing) features that could help users. Examples are included for each mistake, as is an explanation of why the usability evidence shows that it is a mistake, and what can be done to avoid it.

1 Introduction

The web has quickly become the dominant way that many companies, organizations, and individuals provide information to others. Its dominance as a communication medium points out the importance of understanding how to present that information in a way that people can quickly and easily comprehend and use it. Many of the human-factors issues surrounding web-based presentation of information are relatively well understood (see Tullis, Catani, Chadwick-Dias, & Cianchette, 2005). But surprisingly these are often overlooked or ignored in the actual practice of web design. The purpose of this paper is to point out ten of the most common design mistakes in presenting information on the web and explain why the human-factors literature shows that these are mistakes.

2 The Top Ten Mistakes

Admittedly, this list is somewhat subjective. The mistakes chosen for the list are the ones that seem to be the most obvious violations of the human-factors findings or the ones that are seen the most often in real-world websites. The mistakes include not only specific issues related to displaying information on a given page (e.g., using fonts that are too small), but also more general issues related to how the user gets to the information.

2.1 Mistake #1: Burying Information Too Deep in a Website

One of the truisms that we see illustrated over and over in our Usability Lab at Fidelity Investments is that the deeper a piece of information resides in a website, the less likely users will find it. In other words, the more clicks it takes from the homepage to get to the information, the harder it is to find. This seems to be true for almost all types of websites. And it is one of the relatively few topics that has been studied thoroughly in the human-factors literature. The earliest studies of this so-called "depth vs. breadth trade-off" pre-date the web, and involved studies of menu systems.

The trade-off between the amount of information to present on one screen or page versus the total number and depth of pages has been studied at least back to the 1980's (e.g., Miller, 1981; Snowberry, Parkinson, & Sisson, 1983; Kiger, 1984; Tullis, 1985). Most of those early studies compared various types of menu hierarchies, from broad hierarchies with many selections per screen and fewer levels, to deeper hierarchies with fewer selections per screen and more levels. They generally found that shallower, broader hierarchies are more effective and easier for users to navigate than deeper hierarchies. More recently these issues have been re-visited in the context of web pages.

Zaphiris and Mtei (1997) studied five different designs for a website ranging from two to six levels deep. They found that users could reach their desired target items significantly faster with most of the two-level designs. However, one of the two-level designs, which used a relatively unnatural breakdown of the information on the first page, took longer. This points out the importance of the relationship between the site structure and the "natural", or perceived, structure of the information itself. Larson and Czerwinski (1998) similarly showed that users found target items faster in a two-level website than a three-level site. Tsunoda et al (2001) studied four different Web hierarchies for accessing 81 product pages, ranging from only one level deep to four levels. They also manipulated the complexity of the user's task: simple tasks that did not require any comparisons and complex tasks that did. They found that for the simple tasks, there were no differences in performance for the different structures, although users preferred the four-level hierarchy. But for the complex tasks, users found products significantly faster with fewer levels (1-level or 2-level hierarchies), and they preferred the 1-level hierarchy. Similarly, Miller and Remington (2002) studied two hierarchies for organizing 481 department-store items: three levels or two levels. They chose two different types of target items that users were asked to find: unambiguous (e.g., garage door remote) or ambiguous (e.g., bird bath). They found that unambiguous items were found faster in the 3-level structure than in the 2-level structure. On the other hand, ambiguous items were found faster in the 2-level structure. Bernard (2002b) created six hierarchies varying in breadth, depth, and "shape" for finding merchandise, ranging from two levels to six levels. His results showed that users found items faster when there were fewer levels: two levels was best and six levels was worst.

The main conclusion from these studies is that in most of the real-world situations we encounter on websites, it is almost always better to strive for breadth over depth—in other words, putting more choices on each page and having fewer levels of pages. Of course the big caveat is that the organization must also be consistent with the natural organization of the information that the users perceive. Having more selections (links) on a page makes it easier for users to make comparisons between them when trying to decide which path to choose. Having more selections also means that each item will tend to be more specific in order to distinguish it from the other selections, which also helps users.

