These are just some of the tasks you complete through the Graphics and Web Page Design workshop:

Survival Skills for Web Graphics

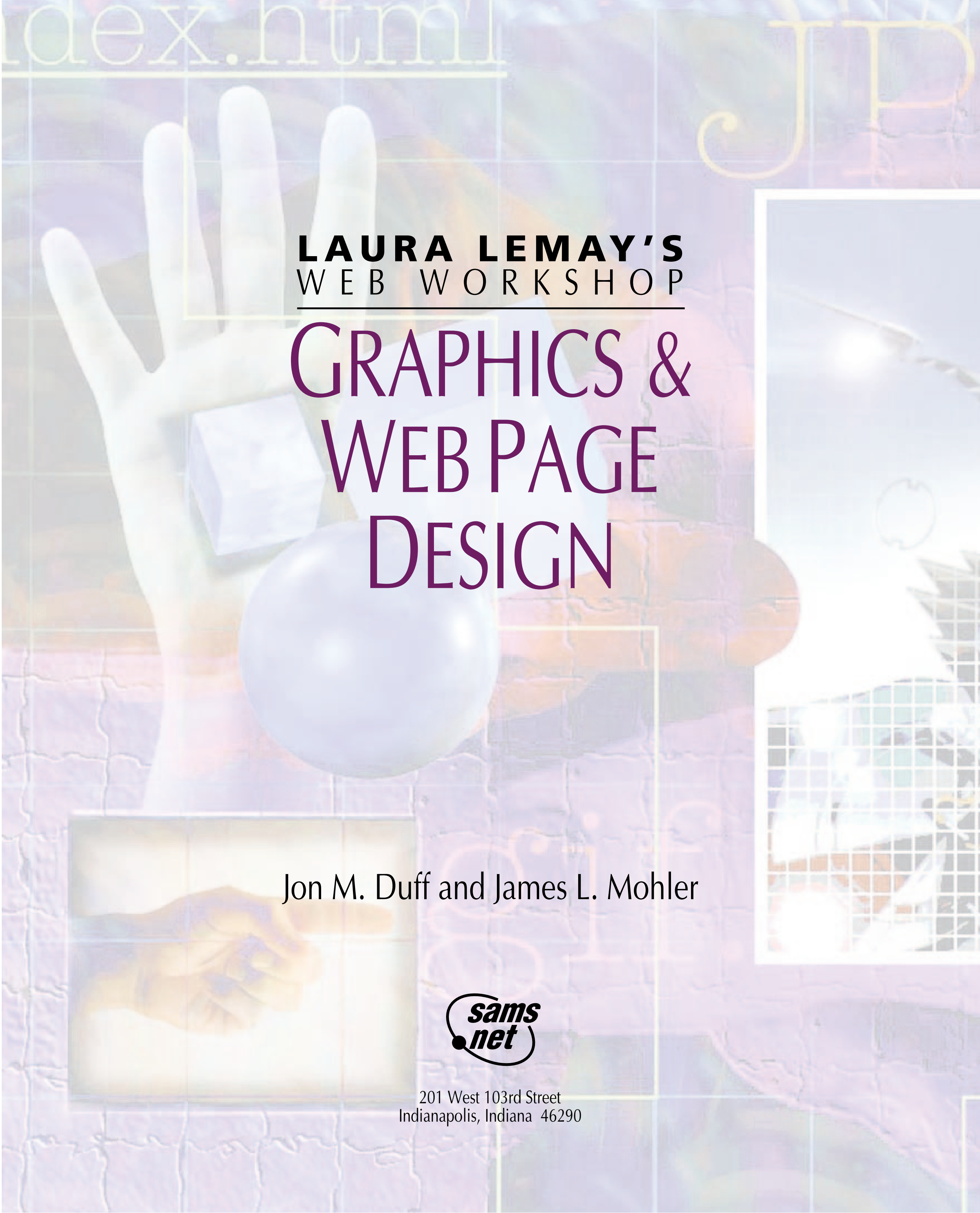
Fast Track to Web Site Design

Survival Skills for Web Design

Additional Graphic Topics

LAURA LEMAY'S
WEB WORKSHOP

GRAPHICS & WEB PAGE DESIGN



LAURA LEMAY'S
WEB WORKSHOP

GRAPHICS & WEB PAGE DESIGN

Jon M. Duff and James L. Mohler

sams.net

201 West 103rd Street
Indianapolis, Indiana 46290

Foreword

In the early days of the World Wide Web, one of the biggest discussions that went on nearly anywhere anyone talked about the Web was the role of content versus presentation in Web page design. Content, of course, was what you were actually putting on the page, and presentation was how that page looked when it was viewed in a browser. At the time, content was by far the more important of the two, simply because of the limitations of the medium. With few HTML tags to choose from and few mechanisms for controlling any sort of page layout, Web "design" in the those days involved little more than knowing some HTML code.

The Web has changed a great deal over the last few years, and while content is still crucial for any sort of Web site, presentation has come into its own as a significant part of a Web designer's job. With the ability to have greater control over where text and images appear on the Web page has come greater challenges. It isn't enough for a Web designer to know some HTML and to be able to throw together a page. Modern Web designers are truly designers and can use aspects of graphic design, illustration, and user interface theory to construct a Web site that is interesting to look at, fun to read, easy to browse, and that stands out from the seething masses of sites available on the Web today.

This can be a scary proposition to many people working with Web sites today, particularly if all you know is HTML. But if you don't have a degree in graphic design, typography, or computer-based art, don't despair. Many of the fundamentals can be learned, and even a basic understanding of the issues can go a long way toward creating an interesting visual look for your own Web pages or for those you create for other people.

That's where this book comes in. This book won't teach you about HTML; there are lots of other books that will do that. Instead, this book will teach you how to look at your pages from a visual standpoint. It will teach you the basics of graphic design and how to arrange your pages in an interesting style without the design becoming gaudy or overpowering the actual content you want your readers to see. In addition, you'll learn all about graphics and images and using those elements to enhance the design of your pages. And, finally, because this is a Web Workshop book, like all Web Workshop books, it has tons of examples and the same conversational and humorous style that makes the fundamentals of graphics and Web design easy to learn and easy to apply to your own work.

Good luck!

Laura Lemay

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Overview

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Special thanks go to

- The companies and individuals who have taken the plunge, created a Web presence, and whose examples appear in these pages.
- Our students who made us scratch our heads with questions we couldn't answer and who provided some of the resources on the CD-ROM.
- John Timble and the people at New Order Media for encouragement and examples of interactive interfaces.
- A.C. Capehart of Kesmai for his contributions to Chapter 11, "How to Avoid the Ten Most Common Web Mistakes."
- Buster Dunsmore of the Computer Science Department at Purdue University for sharing his knowledge about what makes an effective Web publication.
- Chuck McKenna of Precision Graphics for his critiques and insights.

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Technical Graphics at Purdue University prepares graphics professionals for electronic publication, illustration, modeling and animation, and engineering documentation specialties. You can visit the department at `http://www.tech.purdue.edu/tg/main.html`.

Tell Us What You Think!

As a reader, you are the most important critic and commentator of our books. We value your opinion and want to know what we're doing right, what we could do better, what areas you'd like to see us publish in, and any other words of wisdom you're willing to pass our way. You can help us make strong books that meet your needs and give you the computer guidance you require.

Do you have access to CompuServe or the World Wide Web? Then check out our CompuServe forum by typing `GO SAMS` at any prompt. If you prefer the World Wide Web, check out our site at `http://www.mcp.com`.

NOTE: If you have a technical question about this book, call the technical support line at 800-571-5840, ext. 3668.

As the team leader of the group that created this book, I welcome your comments. You can fax, e-mail, or write me directly to let me know what you did or didn't like about this book—as well as what we can do to make our books stronger. Here's the information:

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Introduction

If you're the kind of person I think you are, you've been hanging ten toes off the edge of your Web surfboard for some time now. You've been dazzled by the diversity of information—intellectual and practical, visual and auditory, technical and entertaining—all available in this virtual information space called the World Wide Web.

Or, you may be new to the Web and all its possibilities. After digging deep into funds that could have (and probably should have) been used for more mundane purposes like food, shelter, or retirement, you matched computer, software, and a service provider and now have access to the largest combination of flea market and junk mail consortium ever assembled.

At some point you become a discriminating Web browser. You know what you like, and you vote with your mouse. You start bookmark files of Web site uniform resource locators (URLs) that are so interesting, so informative, and so visually stimulating that you return to them regularly. This is sort of like me rereading my favorite John D. MacDonald novel or my wife popping *Pretty Woman* in the VCR for the fiftieth time.

But as you spend more time on the Web, you also learn what you *don't* like, what irritates you, and what causes you to decide in ten seconds…whoa, I'm outta here!

As you consider the topics covered in this book, you may find yourself in a position where you know Hypertext Markup Language (HTML), you understand your browser, you mentally have a good picture of the World Wide Web landscape, but the graphics you see both intrigue and confuse you. If so, this book is for you.

Who Should Read This Book

The Web without graphics is like pretzels without salt or Madonna without controversy. It's not that you haven't been exposed to graphics over the years; it has been most intense since your telephone bill's Internet charges began to approach your mortgage payment. Unless you are a designer by training or study, you are much like a person who has been exposed to food for most of your life but still know next to nothing about food, biochemistry, or nutrition. Your idea of nutrition may be Spam on Wonderspun with Hawaiian Punch. A power lunch is a Snickers bar and a Diet Coke. Just being exposed to food doesn't give you food knowledge. Just being exposed to graphics doesn't give you graphics knowledge.

This book takes your love of Spam and shows you how to fix lean, healthy, appealing graphical meals that you'll be proud to show your friends. This book is directed to

It is interesting that Spam is used both as a noun, as in a basic food group for Web designers, and as a verb, as in "I just got spammed!" If you use computer programs to send out thousands of automated inquiries, e-mails, or Web hits, this is called *spamming*.

Personally, I have fond memories of that lean pork product from my military brat childhood. My mother was known to put the institutional size to good use at Thanksgiving with cloves, pineapple rings, and what my sister and I would speak of in hushed voices as "the mystery glaze."

- ❑ Anyone who has an interest in how graphic images are used in electronic publications. Much of what is discussed in this book is applicable to multimedia, portable documents, and traditional page and publication layout and design.
- ❑ Casual authors of Web materials. You want to try your hand at making your own Web site because, gee, the technology is just so darned interesting.
- ❑ Serious Webmasters, mongers, meisters, and wireheads who know they're visually challenged, they but also realize that great graphics are an integral part of great Web pages.
- ❑ Managers who have to review and evaluate the effectiveness of Web graphics.
- ❑ Artists and designers who create resources for Web publishing. Although you probably don't need to be a Webmaster yourself, understanding the peculiarities of Web graphics will make you a more valuable member of the Web publishing team.

What This Book Contains

This book isn't a tutorial. Instead, it is a resource of visual examples you can use for inspiration. It's written so that you can jump into whichever topics are of immediate interest, or spend a little more time in dialogue with the authors.

You'll find many of the topics presented as tasks—instructions you can follow to gain a greater understanding of the role graphics play in effective Web pages.

- ❑ In Part I, "Fast Track to Web Site Design," you get a quick overview of the issues that will concern you when making Web graphics. You'll learn a technique for analyzing Web function, the relationship of graphic images and HTML code, and how good design enhances communication. You'll be bombarded with examples and techniques. Finally, you'll be able to review the examples in Chapter 6, "Presenting Effective Web Graphics," and learn *why* they work.
- ❑ Part II, "Survival Skills for Web Design," presents much of the technical information found in this book. This section shows techniques for planning the structure of your Web site and shows how to enhance intrasite navigation.
- ❑ Survival skills are presented in Part III, "Survival Guides for Web Graphics." The chapters in this section should answer your "how did they do that?" questions. If you ever wanted to make your *own* graphics, this is your ticket. If you find yourself having to hire artists to work on a team, these chapters give you portfolio-evaluation ammunition.

- Part IV, "Additional Graphic Topics," presents the high gloss of Web graphics. You'll want animation—both 2D and 3D, movies, and high resolution images. You know virtual graphic worlds are just over the horizon. And you know that there is no way you can create all these yourself, so you need to know what resources are available.
- Tools to assist you in creating Web pages and graphics on the enclosed CD-ROM. These tools include software utilities that you can use right away to make your job easier. Also included are files of graphic elements that can be used directly or as examples for your own inspirations.

What You Need to Make Effective Graphics

Software and hardware people would like you to think that you need to constantly upgrade to the latest and greatest. Of course, their survival is based on convincing you that you can't live without upgrading to version 2.1.3 or to that extra 50MHz or 16MB. Who wants to be left behind?

Here's the most important point that will be made in this book:

All the *really* important and significant activities concerning a Web site occur off the computer. By this I mean that without the planning, analysis, and evaluation; without effective graphics and intelligent use of typography; and without pointed and cogent writing, you're simply playing around.

What equipment do you need to make effective Web graphics? Not much!

I guarantee that exciting, effective, award-winning Web pages can be created on a 386/25 computer with Word 3 and Photoshop 2. You can spend tens of thousands of dollars and still produce ugly pages that don't communicate well and leave your users lost in a link with no idea where they are or how they can get back. There is no substitute for talent. A candidate to become an effective Web designer will probably have most of the following traits:

- First, you need an interest in graphics. That isn't really hard. You drew, painted, and scribbled in kindergarten, and here you are, years later, wanting to make graphics again.
- You need to develop a good eye. You need to be able to recognize effective colors, good page design, appropriate fonts, and graphic elements with both impact and good communication.
- If you're going to be making graphics yourself, you must become adept at *some* raster imaging application. For me, it's Photoshop. For you, it might be Fractal Painter or any of a dozen other programs. Vector graphics will, and

are, finding their way into Web sites via PICT (QuickDraw) and WMF plug-ins. Still, raster formats will continue to be the Web's mainstay because they are, for the most part, platform and operating system independent.

❑ Most of all, you need to bring flexibility and a keen interest in learning. You'll never know everything about the Web or graphics. All you can hope is to know more today than you did yesterday.

The Changing Landscape of the World Wide Web

As authors, we have made every attempt to provide you with the most current examples from the Web. However, the landscape of the Web changes daily and in the several months between original writing, editing, and production there have been, as you might expect, changes in sites and locations. In Chapter 17, "A Portfolio of Graphics from the Web," you'll find a discussion of the reasons why you might not be able to find a particular site that's referenced within these pages. Consider the examples we've included as a starting point for your own graphical adventures on the World Wide Web.

You are about to enter an exciting and challenging field where change is an integral part of everyday life. This book should serve you well in becoming an effective Web artist and designer or as a better user and consumer of Web graphics. But more than that, its instructions, suggestions, and examples should change the very way that you look at Web publication. If we have done our job well, this book will rest, dog-eared and tattered, beside your computer and not on a book shelf. And now, sit back, relax, enjoy, and get graphical!

PART I

Fast Track to Web Site Design

Chapter 1 Making Effective Browser-Independent Graphics

2 Designing an Effective Web Site

3 Creating Cool Graphics for the Web

4 Making Effective Web Graphics

5 Using Multimedia and Special Effects on the Web

6 Presenting Effective Web Graphics

CHAPTER ONE

Making Effective Browser-Independent Graphics

Reading this chapter, you must be interested in designing better Web pages and graphics. If you don't know much about the language used to create Web pages, it isn't the end of the world. As an artist or designer, you may even find it too restrictive to concern yourself with Hypertext Markup Language (HTML) when creating graphics. If you'd like to know more about this method of creating electronic publications, there is no better place to start than Laura Lemay's *Teach Yourself Web Publishing with HTML in a Week* or the other books in this Web Workshop series.

HTML isn't really a programming language. Instead, it's a way to structure the elements of a publication by using embedded tags. Its big brother, Standard Generalized Markup Language (SGML), is used to structure technical documents, primarily for the government and military. Probably the most frustrated HTML users are those accustomed to the power and flexibility of page composition programs such as PageMaker and QuarkXPress. HTML, however, isn't a page layout tool either.

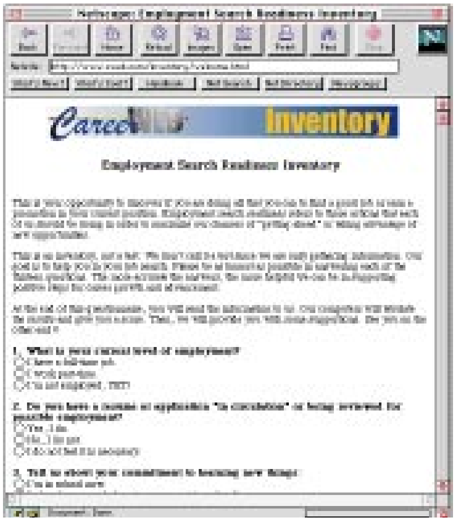
In this chapter, you'll

- □ Learn the importance of describing the function of your Web site, page, or graphic
- □ Visualize a Web site in terms of its dimensionality
- □ Understand how an effective graphic enhances good design

NOTE: We're often asked how we, as Web authors, view the potential of the World Wide Web and the tools available for publishing information on it electronically. If you've been involved in computers long enough—say from the mid-1970s—you can extend the development of word processors to what one might call *Web processors*. Early word processors required the user to memorize dozens of embedded commands to perform formatting tasks. WordStar fans, can anyone remember how to copy a range of text from one part of a document to another? It was worse than an impromptu root canal.

Productivity tools, such as the editor in Netscape Gold or PageMill, or filters in Microsoft Word or PageMaker, are temporary, easy-to-use front ends for what is essentially still a structural tagging exercise. You might say that Net publishing is in a 1975 developmental stage. Programmers are still awaiting fully functioning Web processors.

This means that the content and structure of a Web page are much more important than its visual design. True, you can produce nice pages (see Figure 1.1) using the limited design controls available in the various versions of HTML and with the display characteristics of various browsers, but it's not like using a page composition tool.



Employment Search Readiness Inventory

Figure 1.1. *Pages delivered on the Web can look very much like traditional pages (*`http://www.cweb.com/inventory/welcome.html`*).*

If you haven't thumbed through this book yet, go ahead and page through to see the types of graphics I'll be discussing. Better yet, take some time to do some Web surfing, except this time visit your favorite sites with an eye for graphics. It's amazing how different images can look when you're looking specifically at the graphics.

The subject of design and Web graphics is more than simply making great graphics. Design includes how the client interacts with visual and textual elements, how they are presented on the screen, and how the browser interprets everything. So the entirety of Web design includes

- ❑ The design of the site itself. What is its *topological* structure? How does the site design promote expansion and revision?
- ❑ The design of the pages. What are the consistent elements that tie all the pages together? What are the navigation tools available to give the client a sense of direction?
- ❑ The design of graphic elements for the pages. Here, efficiency and communication ability count as much as impact and novelty.

A *browser* is a software program that navigates through the Web of networks and attached computers, reads HTML files, and interprets their tags to display text, graphics, and other resources. There is no standard browser. Some are very robust, and others are little more than digital teletypes, sending text from the file to your screen.

No other subject elicits more groans and whines than does the subject of browsers, specifically because what you see on your screen depends to a great degree on how your browser is able to interpret and display the HTML files and associated graphic, sound, and multimedia resources.

This book takes the approach that good design and graphics are browser independent. But wait, you ask, "How can I get my graphics exactly where I want them if I can't give the navigator a number carried out to twelve decimal places?" This question is especially common among the pocket-protector CAD crowd, or among right-brained creative Web designers, who say, "I want to rotate that image a smidgen and blend the text and graphics to achieve a greater sense of harmony."

The answer to this question is that it is *much* more important to get the right graphic, at the right place in your site, in the right form, with the best descriptive text, than it is to have ultimate control over design nuances.

Another reason for browser independence is that you may want to repackage a publication that was first done by traditional paper printing into a Web site, interactive multimedia title (see Figure 1.2), portable electronic document, or into any other media.

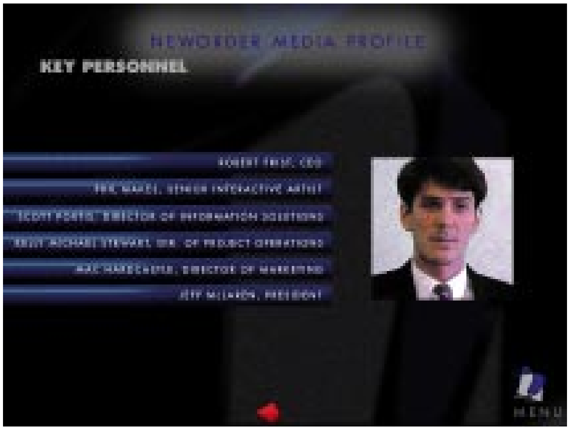

NEWORDER MEDIA PROFILE
KEY PERSONNEL
ROBERT FRIST, CEO
SENIOR INTERACTIVE ARTIST
SCOTT FORTE, DIRECTOR OF INFORMATION SOLUTIONS
MICHAEL STEWART, DIR. OF PROJECT OPERATIONS
DIRECTOR OF MARKETING
JEFF McLAREN, PRESIDENT
MENU

Figure 1.2. *A multimedia title interface. Is it possible to implement this design via the Web?*

The Web can be considered a publishing genre with its own set of evolving expectations. In fact, the way the Web developed—without any rules—allowed early Web sites to stretch traditional conceptions of publishing. Free form, no rules, and over-the-edge Web sites that amaze and amuse will always be around.

But if the Web is to develop into an economically viable entity, where information can be easily found and goods and services contracted, it will necessarily take on many of the characteristics of traditional publications.

NOTE: George Fisher, CEO of Eastman Kodak, comments on the Web's future to the American Association of Advertising Agencies. It is his estimate that Kodak has spent several millions of dollars maintaining their Web presence without making any money. Still, he acknowledges that as a company they have learned a lot. His view is that the Internet is a tool to interact with customers and get them to buy and understand your products. Fisher views it as a powerful medium, but one that has its limitations. In Kodak's business, high resolution images are the core of their business and digital images delivered over the Web simply can't compete with a high quality TV ad. He concludes that the real winners will be those who have *integrated messages across different media*.

The remainder of this chapter encourages you to think seriously about how a Web site functions and the planning necessary to pull one off.

Describing Your Design

Remember when Denzel Washington, in the movie *Philadelphia*, said, "Explain it to me like I was a five-year-old"? The same can be said about designing any product, especially a product as involved as a Web site. Consider the following Web site descriptions:

NOTE: Create a Web site that presents our company's products and their performance characteristics. The client can request additional product information and determine the address of the closest sales representative.

or

Create a Web site that allows the client to visit our virtual company to meet company managers and selected employees. The client can request a copy of our annual report and begin receiving the company newsletter.

or

Create a Web site that provides the client with an unstructured path through simulated life decisions, which include education, career, relationships, family, lifestyle, and unexpected crises for the purpose of psychotherapy role-playing.

Each of these descriptions elicit totally different images. Color, text, interface elements, resources, and interactivity would all be different for the three designs.

NOTE: Have you ever thought of the number of variables around which something can be described? The following are some of the variables that might be important in describing a Web site:

Client	Site	Pages	Interactivity
age	depth	text	controls
education	interlinks	background	navigation
nerd factor	intralinks	graphics	cues
needs	response	video	feedback
	resources	sound	input

Write an Abstract First

Let's assume that someone is interested in starting a Web site and because you are considered the resident technonerd and graphics guru, you're asked to make a proposal. Where do you start?

TASK

Creating an Abstract

To start the process of Web site design

1. Gather information. Interview those who will ultimately evaluate your efforts. Secure product literature, annual reports, newsletters, and any post or e-mail addresses or personnel lists that might be of assistance.
2. Begin by writing a simple statement of function, a description of what your Web will provide. Review the following statement:

   Statement

   Provide the means to create dynamic special interest groups.
3. Expand this simple statement into an abstract including client-site-pages-interactivity variables, as shown in the following:

Abstract

> *A Web site aimed at 30- to 40-year-old middle-level executives with limited computer background who are interested in building professional networks with others of similar interests. Clients will have entry-level browsing capabilities and access to a few, if any, supporting helper applications.*

The site will allow the client to enter their personal contact information into a database and answer a battery of questions. These questions add keywords for searching and associating. The site will maintain a listserve for communicating within the database.

From the abstract, do you start to get an idea of design, colors, fonts, and interactivity? The great thing about the abstract is that your idea isn't just bouncing around inside your head. It's out there, warts and all, where it can be evaluated and refined.

Put Yourself in the Role of a Novice User

By far the most difficult thing about design is to view what you do through the eyes of someone else, which is sort of a Gemini approach. Because you probably aren't a novice yourself, you'll have to figure out some way to introduce the naiveté of a first time user. Remember back when just about everything about computers was confusing? Assume that those who visit your site have the level of sophistication that matches the description of your client in the abstract.

TIP: Ever wonder why books look like they do? Can you imagine using a reference without page numbers, running headers and footers, or sections? Book design developed not so much because of the technology available, but because when people are looking for information they want to know where they are, where they've been, and how to get where they want to go. People have the same needs on the Web.

Knowing the Functions of Web Graphics

Graphics on the Web serve much the same function as they do in traditional publications, with a couple additions:

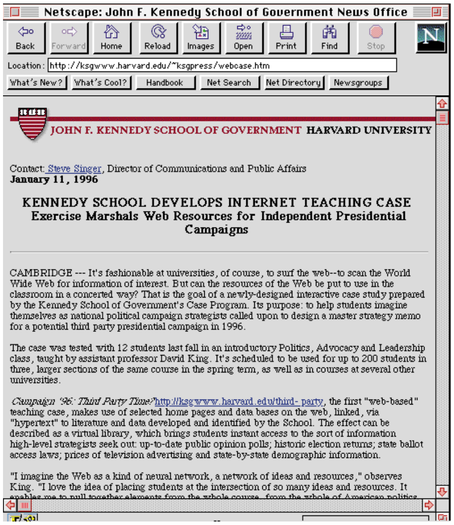
❏ A Web graphic must *add* to the communication of information. If the graphic is used strictly as an embellishment, it must generate the desired effect in the reader, not simply take up space.

- ❑ A Web graphic must be appropriate in content, scale, file format, and style. Use a line illustration to show an abstraction of reality. This allows the reader to focus on the desired information. Use a photograph when spatial, environmental, or material information is needed.
- ❑ A Web graphic must be matched to the visual and technical skills of the intended client. What is the visual acuity and competency of the client?
- ❑ A Web graphic must be tailored to the technology available to display it. If 95 percent of your potential clients have 8-bit video (more on this later in Chapter 3, “Creating Cool Graphics for the Web”), don’t waste your time with 24-bit images.

A graphic interface must be *intuitive*. Your client must easily determine how to navigate through the site and what elements are clickable. The design itself must be *coherent*. That is, it must make sense. One way to achieve this is by presenting a consistent look and feel to your pages. Different colors for the background on each page? I think not. Highly detailed background tiles? Don’t even think about it. Control panels that move around from page to page, introductions in different sizes and different text fonts, and a variety of buttons and click boxes? Not! Finally, pages must have *readability*. See Figures 1.3 and 1.4 for examples of effective readability. Your text passages should have sufficient *white space* and include descriptive heads. Your writing must be appropriate for the desired audience.

Web sites are designed to entertain, inform, communicate, and persuade. These cardinal functions largely determine the site’s structure and its graphic images.

Figure 1.3. *An example of linked text appearing inline in a paragraph from* `http://ksgwww.harvard.edu/`. *Use this feature to gain access to additional information, not as a navigation tool.*


Netscape: John F. Kennedy School of Government News Office
Back
Forward
Home
Reload
Images
Open
Print
Find
Stop
N
Location: http://ksgwww.harvard.edu/~ksgpress/webcase.htm
What's New?
What's Cool?
Handbook
Net Search
Net Directory
Newsgroups
JOHN F. KENNEDY SCHOOL OF GOVERNMENT HARVARD UNIVERSITY

Contact: Steve Singer, Director of Communications and Public Affairs
January 11, 1996

KENNEDY SCHOOL DEVELOPS INTERNET TEACHING CASE
Exercise Marshals Web Resources for Independent Presidential Campaigns

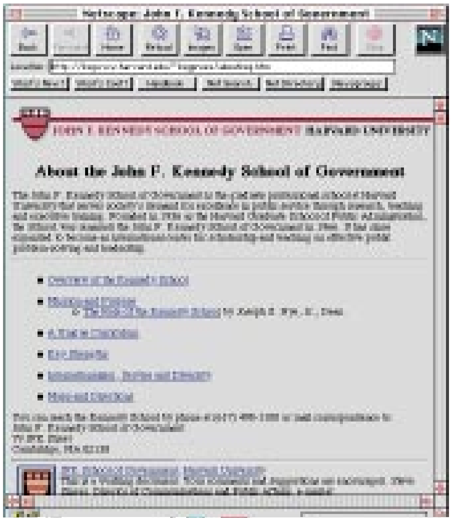
CAMBRIDGE --- It's fashionable at universities, of course, to surf the web--to scan the World Wide Web for information of interest. But can the resources of the Web be put to use in the classroom in a concerted way? That is the goal of a newly-designed interactive case study prepared by the Kennedy School of Government's Case Program. Its purpose: to help students imagine themselves as national political campaign strategists called upon to design a master strategy memo for a potential third party presidential campaign in 1996.

The case was tested with 12 students last fall in an introductory Politics, Advocacy and Leadership class, taught by assistant professor David King. It's scheduled to be used for up to 200 students in three, larger sections of the same course in the spring term, as well as in courses at several other universities.

*Campaign '96: Third Party Time?*http://ksgwww.harvard.edu/third- party, the first "web-based" teaching case, makes use of selected home pages and data bases on the web, linked, via "hypertext" to literature and data developed and identified by the School. The effect can be described as a virtual library, which brings students instant access to the sort of information high-level strategists seek out: up-to-date public opinion polls; historic election returns; state ballot access laws; prices of television advertising and state-by-state demographic information.

"I imagine the Web as a kind of neural network, a network of ideas and resources," observes King. "I love the idea of placing students at the intersection of so many ideas and resources. It enables me to pull together elements from the whole course, from the whole of American politics

A major pet peeve of ours is the overuse of linked words within a textual passage. Linked text shouldn’t take up more than 20 percent of a passage. If it takes more than 20 percent, consider breaking the text into a *jump list*.



Netscape: John F. Kennedy School of Government

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About the John F. Kennedy School of Government

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- [illegible]
- [illegible]
  - [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

[illegible]
79 JFK Street
Cambridge, MA 02138

[illegible]

Figure 1.4.
Topics in a jump list make finding information relatively easy. Note that this page from `http://ksgwww.harvard.edu/` *utilizes a nested link.*

Entertain

A major use of the World Wide Web can be to entertain. Look at the following Web sites for a cross-section of entertainment venues:

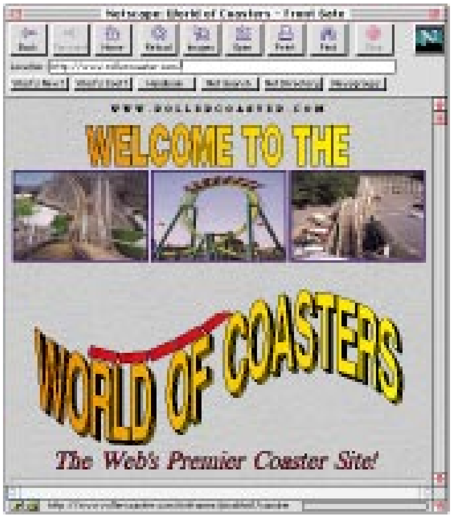
- ❑ `http://www.rollercoaster.com/`—Revisit your favorite roller coasters and catch up on the latest technology.
- ❑ `http://cartoons.ifkw.uni-muenchen.de/cartoons/`—See cartoons with a European flavor.
- ❑ `http://pathfinder.com/@@e06yINC1FwAAQCrF/KidsWB/games/coloring.html`—Get creative with Warner Brothers' interactive coloring book.
- ❑ `http://home.mem.net/~welk/elvisdiaries.html`—Read an evolving novel from the King himself.

Inform

Informing someone about products, services, or information relies heavily on graphic images because information can be, well, boring. But a site whose main function is to make information available to the client must allow substance to prevail over form. Poke into these sites to see examples of information-driven Web publications.

- ❑ `http://www.mapquest.com/`—Prepare for travel by using interactive maps of the continental United States.
- ❑ `http://espnet.sportszone.com/`—This page is a must for the sports nut.
- ❑ `http://www.cnn.com/TECH/`—Visit Cable News Network's technology home page.

- ❑ `http://plaza.interport.net/witbeer/`—A forward-thinking company realizes that beer, computers, and stock investing all mix.



Netscape: World of Coasters - Front Gate

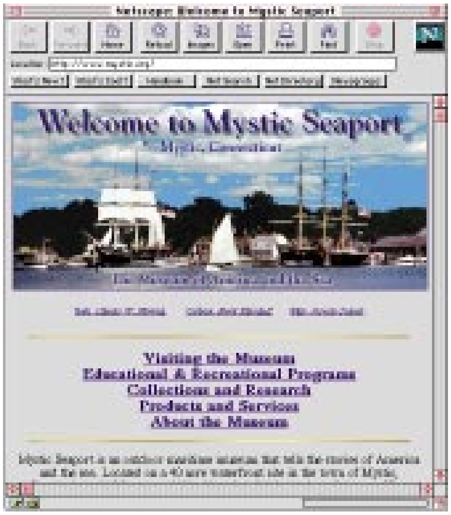
WWW.ROLLERCOASTER.COM

WELCOME TO THE

WORLD OF COASTERS

The Web's Premier Coaster Site!

Figure 1.5. *My favorite entertainment site is upside down.*



Netscape: Welcome to Mystic Seaport

Welcome to Mystic Seaport

Mystic, Connecticut

Visiting the Museum

Educational & Recreational Programs

Collections and Research

Products and Services

About the Museum

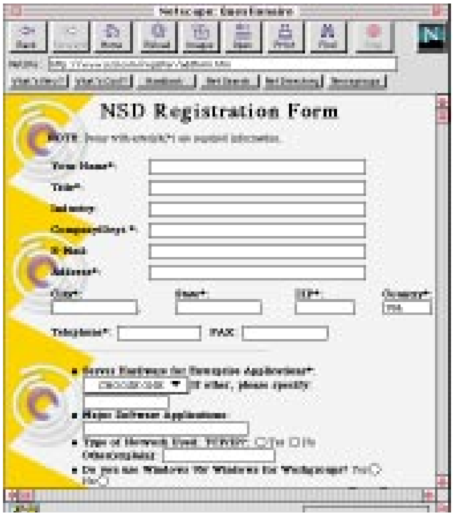
Mystic Seaport is an outdoor maritime museum that tells the stories of America and the sea. Located on a 40 acre waterfront site in the town of Mystic,

Figure 1.6. `http://www.mystic.org/` *hosts a great maritime museum with maps, photos, and drawings.*

Communicate

Communication is a two-way street. Most Internet communications ask for either decisions or keyboard input. Cruise by any of the following sites for examples of communications:

- ❑ `http://www.agfahome.com/`—This is a visually pleasing Web site with clear understandable interactions. Some links are in the form of drop-down menus.
- ❑ `http://www.fastweb.com/`—Start your educational financial aid search here.
- ❑ `http://sckb.ucssc.indiana.edu/`—Submit your computer problems and receive answers from a database of over 4,000 answers.
- ❑ `http://www.dstc.edu.au/babyOIL/`—This offers a global search engine of online information that has simple and understandable interactions.



NSD Registration Form

NOTE: [illegible]

Your Name*:

Title*:

Industry:

Company/Dept.*:

E-Mail:

Address*:

City*: State*: ZIP*: Country*:

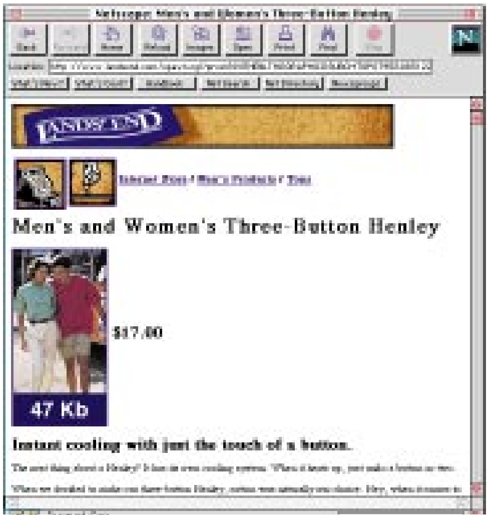
Telephone*: FAX:

Figure 1.7. *You might expect a document company to create effective Web documents as is this site from NSD, Inc. (*`http://www.nsd.com/`*).*

Persuade

Persuading someone to purchase a product or take action is a great potential for Web publications. These sites make use of persuasive as opposed to informative images. Surf these sites for examples of persuasive graphics.

- ❑ `http://www.chefpaul.com/`—Bring on the gumbo! Chef Paul Prudhomme shares his secrets. All you need is aromavision.
- ❑ `http://www.campbellsoups.com/`—This site mixes nutrition and salesmanship.
- ❑ `http://www.rockthevote.org/`—See why it's important for generations X, Y, and Z to vote. Issues and latest news of concern to young voters are presented here.
- ❑ `http://www.cache.net/dogs/`—Do your pet shopping on the Web.



Netscape: Men's and Women's Three-Button Henley

Men's and Women's Three-Button Henley

$17.00

47 Kb

Instant cooling with just the touch of a button.

The neat thing about a Henley? It has its own cooling system. When it heats up, just undo a button or two.

When we decided to make our three-button Henley, cotton was naturally our choice. Hey, when it comes to

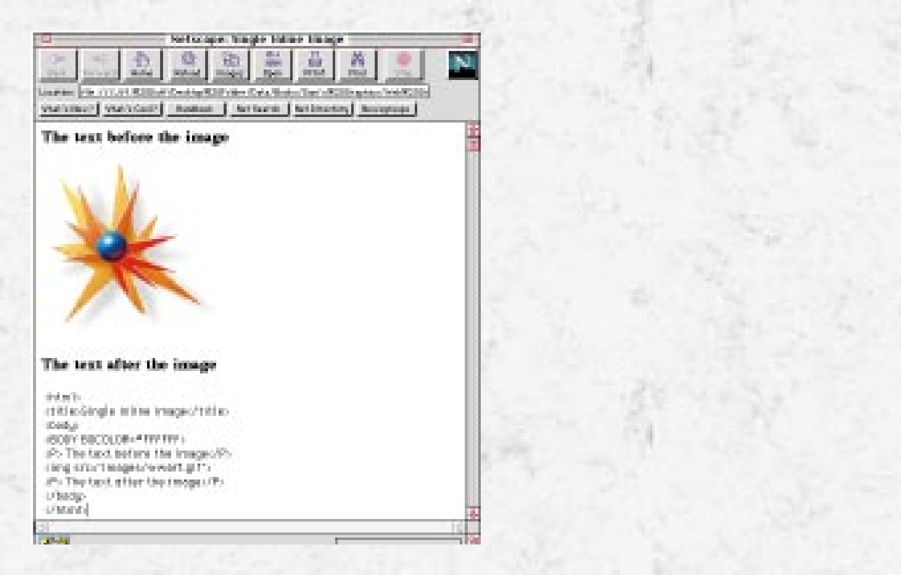
Figure 1.8.

I never can find the latest sale catalog. With Lands' End's Web site you'll never miss out on the best offers (`http://www.landsend.com/`*).*

Design First, Stylize Later

A Web publication is a design in itself. It's more than just a collection of HTML files and graphics connected by links—it's more like a place where people live. Some cities grow up without any long-range urban plan. You've been there. You can see your destination, but there's no way you can get there from where you are. There was no planning. No one asked the right questions. No one put themselves in the place of someone, stuck in traffic, wanting to get somewhere else.

WEB WORKSHOP: The most basic Web design activity is to bring a graphic onto a page inline, that is in the middle of text. This example brings the graphic `wwart.gif` from the `images` directory (which is inside the current HTML file's directory) and puts it on a white page between two passages of text.



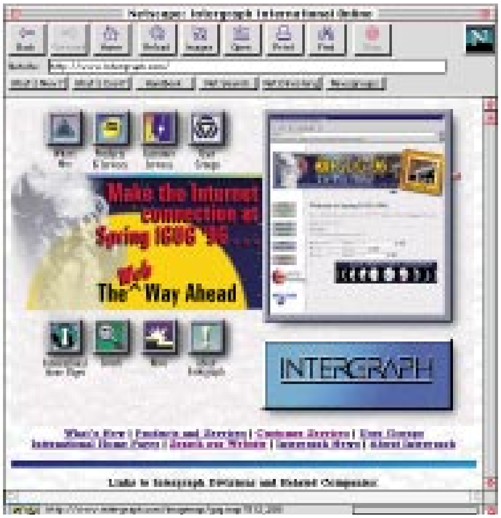
The text before the image

The text after the image

```
<html>
<title>Single inline image</title>
<body>
<BODY BGCOLOR="#FFFFFF">
<P> The text before the image</P>
<img src="images/swart.gif">
<P> The text after the image</P>
</body>
</html>
```

A Web designer is like a *cyburban planner*. You get a chance to lay out the major arteries like the connecting surface streets, zone for collections of like businesses, and protect homeowners and property values.

Design should invite a user to dig deeper into a site. The structural design in Figure 1.9 effectively shows the structure that lies behind the style.


Netscape: Intergraph International Online
http://www.intergraph.com/
Make the Internet connection at Spring IGUG '96 . . .
The Web Way Ahead
INTERGRAPH

What's New | Products and Services | Customer Services | User Groups
International Home Pages | Search our Website | Intergraph News | About Intergraph

Links to Intergraph Divisions and Related Companies

Figure 1.9.
By looking at the design of this page you can see the site's underlying structure (`http://www.intergraph.com/`*).*

HTML as a Structural Tagging Language

A *tag* is a set of text characters used for giving instructions to a formatter. In order to be distinguished from the real text you want displayed on your Web page, each tag must be set off from the text by *delimiters*. HTML utilizes less than (<) and greater than (>) characters because those are not generally encountered. Most HTML tags require an opening tag (`<TAG>`) and a closing tag (`</TAG>`). The HTML parser separates the text between the tags and acts on it based on the function of the tag.

The reason structure is involved is that you are able to check the use of the tags against a *rule set.* For example, this would keep you from using a second-level heading `<h2>` without a preceding `<H1>` tag.

HTML Is Not a Page Layout Tool

The differences here are starting to blur and all I can say is…yeeeesss! Any number of Web authoring tools are available to streamline the process. However, there is a hidden problem as it gets easier to make Web pages look like you want them to look.

Although it is not the intent of this book to be your complete reference for full-fledged industrial strength HTML, it is important to visualize the structure of an HTML document. Just remember, what you start, you usually have to finish. That is, you will usually match an opening tag `<OPEN>` with its matched closing tag `</OPEN>`. The only difference lies in the slash.

TASK

Setting Up a Simple HTML Document

HTML code is simple ASCII text that you can produce in any word processor or text editor. In Windows, you can use Windows Write. On a Macintosh, you can use Simple Text. Just make sure that you save the file without formatting (plan, raw, or unformatted). Otherwise, you'll have lots of nasty control characters that the HTML parser won't recognize.

We like to format our HTML code so that it's easy to come back to it in a week or a month and tell what's going on. The indents aren't recognized by HTML but can help identify structure. Likewise, capitalization is for your benefit as HTML doesn't recognize case.

To write a simple HTML document,

1. Create a working directory with an appropriate title such as "My HTML Projects."
2. Open a text editor, word processor, or one of the HTML editors included on the CD-ROM.

3. Create the following text file:

```
<HTML>
    <HEAD>
    <TITLE> Simple HTML Page </TITLE>
    </HEAD>
    <BODY>
        <H1>The Page Heading</H1>
        <UL>
            <LI>First Item
            <LI>Second Item
            <LI>Third Item
            <LI>Fourth Item
        </UL>
        <H1>Page Footer</H1>
</BODY>
</HTML>
```

4. Save the text file as text-only, unformatted text, or ASCII text with the HTM extension (`filename.htm`).

5. Open your browser and choose File | Open File. You should see a page shown in Figure 1.10.

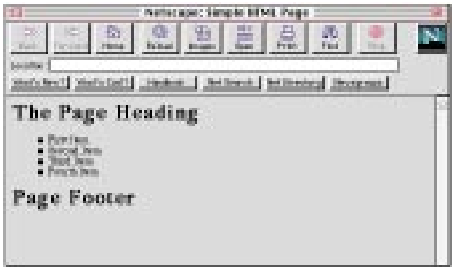


Figure 1.10.
The page as displayed in a browser.

These tools can be grouped into three general categories:

- ❑ HTML word processors. These utilities automate the insertion of HTML tags into text files (for example, `BBEdit`).
- ❑ HTML filters or extensions. Word processors, layout programs, spreadsheets, and databases pass their pages, art, tables, and charts through specialized export filters that create appropriate HTML code (for example, Quark HTML extension, PageMaker 6).
- ❑ HTML layout programs. These programs are the first wave of Web processors. They place a page layout interface between you and the HTML code, sort of like Adobe Illustrator does with PostScript (for example, Netscape Gold Editor, PageMill).

A major theme throughout this book is the importance of *structure* in Web publications. As authoring tools evolve, it is a natural temptation to bypass the front-end design and get right at making pages. Hold on! The time you spend in planning a design that accomplishes the site's intended function is well spent. It makes what you do later more efficient.

Planning an Effective Design

Okay, I admit it. I'm a planning freak. I plan things that most people think are controlled by forces of the universe or laws of nature. But at least I understand this peculiarity and can apply techniques I learned in therapy to overcome the heartbreak of over-planning.

Letting sites have lives of their own—develop their own style and structure—is a little like letting children grow up without parental supervision. Some kids turn out great, most turn out okay, and some kids, as you might imagine, are disasters.

NOTE: Overplanning can take the life and spontaneity out of a project. A good example lies in adobe architecture of the Southwest. Adobe dwellings often start out modestly (sort of like your Web site) with a single room. As a family grows, rooms are added, stories are raised, and a door is punched in a wall. This results in a style that at best can be called unique: nonstandard, nonsymmetrical, nonlinear, and nonuniform. Contrast adobe architecture with the linearity of a New England saltbox where windows and doors are aligned and symmetrical. It's difficult, but not impossible to plan spontaneity and uniqueness.

Just Like Planning Your Vacation

I've tried to use an architectural metaphor to describe design in Web publications. It always has helped me, but maybe you could compare Web and vacation planning. Both have many of the same constraints. Make your own Web correlation.

How much time do you have? If you have one day, you can think about a mini-vacation at an out-of-town motel. Have four weeks? Now we're talking!

How much money do you have? If you have the bucks, you can go anywhere for a weekend. Go ahead, hire a Lear jet!

No money? How's the old family station wagon? Is it up for 3,000 miles? How's your driving? Can you crank out 1,000-mile days?

Imagine starting on a vacation not knowing how long you could be gone, how far you wanted to go, or whether you had the equipment to get there. It's not for me, but then I like to plan.

TASK

Planning an Initial Design

The planning stage of Web development should be content independent. This is tough because everyone's natural inclination is to get the snappy graphics up on the screen as soon as possible. If you start worrying about graphics and text from the onset, your site may be dead on arrival—it looks good but doesn't function. In order to plan an initial Web site design you should,

1. Gather information about the host (the person, company, group), the client, the client's products or services, and the proposed Web provider.
2. Gather information about the client. Profile the client. Get to know how they think. How do they like to get their information? What do they want to do with it once they get it?
3. Gather Web resources. This includes utilities for writing HTML, creating and editing graphics, and capturing and editing sound and video, if applicable. The first place to look is on your Web Workshop CD-ROM included with this book.
4. Spend some time on the Web getting ideas. Think of this as creative calisthenics for your mind. If you have compiled a swipe file, get it out.
5. Use 3×5 cards, each representing a page. Pin them up in spatial relationships. You'll be shown strategies to do this in Chapter 2, "Designing an Effective Web Site."
6. When you have a strong mental picture of what the site looks like structurally, create a simple working shell like the one started in Figure 1.10. You'll find a selection of HTML templates on your Web Workshop CD-ROM that can provide a starting point for your pages.

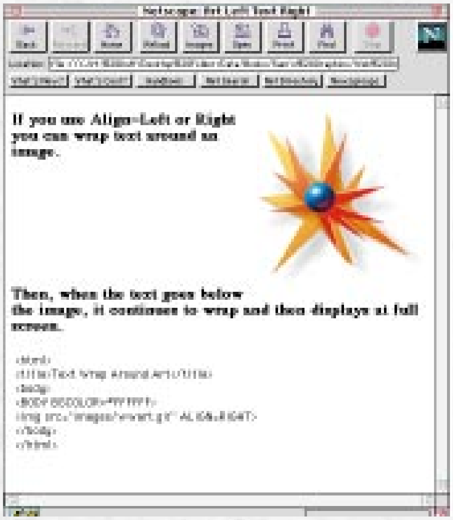
Would You Leave Without a Map?

I admit I've always liked maps so you won't be surprised that I like Web site maps. I even like maps of Web sites *in the Web sites themselves*. As a Web designer, you will need a mental map of your Web terrain. As a client, a map of the Web speeds your route to the information and reduces the winding around that is so typical of Web sites.

Enhancing Your Design with Great Graphics

To conclude, for graphics to really be effective in a Web publication, their use needs to be planned from the start. A graphic image should present information that text or numbers do not present well: spatial relationships, operations, colors, and visual recognition.

WEB WORKSHOP: By aligning a graphic either right or left you can cause text to flow up to and then around the image. Use HSPACE to buffer the graphic if text gets too close. Of course, all this changes if you resize the browser window.



If you use Align=Left or Right you can wrap text around an image.

Then, when the text goes below the image, it continues to wrap and then displays at full screen.

```
<html>
<title>Text Wrap Around Art</title>
<body>
<BODY BGCOLOR="FFFFFF">
<img src="images/wrart.gif" ALIGN=RIGHT>
</body>
</html>
```

In traditional publishing (like this book), figure and illustration placement is paramount because pages have finite dimensions. The discussion of a figure and the location of the figure must be on the same or facing page, or otherwise effectiveness is reduced. Web pages differ in that a figure is just a link away. However, the same considerations apply: thought is broken and the associated text is removed from the figure. In Chapter 8, "Creating a Map of Your Web Site," you'll learn techniques for minimizing the disturbances in information flow caused by jumping to a linked graphic.

Next Steps

Now that you have been shown different ways to look at the design of a Web site and its graphics:

❑ To learn how to make a map of a Web site, see Chapter 8.

❑ To view a portfolio of effective Web graphics, see Chapter 6, "Presenting Effective Web Graphics."

❑ To better understand emerging Web styles, see Chapter 10, "Understanding Form and Substance: The Dilemma of Web Style."

Q&A

Q: Why has it taken so long to have great layout tools for Web pages? Why did I have to pound HTML code for so long?

