

CHAPTER 2

Text

In this chapter, you will learn how to:

- Recognize the importance of word choice
- Describe the difference between a typeface and a font and list at least three attributes of a font, for example, upper/lowercase, serif/sans serif, PostScript/TrueType/OpenType
- Discuss the importance of text and ways text can be leveraged in multimedia presentations
- Discuss the presentation of text on Windows, Macintosh, eBook, tablet, and mobile platforms
- Find sources for free and shareware fonts
- Define hypermedia, hypertext, links, anchors, and nodes and be able to discuss both the potential and limitations of hypertext and hyperlinking systems

USING text and symbols for communication is a very recent human development that began about 6,000 years ago in the Mediterranean Fertile Crescent—Mesopotamia, Egypt, Sumeria, and Babylonia—when the first meaningful marks were scraped onto mud tablets and left to harden in the sun. Only members of the ruling classes and the priesthood were allowed to read and write the pictographic signs and cuneiforms. The earliest messages delivered in written words typically contained information vital to the management of people, politics, and taxes. Because this new medium did not require rote memorization by frail human gray matter, written messages became popular among the elite. Unlike their memory-based counterparts, these new “written” messages were less likely to perish due to acts of God, and certainly weren’t going to die from dysentery or suffer from amnesia. Even if a message were intercepted by foes or competitors, it would still be indecipherable—except by those few who had acquired reading skills (see Figure 2-1).

In fact, because those who could read probably attended the same private school or shared the same tutors, in those days reading, writing, and power politics were naturally intertwined. In some former eras it was a capital offense to read unless you belonged to the proper social class or possessed a patent granted to you by your rulers. In modern times it may still be a capital offense to access, decrypt, or read documents declared by a government to be secret in a national interest.

Today, text and the ability to read it are doorways to power and knowledge. Reading and writing are expected and necessary skills within



Figure 2-1 “Gifts from the High and Mighty of Adab to the High Priestess, on the occasion of her election to the temple.” Dated 26th century BC (4,700 years ago).

most modern cultures. Now, depending upon your proficiency with words, you may be awarded a doctorate instead of the death penalty. And, as has been the case throughout history, text still delivers information that can have potent meaning.

Since the explosion of the Internet, the World Wide Web, and text messaging services for handheld devices, text has become more important than ever. Indeed, the native language of the Web is **HTML** (Hypertext Markup Language), originally designed to display simple text documents on computer screens, with occasional graphic images thrown in as illustrations (see Chapter 11 for more history of the Internet). Academic papers, magazine articles, complex instruction manuals, and even the contents of entire books are now available for reading with a web browser. Add a built-in function that links, with a click of the mouse or a touch on the screen, selected words and phrases to other related and perhaps more-detailed material (the “hypertext” part of HTML, discussed later in this chapter), and you can surf the Net in a medium much richer than the paper pages of a book.

The social impact of this text-based medium on the way people access and use information has been profound. In contrast to today’s television medium, which consists of sound and images with a few text headlines “dumbed down” to the level of a perceived lowest common denominator of passive audience, the Web offers an active experience laden with

While the specifics of how our intelligence agencies carry out this cryptanalytic mission have been kept secret, the fact that NSA’s mission includes deciphering enciphered communications is not a secret, and is not news. Indeed, NSA’s public website states that its mission includes leading “the U.S. Government in cryptology ... in order to gain a decision advantage for the Nation and our allies.”

Office of the Director of
National Intelligence (ODNI)
Statement on the Unauthorized
Disclosure of NSA
Cryptological Capabilities,
September 6, 2013 ([http://
icontherecord.tumblr.com/](http://icontherecord.tumblr.com/))

First Person

In the 15th century, when the Church was a strong power throughout Europe, Johann Gensfleisch zum Gutenberg, a trained goldsmith from Mainz, Germany, invented movable type for printing presses. He used this new invention for the money-making task of producing religious literature, indulgence slips, and the Holy Bible. In the case of the Bible, he sold his copies to people who could read Latin and pay the equivalent of three years of a clerk’s wage to own a personal copy of this Great Work. Other printers, including the Estienne family in France and Aldus Manutius in Italy, soon entered the publishing marketplace to compete,

and together they changed the fabric of society. The mass production of identical copies of text enabled an information-based paradigm shift that changed the human universe in a substantial way. Lots of scribes and illuminators were put out of business.

By way of pointing out that some elements of the human equation may be constant throughout history, I would remark that like many adventurers surfing the waves of today’s continuing dot.com revolution, Gutenberg took on a financial investor, Johann Fust. Gutenberg, who was a visionary craftsman perhaps better suited to lab and shop work, defaulted

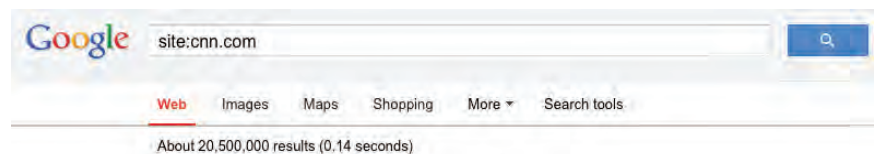
on a payment to Fust in 1455, was sued, and lost his press and all its profits. Toward the end of his life, it is said that he was granted a place as courtier to the archbishop of Mainz. This position offered perhaps better remuneration for a destitute inventor than a diminishing social security plan that rewards today’s surfer who wipes out while hanging ten at the leading edge of the business world.

(From a speech by Tay Vaughan to the jointly held World Conference on Educational Multimedia and Hypermedia and World Conference on Educational Telecommunications, Freiburg, Germany, June 1998)

2 Multimedia: Making It Work

enough choices to challenge even bright people who can read. More than television, with its 50 or 100 or even 400 available channels, the Web offers an explorer's paradise of billions of HTML documents and, through "social media," immediate contact with many millions of friends and followers.

Yahoo! Search once claimed, "Our index now provides access to over 20 billion items. For those who are curious, this update includes just over 19.2 billion web documents, 1.6 billion images, and over 50 million audio and video files." Until 2009, the search engines displayed (bragged about) the total number of documents they indexed, in the billions. These huge numbers were very inaccurate, it turned out, and they have ceased making precise statements about quantity. A trick in the Google search engine is to type in "site:" and the name of a domain. Google will tell you how many pages from that domain are indexed:



With its penchant for interactivity, multimedia too often ignores the power of narrative, of stories. There's really something to be said for documents with a beginning, middle, and end.

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Steven Levy, author of *Hackers*, *Artificial Life*, *Insanely Great*, *The Unicorn's Secret*, *Crypto*, and other books; senior staff writer at *Wired*

As bandwidth improves and more information is successfully embedded within these documents and delivered to many devices—desktop and handheld, or even eye-readable—developers of content will not escape the difficult design issues discussed in Chapter 9. Who is the audience? What words should I use? Under what conditions? What typeface is best?



The Power of Meaning

Even a single word may be cloaked in many meanings, so as you begin working with text, it is important to cultivate accuracy and conciseness in the specific words you choose. In multimedia, these are the words that will appear in your titles, menus, and navigation aids as well as in your narrative or content.

Today's poets and songwriters concentrate text by distilling lengthy prose into few words heavy with meaning. Advertising wordsmiths render the meaning of entire product lines into an evocative single word, logo, or tagline. Multimedia authors weave words, symbols, sounds, and images, and then blend text into the mix to create integrated tools and interfaces for acquiring, displaying, and disseminating messages and data.

I'd like to write something that comes from things the way wine comes from grapes.

.....

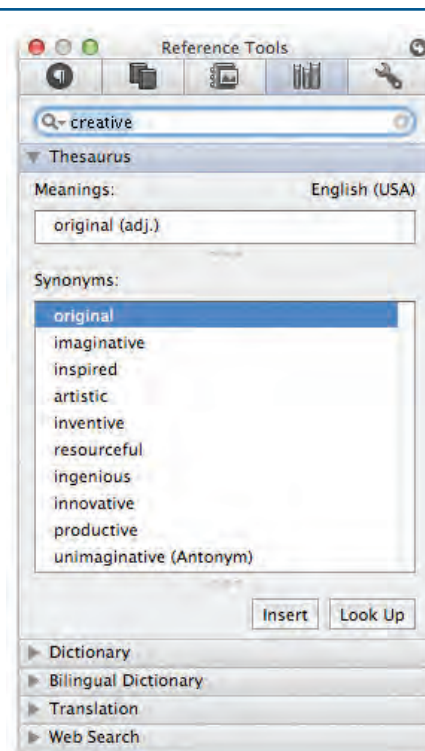
Walter Benjamin,
Philosopher/Writer

The words “Barbie,” “green,” and “lite” may each easily trigger a rush of different meanings. A piercing cry in the night, the sight of fire engines leaving your street as you steer your car into your neighborhood, the scent of drying kelp along the seashore, the feel of rough pine bark against your chest as you climb, fingernails on a chalkboard—all these raw sensory messages are important only because of what they mean to you. Indeed, you alone know the words that will stop you dead in your tracks with anger, or, better, soothe you seductively over a quiet dinner for two. These words have meaning.

All of these examples demonstrate the following multimedia principle: it’s important to design labels for title screens, menus, and buttons or tabs using words that have the most precise and powerful meanings to express what you need to say. Understand the subtle shadings. GO BACK! is more powerful than Previous; TERRIFIC! may work better than That Answer Was Correct. Experiment with the words you plan to use by letting others try them. If you have the budget, set up a focus group to have potential users experience your words. Watch them work. See if users flinch, balk, or click the Help button in confusion. See if they can even find the Help button.

Words and symbols in any form, spoken or written, are the most common system of communication. They deliver the most widely understood meaning to the greatest number of people—accurately and in detail. Because of this, they are vital elements of multimedia menus, navigation systems, keyword lists, and content. You will reward yourself and your users if you take the time to use excellent words. Let your poet loose!

TIP Browse through a thesaurus. You will be surprised at the number of synonyms and related words that are closely associated to the word you start with, and you will certainly find the one word that most perfectly fits your need. The majority of today’s popular word processors ship with a bundled electronic thesaurus; many are also available for free on the Internet.



When we have a technical meeting with engineers coming from Germany, France, Spain, Sweden, Japan, and other countries, people say “Hello!” when they walk into the room; English is clearly the international common language of business and commerce and science. Sometimes the etiquette of polite speech is even more fascinating: when you have a room with a group of Germans talking to each other in German and suddenly a foreign visitor comes in, from one sentence to the other, they seamlessly switch to English.

Dipl.-Ing. Roland Cuny,
Karlsruhe, Germany

The Power and Irregularity of English

If you are reading this book in English, you might consider yourself lucky. A study by the British Council estimated that one billion people spoke English by the beginning of the second millennium as a first, second, or “foreign” language. English is the official or joint official language of more than 75 countries, and Algeria, when it dumped French in favor of English as the second language in schools, irritated a great many Parisian intellectuals. More than two-thirds of the world’s scientists read English, and three-quarters of the world’s mail is written in English. It is estimated that 80 percent of the world’s information that is stored on computers is written in English. As Dutch-born Professor Boeree of Shippensburg University has said, “Unfortunately for learners of English, it still has several irregular verbs (e.g., to be and to have) and a large number of strong verbs (e.g., sing-sang-sung), plus a few irregular plurals (e.g., child-children, man-men...). Nevertheless, people around the world find English relatively easy, with one huge exception: English has the worst spelling of any language using the Latin alphabet!”

The most recent changes in English spelling have been driven by technology limits as SMS (Short Message Service) text messages commonly used by social networking sites such as Twitter and Facebook to communicate and “tweet” allow only about 160 characters per message (140 bytes). As today’s most pervasive method of human-to-human data communication (more than three billion texters worldwide sending trillions of short text messages from phone to phone each year), users speaking many languages quickly developed word shortcuts to pack the most meaning into the fewest characters. NetLingo (www.netlingo.com, where you will discover recent additions “twerk,” “frape,” “mopper,” and “sockpuppet”) maintains a list of almost two thousand English acronyms and instant messaging “**chat-speak**” or “**text-speak**” words such as XOXO (hugs & kisses), U (you), and NME (enemy). When assembled into a message, you might discover “were I a tear in ur eye i wood roll down onto ur lips. but if u were a tear in my eye i wood never cry as i wood be afraid 2 lose u!” Or perhaps your poetry receives the ID10T error code. With the arrival of **MMS (Multimedia Messaging Service)**, which allows for 350,000-byte transmissions, perhaps these shortcut spellings will fade away. But perhaps not.

About Fonts and Faces

A **typeface** is a family of graphic characters that usually includes many type sizes and styles. A **font** is a collection of characters of a single size and style belonging to a particular typeface family. Typical font **styles** are boldface and italic. Your computer software may add other style **attributes**, such as underlining and outlining of characters. Type sizes are usually expressed in points; one **point** is 0.0138 inch, or about 1/72 of an inch. The font’s

size is the distance from the top of the capital letters to the bottom of the descenders in letters such as *g* and *y*. Helvetica, Times, and Courier are typefaces; Times 12-point italic is a font. In the computer world, the term font is commonly used when typeface or face would be more correct.

A font's size does not exactly describe the height or width of its characters. This is because the **x-height** (the height of the lowercase letter *x*) of two fonts may vary, while the height of the capital letters of those fonts may be the same (see Figure 2-2). Computer fonts automatically add space below the descender (and sometimes above) to provide appropriate line spacing, or **leading** (pronounced “ledging,” named for the thin strips of lead inserted between the lines by traditional typesetters).

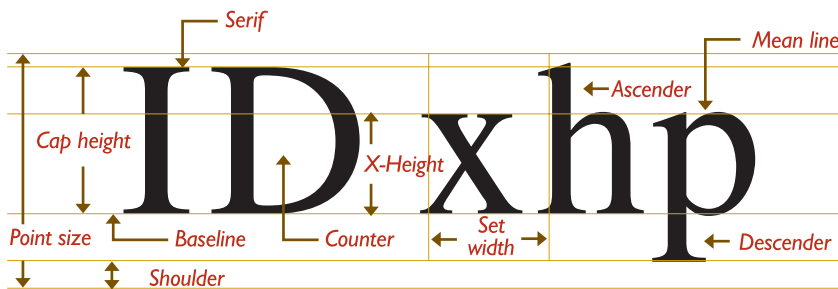


Figure 2-2 The measurement of type

Leading can be adjusted in most programs on both the Macintosh and the PC. Typically you will find this fine-tuning adjustment in the Text menu of image-editing programs or the Paragraph menu of word processing programs, though this is not an official standard. No matter where your application has placed the controls for leading, you will need to experiment with them to achieve the best result for your font. With a font editing program like Fontographer from Fontlab, Ltd. at www.fontlab.com (you'll see an example of it later in the chapter), adjustments can also be made along the horizontal axis of text. In this program the character metrics of each character and the kerning of character pairs can be altered. **Character metrics** are the general measurements applied to individual characters; **kerning** is the spacing between character pairs. When working with PostScript, TrueType, and Master fonts—but not bitmapped fonts—(see “Computers and Text” later in this chapter), the metrics of a font can be altered to create interesting effects. For example, you can adjust the body width of each character from regular to **condensed** to **expanded**, as displayed in this example using the Sabon font:

Regular
Condensed
Expanded

Or you can adjust the spacing between characters (**tracking**) and the kerning between pairs of characters:

Tighter Track	A v	A v
Looser Track	Kerned	Unkerned

When it converts the letter *A* from a mathematical representation to a recognizable symbol displayed on the screen or in printed output (a process called **rasterizing**), the computer must know how to represent the letter using tiny square **pixels** (picture elements), or dots. It does this according to the hardware available and your specification, from a choice of available typefaces and fonts. Search the Web for “free fonts.” High-resolution screen displays and printers can make more attractive-looking and varied characters because there are more fine little squares or **dots per inch (dpi)**. And today’s broad selection of software fonts makes it easier to find the right typeface and font for your needs. The same letter can look very different when you use different fonts and faces:

Cases

In centuries when type was set by hand, the type for a single font was always stored in two trays, or *cases*; the upper tray held capital letters, and the lower tray held the small letters. Today, a capital letter is called **uppercase**, and a small letter is called **lowercase**.