2.2 Mistake #2: Overloading Pages with Too Much Material

Although breadth generally wins over depth when organizing the information on a website, there is a limit to how much material you should put on any one page, mainly because there is a limit to how long most people will wait for the page to load. The biggest offender, in terms of these "bloated pages", is usually large or unnecessary graphics. The total time that a page takes to load is primarily a function of the total size of all the elements of the page (e.g., text and graphics) and the user's connection speed. A rough approximation of the load time for a page can be calculated by dividing the total page size, in Kbytes, by the minimum bandwidth, in Kbytes/sec, of the user's connection. For a user on a dial-up connection with a 56k modem, the minimum bandwidth is about 4 Kbytes/sec. This would indicate, for example, that a 40-Kbyte page would take about 10 seconds to load over a 56k modem. And even though broadband connections are becoming more common, many Internet users are still connecting using 56k or slower modems. For example, Rainie and Horrigan (2005) found that about 60 million Americans have broadband connections at home, or about 46% of the U.S. Internet users. Although this number has increased significantly over the past few years, just over half of the home Internet users in America are still using dial-up connections.

Zona Research (1999) conducted a study in which they looked at "page bailout" rates (i.e., users giving up on a web page loading) as a function of the total page size. They found a dramatic increase in bailout rates between page sizes of 30 Kbytes, where the bailout rate averaged 7%, and 40 Kbytes, where the rate averaged 30%. These two page sizes correspond to approximate load times of 8 and 10 seconds over a 56k modem.

Interestingly, page load time is not just an issue because some users will give up before the page finishes loading. Slower-loading pages have also been shown to have a negative impact on users' perceptions of the site in general. For example, Ramsay, Barbesi, and Preece (1998) studied the effects of page load times ranging from two seconds to two minutes. They found that pages associated with delays longer than 41 seconds were rated as less interesting and more difficult to scan. They also found that slower-loading pages resulted in lower ratings of quality for the associated products and an increased perception that the security of their online purchase was likely to be compromised.

Selvidge (1999) studied average page load time using three levels: 1, 30, and 60 seconds. She found that users completed fewer tasks at the 30- and 60-second levels, and that they were more frustrated and found the tasks more difficult at those levels in comparison to the 1-second level (although the tasks were the same). Bouch, Kuchinsky, and Bhatti (2000) presented users with Web pages having load times that ranged from 2 to 73 seconds. Users were asked to rate the "quality of service" being provided by each of these Web sites. When those ratings were plotted as a function of page load time, they found a dramatic drop in the percentage of "good" ratings between 8 and 10 seconds, accompanied by a corresponding jump in the percentage of "poor" ratings. In a second study, where users were asked to press an "Increase Quality" button when they felt that a site was not being sufficiently responsive, the average point at which the users pressed the button was 8.6 seconds. In a third study, users were more tolerant of delays when the pages loaded incrementally.

In an interesting study conducted at the University of Vienna, Trimmel, Meixner-Pendleton, and Haring (2003) measured physiological responses of users to websites with page load times of 2, 10, or 22 seconds. They found evidence of physiological stress, as indicated by higher heart rates and increased electrodermal activity, with load times of 10 and 22 seconds.

The overall picture from these various studies is that users get more frustrated with a site as load time increases. There is also some evidence that in a wide variety of situations users expect web pages to load in less than about 10 seconds. Beyond that point, there seems to be a significant increase in user frustration, perception of poor site and/or product quality, and simply giving up on the site.

Several techniques are available to web designers to make sure their pages are as "streamlined" as possible, such as the following:

- Make sure that all elements on the page, especially graphics, are really necessary and are making a contribution to the user experience.
- Reduce the file size of each graphic as much as possible by cropping the image, making it smaller, reducing the size of the color palette, and using appropriate compression (e.g., usually JPEG for photos).
- Re-use graphics (by using the same image file name) across pages, because these graphics are generally cached by the browser.
- Use style sheets and other web standards to avoid repetition of extra HTML code throughout the page (e.g., "FONT" tags).
- If someone tries to tell you that your site needs a "splash" page with huge graphics: Just Say No.