A: The culprit is the lack of display language across hardware and software platforms. If one display language had surfaced as the default—like display PostScript, the standard adopted by NeXT Computer, front-end tools could have been made to uniformly address the screen across all computers. The only standard was ASCII text. It let anyone, on any computer, using any text software, write instructions that could later be interpreted and displayed. This problem hasn't changed; we've just found ways around it.

Q: There are all sorts of neat things I want to do on my Web pages, but my browser won't handle them. What should I do?

A: Design for the lowest capable browser you anticipate will be accessing your Web site. If you can't display tables, others can't either. What are you going to do for them? You can still deliver effective and attractive sites.

Q: I find it hard to put into words what I want a page to do. You say that it's important. How can I get better at this?

A: Start with word lists. Use 3×5 cards and jot down keywords that describe as many of the aspects or criteria for each page as possible. Then, pin them up on a wall and move them around, looking for similarities and linkages. You should be able to describe not only each page, but the functional structure of the entire site as well.

Q: I want my Web page to stand out. How can I do that?

A: A Web page is just like any publication—you have about 30 seconds to convince the reader that there is information of interest inside. Two elements contribute to this: *visual appeal* and *visual clarity*. Graphics play a large part in both these factors. That's why splash graphics are so important. It's also why the first page of your site needs to show exactly what can be found within and present an intuitive way to get there.

CHAPTER

TWO

Designing an Effective Web Site

Surfed the Web lately? Let's paint a word picture of the typical cyberspace experience. Imagine jumping into your car and setting out for a leisurely drive. You have no plans, no maps, and no destination. You quickly find yourself on an interstate highway, a really big one. Cloverleaves, ramps, roads going here and there make knowing where you are, and more importantly, where to get off extremely difficult. It's okay, remember? You have no plans, no maps, and no destination.

Unfortunately, most of us that use the Web aren't just sight-seeing, although it's nice to do once in a while. We're usually looking for that all-important data or program, critical graphic, or much-needed helper application or plug-in, and we want it now.

Effective Web site design begins with effective navigational design. Wait a minute, I thought this book was about Web graphics? It is! Before we can begin to talk about Web graphics in more detail, we need to discuss navigation, or you'll end up with a cloverleaf and no off-ramps on one page!

In this chapter, you'll

- □ Learn what a splash page is and how to effectively use graphics on it to catch people's attention and keep them coming back for more
- □ Learn how to use graphics and an effective structure to let users know where they are at, where they can go, and how they will get there
- □ Learn how to use flowcharts and other graphics to help you plan the navigational structure of your pages
- □ Discover the advantage of page shells and how to create and use them

NOTE: The ease of creating Web pages has created a plethora of intertwined pages with limited aesthetic or informational value. Thus, history repeats itself. We can all probably remember what happened with the advent of computer desktop publishing. Everybody ran out and bought a Macintosh (where it all started), a primal version of software such as PageMaker or Microsoft Publisher, and a printer. We had brochures, flyers, advertisements, and the like being produced that had the design finesse of Conan the Barbarian. Sure the message was conveyed, but euh! It was messy. Many people began to realize that there was more to desktop publishing than the hardware or software. We realized that craft and skill are equally, if not more, important. Many discovered that there are underlying skills that contribute to designing effective printed media, and that there was more involved than acquiring a tool. There must be skill behind the tool. We are currently in that *discovery* phase again; it's a different medium but the same principle.

Well, maybe it won't be that bad, but one of the main reasons users don't find what they're looking for in a timely manner is due to poor navigational design. It is also a main reason why newcomers don't consider the Web to be a vital source of information and why experienced users are wary of searching very long at a poorly designed site.

Aside from the content and graphics you plan to provide at your site, navigation is of primary importance. How will users know where they're at or where they're going in your structure? What graphics or screen elements will tie your pages together and give them a coherent look? How will you efficiently and effectively present the users with what they are looking for?

That's what this chapter is about. This chapter focuses on some key organizational issues to help you preplan your pages. This includes things you can do on paper or in your head before you start spewing code or pushing pixels. I'll also present several key issues to consider as you're laying your pages out so you don't end up with a spaghetti site (like the interstate highway system of New York City). The chapter concludes with a discussion on how to create template pages so that you can reuse parts of your site.

Put Your Hook on the Splash Page

So you're putting your pages together, and you want your pages to be effective. You want people to frequently visit your site. You want people to find it interesting and informative, worthy of a bookmark. In communication, the first impression is important (see Figure 2.1).

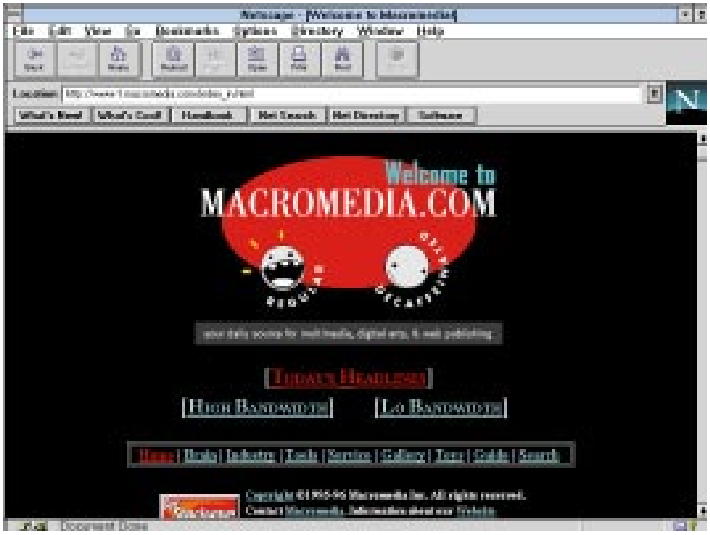

Netscape - [Welcome to Macromedia]
File Edit View Go Bookmarks Options Directory Window Help
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
Welcome to
MACROMEDIA.COM
TODAY'S HEADLINES
HIGH BANDWIDTH
LO BANDWIDTH
Home | Books | Industry | Tools | Service | Gallery | Tours | Guide | Search
Document: Done

Figure 2.1.
An effective sample splash page.

The first page your audience sees, the splash page, is vitally important. The issue of how important is based on your target audience and your site's purpose. The suggested abstract from Chapter 1, "Making Effective Browser-Independent Graphics," should help define these variables, but the question becomes how can you capture the essence of your abstract into something that will hook your audience on the Web?

NOTE: I'm reminded of the billions of dollars spent on advertising each year, most of which is spent on developing the idea for the advertisement. Don't worry if it takes a while to develop your splash page and associated graphics. Take your time and consider your alternatives. Of all pages, this page is the most important, particularly if you're developing commercial sites. The layout, design, and atmosphere of this page are critical because it sets the tone for the rest of the site.

The key to splash page development is to anticipate the needs of the prospective user. Most advertising dollars are spent in market research—knowing the audience, finding what appeals to them, and what they want. Your abstract should help define these three variables.

What is at your site that users want? This page is the place to let the user know what is there. Much like a table of contents, the splash page gives the user a visual overview of the site, such as the one shown in Figure 2.2. Present what is at your site plainly and clearly. However, plan to make it more than a bulleted list or string of hot-linked text.

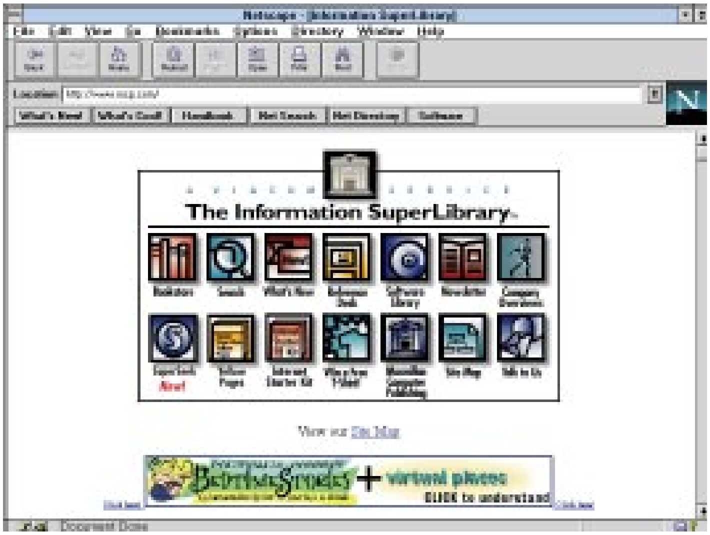

Netscape - [Information SuperLibrary]
File Edit View Go Bookmarks Options Directory Window Help
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
The Information SuperLibrary
New!
View our Site Map
virtual places
CLICK to understand
Document: Done

Figure 2.2.
Presenting the contents of a site via a splash page.

The splash page also gives the users a sense of what the site is about. The look and feel of your first page should support your site's purpose and set the atmosphere, as shown in Figure 2.3. This is conveyed through the design layout and graphics. As you're designing your splash page, use graphics that contribute. All too often a single graphic dominates the splash page, which can leave the user waiting for endless periods of time.

TIP: How many images should you include on your pages? Graphic file size and network speed ultimately determine how fast your browser lets you view images on the Web. A graphic file of 30KB, such as a bullet or small image, can take up to 30 seconds using a 14.4Kbps modem, 10 seconds using a 28.8Kbps modem, or less than a second using a direct network connection with 1.5Mbps throughput. However, a 100KB–200KB image file, roughly one half of the screen, requires 300 seconds (14.4Kbps), 180 seconds (28.8Kbps), or 1 second (1.5Mbps).

One of the most frustrating occurrences is waiting for a page to load all its graphics. If the splash page takes too long to load, odds are the user will stop the load or head for a different site. Alternatively, plan to include at least a logo or moderate image to increase your page's visual appeal.

There should be a careful balance between the amount of graphics and text on a page. Avoid graphical overkill. The more graphics, or the larger the graphics you use on the splash page, the longer the user has to wait and greater the likelihood that he'll stop loading the page.

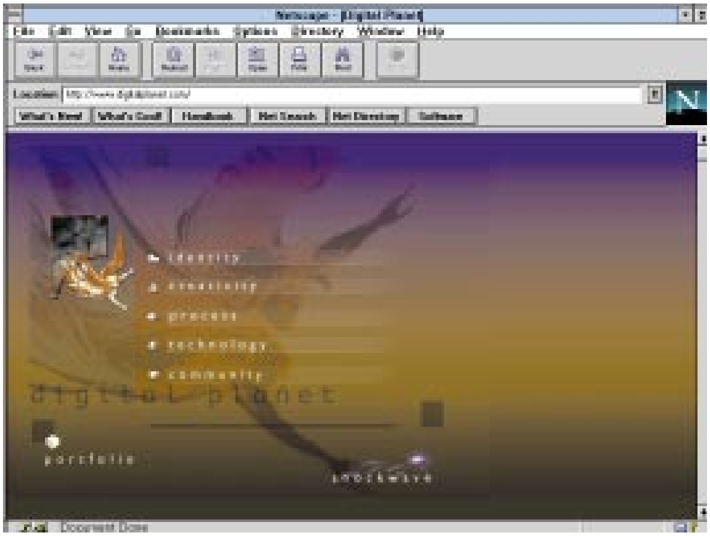

Netscape - [Digital Planet]
File Edit View Go Bookmarks Options Directory Window Help
Location: http://www.digitalplanet.com/
What's New! What's Cool! Handbook Net Search Net Directory Software
identity
creativity
process
technology
community
digital planet
portfolio
shockwave
Document: Done

Figure 2.3.
The splash page sets the tone of the site.

Knowing Where You Are in a Web Site

Many people, including myself, have begun to use a new software package and have gotten lost or had the machine lock up. Immediately, we lose our sense of comfort with the application. At the extreme, we may give it the three-finger salute or look for the button on the back of the Macintosh. On the Net we simply dodge the site and go somewhere else. Allowing the user to keep his or her sense of direction and control is important. A site listing on the splash page is a start, but there must be continuity to the pages. This could include a navigation bar that is on all pages or a constant link back to the splash page (see Figure 2.4). Another method is to provide access to a visual map of all the pages at the site, which allows the user to immediately go anywhere with a click of the mouse.

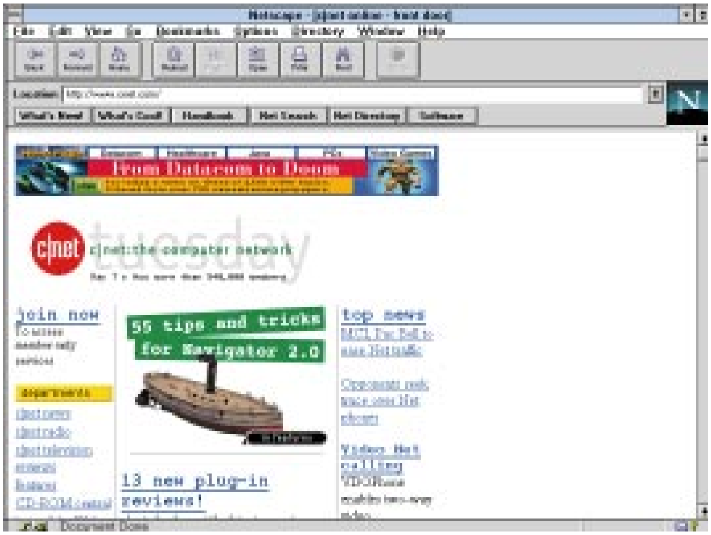

Netscape
File Edit View Go Bookmarks Options Directory Window Help
What's New! What's Cool! Handbook Net Search Net Directory Software
From Datacom to Doom
c|net: the computer network
tuesday
join now
55 tips and tricks for Navigator 2.0
top news
departments
Video Net calling
13 new plug-in reviews!
Document: Done

Figure 2.4.
Navigation bars and continuity.

TASK

Designing Consistency in Your Web Site

Each Web page you create is a virtual interface, a means of interacting with the computer and ultimately with the information at the site. Consistency across these pages not only makes users feel more comfortable with your site, but also gives them a sense of location and helps them find what they are looking for more easily. To help create consistency across your pages:

1. Design a graphical element that represents your Web site. This can be a logo, text element, or product (see Figure 6.1). Open Text's (`http://www.opentext.com/`) header bar and logo at the top of the page becomes a consistent element across all pages to bring both consistency and unity.
2. Establish section unity by designing graphic elements of the same color. Make your logo green in the financial section, red in the hot products section, and blue in the personnel section. If you do this, a change of color will connote movement to another section or topic.
3. Establish subordination by scaling the graphic. The larger the graphic, the more important the topic (the closer to the splash or home page). The smaller the graphic, the deeper into the Web structure (the further away from the home page).

In addition to making the user more comfortable, graphical elements that are consistent from page to page increase the loading speed of your other pages. When most browsers load an image, they *cache* the information—in other words, the browser writes it to your hard drive. This means it only downloads the graphic the first time it is used. All subsequent pages that use the element pull it from the cache on the hard drive rather than loading it from the Net. Consistently reusing your graphics is a smart practice both from a design and systems standpoint.

Page continuity is a concept that can be explained using some of today's suites of applications as an example. What is one of the main selling features behind Microsoft's Office products? Note that the interfaces of each product are strikingly similar. The idea that familiarity with one interface allows users to more easily use another product in the series is the key. This type of continuity is what you want to strive for in your Web pages. Continuity is developed by consistent elements, graphical or not, that remain constant from page to page. Techniques for establishing this continuity are covered in detail in Chapter 9, "Providing Visual Cues to Web Navigation Through Page Design."

Getting Where You Want to Go

From its beginning, the Web has been based in hypertext—small text passages that take you from place to place. Evolution, however, has allowed the Web to grow and mature from Gopher text options (for those who liked to use it) to visually appealing pages that pique our interest. Buttons, images, and drop-down menus, in addition to hypertext links, fill our toolbag with options for navigation through the cyberlandscape (see Figure 2.5).

NOTE: As computer capability has increased, user-interface design complexity has also increased. This has been a natural progression from hypertext, to clickable graphics, to full-blown interfaces being used today. The ability to develop effective interfaces is slowly becoming a requirement in Web site development, and graphics play an important role. As Internet hardware and content continue to evolve, interfacing on Web pages will become even more important. To find out more about human–computer interaction and Web development, check out some of the latest information at one of the following addresses:

`http://is.twi.tudelft.nl/hci/`

`http://info.acm.org/pubs/magazines/interactions/`

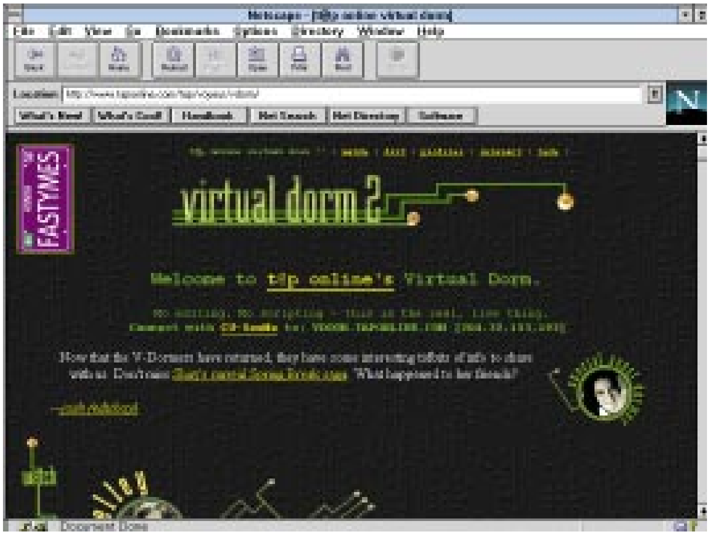

Netscape
File Edit View Go Bookmarks Options Directory Window Help
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
FASTYMES
virtual dorm 2
Welcome to t@p online's Virtual Dorm.
Document: Done

Figure 2.5.
Hypertext links, buttons, and images.

The typical response of new Web designers is to fill the page with text links and a few graphics. However, a page used in this way is not much different from a Gopher menu and is just about as interesting. A key point to navigation on the Web is not only consistency but also ingenuity. Using creative ideas like those shown in Figure 2.6, sites can be created with new twists to commonplace pushbuttons and switches. In interactive page design, as with many things, necessity is the mother of invention.

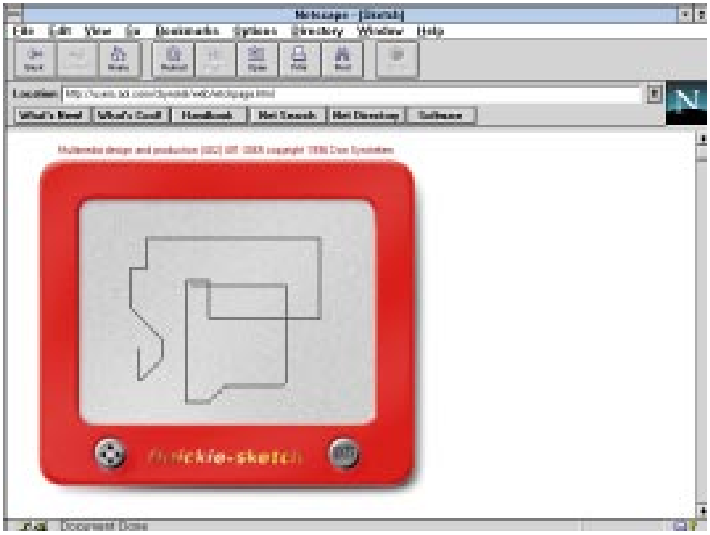
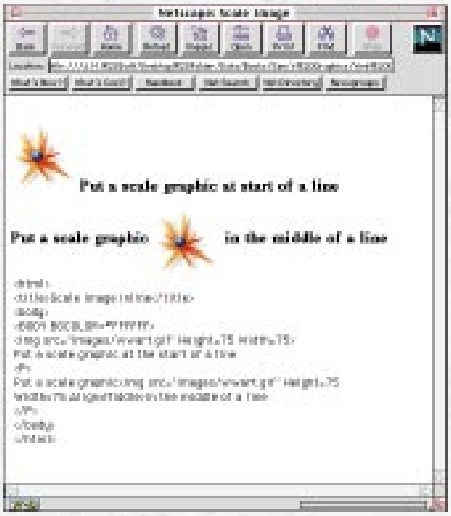

Netscape - [Sketch]
File Edit View Go Bookmarks Options Directory Window Help
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
ckie-sketch
Document: Done

Figure 2.6.
Ingenuity adds a new twist to traditional ideas.

WEB WORKSHOP: Scaling a graphic means entering the exact horizontal and vertical pixel sizes. Use `TOP`, `MIDDLE`, and `BOTTOM` alignment to put the graphic where you want it. If you want the graphic in the middle of a line of text, insert the `<IMG SRC>` tag at the exact place in the text that you want the graphic to appear.



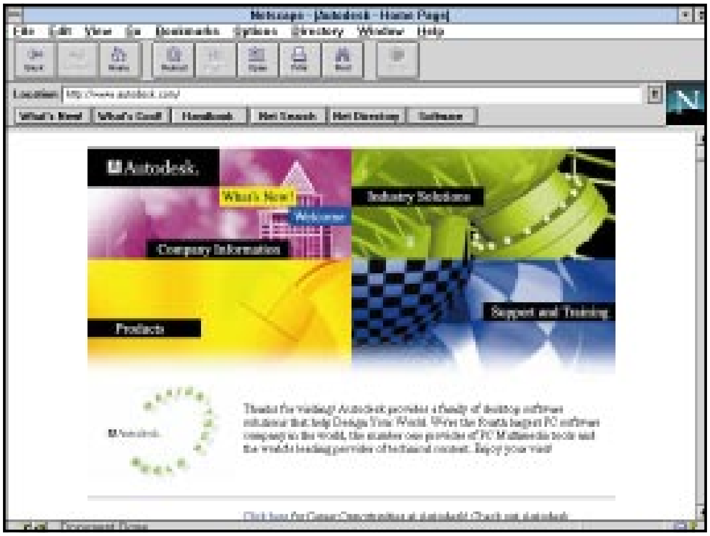
Put a scale graphic at start of a line

Put a scale graphic in the middle of a line

```
<html>
<title>Scale image inline</title>
<body>
<BODY BGCOLOR="FFFFFF">
<img src="images/wwart.gif" height=75 width=75>
Put a scale graphic at the start of a line
<P>
Put a scale graphic<img src="images/wwart.gif" height=75
width=75 align=middle>in the middle of a line
</P>
</body>
</html>
```

The placement of navigational items on your pages is important. Most users have been conditioned to look for main navigation items at either the top or bottom of the page. Usually a bar or series of *inline images* or *icons* is placed in these areas allowing the user to navigate through the information (see Figure 2.7). Inline images are graphics that are included in the Hypertext Markup Language (HTML) coding. They appear like images inserted into a Word document.

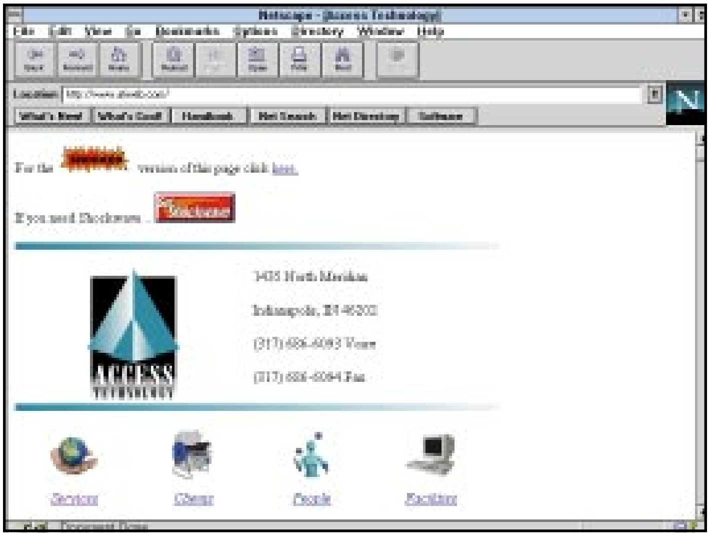
Icons, shown in Figure 2.8, are usually small graphics that depict something, such as a function that goes to the next page. An example would be an arrow pointing left, which would represent the action of taking you to the previous page. These icons actually can be anything, but be careful. The more abstract the graphic, the harder it is to make the connection to its function.


Netscape - [Autodesk - Home Page]
File Edit View Go Bookmarks Options Directory Window Help
Location: http://www.autodesk.com/
What's New! What's Cool! Handbook Net Search Net Directory Software
Autodesk
What's New!
Welcome
Company Information
Industry Solutions
Products
Support and Training
Autodesk
Document: Done

Thanks for visiting! Autodesk provides a family of desktop software solutions that help Design Your World. We're the fourth largest PC software company in the world, the number one provider of PC Multimedia tools and the world's leading provider of technical content. Enjoy your visit!

Click here for Career Opportunities at Autodesk! Check out Autodesk

Figure 2.7.
An example of an inline image.


Netscape - [Access Technology]
File Edit View Go Bookmarks Options Directory Window Help
Location: http://www.atech.com/
What's New! What's Cool! Handbook Net Search Net Directory Software
Shockwave
ACCESS TECHNOLOGY
Services
Clients
People
Facilities
Document: Done

For the version of this page click here.

If you need Shockwave ...

3435 North Meridian

Indianapolis, IN 46208

(317) 686-6093 Voice

(317) 686-6094 Fax

Figure 2.8.
Examples of icons.

Knowing How to Leave

It may seem silly to mention, but as you're designing your page don't forget that information provided on the Web is nonlinear. Users not only want to get into your information, but they also want to be able to get back out. It is important to provide a means for them to go back to the previous page. Netscape has a backward button, but effective design will provide a means within the page itself to go backward through the information.

Use a Diagramming Approach to Web Design

When I started designing my own Web pages I thought, "I don't need to diagram my site structure. I know what I want to create. Diagrams are for programming propellerheads." Well, I was wrong. Site diagrams, shown in Figure 2.9, are one of the most useful planning tools available; no software is required.

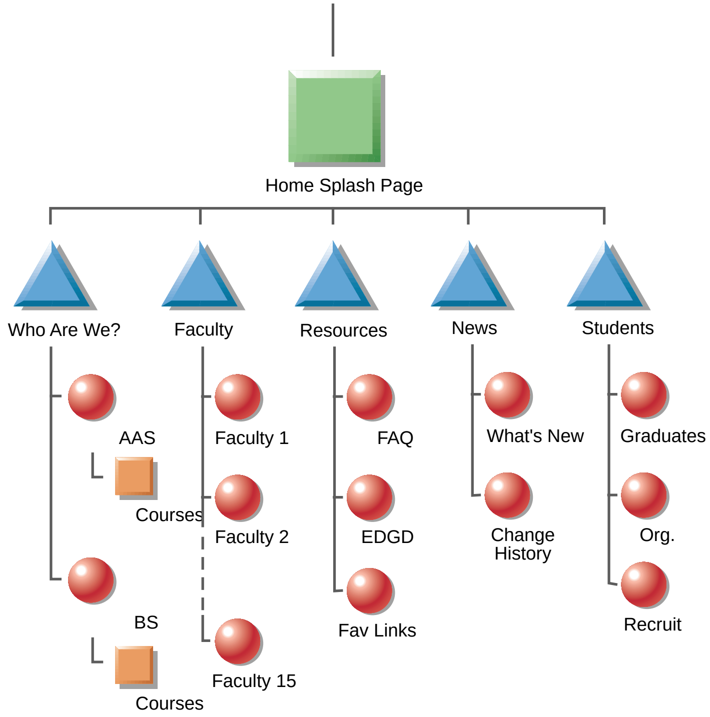


Figure 2.9.
Site diagrams give you a visual road map of your site structure.

Keep in mind that site diagrams are rough sketches. These are not ornate, polished drawings. Most of these are done on tissue napkins over colleague lunch discussions. The idea behind them is to present a point of discussion in group settings or to simply help you organize your thoughts.

This biggest advantage to site diagrams is being able to view your site's structure. Diagrams give you an idea of where each page is and what links or navigational graphics each page will need. The diagram provides a road map of your site, making it easier to code and manage.

When you start punching in code, site diagrams also serve an additional purpose. The HTML `<A HREF>` tag requires you to enter absolute locations for files. In other words, you must specifically state where a file is and what it is called to be able to link to it. The case is also important because most *http servers* are case sensitive. Because you can see each page and its particular name on your site map, it is extremely helpful to have it with you as you're crunching the code for your page links.

NOTE: An additional advantage of the site diagram is that of file management; a task we must all do. Looking at a site diagram, it is easy to see visual groupings of files. This is most noticeable if you're setting up an organization's site. It is advantageous, from a management perspective, to create a directory structure on the server to hold the visual groups of pages. A common, but inadvisable practice, is to put all the pages in a single folder on the server, which makes site maintenance a memory task more than a management task. Try to use the site diagram as a map for not only the pages themselves, but also as a way the digital files can be arranged on the http server.

TASK

Creating a Simple Web Site

A pencil is a diagramming tool that requires no software. What a concept! Sketching can be used as an aid to help lay out each page. Three main items describe individual pages: navigational items (hypertext or graphical), graphics, and text. So where do you begin? To begin creating a simple Web site:

1. Begin by blocking out areas on the page for each of these items (see Figure 2.10). This helps achieve a consistent look across your pages.
2. Leave some whitespace (see Figure 2.11). As you're blocking out your template, this basic principle will help you achieve a professional design. Don't fill every nook and cranny with content. Some of the best designs I've seen had to do more with what wasn't there than what was. This layout becomes your sketching template.
3. Once you have created the block shapes, make copies of this template and use it to sketch the remaining pages. This forces you to conform all your pages to the layout. You'll be surprised to find that it will make your pages look more professional, as well as more consistent. Once you've completed a finished sketch, it should look similar to Figure 2.12.

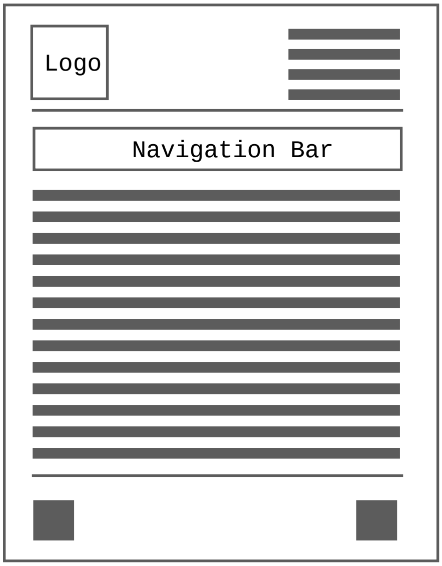


Figure 2.10.
Page diagrams help you lay out a page and get a consistent look.

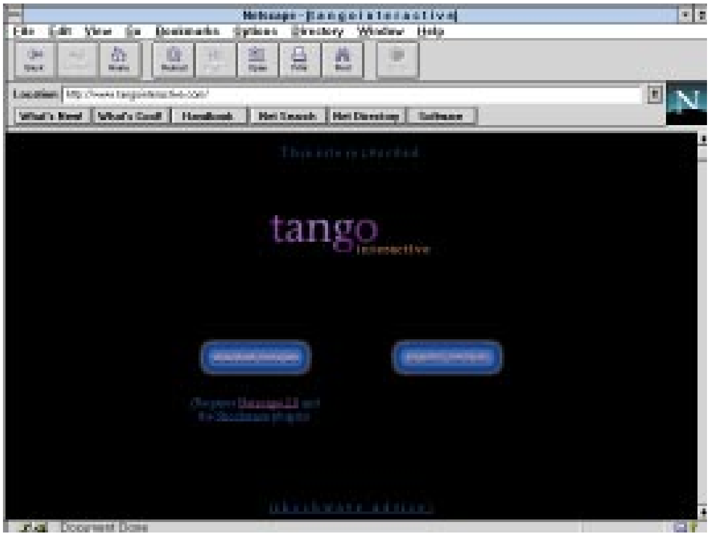


Figure 2.11.
Effective use of white-space on a page.

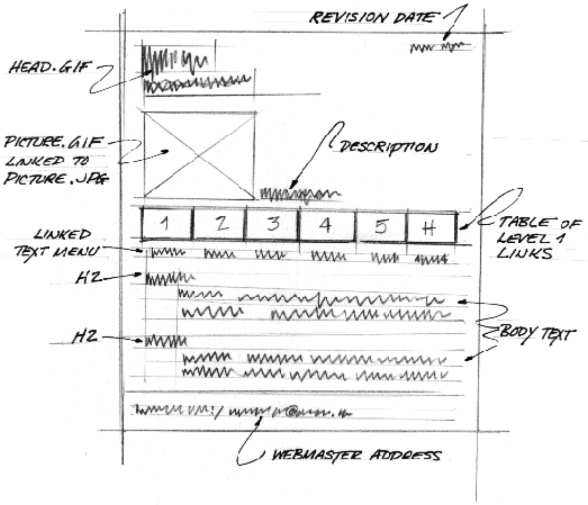


Figure 2.12.
A finished freehand page sketch.

Structured Versus Unstructured Design

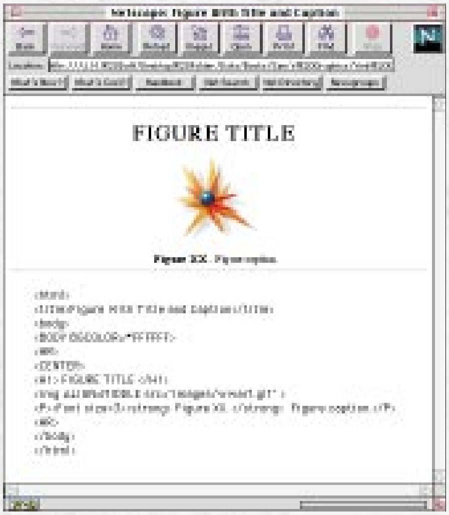
Daily planners are a wonderful thing. They help people organize their lives by helping them construct what they will be doing each hour of the day. These wonderful memory aids not only help them accomplish large tasks, but they also help people remember the things they commonly forget, such as anniversaries, birthdays, and important events. I know I would be lost without mine.

Structuring a page or site without a diagram is much like living without a daily planner. You can accomplish the same tasks without it (that is, design a page or site), but why would you? Why take the chance of forgetting something or leaving a structure to chance? Diagramming is a simple task. Much like a daily planner, diagrams help you organize the items that compose the site or page design. It also reminds you of what you need to do concerning site design.

A Web Site Is Not a Book

Web design is much more than traditional books on the Web. The power that HTML gives us is much more than simple page turning. Many of the analogies we use to describe the Web are based in traditional publishing. It's what we're used to, and it's something we can all relate to. However, Web sites can be and should be much more.

WEB WORKSHOP: Figures normally don’t just sit out there. Usually, a figure title precedes the image, and a caption (sometimes with a figure number) follows. In this example, horizontal rules `<HR>` are used to set the figure off from the rest of the page. Also, the Figure XX are given added emphasis with the `<strong>` tag.



Netscape: Figure With Title and Caption

FIGURE TITLE

Figure XX. Figure caption.

```
<html>
<title>Figure With Title and Caption</title>
<body>
<BODY BGCOLOR="FFFFFF">
<HR>
<CENTER>
<H1> FIGURE TITLE </H1>
<img ALIGN=MIDDLE src="images/[illegible].gif" >
<P><font size=3><strong> Figure XX. </strong> figure caption.</P>
<HR>
</body>
</html>
```

Interactive technologies, whether Web- or CD-ROM–based, allow us to communicate the way we were meant to, as multimedia communicators. We long for audio, video, and graphics. So is it unusual that we’re attracted to Web- and CD-ROM–based media? Hardly, but there is one other item that makes it attractive. Interactive media is powerful because of the interaction between the user and the information. Educators have been aware of this for many years. Retention, interest, and motivation increase if you can interact with the information. Interactive media success, whether Web- or CD-ROM–based, hinges on these characteristics.

NOTE: Let's get theoretical for a minute. Why have traditional publications such as books or magazines remained the main means of communication? Why does the binding of magazines and books always occur on the left side? Why do we read left to right? Why do we print in landscape rather than portrait for text documents? All these parameters are based on rules for text-based communication. The rules don't change, so we find it easy to communicate and receive information. We don't have to constantly relearn how to read a magazine.

So why has digitally based media had difficulty replacing traditional media? Hmmm, good question. It's because the rules are still being defined. Interactive design rules are in a state of flux, and we are slowly defining them. Items such as consistency and continuity help make digitally based media a contributor rather than an inhibitor of the information we're trying to convey. It's important that we follow the rules that we know about good interactive media so that our information tools effectively communicate. It's the information at your site that people are interested in, and it's your job to make it as easy for them to find as possible.

Building a Working Shell

In Microsoft Word, file templates are built to reduce the redundant task of setting margins, fonts, paragraphs, and other formatting items. In Adobe Illustrator, illustration templates can set standard colors, line attributes, and other illustration characteristics. In the HTML world, templates or page shells help reduce the laborious task of recoding something we did in the past, but they also help to force consistency into what we do.

The Elements of a Functional Shell

The contents of a shell will be determined by your content and design. Generally items such as navigation buttons or inline images, rules, and specific font sizes or types will be predefined within your shell. This way the only thing you have to enter to create new pages is the new content. To give you an example, imagine you are in charge of putting together a template page for all the employees at your particular company so that all they have to enter is their specific data. Your template page would probably have a logo, some design and navigational elements, and holes for each employee to enter his or her specific data. Using a template, the look and structure of all the pages should end up being the same. In the long run, template pages help create a thread of consistency and reduce a lot of redundant coding.

Building a Web Site Shell

Consider the following HTML code to build a home page with links to four sections. In each of the sections, you can link to any other section or back to the home page. This is all the code needed to build a functional shell. The section pages are copied and pasted from the home page and edited as needed. If the shell works, fill 'er up with text and graphics! (See the Web Workshops in this and other chapters for tips on including graphics on your pages.) What follows is an example of a very basic Web structure having a home page and four main sections:

❑ The home page's title and top heading are called `Home Page`. A simple jump list is used to control navigation between the home page and the four Level 1 sections:

```
<!-******************** Home Page **********************->
<HTML>
    <HEAD>
    <TITLE>Home Page</TITLE>
    </HEAD>
    <BODY>
        <H1>Home Page</H1>
        <UL>
            <LI><A HREF="Section1.html">Section 1</A>
            <LI><A HREF="Section2.html">Section 2</A>
            <LI><A HREF="Section3.html">Section 3</A>
            <LI><A HREF="Section4.html">Section 4</A>
</BODY>
</HTML>
```

❑ Each section has an appropriate title and top heading. The jump list is edited to remove the current section and to add a link back to the home page:

```
<!-******************* Section 1 *************************->
<HTML>
    <HEAD>
    <TITLE>Section 1</TITLE>
    </HEAD>
    <BODY>
        <H1>Section 1</H1>
        <UL>
            <LI><A HREF="Section2.html">Section 2</A>
            <LI><A HREF="Section3.html">Section 3</A>
            <LI><A HREF="Section4.html">Section 4</A>
            <LI><A HREF="Home.html">Home Page</A>
</BODY>
</HTML>
```

```
<!-******************* Section 2 *************************->
<HTML>
    <HEAD>
    <TITLE>Section 2</TITLE>
    </HEAD>
    <BODY>
        <H1>Section 2</H1>
        <UL>
            <LI><A HREF="Section1.html">Section 1</A>
            <LI><A HREF="Section3.html">Section 3</A>
            <LI><A HREF="Section4.html">Section 4</A>
            <LI><A HREF="Home.html">Home Page</A>
</BODY>
</HTML>
<!-******************* Section 3 *************************->
<HTML>
    <HEAD>
    <TITLE>Section 3</TITLE>
    </HEAD>
    <BODY>
        <H1>Section 3</H1>
        <UL>
            <LI><A HREF="Section1.html">Section 1</A>
            <LI><A HREF="Section2.html">Section 2</A>
            <LI><A HREF="Section4.html">Section 4</A>
            <LI><A HREF="Home.html">Home Page</A>
</BODY>
</HTML>
<!-******************* Section 4 *************************->
<HTML>
    <HEAD>
    <TITLE>Section 4</TITLE>
    </HEAD>
    <BODY>
        <H1>Section 4</H1>
        <UL>
            <LI><A HREF="Section1.html">Section 1</A>
            <LI><A HREF="Section2.html">Section 2</A>
            <LI><A HREF="Section3.html">Section 3</A>
            <LI><A HREF="Home.html">Home Page</A>
</BODY>
</HTML>
```

Next Steps

Just as you begin to walk away, the salesman tells you, “Wait! There are more options to choose from.” Indeed, creating an effective Web site begins with structure, continuity, and planning, but what else can help you before you start pushing pixels? Perhaps the following will give you an idea:

- ❑ To learn more about splash page graphics, see Chapter 3, “Creating Cool Graphics for the Web,” and Chapter 4, “Making Effective Web Graphics.”
- ❑ To find out more about diagramming the structure of your site, see Chapter 8, “Creating a Map of Your Web Site.”

❑ To learn how to use graphics to support your navigation structure, see Chapter 9.

❑ To find out how to create buttons, see Chapter 13, "Designing Buttons That Work."

Q&A

Q: I thought you could use full-screen graphics. Why shouldn't I use a full- screen graphic on the splash page?

A: Speed is the major disadvantage to using full-page graphics. A majority of the users in the cyberdomain are using modems to access the Web. Long wait periods can significantly deter users from letting a site completely load.

In addition, full-screen bitmaps are generally used as clickable navigation maps. You click somewhere on the map and you jump to a new document. This only works if your browser is set to view *inline images*. If this option is turned off, you have no means of navigation. As a modem-connected Net user at home, I find full-screen bitmaps used for navigation a nuisance.

Q: What are some ways that I can increase the consistency across my pages?

A: One of the most significant ways to create consistency is to use the same navigational items in the same place on each page. A second means is to use horizontal rules, the <HR> tag, in the same place or in the same way throughout your pages. Also, similarly colored or tiled backgrounds and consistent font type and size characteristics contribute to consistency.

Q: Can I put as many buttons as I want on my page? Does it matter where I put them?

A: Yes, you can, but why would you? Keep your navigation items in the same location throughout. Most people don't like to hunt for the button to navigate through your site. Remember, it's your information they want.

Q: When I'm learning how to design my pages, is it okay to use the document source option to view source code at other sites? What about saving pages from the Net and incorporating my own elements into the existing code?

A: This is a delicate question, as is any question that touches near U.S. copyright laws. I am frequently asked, "Can I save other people's pages and incorporate my own data into them?" First and foremost, you cannot use graphics from Web pages created by others without their written permission, but you can view the code behind someone's page to learn for yourself how to use a particular tag or function. Normally, code structures that are in the public domain, such as how to do a table or form, can be viewed and re-entered for use in your own page. One of the best ways to learn good programming is to view code programmed by someone else. It's particularly advantageous when you can't figure out what is wrong with your page, such as a small typographical error or something that is uppercase instead of lowercase. (See additional comments on copyrights in Chapter 3.)

However, code that is not in the public domain is considered intellectual property. This is usually special code such as Java or JavaScript, but it can also include some unique HTML coding schemes. Generally code that is not public domain begins with a copyright comment. This means that the person who has designed the page deems it as his or her own intellectual property. I use one simple rule that has kept me out of trouble as it relates to copyright infringement, no matter what I am doing: If there is any question about whether it is public domain, ask for the creator's permission.

CHAPTER THREE

Creating Cool Graphics for the Web

In this chapter, you'll

- ❑ Learn the differences in the types of graphics that can be produced using computers
- ❑ Understand why file type and pixel depth are important
- ❑ Discover sources of graphics you can use in your Web publications
- ❑ Learn the capabilities of major software programs for creating Web graphics
- ❑ Develop an understanding of copyright and its importance in protecting original creative work

Everyone is exposed to graphic images through film, television, games, and traditional print media. It seems that among people who don't make graphics with a computer, two opinions prevail: It's either automatic (it's computerized, isn't it?), or it's too difficult or too expensive for ordinary folks to do.

Well, the truth, as is often the case, lies somewhere in between. Computer tools foster a completely different mind-set than do paper and pencil. With computer tools, you can accomplish things that are very difficult (sometimes impossible) with paper and pencil. For example, say you wanted to see what a design looks like rotated through 5-degree increments and scaled 10 percent each time. This isn't impossible using traditional methods, but you might avoid trying these iterations just because it's too time-consuming.

A major benefit of computer graphics is the ability to entertain a greater number of alternatives (see Figure 3.1). This gives you a better chances of getting closer to an optimum solution. If you try only two solutions (out of an infinite number of possible solutions) your chances of hitting the best one are slim and none. If you can quickly try hundreds of solutions, your chances are much better.

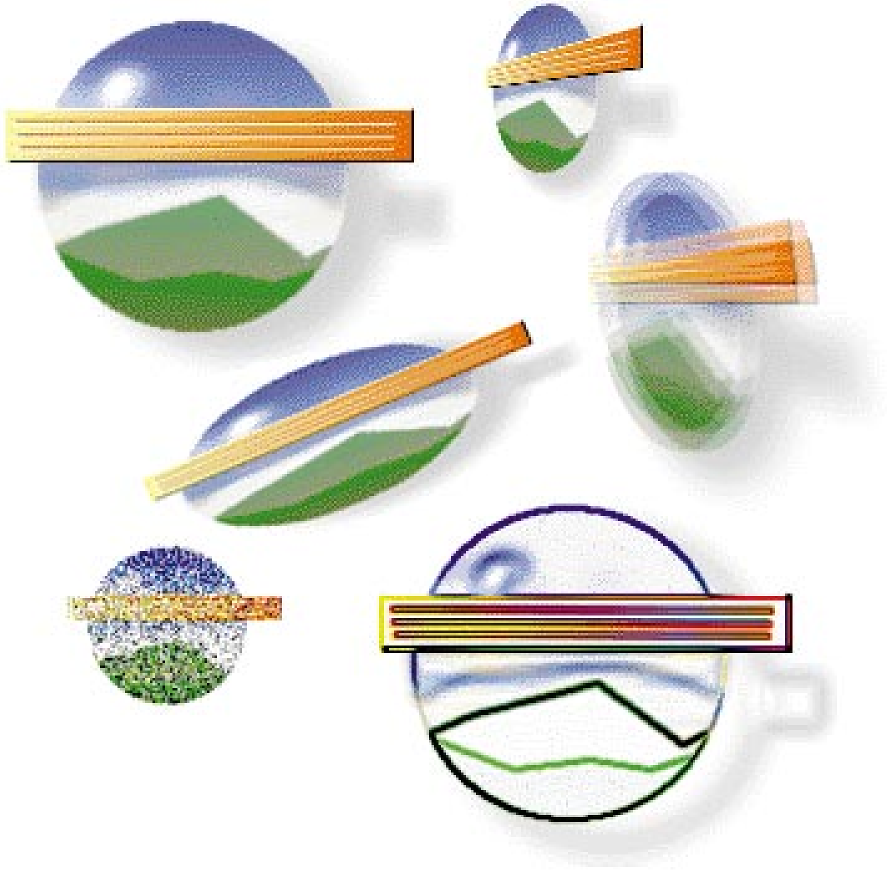


Figure 3.1.
This figure shows how computer graphics aid in generating a large number of alternatives so that the most suitable solution can be found.

Are computer graphics difficult? They can be if you have no idea what you want to accomplish. You have to have a purpose, as well as tools, a good eye, and the ability to identify resources that help you see the end goal.

This chapter introduces you to the types of graphics found on Web pages, and to methods and tools commonly used to create them. After reading the chapter and studying its examples, you may not be the next graphics whiz, but you should have the tools to evaluate, plan, and maybe prepare Web graphics yourself.

Pushing Pixels with Raster Graphics

It doesn’t take a rocket scientist to figure out why computer-generated images are important in Web graphics. There is only one delivery technology for Web publications—an analog raster scan display device. If you create your graphics using the same technology that will be used to view it, you will have better control over its final form.

Creating a Cool Web Page

What's a cool Web page? Realistically, it's a page that accomplishes its purpose with style and panache. Here are some general guidelines:

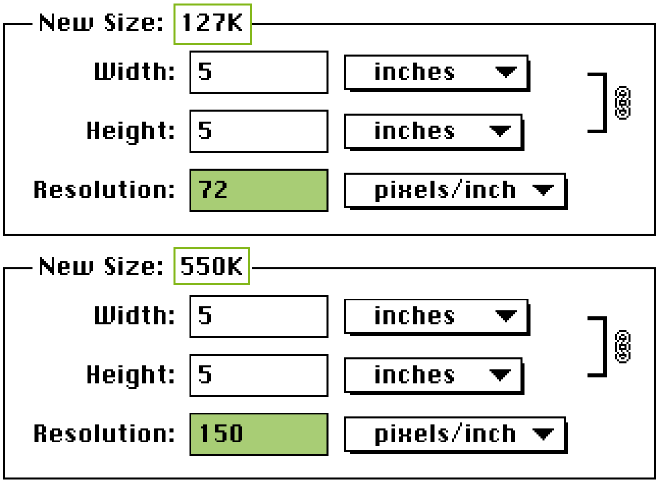
1. Put your Web page on a neat background. I didn't say patterned or textured, I said neat…as in uncomplicated. Why? Because any text or graphic has to compete for eye time when placed on a busy patterned background. See "Mistake Number 6" in Chapter 11, "How to Avoid the Ten Most Common Web Mistakes."
2. Use neat type. Don't use outline, shadowed Olde English, or difficult to read script. See Chapter 12, "Using Text in Design," and look at the fonts used in Figure 6.9.
3. Use a neat design. Avoid the "plop" school of design, which encourages the placement of random elements with no overlap whatsoever (kind of a cow's approach to decorating a pasture). You'll see later in the chapter how to organize page elements.

If you have been involved with traditional publications, you know how difficult it is to accurately reproduce graphics done in traditional media (photography, watercolor, pastel, or pencil) using the standard reprographic techniques of offset printing or gravure. Web graphics are created and displayed using the same fundamental technology. Wow! What a concept!

Just about everyone knows that a computer monitor is comprised of rows and columns of dots called pixels. Just like cylinders in a car engine, the more you have the more powerful you feel. But on the Web, it's not so much what you have (you know what's coming next), but how efficiently you use it. When making graphics for the Web, the following constraints are important:

- ❑ Raster resolution. This is the density of pixels on your screen. This can range from 50 pixels/inch to 85 pixels/inch with an accepted average being 72 pixels/inch. Ultra-high resolution imaging monitors can display 120, 150, or 240 pixels per inch but cost as much as a good used car. This is overkill for 99.99 percent of computer users. Low resolution produces coarse graphics with little detail. High resolution may produce details too fine for most people to see. The standard is 72 pixels/inch.
- ❑ Raster dimension. All monitors are not created equal. Some monitors display a fixed size, usually 640 pixels wide by 480 pixels high. Others are capable of up to 1280×1024 or more. The standard is 640 pixels horizontal and 480 pixels vertical.
- ❑ Raster bit depth. In color monitors, your graphic can display variable intensities of red, green, and blue at each pixel. The number of steps available governs the depth (total number of colors) of information you can display. The standard is 8 bits of color information at each pixel (256 colors).

