

ACCESS by Design

A Guide to Universal Usability
for Web Designers

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Sample Chapter

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CHAPTER 11

Color

ON THE WEB, COLOR IS A VISUAL DESIGN ELEMENT that is truly without cost. Like images, designers can use colors freely and easily; unlike images, users do not pay the price because color settings do not increase page load or rendering times. Color is a powerful tool for visual design; it can be used to set tone, draw attention, convey information, differentiate elements, and more.

However, color can impair usability. Legibility suffers when the contrast between text and background is insufficient. When text is set with low contrast, character shapes are difficult to distinguish, which makes reading difficult and tiring. For best legibility, complementary elements such as text and background should use complementary colors.

Nonvisual users cannot see color, and some visual users cannot distinguish certain colors or are using technology that does not display color. When color is used to communicate information—for example, to identify required fields or to emphasize important text—such users may not be able to access the information. For universal usability, pages must be usable without color.

Some people have viewing requirements for colors, such as a high-contrast view (a black background with white or yellow text). The best way to design for specialized needs is to define color settings so users who have special color needs can apply their own settings.

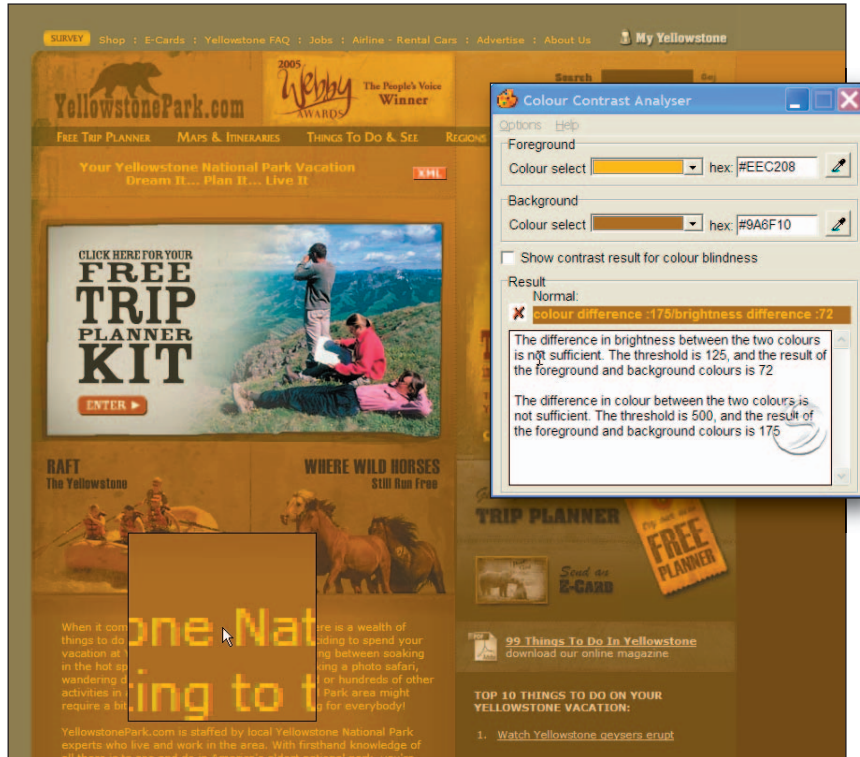
11.1 BASIC PRINCIPLES

11.1.1 Select contrasting colors for greatest legibility

Legibility is greatly affected by the perceived contrast between text and background. With low-contrast typography, reading is difficult since

FIGURE 11.1

Legibility suffers when there is insufficient contrast between text and background. Some of the text on the YellowstonePark.com page is difficult to read because of low contrast and insufficient color differentiation, as shown here using the Colour Contrast Analyzer software.



readers must work to distinguish letterforms. A document set with pink text on a red background would be tiring, if not impossible, to read.

Color perception is affected by many factors, including physiological factors such as aging and color-blindness and environment factors such as display settings and room lighting. When designing elements that require clarity and definition—such as text—choose colors for perceptibility and legibility above all other considerations to avoid using color combinations that make it difficult for users to distinguish foreground from background (Figure 11.1).

Color differentiation is most influenced by contrast in brightness, or light-dark contrast. Brightness is the amount of white that is present in a color. Pairing black with white provides the greatest brightness



FIGURE 11.2
Text is most legible when foreground and background colors differ in brightness. As brightness contrast diminishes, so does legibility. Hue also affects color differentiation. Complementary colors produce more contrast than colors that are adjacent on the color wheel.

contrast since white has a 100% brightness value, whereas black has a brightness value of 0%. Legibility is greatest when the degree of brightness contrast between text and background is high (Figure 11.2).

Hue is also a factor in color differentiation. Greatest contrast is achieved by using complementary hues—that is, colors that are on opposing sides of the color circle—and by combining dark colors from the bottom half of the color circle with light colors from the upper half of the circle (Figure 11.2).

In a nutshell. Readability suffers when there is insufficient contrast between text and background. Maximize legibility by using color combinations that contrast in brightness (such as black and white) and hue (such as purple and yellow).