2.3 Mistake #3: Providing Awkward or Confusing Navigation

Almost as bad as burying information many levels deep in a website is hiding it behind navigation mechanisms that users cannot understand or use. There are several flavors of this problem. Two serious problems are organizing the information in a way that does not make sense to the users and using terminology in the navigation that users do not understand. We saw a classic example of the terminology problem several years ago in our Usability Lab when we were testing a very early prototype of a website for financial advisors to use in managing money on behalf of other people. We brought financial advisors into the Lab, and one of their tasks was to find important messages from Fidelity to them in the prototype. It turns out that in this early prototype, we had put those messages under a tab that was labelled "Client Communications", because from our perspective they were our clients. Almost none of the financial advisors found those messages. The problem, of course, was that they do not think of themselves as clients; they *have* clients that they are managing money for, and so that is how they interpreted the "Client Communications" tab.

Even if you have the right organization and terminology, the other potentially serious problem with navigation is simply presenting it in a way that does not work well for the users. Several studies have investigated the most effective ways of presenting navigation options on web pages. For example, Bernard and Hamblin (2003) studied three different approaches to presenting navigation options for a hypothetical online electronics store: "Index layout", in which all of the links were arrayed in a tabular form in the main part of the page; "Horizontal layout", in which menu headings and associated pull-down menus were arrayed across the top of the page; and "Vertical layout", in which the menu headings and associated fly-out menus were arrayed down the left side of the page.

They found that users reached their targets significantly faster with the "Index" menus than with either of the other two menus, and "Index" menus were more preferred. Similarly, Tullis and Cianchette (2003) studied four different approaches to presenting the navigation options for an online web design guide as: Table of Contents ("TOC"), in which all of the menu items were listed down the left in a two-level scrolling list; "Vertical Drop-downs", in which menu headers were arrayed across the top and associated vertical menus dropped down for each on mouse-over; "Horizontal Drop-downs", in which menu headers were arrayed across the top and associated horizontal menus appeared under each on mouse-click; and "Top and Left", where tab folders were presented across the top for the main sections and when one of those was selected, the associated menu items were listed down the left. They found that users were able to find the answers to questions in the design guide significantly faster with the "TOC" approach than with any of the others. Finally, Tullis, Connor, and LeDoux (2005) studied six different ways of presenting navigation mechanisms for a regional security Intranet site. Their results showed that users found the correct answers to questions about information on the site significantly more often when they used a condition where all of the links were simply listed down the left, similar to the "TOC" approach of Tullis and Cianchette, or a condition with drop-down menus across the top.

Taking these studies together, they paint a relatively clear picture in which the navigation options that allow the user to view more of the choices at once tend to be more effective (i.e., the "Index layout", "TOC", and "Full Menus"). This allows the user to more readily compare the choices to each other and make an informed decision. Navigation mechanisms that require effort on the user's part to explore the various options, or which require clicking down to lower levels, generally are not as effective. Of course, with any relatively large site (e.g., hundreds or thousands of pages), it is not practical to present *all* of the navigation options at once. In those situations, segmenting the site into logical areas may be part of the solution. In addition, at least the Tullis et al (2005) study suggests that certain types of drop-down menus can be very effective. Interestingly, even though the drop-down menus and the fly-out menus in that study were logically equivalent, the drop-down menus were significantly easier for users to navigate, mainly due to the more awkward mouse movement required with the fly-out menus to make a selection.

2.4 Mistake #4: Putting Information in Unexpected Places on the Page

Most web designers would probably claim that the phrase "web design standards" is an oxymoron: the web is a free-for-all where designers can do whatever they want. Although that may be true, a surprisingly large number of design conventions and best practices have emerged over the past five years or so. And even though many users may not be consciously aware of these conventions, they have developed expectations based on them and seem to get confused when they encounter sites that violate them. Some of the strongest expectations are around where users expect to find certain types of elements on web pages, or where they *do not* expect to find them. Some of these expectations, which are mostly based on our observations of web usability tests in our Lab over the past few years, include the following:

- **Nothing critical is going to be on the far right of a page**. On many types of web pages, users seem to expect information on the far right of the page to be "nice-to-know", "see also", or other types of optional information not crucial to the task at hand. In usability studies using our eye-tracking equipment, we commonly find that the far right of the page is one of the last places people look (along with the very bottom of the page). Even more strongly, users don't expect to have to scroll horizontally to see anything important beyond the right-hand border of the window.
- **Nothing critical is going to start "below the fold"**. Users certainly have become accustomed to vertical scrolling on web pages, but only if they see the need. For example, users will scroll to see all of a long bullet list or table (if they're interested in the contents), or they will scroll to see additional items in a long list of links, but only if these lists or tables have at least *started* "above the fold". Quite a few years ago, we were testing an early prototype of allowing users to open a new brokerage account online. Many participants in the test got stuck on the first page of this process and could not figure out how to proceed. The problem was that the part of the page visible above the fold was filled with information about how great it's going to be when they have their brokerage account, and the link for actually starting to fill out the online application was below the fold. Interestingly, the only link above the fold was one for downloading the Adobe Acrobat Reader. Several users wasted quite a bit of time trying to figure out how to open a Fidelity account on the Adobe site! This anecdotal evidence is supported by the work of Bailey,

Koyani, and Nall (2000) who found that, for scrolling pages, users spent about 80% of their time scanning information above the fold and only 20% of the time scanning information below the fold.

- **In a series of pages, "Next Page" links or buttons are going to be at the bottom of the page.** This may seem contradictory to the example just given, but the difference is that the process of filling out the application actually had not started yet in that example. Once the users (eventually) got to start the online application, they expected the buttons or links that would let them step through the multi-page process to be at the bottom of the page. This is mainly because of the logical order of filling out the form or otherwise reviewing the contents top to bottom and then proceeding to the next page. It can also be helpful to have redundant links at the top of the pages, particularly if there are cases where many of the fields can be logically pre-filled.
- **Most navigation options are going to appear on the margins of the pages.** This expectation is particularly true for the navigation options that take you to *other* parts of the site besides the one you are currently in. The strongest expectation seems to be that these options will be either across the top of the page or down the left. One of our recent eye-tracking studies has shown that when users are trying to find a way to get to a page that's not clearly related to the current page, they spend most of their time looking in menus or other links across the top of the page or down the left.
- **Certain specific page elements are going to be in very predictable locations.** Users have begun to develop expectations about where to find some specific features that commonly appear on many web pages: a link to the home page for the site, a site search feature, and help features. In a series of studies, Bernard (2001, 2002a) investigated users' expectations about the location of certain common elements on web pages. He found strong expectations for a link to the site home to be at the top-left of the page, for a site search feature to be near the top-center, and for a help feature to be at the top-right. These results are reinforced by the findings of Carton (2002) and Nielsen and Tahir (2001) who did statistical analyses of the locations of common elements on the pages of popular Web sites. For example, Carton reported that the average location for a company logo was at the top-left of the page, and that 92% of the logos were clickable to take you to the site's home page. Similarly, Nielsen and Tahir reported that 84% of the sites they studied had a company logo at the top-left of the page.

2.5 Mistake #5: Not Making Links Obvious and Clear

If users have not yet found the information they are looking for on a website, then they are looking for a link that will lead them to it. In the early days of the web, the vast majority of links on websites were blue, underlined text. Not any more. In our Usability Lab, we've seen some users adopt a "minesweeping" strategy of randomly moving their mouse around the page to see where the pointer changes to a hand so that they can tell where the links are. This seems to be a particularly common problem for older users and those with less web experience. For example, Chadwick-Dias, McNulty, and Tullis (2003) found that older users often had trouble distinguishing between links and non-links on web pages, as evidenced by a propensity to click on items that were not links (e.g., headings, bullets in a bullet list of links). Chadwick-Dias et al. found that if they significantly increased the link affordance by being extremely consistent in the visual treatment of text links throughout the site (blue underlined, changing to red on mouseover), there was a dramatic reduction in the clicking on non-links.

Once users identify what items on a page are links, there is still the challenge of identifying which link is most likely to lead to the information they want. Spool, Perfetti, and Brittan (2004) refer to this as the "scent" of the links. Links with the right "scent" will draw the users toward them. Chadwick et al (2003) found that this was a serious challenge for their older users. They commonly saw older users put their mouse over the right link and then debate with themselves about whether it was the right link. In many cases, they failed to find what they wanted because of this reluctance to click on a link. They coined this "cautious clicking". They found that if they made the links more descriptive and used more "action" words in them (e.g., "View Accounts" instead of just "Accounts"), the users were much more willing to click on the links and were more successful in their tasks. In addition to the text of the links themselves, Nielsen (1998) argues that descriptive link titles which pop-up in a small box (similar to the ALT tag for an image) can help users decide what link to choose. This is supported by the research of Harper, Yesilada, Goble, and Stevens (2004) who found that users benefited from enhanced context for links (more descriptive links) and from link previews (information about where the link will lead).