The relationship of these factors controls the amount of memory required to store and display your graphic (see Figure 3.2). For example, create a great graphic at 1280×1024 (raster dimension) and your file size looks like the national debt. Increase the resolution to 1200 dots per inch and the raster dimensions stretch across the room. Increase the bit depth to 16 or 24 bits per pixel and the file you used to transport around on disk requires you to learn names like Zip and SyQuest and investigate technologies like magneto-optical storage and writable CD-ROM.



New Size: 127K
Width: 5 inches
Height: 5 inches
Resolution: 72 pixels/inch

New Size: 550K
Width: 5 inches
Height: 5 inches
Resolution: 150 pixels/inch

Figure 3.2. *The effect of raster dimension and resolution on actual image size (from Photoshop).*

Just keep this etched on your cortical matter: Always create the smallest, tidiest, most efficient graphic that does the job.

We're Not in Vector Land Anymore

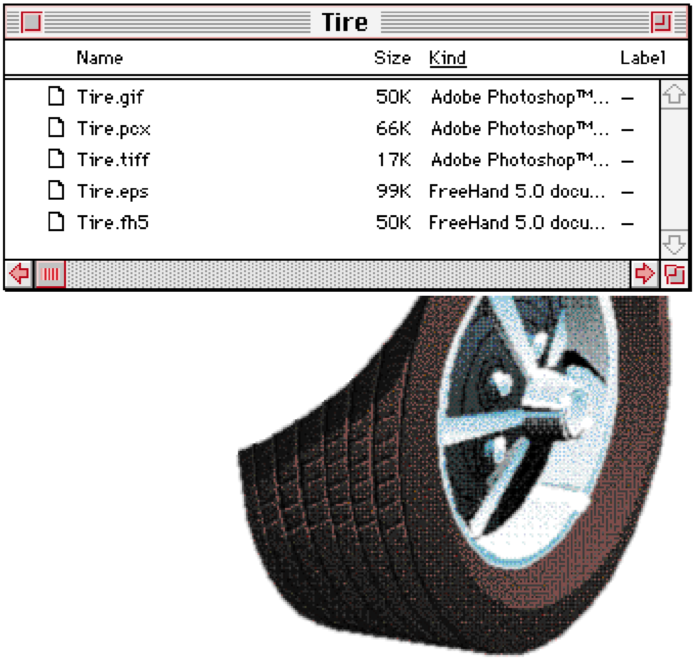
It's totally frustrating to watch an accomplished illustrator who has made a fine living using vector tools struggle to relearn illustration techniques in raster land. Some do it well. But for others, not having end snaps, trimming tools, tangents, and the like is instant death.

Let's quickly compare raster and vector graphics. A raster graphic uses a table of data addresses and instructions to light each pixel. This is commonly called a bitmap. A vector graphic uses objects—lines, circles, curves—with instructions as to where to place them in space.

For the same image, a vector graphic requires considerably less memory than does the same raster graphic. So why don't we use vector graphics on the Web?

Figure 3.3 shows the result of saving a graphic file, in this case a tire and wheel, in various file formats. The `.fh5` file is the original graphic in Macromedia FreeHand native format. The .eps file has been exported from FreeHand in Encapsulated PostScript format. Both of these file formats are vector files. The .tiff file is a Tagged Image File Format raster (bitmapped) graphic with compression. The .gif (Graphic Interchange Format) and .pcx (PC Paintbrush) are also raster files.

File formats contain data, program-specific information and may carry inherent size overhead just due to the nature of the file format. For example, the .tiff file is smaller than the .eps vector file because of the overhead of .eps.



Tire

Name	Size	Kind	Label
Tire.gif	50K	Adobe Photoshop™...	–
Tire.pcx	66K	Adobe Photoshop™...	–
Tire.tiff	17K	Adobe Photoshop™...	–
Tire.eps	99K	FreeHand 5.0 docu...	–
Tire.fh5	50K	FreeHand 5.0 docu...	–

Figure 3.3. *Comparison of raster and vector graphic file sizes in a graphic originated in FreeHand.*

Accept the fact that no matter what form of the data (raster or vector) you are looking at, a raster graphic is on the screen. A raster display device is capable of only displaying raster information. To view vector graphics on a raster device, the vector information must be rasterized, which is no small task. Every computer operating system does this differently. Macintosh computers differ slightly because they use a standard display language (QuickDraw) for rasterizing vector information. But the Web isn't just one type of computer, is it?

NOTE: This reliance on raster graphics is changing. Several companies, including FutureWave Software (`http://www.futurewave.com`), have developed plug-ins to aid the rasterization of vector information. This would bring to the Web the abundant supply of available EPS, PICT, WMF, and CGM vector files. But how would you like to be the person without the plug-in? Without the plug-in, you don't have access to the great graphics.

I Thought PostScript Was the Publishing Standard

The Web is a new publishing medium (but because it stretches over into film, television, and radio, it's so much more). As a way to publish documents, the Web causes us to rethink many of the things we thought were set in stone. For example, consider the PostScript page description language. Without it, there would have been no desktop publishing. In fact, current electronic publishing of almost all printed matter would not be the same. There would be no FreeHand, no Illustrator, no PageMaker, no Quark. We might still be spitting out metal type like we did a hundred years ago.

But so far, PostScript—the most important advance in publishing since movable type—has had minimal impact in Web publishing. This is ready to change because powerhouses like Adobe are moving to consolidate printing strategies for Web documents.

Web documents are intended to be consumed interactively via display technology. We print Web documents because we belong to the generation that printed everything it saw. We run the risk of being the butt of the next generation's jokes.

The resolution-independent nature of PostScript graphics is lost on the Web where screen resolutions are fixed. Could this be the impetus for rethinking the display of PostScript as a standard for computer displays?

Life at 72 dpi and 256 Colors

To reach the greatest number of possible clients with your Web publication, you should design graphics at 72 dpi and in 8-bit 256 colors (see Figure 3.4). I don't see this standard changing in the foreseeable future. Because all color monitors use Red, Green, Blue (RGB) color technology, always use the RGB color model when you make graphics for the Web.

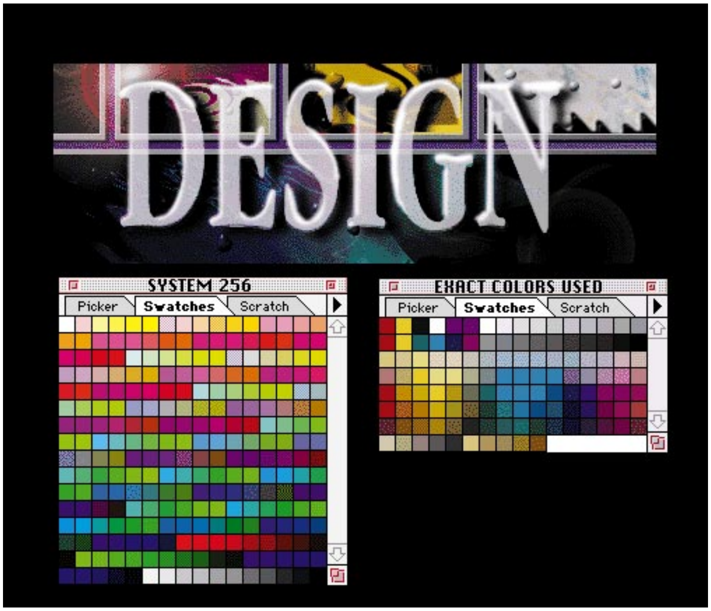


Figure 3.4.
An 8-bit, 256 color graphic. Note that the true (adaptive) palette is much smaller than the system palette.

Situations when you might entertain the use of graphics at higher resolutions and bit depths include the following:

- ❑ High-quality images intended for downloading. These images are displayed on the page at lower resolution or as a thumbnail.
- ❑ An audience that you expect to have greater graphic hardware capabilities. If you're not in this group, tough noogies.
- ❑ Images that need the extra resolution or color depth to even be useful. For example, a medical education site where tissue slides show slight coloration differences or fine detail.

8-bit color is sometimes called *indexed color* . Let's assume that your Web graphics are stuck at 72 dpi and 256 colors. What can you expect?

First, expect to design your graphics using the palette of colors (usually called the system palette) that is most representative of the target client's systems. For the most part, this means Macs and Windows PCs. If your graphic uses a color not in the 256-color palette, it will substitute the closest color. This can yield results from odd to ugly.

To overcome this 256-color limitation, a technique called dithering is applied to the image. This is sort of like halftoning in traditional publications. Dithering (see Figure 3.5) approximates intermediate colors (colors not on the palette) with a pattern of dots that, when viewed from afar, blend together in glorious shades. Some programs, such as Photoshop and Debabilizer, produce well-dithered images. Illustrator produces credible results when its `.eps` files are rasterized. FreeHand produces less than desirable results, as does CorelDRAW!.

TIP: The best results are achieved when using a diffusion dither, which produces smooth transitions. A pattern dither produces geometric patterns that may be less desirable.

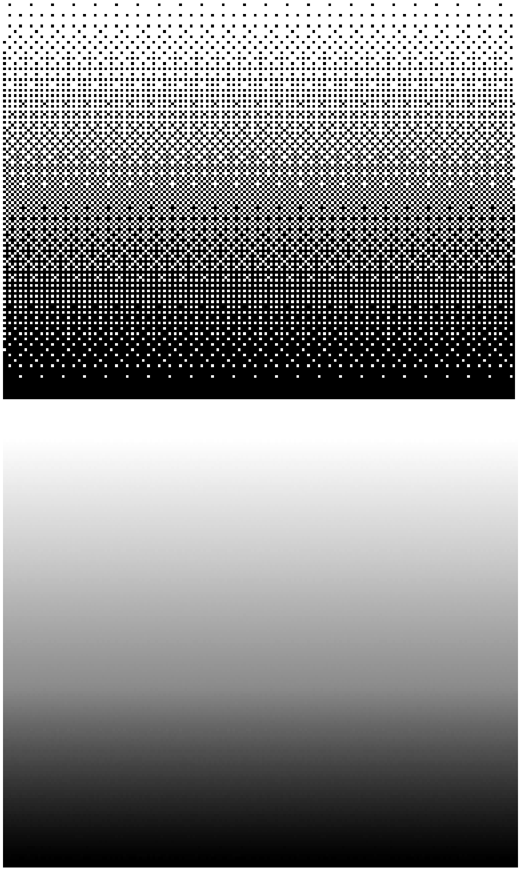


Figure 3.5.
A comparison of diffusion and pattern dither.

Design in Black and White (and Shades of Gray)

Traditional publications made careful use of color partially because color meant more expense. With display publications, color isn't any more expensive than black and white. Unfortunately, when color is so easily available it is often misused and overused.

Color was also carefully used because even though everyone loves it, there isn't much evidence that color increases the effectiveness of communications where color isn't the subject. (Color would be critical, for example, in recognizing changes in skin color with chemical exposure or identifying the RED tag.)

In fact, judicious use of grays can be almost as effective as color for making visual discriminations. Unfortunately, Web graphics are limited to using the grays available in the indexed color palette. In-between grays can be dithered to give the impression of having the full 256 grays available in 8 bits of color depth.

TASK

Creating a Black-and-White Graphic

A black-and-white graphic has a strong appeal on Web pages. This type of graphic can be reduced to 1 bit of color information. This makes for extremely small file sizes and, correspondingly, rapid load times. To reduce a color graphic to black and white in Photoshop requires several steps:

1. Choose a color image that has good contrast—light colors and dark colors.
2. Change the Mode to grayscale and discard all color information. This is still an 8-bit image, it's just that all 256 values are assigned to shades of gray. If your image appears uniformly gray, reload the color image, adjust contrast in the Image| Adjust| Brightness/Contrast menu, and try it again.
3. You don't need 256 grays. Change the Mode again to Bit Map. Specify Diffusion Dither and 72 dpi.

There are several rules of design to be followed that will keep you out of major trouble. They won't make you any more creative, but they will establish a strong foundation for your creativity.

❑ Good design almost always uses a minimum number of elements (see Figure 3.6). You want to avoid overworked or busy designs.

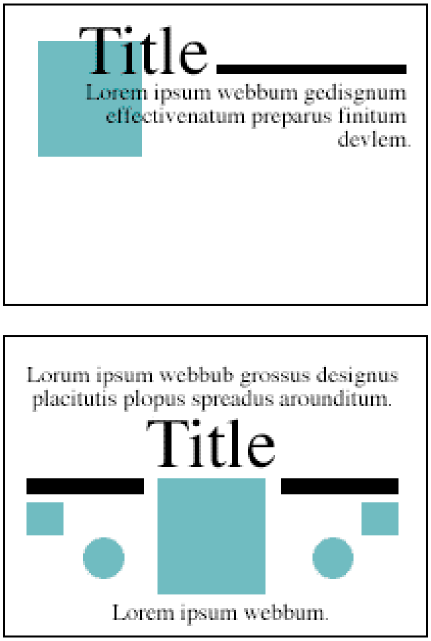

Title
Lorem ipsum webbum gedisgnum effectivenatum preparus finitum devlem.
Lorum ipsum webbub grossus designus placitutis plopus spreadus arounditum.
Title
Lorem ipsum webbum.

Figure 3.6. *Effective (top) and busy (bottom) designs.*

❑ Good design is based on eye flow (see Figure 3.7). The more eye movement required within a visual field, the less information can be received and processed.

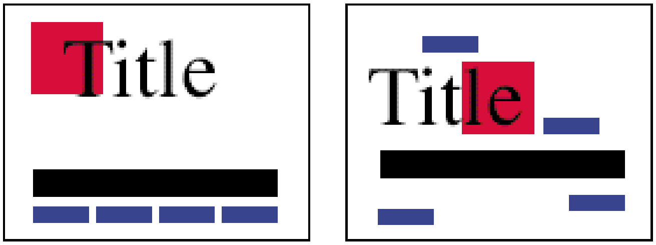


Figure 3.7. *Effective (left) and ineffective (right) eye flow.*

❑ Good design uses a minimum number of appropriate type fonts and sizes. Choose a type font that projects the feeling you desire—formal, informal, technical, or playful (see Figure 3.8).

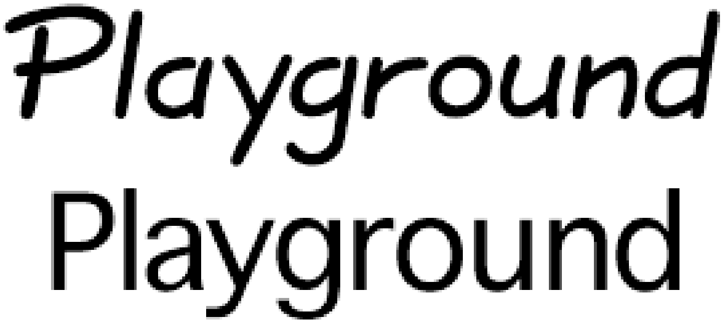


Figure 3.8. *Effective and ineffective font choice. Which font projects the desired feeling?*

- Good design builds a sense of tension (see Figure 3.9): large versus small, light versus dark, straight versus curved, asymmetrical versus symmetrical.

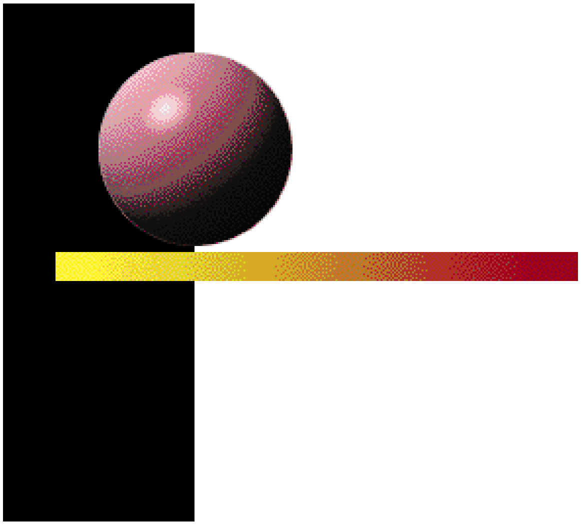


Figure 3.9. *Design may exhibit tension to increase interest.*

- Good design uses color for emphasis and to build a sense of emotion (see Figure 3.10). Warm colors come forward. Cool colors recede.

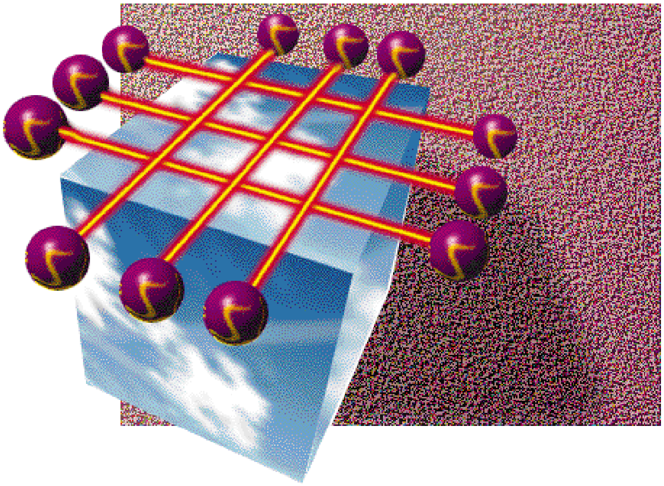


Figure 3.10. *Effective use of color in a design.*

- Good design builds levels of depth on the page (see Figure 3.11). Use juxtaposition and overlap to give a sense of depth.

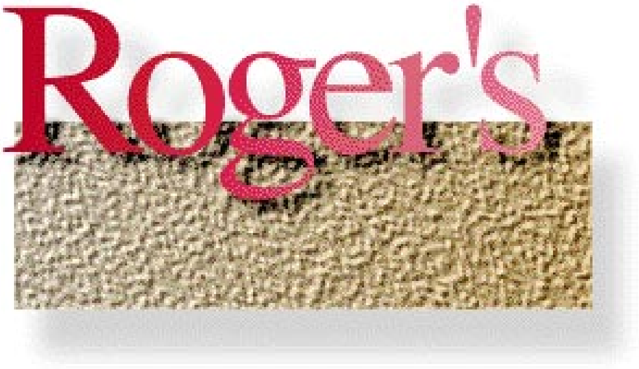
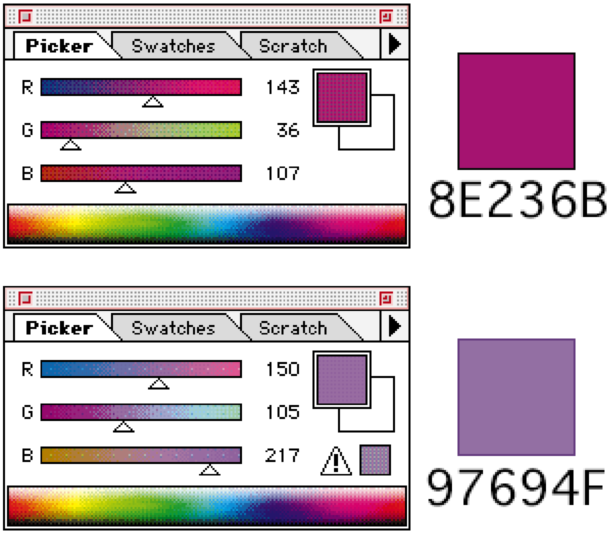


Figure 3.11. *Elements that build a sense of depth.*

Using Hexadecimal to Design in Color

Hexadecimal is another example of yesterday's technology today (along with picas and points, radians, and angle by grade). No one, other than a real wirehead, can convert ASCII numerals to hex in his head. At best, you might remember white (FFFFFF), black (000000), and Netscape gray (cccccc).

Fortunately, graphics you bring onto your Web pages as raster files communicate their RGB values automatically. Figure 3.12 shows two RGB colors and their hexadecimal color values. It's only when you want to set the color of HTML elements (backgrounds, text) that you have to concern yourself with the hexadecimal specification of RGB color.



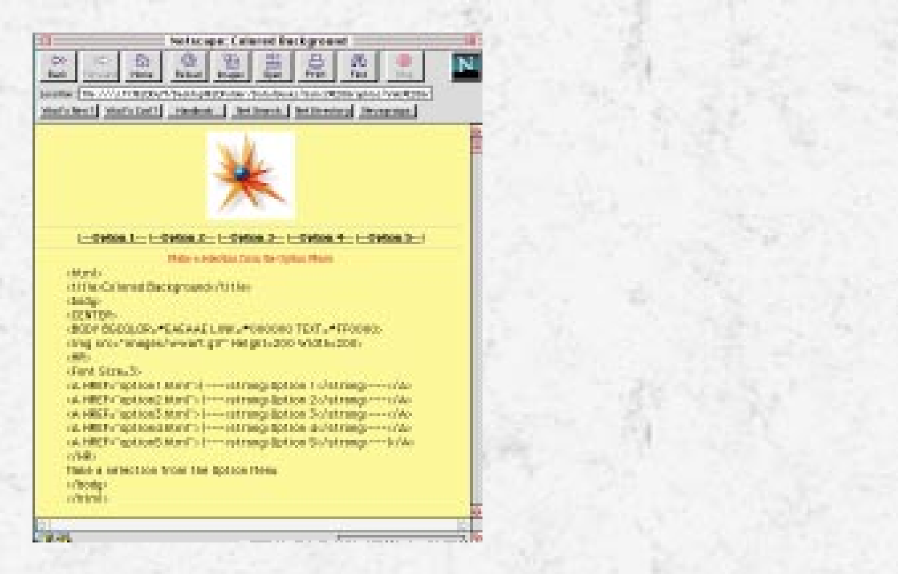
R 143
G 36
B 107

R 150
G 105
B 217

Figure 3.12. *The RGB color mixer in Photoshop and several hexadecimal equivalents.*

Each RGB color contains three sets of values each for the red, green, and blue components. The numbers can range from 0 to 255. Since RGB is an additive color model, no amount of each would be the value 000,000,000 or black. Full intensity of red, green, and blue (255,255,255) results in white.

WEB WORKSHOP: Background color should be carefully chosen. White text on black background was abandoned years ago for extensive reading. This example uses a tan background (EAEAAE) with black (000000) linked text and brick red (FF0000) instructions. Note the use of a menu that links to options.



|--Option 1--| |--Option 2--| |--Option 3--| |--Option 4--| |--Option 5--|

Make a selection from the Option Menu

```
<html>
<title>Colored Background</title>
<body>
<CENTER>
<BODY BGCOLOR="[illegible]" LINK="[illegible]" TEXT="FF0080">
<img src="images/wwart.gif" Height=200 Width=200>
<HR>
<Font Size=3>
<A HREF="option1.html">|---<strong>Option 1</strong>---</A>
<A HREF="option2.html">|---<strong>Option 2</strong>---</A>
<A HREF="option3.html">|---<strong>Option 3</strong>---</A>
<A HREF="option4.html">|---<strong>Option 4</strong>---</A>
<A HREF="option5.html">|---<strong>Option 5</strong>---|</A>
</HR>
Make a selection from the Option Menu
</body>
</html>
```

Scientific calculators have ASCII-to-hex conversion functions. Or, if you want to use a Web resource, cruise by `http://www.bga.com/~rlp/dwp/palette/palette.html` for a palette of colors from which to select.

TASK

Determining Hexadecimal Color

By far the easiest way to convert RGB color into its hexadecimal equivalent is to use a calculator. Scientific calculators usually have this function, or you can use a scientific calculator utility right on your computer (like the one on your CD-ROM):

1. Open your favorite raster program and display the RGB color mixer. Refer to Figure 3.12 for an example of Photoshop's mixer and two RGB colors.
2. Using the RGB sliders, make the color you want.
3. Write down the three numbers in RGB order. The first color in Figure 3.12 has the value 143036107. The second color, 150105217.
4. Using a scientific calculator, enter the nine digits in order and press the hex function. The resulting six characters are your color in hexadecimal. This can be used directly in your HTML code.

Here's an assignment. By using the RGB color mixer in Photoshop and a hexadecimal scientific calculator, or by visiting one of the hex conversion sites on the Web, answer the following questions:

1. How do you know if you have a gray?
2. How can you tell if you have a warm (reddish) or cool (bluish) gray?
3. If you can answer question 2, how can you tell if the hex color is pure (that is, pure red, green, or blue)?

Understanding GIF Format Graphics

Graphics Interchange Format (GIF, either hard or soft G, I like my Gs soft) is a platform-independent intermediate raster format limited to 8 bits of color depth (256 colors). Get the point? Most computers have 8-bit video. GIF is 8 bit. Matches pretty nice, huh?

GIF graphics can be compressed using Lempel-ZivWelch (LZW) lossless compression. (See Chapter 6, "Presenting Effective Web Graphics," for more information on file compression techniques.) GIF files can be also be interlaced. Interlacing begins with a low-resolution image and increases detail as the file continues to load, mollifying those who can't defer gratification, and allowing designers to use heavier graphics than they need to.

TIP: Like most things in life, more is usually better, and in bit depth and resolution this is also true. Although you will be displaying graphics in 8 bit, 256 color, you will want to start with more color and resolution than you need. This gives you greater flexibility in making the image look the way you want it to when you reduce the color depth and resolution. Suggestion: Work in RGB color and 288 dpi. Reduce to 8 bit (256 color), 72 dpi GIF for most needs.

Answering the JPEG Question

Graphics in the Joint Picture Experts Group (JPEG) format are capable of much greater color depth than is GIF, but, of course, this comes at a price. This price is charged in slow download times for larger file sizes. Files in JPEG format can contain up to 24 bits of color information (16.7 million colors).

Files in JPEG format are compressed automatically and then decompressed when they are brought onto a Web page. The compression is variable—the greater the compression, the greater the level of degradation in the final image.

The question is, does a 24-bit JPEG graphic look any better on an 8-bit color monitor? The answer is, generally, no. The answer could even be that the JPEG file ends up looking a lot worse because its 24 bits (16.7 million colors) must be mapped into the 256-color palette used by the client's computer. You have no control over how this is done.

NOTE: William Horton, in his book *Illustrating Computer Documentation* , reveals the hype involved in 24-bit color. Only 7.5 million colors are actually measurable. Trained colorists (people who work for paint companies, for example) can distinguish only 1 million colors under ideal conditions. The average person can only distinguish 50 colors within a given visual field. Makes 8-bit color seem all the more advisable, doesn't it?

Reserve the use of JPEG graphics for specialized applications. See the earlier section, "Life at 72 dpi and 256 Colors," for more information.

Using Anti-Alias to Your Advantage

We have already addressed the topic of dithering, where intermediate colors and values are simulated by a random array of dots or patterns. Another technique important in display graphics is anti-alias. Figure 3.13 shows an example of this anti-alias effect.

Anti-alias is especially effective when displaying text above 24 points. Because most text will be a solid color, the stair-stepping around curves is often distracting. By applying the anti-alias technique, intermediate pixels are calculated on either side of the normal outline, giving the appearance of a smoother curve. Figure 3.13 shows the detail of a serif, without anti-alias on the left and with anti-alias on the right.

Blurring is another technique that yields slightly different but effective results. Blurring an area alters all the pixels within the selection, not just those on the outside.

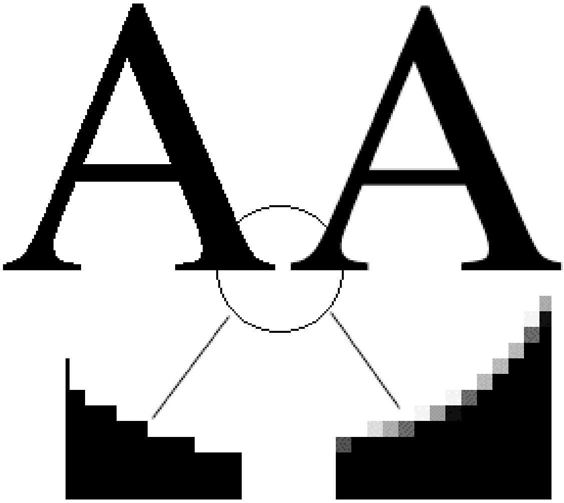


Figure 3.13.
The use of anti-alias to give the appearance of smoothness.

TASK

Resizing an Anti-Aliased Figure

An anti-aliased letter like that shown in Figure 3.13 can break apart when reduced because original pixels may not match up with pixels at the new scale. When enlarged, the image may become unsightly when its anti-aliased pixels are enlarged. If you can, avoid this by creating your graphic at display resolution and at its intended size. If you have a graphic that's already anti-aliased and you want to resize it, do the following:

1. Make a copy and perform the resizing in a raster program. Make a simple HTML program that displays the test graphic:

```
<html>
<title>Image Test</title>
<body>
<img src="test.gif">
</body>
</html>
```

2. Right below the resized graphic, display the original graphic, but let your browser resize it. This can slow the download somewhat as the browser maps your graphic to screen resolution:

```
<html>
<title>Image Test</title>
<body>
<img src="test.gif">
<img src="original.gif">
</body>
</html>
```

3. Test the difference in download time and quality. You may find that for small graphics, letting your browser resize the graphic both produces as good or better results and saves you time in the raster editor.

Becoming an Artist

Everyone can learn to recognize and appreciate good music. Most can learn to play simple tunes on a piano. Some can learn to read music and play credibly. A very few become concert pianists.

Such is the case with visual art. Not everyone needs (or wants) to make their own Web graphics. But everyone should be able to recognize when good design principles are followed, when text is used effectively, and when color adds and doesn't subtract from a page.

Developing a Good Eye

The key to all this is developing what I call "a good eye." I used to tell my students that it isn't the answers they don't know, it's the questions. Invariably I would look at a student's drawing and start a question—like, where is the…?≥and not even get the rest of the question out before the student realized why their drawing was wrong and told me the answer.

The trick to developing a good eye is to have a continuous dialog with yourself concerning the design. This technique can be applied to the design of the Web site itself as well. For starters, ask yourself the following:

Where does it start?

Where does it stop?

Is it aligned?

Is it straight?

How do I get here?

How do I get out of here?

How many are there?

Is it symmetrical?

Is it asymmetrical?

What is it called?

What color is it?

How important is it?

Reading Traditional Design Publications

Some of the best samples of graphic design still remain in traditional print publications. Remember, as Web publications go more mainstream, they will be subjected to the same evaluation criteria as traditional publications. The following is a list of sources you might look at:

- ❑ *U&lc* . Upper and Lower Case. The International Typeface Corporation, PO Box 129, Plainview, NY 11803. This always has something of interest, especially in using type as a design element. Complimentary subscription.
- ❑ *How Magazine*. F&W Publications, Inc. 1507 Dana Ave., Cincinnati, OH 45207. Solutions from professional studios with step-by-step solutions.
- ❑ *Print Magazine* . RC Publications, Inc. 3200 Tower Oaks Blvd., Rockville, MD 20852. A standard for the graphic arts and design industries.
- ❑ *Communication Arts* . Coyne and Blanchard, Inc., 410 Sherman Avenue, Palo Alto, CA 94306. A great source for professional illustrations. CD-ROM of design competition winners available.
- ❑ *Graphic Design Book Club* . PO Box 12526, Cincinnati, OH 45212. If you like books at a club discount, this is for you.
- ❑ *Step-By-Step Graphics* . Dynamic Graphics, Inc. PO Box 1901, Peoria, IL 61656. This is worth every penny of its $36.00 per year (6 issues) fee. If you're into technique, this is for you.

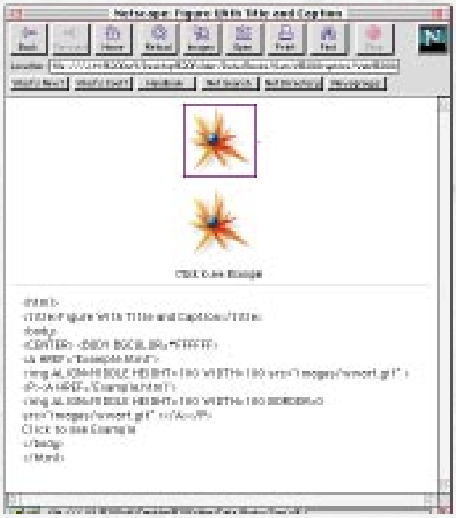
Make a Swipe File of Web Graphics

If you're serious about Web graphics, you'll want to make an electronic swipe file of things you see while surfing. You may be able to download the graphic directly from the Web site. But since you wouldn't consider using the graphic directly (read about copyrights later in this chapter), it's a lot easier to just to do a screen grab with a Mac product like Capture or a PC product like HiJaak. This resolution is fine for use as a visual reference.

Pizzazz at the Expense of Effectiveness

Every graphic element you place on a page must have a function. Either it adds to communication efficiency or…remove it! Each visual element on a page must be processed and either used or discarded. The more visual elements a viewer has to discard, the less efficient the communication.

WEB WORKSHOP: If a graphic isn't a button, it's often difficult to know what has been linked. Our Web Workshop graphic is used here to link to a file named `Example.html` by making use of the `<A HREF></A>` structure. With a default blue border, the reader knows by convention that this is a linked graphic. With `BORDER=0`, a text instruction helps identify the graphic as a link.



Click to see Example

```
<html>
<title>Figure With Title and Caption</title>
<body>
<CENTER> <BODY BGCOLOR="FFFFFF">
<A HREF="Example.html">
<img ALIGN=MIDDLE HEIGHT=100 WIDTH=100 src="images/smart.gif" >
<P><A HREF="Example.html">
<img ALIGN=MIDDLE HEIGHT=100 WIDTH=100 BORDER=0
src="images/smart.gif" ></A></P>
Click to see Example
</body>
</html>
```

NOTE: Under no circumstance should you throw the latest whiz-bang graphic plug-in, multimedia interactive, virtual experience, scratch and sniff add-on onto your Web page just to demonstrate how much on the technologically bleeding edge you are. You will impress no one of importance, even if you impress yourself.

Identifying Sources of Graphics for the Web

Recognizing the demand for effective Web graphics, many companies offer extensive artwork libraries. Use the following as a starting place for possible sources:

- ❑ Clip art books. These are still available for traditional publishing but can be scanned into digital form. Sources:

  Dover Books, Dover Publications. 108 Varich Street, New York, NY 10014. If you owned all of Dover's books you wouldn't need anything else—at least for black-and-white art.

  Multi-Ad Services. 1720 W. Detweiller Drive, Peoria, IL 61615. Literally a graphics clearinghouse for subject specific clip art. Provides much of the series in electronic format. Also offers software for laying out ad pages (Multi-Ad Creator).

  Metro Creative Graphics, Inc. 33 West 34th Street, New York, NY 10001. Purveyors of graphics to magazines and newspapers.

  Dynamic Graphics. Peoria, IL. A great source for industrial-strength clip art especially in large formats. Also available in electronic format.

- ❑ Electronic clip art. Graphics can come on disk or CD-ROM and usually include various resolutions and color depths. Sources:

  Image Club. Image Club Graphics, Inc. 10545 West Donges Court, Milwaukee, WI 53224. `http://www.adobe.com/imageclub/`. Get on its mailing list right now. High quality, good ideas.

  Digital Stock. 400 South Sierra Ave, Suite 100, Solana Beach, CA 92075. CD-ROM preview collections of commercial photography from which you can order publication graphics. High quality.

  Electronic Clipper. 6000 North Forest Park Dr., PO Box 1901, Peoria, IL 61666. Lots of basic digital art: some good, some bad.

  ClickART. Mail Preference Service. c/o Direct Marketing Associates, PO Box 9008, Farmingdale, NY 11735.

  Corel Gallery. Corel Corporation, 1600 Carling Avenue, Ottawa, Ontario, Canada K1Z 8R7. `http://www.corel.com`. How much do you want to spend? This series has quite literally hundreds of thousands of images in multiple formats and resolutions.

  Desk Gallery. Zedcor, Inc. 4500 East Speedway, Suite 22, Tucson, AZ 85712. The price is right for a ton of images, but you have to pick and choose. Lots of public-domain historical scans.

- ❑ The World Wide Web. The Web itself is a great source for graphics. Not only is it a gallery of ideas, but many sites feature freeware or shareware collections of images. Also, commercial image collections can be viewed in thumbnail and ordered. Sources:

  The Art Center. `http://www.clip-art.com/`. Free sampler CD-ROM of images and clip art in more than 25 categories.

Task Force. `http://fox.nstn.ca/~clip art/`. Great graphics and over a megabyte of free stuff.

Totem Graphics. `http://www.gototem.com/`. Web graphics including backgrounds, buttons, and icons. Lots of categories.

Media Merchant. `http://www.bn1.com/mm`. Royalty-free music, photos, fonts, and clip art.

Copyrights and What's Fair Use

A copyright is a grant of exclusive use for a period of time. For something to be copyrightable, it must embody unique intellectual property. If something doesn't pass this test of uniqueness, it is considered to be a common design of industrial utility. That's why automobile shapes can't be copyrighted. That's also why font shapes can't be copyrighted.

Because of the unregulated nature of the Web, it is not uncommon for copyrighted material to find its way into what is advertised as freeware. Be careful!

Every copyright carries with it a presumption of fair use. That is, a copyrighted graphic can appear in a news report or a magazine article without infringement because that's considered fair use.

Copyright protection is granted upon the simple act of making something of unique intellectual property. There is no search—as there is when applying for a patent. You don't have to prove anything when applying for a copyright. You don't even have to apply for the copyright as long as you can prove creation date.

An easy way to prove date of creation (and thereby copyright date) is to print the graphic, include an electronic copy on disk, and mail it to yourself. Make sure the post date is legible. Then, put the envelope in a safe place like a bank lock box.

It's fair to estimate that less than half the material carrying copyright notice is actually copyrightable, that is, would be deemed unique intellectual property in a court of law.

How can you get around this? Use the following guidelines when planning Web graphics:

❑ Use your own graphics whenever possible. This isn't 100% safe because you still run the risk of making something that looks an awful lot like something that was copyrighted. Two people can independently create two images that are very similar.

❑ Use graphics in the public domain: Any graphic over 75 years in age, any graphic you paid for as a taxpayer (government publications), or any graphic of common industrial utility (shapes, outlines).

❑ Graphics for which you have purchased copyright use, such as clip art or CD collections. Be careful here. Some of these products carry bizarre limitations on their use. Some grant out-right use but others restrict how many images can be used per publication, or what kind of publications the images may appear in.

The likelihood that your use of some material carrying a copyright will be challenged in court is directly proportional to the economic resources available to the copyright holder. Like Clint Eastwood would say, "Do you feel lucky?"

Popular Applications

The ease with which you get graphic images ready for the Web depends somewhat on the application program you choose to do the job. Make a poor choice early and you'll just make the job more difficult.

Because your images are going to be displayed in raster format on a raster display device, it would seem silly to use a PostScript drawing program for the majority of your work. That doesn't mean that you shouldn't use a PostScript drawing program (like Illustrator, FreeHand, or CorelDRAW!) to do what it does best—technical line drawing. Figure 3.14 shows a line illustration originally created in PostScript and rasterized in Photoshop where it was used as the basis for a Web graphic.

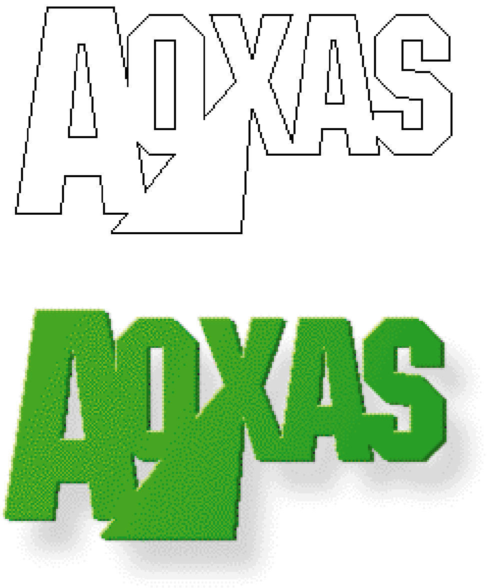


Figure 3.14.
The line drawing, created originally in a PostScript drawing program, would have been difficult to create in Photoshop.

Adobe Photoshop

Program type: Raster out, Raster and Vector in

As the granddaddy of image manipulation programs, Photoshop will filter a large number of vector and raster formats and output GIF and JPEG formats. However, some postprocessing is necessary to make backgrounds transparent. Use Graphic Converter, Transparency, or Debabilizer.

Corel PhotoPaint

Program type: Raster

Corel's answer to Photoshop, PhotoPaint matches Adobe's product almost feature for feature and has extensive import and export filters. It even has the same problem with transparency that Photoshop has.

Fractal Painter

Program type: Raster

A more painterly approach to raster graphics with extensive file conversions, Fractal Painter will create transparent GIF and progressive JPEG files. Its recent release also allows image maps to be created in Painter.

Adobe Illustrator

Program type: Vector PostScript

Vector PostScript is limited to EPS and PICT export on Mac, and EPS, WMF and TIFF export files in Windows. Files rasterize well for Web inclusion.

Macromedia FreeHand

Program type: Vector PostScript

PostScript is limited to EPS and PICT export where dithering is pattern and not diffusion on Mac, also 24-bit TIFF in Windows. It's good for converting PostScript or TrueType fonts to outlines and exporting them as EPS files to a raster editor where the outlines are rasterized.

CorelDRAW!

Program type: Vector PostScript

CorelDRAW! has the same strengths as FreeHand and Illustrator.

Macromedia Director

Program type: Multimedia

Macromedia Director creates interactive Director or QuickTime movies for inclusion on Web pages using Shockwave. It's useful for buttons, bullets, and small animated graphics.

Macromedia Authorware

Program type: Multimedia

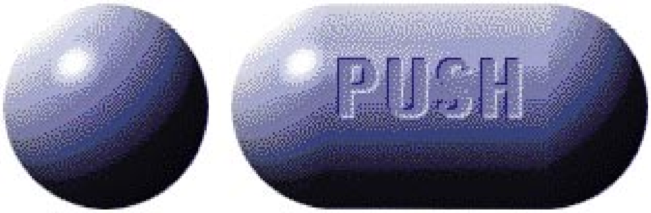
Authorware creates interactive applications that can be included in Web pages using Shockwave.

Filters You Can't Live Without

Several Photoshop plug-in filters are of great help when making Web graphics. Everyone loves blurred drop shadows, and the Blur/BlurMore/Gaussian Blur filters really do the job.

The other filters I find I can't live without are KPT's Glass Lens and Glass Lens Bright. Although these have been replaced by KPT's Spheroid Designer, I like their simplicity and effectiveness. Figure 3.15 shows examples of using these two filters to create interactive buttons.

Figure 3.15.
This button started out as a sphere.



Protecting Your Original Work

Personally, I wouldn't put anything of real creative value on the Web. The ease with which images and page source code can be captured is part of the Web's allure, one of the reasons its potential is difficult to estimate.

The Web can be a teaser, though. Put enough information out there to generate interest. Want the real thing? Send $9.95 by midnight tonight.

The flip side of this is that some of the information found on the Web is of no value whatsoever, even dangerously incorrect. Buy a book of conversion standards from a publisher, and you can almost guarantee that the numbers were checked by outside reviewers, proofread, edited, and backed by the author. Much information on the Web should carry a "Consumer Beware" disclaimer.

If you want to add some protection, put the copyright (©) symbol and a statement of ownership beside anything you think you want to protect. This will scare the timid away.

Next Steps

Now that you are tuned into the world of graphics on the Web

- ❑ To learn more about what's possible on the Web, see Chapter 4, "Making Effective Web Graphics."
- ❑ To better understand how hardware affects your graphics, see Chapter 5, "Using Multimedia and Special Effects on the Web."
- ❑ To get an idea of the graphic possibilities, see Chapter 6.
- ❑ To view a collection of Web site graphics, see Chapter 17, "A Portfolio of Graphics from the Web."

Q&A

Q: All of my company's graphics are in EPS and TIFF format. Will I have to redo everything to put it on our Web site?

A: The TIFF files can be reduced to 8-bit GIF using an image editing program, like Photoshop, or a graphic utility, like Debabilizer or HiJaak. The EPS files are more problematic, though. Try opening them in Photoshop to see how they are rasterized. If they look good, convert to indexed color. I've had some luck in screen-grabbing the EPS file as a raster PICT or TIFF and playing with it.

Q: You seem set against colored backgrounds on Web pages. I've seen some that are nice. Why don't you like them?

A: If the purpose of the Web page is to communicate information, colored backgrounds distract from reading. It takes extra effort to make bright white paper. So why don't we just use the gray-buff unbleached stuff? Because the higher the contrast between foreground and background, the more efficient the visual task.

Q: What's the best way to view a swipe file of Web graphics?

A: First, use intelligent filenames, like `rndbut.gif` for a round button in GIF format. Then create a directory structure that organizes the images by functional type (buttons, panels, people, cars, and so on). Finally, you might want to use a graphic browser like that found in HiJaak Pro or Fetch to quickly search and retrieve the examples.

Q: I'm not an artist and can't afford to purchase clip art libraries. What can I do?

A: Do you have a scanner? Go to the library and check out old books circa 1900. These have expired copyrights and should be okay. Clip art books are relatively inexpensive. Ask friends who may be artists to "donate" their own work. You'd be surprised how willing friends are to help.

Q: I want to try and sell greeting cards over a Web site, but I'm afraid that if I put some of the cards on my Web pages, they'll show up on other people's pages as well. What can I do?

A: You can almost count on someone grabbing your images—especially if they're really nice. My suggestion is to keep resolution just high enough to sell the products. Try increasing dimensions and resolutions out on co-workers. Stop at the lowest quality image that does the job. Include your name and address directly on the image. Remember, there is fair use associated with your greeting cards.

CHAPTER

FOUR

Making Effective Web Graphics

When we view exceptional graphics created by someone else, all we usually see is the final image. We're impressed by the flow, colors, content, and mood conveyed by the image, but do we really see everything that was required to generate the image? Rarely. We don't see the hours of experimentation it took to generate the acceptable ends. We don't see the primeval iterations of the image; ones that the creator would be embarrassed to display. When you look at Monet's Haystacks, don't think for a moment that there weren't several iterations before the completed piece, the means to the final graphical end.

As graphics creators, we are experimenters, trying different effects and techniques to generate a pleasing image. I'm surprised to find that many people, on the verge of creating a masterpiece give up easily in the development process. They are afraid to apply that final filter or brush stroke.

As we're writing this book, we are striving to write clearly and concisely. These are the same characteristics we want our graphics to embody. So how do we write? We begin by developing an outline. We then develop paragraphs. Finally, we read and re-read our paragraphs, honing, refining, and clarifying. The same is true of graphics. We generate an idea of what we want to create. We then develop the beginnings of the image. Finally we hone, refine, and clarify the image. Graphic development, just like writing, is a fluid process to reach a finished product.

In this chapter, you'll

- ❑ Learn what makes pages attractive for kids and corporations
- ❑ Learn about the avant garde in Web page design
- ❑ Learn about font families and font sizes and how they affect the look of a site
- ❑ Learn about the various characteristics of fonts and how they affect the look and feel of the page
- ❑ Learn what the splash page must have to be functional
- ❑ Find out how to use background colors and tiles to set the stage for your page

Surfing the Web is a good way to start learning how to develop Web graphics. Since medieval times, disciplines have flourished through the master and apprentice relationship. It is vitally important to study the work of individuals established in a field to try to capture, learn, and mimic success and style in the discipline. The first step is to know what is possible.

This chapter discusses some key points to help those who consider themselves graphically challenged. It might not make you a Picasso, but it will help you equip your graphic toolbag with some vital information that you can apply to your designs. Then the chapter takes a look at various themes of Web sites and why a site might be best suited for children, business professionals, or the avant garde. The chapter concludes with some specific information that can be used in your Web pages.

Graphic Tips for Nondesigners

Have you ever seen a graphic image that just gives you that special feeling? What is it about the image that attracts your attention? realism? style? colors? fonts? Undoubtedly, they all contribute to your attraction to the image.

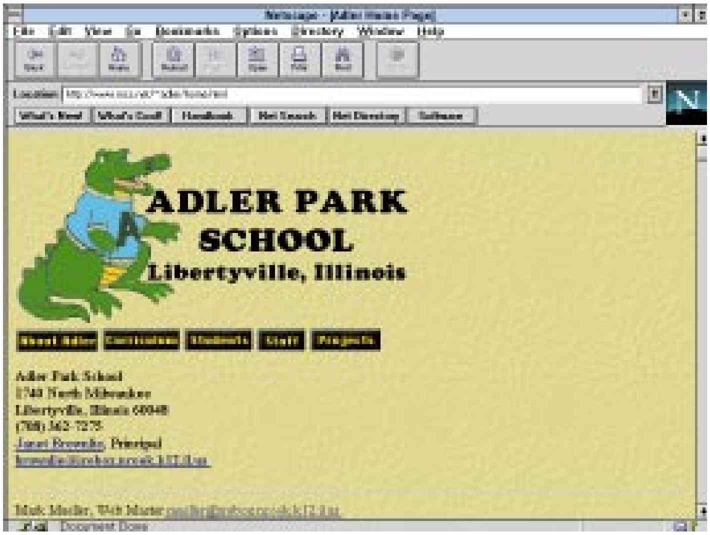
Your attraction to a site, page, or graphic is further based on your vantage point—your background, skills, and perspective. Are you looking for a site for kids? Are you a business professional looking for information for your company? You, as the audience, have certain parameters that you're looking for. This is your paradigm of vantage.

Making Graphics That Kids Will Enjoy

Remember when you were a kid? Coloring books, brightly and brilliantly colored books, and Saturday morning cartoons probably interested you at some point. Sites for kids incorporate many of the same characteristics as the things you enjoyed as a child.

The first thing you'll probably notice about graphics for children is the use of color, as shown in Figure 4.1. Generally bright colors, bold lines, large buttons, and cartoonish images top the list of characteristics. Remember that log called a pencil you used to write with in kindergarten? When you're developing graphics for kids, use this knowledge to your advantage. Look through a child's eyes to find what will interest them.

As we grow up, one of the saddest things that happens to us is that we forget how to have fun. I watch my daughter, who is 1½, have fun with almost anything; she loves empty boxes and wrapping paper. As of late, she has a fatal attraction to Pooh and Tigger.