TIP *Studies have shown that words and sentences with mixed upper- and lowercase letters are easier to read than words or sentences in all caps (uppercase). While uppercase can make your message appear important or urgent, use this sparingly; in online messaging it’s known as “SHOUTING” or “YELLING” and can be annoying, if not offensive.*

In some situations, such as for passwords, a computer is **case sensitive**, meaning that the text’s upper- and lowercase letters must match exactly to be recognized. But nowadays, in most situations requiring keyboard input, all computers recognize both the upper- and lowercase forms of a character to be the same. In that manner, the computer is said to be **case insensitive**.

WARNING *The directory names and filenames used in Uniform Resource Locator (URL) addresses on the Internet are case sensitive! Thus, `http://www.timestream.com/info/people/biotay/biotay1.html` points to a different directory and file than `http://www.timestream.com/info/people/bioTay/biotay1.html`. On the other hand, the record type (HTTP) and the domain name (`www.timestream.com`), and e-mail addresses (`tay@timestream.com`) as well, are usually case insensitive. Read more about addresses on the Internet in Chapter 11.*

Company and product names such as WordPerfect, ByWater, FedEx, FileMaker, and LoJack have become popular. Placing an uppercase letter in the middle of a word, called an **intercap** or a **CamelCase**, is a trend that emerged from the computer programming community, where coders discovered they could better recognize the words they used for variables and commands when the words were lowercase but interCapped.

Serif vs. Sans Serif

Typefaces can be described in many ways, just as a home advertised by a realtor, a wine described by a food critic, or a political candidate's platform can all be described in many ways. Type has been characterized as feminine, masculine, delicate, formal, capricious, witty, comic, happy, technical, newsy—you name it. But one approach for categorizing typefaces is universally understood, and it has less to do with the reader's response to the type than it does with the type's mechanical and historical properties. This approach uses the terms **serif** and **sans serif**.

Serif versus sans serif is the simplest way to categorize a typeface; the type either has a serif or it doesn't (*sans* is French for "without"). The serif is the little decoration at the end of a letter stroke. Times, New Century Schoolbook, Bookman, and Palatino are examples of serif fonts. Helvetica, Verdana, Arial, Optima, and Avant Garde are sans serif. Notice the difference between serif (on the left) and sans serif.

On the printed page, serif fonts are traditionally used for body text because the serifs are said to help guide the reader's eye along the line of text. Sans serif fonts, on the other hand, are used for headlines and bold statements. But the computer world of standard, 72-dpi screen resolution is not the same as the print world, and it can be argued that sans serif fonts are far more legible and attractive when used in the small sizes of a text field on a screen. Indeed, careful selection of a sans serif font designed to be legible in the small sizes (such as Tahoma or Verdana) makes more sense when you are presenting a substantial amount of text on the screen. The Times font at 9-point size may look too busy and actually be difficult and tiring to read. And a large, bold serif font for a title or headline can deliver a message of elegance and character in your graphic layout. Use what is right for your delivery system, which may not necessarily be the same as what is right when you're printing the material to paper. This is because

The image shows two large capital letters side-by-side for comparison. The letter on the left is a serif 'T', featuring a horizontal crossbar with small decorative strokes (serifs) at its ends. The letter on the right is a sans serif 'T', which is simpler and lacks these decorative strokes.

when you're printing out what you create on a display screen, **WYSIWYG** (What You See Is What You Get) is more of a goal than an absolute fact.

Using Text in Multimedia

Imagine designing a project that used no text at all. Its content could not be at all complex, and you would need to use many pictures and symbols to train your audience how to navigate through the project. Certainly voice and sound could guide the audience, but users would quickly tire of this because greater effort is required to pay attention to spoken words than to browse text with the eye.

A single item of menu text accompanied by a single action (a mouse click, keystroke, or finger pressed to the screen) requires little training and is clean and immediate. Use text for titles and headlines (what it's all about), for menus (where to go), for navigation (how to get there), and for content (what you see when you get there).

TIP *In designing your navigation system, bring the user to a particular destination with as few actions and as short a wait as possible. If the user never needs the Help button to get there or never has to click the Back button when at a dead end, you're doing everything right!*

Designing with Text

Computer screens provide a limited workspace for developing complex ideas. At some time or another, you will need to deliver high-impact or concise text messages on the screen in as condensed a form as possible. From a design perspective, your choice of font size and the number of headlines you place on a particular screen must be related both to the complexity of your message and to its venue.

If your messages are part of an interactive project or web site where you know the user is seeking information, you can pack a great deal of text information onto the screen before it becomes overwhelmingly busy. Seekers want dense material, and while they travel along your navigational pathways, they will scroll through relevant text and study the details. Here is where you must strike a balance, however. Too little text on a screen requires annoying page turns and unnecessary mouse clicks and waits; too much text can make the screen seem overcrowded and unpleasant.

On the other hand, if you are creating presentation slides for public-speaking support, the text will be keyed to a live presentation where the text accents the main message. In this case, use bulleted points in large fonts and few words with lots of white space. Let the audience focus on the speaker at the podium, rather than spend its time reading fine points and subpoints projected on a screen.

TIP A lengthy text document read by a web browser may scroll for hundreds of lines without annoying the user because it's expected. As a rule of thumb, however, try to make your web pages no longer than one-and-a-half to two screenfuls of text. In a 1024x768-pixel window, for example, you have about 600 pixels in height to work with before scrolling is necessary. Limit the width of your lines by using columns—reading a line of text across an entire 21-inch display screen is cumbersome, if not uncomfortable. For printing text documents, provide a separate link to a complete document in either plain text (.txt), rich text format (.rtf), word processor format (.doc, .odt, or .wpd), or Adobe PDF format (.pdf) instead of relying on a browser's print facilities. It is often more convenient to print and read a document than to scroll through many pages of text on a screen.

Choosing Text Fonts

Picking the fonts to use in your multimedia presentation may be somewhat difficult from a design standpoint. Here again, you must be a poet, an advertising psychologist, and also a graphic designer. Try to intuit the potential reaction of the user to what is on the screen. Here are a few design suggestions that may help:

- For small type, use the most legible font available. Decorative fonts that cannot be read are useless, as shown here.
- Use as few different faces as possible in the same work, but vary the weight and size of your typeface using italic and bold styles where they look good. Using too many fonts on the same page is called ransom-note typography. Visit www.letterplayground.com/generator.php to make your own ransom notes.
- In text blocks, adjust the leading for the most pleasing line spacing. Lines too tightly packed are difficult to read.
- Vary the size of a font in proportion to the importance of the message you are delivering.
- In large-size headlines, adjust the spacing between letters (kerning) so that the spacing feels right. Big gaps between large letters can turn your title into a toothless waif. You may need to kern by hand, using a bitmapped version of your text.
- To make your type stand out or be more legible, explore the effects of different colors and of placing the text on various backgrounds. Try reverse type for a stark, white-on-black message.
- Use anti-aliased text where you want a gentle and blended look for titles and headlines. This can give a more professional appearance. **Anti-aliasing** blends the colors along the edges of the letters (called **dithering**) to create a soft transition between the letter and its background.
- Try drop caps (like the *T* to the left) and initial caps to accent your words. Most word processors and text editors will let you create drop caps and SMALL CAPS in your text. Adobe and others make initial





Figure 2-3 System font examples of the Roboto typeface designed by Christian Robertson for Google's Android devices and Helvetica Neue used by Apple's iOS

If you are older than eleven years, never *ever* use the Comic Sans face or the “fantasy” CSS attribute on a web page.

Brad Borch, Designer

caps (such as the one shown to the left from Adobe, called Gothic). The letters are actually carefully drawn artwork and are available in special libraries as Encapsulated PostScript files (EPS).

- Coding an initial cap for a web page is simple. Use CSS attributes:

```
p:first-letter { font-size: 200%; }
p:first-line { line-height: 100%; }
```

- If you are using centered type in a text block, keep the number of lines and their width to a minimum.
- For attention-grabbing results with single words or short phrases, try graphically altering and distorting your text and delivering the result as an image. Wrap your word onto a sphere, bend it into a wave, or splash it with rainbow colors.
- Experiment with drop shadows. Place a copy of the word on top of the original, and offset the original up and over a few pixels. Then color the original gray (or any other color). The word may become more legible and provide much greater impact. With web sites, shadowed text and graphics on a plain white background add depth to a page. Surround headlines with plenty of white space. **White space** is a designer's term for roomy blank areas, while programmers call the invisible character made by a space (ASCII 32) or a tab (ASCII 9) white space. While CSS should always be used for presentational purposes, some web designers use a nonbreaking space entity () to force spaces into lines of text in HTML documents.
- Pick the fonts that seem right to you for getting your message across, then double-check your choice against others' opinions. Learn to accept criticism.
- Use meaningful words or phrases for links and menu items.
- Text links (**anchors**) on web pages can accent your message: they normally stand out by color and underlining. Use link colors consistently throughout a site, and avoid iridescent green on red or purple on puce.
- Bold or emphasize text to highlight ideas or concepts, but do not make text look like a link or a button when it is not.
- On a web page, put vital text elements and menus in the top 320 pixels. Studies of surfer habits have discovered that only 10 to 15 percent of surfers *ever* scroll *any* page.
- If you are designing for a mobile operating system such as iOS or Android, be sure to follow that platform's design guidelines. In those environments text can be manipulated to be large or small and scrolled to be readable. For legibility on smaller mobile devices, consider using the device's system font: many hours have gone into the design of these (see Figure 2-3).

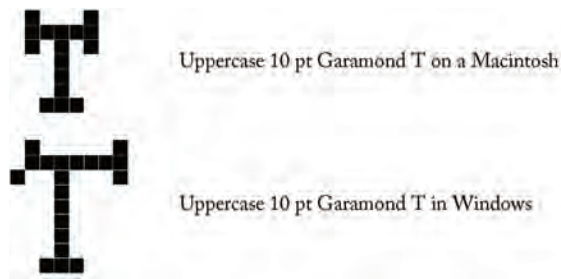


Figure 2-4 Examples of Garamond typeface displayed on a Macintosh (top) and in Windows

TIP Characters identified in a particular font (say, Garamond 10-point) do not always look the same on a Macintosh as they do on Windows displays. Typically, what is called 12-point on a Macintosh will be a 10- or 9-point size in Windows. And the actual shape of the characters may be different (see Figure 2-4). Take care to visually test the flow of your text on all platforms.

Installed Fonts Before you can use a font, it must be recognized by the computer's operating system (see Figure 2-5). That is to say, if you ask the computer to write onto the screen a large 24-point uppercase T in a Palatino font face, the computer must be able to locate the precise

My parents offered my brother and sister \$50 to teach me the alphabet, but that didn't work. So I flunked second grade. I had the same nun again, and she was mean. She paddled me for two years, but I still didn't learn the alphabet or how to read. By the time I was 15 or 16, I could get by in class with reading. But I could never spell. I was a woodshop major in high school, and my typical report card was two Cs, three Ds, and an F. I just got used to it. Though reading is still difficult for me, I do like readers. I like the written language because I like photocopying. I believe in double-spacing, since it helps my business!

.....
Paul Orfalea, founder of Kinko's [now FedEx Office], discussing his reading disability

Aharoni	Aharoni	Al Bayan (Regular, Bold حروف ضخمة)
Aldhabi	Aldhabi	American Typewriter (Condensed Light, Condensed, Condensed Bold, Light, Regular, Bold)
Andalus	خط الأندلس	Andale Mono (Regular)
Angsana New	อักษรอังซาน	Apple Casual (Regular)
AngsanaUPC	อักษรอังซาน	Apple Chancery (Regular)
Arabic Typesetting	خط الطباعة العربي	Apple Garamond (Light, Light Italic, Book, Book Italic, Bold, Bold Italic)
Arial	Arial	Apple Gothic 애플고딕 (Regular 보통)
Arial Black	Arial Black	Apple LiGothic 蘋果雪黑 (Medium 太字)
Batang	바탕	Apple LiSung (Light)
Browallia New	ใบรวาเลีย นิว	Apple Myungjo 애플명조 (Regular 보통)
BrowalliaUPC	ใบรวาเลีย ยูพีซี	Apple Symbols (Regular 白點)
Calibri	Calibri	Apple Symbols (Regular 白點)
Cambria	Cambria	Arial (Condensed Light, Narrow, Narrow Italic, Narrow Bold, Narrow Bold Italic, Regular, Italic, Bold, Rounded Bold, Bold Italic, Black)
Cambria Math	Cambria Math	Arial Hebrew (Regular רגיל, Bold מודגש)
Candara	Candara	Baghdad بغداد (Regular)
Comic Sans MS	Comic Sans	Baskerville (Regular, Italic, Semi-bold, Semi-bold Italic, Bold, Bold Italic)
Consolas	Consolas	Beijing 北京 (Regular)
Constantia	Constantia	BiauKai 標楷 (Regular 體)
Corbel	Corbel	Big Caslon (Medium)
Cordia New	คอร์ดนิว นิว	Book Script (Italic)
CordiaUPC	คอร์ดนิว ยูพีซี	Chalkboard (Regular)
Courier New	Courier New	Charcoal (Regular)
		Charcoal CY (Regular Обычное)
		Chicago (Regular)
		Comic Sans (Regular, Bold)
		Cooper (Black)
		Copperplate (Light, Regular, Bold)
		Corsiva Hebrew (Regular רגיל, Bold מודגש)
		Courier (Regular, Oblique, Bold, Bold Oblique)
		Courier New (Regular, Italic, Bold, Bold Italic)

Figure 2-5 Fonts that come with Windows (left) and Macintosh computers (Continued)

Devanagari देवनागरी (Regular, Bold देवनागरी)
 Didot (Regular, *Italic*, Bold)
 Fang Song 仿宋 (Regular)
 Futura (Condensed Medium, **Condensed Extra Bold**, Medium, *Medium Italic*)
 Gadget (Regular)
 Geeza Pro گیزا Pro (Regular, Bold حروف ضخمة)
 Geezah گیزا (Regular)
 Geneva (Regular)
 Geneva CY (Regular Обычное)
 Georgia (Regular, *Italic*, Bold, **Bold Italic**)
 Gill Sans (Light, *Light Italic*, Regular, *Italic*, Bold, **Bold Italic**)
 Gujarati ગુજરાતી (Regular, Bold ગુજરાતી)
 Gung Seouche 궁서 (Regular 보통)
 Hangangche (Regular 보통)
 Headline 헤드라인A (Regular 보통)
 Hei 黑 (Regular 體)
 Helvetica (Regular, *Oblique*, Bold, **Bold Oblique**)
 Helvetica CY (Regular Обычное, *Oblique Наклонное*, Bold Полужирное, **Bold Oblique Полужирное и Наклонное**)
 Helvetica Neue (**Condensed Bold**, **Condensed Black**, *Ultra-light*, *Ultra-light Italic*, Light, *Light Italic*, Regular, *Italic*, Bold, **Bold Italic**)
 HERCULANUM (REGULAR)
 Hiragino Kaku Gothic Pro ヒラギノ角ゴ Pro (W3, W6 太字)
Hiragino Kaku Gothic Std ヒラギノ角ゴ Std (W8 太字)
 Hiragino Maru Gothic Pro ヒラギノ丸ゴ Pro (W4 體)
 Hiragino Mincho Pro ヒラギノ明朝 Pro (W3, W6 太字)
 Hoefler Text (Regular, *Italic*, Black, **Black Italic**, Ornaments *حرف زخرفي*)
Impact (Regular)
 Jung Gothic جو딕 (Medium 미디엄)
 Kai 楷 (Regular 體)
 LiHei Pro 儷黑 Pro (Medium 太字)
 LiSong Pro 儷宋 Pro (Light)
 Lucida Grande (Regular, Bold)
Marker Felt (Thin, Wide)
 Monaco (Regular)
 Monaco CY Монако (Regular Обычное)
 New Peninim (Regular גזיל, Inclined גזיל, **Bold גזיל גזיל, Bold Inclined גזיל גזיל**)
 New York (Regular)
 Optima (Regular, *Italic*, Bold, **Bold Italic**, **Extra Black**)
 Osaka 大阪市 (Regular 體, Monospace 等幅)
 Palatino (Regular, *Italic*, Bold, **Bold Italic**)
 Papyrus (Regular)
 PCMyungjo PC명조 (Regular 보통)
 Pilgi 派기 (Regular 보통)
 Plantagenet Cherokee GWY (Regular)
 Raanana רעננה (Regular גזיל, **Bold גזיל גזיל**)
Sand (Regular)
 Seoul 서울 (Regular 보통)
 Shin Myungjo Neue 새명조 (Regular 보통)
 Skia (Variable)
 Song 宋 (Regular)
 STFongSong 华文仿宋 (Regular 體)
 STHeili 华文黑体 (Light 细, Regular 體)
 STKaiti 华文楷体 (Regular 體)
 STSong 华文宋体 (Regular 體)
 Symbol (Regular ШВШ)
 TaeGraphic 태그래픽 (Regular 보통)
 Tahoma (Regular, Bold)
Techno (Regular)
Textile (Regular)
 Times (Regular, *Italic*, Bold, **Bold Italic**)
 Times CY (Regular Обычное, *Italic Курсив*, Bold Полужирное, **Bold Italic Полужирное и Курсив**)
 Times New Roman (Regular, *Italic*, Bold, **Bold Italic**)
 Trebuchet (Regular, *Italic*, Bold, **Bold Italic**)
 Verdana (Regular, *Italic*, Bold, **Bold Italic**)
 Zapf Chancery (Medium Italic)
 Zapf Dingbats (Regular *象形文字*)

Windows (left) and Mac

Figure 2-5 Fonts that come with Windows (left) and Macintosh computers

description for a Palatino uppercase T before it can tell the screen to energize exactly the proper tiny dots that will “draw” the T. Additional fonts are included with application packages such as Microsoft Office or Adobe InDesign, and they are added to your available fonts when the application is installed on your computer.