2.6 Mistake #6: Presenting Information in Bad Tables.

There are many situations where the best way to present some information on a web page is through a table. Tables can be a great way to allow users to scan the information effectively, make comparisons, and even manipulate the data by sorting it in different ways. But surprisingly few data tables on the web do this very well.

Tullis and Fleischman (2004) conducted a study to learn how to best present tabular data on the web. The study focused on the effects of table design treatments such as borders, font size, cell background colors, and spacing. Over 1400 subjects performed specific information retrieval tasks using 16 different table designs. They manipulated three basic factors: Cell borders (horizontal lines, horizontal and vertical lines, no lines, and alternating bars of background colors), Font size (large or small), and Spacing (loose or tight, in both dimensions). They studied tables of hypothetical mutual fund performance data (e.g., fund name, fund number, Net Asset Value or NAV, change in NAV, etc). They measured how quickly and accurately users could find specific pieces of information in the tables as well as subjective reactions to the table designs. Somewhat surprisingly, they found that one of the sixteen designs was the clear winner overall. It was a design that used alternating bars of color to distinguish the rows, a larger font size, and a relatively loose spacing. One of the designs that came out among the worst was one that used both horizontal and vertical lines to define the cells, a smaller font size, and tight spacing.

Another important aspect of table design is making sure that users can tell what the columns mean, even when the table is long. We have often seen users in our Lab get confused about which column is which in a long table, frequently scrolling up to the top so they could re-check the column headings and then scrolling back down to the target row, perhaps several times. Repeating headings within a long table or simply limiting the length of each table can address this.

Finally, users are beginning to expect certain functionality from data tables, especially the ability to sort on columns that make sense. Users often expect to be able to sort on any of the column headings by simply clicking on the heading. The currently sorted column is usually marked in some way. Another emerging trend with tables is the ability to select multiple rows or items using check boxes and then perform actions on them, such as making comparisons.

2.7 Mistake #7: Making Text So Small That Many Users Cannot Read It.

Whether I like it or not, I am a card-carrying member of the “Baby Boom” generation. And like many of my fellow Baby Boomers, my eyes are not what they were when I was 20 years old. While my younger colleagues at work are running their computers at 1600 x 1200 resolution on a 19” monitor, I am struggling to read everything at 1024 x 768 on an even larger monitor. The problem with many websites is that they are being designed by people in their 20’s and 30’s who have not started to experience these problems first-hand.

Although the human-factors literature is not totally consistent, most of the studies show that the basic legibility of text starts to degrade significantly at 6 points, or anything less than 7 pixels high. There simply are not enough pixels available to accurately form the letters. For example, Tullis, Boyton, and Hersh (1995) found that a 6-point font yielded only 37% accuracy in the ability of users to detect typographical errors compared to accuracies around 80% for 10-point fonts. But assuming that text is being presented large enough to meet this minimum legibility threshold, what are the effects of larger sizes? The smallest fonts (e.g., 6 to 8 point) certainly appear to hinder reading performance (Tullis et al, 1995). Studies of 10-point and 12-point fonts have found either no difference in reading performance (Bernard & Mills, 2000) or a slight advantage for 12-point fonts (Bernard, Mills, Peterson, & Storrer, 2001). One study with older adults found that they were able to read 14-point fonts faster than 12-point fonts (Bernard, Liao, & Mills, 2001). Finally, Tullis and Fleischman (2002) found that combined reading speed and accuracy for passages displayed using the Verdana font improved significantly from HTML SIZE=1 to SIZE=2, and from SIZE=2 to SIZE=3. Most of these studies also found that users generally prefer the larger fonts, at least for the range of sizes studied.

Taken together, these studies seem to suggest that a website targeted for a general audience should probably use a default font size of 10 or 12 points. If the website is specifically targeted for older users, it would probably be advisable to use a default font size of 12 or 14 points. But what are the implications for users like me, who are

starting to experience mild to moderate vision problems? The answer appears to lie in allowing the user to adapt the text size to something that better suits them. Most of the major browsers support the ability for the user to increase (or decrease) the size of the text being used on the pages. At least with some browsers, this means that the font sizes have to be coded in a scalable manner (e.g., using keyword sizing or relative sizing) rather than using fixed pixel sizes.