Netscape - [Adler Home Page]
File Edit View Go Bookmarks Options Directory Window Help
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
About Adler
Curriculum
Students
Staff
Projects
Document Done

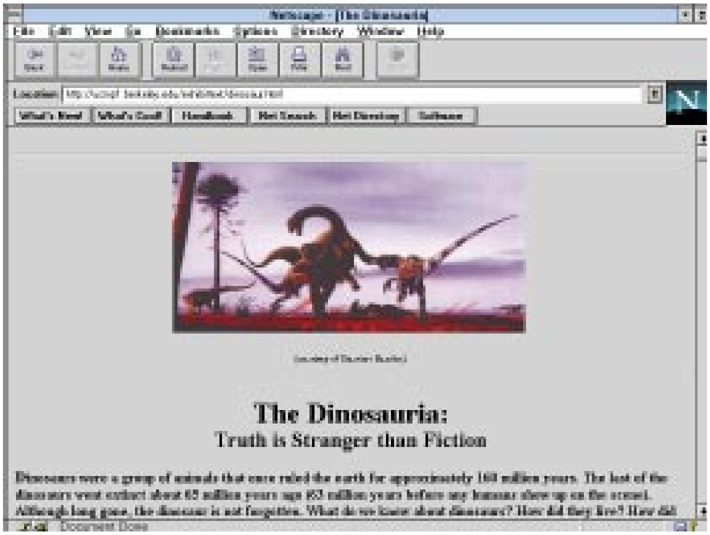
ADLER PARK SCHOOL
Libertyville, Illinois

Adler Park School
1740 North Milwaukee
Libertyville, Illinois 60048
(708) 362-7275
Janet Brzozka, Principal
[illegible]

Mark Mueller, Web Master [illegible]

Figure 4.1.
Use of bright colors for sites for kids.

Designing a site for kids must include something that is graphically fun and aesthetically stimulating, such as what is shown in Figure 4.2. I think most little boys go through the dinosaur stage. Focus a site for kids on something they will like. Use of imaginative cartoon characters is recommended. Development of graphics for these sites can be both fun and challenging, but if you can make your site a fun place to be, you will probably attract kids.


Netscape - [The Dinosauria]
File Edit View Go Bookmarks Options Directory Window Help
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
Document Done

[illegible]

The Dinosauria:
Truth is Stranger than Fiction

Dinosaurs were a group of animals that once ruled the earth for approximately 160 million years. The last of the dinosaurs went extinct about 65 million years ago (63 million years before any humans show up on the scene). Although long gone, the dinosaur is not forgotten. What do we know about dinosaurs? How did they live? How did

Figure 4.2.
Making your site interesting for kids.

The following Web sites are examples of sites that are specifically designed for children:

cellini.leonardo.net/museum/main.html

www.memst.edu/egypt/main.html

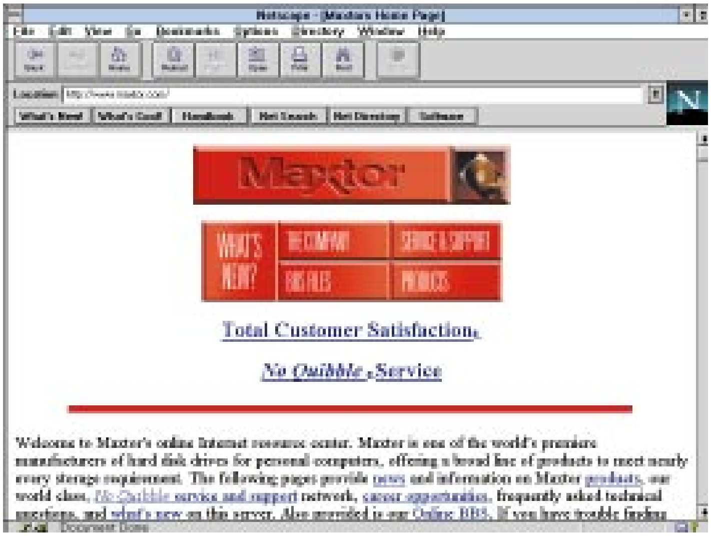
ucmp1.berkeley.edu/exhibittext/dinosaur.html

www.kidlink.org/home-std.html

Giving a Web Site That Corporate Look

In comparison to Web sites for kids, corporate sites may seem to be a more constricting environment. Indeed, in some instances they are. While decisions about the contents of the site are usually made by the "higher-ups," this does not mean that there is a lack of innovation. Many corporations, familiar with the idea that uniqueness is a marketing key, are striving to integrate the latest technology into their sites.

Much like a formatted business letter, most corporate sites have formal, balanced designs such as are shown in Figure 4.3. Unlike sites for kids or the avant garde, these sites strive to present formality through their design characteristics. A balanced design simply means that the page has symmetrical items on each side of the page. Paragraphs are usually justified and employee pages usually conform to preset standard templates.


Netscape - [Maxtor Home Page]
File Edit View Go Bookmarks Options Directory Window Help
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
Maxtor
WHAT'S NEW?
THE COMPANY
SERVICE & SUPPORT
BBS FILES
PRODUCTS
Total Customer Satisfaction
No Quibble Service
Document Done

Welcome to Maxtor's online Internet resource center. Maxtor is one of the world's premiere manufacturers of hard disk drives for personal computers, offering a broad line of products to meet nearly every storage requirement. The following pages provide news and information on Maxtor products, our world class, No Quibble service and support network, career opportunities, frequently asked technical questions, and what's new on this server. Also provided is our Online BBS. If you have trouble finding

Figure 4.3.
The corporate Web look.

To see examples of corporate Web sites, take a look at the following sites:

www.microsoft.com

www.adobe.com

www.sony.com

www.autodesk.com

www.mcp.com

TASK

Creating a Corporate Web Page

Every corporation develops its own look. If you've got the job of designing a Web site for a commercial client, you probably have some research ahead of you. Here are some suggestions:

- ❑ Secure a copy of the company's standards manual. You may not be aware that most major corporations have strict standards that cover how their name and logo will be used, exact specifications (usually in CYMK or Pantone colors) of any corporate color, and the precise placement of these elements on letterhead, envelopes, hats, T-shirts, and anything else.
- ❑ Find the company's annual reports for the last three years. No other corporate communication projects a company's personality better than its annual report.
- ❑ Visit the company and test the corporate climate. Stuffed shirts? Bright and airy cafeteria? Day care? Exercise room and running track? They all set the tone.

Experiencing the Avant Garde in Web Design

Avant garde is defined as a group or individual active in the invention and application of new techniques in a given field, especially in the arts. This statement sums up much of what is taking place on 90 percent of the Web. Let's face it, mom and dad weren't doin' cool stuff like this on the Web. They didn't even have a Web.

NOTE: In the design world there is a significant difference between ingenuity and creativity. Ingenuity is modification of an idea or a process. Alternatively, creativity is the development of an entirely new idea or process. The biggest difference between these two principles is the time required for each; ingenuity equals the square of creativity. Sites that are truly avant garde are creative. On the Web there are many ingenious individuals, but very few who are truly creative.

The avant garde look is a function of an individual's background and experience and can be subjective. Regardless, we can all pretty much agree that a design that shifts our paradigm or way of thinking, even in the slightest way, is avant garde to us. As you continue to surf the Web and even begin to design your own graphics, your idea of avant garde will undoubtedly change. Figure 4.4 shows an example of a site that appears avant garde to me.

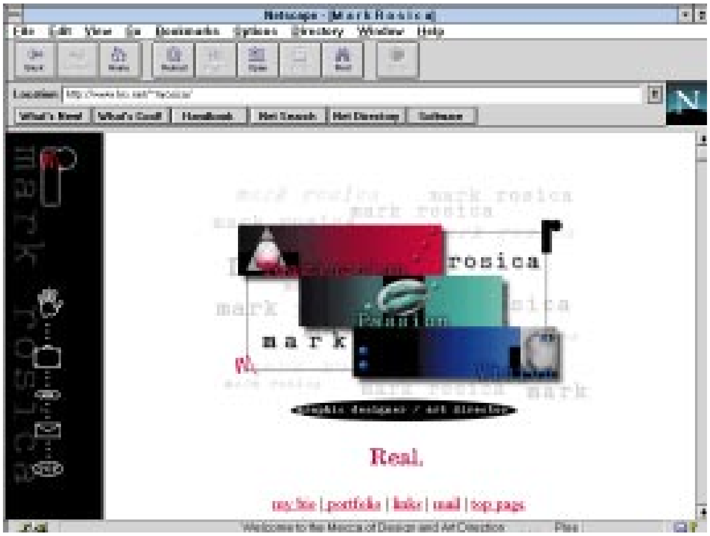


Figure 4.4.
A site that could be considered avant garde.

NOTE: Most of the early designs on the Web mimic traditional publications; this is a natural occurrence due to experiential influences. But this is quickly changing. The paradigm for Web design is becoming its own beast. New interface designs, navigational aids, and structures are emerging due to increasing hardware and software capability. Coupled with continually decreasing costs, we will continue to see the avant garde as individuals and corporations strive to combat a singular way of thinking.

Look at the following Web sites for examples of what we believe to be the avant garde in Web page design:

`www.fns.net/~mrosica/`

`www.digifrontier.com/`

`www.gmatter.com/GMS/GrayMatterStudios.html`

`www.recom.com/~hypno/`

Learning Font Secrets for Web Graphics

When you begin working with page design and layout, no discussion would be complete without talking about fonts. The feature that most distinguishes one font from another is the presence or absence of *serifs*. Serifs are the small tails and feet that appear on certain characters to help distinguish them from other characters. Fonts with tails and feet are called *serif fonts*, those without are called *sans serif*. (See Figure 4.5.)

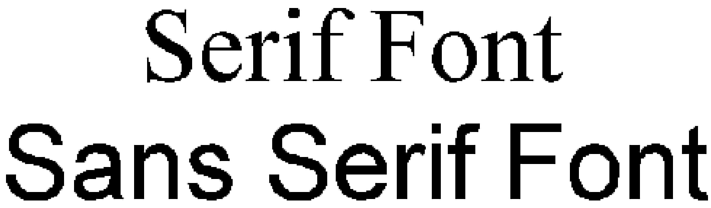


Figure 4.5.
Serif fonts versus sans serif fonts.

There are also other defined features associated with each type of font:

- The *horizontal space* of a character is the width of the letter M in the font, shown in Figure 4.6.

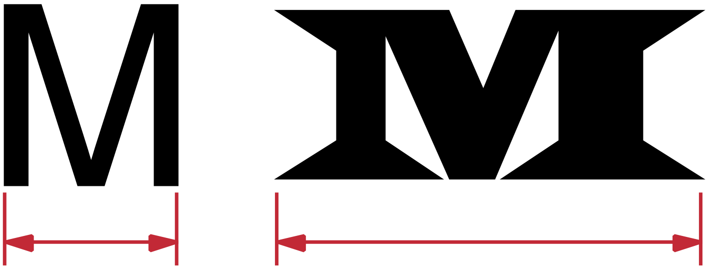


Figure 4.6.
The horizontal space of a font.

- The *weight* of the font is the width of the strokes composing the lines and curves of the letters, shown in Figure 4.7.
- The overall size of a font is called the *point size*, and it is measured in points (72 points equals 1 inch), shown in Figure 4.8.
- *Leading* is defined as the space between two lines of text, shown in Figure 4.9.

Figure 4.7.
The weight of a font.

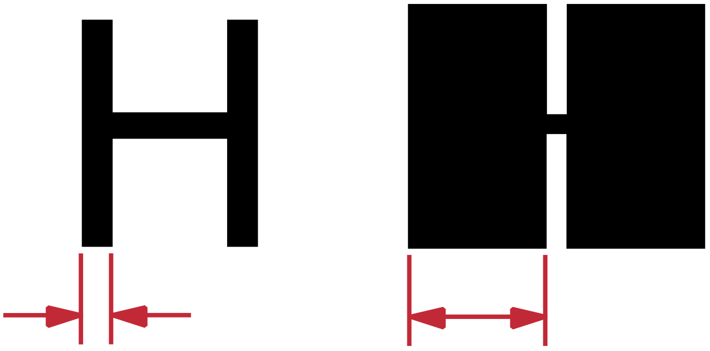


Figure 4.8.
A font at different point sizes.

This is 8 point text.

This is 14 point text.

This is 24 point text.

This is 36 point text.

Figure 4.9.
A font's leading.

The leading of a font is the space between multiple lines.
The leading of a font is the space between multiple lines.
The leading of a font is the space between multiple lines.
The leading of a font is the space between multiple lines.
The leading of a font is the space between multiple lines.
The leading of a font is the space between multiple lines.
The leading of a font is the space between multiple lines.
The leading of a font is the space between multiple lines.

Leading = 12

The leading of a font is the space between multiple lines.

The leading of a font is the space between multiple lines.

The leading of a font is the space between multiple lines.

The leading of a font is the space between multiple lines.

The leading of a font is the space between multiple lines.

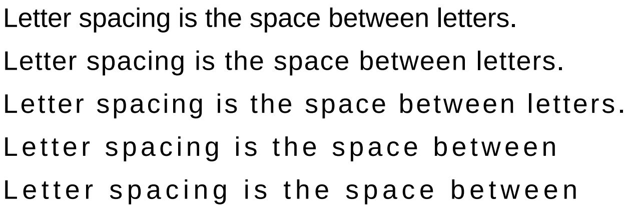
The leading of a font is the space between multiple lines.

The leading of a font is the space between multiple lines.

The leading of a font is the space between multiple lines.

Leading = 16

- ❑ *Letter spacing* is the space between two characters in the font, shown in Figure 4.10.



Letter spacing is the space between letters.

Letter spacing is the space between letters.

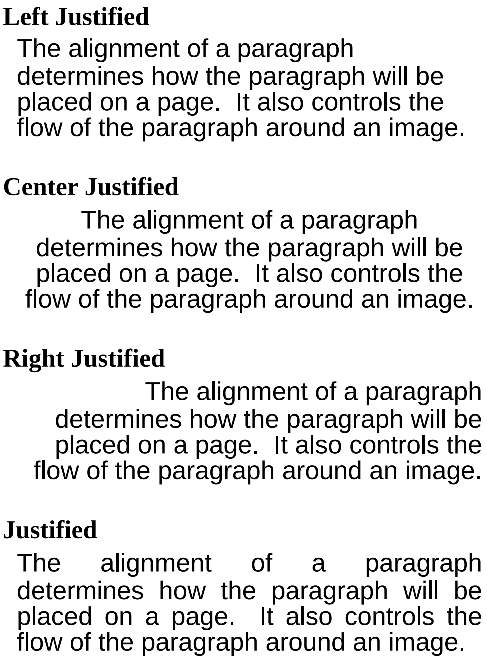
Letter spacing is the space between letters.

Letter spacing is the space between

Letter spacing is the space between

Figure 4.10.
The letter spacing of a font.

- *Alignment* is the physical alignment of a body of text, shown in Figure 4.11.



Left Justified

The alignment of a paragraph
determines how the paragraph will be
placed on a page. It also controls the
flow of the paragraph around an image.

Center Justified

The alignment of a paragraph
determines how the paragraph will be
placed on a page. It also controls the
flow of the paragraph around an image.

Right Justified

The alignment of a paragraph
determines how the paragraph will be
placed on a page. It also controls the
flow of the paragraph around an image.

Justified

The alignment of a paragraph
determines how the paragraph will be
placed on a page. It also controls the
flow of the paragraph around an image.

Figure 4.11.
Alignment.

Font Families That Set the Tone

Different font styles connote different tones in your design. For example, font can be used to aid in developing an emotion. They can also be used to add atmosphere or to support what the particular page is discussing (see Figure 4.12).

Developing style through the use of fonts is often overlooked by new Web designers. Don't forget to use some of the fonts you already have to aid in your design, but don't go font-happy. Stick a font or two on a single page. If your font supply is limited, there are several places on the Web where you can get public-domain fonts. Check out these sites for fonts that you can buy and use in your designs:

`http://www.dol.com/fontsOnline/`

`http://www.imageclub.com/`

`http://www.webcom.com/ztek/`

`users.aol.com/typewire/home.htm`

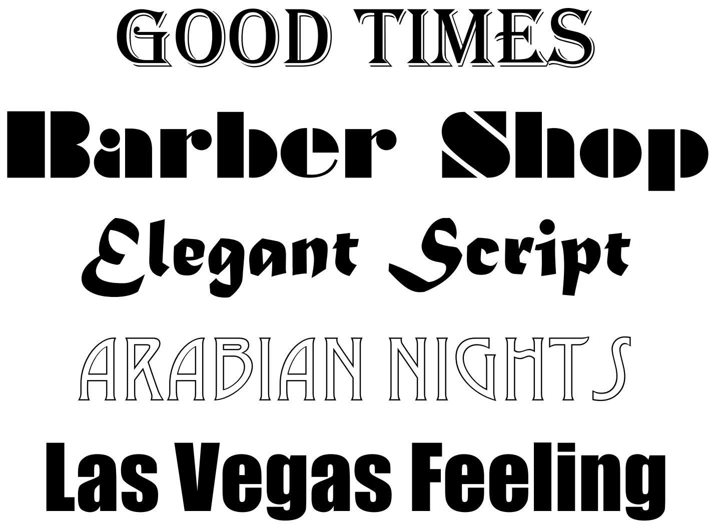


Figure 4.12.
Fonts that can be used to help set the tone of a graphic or page.

When you are creating bitmaps of text, remember to turn on anti-aliasing so your bitmap representation of the font looks smooth when used on your page. If you forget, the bitmap will have a severe case of the jaggies.

Fonts for the Screen

Most of the unique fonts that you use in your Web pages will be graphic text that is a bitmap from an image editor. Fonts that are actually used in the body of a Web page via the HTML `<P>` tag are limited to fonts on the user's machine. Specifying a font in your HTML code that is not on the end user's machine won't work. Make sure you stick with standard operating system fonts when you're coding. Use unique fonts as inline images.

TASK

Designing a Font-Rich Page

Look at Figure 5.1 for an example of a page containing a large number of text elements. There are two ways to get a text font onto a Web page. One way is to use the text available as HTML commands. See Chapter 11, "How to Avoid the Ten Most Common Web Mistakes," for an in-depth discussion of this topic. Another way is to bring in text as part of a graphic.

This is a bittersweet situation. On the plus side, HTML text carries almost no file size overhead because the text you display on the screen is created from the fonts you have resident on your machine. You can display a considerable amount of text on a Web page from a 20KB HTML file. The bad news is that HTML text is limited in its design capabilities, as well as in its font choices, which are slim and none. You should design only in fonts that you can assume will be on your audience's machine (that is, those that come with the operating system).

You can manipulate text all you want in PostScript programs such as Illustrator, FreeHand, or CorelDRAW! But as of this writing, PostScript outline font technology has yet to be delivered to the Web. In raster programs such as Photoshop and Fractal Painter, text committed to the canvas becomes just another pattern of pixels. The solution to this graphic text problem? Make into graphics only passages that you know are not going to change.

A text-rich page has its own set of design considerations:

- ❑ Text should change from large to small and from heavy to light as it moves down the page (refer to Figure 4.1). In Western culture we read from top to bottom and from left to right. You should place text elements that establish both eye flow (top to bottom and left to right) and subordination (read this first, read this next).
- ❑ Use a sans serif font (Helvetica, Arial) for headlines and a serif font (Times, Times Roman) for body text (see Figure 6.5). Large passages of sans serif type are more difficult to read than the same passages in a serif font.
- ❑ Lighter text subordinates (is less important) while bold text dominates (is more important). Refer to Figure 4.4.

Designing an Opening Web Splash Page

Many a Web site is dismissed due to the initial reaction to a splash page. A splash page's poor design, inappropriate graphics, and lack of structure all decrease the potential perceived value of the site. Without careful consideration of splash page contents, the Web site's potential for entertaining, informing, communicating, and persuading can be overlooked by the user.

No One Likes to Scroll

Have you ever noticed that humans are impatient? Think back six years ago. You'd drive up to McDonald's to get a cup of coffee, and there was one window. You'd always have to wait for one car that was ordering for eight. Finally, they noticed that waiting made us impatient, so they added another window. McDonald's has learned the deep truth of humankind: We know what we want and we want it now.

The same principle, slightly modified from the McDonald's model, applies to splash pages: Users hate to scroll. When you're putting your splash page together, put your site overview right at the top where users can immediately jump wherever they're going. Before you know it, you may just have the next sign proclaiming "Over 1 Billion Served!"

The “Must Have” Elements

You may have already begun planning your splash page, or at least have an idea of what you want your site to include via an abstract. Among the many items that a splash page can have, make sure that you include the following:

- ❑ A logo or other identifying mark
- ❑ A text-only option for slow Net hooks
- ❑ The sites structure in text or graphical form for quick access
- ❑ An e-mail link for feedback
- ❑ An address and phone number for additional means of contact

TASK

Designing a Splash Page

Figure 4.1 shows a simple yet effective opening page for Adler Park School (`http://www.mcs.net/~adler/home.html`). Refer to it as the task steps are listed:

1. Create a site overview using icons, a navigation bar, or hotlinked text at the top of your page. This site has five options arranged in a function bar near the top of the page.
2. Include a visually appealing graphic of appropriate size relative to your audience. The alligator (school mascot?) is totally appropriate for kids, parents, and teachers who might visit the site. Use a logo or associated graphic related to the site’s purpose. If the mascot is the school’s logo, all the better. Note the tension caused by the asymmetry of text and graphic. No center alignment here!
3. Include an e-mail address hotlink so people can contact you. The Webmaster’s address is at the bottom of the page. Great!
4. Provide additional methods of contacting you (address, phone, and so on). On Adler Park School’s page, the school’s address is displayed, along with a link to the principal and her e-mail.
5. Plan a hotlink for a text-only version of your page. This is the only thing missing in this page. How would a person learn about Adler Park School if he couldn’t display the graphic? See Chapter 11 for more information.

Planning for Inline Graphics

As you are laying out a site, plan on including inline images. Sites without them are generally on David Letterman’s Top Ten List of Worst Sites or Yahoo!’s Worst Pages (www.yahoo.com). It is much easier to plan for them and not include them than it is to try to incorporate them after the fact. Even if your Web page is just a personal page, add an image of yourself for visual appeal.

TIP: As you're planning for inline graphics, remember that they only need to be 72 dpi (the resolution of most computer monitors). They should also conform to a 256-color (8-bit) palette. Anything more, and the cyber-police may pull you over for hogging the road. Just kidding, but anything higher just wastes Net bandwidth.

Using External Graphics for Impact

As you're working on your page, you may need to let the user view higher resolutions of your work. This is particularly true in environments that deal primarily with graphics. But hey, you never know. You may be a political science major who creates an awesome, cool beans, hold-on-to-your-seat, better-than-Da Vinci graphic. It could happen!

If you do and you're not thrilled with the 256-color version, allow the user to download a high-resolution version from your site and view it externally in a paint editor such as Photoshop or Fractal Painter. This is the only real way for them to view it at a higher resolution and bit depth. If you're thinking about doing this, you may want to consider compressing your files with a product like PKWARE, Inc.'s PKZIP or Aladdin's StuffIt Deluxe.

NOTE: Graphic image file size increases exponentially when you begin beefing up the resolution and bit depth. A 16.7 million color image at 800×600 tends to be 1.44MB, which is relatively large for Net delivery. One option you have is to use file compression to shrink the file. Depending on the compression algorithm, you may be able to cut the size in half. You'll probably want to look at lossless compression schemes. These schemes retain all the original data—in English: Your images stay sharp and clear. To find out more about file compression, check out the Web site at

http://www.cis.ohio-state.edu/hypertext/faq/usenet/compression-faq/top.html

TASK Creating a Colored Background

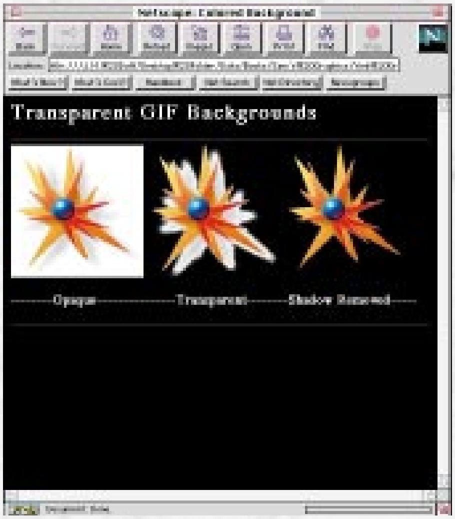
Undoubtedly, one of the worst things you have to work with in HTML is hexadecimal values for background colors. Yahoo! Just when you thought you were getting a handle on things, here comes hex. Chapter 3, "Creating Cool Graphics for the Web," shows you how to convert RGB into hexadecimal using a scientific calculator, and you know there are resources out there on the Web to help do the conversions. Once you have the color converted, changing the hue of your background is pretty straightforward. Just remember, background color is set *per HTML file*. That is, you can't change the background color within a file (without loading a graphic as an alternative). To set the background color of a page, follow these steps:

1. Find the hexadecimal equivalent for the desired RGB color.
2. Insert the following line into your HTML code as the first line in the `<BODY>` section:

   ```
   <BODY BGCOLOR=#ZZZZZZ>
   ```

   where *zzzzzz* is the hexadecimal equivalent of the desired RGB color.

WEB WORKSHOP: If you use a colored background, some decisions you may have already made with your graphics, such as shadows and anti-aliased edges, may be inappropriate. The drop shadow that looked realistic on white looks like a gray glow when displayed on a black (`000000`) background such as this. It would be better to keep the opaque white. Better yet, go back in and remove the shadow.



Hexadecimal math codes allow you to use colored backgrounds, text, links, and rules in HTML coding. Unlike defining RGB or CYMK colors, hexadecimal color codes are base-16 mathematics. Even though they are a pain to work with, they are the most efficient way to create solid-colored backgrounds, because the colors are defined mathematically rather than through bitmaps.

NOTE: If you're like me, calculating hex codes is not your thing. There are several resources on the Web designed to help you. Check out the hex resources at

`http://www.bga.com/~rlp/dwp/palette/palette.html`

or

`http://www.echonyc.com/~xixax/Mediarama/hex.html`

Once you've found the hex code for the color you want (the hard part), you use the hex value in your HTML code like this (where `FFFFFF` equals white):

Color your...	HTML code
Background	`<BODY BGCOLOR="FFFFFF">`
Text	`<TEXT="FFFFFF">`
Links	`<LINK="FFFFFF">`

TASK

Making Custom Background Patterns and Tiles

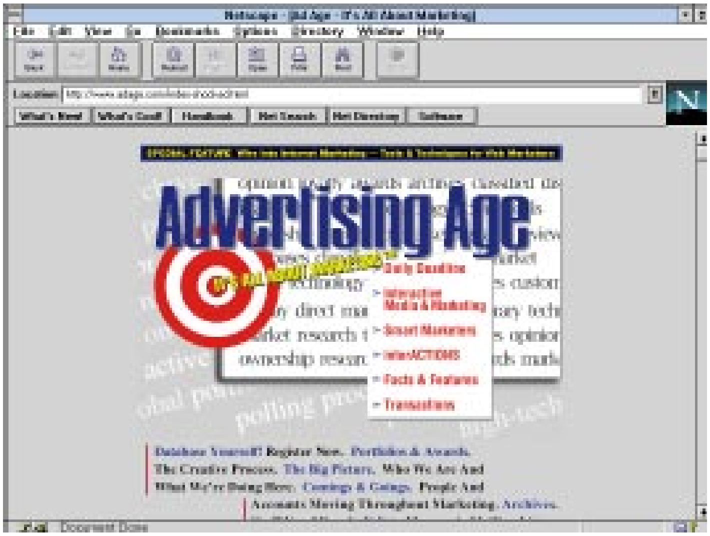
An additional method of filling your background is to use a tiled or repeated bitmap across the back of your page. This is effective, but the larger the bitmap, the longer it takes to load. When you search for images to use, however, make sure that the image is repeatable. This means that the image's edges have similar patterns allowing it to be tiled without a visible seam. This first custom background task describes a non-seamless tile technique. Say you want to create a tiled background like that in Figure 4.13. To make custom background pattern from a tiled image, do the following:

1. Decide the size of the repeating image. The smaller it is, the faster it will load. A 72×72 pixel canvas will work fine.
2. Open a new 72×72 dpi file in your raster editor. Assign the same background color that you'll be using as the canvas color in the tile. This makes the tile blend into the background rather than contrast against it.
3. Open your logo and scale the image so it fits in a 1-inch×1-inch area.

4. Copy this scaled logo to the clipboard and paste it into your background file. Position the logo so that it doesn't touch the edges of the canvas.
5. Reduce the logo to 8-bit indexed color using an adaptive palette and diffusion dither. Accept the number of colors (usually fewer than 256) your program assigns to the file.
6. Add the following line to your HTML code immediately after the `<BODY>` tag:

```
<BODY BGCOLOR=#ZZZZZZ BACKGROUND="tile.gif">
```

where *#zzzzzz* is the same background color as used on the `tile.gif` canvas.

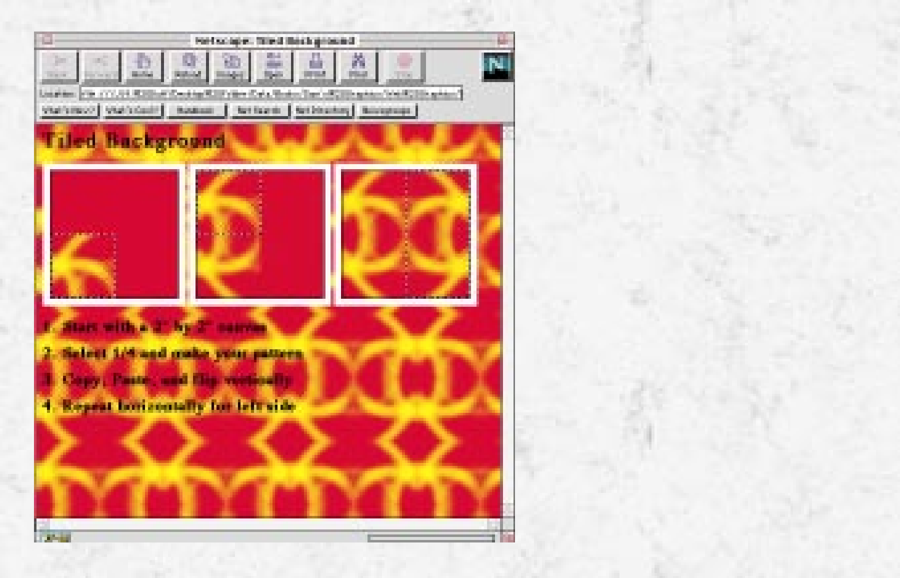

Netscape - [Ad Age - It's All About Marketing]
File Edit View Go Bookmarks Options Directory Window Help
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
Advertising Age
It's All About Marketing
Daily Deadline
Interactive Media & Marketing
Smart Marketers
InterACTIONS
Facts & Features
Transactions
Document Done

Database Yourself! Register Now. Portfolios & Awards. The Creative Process. The Big Picture. Who We Are And What We're Doing Here. Comings & Goings. People And Accounts Moving Throughout Marketing. Archives.

Figure 4.13. *An example of a tiled background.*

WEB WORKSHOP:

A tiled background can be an effective way to add interest to your Web pages. It allows you to overlay HTML text on top of a GIF graphic, which is something you usually can't do. It also gives *selected* pages a different look. Don't use a tiled background behind normal text. The background is built from a single GIF tile that is repeated as often as necessary to paint the background using the `<BODY BACKGROUND=>` tag. To make a tile whose edges match, follow the steps shown in the example. Vary the size of the canvas for different effects.



Netscape: Tiled Background

Tiled Background

1. Start with a 2" by 2" canvas
2. Select 1/4 and make your pattern
3. Copy, Paste, and flip vertically
4. Repeat horizontally for left side

Next Steps

Now that you know how to make effective Web graphics, here are suggestions for your next steps:

❑ To see more examples of Web pages with various modes of design, see Chapter 6, "Presenting Effective Web Graphics."

❑ To discover how to plan for inline images and use them effectively, see Chapter 16, "Utilizing Inline Graphics to Your Advantage."

❑ To find out more information about creating tiled backgrounds, see Chapter 15, "Designing Backgrounds That Make Sense."

Q&A

Q: I specified a font to be used in my HTML code, but when I viewed it on a friend's computer, the text was not the font I specified. What did I do wrong?

A: It's likely that you've specified a font that is not on the user's machine. This is a common problem. If you specify a nonstandard font (a font not included with the operating system), the browser will automatically insert another font. This is called *font substitution*. Some common standard fonts on the PC include Arial, Times New Roman, and Courier. Standard Mac fonts include Helvetica, Times, Geneva, and Palatino.

Q: I decided to change some things in my Web pages. I added an inline graphic, changed the background color, and moved some text around. But now, when my browser opens the page, it's all messed up. What do I do?

A: If you decide to go back and change the code in your pages, like adding an inline image or changing the background color, do one thing at a time. A common programming error is to change several things at once. Programming is more than just entering code. It is also problem solving. By changing one thing at a time in your code, you can help yourself find problem areas if they exist. All you have to do is look at the last thing you did. If you change several things at a time, solving the problem is more difficult.

CHAPTER

FIVE

Using Multimedia and Special Effects on the Web

In this chapter, you'll

- ❑ Learn realistic expectations for multimedia graphics delivered on the Web
- ❑ Discover how tables can be used to help you control your graphics
- ❑ Learn how forms can be used to collect data from visitors at your site
- ❑ Understand the possibilities presented by authoring products, such as Java

Interactive multimedia and special effects are slowly coming of age on the Web. What was once characteristic only of the 640MB CD-ROM media is starting to be seen on the Web. Animated segments, platform-independent applications, and audio elements are now being utilized on the Web. As the capability of the much-talked-about Information Superhighway comes online, more cool CD-ROM–type stuff will be delivered via the Web due to increased bandwidth and sophisticated online programming languages.

Involving the User with Multimedia Graphics

Probably one of the greatest impacts that this new medium has on us is its capability to involve us with the content. We get sucked in by directly interacting rather than passively viewing. One of the most important precepts that media developers must be aware of is the fact that the first seven minutes of any media presentation, whether it be a movie, an interactive game, or a Web site, are the most critical. It takes approximately seven minutes to get drawn into a presentation. It's during this period that you forget you're sitting in front of a movie, television, or computer screen. By using the power of interaction, this time period can be reduced—reduced so that, almost instantaneously, the receivers of your information are drawn into your world. But how do you use dynamic graphic elements to draw your audience in? And what is realistic via the Web?

Realistic Expectations on the InfoBahn

Discussing multimedia use on the Web brings a mixed bag of reactions. Most dream of full-screen, audio-rich environments that literally resemble going to the movies or playing the latest, greatest interactive CD-ROM–based game. Well, it's not quite that just yet.

Multimedia on the Web is a strange critter. At one end, the high-bandwidth end, multimedia is great. Embedded elements that change and react to cursor rolls, clicks, and keyboard punches quite literally make multimedia seem to be the answer for everything. On the low-bandwidth end, however, users curse and swear at the elements that take so long to download. After they download, most low-bandwidth users are disgusted to find that the element is virtually useless or of no interest to them.

Knowing what can be realistically and effectively viewed by your audience is key, and it completely depends on your intended audience. It is imperative that you decide on a specific amount of deliverable content based on your audience's limitations. How do you know what is deliverable? For most consumers, 14.4Kbps to 28.8Kbps is the limit, meaning it will roughly take one minute per 100KB of information. Full-screen movies, large sound bytes, complex applications, or multiple multimedia elements per page can drive the composite size of a page to, well, several hundred kilobytes. If you are considering integrated multimedia, be cautious about how much you can deliver effectively.

Shockwave

Shockwave is Web multimedia in its infancy, comparatively speaking (see Figure 5.1). This is not meant to degrade Shockwave in any way; I love it, but give the technology a year or two and you'll be seeing Director Web applications that will compare to most CD-ROM–based applications.

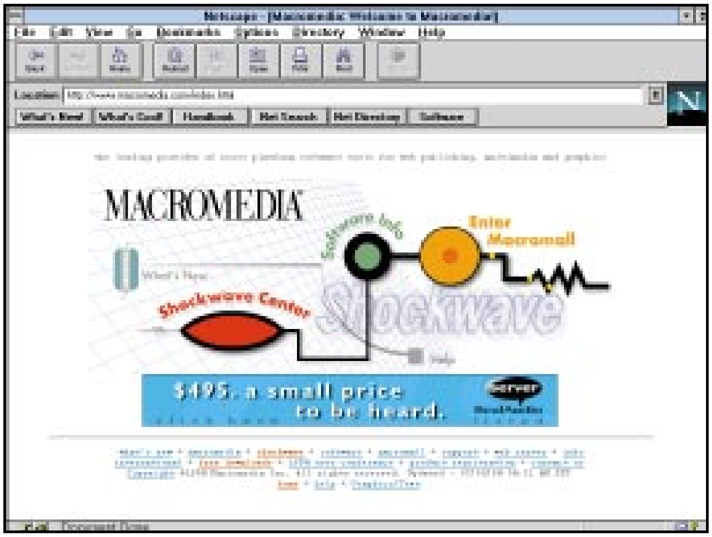


Figure 5.1.
Macromedia's Shocked home page.

NOTE: A point of confusion to most people is the difference between Shockwave and Afterburner. To view Shockwave movies via your browser you must have the Shockwave browser plug-in. To create Shockwave movies you must have Director and the Afterburner filter, which actually compresses your Director movie for use on the Web. Both the Shockwave plug-in and the Afterburner filter can be downloaded from Macromedia's site.

So what should you expect to do via Shockwave—full-screen animated sequences? Well, right now the majority of Shockwave-enhanced Web pages use dancing bullets and small animated buttons or logos. Some go so far as to animate entire pages, which can be somewhat slow depending on your machine and Net hook. For the most part, Shockwave gives you a way to attract attention and extend your browser's capability above and beyond HTML's capabilities (see Figure 5.2).

NOTE: If you decide that you want to Shock your pages, your site administrator will have to tweak some settings on your http server. The administrator needs to tell the server to recognize the Shockwave multipurpose Internet mail extension (MIME) types. This lets the server know what type of files they are and what to do with them. Have your system administrator set the following parameters on your http server:

MIME type: application

Subtype: x-director

Extensions: `dcr`, `dir`, `dxr`

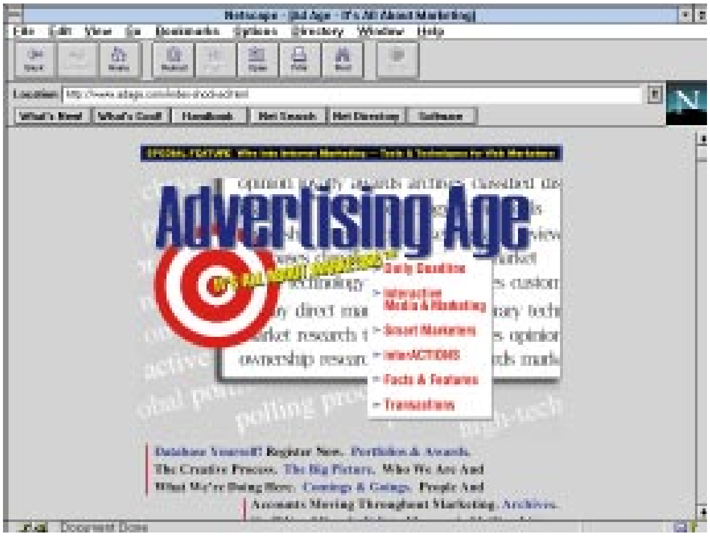

Netscape - [Ad Age - It's All About Marketing]
File Edit View Go Bookmarks Options Directory Window Help
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
Advertising Age
It's All About Marketing
Daily Deadline
Interactive Media & Marketing
Smart Marketers
InterACTIONS
Facts & Features
Transactions
Document Done

Figure 5.2.
A Shocked Web page.

Java

What do you get when you take a group of individuals and separate them from a parent company to develop something new? You get something revolutionary like Java. Originally designed for consumer electronics, Java is quickly changing the paradigm of Web design.

Java is an entirely separate programming language from HTML. It is not designed to replace HTML coding but rather to supplement, enhance, and extend HTML's capability. It was also developed as a way to solve many of the problems with programming in C++. Being a separate programming language, Java can be used to program applications or other software aside from the Web. Its biggest impact is in Web development, however, and the implications for its use are quite vast.

Besides stand-alone applications, Java programming creates modules called *applets*—small programs that are utilized in HTML code through the <APP> tag. Applets are essentially small applications that are utilized over the Web. Because Java is object oriented, applets also serve as modules or code segments that can be reused with future applications. Due to its graphical capability, Java applets open the proverbial door wider, allowing more flexibility and greater utility on the Web (see Figures 5.3 and 5.4).

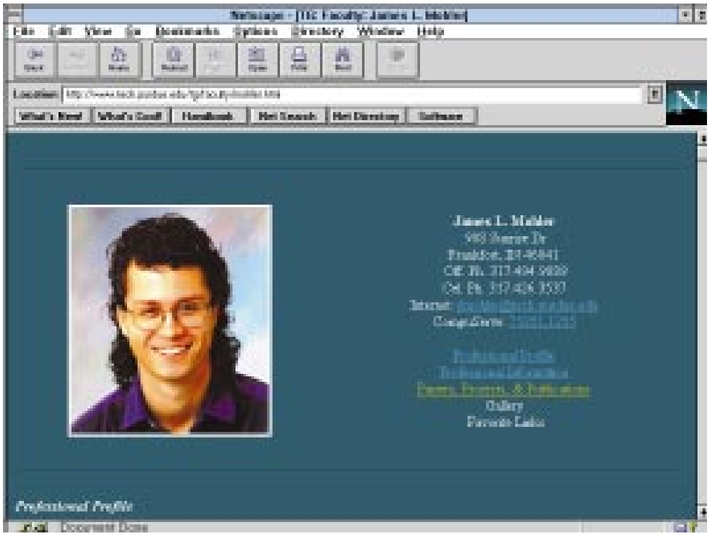
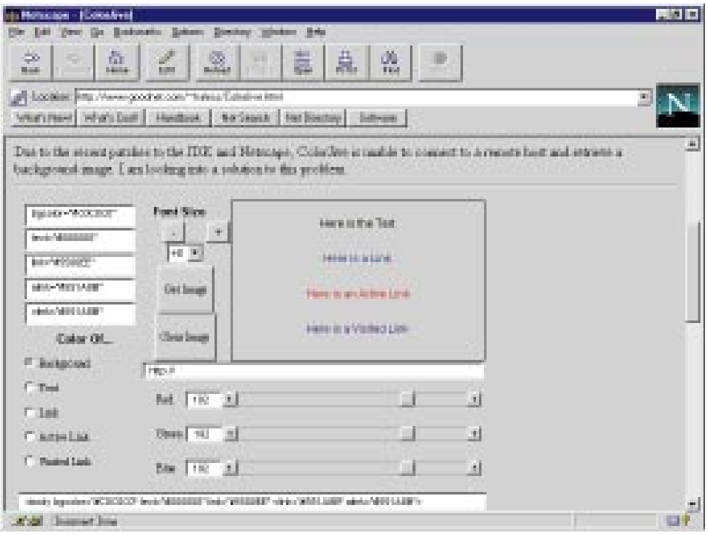

Netscape - [TIC Faculty: James L. Mohler]
File Edit View Go Bookmarks Options Directory Window Help
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
James L. Mohler
Gallery
Favorite Links
Professional Profile
Document Done

Figure 5.3.
A color-selection Java application.

Viewing and developing Java applications requires a 32-bit environment such as Windows 95, Windows NT, or UNIX GUI. In addition, your Net browser must recognize the HTML <APP> tag. Sun Microsystems has developed a graphical Web browser called HotJava that is specifically designed for Java applets. The browser, which resembles Mosaic, is currently available for 32-bit operating systems. Rumor has it that Sun is working on a 16-bit version for Windows 3.1 and Macintosh. Netscape version 2.0b and later, running on Windows 95, Windows NT, or UNIX, will also recognize the <APP> tag.

When a Java-enabled browser comes across an <APP> tag, it downloads the code for the specified application. After the code is downloaded, it is compiled, and the browser attempts to execute the code on the particular platform. Because it works in this way, there has been some concern about the possibility of malicious use of Java; however, Sun says there is little to worry about due to the multilayered security within the language and browsers.



Due to the recent patches to the JDK and Netscape, ColorJam is unable to connect to a remote host and retrieve a background image. I am looking into a solution to this problem.

Figure 5.4.
Game programming on the Web via Java.

Audio Elements in Design

Multimedia is much more than a static and dynamic graphic environment. Multimedia also integrates auditory data to create a multisensory environment. Several browser plug-ins are emerging that allow audio data to be streamed over the Internet in real-time. Several digital video stakeholders are working on plug-ins that allow video and audio. In fact, they will probably have several out by the time this book is printed.

One of the most significant contributors to audio streaming technology over the Net is Progressive Networks with its RealAudio plug-in (`http://www.realaudio.com`). I have been extremely impressed with the quality of sound that can be utilized via RealAudio. This is one to watch!

TASK

Embedding Multimedia Elements

Creating a Shockwave movie is relatively easy if you have a good understanding of Macromedia's Director software and the Shockwave plug-in (for more information on Director, see Macromedia's site at `http://www.macromedia.com`). Use these steps to guide your task:

1. Use Macromedia Director to create a small movie. Note that Director movies integrated on a Web page need to be small (preferably 100KB or less) to be effective due to download considerations.
2. Once the movie has been created, filter it with the Afterburner software (download Afterburner from Macromedia's site, `http://www.macromedia.com`).

3. Embed the movie in the HTML code using the embedded source `<EMBED SRC>` tag. The most difficult aspect about this whole process is learning Director.

Using Tables to Format Graphics

As you begin coding your pages, don't be surprised if you have difficulty getting text to flow nicely around your inline images. It may require some tweaking—a technical term for playing with the code—particularly if you view it from a couple of different browsers.

One solution that may help as you're trying to get what you want: Consider using the HTML `<table>` tag to format text with graphics. The `<table>` tag makes the text format nicely around your images. It also reduces the amount of tweaking you have to do with your HTML code. A table is also a nice way to help format technical items such as a résumé or bibliography. Tables can also be very helpful if you are trying to format a large number of graphics for navigation bars or other functions (see Figure 5.5). Using regular HTML formatting for several graphics on a page can require a significant amount of tweaking to get them aligned and placed just right, but tables force graphics to behave in a very controlled way.

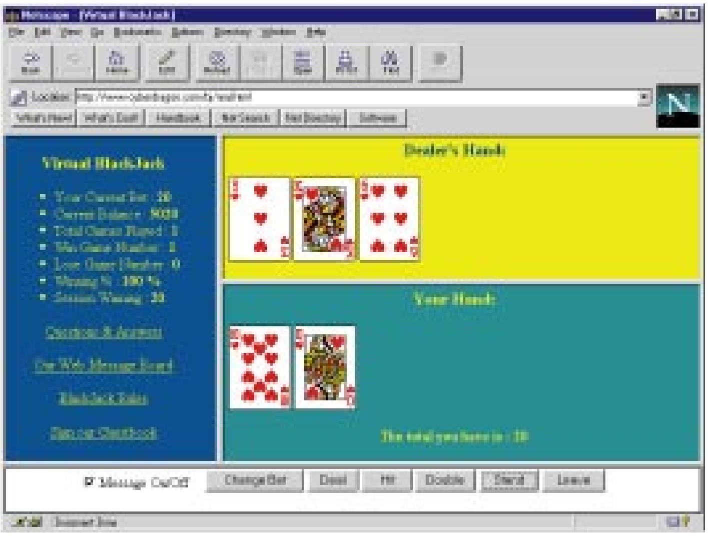


Figure 5.5.
Using a table to format graphics and text.

Creating a Table of Graphics

A table is simply a framework for organizing graphics on an HTML page. This structure overcomes one of the most serious limitations of HTML: its inability to place a graphic at a specific position of the page. Tables trick HTML!

You may want to add the BORDER option to <TABLE> to see the extents of the table.

1. Create an HTML file with the following code:

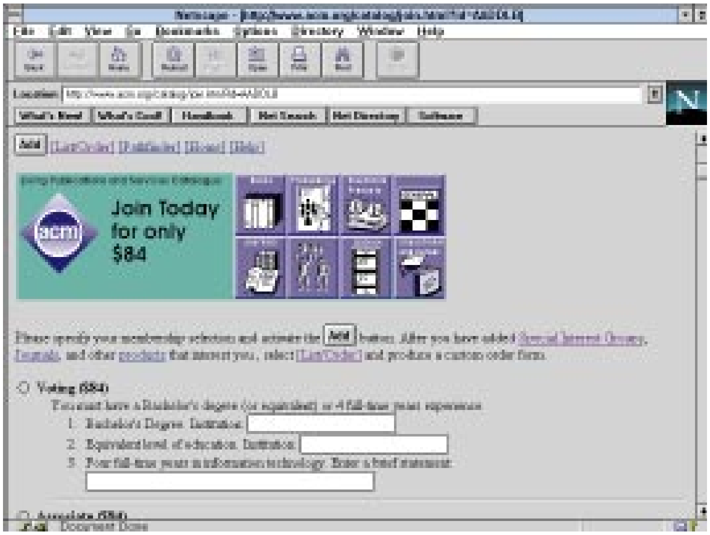
```
<HTML>
    <HEAD>
    <TITLE>Graphics in a Table </TITLE>
    </HEAD>
    <BODY>
        <TABLE>
        <CAPTION>Four By Four Graphics</CAPTION>
        <TR>
            <TH><img src="cell1.gif"></TH>
            <TH><img src="cell2.gif"></TH>
        </TR>
        <TR>
            <TD><img src="cell3.gif"></TD>
            <TD><img src="cell4.gif"></TD>
        </TR>
        </TABLE>
    </BODY>
</HTML>
```

2. Using images from your Web Workshop CD-ROM and the previous code, create your first formatted graphic. Substitute the actual name of each graphic file and ensure that the path to the graphic is correct.
3. Experiment with images of different heights and widths and see what happens to table cell dimensions. Images inside table cells can be scaled and aligned like any other graphic on the page inside the <IMG SRC> tag.

Gather Information with Interactive Forms

Are you curious about who will be visiting your Web pages? Do you need to justify your site's existence, or do you have some pervading questions you'd like to ask your users?

HTML 2.0 allows one of the most functional features for capable browsers— the ability to create interactive forms. These forms are particularly useful to corporations, but they can also be used for individual sites or purposes. An interactive form can be designed to gather any information you want to gather (see Figure 5.6). Clickable buttons, radio buttons, and text fields can also be set up to aid in information collection. Then, the information can be automatically compiled and recorded on the http server for your use. Pretty cool, huh?


Netscape
File Edit View Go Bookmarks Options Directory Window Help
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
Add [ListOrder] [Publications] [Home] [Help]
Join Today for only $84
acm
Document Done

Please specify your membership selection and activate the Add button. After you have added Special Interest Groups, Journals, and other products that interest you, select [ListOrder] and produce a custom order form.