Use of **Cascading Style Sheets (CSS)**, preferred over the deprecated HTML `` tag, allows you to be quite precise about font faces, sizes, and other attributes when writing HTML code for the Web (see Table 2-1).

Although in HTML and using CSS for building Web pages you can specify a base font size, color, and other attributes for displaying text, you still have no guarantee that the font is installed in the user’s system. Fortunately, if your specified font is missing, a browser will attempt to substitute a similar font. But the look is not guaranteed to be exactly the same as the one you have designed. In the font-family property you can build a **font stack**, which can include the exact names of both Windows and Macintosh fonts. Using this comma-separated list, a browser will look on the computer for the first font specified in the list; if it is not available, the browser will check for the next, then the next, and so on until it finds a match. At the end of your list, it is best to place a **generic font** catch-all (“serif” or “sans serif”) to cover an instance in which all specified fonts are unavailable.

Property	Value	Description
color	color	Sets the color of text
direction	ltr rtl	Sets the text direction; use with the unicode-bidi property
letter-spacing	normal length	Increases or decreases space between characters
line-height	normal number length %	Sets the distance between lines
text-align	left right center justify	Aligns the text in an element
text-decoration	none underline overline line-through blink	Adds decoration to text
text-indent	length %	Indents the first line of text in an element
text-shadow	none color length	Shadows the text
text-transform	none capitalize uppercase lowercase	Controls the letters in an element
unicode-bidi	normal embed bidi-override inherit	Used for languages that run from left to right or right to left; works with the direction property
vertical-align	baseline sub super top text-top middle bottom text-bottom length %	Sets the vertical alignment of an element
white-space	normal pre nowrap	Sets how white space inside an element is handled
word-spacing	normal length	Increases or decreases space between words

Table 2-1 Available Text Properties Using Cascading Style Sheets (CSS)

Some font stacks for paragraph text might look like:

```
font-family: Baskerville, "Times New Roman", Times, serif;
font-family: Garamond, "Hoefler Text", "Times New Roman", Times, serif;
font-family: "Gill Sans", Calibri, "Trebuchet MS", sans-serif;
font-family: "Helvetica Neue", Arial, Helvetica, sans-serif;
```

And for titles, font choices might look like:

```
font-family: Georgia, Times, "Times New Roman", serif;
font-family: Baskerville, Times, "Times New Roman", serif;
font-family: "Gill Sans", "Trebuchet MS", Calibri, sans-serif;
font-family: Verdana, Tahoma, Geneva, sans-serif;
```

Note that if a font name includes a space, it must be enclosed in quotes.

If the right look is important to you, provide a way to download the font to the end user's computer. Or, for the Web, either use the CSS3 `@font-face` rule to provide a link to the font(s) on your own server or, for a small annual fee, purchase a font-linking service and choose from hundreds of fonts on that service's server. If the look is crucial, use a bitmap image of the text drawn in the selected font.

To address copyright and cross-platform font issues, Microsoft hired type designer Matthew Carter of Carter & Cone Type, Inc. ([http://new.myfonts.com/foundry/Carter_and_Cone_Type_Inc./](http://new.myfonts.com/foundry/Carter_and_Cone_Type_Inc/)) to design a serif font and a sans serif font that display well on a computer screen. The two fonts Carter designed are Georgia (the serif font) and Verdana (the sans serif font), both of which Microsoft makes available for free. Since they are freely available and designed specifically for screen display, many designers recommend them as a "first choice" when specifying font faces for web pages. For mobile devices, Roboto and Helvetica Neue are a good font choice (see Figure 2-3 earlier in this section).

In addition to serif and non-serif fonts, the generic fonts available in CSS also include monospace, cursive, and fantasy:

```
font-family: Verdana, Arial, Helvetica, sans-serif;
font-family: Times, "Times New Roman", Georgia, serif;
font-family: Impact, Arnoldboecklin, Oldtown, fantasy;
font-family: "Zapf Chancery", "Comic Sans", "Comic Sans MS",
cursive;
font-family: "Lucida Console", Courier, monospace;
```

Animating Text There are plenty of ways to retain a viewer's attention when displaying text. For example, you can animate bulleted text and have it "fly" onto the screen. You can "grow" a headline a character at a time. For speakers, simply highlighting the important text works well as a pointing device. When there are several points to be made, you can stack keywords and flash them past the viewer in a timed, automated sequence (as in the roadside Burma Shave ads—signs placed every half mile or so along the highway, each offering the motorist just a few more words toward a

complete slogan). You might fly in some keywords, dissolve others, rotate or spin others, and so forth, until you have a dynamic bulleted list of words that is interesting to watch. But be careful—don't overdo the special effects, or they will become boring. For simple presentations, PowerPoint (see the Custom Animation palette at right) has bells and whistles to reveal a line of text one word or one letter at a time, or to animate an entire line.

Symbols and Icons

Symbols are concentrated text in the form of stand-alone graphic constructs. Symbols convey meaningful messages. The trash can symbol, for instance, tells you where to throw away old files; the hourglass cursor tells you to wait while the computer is processing. Though you may think of symbols as belonging strictly to the realm of graphic art, in multimedia you should treat them as text—or visual words—because they carry meaning. Symbols such as the familiar trash can and hourglass are more properly called **icons**: these are symbolic representations of objects and processes common to the graphical user interfaces (**GUI**—pronounced “gooey”) of many computer operating systems.

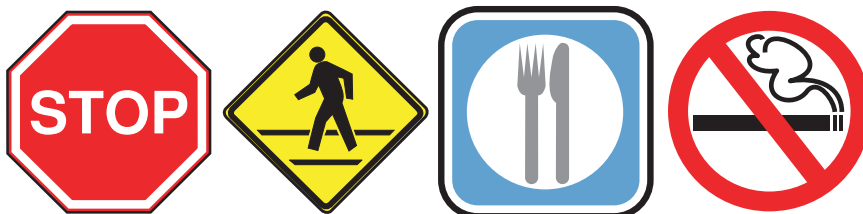
Certainly text is more efficient than imagery and pictures for delivering a precise message to users. On the other hand, pictures, icons, moving images, and sounds are more easily recalled and remembered by viewers. With multimedia, you have the power to blend both text and icons (as well as colors, sounds, images, and motion video) to enhance the overall impact and value of your message.

Word meanings are shared by millions of people, but the special symbols you design for a multimedia project are not; these symbols must be learned before they can be useful message carriers. Some symbols are more widely used and understood than others, but readers of even these common symbols must grow accustomed to their meanings. Learning a system of symbols can be as difficult as lessons in any foreign language.

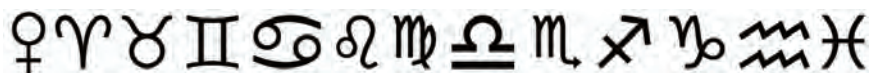


WARNING Do not be seduced into creating your own language of symbols and icons.

Here are some symbols you may already know:



And here are some astronomers' symbols from the days of Kepler and Galileo that you may not have learned. Still in heavy use by astrologers, they represent the 12 constellations of the zodiac:



But why are there 13 icons in the preceding illustration? Or did you notice? Find the sign for the planet Venus among the constellations. Not easy if you are unfamiliar with the meaning of these symbols.

When early computers began to display bitmapped pictures as well as lines of text, there was a flurry of creative attempts by graphic artists to create interesting navigational symbols to alleviate the need for text. The screens were pure graphic art and power—all lines and angles and stunning shadows. But many users were frustrated because they could not get to the data right away and had to first wade through help and guidance material to learn the symbols. In this context it is clearly safer, from a product design point of view, to combine symbols with text cues. This ensures the graphic impact of the symbols but allows prompting the user on their meaning. The Macintosh trash can icon, incidentally, also has a text label, “Trash,” just in case people don’t get the idea from the symbol. Indeed, long arguments occur among designers dealing with clarity of meaning and ambiguity: the Macintosh trash can was used to obliterate files but also to eject discs and mounted volumes, which are not actually “trashed” when ejected. Apple now replaces the trash can icon with the Eject symbol when dragging CDs and other volumes to it.

Nonetheless, a few symbols have emerged in the interactive multimedia world as an accepted lexicon of navigation cues that do

not need text. These symbols are by no means universal, but Figure 2-6 shows some that have roots in the consumer electronics world and in social networking. Even for these “common symbols,” text labels are often added to the graphic icons to avoid uncertainty. Microsoft Word and Adobe Acrobat, for example, use an icon representing a 3.5-inch diskette to indicate “Save to Disk.” While this storage medium has been relegated to museums, the iconic meaning persists. Some Japanese-invented ideograms or pictographs, called **emoji** (*e* for “picture” and *moji* for “letter”), have been incorporated into Unicode (described later in this chapter)

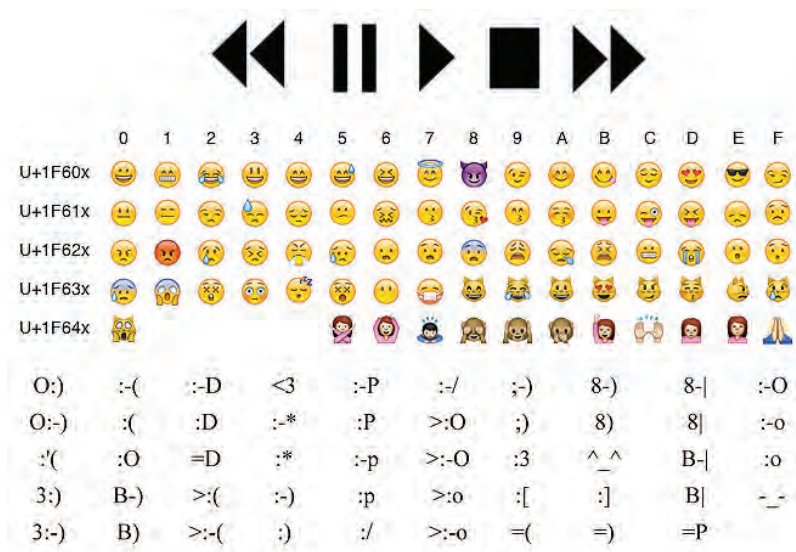


Figure 2-6 Some symbols, like Rewind, Pause, Play, Stop, and Fast Forward, are easily recognized but may still be more precise with text titles.

and are used in phones and e-mail services as well as being available in both the Macintosh and Windows operating systems.

“Smiley” symbols, or **emoticons**, used in Internet conversation to express mood, once were made up entirely of text and punctuation characters. These have been replaced by both custom-made graphic symbols and official type characters as part of the international Unicode library (Block 1F600..1F64F). Indeed, as you can see in Figure 2-6, sometimes it’s difficult to know what a smiley really *means*! ☺

Menus for Navigation

An interactive multimedia project or web site typically consists of a body of information, or content, through which a user navigates by pressing a key, clicking a mouse, or pressing a touch screen. The simplest menus consist of text lists of topics. Users choose a topic, click it, and go there. As multimedia and graphical user interfaces become pervasive in the computer community, certain intuitive actions are being widely learned.

For example, if there are three words on a computer screen, the typical response from the user, without prompting, is to click one of these words to evoke activity. Sometimes menu items are surrounded by boxes or made to look like push buttons. Or, to conserve space, text such as Throw Tomatoes, Play Video, and Press to Quit is often shortened to Tomatoes, Video, and Quit. Regardless, the user deduces the function.

Text is helpful to users to provide perpetual cues about their location within the body of content. When users must click up and down through many layers of menus to reach their goal, they may not get lost, but they may feel transported to the winding and narrow streets of a medieval city where only the locals know the way. This is especially true if the user moves slowly from screen to screen en route to that goal. If Throw Tomatoes leads to Red or Green, then to Paris or Prague, then to Prime Minister or President, then to Forehead or Chest, then to Arrested or Got Away, and so on, the user can end up tangled in the branches of a navigation tree without cues or a map. However, if an interactive textual or symbolic list of the branches taken (all the way from the beginning) is continuously displayed, the user can at any time skip intervening steps in a nonlinear manner or easily return to one of the previous locations in the list.

```

Tomatoes
  Red
    Paris
      Prime Minister
        Chest
          Arrested

```

The more locations included in the menu list, the more options available for navigation. On the Web, designers typically place on every page at least



Hänsel wirft Brotkrümel auf den Weg.

a Main Menu of links that offers the user a handhold and mechanism for returning to the beginning. Often they will also place a list, such as

[Store](#) > [Home & Garden](#) > [Patio & Grilling](#) > [Gas Grills & Accessories](#) > [Gas Grills](#) > [Burners](#)

along the tops of storefronts to let shoppers know where they are currently located within the store. Inventive interface developers first referred to this array of menu items as “**breadcrumbs**,” for they represent a map of the virtual forest and often the “trail” users have taken, like the edible markers so intelligently placed by Hänsel und Gretel along the way to the witch’s house in the Brothers Grimm’s famous fairy tale.

Navigation methodologies and navigation maps are discussed in greater detail in Chapter 11.

TIP Avoid using more than a few levels of **GO BACKS** or **RETURNS** if you do not provide a map. Too much tunneling in and out with repetitive mouse clicks will frustrate users and discourage exploration. Display a perpetual menu of interactive text or symbolic cues so users can always extricate themselves from any place in the tunnel. In a web browser, this can be handled by a **Back** or **Prev.**

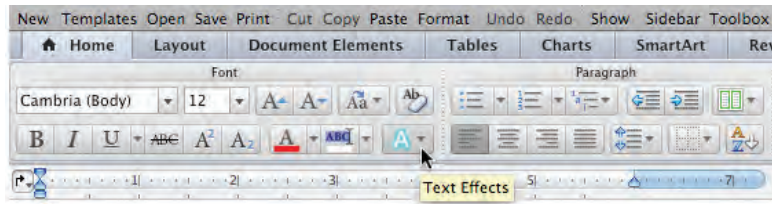
Buttons for Interaction

In most modern cultures a doorbell is recognized by its context (next to the door itself, possibly lit); but if you grew up in a high-rise apartment, you may have seen 50 or more buttons at the entrance. Unless you knew that yours was the third from the top on the left, you could find your button only by reading the printed or scrawled name beside it. And certainly your Aunt Barbara needed this text cue to avoid having to push the Help button, which in this case rang in the building superintendent’s apartment.