2.8 Mistake #8: Using Color Combinations for Text That Many Users Cannot Read.

The other major factor that determines the legibility of text, in addition to the font size, is the combination of the text color and the background color. Although other factors influence the legibility of any given color combination, a good predictor is the difference in the gray values of the text and the background (e.g., White, 1990; Fowler & Stanwick, 1995; Tullis, 1997). Gray values range from 0 to 100, so the greatest difference is for black text on a white background, or vice versa, which yields a difference of 100. Unfortunately, many web designers seem to think this is boring. So they adopt color schemes where they end up with things like light purple text on a slightly darker purple background, because it fits in better with their color scheme. The fact that no one can read it does not seem to matter as long as it looks good.

Poor contrast between the text and background color can cause legibility problems for anyone, but it is particularly troublesome for people with various types of vision problems. For example, about 6-8% of all males have some type of color vision deficiency (and about 0.5% of females). With most forms of color vision deficiency, the legibility of any given color combination can be maintained by ensuring a high difference in the gray values. Just recently we have been conducting a series of usability studies in our Lab with people who have various forms of vision problems, from relatively mild myopia to legal blindness (best-corrected vision of 20/200 of worse). One of the things we have seen over and over is that for many of these users, the color contrast of text is just as important as its size.

There is a simple technique that web designers can use to check the color contrast of any text on a web page:

1. Take a screen-shot of the page containing the text to be tested.
2. Bring it in to an image-manipulation program such as PhotoShop or Paint Shop Pro.
3. Convert the screen-shot to grayscale.
4. Zoom in on the text to be tested and use the tool (usually an eye-dropper) that lets you see the various values associated with each pixel. One of those values will be the gray value. In PhotoShop, this is labelled as “K” on the “Info” window. Check those gray values for the text and its immediate background.
5. The simple rule of thumb is that the difference in those gray values should be in the top third of the possible range, or a difference greater than 67, for optimum legibility. Differences of 33-67 are considered marginal (and probably troublesome for anyone with vision problems), while differences under 33 are definitely bad.

2.9 Mistake #9: Using Bad Forms.

Any web site that needs to get information from the user almost always includes forms of some type. Forms are used for everything from simple functions like logging in to complex functions like the checkout process in an e-commerce site. Since forms are the primary way to get information from the user, they are also ripe territory for all kinds of usability problems. The following are some of the more common problems with forms that we have seen in our Usability Lab:

- **Tab order problems**. Many users interact with forms in a very keyboard-intensive way. Because they are usually typing information into text entry fields, they tend to keep their hands on the keyboard and use the “tab” key to move between fields. It is quite disturbing when the typing cursor jumps around the page in odd ways when tabbing, or when areas of the screen get focus at unexpected times. A common example of this problem is putting something in the tab order *between* the “User ID” and “Password” fields on a login form. Especially on a login form, users are often running in heads-down auto-pilot mode, where they type their ID, press Tab, type their password, and then press Enter. Little do they realize that the focus was set on a “Forgot Your User ID?” link instead of the password field when they were typing it.