○ Voting ($84)
You must have a Bachelor's degree (or equivalent) or 4 full-time years experience
1. Bachelor's Degree. Institution:
2. Equivalent level of education. Institution:
3. Four full-time years in information technology. Enter a brief statement:

○ Associate ($84)

Figure 5.6.
Using interactive forms at your site.

TASK

Creating an Interactive Form

As with several other advanced features, forms require the use of external programming modules to work correctly. The creation of the HTML form itself is relatively basic, but the form page must know what to do with the information after it has been entered. This is where the CGI script takes over. The CGI script reads the information submitted by the user and writes it down. The CGI script can be very simple, taking the information and creating a text file on the server, or it can do a number of complex analyses of the data before writing it. Here I am going to focus on the simple end of recording the information so that you can look at it later.

Before you start the following task, you will need to have the CGI script you'll be using or know where you can find it on the server. Contact your site administrator and see if there is a CGI script for simply saving information from interactive forms. If one does not exist, take a look on the Web for a freeware CGI script to save simple information. A good place to start is Yahoo!'s site under programming languages. When you have a CGI script to work with, begin creating a form by doing the following (see Figure 5.7):

1. Create an HTML file with the following code:

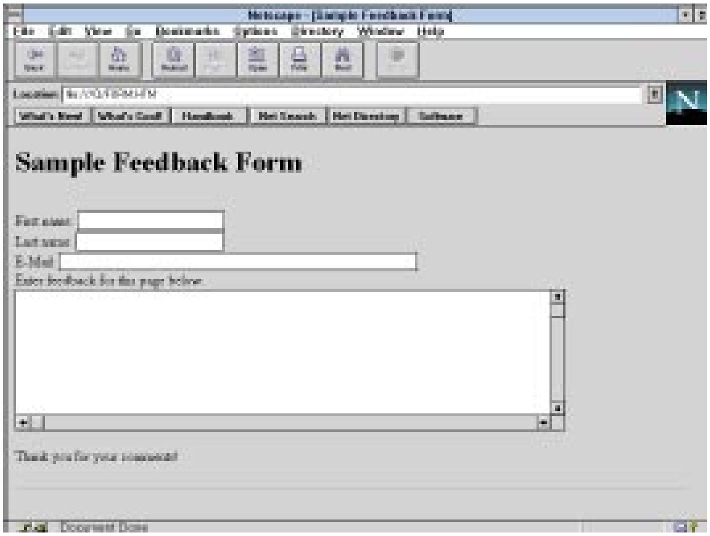
```
<HTML>
<HEAD>
<TITLE>Sample Feedback Form</TITLE>
</HEAD>
<HL>
<H1>Sample Feedback Form</H1>
<HL>
<BODY>
```

```
<FORM METHOD="POST" ACTION="../cgi-bin/simpletextCGI">
<BR>
First name:
<INPUT TYPE=text NAME="first_name" SIZE=20 MAXLENGTH=20>
<BR>
Last name:
<INPUT TYPE=text NAME="last_name" SIZE=20 MAXLENGTH=20>
<BR>
E-Mail:
<INPUT TYPE=text NAME="address" SIZE=50 MAXLENGTH=75>
<BR>
Enter feedback for this page below:
<TEXTAREA NAME="feedback" ROWS=10 COLS=75>
</textarea>
<BR>
<BR>
Thank you for your comments!
</form>
<HR>
</BODY>
</HTML>
```

2. Edit the line that begins with `<FORM METHOD>`. Change the portion that says `ACTION="../cgi-bin/simpletextCGI"` to the location and name of your CGI script.
3. You can edit the size of the text entry fields by changing the `SIZE`, `ROWS`, and `COLS` settings.
4. You can also set default text to appear in any of the fields by adding the `VALUE` option. For example, if I wanted the name `JOE` to appear by default in the first name field, I would change the `INPUT` line for it to

   ```
   <INPUT TYPE=text NAME="last_name" SIZE=20 VALUE="JOE" MAXLENGTH=20>
   ```

   This would cause `JOE` to appear in the first name field when the page is first loaded.


Netscape - [Sample Feedback Form]
File Edit View Go Bookmarks Options Directory Window Help
Back Home Reload Open Print Find
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
Document Done

Sample Feedback Form

First name:

Last name:

E-Mail:

Enter feedback for this page below:

Thank you for your comments!

Figure 5.7.

A simple interactive form.

Next Steps

Now that you know how multimedia elements can be used on your pages, check out these possibilities:

- ❑ To find out more about multimedia integration on the Web, see Chapter 18, “Delivering Animations at Your Web Site.”
- ❑ To find out more information about external graphic file formats, see Chapter 19, “Understanding Advanced Graphic File Types.”

Q&A

Q: I want to use some of the cool plug-ins you talked about in the chapter. I looked on my browser’s site and couldn’t find them. Where are they?

A: The best way to find a plug-in is to look on the site of the creator. Recently there has been a move toward developers delivering their plug-ins from their own sites.

Q: How do you use this Shockwave thing? I bought the Director software, but there's no documentation for Afterburner or Shockwave.

A: Several Director sites have a tremendous amount of information on Director, Shockwave, and Afterburner. These sites include the following:

```
http://www.mcli.dist.maricopa.edu/director/
http://www.xensei.com/users/gcm/
http://www-1.macromedia.com/index_in.html
```

A very comprehensive location called the Shockwave Center is located at `http://www.macromedia.com/Tools/Shockwave/`. This site should answer most of your questions concerning Macromedia's Shockwave and Afterburner products.

CHAPTER SIX

Presenting Effective Web Graphics

In this chapter, you'll

- ❑ See examples of effective splash graphics, jump lists, and reduced-resolution thumbnails
- ❑ See how attractive a Web site can be with a good layout, clean design, and a smart choice of color

Reproduced on the following pages is a portfolio of current Web graphics that the authors find to be particularly effective. Of course, this is just a snapshot because the nature of the World Wide Web is fluid, with resources changing daily.

Several themes can be identified in the images presented here. Effective graphics tend to be unambiguous. That is, the purpose of the image is not confusing. Effective graphics tend to be minimalist, with just the right amount of color, line work, and contrast. Visual elements are usually kept to a minimum, and a sense of tension is created with asymmetrical elements. Finally, great graphics almost always project contrast between light and dark, thick and thin, saturated and unsaturated.

The examples aren't presented in any particular order so don't think we saved the best for last. As you look at each example, use what you already know about effective Web graphics to analyze the design. Do you agree with us?

http://www.opentext.com/

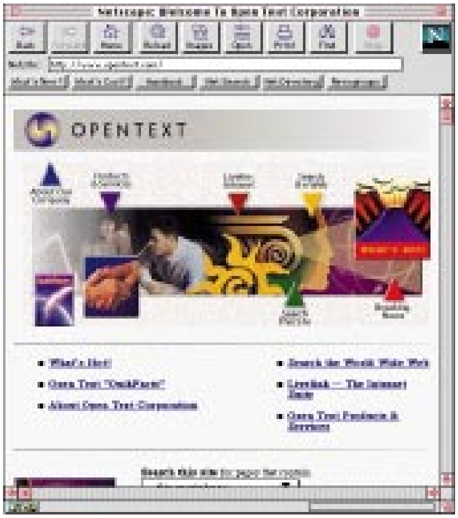

Netscape: Welcome to Open Text Corporation
OPENTEXT
What's New!
Open Text "OmniPage"
About Open Text Corporation
Search the World Wide Web
Livelink — The Intranet Suite
Open Text Products & Services
Search this site

Figure 6.1. *I liked Open Text's first Web site, and this new version doesn't disappoint. It offers nice, soft splash graphics with an easy-to-read textual jump list. Graphics combine table formatting and mapping.*

http://www.premenos.com/

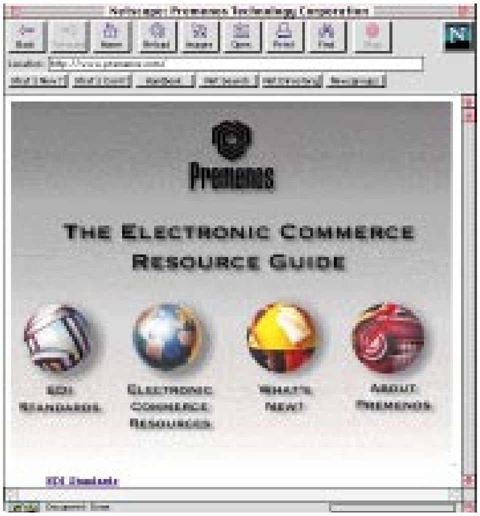

Netscape: Premenos Technology Corporation
Location: http://www.premenos.com/
Premenos
The Electronic Commerce Resource Guide
EDI Standards
Electronic Commerce Resources
What's New!
About Premenos
EDI Standards
Document: Done

Figure 6.2. *Color makes an impression when it is contrasted with a monochromatic background, such as this example from Premenos Corporation. The splash graphic is a Joint Picture Experts Group (JPEG) image map.*

`http://www.honda.com/cars/prelude/mred.html`

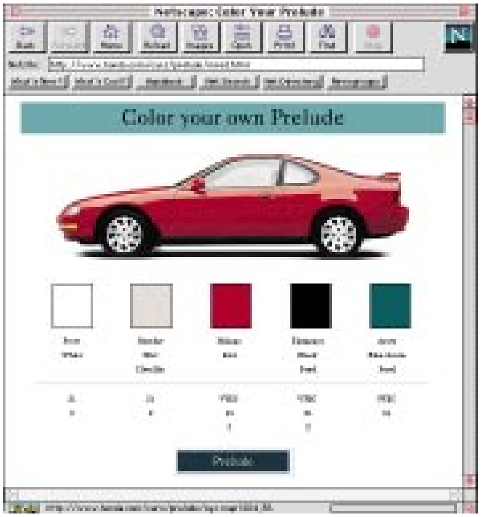


Figure 6.3. *Honda of America delivers an almost publication-quality site with the interactivity that keeps you coming back. No cute tricks here, just solid design, graphics, and execution.*

`http://www.imageclub.com/html/topten/topten-photo.html`

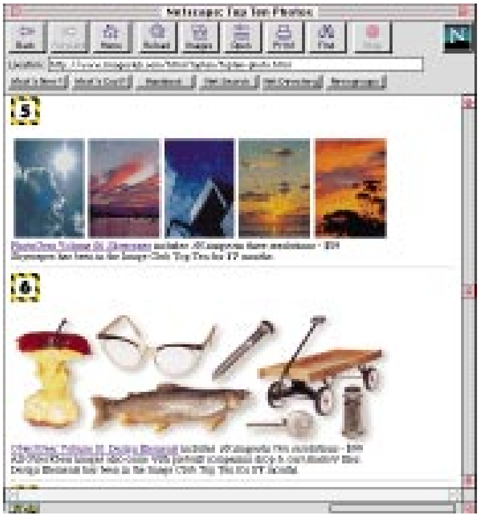
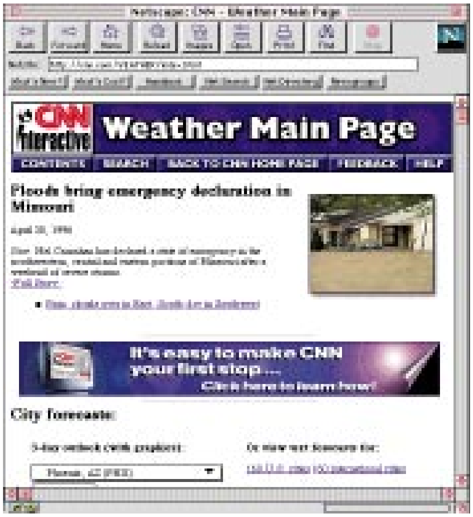


Figure 6.4. *Image Club is one of my favorite sources for art resources, so you'd think that their Web site would have the same concern for design, and it does! This is another example of using a table to format linked graphic images.*

http://cnn.com/WEATHER/



Netscape: CNN - Weather Main Page

Weather Main Page

CONTENTS | SEARCH | BACK TO CNN HOME PAGE | FEEDBACK | HELP

Floods bring emergency declaration in Missouri

April 20, 1996

[illegible]

Full Story

- [illegible]

It's easy to make CNN your first stop ... Click here to learn how!

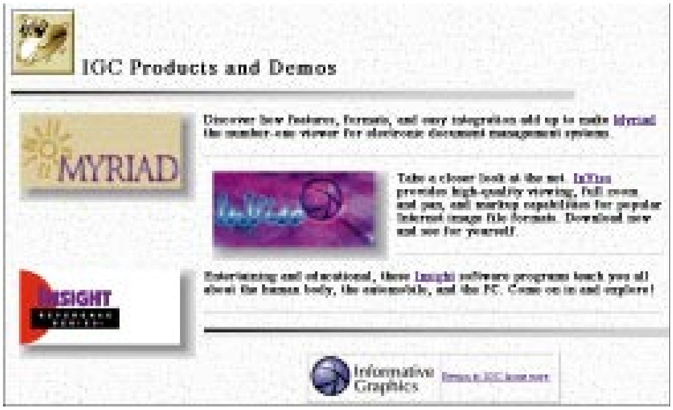
City forecasts:

5-day outlook (with graphics): [illegible]

Or view text forecasts for: [illegible]

Figure 6.5. *I love this page! Cable News Network's site could be the prototype for Web information sites with easy-to-get data, lots of white-space, engaging graphics, and good layout.*

http://www.infograph.com/products.htm



IGC Products and Demos

Discover how features, formats, and easy integration add up to make Myriad the number-one viewer for electronic document management systems.

Take a closer look at the net. InView provides high-quality viewing, full zoom and pan, and markup capabilities for popular Internet image file formats. Download now and see for yourself!

Entertaining and educational, these Insight software programs teach you all about the human body, the automobile, and the PC. Come on in and explore!

[illegible]

Figure 6.6. *Informative Graphics developed this site for BIG monitors. The buttons and the text are placed in tables. Its attributes include nice colors and a clean design.*

http://www.cs.purdue.edu/

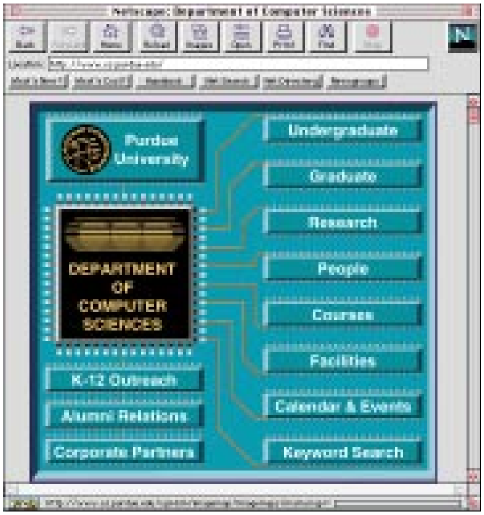


Figure 6.7. *Nothing like plugging your own university! This splash page shows exactly what's included in the Web site in an attractive and rapidly loading Graphical Interchange Format (GIF) graphic. Subsequent Level 1 sections carry the same theme.*

http://www.a1.com/shirt/genius.html

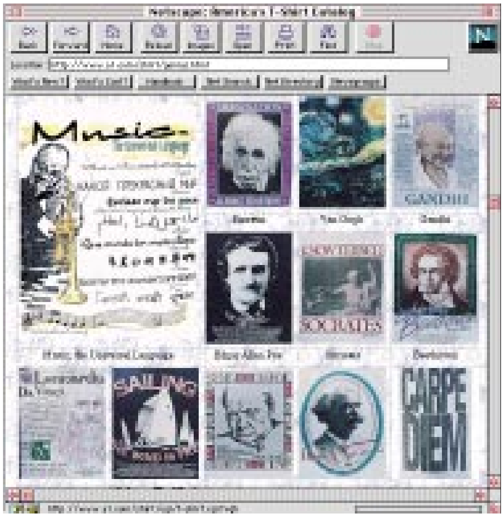


Figure 6.8. *This site from Sophisticated Shirts is a good example of a commercial Web site. Good use is made of reduced-resolution thumbnails. Which shirt do you think they will sell in highest quantity?*

http://www.penton.com/

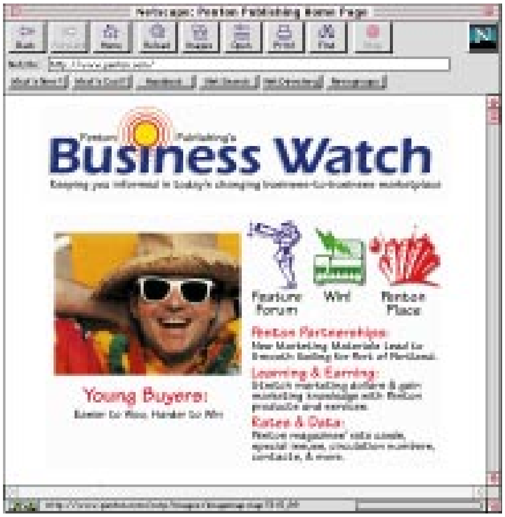

Netscape: Penton Publishing Home Page
Penton Publishing's
Business Watch
Keeping you informed in today's changing business-to-business marketplace
Feature Forum
Win!
Penton Place
Penton Partnerships:
New Marketing Materials Lead to Smooth Sailing for Port of Portland.
Learning & Earning:
Stretch marketing dollars & gain marketing knowledge with Penton products and services.
Rates & Data:
Penton magazines' rate cards, special issues, circulation numbers, contacts, & more.
Young Buyers:
Easier to Woo, Harder to Win

Figure 6.9.
How do you make a page look fun and inviting? Use primary colors and a text font that isn't too serious. This page from Penton Publishing is clean, well organized, and shows good use of dominant asymmetry.

http://www.alias.com/

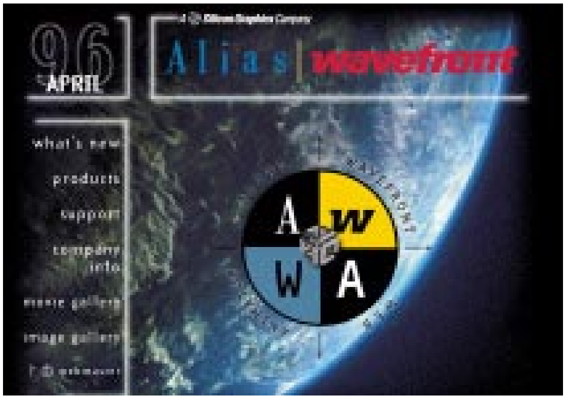
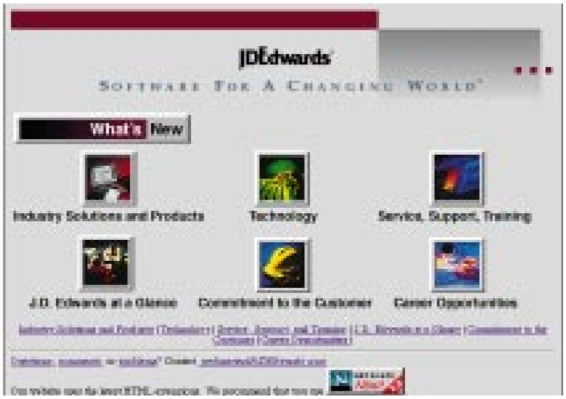


Figure 6.10.
As you might expect, a page from a high-profile graphics company like Alias/Wavefront (Silicon Graphics) would make effective use of a color background and JPEG images sequentially loaded into an image map.

http://www.jdedwards.com/

Figure 6.11.
Talk about clean! Good use of small GIF icons, clean design, some tension, and default background. Linked text provides further flexibility without cluttering the page with a lot of buttons.



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What's New

Industry Solutions and Products | Technology | Service, Support, Training

J.D. Edwards at a Glance | Commitment to the Customer | Career Opportunities

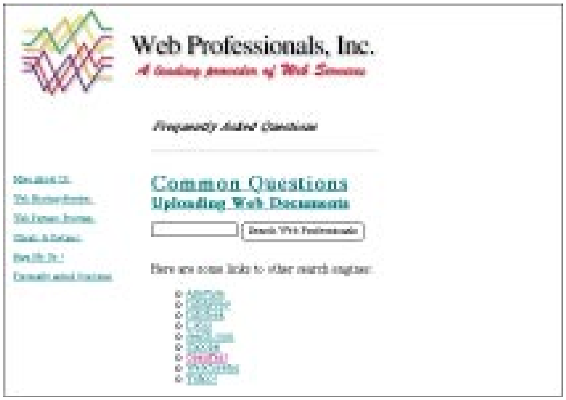
[illegible]

Questions, comments, or problems? Contact [illegible]

Our website uses the latest HTML extensions. We recommend that you use [illegible]

http://www.indus.com/

Figure 6.12.
The one-screen splash page from Web Professionals, Inc. includes an interlaced banner logo and simple, clean information. Subsequent pages also carry the company logo. A great frequently asked questions (FAQ) link for Web information!



Web Professionals, Inc.

A leading provider of Web Services

Frequently Asked Questions

Common Questions

Uploading Web Documents

[Search Web Professionals]

Here are some links to other search engines:

[illegible]

PART II

Survival Skills for Web Design

CHAPTER

SEVEN

Designing Graphical Pages Anyone Can Download

In this chapter, you'll

- ❑ Discover the options available for connecting to the Net and how they affect viewing and performance
- ❑ Discover how to design pages that will work in graphic and text-only browsing
- ❑ See how monitors and the screen resolution affect browsing
- ❑ Learn what differences exist from one platform to another
- ❑ Discover the differences between palettes on various platforms

Prior to the development of the graphical Web browser, anyone could use the Internet via a $50 modem and a Gopher connection. All you had to do was funnel through text menus by picking numbers until you got to where you were going. The only problem was when you finally got there (wherever that may have been) and began downloading a compressed file. The rest was relatively quick.

With the advent of Mosaic in 1994, most people who were surfing the Net were graduate students and government researchers. At this point, you were generally looking at Web pages with a little formatting, a little graphics, and a lot of text content. This pushed your $50 modem hook a little more. You noticed slower response to your interactions and were sometimes left waiting while graphics and text downloaded.

Today, with cross-platform woes and multiple browsers with different capabilities, it's difficult to plan for all the variables you'll encounter. Not to mention that your modem is often overtaxed, even if it's a 14.4 or a 28.8Kbps device. Aside from carefully planning the amount of graphics and sweating over the design of your pages, what else can you do?

One of the things Web developers forget is that they are actually in the software development business. Like it or not, if you're designing pages, you are developing software. The problem is your *interpreter* (in reference to programming languages like BASIC that use them) does not always read the Hypertext Markup Language (HTML) code the same way. Why? This is because there are different interpreters, and they also reside on different platforms—as if the former didn't present a big enough challenge.

Having said this, what's the solution? Well, just like Microsoft and the other big boys, you've got to plan time for—drum roll, please—testing, testing, and more testing. And once you've tested, you test some more. Just like large companies, you'll find that you don't have time for, don't want to, or can't justify testing. But the only surefire way to see if your pages work with multiple browsers and multiple environments is to run them in these settings.

In addition to testing issues, this chapter focuses on hardware and software issues as they relate to surfing the Net and the design of your pages. You'll take a look at the different physical means by which users access your pages—how they get hooked to the Net—and how this affects performance. The monitors and platforms they are using can either positively or negatively affect the appearance of your pages.

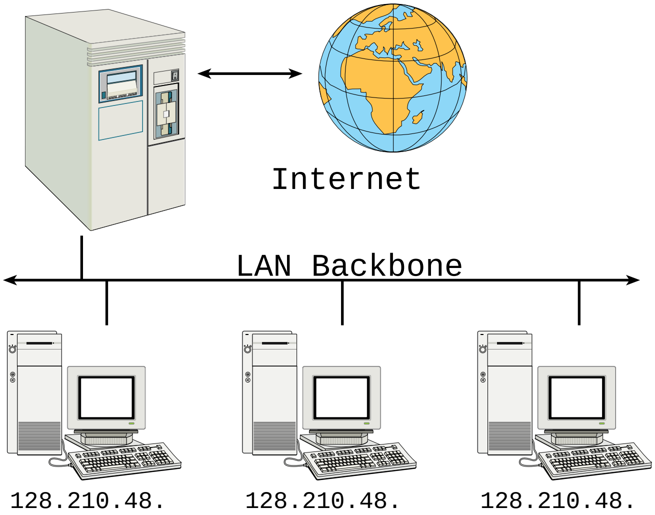
Many dial-up connection and access providers also give you a number of other options to choose from. In addition to Net connection, other features may include other information services such as File Transfer Protocol (FTP) or Gopher service, e-mail, news service, or server space for your own pages. Simply ask your provider for a list of options. If you are located at a company or educational institution, it may be as easy as checking with your system administrator to find out how to initiate these additional options.

Sending Graphics Over the Wire—ZZZZZZ

Unless you have a direct network connection, some Web pages can severely test your patience. Waiting for hefty pages to download is quite frustrating. One of my pet peeves is waiting several minutes for a graphic to download that has little or no relevance to what I'm looking for. Your experience with this type of frustration is undoubtedly based on what type of Net connection you have. Having experienced both the most limiting and the most unlimiting means, I can understand both. A single connection to the Internet can be via dial-up access, dial-up connection, or direct connection.

The fastest and most expensive means of connecting to the Net is via direct connection. In this scenario, the computer you are using is a direct node or computer hooked to the Internet. This means you have an Internet Protocol (IP) address and can log on anytime you want. In a direct connection, you are usually part of your department's computer network, such as a local area network (LAN), that is connected to the Internet. With this type of connection, full-screen graphics are a breeze, taking less than a few seconds to download. Most transfers occur quickly—about 1.5MB per second. Wouldn't we all like to have a direct connection at home? Ah, the promise of the Information Superhighway.

Figure 7.1.
A direct Internet connection via a LAN.



The IP address is the addressing scheme used to denote specific machines on the Internet. The IP address is composed of the familiar four-number sequence, such as `128.210.48.109`, which is separated by periods. If you had to keep track of these numbers in your bookmark listing, it would be dull, but on the Internet you can use the Domain Name Service (DNS), which changes the previous number sequence to something more meaningful, such as `tech.purdue.edu`.

Before you decide upon a service provider, make sure you ask them what type of Net connection they offer. Ask if they offer dial-up access or dial-up connection. Some may provide either, but the only way to know which you will have is to ask prior to subscription.

Back to reality. If you're like me, your home connection is a different story. Except for the blessed few, most in-home connections are either dial-up access or dial-up connection. Dial-up connection, the faster of the two, allows you to use a modem to connect directly to the Internet. In this type of connection the user has an IP address. The advantage to this connection is that when you download a page, graphic, or file it is funneled directly to your computer. Download times here range from 20 to 40 seconds per 100KB to 200KB at about 28.8KB per second. These are approximate numbers depending on your service provider.

The least appealing of all these options is dial-up access. In this mode, you dial up a computer which then connects to the Internet. When you download a page, graphic, or file with a 28.8 modem, wait times range from 180 to 300 seconds per 100KB to 200KB. The severe drawback to this type of access is that when you download the files, they are loaded to the host computer and then transferred to your computer.

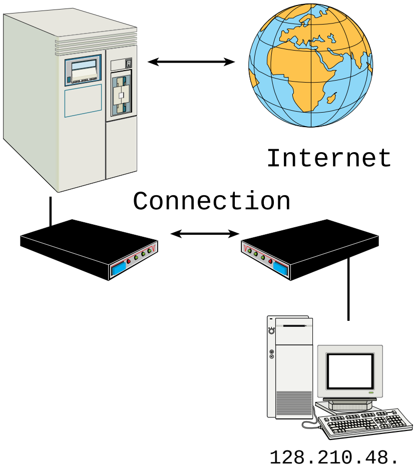


Figure 7.2.
A dial-up connection to the Internet.

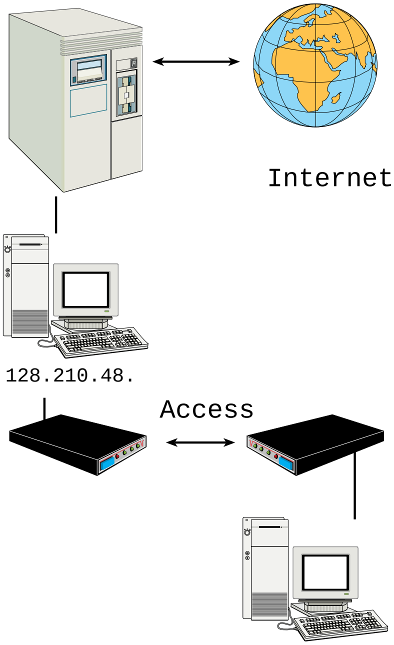


Figure 7.3.
Dial-up access to the Internet.

Deciding When to Download Inline Graphics

Most users, including myself, get anxious waiting for the page to load. Allowing a page's graphics to load increases your wait time because the browser has to pull the graphic from the site's server to your machine. Although most access providers give you ample time to surf (approximately 120 hours for $20), the clock's still running. Hey, time is money. Unless the user has a direct Net connection, he or she will probably not let inline graphics load because the proverbial meter is running.

You can easily control whether inline images are loaded or not by using your browser's inline image option. For example, in Netscape you select or deselect the Auto Load Images option in the Options menu. Toggle it on to let inline graphics load, toggle it off to see text-only pages. When the inline image option is off, the pictures embedded in the page are replaced with small icons.

Generally I run with the inline image option shut off when I'm at home. When I am at the office, I have a direct connection so I leave it on. When you are designing your pages, seriously consider what type of connection the user will have and what constraints under which they are operating. If it's for business, it will probably be a direct connection. Consumers will undoubtedly have either of the dial-up scenarios.

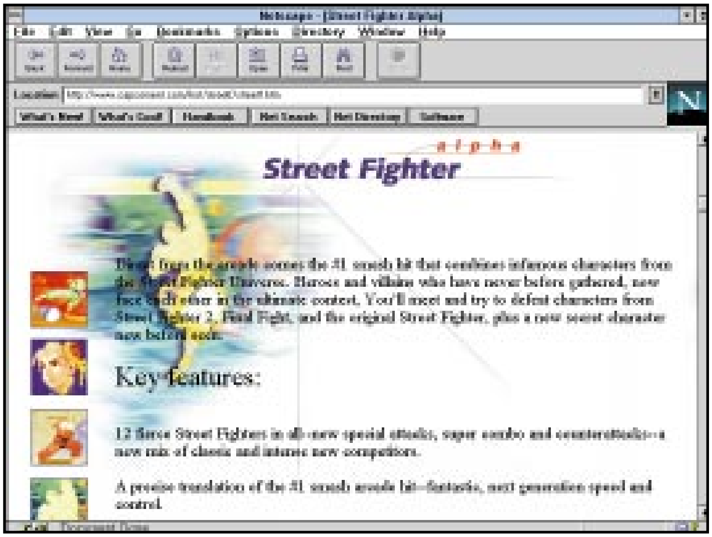
The Importance of Thumbnails

When talking about distributing graphics over the Net, the smaller you can make them and still have them communicate the better. As discussed in previous chapters, graphics used for navigation must load quickly. But what about graphics for clarification, reference, or additional information? Many times you just want to use graphics as supplemental material to help convey information better or clearer. In this case, it may be best to use thumbnail representations of the images so that the user can choose to click on them to invoke larger external images.

A *thumbnail image* is a small graphic, usually around 100 pixels tall or wide. The graphic actually serves as a link to a larger version of the graphic. If the user chooses to click on it, he is presented with a larger version of the image. In this way, the user has the choice to view the larger image rather than being forced to view it.

The use of thumbnails where the user is dialing up for connection or access is vitally important. Focusing on the perspective and needs of the users will make them much more responsive to your pages and interested in the rest of your site.

Note that I'm talking not talking about thumbnails that are saved as a part of graphic image headers. Some image formats allow you to save previews in the beginning of the file. These cannot be utilized in HTML, even though they are part of the image file. To use thumbnails in your pages, use an image editor to create a small version of your graphic. Then you can designate the small image as a navigational item using the <A HREF> tag. This creates a link to a second, larger image stored on the HTTP server. This secondary version of the image is the *real* version of the image. In effect you have two versions of the image on your site, one large and the other small.


Netscape - [Street Fighter Alpha]
File Edit View Go Bookmarks Options Directory Window Help
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
Document: Done

alpha

Street Fighter

Direct from the arcade comes the #1 smash hit that combines infamous characters from the Street Fighter Universe. Heroes and villains who have never before gathered, now face each other in the ultimate contest. You'll meet and try to defeat characters from Street Fighter 2, Final Fight, and the original Street Fighter, plus a new secret character never before seen.

Key features:

12 fierce Street Fighters in all-new special attacks, super combo and counterattacks—a new mix of classic and intense new competitors.

A precise translation of the #1 smash arcade hit—fantastic, next generation speed and control.

Figure 7.4.
Thumbnails allow the user to choose to view a larger version of the image.

TASK

Testing Your Page

As you get ready to test your page, keep a couple of things in mind. First, you should test early and often. Preferably you should add a particular feature, then test it, add another feature, then test it, and so on. By incrementally adding and testing, you will save yourself time debugging your code rather than having to sort through several new code strings to find the problem.

Second, make sure you test your pages in the same environment from which your user will be viewing the pages. If they will be using a Macintosh, use a Mac for testing. If you want both Mac and PC to capably view the pages, then test on both. If most users have limited random access memory (RAM) or low resolution displays, test under those conditions. The testing environment should match the performance environment for accurate results. To verify that your pages will work as planned, follow these steps:

1. When you have finished adding the code you want to test, open your page in your browser. Remember if you use Microsoft Word or another word processor to code your pages, you may have to close the file to be able to access it from your browser.
2. If you find errors, close your browser and return to your code. Most page bugs are typographical errors, so check for those first. If the design layout didn't come out right, it may be a matter of tweaking some of your tag parameters.
3. After editing the code and closing the file, reopen your browser and HTML file. Note that you may have to clean out your cache if you edited any of the

actual images in your page. To clean your Netscape cache, select Options|Network Preferences. Then select the Cache tab, and click on the Clean Cache button.

4. When the page is satisfactory in your primary choice of browsers, consider testing on any other platforms or browsers you want the page to run in to make sure the page works there as well.
5. If you make changes after viewing in a second browser or platform, remember to go back to your original browser and make sure any coding changes made didn't affect viewing there.

Feeling the Power of a Graphic Browser

Graphics are undoubtedly both the power and pitfall of the Web. Overuse can be catastrophic, and underuse can be visually sedating. With new technology or the modification of technology comes new responsibility, concern, and problems to overcome. Web hardware will continue to advance, and soon you won't have to be concerned with how big, how much, or how colorful your graphics on the Web are from a delivery standpoint. But until then, you must be wise in your use and development of graphics for the Web so that you will create pages that are not only aesthetically pleasing, but will be able to be downloaded by your audience.

Seeing How Hardware Affects Web Graphics

What you see on one computer monitor is not always what you get on another. Inherently there are differences in the way different monitors produce a particular color. This is due to the variability in manufacturing. The platform and the video card, not just the monitor, can also change your would-be awesome pages into something less desirable.

Color differences occur from one platform to another. You can't change this. So you must find a way to create pages that will look good regardless of the platform on which you view it. Simply stated, the colors of a particular image will lighten and desaturate slightly when viewed on the Macintosh. The same image viewed on a PC will appear darker and more saturated. Further yet, a UNIX box could give results at either end of the spectrum.

The lightening or darkening of images deals with a concept called *value*. If you add white to a color you lighten its value, to create a tint of the color. If you add black to a color, you darken its value to create a shade of the color.

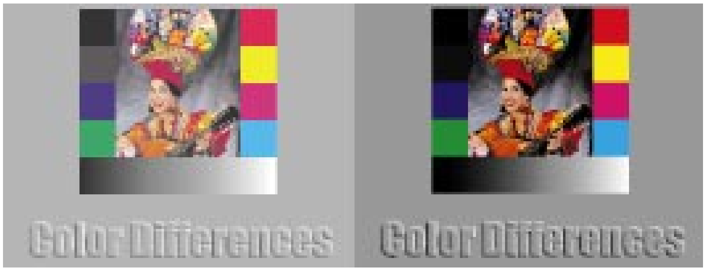


Figure 7.5.
Comparing Web graphics from a Macintosh and PC, respectively.

Saturation is the pureness of a color. At the extreme end, saturated colors are very vibrant, almost to the point of fluorescence. Desaturated colors are duller and more subdued.

The *saturation*, which is the richness or vibrance of the colors in the image, affects the *contrast* in the image. A saturated blue, or vibrant blue, has a greater lightness than a desaturated, or duller blue. Knowing this, you must watch the values you create and the contrasts between those values. It's not much different from dealing with black and white print issues.

One of the best ways to check for both value and contrast is to use this premise: If you are concerned with a particular color image and how it will display, try opening it into an image editor and converting it to a grayscale image. Does the image still convey information? Does it still have the same impact? Are the values pretty much the same, making it difficult to distinguish what is what? These are the things you should consider before slapping it into your Web page. If it doesn't communicate in grayscale, you may want to rethink your image or use an image editor like Photoshop to adjust the brightness and contrast in the original color image.

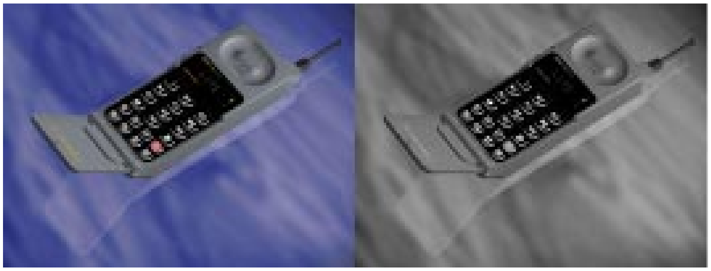


Figure 7.6.
Using grayscale to test an image for Web use.

Another note about screen displays is the issue of color depth. This is a function of the video card inside the computer. Undoubtedly if you have a card capable of 16.7 million colors, which is 24-bit, this section won't necessarily relate to you, but most users in cyberspace are still using video cards that are only capable of 256 colors. In a 256-color environment, all the colors shown onscreen are mapped in a matrix or palette called the Color Look-Up Table (CLUT). The individual pixel colors in the image are referenced to the CLUT, much like paint by numbers. The palette or CLUT for an image can be changed to a new one; however, in some instances you may get undesirable results.

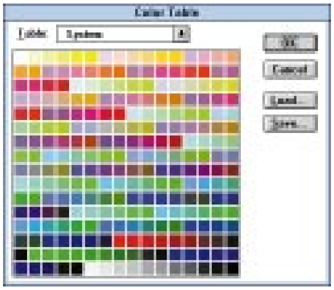


Table: System

Figure 7.7.
The Windows 3.1 CLUT.

What happens if you use a color that's not in the table? For example, you load a page from the Web that has a 24-bit image in it. Well, the computer does its best to match the color to the system CLUT by either interpolation or dithering. Interpolation causes the computer to pick the closest color from the palette, but seldom does this technique give a desirable result. The second, and the preferred method, uses two colors that, when combined, create the illusion of the missing color. Most imaging packages will automatically dither colors when you change bit-depth modes. For example, changing a 24-bit image to a 256-color image will require a reduction in colors. The image editor should prompt you on how the colors should be mapped.

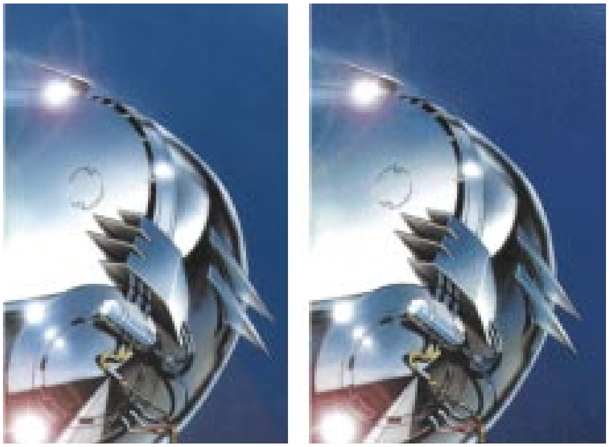


Figure 7.8.
True Color versus Indexed color.

The best-case scenario, when preparing your images for the Web, is to work in 24-bit (True Color) mode. This allows you to paint with 16.7 million colors and lets you see smooth blends in the image onscreen. When you are finished editing, convert your images to 8-bit (Indexed) mode; conforming it to a 256-color palette from your target browsing platform. You can perform these bit depth operations in most image editors like Photoshop. In Photoshop, you use the options in the Mode menu to change an image's color depth.

If you are planning for both PC and Mac, decide which will target the maximum number of users. There are differences between the Windows 3.1, Windows 95, and Macintosh system palettes, not to mention UNIX boxes, but this is discussed a little later.

TASK

Calculating Screen Dimensions and Resolution

So why, you may ask, do I need to calculate screen dimensions for images I put on the Web? Again, you must look at the wide variety of platforms, machines, and users your pages will be serving. All computers have specific screen dimensions. Note that this is not a function of the monitor, but of the display card. Most users have their machines set at VGA resolution, meaning the image projected to the monitor is 640×480 pixels. Other surfers may have higher, but generally the lowest common denominator is 640×480 pixels. This means if you present an image on a page that is greater than 640×480 pixels, the user will have to scroll to see all of it. Most pages are designed to run at a resolution of 640×480 at 256 colors. This is a general standard that most people use. As you get ready to calculate for your image sizes, take a long hard look at your target audience. Calculate for the lowest common denominator, which is the smallest screen size you'll encounter. By doing so you won't eliminate part of your market. To calculate for screen dimensions

1. Grab some square grid paper to lay out all your page elements on. Grid paper that has .25-inch grid boxes works well.
2. Assign a unit to each grid such as one grid equals 20 pixels.
3. Begin laying out your page on the grid paper and use the grid boxes to calculate the image sizes in pixels. This should give you a general idea of what sizes the images need to be to fit your page design.
4. To size a digital image to the correct size, open your image in Photoshop or another image editor.
5. Use the Image|Image Size option to make the image equal to the appropriate size. If you're not in Photoshop, look for a way to change the size of the image.
6. Save the sized image file.

Overcoming Cross-Platform Difficulties

The whole purpose behind the development of HTML as the code for Web development has been the desire for platform independence. However, inherent differences in the resources that are used to build the page on each platform inadvertently affect the end result. Remember that HTML is a semantic page definition, not a page layout tool. The fonts, rules, and alignment characteristics for each platform vary even through the semantic page definition.

In general, the biggest difficulty in surfing the Net is just getting your browser set up. Once it's running, things usually work pretty well. (Smirk.) In the following three sections, you'll learn about some specific items for each platform concerning Netscape on various platforms.

Tips for Windows Clients

The first thing you must do when you set up Netscape is establish a network connection. This requires either a network card or modem installation. Most network cards will come with software drivers for installation. Additionally, if your network is simply Transmission Control Protocol/Internet Protocol (TCP/IP) compatible, Microsoft's TCP/IP driver is enough. Network card connection to the Internet is far more stable and reliable than modem connection.

Use of a modem for dial-up access or connection requires the use of either Serial Line Internet Protocol (SLIP) or Point-to-Point Protocol (PPP) software. These are special software connections over a modem. Usually your provider will supply you with the software for the connection. To use Netscape in this scenario, you simply start the SLIP or PPP software to connect to your provider and then you start Netscape.

One of the most difficult things about setting up Netscape on the PC is avoiding General Protection Faults (GPF). GPFs are usually caused by two programs overlapping in memory and can usually be solved by shuffling a program in memory or by specifically limiting memory locations. Netscape's home page has specific information on dealing with this and other Windows-related issues.

Tips for Macintosh Clients

Network access on the Macintosh is controlled via the MacTCP control panel. If you are hooking your Mac directly to a network and have a choice, use an Ethernet connection rather than an AppleTalk connection. This is a recommendation based on speed more than anything else, but you may not have a choice.

The biggest problems that occur on the Macintosh are conflicts between MacTCP (and/or a SLIP or PPP program) and other programs loaded from the System Folder. For example, there is a known problem between MacTCP and a program called RamDoubler. RamDoubler is a program that doubles the amount of RAM in the machine by real-time memory compression. When the system boots, both programs try to load in the same location. A solution is to get MacTCP to load after RamDoubler by renaming MacTCP as ~MacTCP. Problems with other programs could also be solved in this way.

Tips for UNIX Clients

UNIX machines, which are designed for designing tools rather than for surfing the Web, can be somewhat difficult to diagnose for the average Joe. Fortunately, the biggest problem that occurs is that of default colors in Netscape. This relates to previous information about viewing 24-bit images with a screen display of 8-bit. The only way to solve it is to either increase the screen display to 24-bit mode or use an external image editor to view high bit-depth images.

Operating System Palette Differences

Fundamentally, the 8-bit palettes from the Macintosh, Windows 3.1, and Windows 95 palettes function the same. However, the arrangement of colors varies from one to another. In fact, 216 of the 256 colors are the same no matter which platform you're viewing on, but the remaining 40 colors are the ones that cause problems. These 40 colors are used for system items such as dialog boxes and other system functions. The best way to overcome these problems is to design around what the majority of your target audience uses. If the majority are Macintosh users, design using the Macintosh palette. If they are Windows 3.1 or 95 users, use their respective palettes.

Next Steps

Now that you know how to design pages that anyone can download

❏ To find out more about creating graphics, see Chapter 3, "Creating Cool Graphics for the Web."

❏ To find out more about the use of graphics on pages, see Chapter 2, "Designing an Effective Web Site."

❏ To learn how to create thumbnails, see Chapter 16, "Utilizing Inline Graphics to Your Advantage."

❏ To find out more about graphic file types and helper applications, see Chapter 19, "Understanding Advanced Graphic File Types."

Q&A

Q: I want to view in 24-bit mode. How do I know what my current resolution is, and how do I change it to 24-bit mode?

A: The procedure to check your current resolution or change the resolution depends on which platform you are on. To check or change the resolution on the Macintosh, access Control Panel|Monitors. On Windows 3.1, access the Main group|Setup. With some video board manufacturers, there may be a special control panel to change resolutions located in the Main group | Control Panel, rather than changing it through Windows setup. In Windows 95, the resolution can be changed by going to the Start Menu | Settings and choosing Control Panel. In Control Panel, select Display and then the Settings tab.

Q: I've installed Netscape, but it says it can't find `winsock.dll`. What do I do?

A: Check to ensure that there is a file called `winsock.dll` in your `\wWindows` or `\wWindows\system` directory. If so, make sure that the Path statement in your `autoexec.bat` file includes the `\windows` or `windows\system` directory. If not, you need to install the network TCP/IP driver for your network card or from your service provider diskette.

Q: I installed Netscape 2.0 to my system, but now my Macintosh won't boot up! What's the deal?

A: There is a major conflict between the Netscape install program and memory doubling utilities like RamDoubler. When Netscape 2.0 is installed on a machine that uses RamDoubler, it corrupts the B-tree structure of the Macintosh. Unfortunately, most people don't find out about this until after the fact. To fix the problem, use either the First Aid on the Disk Utilities disk that came with your Mac or use a utility such as Norton Disk Doctor.

Q: I tried to access a site and it gave me "Unable to find DNS Entry." What does this mean?

A: There are several reasons why you might get this prompt. Generally it is an indication that there was a momentary lapse in DNS service—the DNS server was too busy to accept your call. Another occurrence is that of a misspelling in the address name. If you are trying to set up Netscape for the first time and keep getting this message, it means that it is not set up correctly. First, it may be your TCP/IP software. In this case, check your settings and make sure the TCP/IP software is set up correctly. If you find that it is set up correctly, check with your system administrator to make sure that you don't have a firewall that requires a password for external access or that your server allows DNS name mapping.

Q: I get weird things happening on my display when I run Netscape. Is Netscape just really buggy?

A: More than likely it's not Netscape. It's probably your video card driver—the software that is the mediator between the CPU and your card. If you find that Netscape crashes or you get screen redraw problems or weird things happen onscreen, check with your video board manufacturer to see if you have the latest video drivers for your board.

CHAPTER

EIGHT

Creating a Map of Your Web Site

Chapter 1, "Making Effective Browser-Independent Graphics," stresses the importance of writing an abstract that describes how a page or set of pages in a Web site might function. This is the first step to good design on the Web. Structure is an important aspect of Web design because a typical Web site is not a single document—rather it is a collection of pages, images, sounds, and animations connected and cross-connected by links (see Figure 8.1).

Hey, you free-form, unstructured types out there. I want to hear a collective raspberry. Pfffft! You are probably thinking Web sites should develop as a creative extension of the internal aesthetic needs of the designer. Okay, I'll admit one attraction of the Web is its lack of rules and structure, so go for it!

Some Web sites simply have no structure at all. Other sites develop a structure, not through a master plan, but naturally, either as a function of the subject matter or as an unconscious expression of the Webmaster.

In this chapter, you'll

- ❑ Understand the elements of a home page and how they contribute to the overall success of the Web site
- ❑ Use the four fundamental design structures to plan the flow inside and outside your Web site
- ❑ Learn to plan first-level heads that logically organize topical subjects
- ❑ Place in-depth information on second-level pages
- ❑ Use the third level to organize resources that you will bring onto first and second levels
- ❑ Understand the importance of intrasite links
- ❑ Plan for links to external Web sites when your reader needs additional information

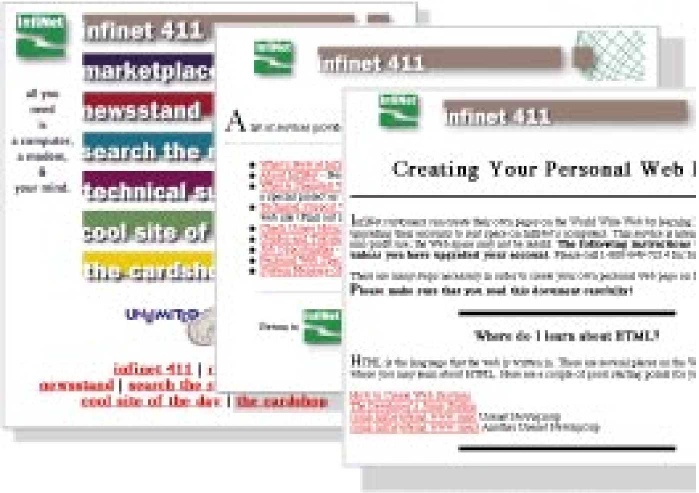


Figure 8.1. *The structure of a Web site requires that you develop a mental map of how pages, functions, and resources are related (*`http://infi.net/`*).*

Planning the Home Page

No other aspect of your Web site makes an immediate impact than the first screen a client sees after typing in your uniform resource locator (URL) and pressing the Enter key. Everyone has accepted the axiom that "First impressions count" or "You only have one chance to make a first impression." You have roughly 30 seconds to convince the user that something of interest lies beyond the first page.

TIP: Make sure your Web site works (gets you where you want, has no dead ends, and has the appropriate links) by setting up a shell. A shell doesn't have graphics and has only enough text to mark levels and page titles.