In multimedia, **buttons** are the objects, such as blocks of text, a pretty blue triangle, or a photograph, that make things happen when they are clicked or tapped. They were invented for the sole purpose of being pushed or prodded with cursor, mouse, key, or finger—and to manifest properties such as highlighting or other visual or sound effects to indicate that you are over or have hit the target. Buttons and the art of button design and human interaction are discussed in detail in Chapter 9. For now, remember that the rules for proper selection of text and fonts in your projects apply to buttons as well as headlines, bulleted items, and blocks of text.

The automatic button-making tools supplied with multimedia and HTML page authoring systems are useful, but in creating the text for you, they offer little opportunity to fine-tune the look of the text. Character- and word-wrap, highlighting, and inverting are automatically applied to your buttons, as needed, by the authoring system. These default buttons and styles may seem overused or trite, but by using common button styles, shapes, borders, and highlights, you increase the probability that users will know what to do with them—especially when they are also labeled. Many

applications that use icon buttons also provide **tooltips**, sometimes called “hover boxes” or “screen tips,” that display information about the icon when the mouse pointer or cursor hovers for a short time above the icon. Tooltips are not found on mobile devices because they have no pointer.



Pick a font for buttons that is, above all, legible; then adjust the text size of the labels to provide adequate space between the button’s rim and the text. You can choose from many styles of buttons and several standard methodologies for highlighting. You will want to experiment to get the right combinations of font, spacing, and colors for just the right look.

In most authoring platforms, it is easy to make your own buttons from bitmaps or drawn objects. In a message-passing authoring system, where you can script activity when the mouse button is up or down over an object, you can quickly replace one bitmap with another highlighted or colored version of the bitmap to show that the button has been “pushed” or that the mouse is hovering over it. Making your own buttons from bitmaps or drawn objects gives you greater design power and creative freedom and also ensures against the missing font problem. On the other hand, this custom work may require a good deal more time. You can also implement these graphic image **rollovers** on web pages, using JavaScript or CSS to replace the image when there is a MouseOver or hover event; when a MouseUp event occurs on the image, the user can be directed to another page (see “Clickable Buttons” in Chapter 11). Typically the destination address (URL) is displayed in the status bar of the browser when the mouse is over a linked image or text element. So users know first if the mouse is over an active button and second, where that button will take them if they click.

Whether default or custom, treat the design and labeling of your buttons as an industrial art project: buttons are the part of your project the user touches.

Fields for Reading

Unless the very purpose of your multimedia project or web site is to display large blocks of text, try to present to the user only a few paragraphs of text per page. Use a font that is easy to read rather than a prettier font that is illegible. Try to display whole paragraphs on the screen, and avoid breaks where users must go back and forth between pages to read an entire paragraph.

When I was four years old, a button was the little plastic knob mounted in brass next to the front door. When I pushed it, a muffled ringing sound worked its way through the house from the kitchen. Sometimes I would push the button a lot and somebody would always come to the door. As an adult, I’m still pushing buttons to make things happen.

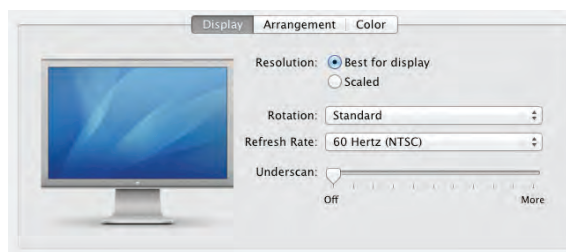
Ann Stewart, Multimedia Developer, Smyrna, Tennessee

WARNING Research has shown that when people read text on a computer screen, they blink only 3 to 5 times per minute, but they blink 20 to 25 times per minute when reading text on paper. This reduced eye movement may cause dryness, fatigue, and possibly damage to the eyes. Research also suggests that desktop displays should be placed lower than eye level.

Portrait vs. Landscape

Traditional hard-copy and printed documents in the taller-than-wide orientation are simply not readable on a typical display with a wider-than-tall **aspect ratio**. The taller-than-wide orientation used for printed documents is called **portrait**; this is the 8.5-by-11-inch (21.6 cm by 27.9 cm) letter size unique to the United States, Canada, Mexico, and a few other countries or the internationally designated standard A4 size, 21 cm by 29.7 cm (8.3 by 11.7 inches). The wider-than-tall orientation normal to computer displays is called **landscape**. Shrinking an 11-inch-tall portrait page of text into your available display screen height usually yields illegible chicken tracks. There are four possible solutions if you are working with a block of text that is taller than what will fit:

- Put the text into a scrolling field. This is the solution used by web browsers.
- Put the text into a single field or graphic image in a project window, and let the user move the whole window up or down upon command. This is most appropriate when you need to present text with page breaks and formatting identical to the printed document. This is used by Adobe's popular Acrobat Reader for displaying PDF files.
- Break the text into fields that fit on screen-sized pages, and design control buttons to flip through these pages.
- Design your multimedia project for a special display that is taller than it is wide (portrait) or a normal display rotated onto its side. At one time "page view" displays were expensive and used for commercial print-based typesetting and layout. Today, you can turn the display on its side and the video controller can rotate the text 90 degrees for you:



eBooks, E-Readers, and Tablet Computers



eBooks are books digitized and formatted to be read using an **e-reader**. E-readers display text, graphics, and multimedia—most using E Ink screens between five and ten inches diagonal, some with touch screens, some with Wi-Fi and 3G connectivity, and all with varying and sometimes nonstandard input formats (see Table 2-2). Among devices handy for reading eBooks are the Amazon Kindle, Apple iPad, Barnes & Noble Nook, Bookeen Cybook, Google Nexus, DistriRead Icarus, Ectaco Jetbook, Rakuten Kobo, Microsoft Surface, and the Sony Reader.

Format	Filename Extension
Arg hosReader	.aeh
Broadband eBook	.lrf, .lrx
DjVu	.djvu
EPUB	.epub
eReader	.pdb
FictionBook	.fb2
HTML	.html
Kindle	.azw
Microsoft Reader	.lit
Mobipocket	.prc, .mobi
Multimedia eBook	.exe
Plain text	.txt
Portable Document Format	.pdf
PostScript	.ps
Tome Raider	.tr2, .tr3
WOLF	.wol

Table 2-2 E-Readers Can Read Many File Formats, Some Proprietary

Electronic ink is a proprietary material of E Ink® Corporation that is processed into a film for integration into electronic displays.

Revolutionary in concept, electronic ink is a straightforward fusion of chemistry, physics and electronics to create this new material. The principal components of electronic ink are millions of tiny microcapsules, about the diameter of a human hair. Each microcapsule contains positively charged white particles and negatively charged black particles suspended in a clear fluid. When a negative electric field is applied, the white particles move to the top of the microcapsule where they become visible to the user and pull the negatively charged black particles to the bottom of the capsule, hidden behind the white. This makes the surface appear white at that spot or pixel. The opposite happens if a positive electric field is applied causing the black particles to come to the surface and the white are pulled to the bottom, causing a black pixel. Gray can be achieved by removing the electric field when the particles have only travelled part of the way and hence are partially mixed.

To form an E Ink electronic display, the ink is printed onto a sheet of plastic film that is laminated to a layer of circuitry called a Thin Film Transistor (TFT) array. The TFT array forms a grid pattern of pixels that can then be controlled by a display driver.

During the manufacturing process, the microcapsules are suspended in a liquid “carrier medium” allowing them to be printed or laminated using existing screen printing processes onto virtually any surface, including glass, plastic, fabric, and even paper. Electronic ink can turn almost any surface into a display, bringing information out of the confines of traditional devices and into the world around us.

From E Ink Corporation
(www.eink.com)

The E Ink screen is a technology for “electronic paper,” designed to imitate the appearance of ordinary ink on paper (see sidebar and Figure 2-7). E Ink displays can be used in direct sunlight and boast a long battery life. But E Ink is not required to read eBooks, which can be viewed on most computers and many mobile devices using format converting/reading software such as Adobe Digital Editions.



Figure 2-7 Electronic paper and e-reader devices have changed the way we do things.

HTML Documents

The standard document format used for displaying text pages on the Web is called Hypertext Markup Language (HTML). In an HTML document you can specify typefaces, sizes, colors, and other properties by “marking up” the text in the document with **tags**. The process of marking up documents or “styling” them is simple: Where you want text to be bold, surround it with the tags `` and `` or `` and ``; the text between the tags will then be displayed by your browser application in bold type. Where you have a header, surround it with `<h1>` and `</h1>`. For an ordered list of things (1, 2, 3, ... or a, b, c, ..., etc.), surround your list with `` and ``. There are many tags you can use to lay out a page. Although HTML Version 5 (HTML5) is not case sensitive, it is convention to use lowercase tags. Cascading Style Sheets (CSS) work in conjunction with HTML and provide fine tuning and control of text and layout. How HTML and CSS work together is discussed in greater detail in Chapters 12 and 13, and there are many good learning guides and references available on the Web.

.....
www.w3.org/TR/html5/

www.w3.org/MarkUp/Guide/

www.w3schools.com/html/default.asp

www.w3schools.com/css/default.asp

www.w3.org/Style/CSS/

Check out these web sites for more information about HTML and CSS.

The remarkable growth of the Web is straining the “old” designs for displaying text on computers. Indeed, while marked-up text files (HTML documents) remain at the foundation of Web activity, when you visit a well-designed web site, you often discover graphic images, animations, and interactive work-arounds contrived to *avoid* displaying text. The neat paragraphs, indented lists, and formats for text documents for which HTML was originally intended are evolving into multimedia documents, not text documents, and the original HTML method and standard is consequently suffering great stress.

HTML5 is a redesign that stretches the Web into a multimedia delivery vehicle, making HTML no longer just a text display tool with assorted attachments and plugged-in objects. The new <canvas> element allows a box to be defined on a web page in which 2-D graphics can be drawn under program control. Video and audio (timed media) playback is supported. Still, HTML doesn’t provide you with much flexibility to make pretty text elements, which are often done as graphical bitmaps placed within the HTML document’s layout with image () tags or incorporated into Flash animation files. Indeed, using plain HTML, you do not know what font a reader will use to view your document—the default display font is a preference that can be set in the viewer’s browser, which knows it’s installed on that viewer’s machine. So some viewers may read your words in serif Times Roman, others in sans serif Helvetica or Arial.

Computers and Text

Very early in the development of the Macintosh computer’s display hardware, Apple chose to use a resolution of 72 pixels per inch. This almost exactly matches the standard measurement of the printing industry (72 points per inch) and allows desktop publishers and designers to see on

a display screen what their printed output will look like (WYSIWYG). In addition, Apple made each pixel square-shaped, providing even measurements in all directions. Until the Macintosh was invented, and the VGA video standard set for the PC (at 96 pixels per inch), pixels were typically taller than they were wide. The aspect ratio for a pixel on older EGA displays, for example, is 1.33:1, taller than it is wide. Screen resolutions for both Macintosh and Windows display pixels at an aspect ratio of 1:1 (square). With square pixels, there has been a steady increase in display resolution and screen size, and aspect ratios are no longer fixed at 4:3 (see Chapter 7 for more detail).

The Font Wars Are Over

In 1985, the desktop publishing revolution was spearheaded by Apple and the Macintosh computer, in combination with word processing and page layout software products that enabled a high-resolution 300-dpi laser printer using special software to “draw” the shapes of characters as a cluster of square pixels computed from the geometry of the character. This special software was the **Adobe PostScript** page description and **outline font** language. It was licensed by Apple and included in the firmware of Apple’s LaserWriter laser printer.

PostScript is really a method of describing an image in terms of mathematical constructs (Bézier curves, described in more detail in Chapter 3), so it is used not only to describe the individual characters of a font but also to describe entire illustrations and whole pages of text. Because each PostScript character is a mathematical formula, it can be easily scaled bigger or smaller so it looks right whether drawn at 24 points or 96 points, whether the printer is a 300-dpi LaserWriter or a high-resolution 1200-, 2400-, or even 3600-dpi image setter suitable for the finest print jobs. And the PostScript characters can be drawn much faster than in the old-fashioned way. Before PostScript, the printing software looked up the character’s shape in a **bitmapped font** table (see Figure 2-8) containing an exact representation of the pixels of every character in every size. PostScript quickly became the de facto industry font and printing standard for desktop publishing and played a significant role in the early success of Apple’s Macintosh computer.

There are two kinds of PostScript fonts: Type 3 and Type 1. Type 3 font technology is *older* than Type 1 and was developed for output to printers; it is rarely used by multimedia developers. There are currently over 6,000 different Type 1 typefaces available. Type 1 fonts also contain **hints**, which are special instructions for grid-fitting to help improve resolution. Hints can apply to a font in general or to specific characters at a particular resolution.

Other companies followed Adobe into the desktop publishing arena with their own proprietary and competitive systems for scalable

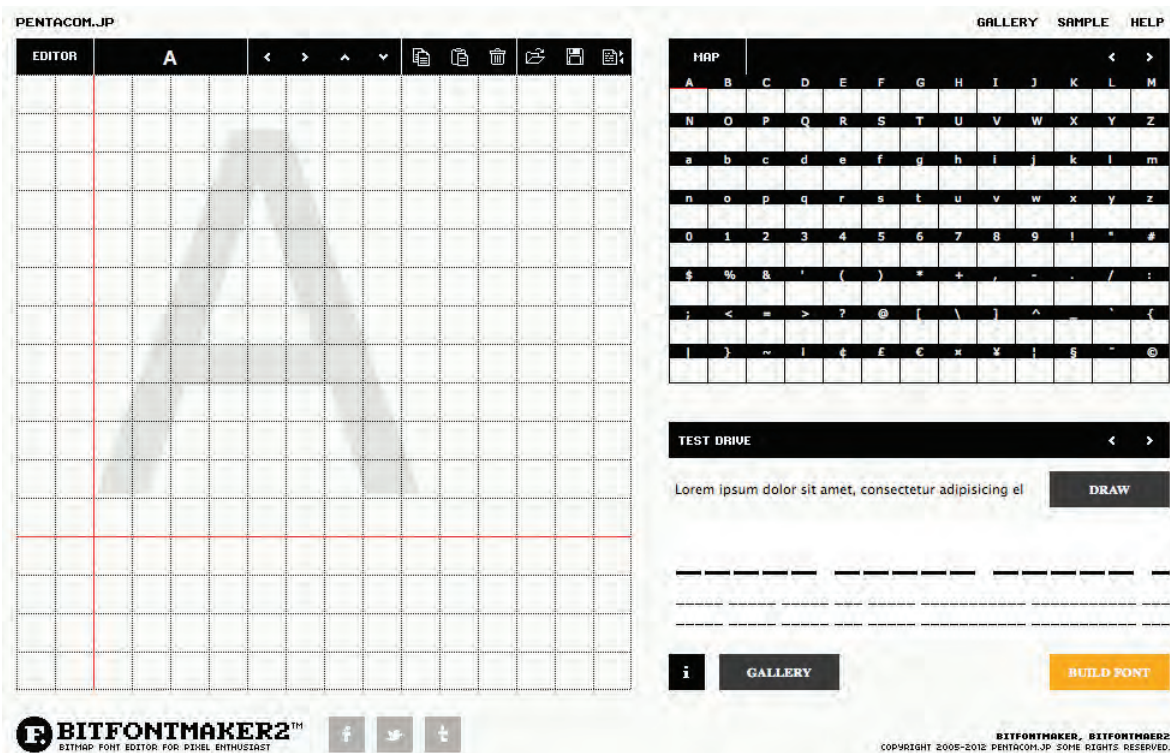


Figure 2-8 BitFontMaker2 (www.pentacom.jp/pentacom/bitfontmaker2/) is an online tool for building bitmapped fonts.

outline fonts. In 1989, Apple and Microsoft announced a joint effort to develop a “better and faster” quadratic curves outline font methodology, called **TrueType**. In addition to printing smooth characters on printers, TrueType would draw characters to a low-resolution (72 dpi or 96 dpi) display. Furthermore, Apple and Microsoft would no longer need to license the PostScript technology from Adobe for their operating systems. Because TrueType was based on Apple technology, it was licensed to Microsoft. Adobe and Microsoft then developed a new and improved font management system incorporating the best features of both PostScript and TrueType, and by 2007, **OpenType** became a free, publicly available international standard. The font wars were over.

