We Seek and Use Visual Structure

3

Chapter 2 used the Gestalt principles of visual perception to show how our visual system is optimized to perceive structure. Perceiving structure in our environment helps us make sense of objects and events quickly. Chapter 2 also mentioned that when people are navigating through software or Web sites, they don't scrutinize screens carefully and read every word. They scan quickly for relevant information. This chapter presents examples to show that when information is presented in a terse, structured way, it is easier for people to scan and understand.

Consider two presentations of the same information about an airline flight reservation. The first presentation is unstructured prose text; the second is structured text in outline form (see Fig. 3.1). The structured presentation of the reservation can be scanned and understood much more quickly than the prose presentation.

The more structured and terse the presentation of information, the more quickly and easily people can scan and comprehend it. Look at the Contents page from the California Department of Motor Vehicles (see Fig. 3.2). The wordy, repetitive links slow users down and "bury" the important words they need to see.

Unstructured:

You are booked on United flight 237, which departs from Auckland at 14:30 on Tuesday 15 Oct and arrives at San Francisco at 11:40 on Tuesday 15 Oct.

Structured:

Flight: **United 237, Auckland → San Francisco**
    Depart: **14:30   Tue 15 Oct**
    Arrive: **11:40   Tue 15 Oct**

FIGURE 3.1

Structured presentation of airline reservation information is easier to scan and understand.

Renewals, Duplicates, and Information Changes for Driver Licenses and/or ID Cards

- How to renew your driver license in person
- How to renew your driver license by mail
- How to renew your driver license by Internet
- How to renew your instruction permit
- How to apply for a duplicate driver license or identification (ID) card
- How to change your name on your driver license and/or identification (ID) card
- How to notify DMV of my change of address
- How to register for the organ donor gift of life program

FIGURE 3.2

Contents page at the California Department of Motor Vehicles (DMV) Web site buries the important information in repetitive prose.

Licenses & ID Cards:	**Renewals, Duplicates, Changes**		
• Renew license:	in person	by mail	by Internet
• Renew:	instruction permit		
• Apply for duplicate:	license	ID card	
• Change of:	name	address	
• Register as:	organ donor		

FIGURE 3.3

~~"~~The California DMV Web site~~.~~~~"~~ Contents page with repetition eliminated and better visual structure.

Compare that with a terser, more structured hypothetical design that factors out needless repetition and marks as links only the words that represent options (see Fig. 3.3). All options presented in the actual Contents page are available in the revision, yet it consumes less screen space and is easier to scan.

Displaying search results is another situation in which structuring ~~the~~ data and avoiding repetitive "noise" can improve people's ability to scan quickly and find what they seek. In 2006, search results at HP.com included so much repeated navigation data and metadata for each retrieved item that they were useless. By 2009 HP had eliminated the repetition and structured the results, making them easier to scan and more useful (see Fig. 3.4).

Of course, for information displays to be easy to scan, it is not enough merely to make them terse, structured, and nonrepetitious. They must also conform to the rules of graphic design, some of which were presented in Chapter 2.

For example, a prerelease version of a mortgage calculator on a real estate Web site presented its results in a table that violated at least two important rules of graphic design (see Fig. 3.5, left). People usually read (on- or offline) from top to
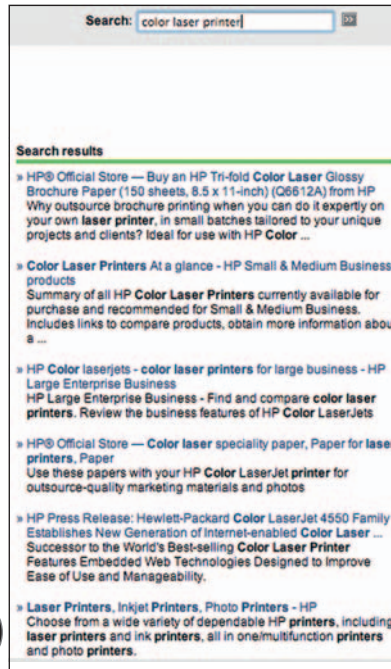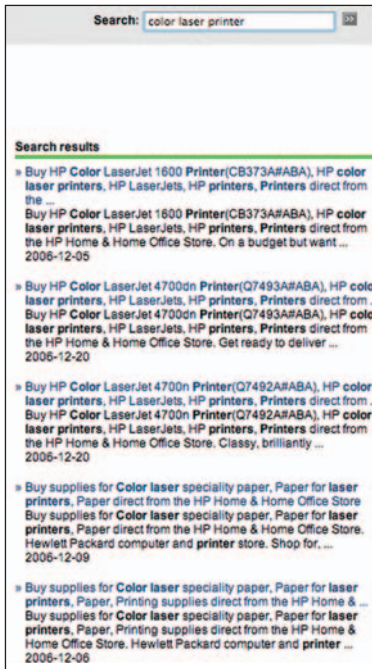
FIGURE 3.4