Look at the splash screens for Photoshop, Illustrator, FreeHand, and KPT Bryce for examples of well-dithered images.

The first page is called a *splash page* because the main graphic elements serve much the same purpose as a splash graphic on a piece of software. Splash graphics provide quick identification of the product while the bulk of the data is loading.

The splash graphic should

❏ Load quickly. Use either a small, well-dithered Graphical Interchange Format (GIF) graphic, a larger interlaced GIF, or a progressive Joint Picture Experts Group (JPEG) graphic.

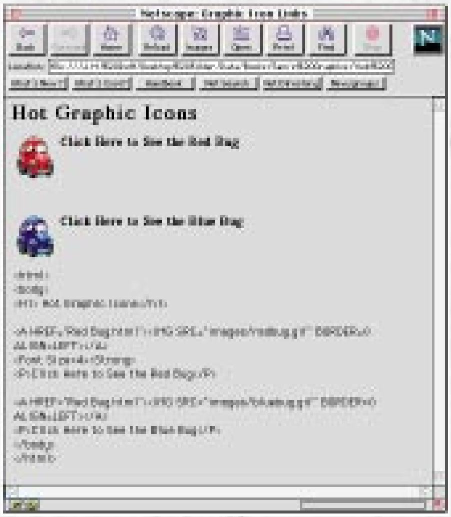
❏ Say something immediately about the company or its services. If the company has a well-known logo, use it dominantly to parlay existing identification. If its name is a market leader, feature it prominently.

❏ Integrate the function of the page by directing the reader's eye to available interactions.

I'll admit to a serious bias when it comes to designing splash pages. I can't imagine why the initial page in a Web site has to scroll. Shouldn't a splash page serve the same function as the cover of a book, magazine, or front page of a newspaper? How would you like it if you had to unfold the cover of *Newsweek* three or four times just to see the whole cover illustration or a bulleted list of what's in the issue?

Here's the key: Design your splash page for a 640×480 display at the default browser width of your target population. Your goal is to avoid scrolling or resizing of the default browser window.

WEB WORKSHOP: Use a graphic icon to draw attention to an interaction. In this case, the icon is followed by text that explains the action. You may want to do this if the icon isn't actually a button. Note that there is no border (`BORDER=0`) and that alignment (`ALIGN=LEFT`) is used so that the explanatory text follows on the same line. The cursor will turn into a pointer because the GIF file is inside the `<A>` tag. The text is not linked because it's outside the `<A>` tag.



Hot Graphic Icons

Click Here to See the Red Bug

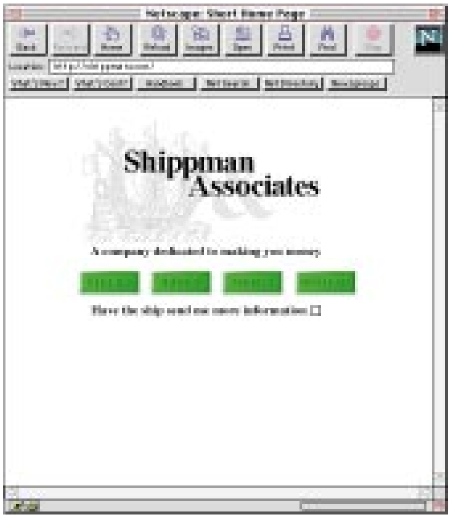
Click Here to See the Blue Bug

```
<html>
<body>
<H1> Hot Graphic Icons</H1>

<A HREF="Red Bug.html"><IMG SRC="images/redbug.gif" BORDER=0
ALIGN=LEFT></A>
<Font Size=+4><Strong>
<P>Click Here to See the Red Bug</P>

<A HREF="Red Bug.html"><IMG SRC="images/bluebug.gif" BORDER=0
ALIGN=LEFT></A>
<P>Click Here to See the Blue Bug</P>
</body>
</html>
```

Test for your intended audience. If you anticipate a 13-, 15-, or 17-inch monitor, test your favorite browser for height and width. If you're stuck with a 13-inch monitor, you may not be able to see the entire page. Horizontal scrolling destroys any natural communication you have worked so hard to achieve. Figures 8.2 through 8.4 show examples of poorly planned pages.



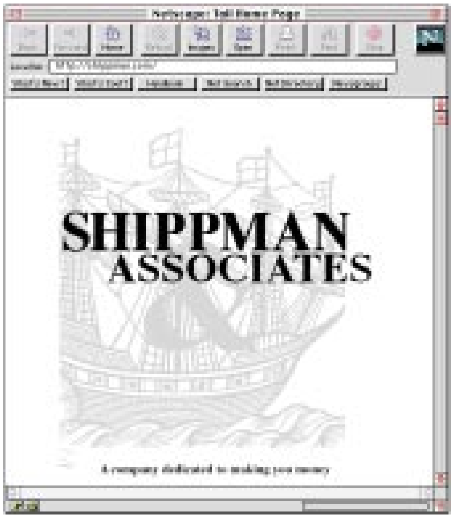
Netscape: Short Home Page

Shippman Associates

A company dedicated to making you money

Have the ship send me more information □

Figure 8.2. *A page with elements too small to fill the default window.*



Netscape: Tall Home Page

SHIPPMAN ASSOCIATES

A company dedicated to making you money

Figure 8.3. *A page with elements too tall, which causes the user to scroll the window vertically to get the full message. The level-one options in Figure 8.2 are not visible in the default window.*

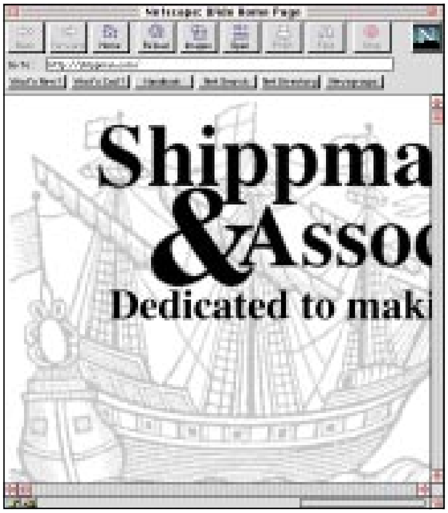


Figure 8.4.
A page with elements too wide, which requires horizontal scrolling.

Creating a Home Page Plan

Creating a home page plan can be one of the more daunting aspects of designing a Web site. This is exactly like the first blank page an author faces when writing a novel. What will the first line be? or the first word?

Like any new work, it helps to form an outline of what you want to present. For a graphical work such as a Web page, try this:

1. Using a word processing tool, create a new file that has a list of the things that must be conveyed on the home page. Hang on to this list because you'll be able to transfer some of this information in a more verbose form to your home page Hypertext Markup Language (HTML) files later.
2. Now, make a list of the graphical elements you have available. Does the client have a nice logo? Does the company president want to have his or her picture on the page? List them all, even if you don't think you'll use them on the home page. Likely, they'll be used in other parts of the site.
3. Using this list of elements, choose your favorite freehand art tool (from high-end Photoshop to pencil and paper) to create several quick sketches of how the splash page should look. Try everything. Refer to Figure 2.12 for an example of a freehand planning sketch.
4. Once you've gotten some basic sketches down, look at them again, only this time judge them with an HTML designer's eye. What will be too big to download? What will be impossible to code? Use the list that follows for additional criteria.

Although home or start pages vary widely from one Web site to another, there are identifiable elements common to all but the most avant garde publications. How you put them together weighs as heavily in the success equation as their inclusion. There are five criteria for the first page in a Web site:

- ❑ Exactly identify the name of the sponsoring company. You'd be amazed how many sites forget this. Personally, if I were paying big bucks for Web development, I'd want *my* name in 48-point bold. Use graphics to reinforce the product, service, or activity, as shown in Figure 8.5. The car illustration is an EPS file from FreeHand, rasterized in Photoshop. The text utilizes techniques covered in detail in Chapter 12, "Using Text in Design," and was created on a separate layer and overlaid.

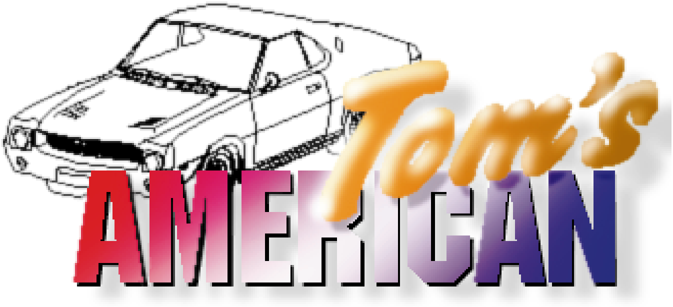


Figure 8.5.
Put the company's name and product up front.

- ❑ Describe the function of the Web site in a short passage (see Figure 8.6). Don't waste the client's time making them surf to find out that they *can't* order your hot new product interactively at the site. The text is anti-aliased and justified flush right to continue eye flow from upper left to lower right.

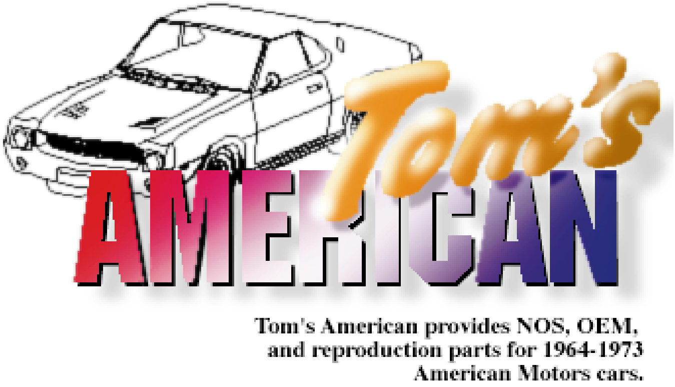
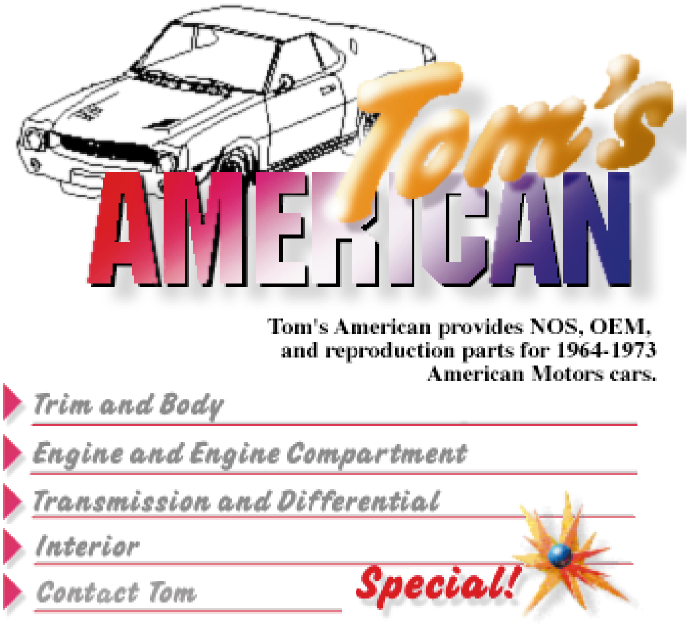

Tom's
AMERICAN
Tom's American provides NOS, OEM,
and reproduction parts for 1964-1973
American Motors cars.

Figure 8.6.
Present the function of the site in a short descriptive passage.

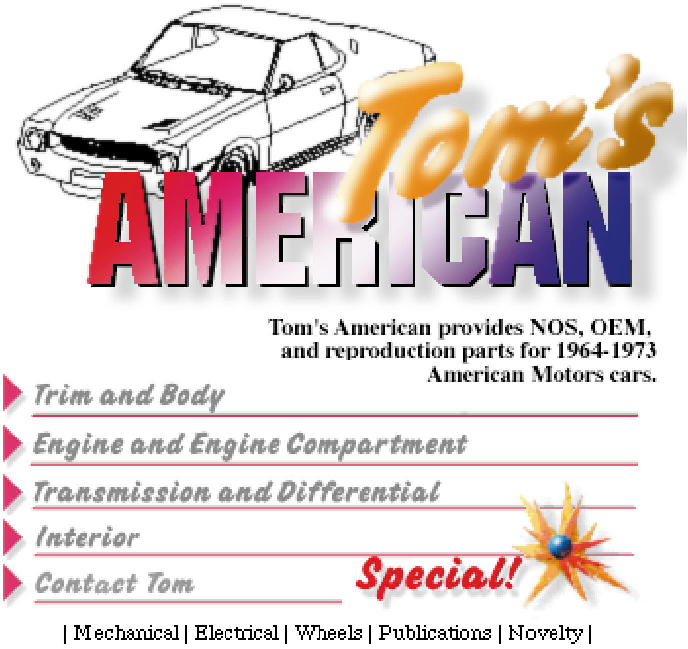
- ❑ Clearly display the topology of the site (see Figure 8.7). The splash page functions as the table of contents. Use it as such. The section heads bring the same softness as the text used for "Tom's" in the title. The starburst adds an element of surprise.



Tom's American provides NOS, OEM, and reproduction parts for 1964-1973 American Motors cars.

Figure 8.7.
The structural relationships of the site design can be seen in the organization of topics.

❏ Establish the relationship between level-one topics and their subordinate subjects. The sections guide the user to major topics in the site. This is done through buttons, clickable areas, or linked word lists. The word list at the bottom of the screen is linked HTML text (see Figure 8.8).

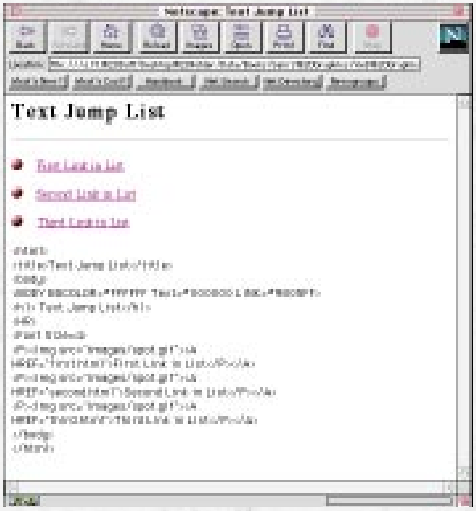

Tom's
AMERICAN
Trim and Body
Engine and Engine Compartment
Transmission and Differential
Interior
Contact Tom
Special!
| Mechanical | Electrical | Wheels | Publications | Novelty |

Tom's American provides NOS, OEM, and reproduction parts for 1964-1973 American Motors cars.

Figure 8.8.
Use linked word lists to show subordinate information.

- ❑ Provide contact information with the host site (see Figure 8.9). How can I get more information? Who do I contact to be put on a mailing list or to receive an annual report? Always give the user the option of *not* sending the information, which is a nice courtesy.

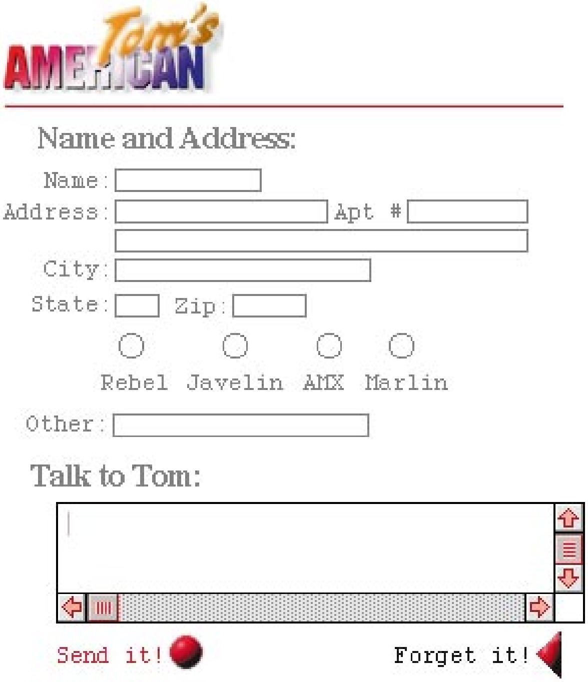
WEB WORKSHOP: Rather than use a graphic as the anchor to a link, it may be easier to link a text passage. In this example, a small GIF bullet (`spot.gif`) sets off the list. You could use the `<UL>` structure and choose among character bullets, but we think a graphic bullet looks nicer. Each spot carries some empty pixels to the right to buffer the text. The spot is not a link because it's outside the `<A>` structure. The text is a link (see the underline and `#9805FF` color?) because it's inside the `<A>` structure.



Text Jump List

- First Link in List
- Second Link in List
- Third Link in List

```
<html>
<title>Text Jump List</title>
<body>
<BODY BGCOLOR="#FFFFFF" Text="#000000" LINK="#9805FF">
<h1> Text Jump List</h1>
<HR>
<Font SIZE=+3>
<P><img src="images/spot.gif"><A
HREF="first.html">First Link in List</P></A>
<P><img src="images/spot.gif"><A
HREF="second.html">Second Link in List</P></A>
<P><img src="images/spot.gif"><A
HREF="third.html">Third Link in List</P></A>
</body>
</html>
```



Name and Address:

Name:

Address: Apt #

City:

State: Zip:

○ Rebel ○ Javelin ○ AMX ○ Marlin

Other:

Talk to Tom:

Send it! Forget it!

Figure 8.9.
This contact page is only one jump from the splash page. Contact information shouldn't be buried deep in the Web site.

Structuring Your Web Site

It is important to visualize the structural relationships around which a Web site is developed. This will tell you how to organize the various HTML text files, graphics, and other resources, not only so the browser can efficiently find them, but also so you can easily revise the components of the site when you need to. The icons in Figure 8.10 are used to easily arrange levels in a Web site. The diagrams in Figures 8.11 through 8.14 show four fundamental Web structures.

How you organize the structure and its relationships promotes certain links and communication flow. If you want the major flow of information to be between level-one pages, consider a *linear design* (see Figure 8.11). When related information is generally within a single topical level, the *hierarchical structure* (see Figure 8.12) puts all level-two pages together. The *pyramidal structure* (see Figure 8.13) puts all level-three resources at the same availability. When sections of your site all share the same sounds, photos, videos, and interactions, this is the structure for you. Finally, a *polar structure* (see Figure 8.14) makes level-three resources available universally from level-two pages, but can be associated with specific level-two topics.

Figure 8.10.
Icons used to assist in designing Web site structure.

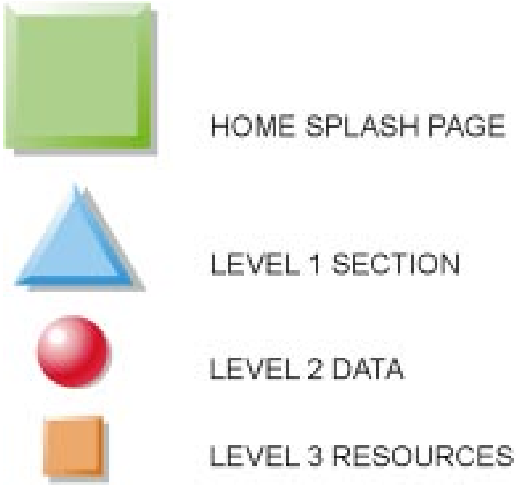


Figure 8.11.
A linear design utilizing three levels of structure.

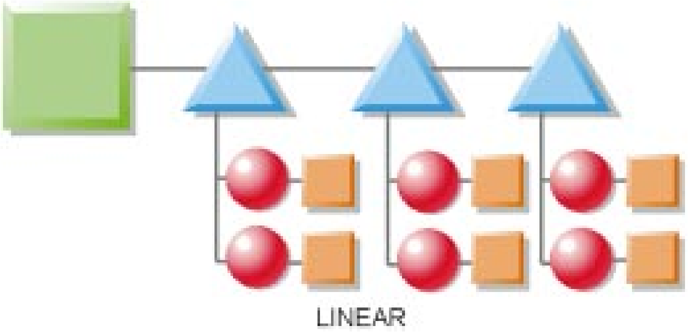


Figure 8.12.
A hierarchical design.

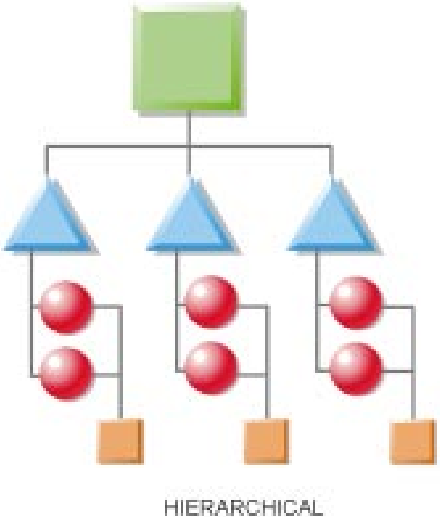


Figure 8.13.
A pyramidal design.

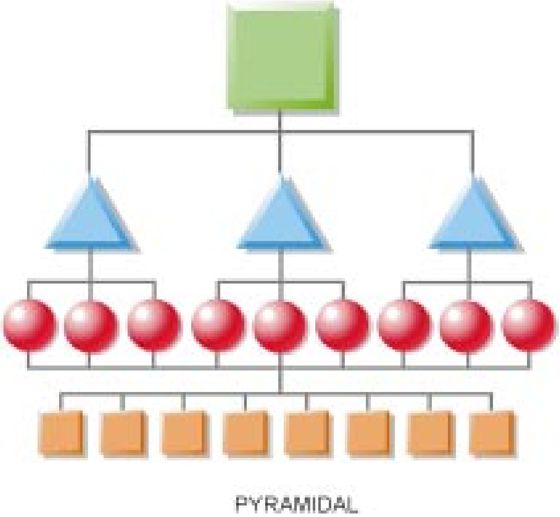
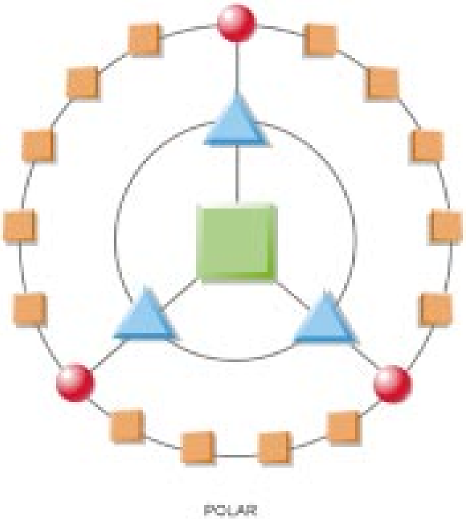


Figure 8.14.
A Web site utilizing a polar design.



Understanding the Importance of Level-One Sections

Level-one sections represent the major topical divisions of your site, much like the sections of a book, magazine, or newspaper. The temptation is to include too much detailed information at this level rather than using it to further organize the topic. Ask yourself, "Why is the client in this section, and what do they want to know?"

If your design promotes lateral links between level-one pages, it is effective to use navigation tools that allow easy navigation—unique shapes, colors, or other visual elements. Or, you can use parallel visual elements for that section taken from the splash page. By repeating these visual elements, you build a sense of unity by tying the pages together into a unit.

Look at Figure 8.1 again. Note the following about how Infinet has organized its design:

- ❑ The home page includes both graphics and textual links to major level-one sections (see Figure 8.15).
- ❑ Level-one pages further organize the site's options in a jump list. Note that the return graphic is the company logo.
- ❑ Level-two pages present the bulk of textual information and provide links to related external URLs.

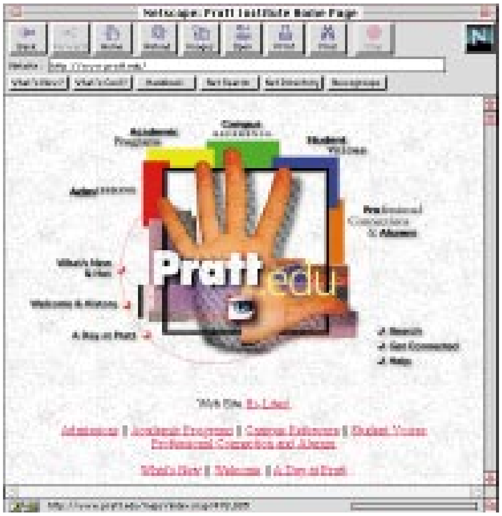


Figure 8.15. *Elements from the splash page help identify the Level-one section. Pratt Institute's approach is to combine an image map with a linked text menu.*

Increasing the Detail on Level-Two Pages

Level-two pages are the chapters of the Web site (see Figure 8.16). Add lots of detail because the client is expected to scroll here. Make use of intrasite links to other related level-two pages along with visual resources.

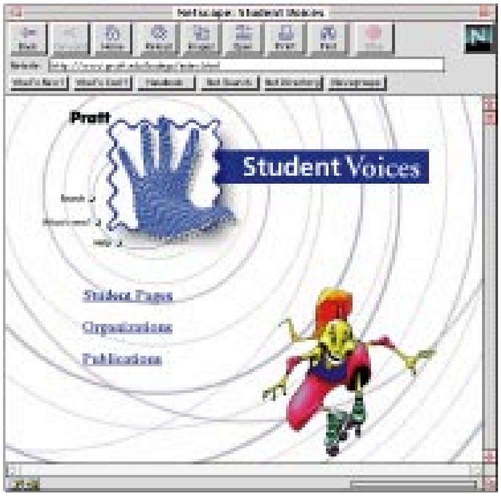


Figure 8.16.
Level-two pages from Pratt's Web site display detail while still bearing a resemblance to the parent level-one.

Adjusting Detail Levels

Is it always a hard-and-fast rule that Web sites should have a home page and three levels? Of course not! The structure of your site should take the form that both best organizes the data and provides access to it. However, if you get deeper than about three levels, I feel that some communication functionality is often sacrificed.

To begin with, you are going to start from the outline that you used to create the home page for your site:

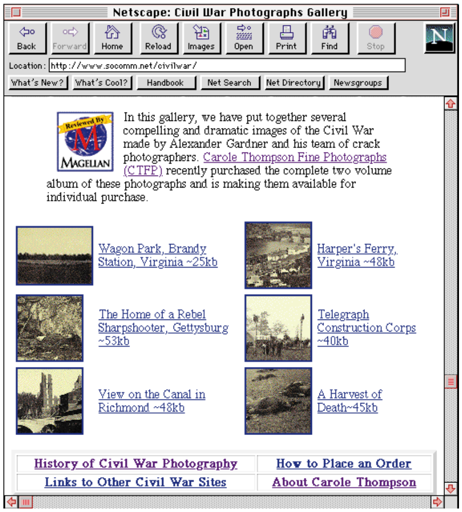
1. Reopen your home page outline document. Add a new, separate list that now includes the complete information the clients (or you) want to convey in the entire site.
2. Look at the list and start choosing what topics should be immediately accessible from the home page. This is your second level. (If your word processor has an outline creation function, now's the time to use it!) Repeat the process for items that are directly related to level two, and so on.
3. Examine the complete list of available graphical elements you made when you created the home page. Start picking out which elements go with which page. Some of these will be obvious, such as "picture of cafeteria goes next to cafeteria hours." Icons and thumbnails can pile up, so you want to make sure you've assigned all of them to their proper places. Use repeating images as much as possible, both for consistency and to shorten download times.
4. As you are assigning graphics to individual pages, keep in mind what graphics you used for the home page. A simple and effective way of maintaining consistency throughout a Web site is to keep the same logos and icons for each page.

If you work from a general statement, to an abstract, to a word outline, to a structural diagram, you should have a pretty good idea of what level of detail is necessary. Ask yourself the following questions:

- ❑ Will a person enter the site with the need for a particular piece of information? If so, provide a search engine and a simple home page.
- ❑ Are most browsers unfamiliar with your company and its products, or the information you have to offer? In that case, work from the large to the small, from the gross to the specific.
- ❑ Is interactivity an important part of your Web experience? If so, put the user in control of choosing his path through your site.

Placing Your Resources on Level Three

Some of the most effective Web sites group their level-three resources together in media galleries (see Figure 8.17). If you have the need to see a picture of a particular topic, you may want to browse laterally through the pictures before you return to level two. Or, if you linked out to get a definition, you may want to continue browsing through terms before returning. This is sort of like getting the dictionary out to look up a word and finding additional words before you put it away.



Location: http://www.socomm.net/civilwar/

In this gallery, we have put together several compelling and dramatic images of the Civil War made by Alexander Gardner and his team of crack photographers. Carole Thompson Fine Photographs (CTFP) recently purchased the complete two volume album of these photographs and is making them available for individual purchase.

Wagon Park, Brandy Station, Virginia ~25kb

Harper's Ferry, Virginia ~48kb

The Home of a Rebel Sharpshooter, Gettysburg ~53kb

Telegraph Construction Corps ~40kb

View on the Canal in Richmond ~48kb

A Harvest of Death~45kb

History of Civil War Photography | How to Place an Order
Links to Other Civil War Sites | About Carole Thompson

Figure 8.17.
Level-three graphic resources arranged as a gallery rather than individual files. This example from Carol Thompson Fine Photographs (`http://www.sucomm.net/civilwar/`*) utilizes a gallery of thumbnails that you can browse together. Size specifications for downloading are also conveniently displayed.*

The Importance of Intrasite Internal Links

You have, no doubt, noticed that at the end of each chapter a section called "Next Steps" points you to other chapters or pages of interest. This is also one of the functions of an intrasite link.

How many times have you had to flip to the glossary to look up a new or confusing term? Probably several times. Linking to a textual or visual glossary is another function of an intrasite link.

Words or pictures linked to additional information are called *hypermedia*. Click on the word *conifer* and see a picture of a fir tree. Click on a picture of a logging crew and see a video of tree harvesting in action. Click on the word *issues* and hear a recording of a spotted owl.

TASK

Creating an Intrasite Link

Several methods are available in HTML for navigating between pages in a Web site. In the next chapter, you will be shown specific techniques for increasing the efficiency of navigation. If you're adventurous, try the following:

1. Design a method of showing the user exactly where he is within the Web pages. This can be a textual or graphic system.
2. Sketch what this might look like.
3. Create an HTML shell and sufficient controls to demonstrate the feasibility of your design.

But please, don't overuse this powerful feature of hypermedia. If *everything* is linked, then what's the point? The most effective designs anticipate when the client will need additional information. How can you design effective and timely links into your site? Look at the information not through your own familiar eyes, but through the eyes of the typical browser. If you can't do this, secure test subjects and observe them interacting with your design. Have specific questions to ask at important junctures of the interaction.

Of course, our interest is primarily using graphics as links and linking to graphical pages. Use the following guidelines when planning your intrasite links:

- ❑ If you use a word as the hotlink to a graphic, use a consistent device to let the user know to expect an image. You can use an inline icon, text weight, or text color.

- ❑ Give the reader options in resolutions of linked graphics. This can be done globally at the front end of the Web site or on an image-by-image basis.
- ❑ Place graphics inline that are important to the information being presented right there on the page. Link to graphics that are supplementary.

Intrasite links are easily created with an HTML editor. Instead of linking to another page with an ordinary URL, which is also called an *absolute link*, you can link to a page with a filename and a target, a process known as *relative linking*.

To create the HTML code that links your page to another page in the same site, follow these steps:

1. Using the HTML editor, surround the text or graphic you wish to link with the `<A>` tag:

   ```
   <A>Visit the Graphical World of Wonder!</A>
   ```

2. Assuming that the `Graphical World of Wonder` page is in the file `wonder.html` on your Web site, your link would then look like this:

   ```
   <A HREF="wonder.html">Visit the Graphical World of Wonder!</A>
   ```

3. Suppose that the `wonder.html` file is not located in the same directory as the page you are currently linking from. Say your page is in the `/home` directory, and `wonder.html` is in the `/home/graphics` directory. Not a problem. Just use this link:

   ```
   <A HREF="/graphics/wonder.html">Visit the Graphical World of Wonder!</A>
   ```

You may want to link directly to a certain section of a page. This can be done using a link to a target. A target is an `<A>` link with the addition of a `NAME` attribute. You can link to a target in your own document or within another document.

To create the HTML code that links your page to a specific target location on another page, follow these steps:

1. To link to a target in your own document, first assign a target link at the beginning of the text you want the reader to be referred to. The target's `NAME` can be whatever you wish it to be. Make it simple, so you can keep the different targets straight:

   ```
   <A NAME="Tom"><P>Hi, my name is Tom. I make the best graphics in the
   world.</P></A>
   ```

2. At the link you want the reader to jump to Tom's modest introduction, you would assign this link:

   ```
   <A HREF="#Tom">Meet Tom.</A>
   ```

3. Almost the same procedure is used for linking to a specific target in another file. If Tom's introduction were in the `wonder.html` file, you would link with this code:

```
<A HREF="wonder.html#Tom">Meet Tom.</A>
```

TASK

Providing Flexibility with Links to External URLs

Having access to almost unlimited supportive data and information is a strong allure of Web publishing. If you need a special kind of calculator or a table of data, link to it. Want to show a map of Madagascar? It's over there. However, be careful because

- ❑ The pages you so carefully linked to may be defunct, offline, or under new construction.
- ❑ Resources that used to be there are gone in a new edition or moved to another location within the site.
- ❑ If you don't preview each and every link, you may send your client out into the zonkisphere. Bad form.
- ❑ Never link to a page with a heavy-duty graphic without warning users of an impending vacation. Sure, they can stop the link, but you haven't picked friends.

Linking to an external site is very much the same as linking to an internal link. Open up your file in the HTML editor.

To create the HTML code that links your page to another (external) Web site, follow these steps:

1. Once again, surround the text or graphic you want to link with the `<A>` tag. This time, however, use the complete URL of the external site within the tag's `HREF` attribute:

```
<A HREF="http://www.tom.com/home.html">Visit Tom's Modest Home Page!</A>
```

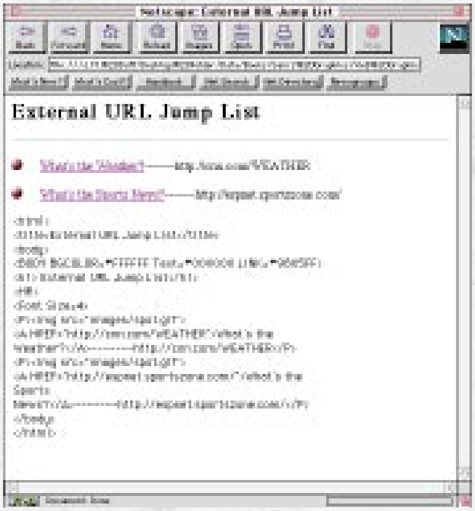
2. To link to a specific target in the external site, you need to examine that document's HTML code to see if there is a target link available. You have to use what's there, if anything, unless you created the external site, too. Using your favorite browser, go to the page in question and use a function called View Document Source, or something of that nature. This will allow you to see what targets are available. In our example, assume the following:

```
<A NAME="Tom"><P>Hi, my name is Tom.
➥I make the best graphics in the world.</P></A>
```

3. At the link on your Web site where you want the reader to jump to Tom's modest introduction on his Web site, you code this:

```
<A HREF="http://www.tom.com/home.html#Tom">Meet Tom.</A>
```

WEB WORKSHOP: Links to external resources are one of the most powerful features of a dynamic Web site. Constantly review your external URL links to assure that they still do what you want them to do. In this example, the spot graphic you've seen before is combined with linked text. Instead of the object of the link being a graphic or an HTML file inside your site, the object is the URL of the site you want to jump to.



External URL Jump List

- What's the Weather?——http://tom.com/WEATHER
- What's the Sports News?——http://espnet.sportszone.com/

```
<html>
<title>External URL Jump List</title>
<body>
<BODY BGCOLOR="FFFFFF Text="000000 LINK="0000FF">
<H1>External URL Jump List</H1>
<HR>
<Font Size=4>
<P><img src="images/spot.gif">
<A HREF="http://tom.com/WEATHER">What's the
Weather?</A>--------http://tom.com/WEATHER</P>
<P><img src="images/spot.gif">
<A HREF="http://espnet.sportszone.com/">What's the
Sports
News?</A>--------http://espnet.sportszone.com/</P>
</body>
</html>
```

Next Steps

To understand the importance of structure in designing your Web pages, you might want to consider

❑ Chapter 9, "Providing Visual Cues to Web Navigation Through Page Design," where the types of navigation graphics are presented.

❑ Chapter 16, "Utilizing Inline Graphics to Your Advantage," where inline graphics are looked at under a magnifying glass.

Q&A

Q: I want to build a Web site for my consulting business. Where do I start?

A: First, you need to locate a service that will publish your Web site on its Internet server. There are plenty around. Look at `http://www.iwork.net/~chandler/book.htm` for information on securing or setting up a Web server. Second, decide if you have either the interest or the skills to do the job yourself. Having either one without the other spells almost sure disaster. You can get a simple Web site designed and created for as little as $1,000. See `http://www.thielenonline.com` for an example of one company that provides this service and tells you up front what the charges will be. If you want to do the job yourself, start with a single splash page with an "under construction" warning, post it, and start expanding.

Q: How do I know what to put on the splash page?

A: Start with the minimum to introduce your site. Inform the reader as to what it does and its major functions. Look at major news magazines' tables of content and study how they organize an issue.

Q: You talk about levels. Are they real or just something you visualize while designing?

A: They're real. They not only represent navigational depth within a site, but also the physical relationships between nested directories as they are installed on a Web server. Try to limit level depth to three. Your readers will appreciate it.

Q: Do I have to send my URL to an external page that I link to?

A: No. I'm sure the external site doesn't know or care about your URL. Your browser provides rudimentary navigation tools (like the back arrow in Netscape) to return to your site. It's still possible to get out of an external URL where the back button shuffles you back and forth between two of its pages. Solution? Re-enter the original URL (yours) and press Enter.

Q: Can I change how my pages are organized, or am I stuck with my first design?

A: Redesigning a Web site is a little like altering a shirt. It may be easier to make a new one. However, experienced Web designers use a modular approach when assembling a Web site. They make new pages out of old pages. They copy and paste a lot. If you approach Web design as a modular exercise, you can more easily redesign your Web site.

CHAPTER NINE

Providing Visual Cues to Web Navigation Through Page Design

In this chapter, you'll

- ❑ Learn how to increase the readability of your pages via page and icon design
- ❑ Discover that color coding is one of the keys to effective page design
- ❑ Discover how to color code navigation on your page
- ❑ Learn how to use icons to guide navigation
- ❑ Find out how to overcome hardware limitations

When it comes to reading material, people generally know what they like and don't like. Much of their perceptions or opinions of what they read is not only based on the content, but also is based on the look and feel of the medium, particularly when it comes to magazines. Contemporary magazines such as *Morph's Digital Outpost* and *Wired* use abstract design to create a New Age, technopop feel. It has become a signature trademark of these publications, and many would consider dropping their subscriptions if the style or design were to change. The design, not just the content, attracts them.

NOTE: One of the best ways to understand what is meant by "technopop feel" is to take a look at some of the Web sites that exhibit this style. One of the most talked about sites in magazines such as *Interactivity* and *NewMedia* is the Hotwired site. As of the writing of this book, it has a feature called "Ask Dr. Weil," which presents exactly what we're talking about. If you get a chance, take a look at `http://www.hotwired.com`. Cool site!

So what is inherent to a design that magnetizes us? Most unique designs strive to draw attention and direct the eye flow of the individual via visual cues strewn throughout the page. The creation and interruption of *eye flow* are used as instruments to aid us in understanding content. Some designs use flamboyant colors to draw the eye to an area of the page. Still others use iconic elements or textual passages to aid in visual appeal. Regardless of the individual elements, they all contribute to creating a fluid and harmonic motion across the page by directing, commanding, and accenting the content as portrayed in Figure 9.1.

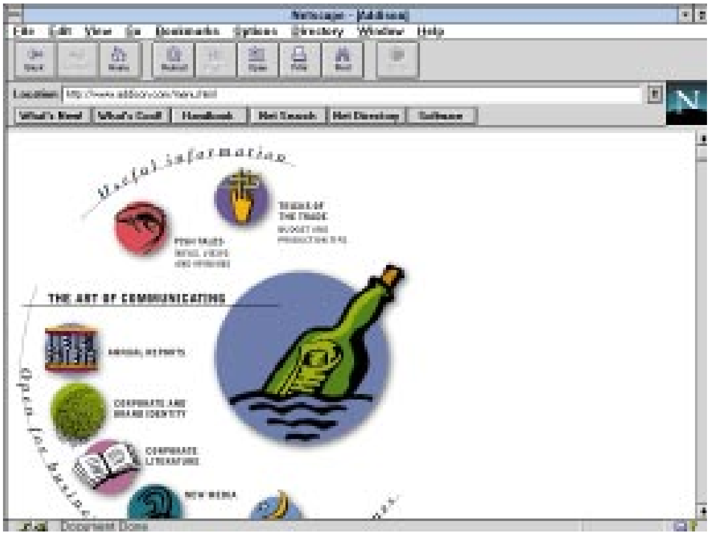


Figure 9.1.
Creating fluid and harmonic motion on the page.

Web page design principles like eye flow and other more traditional design principles are associative in nature. Associations are a Pavlovian response based on past experiences. For example, you see icons and you know instinctively, based on past experiences, that they represent a link to something. You see blue underlined text and realize that you can jump to another document. You see dimmed text and you know you've been there. Everyone makes assumptions about certain things in a design because of their past experiences.

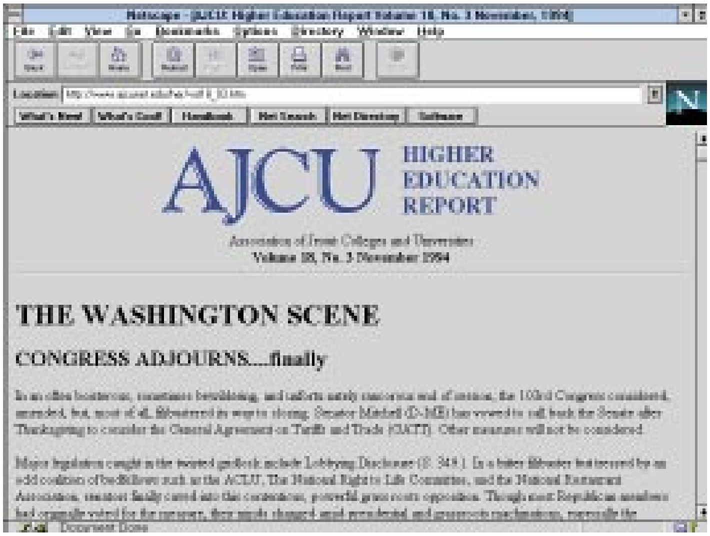
It is amazing that once enough people have assumed long enough—remember, based on their experience—they begin designing based on their assumptions. This provides standards and creates an interesting convergence from experience to assumptions to standards.

This chapter helps define many assumptions that have become or are becoming standards on the Web. It looks at page consistency and how to assure that page design aids in creating consistency across both pages and content. Then it covers how color and icons can be used to increase the visual appeal and complementary value of graphic elements on a page. Finally, this chapter looks at a method for achieving navigation consistency regardless of hardware issues.

Increasing Readability Through Consistent Page Design

Previous chapters discussed the use of navigation bars, navigation icons, and graphics for consistency, but what about other information on the page? Consistent paragraph formatting, text size, text fonts, and color can all be used to increase readability and aid navigation.

One method for increasing readability is to use the proper type of font for the information provided (see Figure 9.2). Have you ever read material that is typed in all uppercase letters? Have you ever tried to read several paragraphs of text that are composed entirely of a sans serif font (fonts without feet and tails)? Readability is not only a function of writing style but also the way the text is presented.



AJCU HIGHER EDUCATION REPORT

Association of Jesuit Colleges and Universities
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THE WASHINGTON SCENE

CONGRESS ADJOURNS.....finally

In an often boisterous, sometimes bewildering, and unfortunately rancorous end of session, the 103rd Congress considered, amended, but, most of all, filibustered its way to closing. Senator Mitchell (D-ME) has vowed to call back the Senate after Thanksgiving to consider the General Agreement on Tariffs and Trade (GATT). Other measures will not be considered.

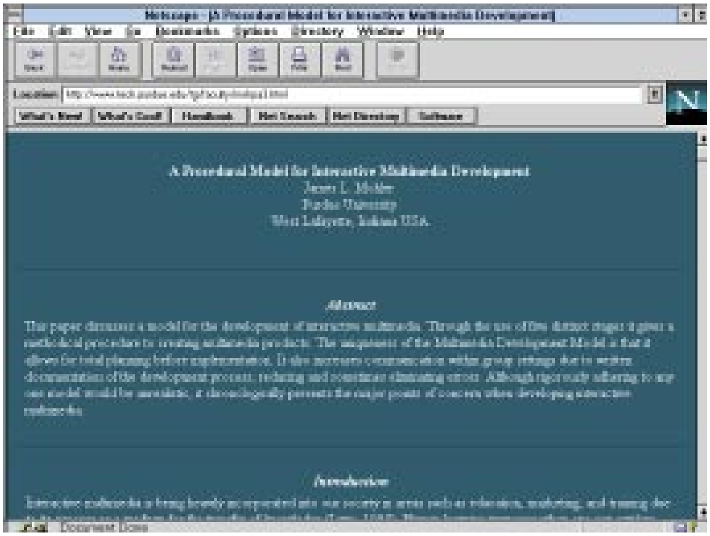
Major legislation caught in the twisted gridlock include Lobbying Disclosure (S. 349). In a bitter filibuster first incited by an odd coalition of bedfellows such as the ACLU, The National Right to Life Committee, and the National Restaurant Association, senators finally caved into this contentious, powerful grass roots opposition. Though most Republican members had originally voted for the measure, their minds changed amid presidential and grassroots machinations, especially the

Figure 9.2.
Logical font choices for readability.

For increased readability, use sans serif fonts such as Helvetica or Arial for title text. Titles are generally large (from 24 point to 48 point) and are much more legible and pleasing to the eye when sans serif fonts are used. At these sizes, the tails and feet get in the way visually and create a busy look. For body text, use serif fonts like Times or Century Schoolbook. Paragraphs, long quotes, and captions are much easier to read in serif fonts because of sizes that usually range from 6 point to 14 point. At these sizes, the tails and feet aid in determining a word's characters, which makes the information much more readable.

TIP: Keep in mind the issue of special or ornate fonts. Fonts unique to your machine will not be available to the users' browsers when they load the page. The only fonts you can be guaranteed that they have are the fonts installed with the operating system. Then again, this is not completely fail-safe if they are viewing from a different platform. If you want to use a specific font and have it viewed as the same font on any platform, remember that you will probably have to create a bitmap of the font in Photoshop or another editor, and then incorporate it as a graphic on your page.

Although I have stated many times that HTML is not a page layout language, consistency in paragraph formatting is still an issue that must be dealt with. It is unpleasant to read paragraphs that are not formatted consistently. The best way to consistently format paragraphs is by using a table, via the <TABLE> tag, to format items such as online papers and textual information.



A Procedural Model for Interactive Multimedia Development
James L. Mohler
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West Lafayette, Indiana USA

Abstract

This paper discusses a model for the development of interactive multimedia. Through the use of five distinct stages it gives a methodical procedure to creating multimedia products. The uniqueness of the Multimedia Development Model is that it allows for total planning before implementation. It also increases communication within group settings due to written documentation of the development process, reducing and sometimes eliminating errors. Although rigorously adhering to any one model would be unrealistic, it chronologically presents the major points of concern when developing interactive multimedia.

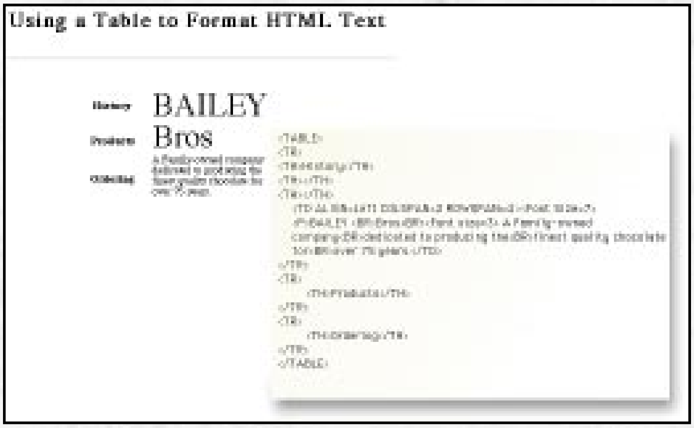
Introduction

Interactive multimedia is being heavily incorporated into our society in areas such as television, marketing, and training due

Figure 9.3.
Using tables to format textual information.

WEB WORKSHOP: One of the most flexible design techniques in HTML is the <TABLE> structure. This example demonstrates how HTML text can be formatted within table cells, creating designs that would otherwise be impossible.

This example places a column of three Level 1 section heads beside a larger block that contains the logo and description of the Bailey Bros. Chocolate Company. Beside the display is the HTML code used to drive the table. It's not really fancy, but it is an improvement over one row of text after another.



Using a Table to Format HTML Text

History

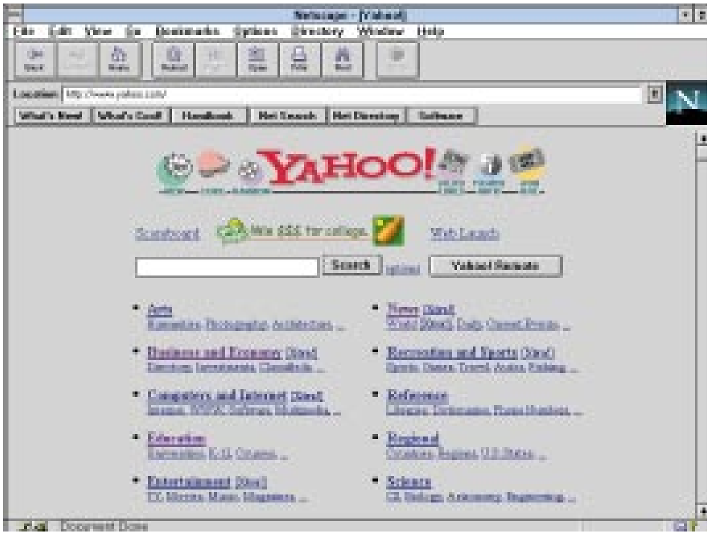
Products

Ordering

BAILEY
Bros
A Family-owned company dedicated to producing the finest quality chocolate for over 75 years.

```
<TABLE>
<TR>
<TH>History</TH>
<TR></TH>
<TH></TH>
   <TD ALIGN=LEFT COLSPAN=2 ROWSPAN=3><FONT SIZE=7>
   <P>BAILEY <BR>Bros<BR><font size=3> A Family-owned
   company<BR>dedicated to producing the<BR>finest quality chocolate
   for<BR>over 75 years.</TD>
</TR>
<TR>
      <TH>Products</TH>
</TR>
<TR>
      <TH>Ordering</TH>
</TR>
</TABLE>
```

A final note concerning readability: Color-coding your pages, via links and text, is a powerful technique that lets the browser know immediately what section she's in and how to get to other sections. Choose color for paragraphs or text within paragraphs that contribute to readability. Embedded links—links that appear within textual passages—are a good addition in a page, but they are frequently overused. Strive to use color to *enhance* the text on your pages rather than dominate. If you have more than three links in a paragraph, the audience's attention is usually attuned to the hotlinks rather than the content you're providing. In cases such as this, consider using lists of hotlinks (the <UL> tag) rather than a paragraph with embedded links. Remember that your content is what the users want.