WARNING *TrueType, OpenType, and PostScript fonts do not display (or print) exactly the same, even though they may share the same name and size. The three technologies use different formulas. This means that word-wrapping in a text field may change. So if you build a field or a button that precisely fits text displayed with a PostScript font, be aware that if you then display it with the same font in TrueType or OpenType, the text may be truncated or wrapped, wrecking your layout.*

Font Foundries

Today collections of fonts are available through retail channels or directly from their manufacturers. Typefaces are created in a **foundry**, a term (much like *case*) that has carried over from times when lead was poured into molds to make letter faces. There are also special interest groups (SIGs) where people who enjoy designing and making interesting fonts post them for others to download. Check out the Fonts SIG at the free software Fedora Project (<https://fedoraproject.org/wiki/Category:SIGs?rd=SIGs#Fonts>). Also visit the Unicode Code Charts page (www.unicode.org/charts/), where hundreds of international fonts are cataloged and can be viewed with a click of your mouse. When you purchase some applications, such as CorelDraw, Adobe Illustrator, or Microsoft Word, many extra fonts are included for free.

.....
www.3ipfonts.com/

www.myfonts.com/

www.bitstream.com/

www.esperfonto.com/

These gateways are commercial type foundries and font sites, and they lead to a discussion of fonts and where to find them. With *Esperfonto*, Will Harris provides an interesting tool for making font decisions: Casual or Formal, Body or Display, Friendly or Serious, Cool or Warm, Modern or Traditional.

WARNING *It is easy to spend hours and hours downloading neat and interesting fonts; they are like the midnight snack table on a Caribbean cruise liner—ice carvings and delectable goodies laid out as far as the eye can see.*

Character Sets and Alphabets

Knowing that there is a wide selection of characters available to you on your computer and understanding how you can create and use special and custom-made characters will broaden your creative range when you design and build multimedia projects.

The ASCII Character Set

It all began with a set of characters called **ASCII**, for the American Standard Code for Information Interchange. ASCII was initially invented and standardized for analog teletype communication before the digital age began; it was in place and available when computers needed a system to display or print characters. As seen in Figure 2-9, this simple system assigns a binary value to 128 characters (7 bits), including both lower- and uppercase letters, punctuation marks, Arabic numbers, and math symbols.

Also included in the 128 are 32 control characters used for device control messages such as carriage return, line feed, tab, and form feed.



ASCII code numbers represent a letter or symbol within the English alphabet, so a computer or printer can work with the number that represents the letter, regardless of what the letter might actually look like on the screen or printout. To a computer working with the ASCII character set, the number 65, for example, always represents an uppercase letter *A*. Later, when the computer is asked to display the number 65 on a screen or print it, it converts the number into the letter shape using the specified font information.

0 0x00	NUL	16 0x10	DLE	32 0x20		48 0x30	0	64 0x40	@	80 0x50	P	96 0x60	`	112 0x70	p
1 0x01	SOH	17 0x11	DC1	33 0x21	!	49 0x31	1	65 0x41	A	81 0x51	Q	97 0x61	a	113 0x71	q
2 0x02	STX	18 0x12	DC2	34 0x22	"	50 0x32	2	66 0x42	B	82 0x52	R	98 0x62	b	114 0x72	r
3 0x03	ETX	19 0x13	DC3	35 0x23	#	51 0x33	3	67 0x43	C	83 0x53	S	99 0x63	c	115 0x73	s
4 0x04	EOT	20 0x14	DC4	36 0x24	\$	52 0x34	4	68 0x44	D	84 0x54	T	100 0x64	d	116 0x74	t
5 0x05	ENQ	21 0x15	NAK	37 0x25	%	53 0x35	5	69 0x45	E	85 0x55	U	101 0x65	e	117 0x75	u
6 0x06	ACK	22 0x16	SYN	38 0x26		54 0x36	6	70 0x46	F	86 0x56	V	102 0x66	f	118 0x76	v
7 0x07	BEL	23 0x17	ETB	39 0x27	'	55 0x37	7	71 0x47	G	87 0x57	W	103 0x67	g	119 0x77	w
8 0x08	BS	24 0x18	CAN	40 0x28	(	56 0x38	8	72 0x48	H	88 0x58	X	104 0x68	h	120 0x78	x
9 0x09	TAB	25 0x19	EM	41 0x29	)	57 0x39	9	73 0x49	I	89 0x59	Y	105 0x69	i	121 0x79	y
10 0x0A	LF	26 0x1A	SUB	42 0x2A	*	58 0x3A	:	74 0x4A	J	90 0x5A	Z	106 0x6A	j	122 0x7A	z
11 0x0B	VT	27 0x1B	ESC	43 0x2B	+	59 0x3B	;	75 0x4B	K	91 0x5B	[	107 0x6B	k	123 0x7B	{
12 0x0C	FF	28 0x1C	FS	44 0x2C	,	60 0x3C	<	76 0x4C	L	92 0x5C	\	108 0x6C	l	124 0x7C	|
13 0x0D	CR	29 0x1D	GS	45 0x2D	-	61 0x3D	=	77 0x4D	M	93 0x5D	]	109 0x6D	m	125 0x7D	}
14 0x0E	SO	30 0x1E	RS	46 0x2E	.	62 0x3E	>	78 0x4E	N	94 0x5E	^	110 0x6E	n	126 0x7E	~
15 0x0F	SI	31 0x1F	US	47 0x2F	/	63 0x3F	?	79 0x4F	O	95 0x5F	_	111 0x6F	o	127 0x7F	!

Figure 2-9 The 128-character ASCII character set showing each character's decimal and hexadecimal value

Unicode provides a consistent way of encoding multilingual plain text and brings order to a chaotic state of affairs that has made it difficult to exchange text files internationally. Computer users who deal with multilingual text—business people, linguists, researchers, scientists, and others—will find that the Unicode Standard greatly simplifies their work. Mathematicians and technicians, who regularly use mathematical symbols and other technical characters, will also find the Unicode Standard valuable.

The design of Unicode is based on the simplicity and consistency of ASCII, but goes far beyond ASCII's limited ability to encode only the Latin alphabet. The Unicode Standard provides the capacity to encode all of the characters used for the written languages of the world. To keep character coding simple and efficient, the Unicode Standard assigns each character a unique numeric value and name.

The Unicode Standard and ISO/IEC 10646 support three encoding forms (UTF-8, UTF-16, UTF-32) that use a common repertoire of characters. These encoding forms allow for encoding as many as a million characters. This is sufficient for all known character encoding requirements, including full coverage of all historic scripts of the world, as well as common notational systems.

The Unicode® Standard: A
Technical Introduction
(www.unicode.org/unicode/standard/principles.html)

The ASCII Extended Character Set

A byte, which consists of 8 bits, is the most commonly used building block for computer processing. ASCII uses only 7 bits to code its 128 characters; the eighth bit of the byte is unused. This extra bit allows another 128 characters to be encoded before the byte is used up, and computer systems historically used these extra 128 values for an extended character set. The extended character set is most commonly filled with ANSI (American National Standards Institute) standard characters, including often-used symbols, such as $\$$ or ∞ , and international diacritics or alphabet characters, such as \ddot{a} or \tilde{n} . This fuller set of 255 characters is also known as the ISO-Latin-1 character set; it was commonly used to program the text of HTML web pages but has been replaced by Unicode's UTF-8 as the most common character set on the Internet. It is backward compatible with the ASCII set.

Unicode

As the computer market became more international, one of the resulting problems was handling the various international language alphabets. It was at best difficult, and at times impossible, to translate the text portions of programs from one script to another. For example, the differences between the Latin script used by Western European writers and the kanji script used by Japanese writers made it particularly challenging to transfer innovative programs from one market to another.

Since 1989, a concerted effort on the part of linguists, engineers, and information professionals from many well-known computer companies has been focused on a 16-bit architecture for multilingual text and character encoding. This architecture is now an international standard called **Unicode**. The original standard accommodated up to about 65,000 characters to include the characters from all known languages and alphabets in the world.

Where several languages share a set of symbols that have a historically related derivation, the shared symbols of each language are unified into collections of symbols (called **scripts**). A single script can work for tens or even hundreds of languages (for example, the Latin script used for English and most European languages). Sometimes, however, only one script will work for a language (such as the Korean Hangul). Figure 2-10 shows a map of writing systems used in the world today.

The Unicode standard includes more than 18,000 Han characters (ideographs for Japanese, Chinese, and Korean) as well as obsolete alphabets such as cuneiform, hieroglyphs, and ancient Han characters. In addition, character space is reserved for users and publishers to create their





Figure 2-10 Writing systems currently in use around the world. Unicode provides a consistent methodology for encoding the characters of any alphabet.

own scripts, designed especially for their own applications. For example, a carpenter might develop a script that includes a character meaning “half-inch Sheetrock,” another character meaning “three-quarter-inch plywood,” and so forth. HTML allows access to the Unicode characters by numeric reference. Thus `水` (in hexadecimal) represents the Chinese character for water:



Mapping Text Across Platforms

If you build your multimedia project on a Windows platform and play it back on a Macintosh platform (or vice versa), there may be subtle (and sometimes not-so-subtle) differences. Fonts are perhaps the greatest cross-platform concern, because they must be mapped to the other machine. If a specified font doesn't exist on the target machine, a substitute must be provided that does exist on the target. This is **font substitution**. In many cross-platform-savvy applications, you can explicitly define the **font mapping**.

TIP Never assume that the fonts you have installed on your computer will also be installed on another person's computer. Pay attention to the way you include fonts in a project so that you never face the nightmare of your carefully picked fonts being replaced by an ill-suited default font like Courier (see the next "First Person"). If your work is being distributed to sites that may not have the fonts you are using, or if you do not license these fonts for distribution with your work, be sure to bitmap the special font text you use for titles, headlines, buttons, and so forth. For text to be entered by users, it is safest to stay with the installed Windows or Macintosh fonts, because you know they are universally available on that platform. In Windows, use the TrueType fonts installed during the Setup procedure.

First Person

We had a short break between sessions to install the software for a panel discussion about multimedia. It was a big auditorium in Boston. Four of us brought media with discussion material. Our moderator installed

her presentation first, and we heard her wail, "Something's wrong with my fonts!" We all looked at her ugly 48-point Courier and felt sorry for her; we knew her mistake. The beautiful fonts she had installed on

her home system were not installed in the system of the computer being used for the big-screen projector, and she had failed to bring the fonts along so she could install them. By then, it was too late anyway.

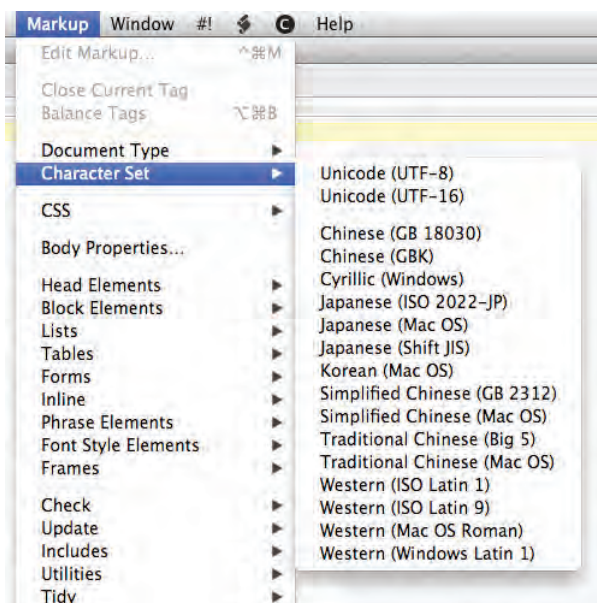


Figure 2-11 BBEDIT, a serious text editor for creating HTML documents and creating program code, provides a choice of Unicode character sets. Choose UTF-8 and BBEDIT creates a meta tag for your HTML document, `<meta charset="utf-8" />`, to declare it to be using the most widely used (and "safest") set among all web documents, UTF-8.

Always be sure your fonts travel with your application when you are delivering software to run on a hardware platform other than the one you used to create the application. To avoid many font display problems, particularly for menus and headlines, you may wish to snap a picture of your text with a screen capture utility and use this image, or bitmap, instead of text that you type into a text field. (Chapter 3 describes bitmaps and how to capture and edit images.) This will ensure that the screen always looks right, regardless of what hardware platform you use or what fonts are installed.

It is not just fonts that are problematic; characters, too, must be mapped across platforms. **Character mapping** allows bullets, accented characters, and other curious characters that are part of the extended character set on one platform to appear correctly when text is moved to the other platform. In documents created using a Western Latin set, for example, curly quotes may not properly display across platforms. Documents created using the more complete and better-organized UTF-8 set (see Figure 2-11) are readable on most all platforms.

First Person

While we were in the early phases of producing my CD-ROM, *Multimedia: Working It Out!* I sold the rights to distribute it into Korea and Mainland China. Nobody on the production team had ever seen a computer that typed short-form Mandarin, and we knew that even when the English was localized, we would be hard pressed to recognize any of the text, much less edit or alter it in its new form.

So we devised a structured system of labels and names for *Multimedia: Working It Out!* and converted all the text in the project (about 600 “pages” of about a paragraph each) into 1-bit bitmaps in an Adobe Director movie. Donna Boohar edited and formatted the text in Microsoft Word, Dan Hilgert bitmapped and screen-captured each page with Capture and Photoshop, and Peter Wolf imported the image files into Director (by the hundreds) as cast members. Each cast member had a unique (but systematic) name associated with a Director movie, a heading, and various icons. It took a while.

The localizers across the Pacific, then, would simply translate a page or a series of pages using their own native-language word processor and capture their own bitmaps. Finally, we would substitute the

new bitmaps for the old using the unique identification labels. No language skills required!

When we started, Terry Thompson devised a color-coded master filing system and database so that all the word-processed text and the screen-captured bitmaps would remain neatly side by side and concurrent. This is called *version control*. By the time this project shipped, Donna’s computer was crashing four or five times a day and we had lost files, Dan had gone back to school, Peter and I were slapping miscellaneous text elements into the project without tracking where they came from, and we were changing labels and moving cast members around as we streamlined performance, debugged, and staggered toward a golden master and the FedEx drop-off. We had converted Terry’s neatly organized system into chaos.

After the CD-ROMs were pressed, and there wasn’t anything anybody could change anymore anyway, we did a tricky thing with Lingo programming, image processing, and optical character recognition (OCR) to convert the final project’s bitmapped text back into word processor text.

First we collected all the bitmapped text into a single Director movie (we weren’t interested in pretty pictures, QuickTime, sounds, or other types of cast members, just text). Then we placed each page of bitmapped text into a movie frame (Cast to Time), neatly labeled that frame at the top with the identifying code of the image using a Lingo handler, and saved all of the frames as bitmapped images (an automatic command in Director’s Export menu). With DeBabelizer, we batch-converted these hundreds of images from 72 dpi (screen capture resolution) to 300 dpi (printer resolution) and saved each as a 1-bit TIFF image. The process was automatic.

We then batch-processed the image files using an OCR program to turn them into nicely formatted word processing documents. Bingo! They came out as archival word processing files. Then we sent the word files to Guido Mozzi in Italy so that his team of translators could begin localizing there.

Some efforts are cyclical, we have discovered. The trick is to learn something and improve the process each time the task comes around!

The written Japanese language consists of three different types of character sets, namely: kanji, katakana, and hiragana. Kanji was originally taken from the Chinese language and is essentially a pictographic representation of the spoken word. Each kanji has two different readings, “on-yomi” and “kun-yomi,” respectively, the “Chinese rendering” and the “Japanese rendering.” Both are used depending on the conjugation of the kanji with other kanji.

Due to certain incompatibilities between the Japanese spoken word and kanji, two sets of kana or phonetic syllabary (alphabet) were developed. Katakana is the “square” kana and is used today for writing only foreign words or onomatopoeic expressions. Hiragana is the “cursive” kana and can be used alone to represent a certain word or combined with kanji to form other words and sentences. Romaji, a more recent addition to the alphabets of Japan, allows for the phonetic spelling of the Japanese language using the Roman characters familiar to the Western world.