In 2006, HP.com's site search produced repetitious, noisy results (left) but by 2009 was improved (right).

FIGURE 3.5

Left: Mortgage summary presented by a software mortgage calculator. Right: Improved design.

bottom, but the labels for calculated amounts were *below* their corresponding values. Second, the labels were just as close to the value below as to their own value, so proximity (see Chapter 2) could not be used to perceive that labels were grouped with their values. To understand this mortgage results table, users had to scrutinize it carefully and slowly figure out which labels went with which numbers.

The revised design, in contrast, allows users to perceive the correspondence between labels and values without conscious thought (see Fig. 3.5, right).

STRUCTURE ENHANCES PEOPLE'S ABILITY TO SCAN LONG NUMBERS

Even small amounts of information can be made easier to scan if they are structured. Two examples are telephone numbers and credit card numbers (see Fig. 3.6 and Fig. 3.7). Traditionally, such numbers were broken into parts to make them easier to scan and remember.

A long number can be broken up in two ways: either the user interface breaks it up explicitly by providing a separate field for each part of the number, or the interface provides a single number field, but lets users break the number into parts with spaces or punctuation (see Fig. 3.8a). However, many of today's computer presentations of phone and credit card numbers do not segment the numbers and do not

Easy:	(415) 123-4567
Hard:	4151234567
Easy:	1234 5678 9012 3456
Hard:	1234567890123456

FIGURE 3.6

Telephone and credit card numbers are easier to scan and understand when segmented.
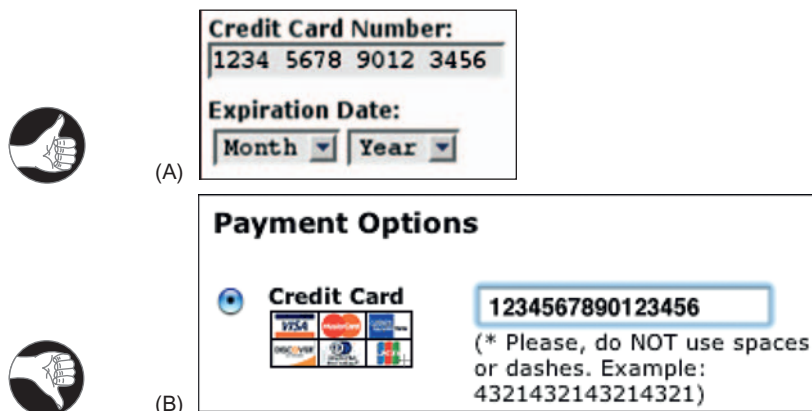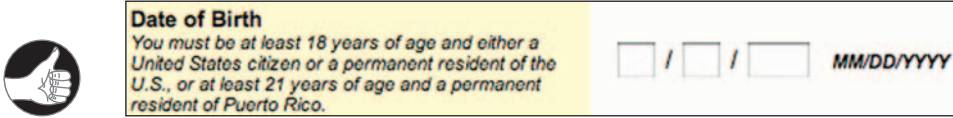

(A)

FIGURE 3.7

(A) At Democrats.org, credit card numbers can include spaces. (B) At StuffIt.com. they cannot, making them harder to scan and verify.

FIGURE 3.8

BankOfAmerica.com: Segmented data fields provide useful structure.

allow users to do it with spaces (see Fig. 3.8b). This limitation makes it harder for people to scan a number or verify that they typed it correctly.