Netscape - [Yahoo!]
File Edit View Go Bookmarks Options Directory Window Help
Location: http://www.yahoo.com/
What's New! What's Cool! Handbook Net Search Net Directory Software
YAHOO!
Search
options
Yahoo! Remote
Document: Done

Scoreboard Win $$$ for college. Web Launch

- Arts
  Humanities, Photography, Architecture, ...
- Business and Economy [Xtra!]
  Directory, Investments, Classifieds, ...
- Computers and Internet [Xtra!]
  Internet, WWW, Software, Multimedia, ...
- Education
  Universities, K-12, Courses, ...
- Entertainment [Xtra!]
  TV, Movies, Music, Magazines, ...
- News [Xtra!]
  World [Xtra!], Daily, Current Events, ...
- Recreation and Sports [Xtra!]
  Sports, Games, Travel, Autos, Fishing, ...
- Reference
  Libraries, Dictionaries, Phone Numbers, ...
- Regional
  Countries, Regions, U.S. States, ...
- Science
  CS, Biology, Astronomy, Engineering, ...

Figure 9.4.
Using lists for hotlinks.

Making Quick Work of Color Coding

Colored text is an effective means of creating both attention and association. Colored links can be used to present a listing of sites, images, or information related to a particular topic. As you are considering colored links or text, think about its impact on readability. Does the color adequately contrast with the background or other elements? Or does it blend in making the text difficult to read? Does the particular color draw the proper amount of attention to the area? These questions should be asked when deciding upon colored items in the HTML page.

TIP: Because contrast between text and the background is so critical, deciding text colors before settling on the background is like starting on a trip and *then* checking the gas tank. Design your pages from the background forward.

It is useful to decide on a special color for a particular type of link or information. For example, hotlinks to graphic sites may be red, animation sites may be orange, and miscellaneous sites may be yellow. Make sure, however, that you don't choose a color that conflicts with special functions in Netscape, such as the already visited link color. Most design decisions, as they relate to color, are simply common sense. So consider color assignment from a usability standpoint.

Another point of consideration is the psychological and cultural implications of the colors you choose. One of the things we do know about colors is that warm colors such as red, orange, and yellow excite, energize, or stimulate us. Cool colors such as blue, green, and violet are more calming and soothing. These two types of colors also have visual properties. The warm colors tend to project toward us while cool colors tend to recede. A look at contrasting sunsets, such as a brilliant orange setting versus a cool blue sunset, reveals these properties of color, not just the feelings the two settings evoke. These properties of color, unlike cultural implications, do not change.

Color can also imply meaning due to our cultural background, which can change over time with the cultural base. In the United States, red generally connotes danger or warning, while green may represent financial information. However, these colors may mean something entirely different, depending on cultural background. As technology makes us more and more globally minded, realize that your information may be accessed by people with a wide variety of ethnic backgrounds. From the design of your pages down to the colors you choose for each element, think globally.

TASK

Color Coding a Page

To color code your page, you will have to be familiar with the hexadecimal specification of color. Review the section "Determining Hexadecimal Color" in Chapter 3, "Creating Cool Graphics for the Web." The great thing is that you don't have to use *every* color in the 256-color system palette. Create a raster file with a half dozen color chips and their hexadecimal equivalents. Use this for reference:

1. Decide which colors will be assigned to special functions such as hotlinks, clarification, additional information, must-see links, and so on. Refer to your color file to see what color you'd like each to be.
2. From your list of functions, assign the hexadecimal code for each color so you will have them on hand when you start coding.
3. Use the appropriate HTML codes, like the following, to define the colors for the items:

Background color:	`<BODY BGCOLOR="FFFFFF>`
Coloring text:	`<TEXT="FFFFFF">`
Coloring active links:	`<ALINK="FFFFFF">`
Coloring unvisited links:	`<LINK="FFFFFF">`
Coloring visited links:	`<VLINK="FFFFFF">`

Help Direct Your Browsing with Icons

Icons are a perfect example of association. Viewing an effective icon, you are able to know the results of the proposed action without words. Consider the following when designing icons to represent actions:

- The greater the relationship of the graphic to the function, the clearer the purpose and the better the icon.
- The more abstract the icon, the more difficult it is to interpret its meaning.
- Use internationally accepted iconic representations for accepting, rejecting, moving, and so on whenever possible. See Dover Publication's address in Chapter 3.
- Consider the psychological properties of warm and cool colors and how they affect the icon.
- Globally consider the use of specific icons for functions and don't exclude someone due to cultural differences.
- Consider the cultural implications of color for text elements. Be careful concerning the assumptions you make about the relationship between color and association.

I find it revealing that much of the national and international communication occurs via iconic representations. From restroom signs to street signs, graphics transcend verbal or textually written communication by crossing cultural and language barriers (see Figure 9.5).

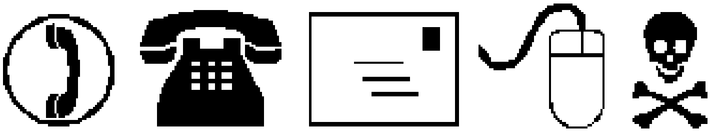


Figure 9.5.
Icons and symbols.

Icons on the Web are generally used for one of three purposes: navigation, instruction, or eye flow. *Navigational* icons allow you to jump from one page to the next or evoke a map of the site; it's also something that allows you to navigate through the site. Those used for *instruction* may clue the user to a special note, warning, or comment on the page such as an icon that shows the site is Shocked or requires Netscape 2.01. Icons used for *eye flow* serve to increase visual appeal of the page and not much else. They help keep the user's eye focused on specific information or content areas on the page.

TASK

Creating Icons

If you're interested in graphics, you'll probably want to develop your own navigation icons. Chapter 13, "Designing Buttons That Work," covers buttons and icons in detail. Many of you want to understand what makes a good navigation button, but will use resources available in clip libraries. (See the Q&A section at the end of this chapter for Web sites devoted to icons.) For both sets of Web developers, consider these steps for effective navigation:

1. The first step is to brainstorm for graphic representations that can be used for the particular task. Is the purpose navigational, instructional, or simply visual?
2. It may be helpful to sketch out what you envision so that you are better prepared to create it.
3. Open a vector- or raster-based program and develop the graphic. A vector program gives you geometric control. A raster program gives you variability and creativity.
4. Once you have created the graphic, prepare it for Web use by sizing the image, converting to a bitmap, reducing the palette to 256 colors, and dithering the image.
5. Integrate the graphic into your code using the appropriate coding, as shown:

   Navigational Link—Link to another page

   ```
   <A HREF="Link.htm"><IMG SRC="icon.gif"></A>
   ```

   Informational Link—Link to a site (or page)

   ```
   <A HREF="http://site"><IMG SRC="icon.gif"></A>
   ```

   Eye flow—Inline image

   ```
   <IMG SRC="icon.gif">
   ```

Ensuring Consistent Navigation Hardware

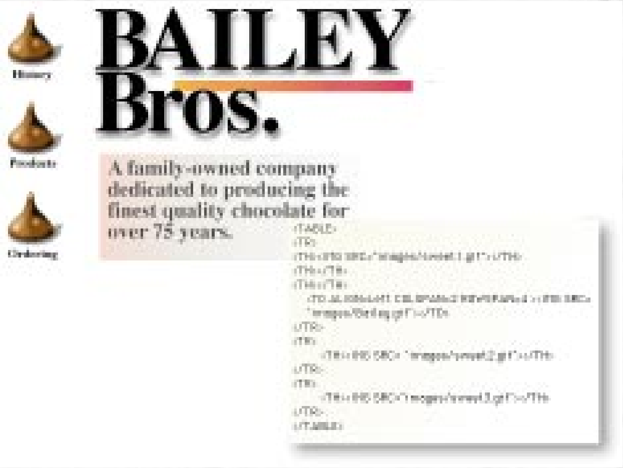
This is a slight departure from the graphic topics presented so far in this chapter, but because you're almost at the end of the overview of graphics and Web design, you should be aware that at some time you have to make all this work. After you have taken the time to create your pages, test on Macintosh and/or PC platforms. Now comes the moment of truth—pushing them to your http server:

- ❑ Again, test, test, test. Keep testing your site locally with all files on your hard drive. Use relative paths to your files.
- ❑ You, of course, have been in close contact with your http provider, who has communicated the path to your site's directory.
- ❑ Open an FTP connection, log in, and copy all your files over to the provider's server and into your directory.
- ❑ Test your page from your browser. If your browser says `Cannot find the page`, and you are using a UNIX server, you probably need to correct the filenames. Filenames on a UNIX server are not like those on a PC or Mac. They exclusively use lowercase filenames with four-letter extensions (`.giff`, `.jpeg`, `.html`).

The only way to minimize installation problems is to design on the server you'll be using, in the environment that will be serving the information. This is not always possible, and cross-platform performance issues will continue to be a factor in graphics and Web design.

WEB WORKSHOP: After learning to format text within the `<TABLE>` structure, the next step is using tables to format linked graphics. This is how menu bars and navigation icons can be flexibly positioned on a Web page.

The Bailey Bros. Chocolate Company takes on a new look when you fill the table cells with graphics. A column of three chocolate kisses (navigation buttons) is displayed beside the logo. The HTML code that drives the table is shown beside the page. Turn back to the Web Workshop earlier in this chapter and compare both the output (a big difference) and the code (not much difference).



A family-owned company dedicated to producing the finest quality chocolate for over 75 years.

```
<TABLE>
<TR>
<TH><IMG SRC="images/sweet1.gif"></TH>
<TH></TH>
<TH></TH>
  <TD ALIGN=LEFT COLSPAN=2 ROWSPAN=4 ><IMG SRC=
  "images/Bailey.gif"></TD>
</TR>
<TR>
    <TH><IMG SRC="images/sweet2.gif"></TH>
</TR>
<TR>
    <TH><IMG SRC="images/sweet3.gif"></TH>
</TR>
</TABLE>
```

Next Steps

Now that you know how page design can be used for visual cues

- ❑ To assure consistency at your site, review Chapter 2, "Designing an Effective Web Site."
- ❑ To refamiliarize yourself with calculating hexadecimal colors, see Chapter 3.
- ❑ To learn more about font characteristics, see Chapter 4, "Making Effective Web Graphics."

- ❑ To see additional considerations in Web browsing, see Chapter 7, "Designing Graphical Pages Anyone Can Download."
- ❑ To see how to use font design tricks in graphics and HTML code, see Chapter 12, "Using Text in Design."

Q&A

Q: I thought you said HTML wasn't a page layout tool. Why worry about formatting text?

A: It is important to format text with HTML because, quite simply, it's what everyone is used to. For example, online résumés, portfolios, papers, and journal articles all have particular formats, and most expect to see the usual format re-created in the digital representation. If you're going to provide documents on the Web whose roots are traditional paper documents, you must mimic the traditional documents as closely as possible. Again, focus not only on what the user wants, but also on his perception of what it should look like. Does this mean you can't add special things like hotlinks, exceptional graphics, multimedia, and so on? Of course not! But these documents must be professional. Professional appearance requires a professional format.

Q: Are there any sites on the Web devoted to icon development? Where?

A: Some freebie sites include the following. You may also want to do a search at `www.yahoo.com`:

`http://www.mccannas.com/`

`http://www59.metronet.com/kicons/buttons.html`

`http://members.gnn.com/dcreelma/imagesite/image.htm`

`http://members.aol.com/minimouze/private/ICONS.html`

Q: What about stock libraries of icons that I can purchase?

A: The following sites are places where you can buy clip art images and icons. Again, you may want to do a search at `www.yahoo.com`:

`http://www.doubleexposure.com/`

`http://www.clever.net/gld/home/dewitt.shtml`

`http://cvp.onramp.net/art.html`

`http://www.Nashville.Net/dcd/`

`http://fox.nstn.ca/~clipart/`

CHAPTER

TEN

Understanding Form and Substance: The Dilemma of Web Style

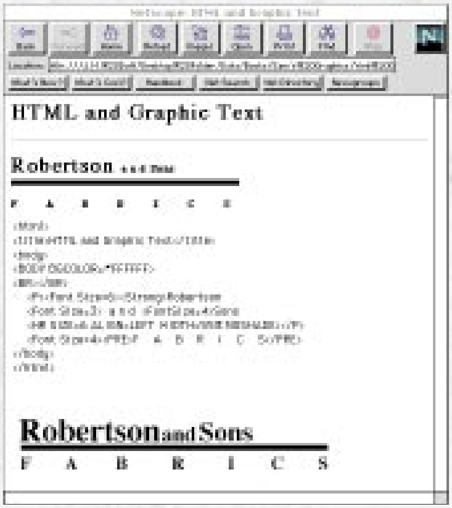
In this chapter, you'll

- ❑ Learn that there is a unique style found in Web publications
- ❑ Understand the difference between the first and subsequent waves of Web surfers
- ❑ Use examples from the Web in a swipe file to foster your own creativity
- ❑ Be shown how to organize your swipe file and how to create a directory and file naming strategy to make efficient use of your resources

To design effectively for the Web you need to be part designer, part computer geek, and part psychologist. The designer part of you sees a world of color, light, form, and balance. You feel a need to manipulate these variables and in doing so, make the world more visually attractive. The geek part of you eats up baud and bandwidth, push and pull, and client and server. These technical things make your world more efficient. The psychologist in you can study and evaluate, then anticipate a client's needs and actions. Which words, colors, actions, and feedback does the client need and expect? The psychologist in you knows this.

Combine designer, computer geek, and psychologist, and you get a new kind of animal—a Webmaster!

WEB WORKSHOP: It's possible to create interesting designs using HTML text; however, it isn't easy. In this example, the company name is created in three sizes with a horizontal rule scaled to run part way across the page. To fit the word FABRICS across the width of the bar the `<PRE>` tag is used so that space bar characters are recognized. The Hypertext Markup Language (HTML) code that drives this formatting is displayed below the text.



HTML and Graphic Text

Robertson and Sons

F A B R I C S

```
<html>
<TITLE>HTML and Graphic Text</TITLE>
<body>
<BODY BGCOLOR="FFFFFF">
<BR></BR>
  <P><Font Size=5><Strong>Robertson
  <Font Size=3> a n d </FontSize=4>Sons
  <HR SIZE=6 ALIGN=LEFT WIDTH=300 NOSHADE></P>
  <Font Size=4><PRE>F   A   B   R   I   C   S</PRE>
</body>
</html>
```

Robertson and Sons

F A B R I C S

The Web has developed its own style or *genre*, which is its own way of presenting visual, textual, and numeric data. Understanding the genre means understanding what it takes to be successful. Say, for example, you want to write Western fiction. Cowboy novels have their own genre or their own set of rules that you must understand if you want to sell your stories. Web design is unique in that you're in on the formation of a genre—sort of like being Guttenberg's woodworking assistant.

The style of the Web, unlike other publishing genres, is intimately tied to its technology. You don't need special equipment to read a book, magazine, newspaper, or report. A Web publication, on the other hand, simply can't be accessed without a network connection, browser software, and appropriate hardware. Of course, some of these issues will be addressed when the Web comes in over television cable. With the right controller anyone with television cable should be able to surf the Web.

NOTE: Glance at Figure 6.9, which is Penton Publishing's home page (`http://www.penton.com/`). Three things stand out. First, the choice of the photographic subject establishes the tone for the site. It screams "Yo, this is a place where we have fun!" The icons are informal, suggesting a loose, rapid sketch style. Perhaps the guy at the beach sketched them on a bar napkin. Finally, the font reinforces a personal, hand-written note style. Taken together, these three elements create a definite style.

This reliance on special technology is both the strength and weakness of Web publications. This is its strength because of the almost limitless possibilities, and its weakness because of the inherent limitations in delivering Web publications to a wide audience. This is the dilemma of Web style.

Developing a Genre of Web Design

The genre of Web style contains the following:

❑ Appropriate interactivity. The fundamental difference between traditional print and Web publications is that the Web can be interactive (see Figure 10.1). Use it! Lose this interactivity and you should probably choose a different publication medium.

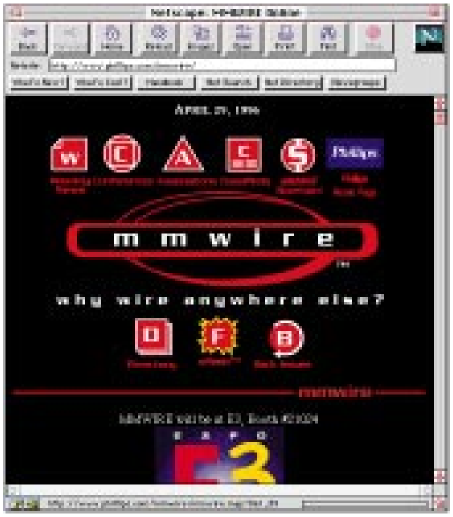


Figure 10.1. *This page from MMWIRE (*`http://www.phillips.com/mmwire/`*) presents a clearly interactive way to locate services within the site.*

- ❑ Geography. If you look at the site diagrams in Figures 8.11 through 8.14, you'll see that they strongly resemble street maps. This structure can be extended to the Web pages themselves as shown in Figure 10.2. Taken to the extreme, if a Web site has a valid structure, it may actually subcreate a valid world.

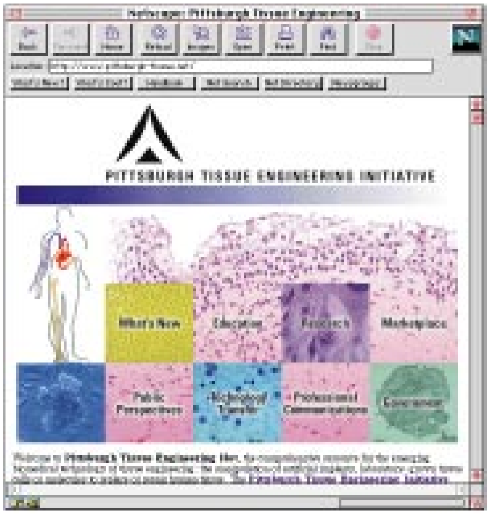
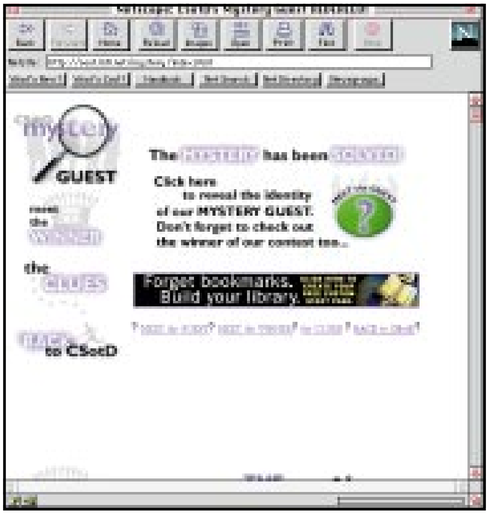


Figure 10.2. *An interesting way of presenting structure and a thumbnail of the subject matter within each section by the Pittsburgh Tissue Engineering Initiative* (`http://www.pittsburgh-tissue.net/`)

- ❑ Characters. The impersonality of many Web publications often makes them sterile. If you populate your world with interesting characters, it will come alive (see Figure 10.3). You can do this in a static way with photographs or dynamically using video or animation resources.



The MYSTERY has been SOLVED

Click here to reveal the identity of our MYSTERY GUEST. Don't forget to check out the winner of our contest too..

Figure 10.3. *This interactive site lets you engage in a mystery with clues and surprises. Find it at* `http://cool.infi.net/mystery/`.

- ❑ Story line. Boy meets data. Boy acquires data. Boy loses data. Same old story. What's the story line in your Web site? Southwest Airline's Web site provides a virtual travel desk (see Figure 10.4).

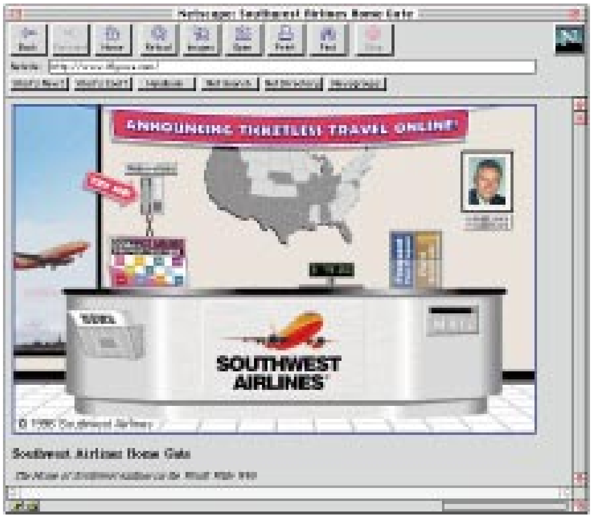

ANNOUNCING TICKETLESS TRAVEL ONLINE!
SOUTHWEST AIRLINES
Southwest Airlines Home Gate

Figure 10.4. *Southwest Airline's (*`http://www.iflyswa.com/`*) story line is that you're at their Web travel desk. Click on the graphic that describes what you want to see. Neat, huh?*

- ❑ A hook in every section. Something on the page invites further exploration. This could be something like "tip of the month" or a link to a really cool site (see Figure 10.5).

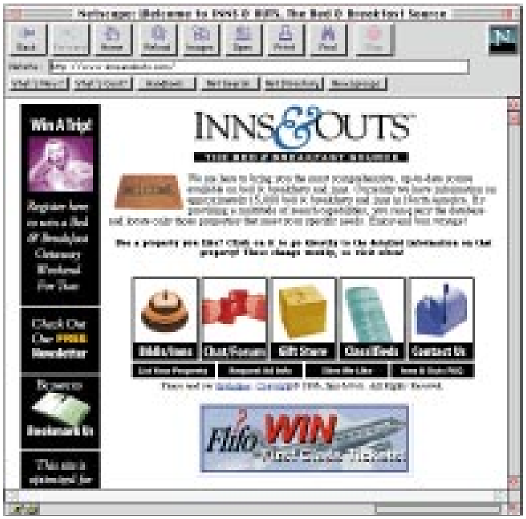

INNS & OUTS
Win A Trip!
Register here to win a Bed & Breakfast Getaway Weekend For Two
Check Out Our FREE Newsletter
Bookmark Us
Gift Store
Classifieds
Contact Us
Fly WIN First Class Tickets

Figure 10.5. *Everyone likes to win something. Inns & Outs (*`http://www.innsandouts.com/`*) uses hooks to keep you interested in their product by taking a Sunday insert approach.*

Surfing the Web with the First Wave

As of this writing, Web publication has yet to reach a large number of people. Less than 15 percent of the population has access to the Web. Only 20 percent of stockholders believe it is a viable tool for corporate communications.

The first wave of Web surfers had little interest in its commercial value or in how to use it as a vehicle for distributing information. It was legalized hacking, like snooping with a license. On the first wave road the pioneers of the wild Web. No rules. No boundaries. They tamed it for the settlers who followed.

Designing for the Web's Next Wave

You're part of the Web's next wave. You want to put down roots, build a society, and start a family. The very reason you're here differs from that of the early voyageurs. As a developer of Web publications

- You see the Web as one piece of the information puzzle. You know enough about print, direct mail, catalogs, television, *and* the Web to make economically viable decisions.
- You have the knowledge to match the medium to the message, to put a twist on Marshall McLuhan's mantra ("The medium is the message"). Would you distribute an annual report as a newsprint insert in the Sunday paper? Would you deliver visual information over the radio or tactile information on television?
- You have few technological needs, but you do have productivity needs. You may never have to deal directly with HTML, Virtual Reality Modeling Language (VRML), GIF, JPEG, Shockwave, or Java.
- You recognize that the Web is not an end; rather, it is the means to an end. The Web will be replaced. The need for information won't.

TASK

Creating a Swipe File of Web Style

A collection of art examples is called a *swipe file*. I'm not encouraging you to steal anything (see the section "Copyrights and Fair Use" in Chapter 3, "Creating Cool Graphics for the Web"), but make intelligent use of resources available to you. Use them to foster your own creativity. But be careful! The biggest mistake you can make is to grab examples off the Web with no plan in mind. You just end up with tons of files, and no way to use them. Follow these steps when you're planning to use graphics:

1. Decide how you are going to store the images. Since you probably won't need access to them all the time, keeping them on removable media such as Zip, SyQuest, or magneto-optical is a smart move.
2. Decide how you are going to organize the images. You may want to use products like Fetch or Hijaak Pro to build libraries of images that can be

searched visually or by keyword. Grab the images in 8-bit format (BMP, PCX, or GIF in Windows; PICT on a Macintosh).

3. Create a directory structure that makes it easy to find the examples you want. The following is an example:

```
Web Graphics Examples Disk
Button Directory
    Realistic Buttons
    Iconic Buttons
Background Directory
    Solid Background Subdirectory
    Tiled Background Subdirectory
Text Directory
    Interesting Fonts Subdirectory
    Font Shadow Subdirectory
```

4. Use a consistent and logical file-naming system. Consider the following naming conventions:

`rndbut01.bmp`	A round button
`sqrbut01.bmp`	A square button
`bmppat01.bmp`	A bumpy pattern
`chrome01.bmp`	A chrome material

5. If you're handy in a raster graphics program (such as Photoshop or Painter), you might organize the images into a contact proof sheet (see Figure 10.6). Organize proof pages with similar content. Include the uniform resource locator (URL) in the image so you can revisit the site.

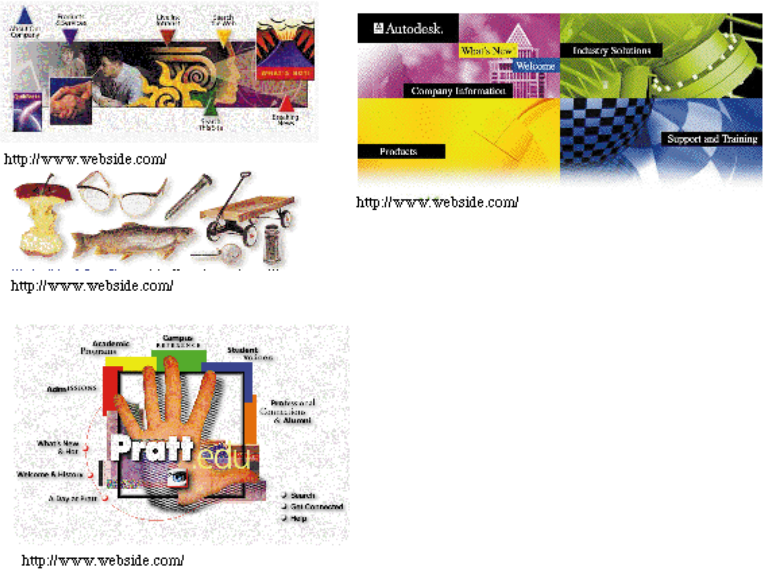


Figure 10.6.
A contact sheet of montage Web graphics for swipe file reference. Note that the URL for each is placed below the figure.

Web surfers enjoy free entertainment. Grab a board, and catch a wave. The emerging practice of charging for Web site access may destroy or at least fundamentally change the sport. Stay tuned!

Next Steps

Now to apply your understanding of Web graphics style:

❑ Flip through Chapter 11, "How to Avoid the Ten Most Common Web Mistakes," to see how to avoid common mistakes in Web design and graphics.

❑ Develop a sense of typographic style in Chapter 12, "Using Text in Design."

❑ Become aware of the diversity of graphics you can deliver to the user as covered in Chapter 19, "Understanding Advanced Graphic File Types."

Q&A

Q: Do my Web pages have to look like everyone else's? I want to develop my own style.

A: Go for it! But to reduce the frustration level, spend some time surfing the Web, taking notes, making screen grabs, and viewing source code. Find pages you like and create prototype pages. Remember, before Pablo Picasso developed his own unique style, he was a classically trained artist.

Q: I want to include small video clips of our key personnel in our new Web site. It this feasible?

A: Certainly, but consider what may or may not be gained (see Chapter 18, "Delivering Animations at Your Web Site"). First, you must deliver the video in a format and in a quality that is effective. Too large a format (like 320×240 pixels) and download times may render the video unusable. Even then, your client must have the appropriate video helper application or plug-in to view the clip and enough hardware to view it at an effective frame rate. Whew!

Q: I want to make my Web site available to the broadest audience. How can I do this?

A: Secure the service of a server provider who won't fold next week. Then, create a URL that is a natural for your company. If your company is called BIZ Fasteners, try to use a URL such as `http://www.bizfast.com/`. Don't forget to put the URL on all your correspondence.

CHAPTER ELEVEN

How to Avoid the Ten Most Common Web Mistakes

In this chapter, you'll

- ❑ Learn which mistakes to avoid when designing and executing Web pages and sites
- ❑ Understand strategies for correcting these mistakes
- ❑ Be able to critically analyze Web publications for their effectiveness based on the examples presented in this chapter

If you knew the most common mistakes in designing Web pages, you probably wouldn't waste the first two or three months developing a project. Well, here they are! We have talked with Web designers around the country, asking dumb questions, trying to identify trends and common mistakes. Just about everyone had an opinion, and surprisingly, there was a lot of agreement.

These mistakes were grouped and distilled until commonalities surfaced. The resulting ten mistakes are presented in no particular order (we didn't have a beauty contest). Not all of the mistakes are fatal. However, when taken together, they go a long way in developing a philosophy of Web page design.

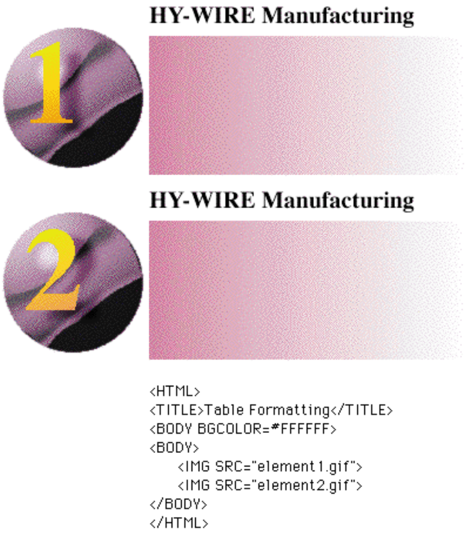
Rather than present the mistakes in a Wall of Shame, the authors have taken pains to recreate examples of mistakes and their possible solutions. This is sort of like the before and after makeovers you see in computer graphics and publishing magazines.

Number 10. You Use a New Graphic File for Figures That Have Repeating Elements

Solution: Download once, reuse many times. Build subsequent graphic images by combining elements that don't change with elements that do using the `<TABLE>` structure.

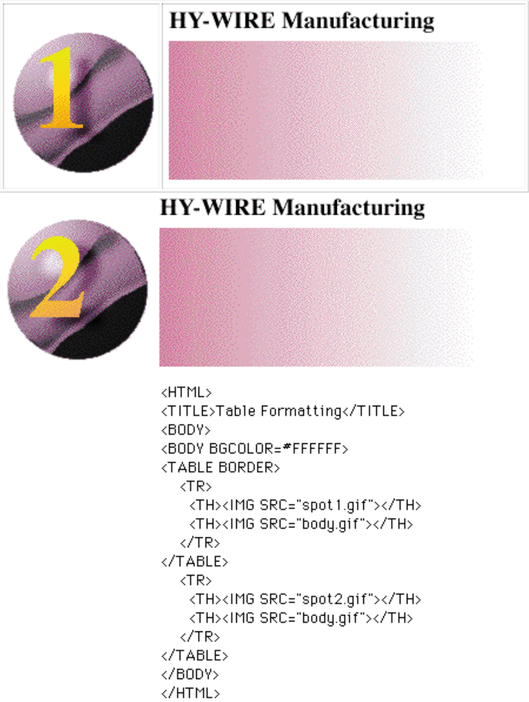
In Figure 11.10, two individual graphic elements are displayed. You can see by the Hypertext Markup Language (HTML) code that to accomplish this, two separate graphic files have been loaded. Because each graphic is a separate file, each is cached in case it might be used again.

Compare the first example to the second. The figures look the same but with a big difference. The body of the graphic (`body.gif`) was downloaded once into a table structure. The first graphic is displayed using the `BORDER` option so you can see how HTML adjusts cell size automatically. The part of the graphic that was changed (`spot1.gif`) was also loaded into the table. What was saved? `body.gif` was loaded once and cached, ready to be used in the second table. Only the much smaller `spot2.gif` was downloaded to complete the second graphic.



```
<HTML>
<TITLE>Table Formatting</TITLE>
<BODY BGCOLOR=#FFFFFF>
<BODY>
    <IMG SRC="element1.gif">
    <IMG SRC="element2.gif">
</BODY>
</HTML>
```

Figure 11.10.
By using the <TABLE> *structure, you can pull part of your next graphic from cache and not have to download it.*



```
<HTML>
<TITLE>Table Formatting</TITLE>
<BODY>
<BODY BGCOLOR=#FFFFFF>
<TABLE BORDER>
  <TR>
   <TH><IMG SRC="spot1.gif"></TH>
   <TH><IMG SRC="body.gif"></TH>
  </TR>
</TABLE>
  <TR>
   <TH><IMG SRC="spot2.gif"></TH>
   <TH><IMG SRC="body.gif"></TH>
  </TR>
</TABLE>
</BODY>
</HTML>
```

Number 9. You Assume That Everyone Has a Graphical Browser

Solution: Provide alternate text links and textural descriptions of graphic resources.

Don't assume that everyone has the same Web functionality that you do. Design for the *lowest* denominator. There might be potential visitors out there with visual handicaps who use special software to synthesize text, which allows them to interact with Web pages…if they have text links.

The first example in Figure 11.9 shows a graphics-only page. The second example takes those same links and displays them using a *text link menu*. A client without the ability to use your graphic links (tables, image maps, <HREF> buttons) will be able to navigate your pages.

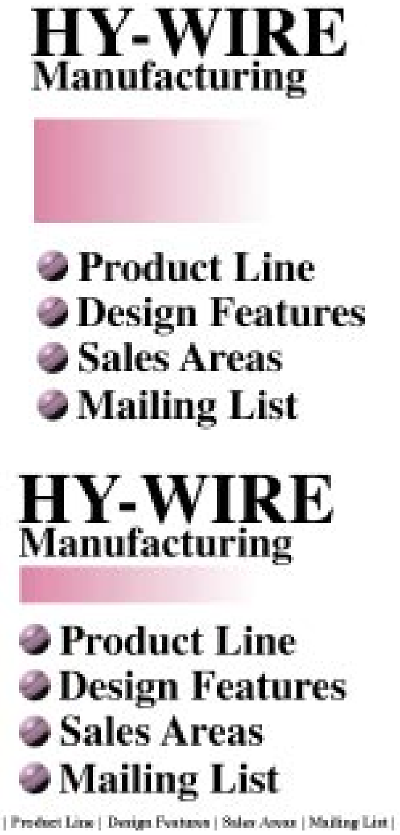


Figure 11.9.
The simple addition of a linked text menu increases your page's flexibility.

Number 8. You Always Use a Full 8-Bit, 256-Color Palette

Solution: Use an adaptive palette and the smallest bit depth possible. Use black-and-white bitmap graphics, reduced grayscale images, or limited color 8-bit graphics.

Reducing your color palette reduces the size of your graphic. It also reduces the amount of color mapping and dithering done on the client side, bringing your pages to the screen faster. So reducing color palette depth and dimensions has a double benefit.

The first example in Figure 11.8 shows our little logo and the full 256-color system palette. The second example shows the same graphic with the colors that are actually used and with color depth set to 4 bits.

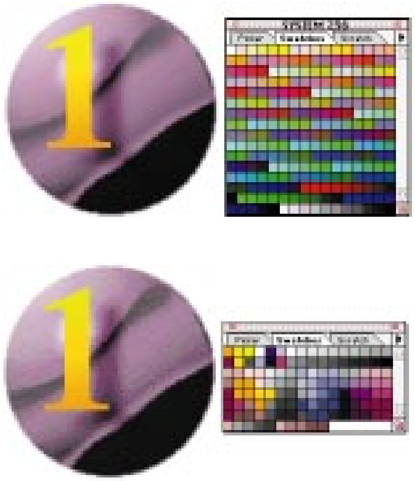


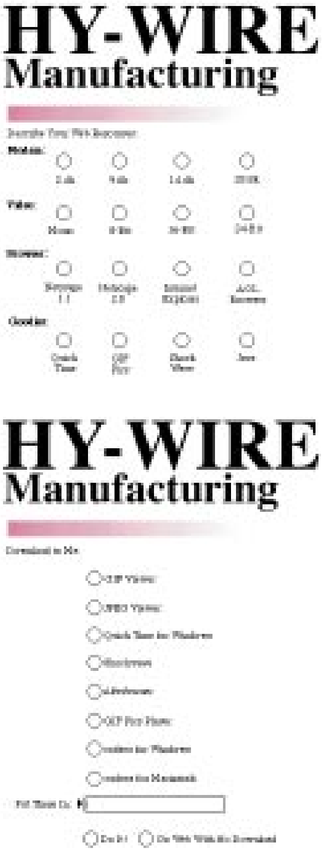
Figure 11.8.
Reduce color depth and the number of colors used to keep graphic files as small as possible.

Number 7. You Design Web Pages for Your Browser and Your Plug-Ins

Solution: Make it obvious on the splash page what resources are necessary to fully use your site. Better yet, let the user decide which version of your site is appropriate for his equipment.

The first example in Figure 11.7 shows an initial screen (sort of a pre-splash screen) that allows the user to branch to a group of HTML files and resources appropriate for their resources. This is called a *front end*. Building this flexibility into your Web site makes extra work on your part, but is a really positive design move—especially if you have pages designed for specific browsers or graphic applications.

A different alternative is shown in the second example. This downloads the necessary resources on demand. Unfortunately, most require that they be installed, the system rebooted, and so on—not exactly a smooth flow of information.



HY-WIRE Manufacturing

[illegible]

Modem: ○ [illegible] ○ [illegible] ○ 14.4k ○ 28.8K

Video: ○ None ○ 8-Bit ○ 16-Bit ○ 24-Bit

Browser: ○ Netscape 1.1 ○ Netscape 2.0 ○ Internet Explorer ○ AOL Browser

Good for: ○ Quick Time ○ GIF Play ○ Check View ○ Java

HY-WIRE Manufacturing

Download to Me:

○ GIF Viewer
○ JPEG Viewer
○ Quick Time for Windows
○ Shockwave
○ [illegible]
○ GIF Play Plus
○ [illegible] for Windows
○ [illegible] for Macintosh

[illegible]: ▭

○ Do It! ○ [illegible]

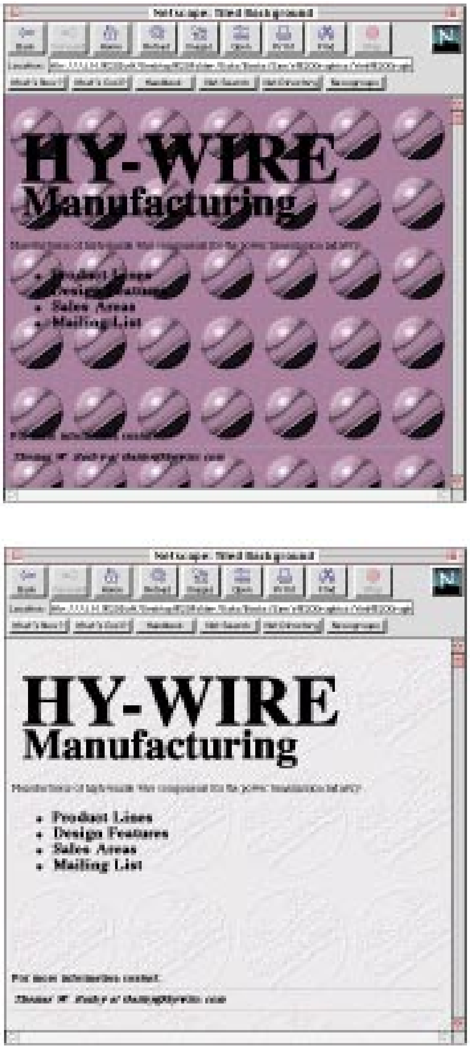
Figure 11.7.
Provide flexibility in your design by designing custom front ends that link to subsets of your site's pages.

Number 6. You Use Designs and Colors in Tiles That Make It Difficult to Read Text That Is on Top of the Background

Solution: Reduce the saturation of any background tile (take the color out and make it more gray). Use simpler designs for the tile. Make the tile larger.

The first example in Figure 11.6 shows our HY-WIRE logo in all its glory as a repeating background tile. Note how difficult it is to read even the large point size text, let alone the smaller copy. The logo is both too dark and too colorful to allow the text to stand out.

The second example uses the logo as a background element, embossed on a much lighter background. See how all the text is easier to read and the logo now becomes a true background. To accomplish this, the original logo was enlarged 200 percent. Its contour was traced, and the saturation was reduced 100 percent. This gray image was then embossed and lightened. A color from the original logo was lightened and then lightly filled over the entire canvas. The result? A lightly embossed tile that is subtle yet full bodied.



HY-WIRE
Manufacturing

[illegible]

- Product Lines
- Design Features
- Sales Areas
- Mailing List

For more information contact:

[illegible]

HY-WIRE
Manufacturing

[illegible]

- Product Lines
- Design Features
- Sales Areas
- Mailing List

For more information contact:

[illegible]

Figure 11.6.
A background graphic should allow text placed on top to be easily read.

Number 5. You Make Your User Wind His Way Back to the Home Page, One Level at a Time

Solution: Provide a direct link between any page and the home page.

This function can be accomplished by a word list link or by a consistent icon. The word can be simply Home, which most people understand to be a return to the home page. If you use icons to link to various pages, you might use the dominant icon from the home page.

Figure 11.5 shows versions of a navigation bar displaying increasing levels of control. The first panel simply allows forward and backward movement. The second panel provides links to level-one sections in the HY-WIRE Web site. The third panel includes the HY-WIRE logo, which appeared on the home page—a link to each entry page in the site. The last control panel includes textual explanations of the controls, which is an aid if the icons are not universally understood. If placed in a frame or directly on a page as an image map, you can see how much more power you give the user as navigation ability increases.

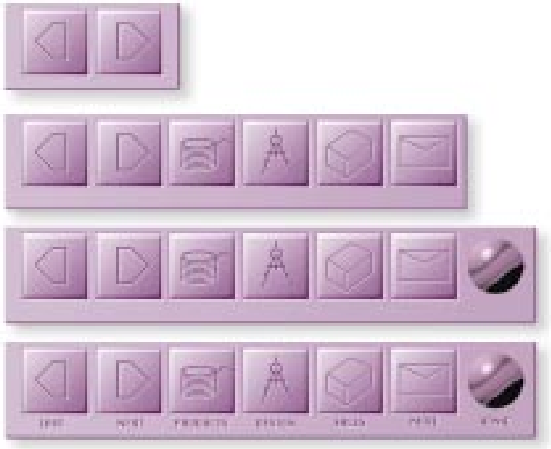


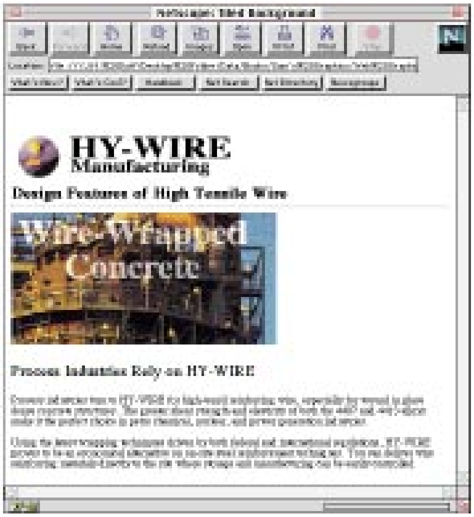
Figure 11.5. *Increasing levels of navigation control.*

Number 4. You Always Load Your Best Images Inline

Solution: Use well-dithered Graphical Interchange Format (GIF) thumbnails linked to high-quality Joint Picture Experts Group (JPEG) graphics. Include a description of the subject and its size.

It really doesn't take much more effort to give the reader this control, as Figure 11.4 demonstrates. The first page shows an inline JPEG graphic of approximately 280KB. The second page includes a 39KB thumbnail of the graphic, its description, and size. The thumbnail is linked to the JPEG file.

This has the added benefit for readers whose browsers may not support the file type you embed inline.



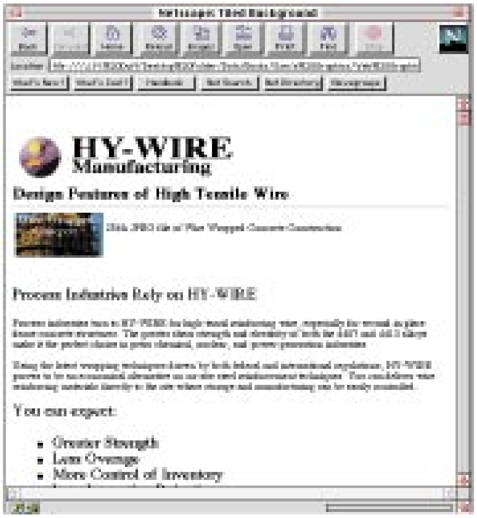
HY-WIRE Manufacturing

Design Features of High Tensile Wire

Process Industries Rely on HY-WIRE

[illegible]

[illegible]



HY-WIRE Manufacturing

Design Features of High Tensile Wire

280k JPEG file of Wire Wrapped Concrete Construction

Process Industries Rely on HY-WIRE

[illegible]

[illegible]

You can expect:

- Greater Strength
- Less Overage
- More Control of Inventory

Figure 11.4.
By including a thumbnail inline and a link to its high-quality sibling, you give the reader more control.

Number 3. Your Graphics Always Have Halos Around Them

Solution: Use the same background color as was on your original graphic. Remove all anti-alias pixels from your graphic in a raster editor such as Photoshop.

A large percentage of Web graphics were created for other purposes, and unfortunately, plopped onto Web pages without thought as to how they will look in their new environment.

The main culprit is anti-alias. When a graphic has been anti-aliased, its outside pixels have been blurred with the background color. The easiest solution is to always use graphics that have been originally created on white backgrounds and set your Web pages' background color to white. Removing anti-alias from one source so you can use it in another is always a compromise and results in something not quite as good as the original.

The first example in Figure 11.3 shows what happens when you place a graphic from various backgrounds on a white page. Each anti-alias halo is a little different because each blend is between the object and a different background color.

The problem of correcting this is made more difficult when the illustration itself has varied colors. The example here is for the most simple case, a black figure. In any case, you will almost always end up with either a slightly larger or smaller graphic.

One solution is shown in the second example of Figure 11.3. Follow these steps—top to bottom, left to right—in Photoshop:

1. In the original graphic, turn the background to a value much lighter (or darker) than the lightest (or darkest) anti-alias pixel. White or black usually does this.
2. Use the magic wand with tolerance set to 150 and click on the graphic. If you don't select all of the graphic and its anti-aliased pixels, increase the tolerance. If you select the graphic and the background, decrease the tolerance. Also, you can expand or contract the selection until you get what you want. Leave the selection active.
3. Create the desired foreground (object) color and fill the selection.
4. Clean up pixels as necessary. You'll have holes and little nubbins sticking out and these must be corrected.
5. Select a new red, green, blue (RGB) background color (RRGGBB) from the 8-bit system palette.
6. Fill in the background and blur the edges to produce a new anti-alias.

7. Set `<BODY BGCOLOR=#XXXXXX>` to hexadecimal value RRGGBB.
8. Your graphic should have no halo.

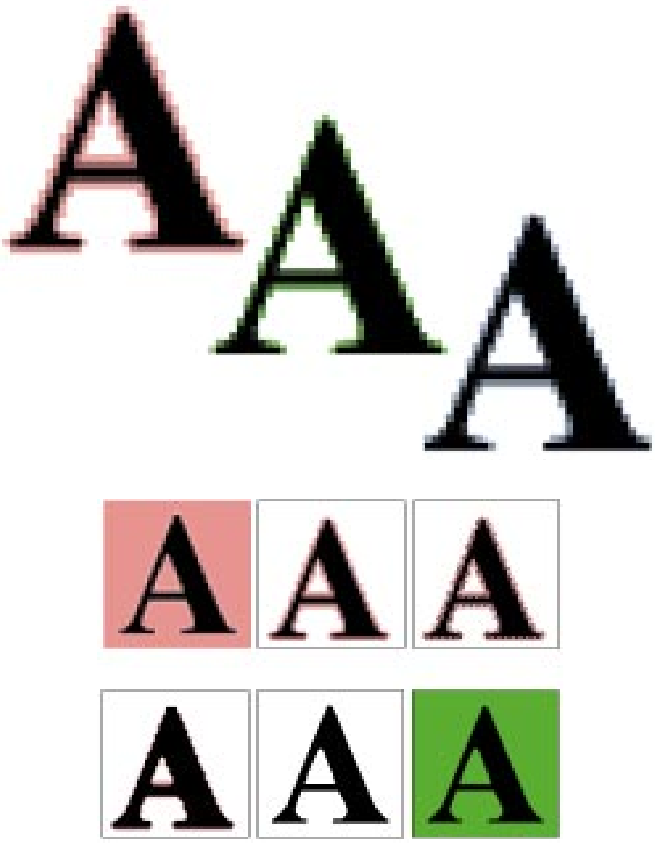


Figure 11.3.
Correcting anti-alias problems is time-consuming but makes for much better-looking pages.

Number 2. All Your Graphics and Designs Look the Same

Solution: Use techniques for expanding your creativity. Create a swipe file, read the resources cited in Chapter 3, "Creating Cool Graphics for the Web." Create at least three different versions of your template page design.

There isn't anything fundamentally wrong with developing an identifiable style. If you use a systematic approach to analyzing and solving graphic problems, solutions will take on their own form.

As you might guess, there are an infinite number of possible solutions to every graphics assignment, and your chance of finding the best (or optimum) solution isn't very good.

However, if you try several solutions, you have a better chance for success than if you try just one.

Figure 11.2 shows several solutions to our HY-WIRE graphics logo. Even though the same elements were used in each, the results are quite different. Some solutions vary typographic design while others experiment with justification, alignment, overlap, and montage. Which one do you like the best?