FIGURE 11.3

Tribeworks uses red text to label required form fields on its registration form. Users who cannot differentiate the colored labels from the other text labels will be unable to identify the required fields.

The screenshot shows the Tribeworks registration page. At the top, there is a navigation bar with links for 'home', 'products', 'enterprise', and 'support', and a 'store' link. The main heading is 'The resource you are trying to reach requires registration!' followed by 'Registration is Free'. Below this, there are two options: 'Not ready to register? Click here to continue.' and 'Already registered? Click here to log in.' The form is titled 'Fill out the form below to Register Now...' and includes a note that 'All fields in red are required.' The form fields are: First Name, Last Name, Address, City, State/Province (with a dropdown for 'Non USA or Canada' and 'Intl. Province'), Postal Code, Country (with a dropdown for '<Choose>'), Phone, Email, Password, Confirm Password, Position (with a dropdown for '<Choose>'), and Address Kind (with a dropdown for '<Choose>'). Red text is used to label the required fields: First Name, Last Name, Address, City, State/Province, Postal Code, Country, Phone, Email, Password, Confirm Password, Position, and Address Kind. A note below the Email field states: 'It is important to give a valid e-mail address. Your iShell license and account information will be sent to this address.'

11.1.2 Don't use color alone to convey meaning

When color is used to enhance or enliven the visual display of a page, people who cannot access color will not necessarily suffer from reduced usability. They will still be able to access the materials on the site and to operate the site functions. However, when color is an integral part of the user interface, people who cannot access color may encounter difficulties. When color is used to convey information or to provide direction—as an indicator, to draw attention to interface elements or important text, and to provide status information—nonvisual users as well as some visual users will be affected.

For example, required form fields are commonly identified using red text for the field label (**Figure 11.3**). Nonvisual users will not be able to identify required fields because the software reads the content of the page, not its visual characteristics. Visual users who cannot distinguish the color red will therefore not be able to identify required fields. Other examples include alert text displayed as red text, and colored buttons.

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FIGURE 11.4
UNICEF uses a colored asterisk to identify required fields. The color makes the fields easy to identify for users who access color, and the asterisk can be identified and understood by all users.

As with other potential obstacles, the solution is not to eschew color. Color is an extremely effective method for creating emphasis and providing feedback—two essential aspects of a user interface. The solution is to provide redundant emphasis and feedback using other, accessible methods.

Links are a good model for this type of redundancy. On the Web, links have built-in visual attributes: color and underlines. Users who can see color can identify links by looking for colored text. Users who cannot distinguish colors can identify links by looking for underlined text. Because links are machine-readable, nonvisual users also have a means for identifying links. Screen readers distinguish links from other text by reading them using a different voice. Screen reader users can cycle through the links on a page using the tab key, access a list of links, and ask software to read only links. Software's ability to recognize links is what allows search engines to rank pages based on link frequency.

When using color to emphasize elements that do not have built-in redundancy, we need to take into account nonvisual users and visual users who cannot access color. The best way to design for these users is to provide emphasis using text as well as color. For example, instead of using color to identify required form fields, use color and an asterisk, and advise users that “Required fields are red and marked with an asterisk” (Figure 11.4, *previous page*). Instead of using color to highlight alert text, use color and text, such as “ALERT! Your username and password are incorrect.” Rather than ask users to “Click the red button to continue,” instruct users to “Click the Submit button to continue.”

In a nutshell. Some users cannot see color, while others have difficulties distinguishing certain colors. When using color to convey information, reinforce color with text so people who cannot access color can access the information.

11.2 MARKUP

11.2.1 Allow users to override color settings

To design a Web page, we must make decisions about the visual characteristics of the page. In terms of color, we make decisions about page color, text color, the color of page elements and areas, link colors, button colors, and more.

In a fixed medium, a user who has difficulties with a document’s chosen colors has little opportunity to modify those characteristics. If the designated colors make it difficult to read the document, or if other color combinations are needed for reading, the user may have difficulty accessing the content of the document.

On the Web, color settings are flexible and can be user-defined. When users encounter a document with colors that get in the way of usability, they can override the color settings by changing browser settings or by applying a custom style sheet.

When designing color, use methods that can be overridden by the user. Colors set in style sheets are easily customized using user style



sheets. Colors set on the page are less flexible. For example, when colors are defined in the HTML code, users cannot selectively override color settings. They have no choice but to override all color settings and display the page using the browser-defined color settings.

Colors in graphics cannot be customized. If users have difficulty with the colors in an image, they have no way to remedy the display so as to access the content. When essential elements such as headings and links are presented as images, users who need custom colors may be unable to use the site. On the other hand, when color is applied using HTML and styles, designers have a way to define, and users to customize, color in the user interface (Figure 11.5).

In a nutshell. Users may need to apply customized color settings to access Web content. Use styles to define colors so users can easily override color settings. Avoid using images, which cannot be customized, for essential page content.

FIGURE 11.5

When colors are specified in style sheets, users who need certain colors can override the author-defined styles and apply their own custom color settings. SimpleBits has a flexible design that can accommodate this level of customization.