Segmenting data fields can provide useful visual structure even when the data to be entered is not, strictly speaking, a number. Dates are an example of a case in which segmented fields can improve readability and help prevent data entry errors, as shown by a date field at Bank of America's Web site (see Fig. 3.8).

DATA-SPECIFIC CONTROLS PROVIDE EVEN MORE STRUCTURE

A step up in structure from segmented data fields are data-specific controls. Instead of using simple text fields—whether segmented or not—designers can use controls that are designed specifically to display (and accept as input) a value of a specific type. For example, dates can be presented (and accepted) in the form of menus combined with pop-up calendar controls (see Fig. 3.9).

It is also possible to provide visual structure by mixing segmented text fields with data-specific controls, as demonstrated by an email address field at Southwest Airlines' Web site (see Fig. 3.10).
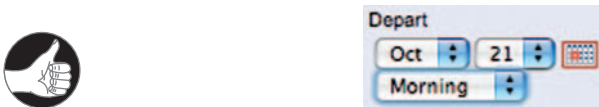
FIGURE 3.9

NWA.com: Dates are displayed and entered using a control that is specifically designed for dates.

FIGURE 3.10

NWA.com: Dates are displayed and entered using a control that is specifically designed for dates.

VISUAL HIERARCHY LETS PEOPLE FOCUS ON THE RELEVANT INFORMATION

One of the most important goals in structuring information presentations is to provide a visual hierarchy—an arrangement of the information that:

- Breaks the information into distinct sections, and breaks large sections into subsections

- Labels each section and subsection prominently and in such a way as to clearly identify its content

- Presents the sections and subsections as a hierarchy, with higher level sections presented more strongly than lower level ones

A visual hierarchy allows people, when scanning information, to separate what is relevant to their goals from what is irrelevant instantly, and to focus their attention on the relevant information. They find what they are looking for more quickly because they can easily skip everything else.

Try it for yourself. Look at the two information displays in Figure 3.11 and find the information about prominence. How much longer does it take you to find it in the nonhierarchical presentation?
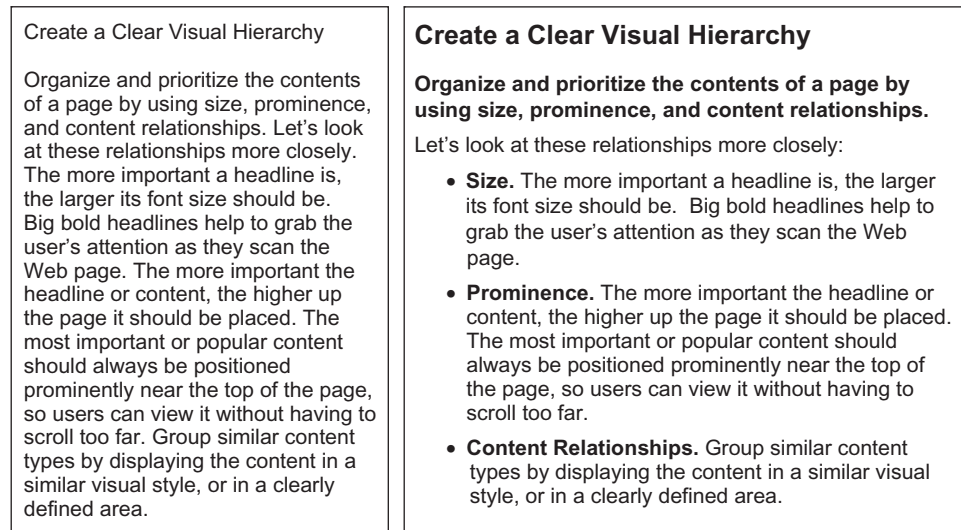
Create a Clear Visual Hierarchy

Organize and prioritize the contents of a page by using size, prominence, and content relationships. Let's look at these relationships more closely. The more important a headline is, the larger its font size should be. Big bold headlines help to grab the user's attention as they scan the Web page. The more important the headline or content, the higher up the page it should be placed. The most important or popular content should always be positioned prominently near the top of the page, so users can view it without having to scroll too far. Group similar content types by displaying the content in a similar visual style, or in a clearly defined area.