Ross Uchimura, Executive Vice-President, GC3 Ltd., a cross-cultural expert

Languages in the World of Computers

In modern Western languages, words are made up of symbols or letters strung together, representing as a whole the sounds of a spoken word. This is not so for Eastern languages such as Chinese, Japanese, and Korean (and the ancient languages of Sumeria, Egypt, and Mesopotamia). In these languages, an entire concept might be represented by a single word symbol that is unrelated to a specific phonetic sound.

The letters or symbols of a language are its alphabet. In English, the alphabet comprises more than 3,000 *kanas*, or whole words. The Russian alphabet, made up of Cyrillic characters based on the ancient Greek alphabet, has about the same number of letters as a Roman alphabet. All languages, from Navajo to Hebrew, have their own unique alphabets.

Most modern alphabets share one very important attribute: the graphic shapes and method for writing the Arabic numbers 0 1 2 3 4 5 6 7 8 9. This is a simple system for representing decimal numbers, which lends itself to easy reading, writing, manipulation, and calculation. Expressing and performing

$$16 + 32 = 48$$

is much easier in Arabic numbers than in Roman or Greek numerals:

$$\text{XVI} + \text{XXXII} = \text{XLVIII}$$

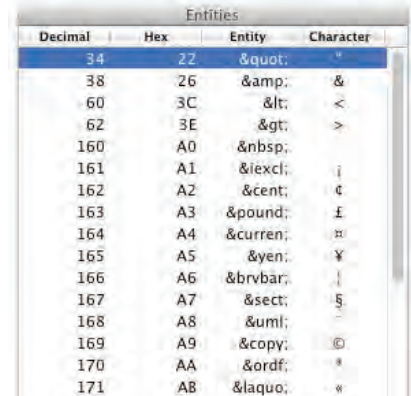
$$\iota\varsigma + \lambda\beta = \mu\eta$$

Use of Arabic notation has gradually spread across the world to supplant other systems, although Roman numerals are still used today in Western languages in certain forms and contexts.

Translating or designing multimedia (or any computer-based material) into a language other than the one in which it was originally written is called **localization**. This process deals with everything from the month/day/year order for expressing dates to providing special alphabetical characters on keyboards and printers. Even the many Western languages that share the Roman alphabet have their own peculiarities and often require special characters to represent special sounds. For example, German has its umlaut (¨); French its various accents (é, for example), the cedilla (ç), and other diacritics; and Spanish its tilde (ñ). These characters are typically available in the extended character set of a font.

Special Characters in HTML

In HTML, **character entities** based upon the ISO-Latin-1 set make up an alphabet that is required by the HTML standard to be recognized by all browser software. All of the usual characters of an English keyboard are included (the 7-bit ASCII set is built in), but to use characters from the extended set that includes tildes, umlauts, accents, and special symbols, you must use an escape sequence to represent them. A character entity is represented either by a number or by a word and is always prefixed by an ampersand (escape) and followed by a semicolon. For example, the name for the copyright symbol is “copy” and its number is 169. The symbol may be inserted into a document either as `©` or as `©`—either way, the character © is generated by the browser. The list of character entities allowed in standard HTML is growing and will soon include mathematical symbols and even icons to represent things like trash cans, clocks, smileys, and disk drives. Word processors for languages other than English automatically insert the necessary character entities when a document is saved in HTML format.



Decimal	Hex	Entity	Character
34	22	"	"
38	26	&	&
60	3C	<	<
62	3E	>	>
160	A0	 	
161	A1	¡	¡
162	A2	¢	¢
163	A3	£	£
164	A4	¤	¤
165	A5	¥	¥
166	A6	¦	¸
167	A7	§	§
168	A8	¨	¨
169	A9	©	©
170	AA	ª	ª
171	AB	«	«

First Person

When I was in Germany some years ago, I read a curious report in the *Frankfurter Allgemeine* about a fellow who was suing the local electric utility for not correcting the spelling of his name to its proper form in the German alphabet. His name had an umlaut in it (Wörm), but his bill always read Woerm. In German, the letter ö sounds different from the letter o, so I can't say I blamed him. At first he didn't pay his bill, claiming that he wasn't that person; then

the courts told him to pay anyway. So he initiated a civil suit to protect his name.

It seems the utility was using a legacy IBM system with a high-speed chain printer to produce the monthly bills, and none of the umlaut characters were available on the ASCII-based chain. By long-standing convention, when you are limited to the English alphabet, the letter e immediately follows any

umlautless vowel, to indicate that the umlaut should be there but isn't. Today, with high-speed laser printers and special fonts, the problem has probably gone away.

More recently, there are reports that the California Department of Motor Vehicles cannot handle blank spaces in the name fields of its massive database, so Rip Van Winkle's name was changed to RipVanWinkle without his permission. Expect a lawsuit.

.....
www.w3.org/TR/REC-html40/sgml/entities.html

An encyclopedic discussion and reference for HTML character entity references

.....

Multilanguage Web Pages

When building a project in more than one language for the Web, consider translating the languages that use Roman fonts and displaying them as text in the browser in the normal way. Languages other than English may have many escaped characters, as you can see in Figure 2-12. If Chinese or Japanese or Arabic is desired, translate the Roman text onto a computer running an operating system using that native language. For the web page, the translator can then capture a screen image of the translated text, and you can embed that image into your web page. This process takes precise coordination among the designers, the content providers, and the translators, but it can be done smoothly with careful labeling of the bits and pieces.

<p>

What can this integrated network solution offer your business? Lower costs, increased flexibility, and greater reliability by supporting all voice and data requirements, including:</p>

<p>

O que esta solução de rede integrada pode oferecer a sua empresa? Menores custos, elevada flexibilidade, e maior confiabilidade, pelo suporte a todos os requisitos de voz e dados, incluindo:</p>

<p>

Qué puede ofrecerle a su negocio esta solución integrada de redes? Menores costos, mayor flexibilidad y mayor fiabil-idad mediante la compatibilidad con todos los requisitos para voz y datos, incluso:</p>

<p>

這種綜合性的網路產品能為您的公司企業帶來哪些好處呢？它能降低成本，提昇服務的靈活性，以及具有更大的可靠性，因為它能支持各種話音與數據傳輸的要求，包括：

</p>

<p>

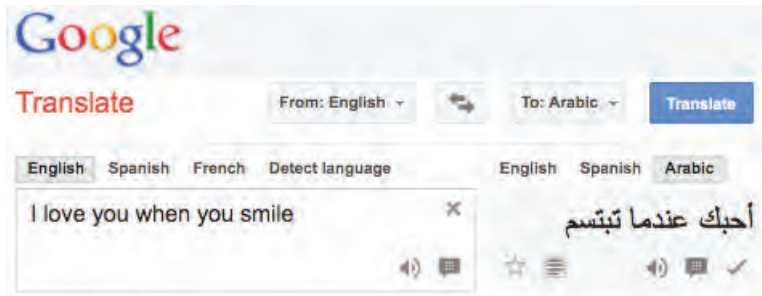
この統合的ネットワークソリューションは、以下を含む音声・データ要件のすべてに対応し、費用節減、フレキシビリティや信頼性の向上を実現させます。

求，包括：

</p>

Figure 2-12 Portion of a five-language web site using normal HTML code for the Roman languages and screen-captured graphic images to display the Chinese and Japanese translations

Translation web services are available that attempt to make text in one language readable in another, even from Western languages to Eastern languages and vice versa. Google's online translator will even speak the words to you:



Font Editing and Design Tools

Special font editing tools can be used to make your own type, so you can communicate an idea or graphic feeling exactly. With these tools, professional typographers create distinct text and display faces. Graphic designers, publishers, and ad agencies can design instant variations of existing typefaces.

Typeface designs fall into the category of industrial design and have been determined by the courts in some cases to be protected by patent. For example, design patents have been issued for Bigelow & Holmes' Lucida, International Typeface Corporation's ITC Stone, and Adobe's Minion.

WARNING *If your commercial project includes special fonts, be sure that your license agreement with the font supplier allows you to distribute them with your project.*

Occasionally in your projects you may require special characters. With the tools described in the paragraphs that follow, you can substitute characters of your own design for any unused characters in a character set. You can even include several custom versions of your client's company logo or other special symbols relevant to your content or subject right in your client's text font.

.....
www.fontfoundry.com

www.larabiefonts.com

There are hundreds of sites for downloading free and shareware fonts drawn by others. For starters, try these two.

.....

Fontographer

Fontlab, Ltd., located at www.fontlab.com, specializes in font editors for both Macintosh and Windows platforms. You can use this software to develop PostScript, TrueType, and OpenType fonts for Macintosh, Windows, and Sun workstations. Designers can also modify existing typefaces, incorporate PostScript artwork, automatically trace scanned images, and create designs from scratch. A sample of the Fontographer screen is shown in Figure 2-13.

Fontographer's features include a freehand drawing tool to create professional and precise inline and outline drawings of calligraphic and script characters, using either the mouse or alternative input methods (such as a pressure-sensitive pen system). Fontographer allows the creation of multiple font designs from two existing typefaces, and you can design lighter or heavier fonts by modifying the weight of an entire typeface.

Making Pretty Text

To make your text look pretty, you need a toolbox full of fonts and special graphics applications that can stretch, shade, shadow, color, and anti-alias your words into real artwork. Pretty text is typically found in bitmapped drawings where characters have been tweaked, manipulated, and blended into a graphic image. Simply choosing the font is the first step. Most designers find it easier

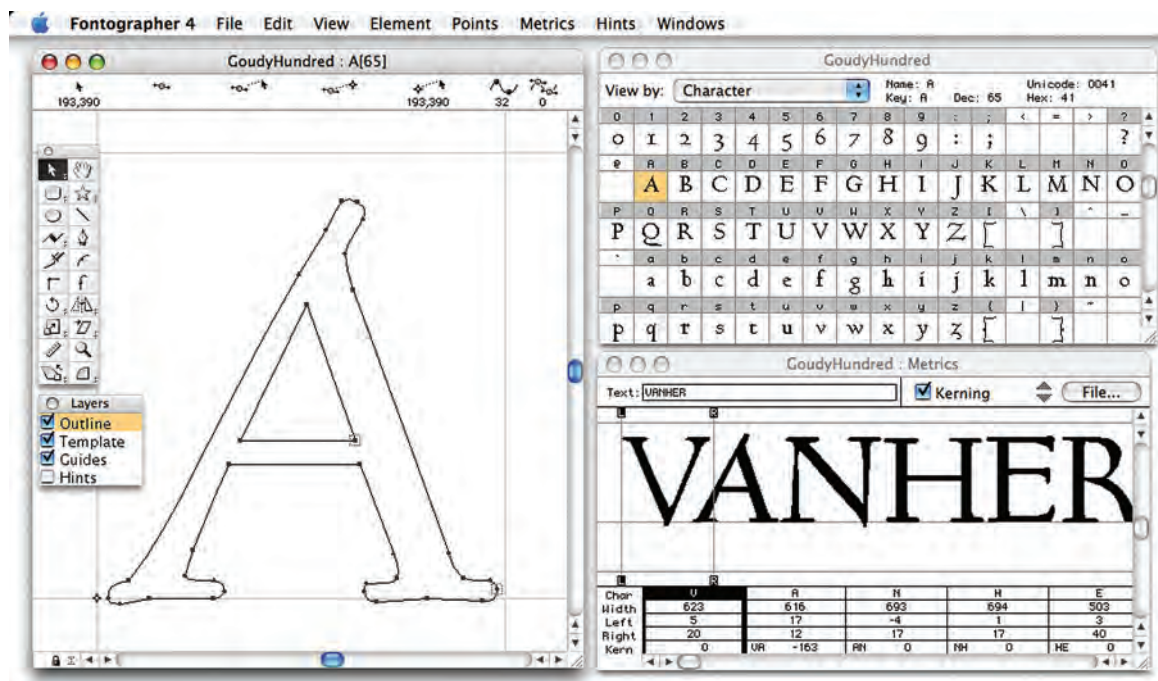


Figure 2-13 Fontographer from Fontlab, Ltd. is a powerful font editor for Macintosh and Windows.

to make pretty type starting with ready-made fonts, but some will create their own custom fonts using font editing and design tools.

With the proper tools and a creative mind, you can create endless variations on plain-old type, and you not only choose but also customize the styles that will fit with your design needs. Using **Dynamic HTML (DHTML)** with Cascading Style Sheets (CSS), you have great flexibility and type choices ranging from line height to margin width to font face.

Most image-editing and painting applications (see Figure 2-14 for a PowerPoint example) let you make text using the fonts available in your system. You can colorize the text, stretch, squeeze, and rotate it, and filter it through various plug-ins to generate wild graphic results.

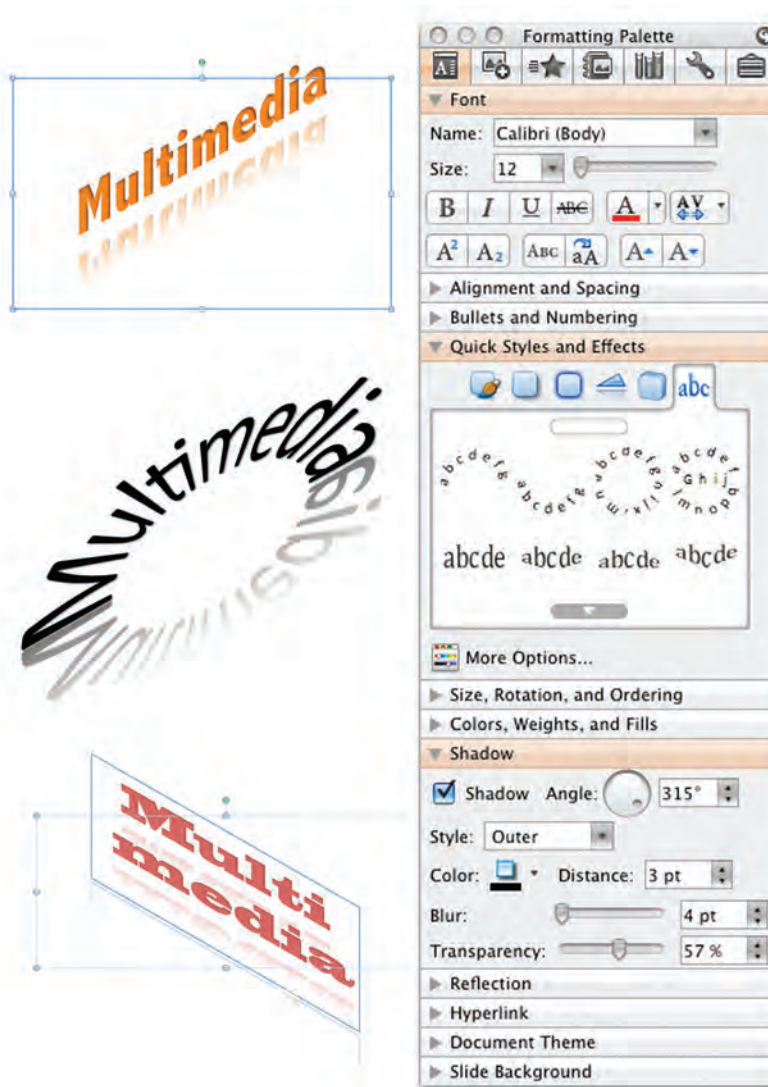


Figure 2-14 PowerPoint lets you manipulate text in many ways.

When they first invented typesetting, there were variants cut of each character so that text would look as if it had been handwritten by a monk! Desktop designers have been fighting so hard to get their setting to look like it's come from a Berthold system, that most of the new potential of desktop typography has been overlooked.