- **Unclear when "Submit" actually will happen.** Particularly long or complex forms, such as a checkout process or new account application, are usually split across several pages. The problem that users sometimes have is knowing when they have reached the end of that process and the actual "submit" is going to happen. We've seen two versions of this problem, both of which can be serious. In one version, the user has been clicking a "Next" button all along to move to the next page in the process. After clicking a "Next" button that was actually the last one, they suddenly realize that they just booked a plane trip to Paris when all they really wanted to do was check availability. The other version is one that I encountered just recently. I was ordering some gift checks on a site that I use perhaps once every few months. After filling out several pages of forms, clicking a "Next" button after each, I clicked a button labelled "Done". This took me to a page that recapped the details of my order. No more buttons were apparent. Confident that I was finished and my gift checks were on their way, I closed the browser. Two weeks later, there was still no sign of the gift checks. So I called the company. There was no record of my order. Mystified, I went back to their website to place an order (again). This time I realized the problem. When I previously got to the page that looked like a confirmation page summarizing my order, I had not scrolled down, below the fold, to see the actual "Submit" button. The "Done" button on the previous page really meant "I'm done entering information, let me review it now".
- **Poor error handling.** Few things are more frustrating than filling out a long form, clicking "Submit", and then getting an obscure error message indicating that *something* is wrong *somewhere* on the form, but we are going to keep you guessing about where and what it really is. My favorite example is one where the user was filling out a form to set up a telephone conference. Having filled in all the fields, the user clicked on "Submit" and got an error message that said "A valid entry can only contain letters or numbers", with no indication of what field was in error or why (at least not in any helpful way). The user tried everything he could think of, making numerous attempts at changes to various fields. Finally, he happened to change the "Name" of the meeting from "Staff Meeting" to "Test". No more error message. It turns out that the space between "Staff" and "Meeting" was unacceptable because it was not a letter or number!
- **Not indicating data formats.** Many of the fields that need to be completed on a form have specific formatting requirements. An obvious example is a date. Do they need it as 11/24/2005, 24/11/2005, 24 Nov 2005, November 24, 2005, or something else altogether? Can my Social Security Number, telephone number, or credit card number include dashes or spaces? Of course, there are several ways of addressing this problem. One is to avoid it altogether when it makes sense to provide a selection mechanism instead of a free-form entry. A good example is a pop-up calendar control that allows the user to select the date. Another approach is to clearly identify the data format in a label, such as "Date (mm/dd/yyyy):" And still another approach is to be as forgiving as possible in the interpretation of the data that was entered, such as simply ignoring spaces or dashes imbedded in a credit card number.
- **Incorrect use of check boxes and radio buttons.** It's almost funny when this mistake happens, mainly because the rule is so simple and has been around since the dawn of GUIs. So let's repeat it one more time: Use check boxes when the user should be able to choose more than one option and use radio buttons when the user can choose only one option. And, by the way, never use just one radio button!

2.10 Mistake #10: Hiding (or Not Providing) Features That Could Help Users.

Surprisingly, very few conventions have arisen for providing user assistance on websites. Traditional GUI applications have a relatively well-defined set of conventions about providing online help and how the user should be able to access it, but not websites. Although some of these may not commonly be thought of as "user assistance", there are several different features that should be provided on any reasonably rich website to help users:

- **Site Search.** We see more and more users in our Lab turning to a site search mechanism when they can't find what they're looking for. Even just a few years ago, that was rarely the case. The change is probably due to the increased popularity of Internet search engines in general and improvements in search engines for sites. The potential problems in this area are not providing a site search mechanism at all, providing one but hiding it from the user, or providing one that gives bad results. Users expect site search, they expect to be able to access it from an input field near the top of every page, and they expect it to give them meaningful results, not a long list of hits that say "Untitled Page". If you are unable to provide a site search for technical reasons, then something resembling the index of a book can be useful.

- **Site Map.** If users are unsuccessful in either finding or using a site search mechanism, many will then turn to a site map. Many different types of site maps can be found on the web. What we have seen is that simpler site maps are usually more effective than complicated ones with which the user can manipulate and interact in various ways. This is consistent with the findings of Stover, Coyne, and Nielsen (2002), who summarized their conclusions by saying that a site map should not be a navigational challenge itself. Something resembling the table of contents of a book usually works very well as a site map, and has the added advantage of working well for people using screen-reading software.
- **FAQs.** One convention that seems to be unique to the Internet and web is the use of Frequently Asked Questions, or FAQs. Interestingly, users seem far more willing to try something called "FAQs" when they are having trouble than something called "Help". Perhaps they have more often found the answers they need with FAQs, or they do not feel like they are admitting that they need help! One key to the success of FAQs seems to be making sure that they really are questions that users have asked frequently.
- **Definitions of Terms and Other Help.** Many sites cannot avoid the use of terms that may be unique to their industry and perhaps not familiar to all their users. Providing a way to access definitions of terms that users may not be familiar with can be very helpful, as can access to other help such as overviews of procedures. Unfortunately, there is no common convention for providing such access. One technique used on forms is for the labels of fields to be links to definitions that pop up in a secondary window. Another technique is to provide a small icon that the user can click, such as a question mark, beside fields that have definitions or some type of help available.

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