Create a Clear Visual Hierarchy

Organize and prioritize the contents of a page by using size, prominence, and content relationships.

Let's look at these relationships more closely:

- **Size.** The more important a headline is, the larger its font size should be. Big bold headlines help to grab the user's attention as they scan the Web page.

- **Prominence.** The more important the headline or content, the higher up the page it should be placed. The most important or popular content should always be positioned prominently near the top of the page, so users can view it without having to scroll too far.

- **Content Relationships.** Group similar content types by displaying the content in a similar visual style, or in a clearly defined area.

FIGURE 3.11

Find the advice about prominence in each of these displays. Prose text format (left) makes people read everything. Visual hierarchy (right) lets people ignore information irrelevant to their goals.
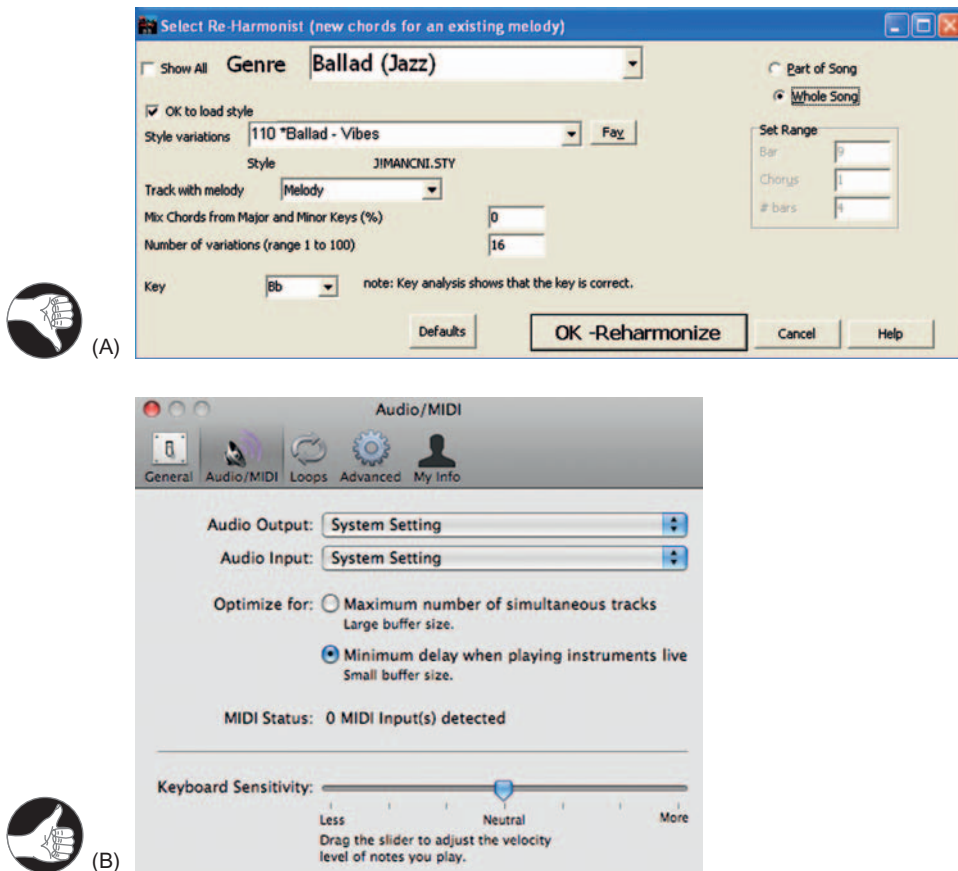
FIGURE 3.12

Visual hierarchy in interactive control panels and forms lets users find settings quickly. (A) Band in a Box (bad), (B) GarageBand (good).

The examples in Figure 3.11 show the value of visual hierarchy in a textual, read-only information display. Visual hierarchy is equally important in interactive control panels and forms—perhaps even more so. Compare dialog boxes from two different music software products (see Fig. 3.12). The Reharmonize dialog box of Band-in-a-Box has poor visual hierarchy, making it hard for users to find things quickly. In contrast, GarageBand's Audio/MIDI control panel has good visual hierarchy, so users can quickly find the settings they are interested in.