David Collier, Author of *Collier's Rules for Desktop Design and Typography*

As a multimedia developer, you may only need to be concerned about how your fonts look on the screens, not how they are printed to paper—unless, of course, you are printing perfect proposals, bids, storyboards, reports, and above all, invoices ☺. TrueType, OpenType, and PostScript outline fonts allow text to be drawn at any size on your computer screen without jaggies:

The Jaggies

Jaggies are avoided by anti-aliasing the edges of the text characters, making them seem smoother to the eye. Note the improved look of the anti-aliased letters in the bottom row of letters in Figure 2-15. Pasting an image that was anti-aliased against a light background onto a darker-colored background using transparency (so that the new, dark background is seen, instead of the old, light one) can be problematic: the blending pixels along the edge will show as a halo and may have to be edited pixel by pixel.



Figure 2-16 In some authoring programs, anti-aliasing can be fine-tuned.

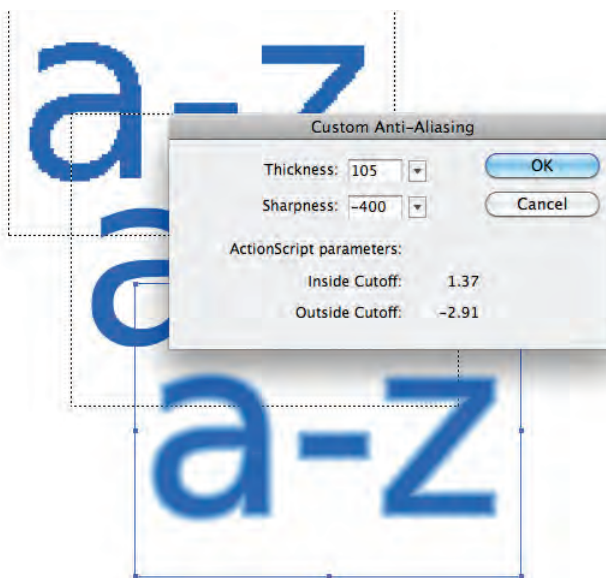


Figure 2-15 Anti-aliasing text and graphics creates “smooth” boundaries between colors. The top row of letters is not anti-aliased; the bottom row is.

Macintosh and PCs handle anti-aliasing differently. Authoring programs such as Adobe Flash allow you to fine-tune anti-aliasing settings for text fields (see Figure 2-16), useful when you want a different look for text that will be static versus text that will be animated.

Hypermedia and Hypertext

Multimedia—the combination of text, graphic, and audio elements into a single collection or presentation—becomes interactive multimedia when you give the user some control over what information is viewed and when it is viewed. Interactive multimedia becomes **hypermedia** when its designer provides a structure of linked elements through which a user can navigate and interact.

When a hypermedia project includes large amounts of text or symbolic content, this content can be indexed and its elements then linked together to afford rapid electronic retrieval of the associated information. When words are keyed or indexed to other words, you have a **hypertext system**; the “text” part of this term represents the project’s content and meaning, rather than the graphical presentation of the text. Hypertext is what the World Wide Web is all about.

When text is stored in a computer instead of on printed pages, the computer’s powerful processing capabilities can be applied to make the text more accessible and meaningful. The text can then be called **hypertext**; because the words, sections, and thoughts are linked, the user can navigate through text in a nonlinear way, quickly and intuitively.

Using hypertext systems, you can electronically search through all the text of a computer-resident book, locate references to a certain word, and then immediately view the page where the word was found. Or you can create complicated Boolean searches (using terms such as AND, OR, NOT, and BOTH) to locate the occurrences of several related words, such as “Elwood,” “Gloria,” “mortgage,” and “happiness,” in a paragraph or on a page. Whole documents can be linked to other documents.

A word can be made into a hyperlink (made “hot”), as can a button, thus leading the user from one reference to another. Click on the word “Elwood,” and you may find yourself reading a biography or resume; click on “mortgage,” and a calculator pops up. Some authoring systems incorporate a hypertext facility that allows you to identify words in a text field using a bold or colored style, then link them to other words, pages, or activities, such as playing a sound or video clip related to that hot word. You cannot do this kind of nonlinear and associative navigation in a sequentially organized book. But on a CD-ROM or DVD or on the Web, where you might have more than 100,000 pages of text to investigate, search, and browse, hypertext is invaluable.

Because hypertext is the organized cross-linking of words not only to other words but also to associated images, video clips, sounds, and other exhibits, hypertext often becomes simply an additional feature within an overall multimedia design. The term “hyper” (from the Greek word “over” [ὑπερ]) has come to imply that user interaction is a critical part of the design, whether for text browsing or for the multimedia project as a whole.

[Vannevar] Bush identified the problem—and the need to provide new ways to access information—but was he right about how the mind works? I suspect a purely associative model of human memory and mental processes is too simplistic.

Philip Murray, *From Ventura to Hypertext*, Knowledge Management Associates, Danvers, MA

When interaction and cross-linking is then added to multimedia, and the navigation system is nonlinear, multimedia becomes hypermedia.

In 1945, Vannevar Bush wrote a seminal eight-page article, “As We May Think,” for the *Atlantic Monthly* (www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/). This short treatise, in which he discusses the need for new methodologies for accessing information, has become the historic cornerstone of hypertext experimentation. Doug Englebart (inventor of the mouse) and Ted Nelson (who coined the term “hypertext” in 1965) have actively championed the research and innovations required of computer technology for implementing useful hypertext systems, and they have worked to combat the historic inertia of linear thought. Nelson would claim that the very structure of thought is neither sequential nor linear and that computer-based hypertext systems will fundamentally alter the way humans approach literature and the expression of ideas during the coming decades.

The argument against this theory of associative thought is that people are, indeed, more comfortable with linear thinking and are easily overwhelmed by too much freedom, becoming quickly lost in the chaos of nonlinear gigabytes. As a practical reminder, it is important always to provide location markers, either text-and-symbol menus or illustrative maps, for users who travel the threads of nonlinear systems.

The Power of Hypertext

In a fully indexed hypertext system, all words can be found immediately. Suppose you search a large database for “boats,” and you come up with a whopping 1,623 references, or *hits*—among them, Noah’s Ark (open boat in water), television situation comedies (*The Love Boat*), political criticisms of cabinet members who challenged the status quo (rocked the boat), cabinet members who were stupid (missed the boat), and Christmas dinner trimmings (Grandmother’s gravy boat). So you narrow your search and look for “boats” and “water” when both words are mentioned on the same page; this time you get 286 hits. “Boats,” “water,” and “storms” gets you 37; “boats,” “water,” “storms,” and “San Francisco,” a single hit. With over a thousand hits, you are lost. With one hit, you have something! But you still may not find what you are looking for, as you can see in this fictional example:

The *storm* had come and gone quickly across the Colorado plains, but *water* was still puddled at the foot of the house-high bank of mud that had slid into town when the dam burst. In front of the general store, which had remained standing, four strong men carefully lifted a tiny *boat* onto the large dray wagon borrowed from the woodcutters. On a layer of blankets in the bilge of the *boat*, the undertaker had carefully laid out the remains of both the mayor and his paramour.

The mayor had not drowned in the flood, but died of a heart attack in the midst of the panic. Children covered the *boat* with freshly cut pine boughs while horses were quickly harnessed to the wagon, and a strange procession began to move slowly down *San Francisco Street* toward the new cemetery. ...

The power of such search-and-retrieval systems provided by a computer for large volumes of data is immense, but clearly this power must be channeled in meaningful ways. Links among words or clusters of information need to be designed so that they make sense. Judgments must be made about relationships and the way information content is organized and made available to users. The lenses through which vast amounts of data are viewed must necessarily be ground and shaped by those who design the access system.

The issue of who designs the lenses and how the designers maintain impartial focus is troubling to many scientists, archivists, and students of cognitive thinking. The scientists would remain “hermeneutically” neutral; they would balance freedom against authority and warn against the epistemological unknowns of this new intellectual technology. They are aware of the forces that allow advertising and marketing craftspeople to intuitively twist meanings and spin events to their own purposes, with actions that can affect the knowledge and views of many millions of people and thus history itself. But these forces remain poorly understood, are not easily controlled by authority, and will express themselves with immeasurably far-reaching, long-term impact on the shape of human culture.

The multimedia designer controls the filtering mechanisms and places the lenses within the multimedia project. A manufacturer, for instance, that presents its products using interactive multimedia can bring abundant information and selling power within reach of the user, including background information, collateral marketing material, pricing statistics, and technical data. The project design will be, of course, biased—to sell more of the manufacturer’s products and generate more profit; but this bias is assumed and understood in these circumstances. When the assumptions and understandings of inherent bias in any information base break down, when fiction or incomplete data is presented as full fact, these are the times when the powerful forces of multimedia and hypermedia can have their greatest deleterious effect.

WARNING *Bad multimedia projects will not alter the collective view of history; really bad projects might.*

Using Hypertext

Special programs for information management and hypertext have been designed to present electronic text, images, and other elements in a database fashion. Commercial systems have been used for large and complicated

The hype about hypertext may be justified. It can provide a computer-supported information environment which can add to our appreciation of the text, can go some way towards aping the mental agility of the human mind, can allow navigation along patterns of association, can provide a nonlinear information environment. But the problems of constructing nonlinear documents are not few and can prove to be very complex.

.....

Patricia Baird, Editor of
Hypermedia, a scientific journal
published in the United Kingdom

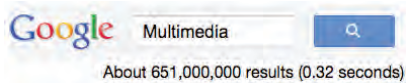
Hypermedia on its own simply functions as a reference tool.

But when it is integrated within a goal-based activity, it becomes a powerful learning resource.

.....

Brigid Sealy and Paul Phelan,
INESC, Porto, Portugal
(conclusions from research
funded by the European
Commission’s Human Capital
and Mobility Program)

mixtures of text and images—for example, a detailed repair manual for an Airbus 330 aircraft, a parts catalog for Rolls Royce jet turbine engines, an instant reference to hazardous chemicals, and electronic reference libraries used in legal and library environments. Such searchable database engines are widely used on the Web, where **software robots** or “bots” visit millions of web pages and index entire web sites. Hypertext databases rely upon proprietary indexing systems that carefully scan the entire body of text and create very fast cross-referencing indexes that point to the location of specific words, documents, and images. Indeed, a hypertext index by itself can be as large as 50 percent to 100 percent the size of the original document. Indexes are essential for speedy performance. Google’s search engine generates more than half a billion hits in less than a third of a second!



Commercial hypertext systems were developed historically to retrofit gigantic bodies of information. Licenses for use and distribution of these commercial systems are expensive, and the hypertext-based projects typically require the large mass-storage capability of dedicated gigabyte or terabyte hard disks. Simpler but effective hypertext indexing tools are available for both Macintosh and Windows, and they offer fairly elaborate features designed to work in concert with many multimedia authoring systems. Server-based hypertext and database engines designed for the Web are now widely available and competitively priced.

TIP *Rather than designing an elaborate, fully cross-referenced hypertext system for your multimedia project, you can “hardwire” the links between the most salient words (highlight them in your text) so that a mouse click leads to a topic menu specific to the chosen word. Though this constrains the user’s movement through the text, the user will not perceive it as such, and you can thus maintain strict control over your navigation pathways and design.*

Searching for Words

Although the designer of a hypermedia database makes assumptions, he or she also presents users with tools and a meaningful interface to exercise the assumptions. Employing this interface, users can tailor word searches to find very specific combinations. Following are typical methods for word searching in hypermedia systems:

- **Categories** Selecting or limiting the documents, pages, or fields of text within which to search for a word or words.
- **Word relationships** Searching for words according to their general proximity and order. For example, you might search for “party” and “beer” only when they occur on the same page or in the same paragraph.

- **Adjacency** Searching for words occurring next to one another, usually in phrases and proper names. For instance, find “widow” only when “black” is the preceding adjacent word.
- **Alternates** Applying an OR criterion to search for two or more words, such as “bacon” or “eggs.”
- **Association** Applying an AND criterion to search for two or more words, such as “skiff,” “tender,” “dinghy,” and “rowboat.”
- **Negation** Applying a NOT criterion to search exclusively for references to a word that are not associated with the word. For example, find all occurrences of “paste” when “library” is not present in the same sentence.
- **Truncation** Searching for a word with any of its possible suffixes. For example, to find all occurrences of “girl” and “girls,” you may need to specify something like **girl#**. Multiple character suffixes can be managed with another specifier, so **geo*** might yield “geo,” “geology,” and “geometry,” as well as “George.”
- **Intermediate words** Searching for words that occur between what might normally be adjacent words, such as a middle name or initial in a proper name.
- **Frequency** Searching for words based on how often they appear: the more times a term is mentioned in a document, the more relevant the document is to this term.

Hypermedia Structures

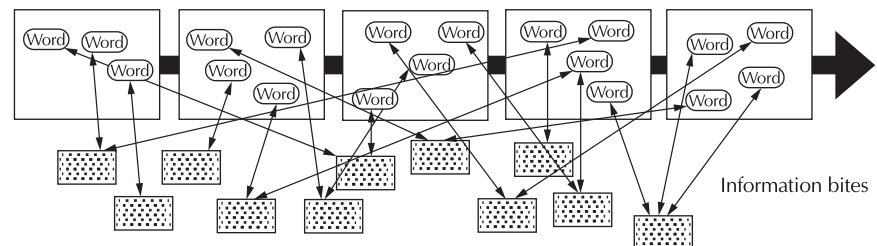
Two buzzwords used often in hypertext systems are link and node. **Links** are connections between the conceptual elements, that is, the **nodes**, which may consist of text, graphics, sounds, or related information in the knowledge base. Links connect Caesar Augustus with Rome, for example, and grapes with wine, and love with hate. The art of hypermedia design lies in the visualization of these nodes and their links so that they make sense, not nonsense, and can form the backbone of a knowledge access system. The term anchor is used for the reference from one document to another document, image, sound, or file using HTML on the Web (see Chapter 11).

Links are the navigation pathways and menus; nodes are accessible topics, documents, messages, and content elements. A **link anchor** is where you come from; a **link end** is the destination node linked to the anchor. Some hypertext systems provide unidirectional navigation and offer no return pathway; others are bidirectional.

The simplest way to navigate hypermedia structures is via buttons that let you access linked information (text, graphics, and sounds) that is contained at the nodes. When you’ve finished examining the information,

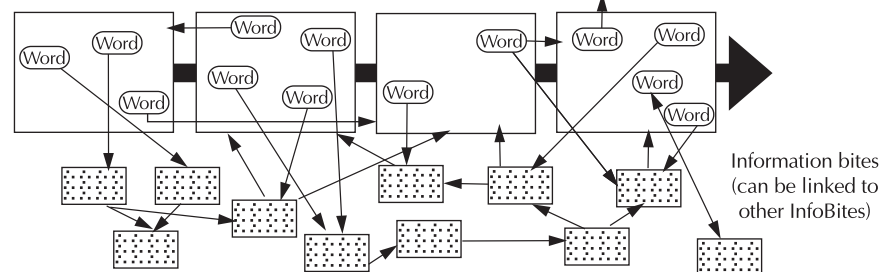
you return to your starting location. A typical navigation structure might look like the following:

Pages of text with hot words linked to InfoBites only

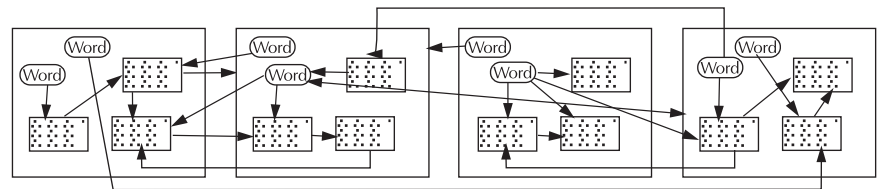


Navigation becomes more complicated when you add associative links that connect elements not directly in the hierarchy or sequence. These are the paths where users can begin to get lost if you do not provide location markers. A link can lead to a node that provides further links, as shown here:

Pages of text with hot words linked to InfoBites linked to pages and to other InfoBites



When you offer full-text search through an information base, there may be links between any number of items at your current node and any number of other nodes with items that meet your relationship criteria. When users are browsing freely through this system, and one page does not follow the next (as expected in the linear metaphor of books and literature), users can get lost in the associative maze of the designer's content:



One publisher of hypermedia products claims that becoming lost in "hyperspace" may not be all that bad. The struggle to find your way back can be valuable in itself, and certainly a learning experience.

Hypertext Tools

Two functions are common to most hypermedia text management systems, and they are often provided as separate applications: building (or authoring) and reading. The builder creates the links, identifies nodes, and generates the all-important index of words. The index methodology and the search algorithms used to find and group words according to user search criteria are typically proprietary, and they represent an area where computers are carefully optimized for performance—finding search words among a list of many tens of thousands of words requires speed-demon programming.

Hypertext systems are currently used for electronic publishing and reference works, technical documentation, educational courseware, interactive kiosks, electronic catalogs, interactive fiction, and text and image databases. Today these tools are used extensively with information organized in a linear fashion; it still may be many years before the majority of multimedia project users become comfortable with fully nonlinear hypertext and hypermedia systems. When (and perhaps if) they do, the methodology of human thought and conceptual management—indeed, the way we think—will be forever changed.

Hypermedia can take advantage of powerful capabilities that are becoming clearer as the new multimedia medium matures, giving us a greater choice in exploration, if not in outright plot definition, for example.

From my experiences with “Playa Sirenas,” the real challenge facing storytellers in this new medium is allowing readers appropriate choices (some authorship of the story, really) while they navigate through the hypermedia experience, without destroying the successful and basic patterns that have been part of storytelling since people first gathered around campfires.

There is something organic about these time-proven storytelling patterns. As an author in the new medium, you must first design the DNA or template of your story, then allow (and promote) mutation along evolutionary lines that you, as the author, have created as part of the template...

.....
Hermann Steffen, hypermedia
novelist, San Jose, Costa Rica

Chapter 2 Review

■ Chapter Summary

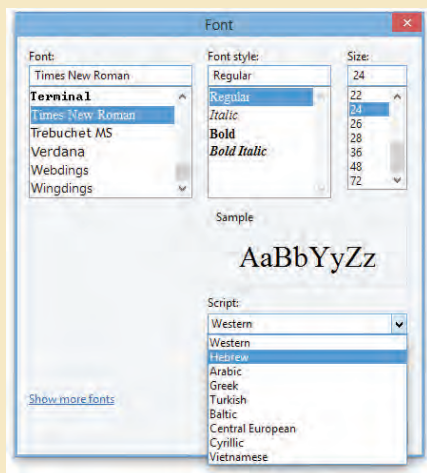
For your review, here's a summary of the important concepts discussed in this chapter.

Recognize the importance of word choice

- With the relatively recent explosion of the Internet and the World Wide Web, text has become more important than ever. Words and symbols in any form, spoken or written, are the most common system of communication. It's important to design labels for title screens, menus, and buttons using words that have the most precise and powerful meanings to express what you need to say. Experiment with the words you plan to use by letting others try them.

Describe the difference between a typeface and a font and list at least three attributes of a font, for example, upper/lowercase, serif/sans serif, PostScript/TrueType/OpenType

- A typeface is a family of graphic characters that usually includes many type sizes and styles.
- Serif versus sans serif is the simplest way to categorize a typeface.
- A font is a collection of characters of a single size and style belonging to a particular typeface family.
- Three common font styles are bold, italic, and underline, but there are several others; some, such as superscript, emboss, or strikethrough, have specialized uses.



- Type sizes are usually expressed in points (about 72 per inch).
- Leading is the space between lines.
- Kerning is the space between individual characters.
- Alignment can be left, right, centered, or justified.

Discuss the importance of text and ways text can be leveraged in multimedia presentations

- Size, color, background color, style, and leading are factors that affect the legibility of text.
- On the printed page, serif fonts are traditionally used for body text because the serifs are said to help guide the reader's eye along the line of text. Sans serif fonts, on the other hand, are used for headlines and bold statements. But sans serif fonts are far more legible and attractive when used in the small sizes of a text field on a screen.

Discuss the presentation of text on Windows, Macintosh, eBook, tablet, and mobile platforms

- The fonts installed in Windows and Macintosh operating systems are not the same.

Find sources for free and shareware fonts

- Search for "free fonts" for access to thousands of free downloadable fonts.

Define hypermedia, hypertext, links, anchors, and nodes and be able to discuss both the potential and limitations of hypertext and hyperlinking systems

- Multimedia—the combination of text, graphic, and audio elements into a single collection or presentation—becomes interactive multimedia when you give the user some control over what information is viewed and when it is viewed. Interactive multimedia becomes hypermedia when its designer provides a structure of linked elements through which a user can navigate and interact.
- When a hypermedia project includes large amounts of text or symbolic content, this content

can be indexed and its elements then linked together to afford rapid electronic retrieval of the associated information. When words are keyed or indexed to other words, you have a hypertext system; the “text” part of this term represents the project’s content and meaning, rather than the graphical presentation of the text. Hypertext is what the World Wide Web is all about.

- When text lives in a computer instead of on printed pages, the computer’s powerful processing capabilities can be applied to make the text more accessible and meaningful. The text can then be called hypertext; because the words, sections, and thoughts are linked, the user can navigate through text in a nonlinear way, quickly and intuitively. Because hypertext is the organized cross-linking of words not only to other words but also to associated images, video clips, sounds, and other exhibits, hypertext often becomes simply an additional feature within an overall multimedia design.
- Links are connections between the conceptual elements, that is, the nodes containing text, graphics, sounds, or related information in the knowledge base. The term anchor is formally used in HTML as the reference from one document to another document, image, sound, or file. Links are the navigation pathways and menus; nodes are accessible topics, documents, messages, and content elements. A link anchor is where you come from; a link end is the destination node linked to the anchor.
- The standard document format used for pages on the Web is called Hypertext Markup Language (HTML). In an HTML document you can specify typefaces, sizes, colors, and other properties by “marking up” the text in the document with tags. The remarkable growth of the Web is straining the “old” designs for displaying text on computers. Dynamic HTML (DHTML) uses Cascading Style Sheets (CSS) to define choices ranging from line height to margin width to font face. HTML character entities are represented either by a number or by a word and always prefixed by an ampersand (escape) and

followed by a semicolon. In modern web design, presentation (for example color, font, font size and style) should be declared using CSS.

Decimal	Hex	Entity	Character
188	BC	¼	¼
189	BD	½	½
190	BE	¾	¾
191	BF	¿	¿
192	C0	À	À
193	C1	Á	Á
194	C2	Â	Â
195	C3	Ã	Ã
196	C4	Ä	Ä
197	C5	Å	Å
198	C6	Æ	Æ
199	C7	Ç	Ç
200	C8	È	È
201	C9	É	É
202	CA	Ê	Ê
203	CB	Ë	Ë
204	CC	Ì	Ì
205	CD	Í	Í
206	CE	Î	Î
207	CF	Ï	Ï
208	D0	Ð	Ð
209	D1	Ñ	Ñ
210	D2	Ò	Ò
211	D3	Ó	Ó
212	D4	Ô	Ô
213	D5	Õ	Õ
214	D6	Ö	Ö
215	D7	×	×
216	D8	Ø	Ø
217	D9	Ù	Ù
218	DA	Ú	Ú
219	DB	Û	Û
220	DC	Ü	Ü
221	DD	Ý	Ý
222	DE	Þ	Þ
223	DF	ß	ß
224	E0	à	à
225	E1	á	á
226	E2	â	â
227	E3	ã	ã
228	E4	ä	ä
229	E5	å	å
230	E6	æ	æ
231	E7	ç	ç
232	E8	è	è
233	E9	é	é
234	EA	ê	ê
235	EB	ë	ë
236	EC	ì	ì
237	ED	í	í
238	EE	î	î
239	EF	ï	ï

- You can search and view potentially billions of documents and files (information), but you can also become “lost in hyperspace.”

■ Key Terms

Adobe PostScript (24)
anchor (10)
anti-aliasing (9)
ASCII (26)
aspect ratio (20)
attribute (4)
bitmapped font (24)
breadcrumbs (18)
buttons (18)
CamelCase (7)
Cascading Style Sheets (CSS) (13)
case insensitive (6)
case sensitive (6)
character entity (33)
character mapping (30)
character metrics (5)
chat-speak (4)
condensed (5)
dithering (9)
dots per inch (dpi) (6)
Dynamic HTML (DHTML) (37)
eBook (21)
emoji (16)
emoticon (17)
e-reader (21)

expanded (5)
font (4)
font mapping (29)
font stack (13)
font substitution (29)
foundry (26)
generic font (13)
GUI (15)
hint (24)
HTML (1)
hypermedia (39)
hypertext (39)
hypertext system (39)
icon (15)
intercap (7)
jaggies (38)
kerning (5)
landscape (20)
leading (5)
links (43)
link anchor (43)
link end (43)
localization (32)
lowercase (6)
Multimedia Messaging Service (MMS) (4)

nodes (43)
OpenType (25)
outline font (24)
pixel (6)
point (4)
portrait (20)
rasterizing (6)
rollovers (19)
sans serif (7)
scripts (28)
serif (7)
software robot (42)
style (4)
tags (22)
text-speak (4)
tooltip (19)
tracking (6)
TrueType (25)
typeface (4)
Unicode (28)
uppercase (6)
white space (10)
WYSIWYG (8)
x-height (5)

■ Key Term Quiz

1. Type sizes are usually expressed in _____.
2. When a password must be entered in upper- or lowercase in order to match the original password, it is said to be _____.
3. Symbolic representations of objects and processes common to the graphical user interfaces of many computer operating systems are called _____.
4. Special HTML characters, always prefixed by an ampersand (escape) and followed by a semicolon, are called _____.
5. “What you see is what you get” is spoken as _____.
6. Translating or designing multimedia (or any computer-based material) into a language other than the one in which it was originally written is called _____.
7. The little decoration at the end of a letter stroke is a(n) _____.
8. Designers call roomy blank areas _____.
9. _____ blends the colors along the edges of the letters (called dithering) to create a soft transition between the letter and its background.
10. Conceptual elements consisting of text, graphics, sounds, or related information in the knowledge base are called _____.

■ Multiple-Choice Quiz

1. A family of graphic characters that usually includes many type sizes and styles is called a:
 - a. typeface
 - b. font
 - c. point
 - d. link
 - e. node
2. Which of the following is a term that applies to the spacing between characters of text?
 - a. leading
 - b. kerning
 - c. tracking
 - d. points
 - e. dithering
3. Intercapping, the practice of placing a capital in the middle of a word, is a trend that emerged from the computer programming community because:
 - a. it looks cool
 - b. they wanted to copy marketing practices in the electronics industry
 - c. they found they could see the words used for variables and commands better
 - d. one of the first computer programmers had a faulty SHIFT key on his keyboard
 - e. it increases security in case-sensitive passwords
4. Dynamic HTML uses _____ to define choices ranging from line height to margin width to font face.
 - a. Cascading Style Sheets
 - b. font mapping
 - c. font substitution
 - d. software robots
 - e. Encapsulated PostScript
5. If a DHTML document includes a font face that is not installed on the user's computer, a browser will:
 - a. automatically download the correct font
 - b. refuse to load the page
 - c. leave a blank space where that text is
 - d. crash
 - e. try to substitute the font with a similar looking font
6. In the URL `http://www.timestream.com/info/people/biotay/biotay1.html`, which part is case sensitive?
 - a. the record type: "`http://`"
 - b. the domain name: "`timestream.com`"
 - c. the subdomain "`www`"
 - d. the document path: "`info/people/biotay/biotay1.html`"
 - e. all are case sensitive
7. Multimedia becomes interactive multimedia when:
 - a. the user has some control over what information is viewed and when it is viewed
 - b. the information is displayed by a computer with a touchscreen or other input device
 - c. the information is available on the Web—either the Internet or a local area network
 - d. quizzes and tests with evaluations and scoring are included
 - e. the user can change such attributes as volume and type size
8. Interactive multimedia becomes hypermedia when:
 - a. the information is available on the Web—either the Internet or a local area network
 - b. quizzes and tests with evaluations and scoring are included
 - c. it includes a structure of linked elements through which a user can navigate and interact
 - d. the user can change such attributes as volume and type size
 - e. the content formatting complies with the American Standard Code for Information Interchange
9. Web pages are coded using:
 - a. Unicode
 - b. ASCII
 - c. File Transfer Protocol
 - d. Hypertext Markup Language
 - e. Encapsulated PostScript

10. Which of the following provides a system for dynamically displaying a font?
- Apache
 - PostScript
 - HTTPD
 - serif
 - WYSIWYG
11. A printed page might be presented in which of these orientations?
- newsscape
 - portrait
 - flat-file
 - x-height
 - node
12. Which of the following is a character encoding system?
- FontTab
 - HTML
 - CSS
 - WYSIWYG
 - Unicode
13. The reference from one document to another document, image, sound, or file on the Web is a(n):
- sweetspot
 - anchor
 - node
 - tag
 - button
14. Which of the following is a problem that might apply to hypermedia?
- Users' eye movements affect their ability to link.
 - Users will be turned off by excessive animation.
 - Hypermedia software might create inappropriate links.
 - Current hyperlinking technology far exceeds what today's desktop computers can handle.
 - Search results generally are too granular to be useful.
15. Which of the following is a typical method for word searching in a hypermedia system?
- best fit
 - adjacency
 - popularity
 - tracking
 - localization

■ Essay Quiz

1. Describe what characteristics a block of text might have.
2. Describe what characteristics a typeface might have.
3. Discuss the problems encountered using text across computer platforms and in different languages.
4. Discuss the differences among multimedia, interactive multimedia, hypertext, and hypermedia.
5. Your boss wants you to create a hypermedia system for web visitors to find technical support information about your company. What are some of the implications in creating this system? Should you hand-build the links or use an automatic indexing system? Why?

Lab Projects

■ Project 2.1

Visit three foreign television news or newspaper web sites from different cultures around the world (such as CNN, BBC, CNTV, Reuters, or Al Jazeera). Describe the text fonts and styles used by each for headlines, paragraph content, and menus.

Now visit a local news web site in your own country or local area. If there are differences, explain them. Choose the web site from all that you visited that best presents information through use of text. Describe why this is so.

■ Project 2.2

Using a laptop or desktop computer, visit three web sites. Then visit the same three web sites using a mobile smartphone device with a smaller screen. Compare the presentations of each web site on the mobile and non-mobile devices and describe differences in text style, fonts, and readability. Describe some ways that you might alter fonts and text on these web pages to improve legibility and ease of use when delivered to a mobile device.

■ Project 2.3

Install on your computer two presentation programs that allow you to manipulate text, such as PowerPoint from Microsoft, Keynote from Apple, Prezi, Kingsoft, LibreOffice, or Apache Open Office. If the program is not free, it can often be downloaded as a free trial for limited-time use.

Open each program and write a few sentences of text. Explore the program's customization options for text color, style, and font. Animate your text to “fly” or “grow” or change color as the screen opens or a button is clicked.

Visit the Presentation Library of the American Association of Variable Star Observers (AAVSO) at www.aavso.org/presentation-library-0. View *Cataclysmic Variables for Visual Observers* by Mike Simonsen, *¡Aprenda cómo divertirse haciendo observaciones de estrellas variables!* by Chuck Pullen (translated into Spanish by Jaime García, 2001), and *Pourquoi pas observer les étoiles variables?* by Pierre de Ponthiere (2007). Describe the different ways each handles the presentation of text.

■ Project 2.4

Using a word processor or text editor like Notepad or TextEdit, write two sentences that are 140 characters in length—without using any abbreviations or word shortcuts. Now write the same sentence with as much “chat-speak” as you can possibly apply. Consider how your message's meaning might be changed by using chat-speak, and the pros and cons of doing so.

Now go online and navigate to Twitter.com, or an equivalent platform in your country. Find a prominent celebrity or figure, and describe his or her use of chat-speak. List each use of a chat-speak word.

■ Project 2.5

Use a web browser to locate the free online bitmap font editor BitFontMaker2 (www.pentacom.jp/pentacom/bitfontmaker2/; refer to Figure 2-8 earlier in the chapter). Create several letters to make a new font. Click the Build Font button to download your new font to your computer as a TTF file. Install this font on your computer. Open a text editor and write a few lines using your new font.