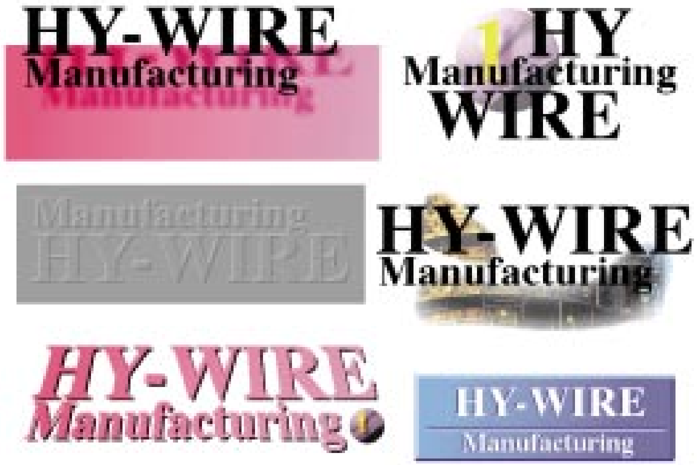


Figure 11.2.
A variety of styles can be used to express the same information.

Number 1. You Design Web Pages for Yourself

Solution: Unless you're doing this strictly for fun, someone will be evaluating your work—either the person hiring you to make the pages or the person looking at your pages.

If you want the opportunity to design pages again for your current client or for someone else, you had better learn the technology, the tools, client expectations, and user psychology. Revisit Chapter 10, "Understanding Form and Substance: The Dilemma of Web Style," for a discussion of how important this is.

Figure 11.1 is an actual job posting for a Web developer. Read it carefully. What does it tell you about who you will design the Web page for?

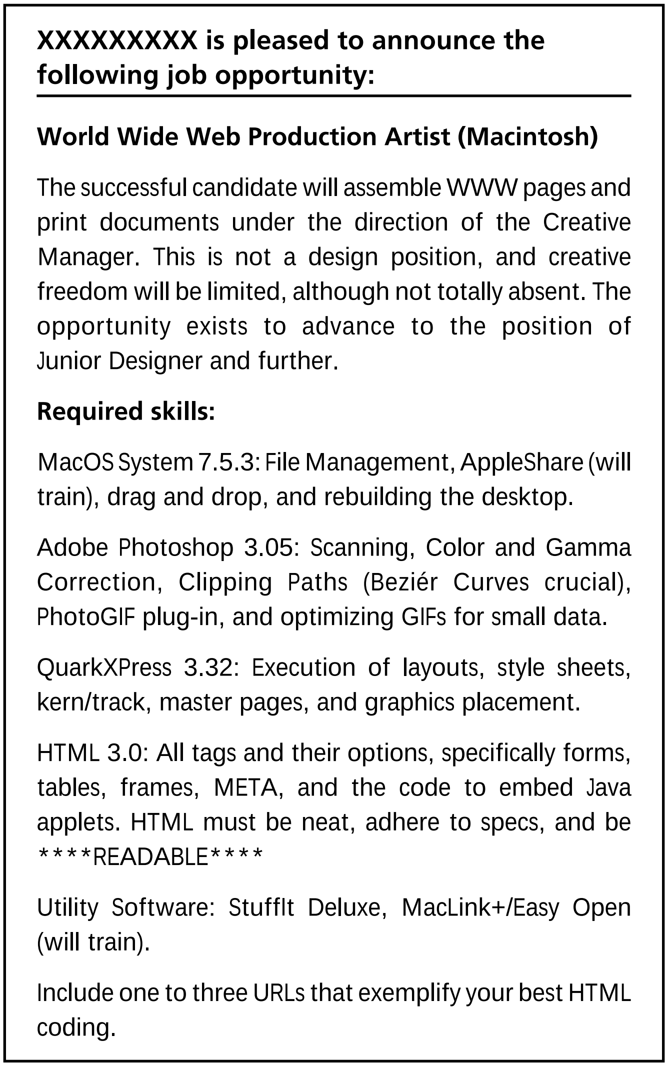


Figure 11.1.
Job description for a Web developer.

XXXXXXXXX is pleased to announce the following job opportunity:

World Wide Web Production Artist (Macintosh)

The successful candidate will assemble WWW pages and print documents under the direction of the Creative Manager. This is not a design position, and creative freedom will be limited, although not totally absent. The opportunity exists to advance to the position of Junior Designer and further.

Required skills:

MacOS System 7.5.3: File Management, AppleShare (will train), drag and drop, and rebuilding the desktop.

Adobe Photoshop 3.05: Scanning, Color and Gamma Correction, Clipping Paths (Beziér Curves crucial), PhotoGIF plug-in, and optimizing GIFs for small data.

QuarkXPress 3.32: Execution of layouts, style sheets, kern/track, master pages, and graphics placement.

HTML 3.0: All tags and their options, specifically forms, tables, frames, META, and the code to embed Java applets. HTML must be neat, adhere to specs, and be ****READABLE****

Utility Software: StuffIt Deluxe, MacLink+/Easy Open (will train).

Include one to three URLs that exemplify your best HTML coding.

Next Steps

Now that you've studied our top ten list, get out there on the Web and become a critic! Better yet, become your *own* best critic. If you can avoid the big ten, there's a great chance that your own Web pages will be both effective and attractive.

PART III

Survival Skills for Web Graphics

CHAPTER

TWELVE

Using Text in Design

Effective Web pages combine textual and graphical elements in order to convey information. What you might forget is that text elements do more than just convey written information. Font, size, weight, color, and placement all contribute subtle (and sometimes not so subtle) nuances to your reading. So text is more than just the words...it's *how* those words are presented.

Take, for example, the word "picnic" in Figure 12.1. Both instances have the same characters, but one does a much better job of conveying the *feeling* of the word because of the choice of font, weight, color, and design.

In this chapter, you'll

- ❏ Learn when to use HTML text in your design
- ❏ Understand how to mix HTML and graphic text on the same page
- ❏ Revisit time-honored techniques for making character graphics
- ❏ Learn ways of combining text captions with inline graphics
- ❏ Discover methods for producing graphic text that is both interesting and effective

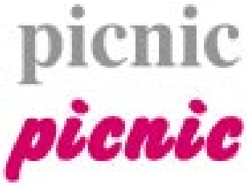


Figure 12.1. *Your choice of font characteristics contributes to the effectiveness of the message.*

In order to effectively use text on Web pages, you need to combine a knowledge of what Hypertext Markup Language (HTML) can and can't do with other graphics programs such as Photoshop and Illustrator (or Fractal Painter and FreeHand).

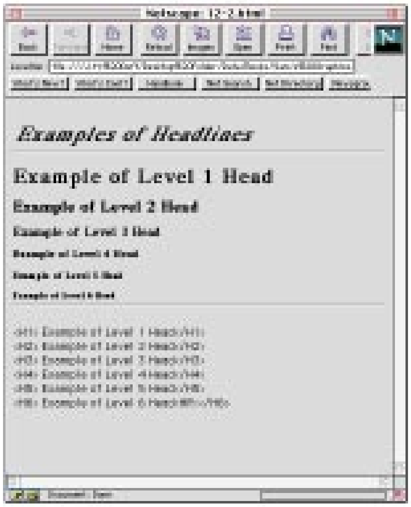
Mixing HTML Text and Your Graphics

Stop the presses! As you might suspect, even as this book goes to press, Adobe has big plans for text and graphics on the Web. A device-independent graphic standard and on-the-fly PostScript and TrueType rasterization, much like Web-delivered Adobe Type Manager (ATM), are in the works.

Let's find out what we can do with HTML text so this can be supplemented later with graphic text. Many browser-specific extensions have been included in Release 3 of HTML, but you'll still have to experiment with browsers to find out which tags will work.

As of this writing, HTML and its extensions remain a poor choice for doing creative text manipulation; plus, each browser does its own thing in interpreting the HTML code. Still, here are some ideas you can try:

- ❑ Make selected text larger, bolder, or otherwise differentiated from body text using the headline tag pairs `<H1></H1>` through `<H6></H6>`. Heads subordinate as the number gets larger. Figure 12.2 shows the use of heading tags.



Examples of Headlines

Example of Level 1 Head

Example of Level 2 Head

Example of Level 3 Head

Example of Level 4 Head

Example of Level 5 Head

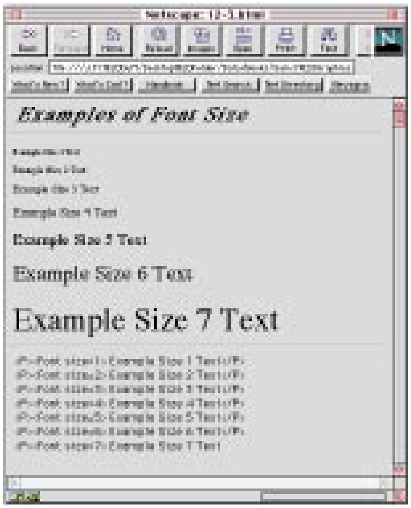
Example of Level 6 Head

```
<H1> Example of Level 1 Head</H1>
<H2> Example of Level 2 Head</H2>
<H3> Example of Level 3 Head</H3>
<H4> Example of Level 4 Head</H4>
<H5> Example of Level 5 Head</H5>
<H6> Example of Level 6 Head</H6>
```

Figure 12.2. *The use of heading tags to vary subordination.*

❑ Set the size of letters, words, or paragraphs using the `<FONT SIZE=X>` tag. The value of *x* ranges from 1 to 7 with 3 being the default (approximately 12 point) size. Figure 12.3 shows how to adjust the size of a whole line, a word, or a letter in a word.

To change a word within a head, enclose the word in its own set of tags (for example, `<H3>A Heading with a <H1>BIG</H1>word.</H3>`). To change a letter, enclose the letter in its own tags (for example, `<H3>A Heading with the first letter of a <H1>W</H1>ord made larger.<H3>`).



Netscape: 12-3.html

Examples of Font Size

Example Size 1 Text

Example Size 2 Text

Example Size 3 Text

Example Size 4 Text

Example Size 5 Text

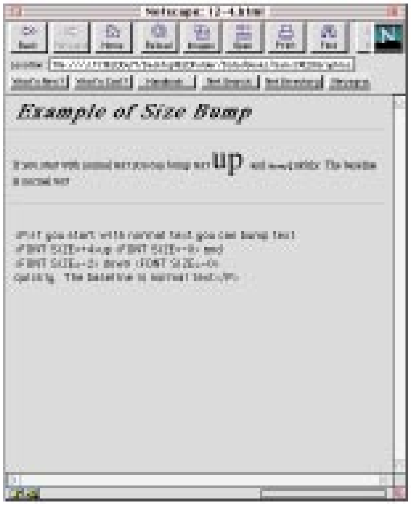
Example Size 6 Text

Example Size 7 Text

```
<P><Font size=1>Example Size 1 Text</P>
<P><Font size=2>Example Size 2 Text</P>
<P><Font size=3>Example Size 3 Text</P>
<P><Font size=4>Example Size 4 Text</P>
<P><Font size=5>Example Size 5 Text</P>
<P><Font size=6>Example Size 6 Text</P>
<P><Font size=7>Example Size 7 Text
```

Figure 12.3.
The use of a font size tag to vary type height.

❑ Bump succeeding text up or down using the `<FONT SIZE=+Y>` or `<FONT SIZE=-Y>` tag. The value of *Y* changes the font size up or down by that amount. Figure 12.4 bumps several words in a line up and then down. This is great when you don't really remember what the absolute font size is, but you just want to make something larger or smaller.



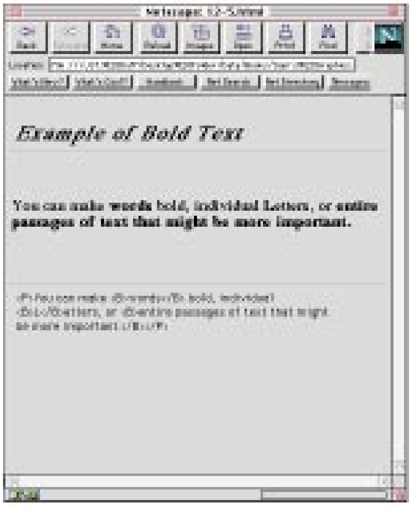
Example of Size Bump

If you start with normal text you can bump text up and down quickly. The baseline is normal text.

```
<P>If you start with normal text you can bump text
<FONT SIZE=+4>up <FONT SIZE=-3> and
<FONT SIZE=-2> down </FONT SIZE=+0>
quickly. The baseline is normal text.</P>
```

Figure 12.4.
The use of incremental sizing from the current font size.

❏ Make text bold with the `<B></B>` tag pair. The use of bold is shown in Figure 12.5.



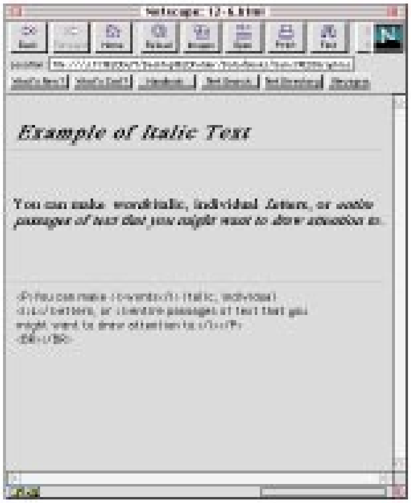
Example of Bold Text

You can make words bold, individual Letters, or entire passages of text that might be more important.

```
<P>You can make <B>words</B> bold, individual
<B>L</B>etters, or <B>entire passages of text that might
be more important.</B></P>
```

Figure 12.5.
Making selected text bold using the bold tag.

❏ Make text italic with the `<I></I>` tag pair. The use of italics is shown in Figure 12.6.



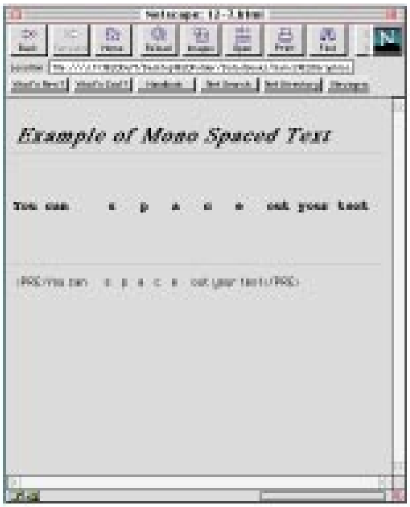
Example of Italic Text

You can make *words* italic, individual *L*etters, or *entire passages of text that you might want to draw attention to.*

```
<P>You can make <I>words</I> italic, individual
<I>L</I>etters, or <I>entire passages of text that you
might want to draw attention to.</I></P>
<BR></BR>
```

Figure 12.6.
Making selected text italic.

❑ Make monospaced typewriter text that recognizes spacebar spaces with the `<PRE></PRE>` tag pair. Figure 12.7 shows preformatted text spaced with the spacebar.



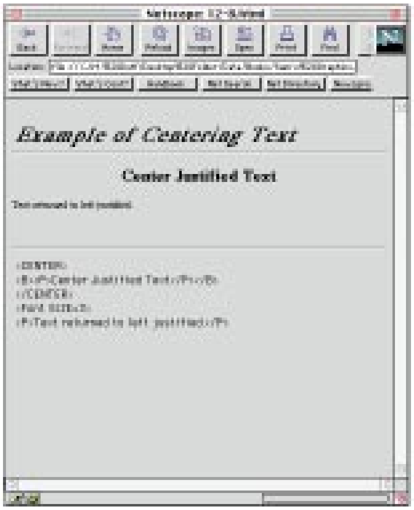
Example of Mono Spaced Text

```
You can     s  p  a  c  e   out your text
```

```
<PRE>You can   s p a c e  out your text</PRE>
```

Figure 12.7.
Spacing characters with preformatted text.

❑ Center text with the `<CENTER></CENTER>` tag pair. Figure 12.8 shows centered text followed by text returned to left justification.



Example of Centering Text

Center Justified Text

Text returned to left justified.

```
<CENTER>
<B><P>Center Justified Text</P></B>
</CENTER>
<FONT SIZE=3>
<P>Text returned to left justified.</P>
```

Figure 12.8.
Centering text.

NOTE: A neat way to get more flexibility in your HTML type design is to create a number of transparent Graphical Interchange Format (GIF) files of specific widths to be used as spacers. This is how you do it.

In an image editor create a white canvas 12 pixels high and 1 pixel wide. Save this in bitmap mode and in GIF format. Make the white pixels transparent. Then, edit this file, adding canvas to make a number of files of incremental width—say 10, 20, 30, and so on. Or if you think in inches, make the files 18, 36, 54, and 72 pixels wide. This results in spacers ¼, ½, ¾, and 1 inch wide. To implement, determine the space you need and use the `<IMG SRC="spacer.gif">` structure at the spot you want the space.

TASK

Creating a Mixed Page

The real power and flexibility of Web page design lies in the mixing of HTML text and text that you compose in a graphic editor and combine on the page. To combine HTML text and graphic text

1. Decide which text will change and which will remain constant. Text that you need to change frequently needs to be set in HTML. A sketch like that shown in Figure 2.12 is a great way to plan your page.

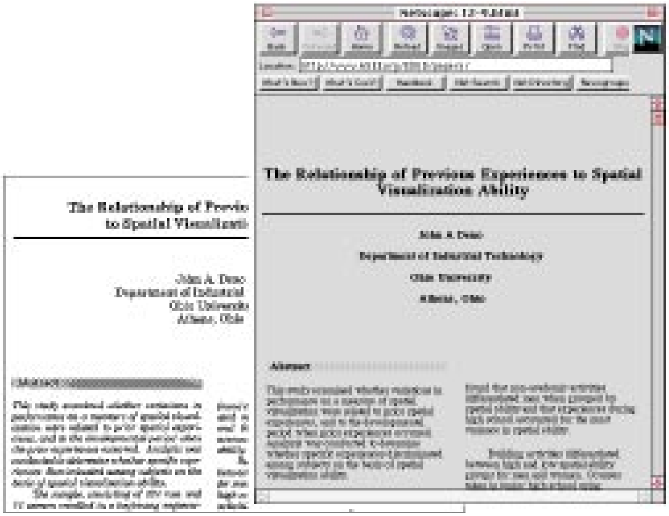
2. Decide which text needs to make an impression other than its delivery of information (see Figure 12.1). Text that needs to convey a mood, an attitude, or a statement should be created in a graphic editor.
3. Open a graphic editor like Photoshop and set your graphic text. Use either TrueType or Adobe Type Manager (ATM)-supported PostScript fonts for the smoothest results. If you know the background color of your Web page, use the same color in Photoshop and anti-alias the text. This will produce the best results. If you don't know the background color yet, set the text without anti-alias turned on.
4. Create the graphic text at the display size you want on the page and with the smallest palette and bit depth possible.
5. Save the text either in GIF or JPEG format. GIF is usually fine with solid-color text.
6. Choose a structure that best accomplishes the integration of text and graphic text. Choose between inline, tables, and image maps (read about image maps in Chapter 14, "Making Image Maps and HTML Frames").

Designing with HTML Fonts

Many Web pages are designed to mimic existing publications and require a technician's eye rather than that of a creative designer. Existing publications are matched on the Web when readers have learned to expect information in certain locations or with familiar formatting. To create a brand new design would reduce the effectiveness—what might even be the product identity—that may have taken years to establish.

Several text processing and page layout programs have automated this process. PageMaker 6, for example, lets you design your pages in PageMaker and then translate the pages into HTML code. Be prepared to fiddle with the code to establish links to external URLs and to ensure that paths to images are correct.

Matching an existing style is often as challenging as making a page with few, if any, guidelines. Figure 12.9 shows a page from a technical journal and its re-creation in HTML.



The Relationship of Previous Experiences to Spatial Visualization Ability

John A. Dean

Department of Industrial Technology

Ohio University

Athens, Ohio

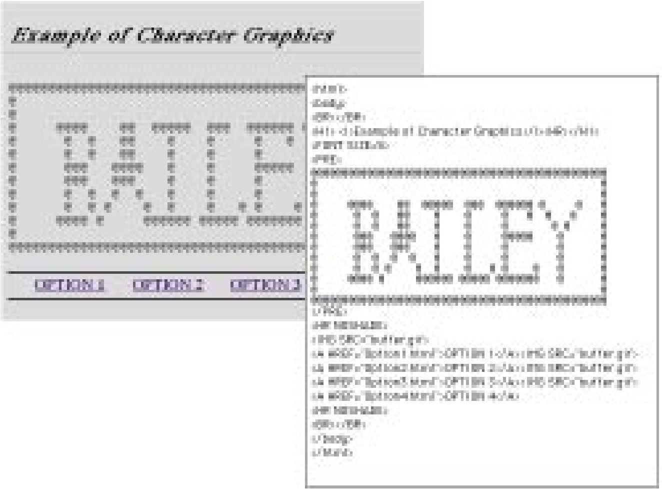
Abstract

Figure 12.9.
Using HTML to recreate an existing page design.

Adobe's Acrobat Portable Document Format (PDF) is showing up on the Web by way of Adobe Acrobat reader plug-ins. This allows existing documents to be browsed in their original formats.

Playing with Character Graphics

If you're old enough to remember programming graphics on computers by laboriously determining the placement of characters (+, *, ^, |, —), you're probably thinking about retirement. Not that I'd do very much of this—although there are utilities that exist to translate grayscale information into ASCII characters. Still, it's an interesting alternative to bitmapped graphics. Figure 12.10 shows a title page done in character graphics, including an HREF text menu bar.



Example of Character Graphics

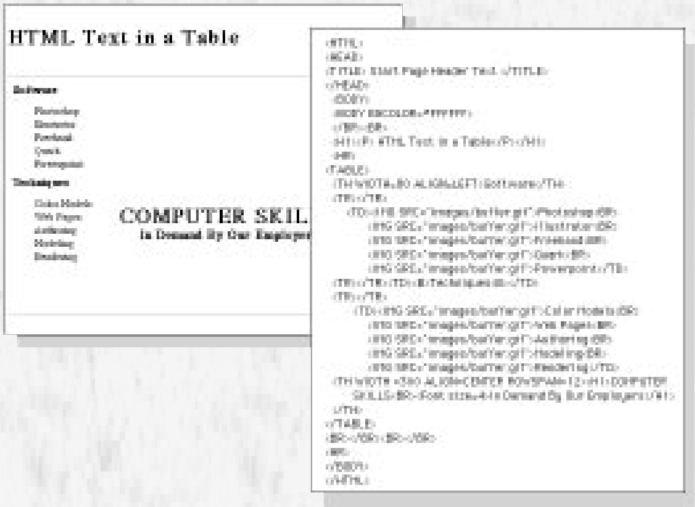
OPTION 1 OPTION 2 OPTION 3

```
<HTML>
<body>
<BR></BR>
<H1><I>Example of Character Graphics</I><HR></H1>
<PRE>
</PRE>
<HR NOSHADE>
<IMG SRC="buffer.gif">
<A HREF="option1.html">OPTION 1</A><IMG SRC="buffer.gif">
<A HREF="option2.html">OPTION 2</A><IMG SRC="buffer.gif">
<A HREF="option3.html">OPTION 3</A><IMG SRC="buffer.gif">
<A HREF="option4.html">OPTION 4</A>
<HR NOSHADE>
<BR></BR>
</body>
</html>
```

Figure 12.10.
Using character graphics to produce a graphic style.

WEB WORKSHOP: In previous workshops you have seen how to format text and graphics using the `<TABLE>` structure. In this example, a page of text utilizes many of the formatting structures just discussed.

By far, the greatest limitations in using HTML-only text formatting are in having no really large and bold text for big headings and in having access to only two font families (serif and typewriter).



HTML Text in a Table

Software

- Photoshop
- Illustrator
- Freehand
- Quark
- Powerpoint

Techniques

- Color Models
- Web Pages
- Authoring
- Modeling
- Rendering

COMPUTER SKIL

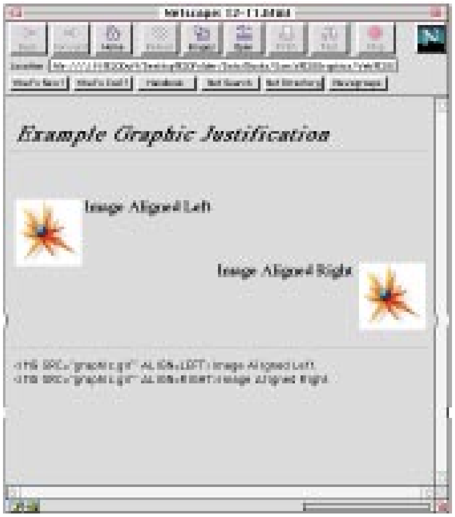
In Demand By Our Employe

```
<HTML>
<HEAD>
<TITLE> Start Page Header Text </TITLE>
</HEAD>
 <BODY>
 <BODY BGCOLOR="#FFFFFF">
 </BR><BR>
 <H1><P> HTML Text in a Table</P></H1>
 <HR>
<TABLE>
 <TH WIDTH=80 ALIGN=LEFT>Software</TH>
 <TR></TR>
    <TD><IMG SRC="images/bullet.gif">Photoshop<BR>
         <IMG SRC="images/bullet.gif">Illustrator<BR>
         <IMG SRC="images/bullet.gif">Freehand<BR>
         <IMG SRC="images/bullet.gif">Quark<BR>
         <IMG SRC="images/bullet.gif">Powerpoint</TD>
 <TR></TR><TD><B>Techniques</B></TD>
 <TR></TR>
     <TD><IMG SRC="images/bullet.gif">Color Models<BR>
         <IMG SRC="images/bullet.gif">Web Pages<BR>
         <IMG SRC="images/bullet.gif">Authoring<BR>
         <IMG SRC="images/bullet.gif">Modeling<BR>
         <IMG SRC="images/bullet.gif">Rendering</TD>
 <TH WIDTH=330 ALIGN=CENTER ROWSPAN=12><H1>COMPUTER
     SKILLS<BR><Font size=4>In Demand By Our Employers</H1>
 </TH>
</TABLE>
<BR></BR><BR></BR>
<HR>
</BODY>
</HTML>
```

Formatting Inline Graphics

You can't discuss formatting text without discussing formatting graphics because if they're on the same page, one affects the other. If you thought HTML was limited in its ability to control design through text, its graphic functionality is almost zip! As a starter, you have control over

- ❑ The justification of the graphic. You can specify `ALIGN=LEFT` or `ALIGN=RIGHT`. Figure 12.11 shows examples of image alignment.



Example Graphic Justification

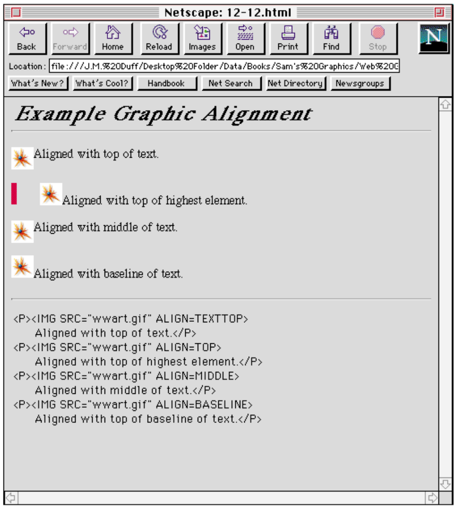
Image Aligned Left

Image Aligned Right

```
<IMG SRC="graphic.gif" ALIGN=LEFT>Image Aligned Left
<IMG SRC="graphic.gif" ALIGN=RIGHT>Image Aligned Right
```

Figure 12.11.
Justification of a graphic using `LEFT` *and* `RIGHT`*.*

- ❑ The alignment of the graphic vertically on a line of text. You can specify `ALIGN=TEXTTOP`, `ALIGN=TOP`, `ALIGN=MIDDLE`, `ALIGN=ABSMIDDLE`, `ALIGN=BASELINE`, and `ALIGN=ABSBOTTOM`. Figure 12.12 shows examples of this vertical alignment.



Location: file:///J.M.%20Duff/Desktop%20Folder/Data/Books/Sam's%20Graphics/Web%20G

Example Graphic Alignment

Aligned with top of text.

Aligned with top of highest element.

Aligned with middle of text.

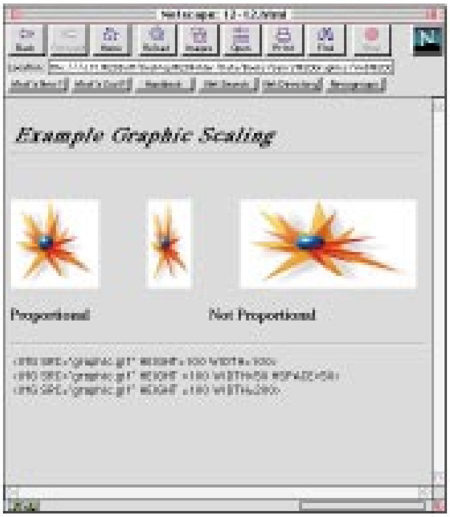
Aligned with baseline of text.

```
<P><IMG SRC="wwart.gif" ALIGN=TEXTTOP>
    Aligned with top of text.</P>
<P><IMG SRC="wwart.gif" ALIGN=TOP>
    Aligned with top of highest element.</P>
<P><IMG SRC="wwart.gif" ALIGN=MIDDLE>
    Aligned with middle of text.</P>
<P><IMG SRC="wwart.gif" ALIGN=BASELINE>
    Aligned with top of baseline of text.</P>
```

Figure 12.12.
Vertical alignment of a graphic on a line of text.

- ❑ The scale of the graphic. You use `HEIGHT=`*`Z`* and `WIDTH=`*`W`* where *`Z`* is the height in pixels and *`W`* is the width in pixels. It's important to know the height-to-width ratio of the original graphic if you want to maintain proportionality. Study Figure 12.13 for an example of both proportional and nonproportional scaling.

Figure 12.13.
Scaling a graphic with `HEIGHT` *and* `WIDTH` *parameters.*



Example Graphic Scaling

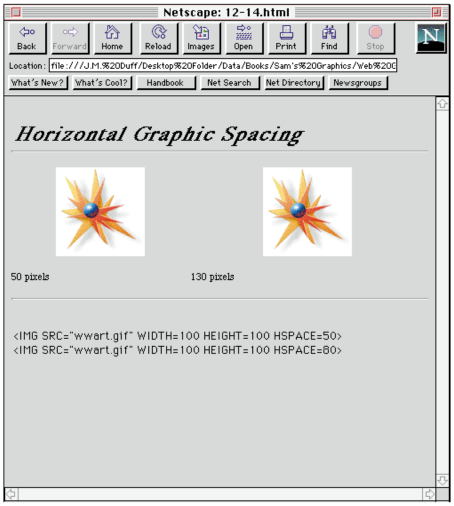
Proportional

Not Proportional

```
<IMG SRC="graphic.gif" HEIGHT=100 WIDTH=100>
<IMG SRC="graphic.gif" HEIGHT =100 WIDTH=50 HSPACE=50>
<IMG SRC="graphic.gif" HEIGHT =100 WIDTH=200>
```

❑ Buffer the graphic with space. You can specify `HSPACE=`*`H`* and `VSPACE=`*`V`*, where *H* and *V* are spaces in pixels. The two images in Figure 12.14 are aligned horizontally using `HSPACE`.

Figure 12.14.
Aligning two images using `HSPACE`.



Location: file:///J.M.%20Duff/Desktop%20Folder/Data/Books/Sam's%20Graphics/Web%20C

Horizontal Graphic Spacing

50 pixels

130 pixels

```
<IMG SRC="wwart.gif" WIDTH=100 HEIGHT=100 HSPACE=50>
<IMG SRC="wwart.gif" WIDTH=100 HEIGHT=100 HSPACE=80>
```

TASK

Coding an Inline Graphic

A graphic on a Web page actually doesn't exist on the page itself. Instead, it is brought to the page using the `<IMG SRC>` tag. For the browser to locate and display the graphic, the following must occur:

❑ Include the name of the graphic and its path within the `<IMG SRC=>` tag.

The path to the graphic must be correct. Always use relative paths that don't depend on drive or server names. For example, `<IMG SRC="images/graphic.gif">` causes the browser to look for the image `graphic.gif` in a directory (folder) called `images`, which is inside the current directory.

❑ Use short, concise file and directory names.

The name of the graphic and the directory must be exactly the same as the HTML code. For example, the HTML instruction `<IMG SRC="images/graphic.gif">` requires that the directory and the file be spelled exactly that way. Get in the habit of using uppercase for HTML commands and lowercase for directories and filenames. It's easier to spot mistakes!

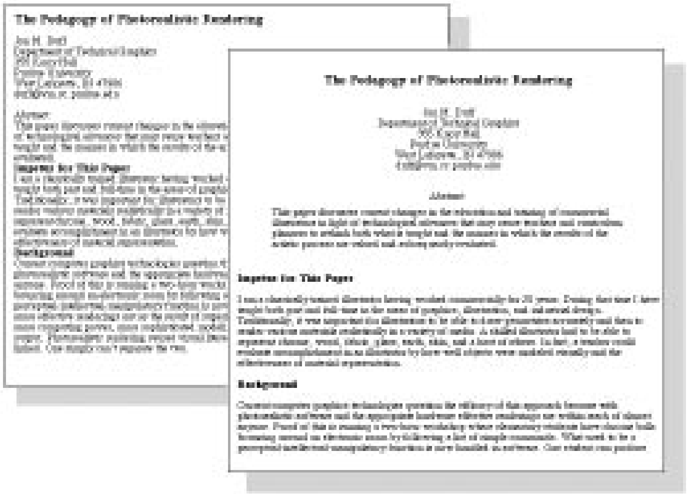
❑ The browser you are using must be able to interpret the image's file format. You're safe with GIF. You're pretty safe with JPEG. File formats like BMP, PCX, TIF, and PIC require helper applications or plug-ins. (See Chapter 19, "Understanding Advanced Graphic File Types.")

If any of the above are not satisfied, your browser will display an icon representing the graphic. If you are considerate, you already have included a textual description so the user can see what they're missing.

Deciding Heading Options

To plan effective headings, just reach into your memory banks to somewhere around the seventh grade. Remember what Mrs. Frump told you: "Don't include a heading with only one subhead." Use headings to break the page into *logical* divisions. You can accept HTML's `<H>` tag organization or make your own. Personally, I think heads in HTML are just fine.

Headings without a sufficient amount of whitespace do little to break the page into readable sections. Use the `<BR></BR>` structure to insert line breaks into a page. It's like `VSPACE` for paragraphs! Figure 12.15 shows two examples. Which one would you rather read?



The Pedagogy of Photorealistic Rendering

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Abstract

This paper discusses current changes in the education and training of commercial illustrators in light of technological advances that may cause teachers and curriculum planners to rethink both what is taught and the manner in which the results of the artistic process are valued and subsequently evaluated.

Impetus for This Paper

I am a classically trained illustrator having worked commercially for 25 years. During that time I have taught both part and full-time in the areas of graphics, illustration, and industrial design. Traditionally, it was important for illustrators to be able to draw geometries accurately and then to render various materials realistically in a variety of media. A skilled illustrator had to be able to represent chrome, wood, fabric, glass, earth, skin, and a host of others. In fact, a teacher could evaluate accomplishment in an illustrator by how well objects were modeled visually and the effectiveness of material representation.

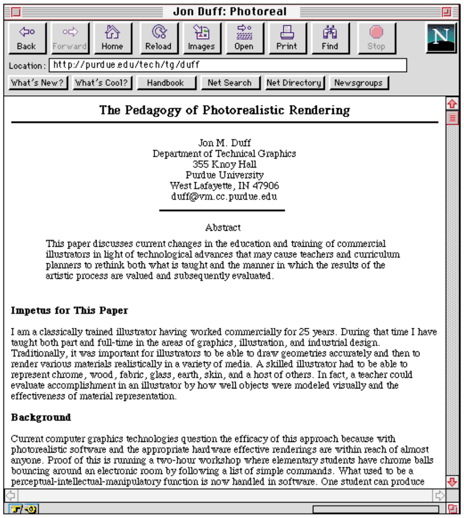
Background

Current computer graphics technologies question the efficacy of this approach because with photorealistic software and the appropriate hardware effective renderings are within reach of almost anyone. Proof of this is running a two-hour workshop where elementary students have chrome balls bouncing around an electronic room by following a list of simple commands. What used to be a perceptual-intellectual-manipulatory function is now handled in software. One student can produce

Figure 12.15.
Combine effective heads with whitespace and you increase readability.

The last structure to help divide a page visually is to use horizontal rules (<HR>), which are horizontal grooves on the page of your graphic browser. Adding the parameter NOSHADE within the delimiters produces a black rule, no groove. The shaded horizontal rule is a default design based on a gray background. This still works with most hexadecimal backgrounds or backgrounds you create, more or less.

Rules are often overused. A page with too many horizontal rules is more difficult to read. Use them to set off major sections of your page or things like footnotes or e-mail addresses. The <HR> can be modified with a thickness parameter such as <HR SIZE=4>. Our page with heads, space, and rules is shown in Figure 12.16.



Location: http://purdue.edu/tech/tg/duff

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Figure 12.16.
The completed page.

Avoiding the Boredom of Flat Text

Let’s leave the discussion of HTML text and explore ways where more design flexibility can be introduced to the page. To do this, you need to become familiar with programs that produce well-defined text in a raster or bitmap format.

Before you get into the actual mechanics of making more interesting text, you should be aware of at least the basics of font technology because these issues directly affect the quality of text you can produce.

The text you see on the screen is, by default, bitmapped. There’s no way around it. A raster display device displays raster text. However, your ability to create good-looking text at any size depends on the following:

- You must have *outline* fonts on your computer. PostScript and TrueType are examples of outline fonts.
- If you have PostScript fonts, you must have ATM installed. ATM creates accurate bitmapped representations of PostScript outline fonts. With ATM you’ll never have a case of the “jaggies” when you specify 77 point Helvetica.
- If you have TrueType fonts, you have access to all sizes, all the time. TrueType creates good-looking bitmaps on-the-fly as you request them.
- You must have an image editing program, such as Photoshop, that is capable of accurately displaying and manipulating the bitmapped text.

TASK

Making 3D Text

Three-dimensional text adds lots of eye appeal to your page. It is so strong, however, that it should be used carefully, generally as logos, headers, or splash page graphics. The best way to produce 3D text is to use a 3D modeling program. Figure 12.17 shows a graphic with 3D text created in Autodesk’s 3D Studio program.

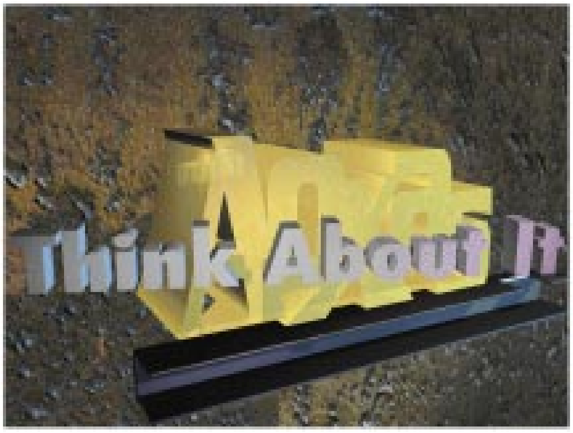


Figure 12.17.
Three-dimensional text from a modeling-rendering-animation program.

TIP: Text looks 3D because you can see the top, front, and sides of the letters. It looks even more 3D when these three planes are shaded consistently with the top being the lightest and the side the darkest.

If you don't want to follow the 3D modeling route, you can produce credible results by creating two-dimensional pictorial text (flat text that looks 3D) by completing the following steps:

1. In a program such as FreeHand, Illustrator, or CorelDRAW!, create the text you want. Duplicate this text and connect the corners.
2. Edit the text so that lines in the back are hidden.
3. Export as a TIFF or an EPS and open in image editor. Colorize and save in the appropriate format (see Figure 12.18).

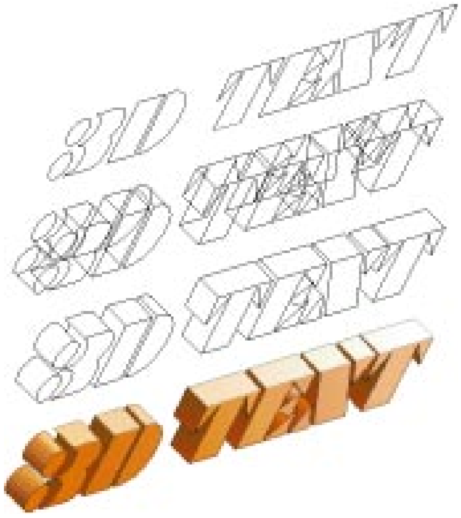


Figure 12.18.
Developing 2D pictorial text that looks 3D.

TASK

Making Engraved Text

Text that looks engraved has a more realistic appearance than text that looks like it's simply been painted on a surface. Use this technique for icons (see Figure 12.19) and text on buttons. To make engraved text, follow these steps:

1. Set the text in the color of the panel. Place the text where you want it. While it's still selected, copy it to the clipboard.
2. Paste and move the shadow up and to the left 3 pixels. This will become your engraved shadow.
3. Decrease brightness 40 percent for the shadow.
4. Paste and move highlight down and to the right 3 pixels. This will become your engraved highlight edge.
5. Increase brightness 40 percent for the highlight.
6. Paste text and move to the position in between the shadow and the highlight. This is the body of the text slightly below the surface (the engraved part). You should see only a small amount of the shadow and highlighted text. Decrease brightness 20 percent to make it look depressed.

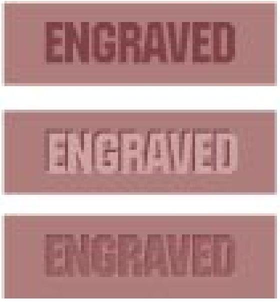


Figure 12.19.
Engraved text darkens the text so it looks like it is below the surface.

TIP: Don’t use engraved or embossed text for passages that require in-depth reading. Use these techniques for text that is part of a manufactured product.

Making Embossed Text

Embossed text is just like engraved text with the shadow and highlight reversed and with the body of the text lightened to make it look like it is raised from the surface (see Figure 12.20). To make embossed text, follow these steps:

1. Set the text in the color of the panel. Place the text where you want it, and while it’s still selected, copy it to the clipboard.
2. Paste and move the shadow down and to the right 3 pixels. This will become the shadow of the embossed text.
3. Decrease the brightness 40 percent.
4. Paste and move the shadow up and to the left 3 pixels. This will become the highlight of the embossed text.
5. Increase brightness 40 percent for the highlight.
6. Paste text and move to the position in between the shadow and highlight. This is the body of the text slightly above the surface (the embossed part). You should see only a small amount of the shadow and highlight text. Increase brightness 20 percent to make it look like it stands out from the background.

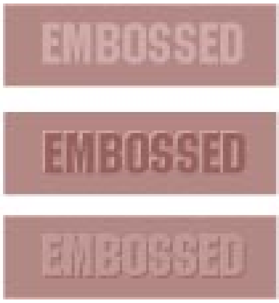


Figure 12.20. *Embossed text lightens the text so it looks like it is above the surface.*

TASK

Making Metallic Text

Metallic text uses smooth changes in the value or color to make a surface look shiny. Metallic text is effective when it is contrasted with a darker background (see Figure 12.21). To create metallic text, follow these steps:

1. Create a rectangular selection and fill it with a smooth gradient from dark to light.
2. Select a diagonal area. Feather this selection to produce soft edges and lighten to create a highlight. Copy this metallic panel to the clipboard.
3. Create your text in black on a background that will contrast with the metallic text.
4. Select the black text.
5. Paste the metallic texture into the selected text.

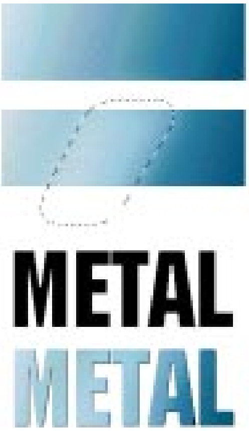


Figure 12.21. *Metallic text uses color and value contrast to achieve a realistic material representation.*

TIP: Metallic text works best when the letters have a slight thickness. Study the final metal text in Figure 12.21. Make sure highlight direction matches highlight edges and drop shadows. Pick a direction of sun and stick with it.

TASK

Making Soft Rounded Text

Rounded text provides an interesting contrast with the rest of the text on your pages. Much like the metallic text, soft rounded text is the most effective when good contrast is achieved between the text and the background. To create soft rounded text, follow these steps:

1. Create your text in the desired color. The font should have thick letter strokes for this technique to work the best.
2. Select off-white and off-black highlight and shade colors based on the text color (that is, lighter red and darker red). Save these colors in the current palette. Make the highlight color active.
3. With the Lasso tool in the free mode, select highlight areas on the upper left of each letter and feather 5–10 pixels. The more the feather, the softer the rounded edges.
4. Paint Bucket fill with opacity set at 50 percent to begin. Click on the colored part of the text. Undo to cancel and adjust opacity. You may want to occasionally hide the selection marquee to better see the results.
5. Switch colors to the shadow. Repeat for the shaded portion of the text, selecting the lower-right portion of the text.
6. If you want, add airbrush sparkles inside the feathered selection for shine (see Figure 12.22).

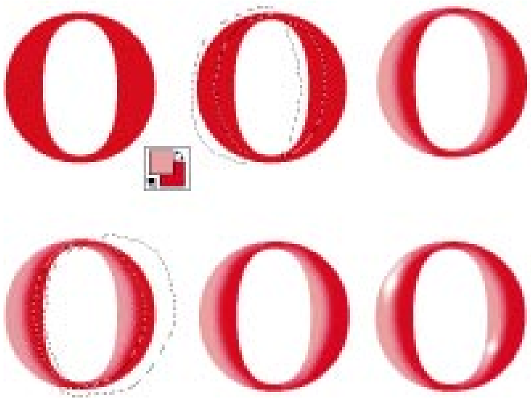


Figure 12.22. *Soft rounded text provides an interesting alternative to flat text for titles and logos.*

TIP: Anytime you need instant highlights and shadows, adjust the brightness +60 percent and –60 percent. You'll never have to mix colors again!

TASK

Making Projected Text

Text that looks like it is being projected in light onto a screen is a subtle, effective way to add terms or words to a graphic (see Figure 12.23). Use this technique when you want an almost subliminal message to accompany an image. To make text look like its being projected on an image, follow these steps:

1. Open the image or photograph you want to use as the basis of your graphic.
2. Create a text layer with opacity set to 60 percent. Make this layer active.
3. Make white or off-white your active color.
4. Set the text. This should be large enough to read (between 18 and 72 points).
5. The text will be translucent, which allows the photograph to be seen through the letters. Merge the layers.

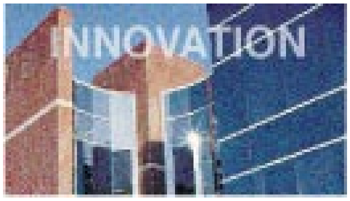


Figure 12.23.
Text projected on a photograph is used to convey a subtle message.

TASK

Making Transparent Panel Text

Rather than using lighter text projected on an image, let's try regular black text on a transparent or smoke gray panel. This is best when you want the text for reading—when the text is 12 to 14 points in size (see Figure 12.24). To create a transparent panel text, follow these steps:

1. Create a rectangular selection in the desired location. If the base graphic is dark, adjust brightness +60 percent. If the base graphic is light, adjust the brightness –60 percent.
2. Set your text in black on top of the lighter panel and white on the darker panel.

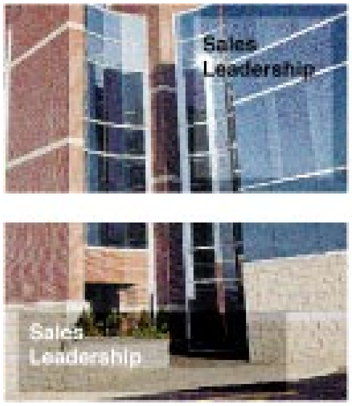


Figure 12.24.
Text on transparent and smoked panels.

TASK

Making That Popular Fuzzy Drop Shadow

This technique is easier than you might first think, and it is one that is popular right now (though it may look dated next week). The key is in using the brightness adjustment rather than mixing shadow colors. To create a soft drop shadow, follow these steps:

1. Create the background you want the text to hover above.
2. Set the text in black on a separate layer. Select the black text. Decrease the opacity of that layer to 1 percent.
3. Switch to the background layer. The text selection should be active but empty.
4. Feather this selection to the desired level of softness.
5. Decrease brightness of the background –60 percent to produce the shadow.
6. Make the text layer active. Return opacity to 100 percent. Offset the black text to produce the desired distance between text and background. Stylize the text however you want (metallic, rounded, or colorized).
7. Merge the layers and save in the desired format.

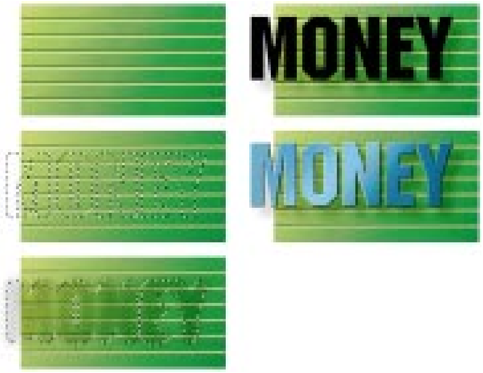


Figure 12.25. *That popular fuzzy drop shadow.*

TIP: A shadow's edge becomes more fuzzy as an object gets farther away from the surface catching the shadow. This visual cue helps build depth in your graphics.

Next Steps

Now that you have been shown techniques to use text to maximum effectiveness on your Web pages, consider the following:

- ❑ To learn how to make effective navigation buttons and devices, see Chapter 13, "Designing Buttons That Work."
- ❑ To define areas of a graphic that can be used to link to other pages or resources, see Chapter 14.
- ❑ To better use backgrounds as a platform for text, see Chapter 15, "Designing Backgrounds That Make Sense."

Q&A

Q: I created a great graphic for my home page but when it loads, I can only see the upper left corner. What happened?

A: You used a resolution higher than 72 dpi when you made the graphic. Your browser maps each pixel in your graphic to a pixel on the screen. You have two alternatives. First, scale the graphic with `WIDTH` and `HEIGHT` variables inside the `<IMG SRC>` structure. It will slow down the load, and you may get surprise dithering. Or, go back into your image editor and resample the image to 72 dpi. Save as a new file so you don't destroy all that hard work! You'll lose the detail you were so proud of, but it will display at the right scale.

Q: All my inline graphics keep the following text on the same line. I want the text to follow the graphic. What do I do?

A: Sounds like you're using the `LEFT` alignment option in the `<IMG SRC>` structure. Force the text onto another line with a line break, `<BR></BR>`.

Q: All of my text after a `H1` heading is the same size as the heading. What went wrong?

A: You left off the closing `</H1>` tag. Your browser is looking for it. Add it at the end of the heading text.

Q: I have trouble combining the artistic text I've done in Photoshop with background textures. I turn the white pixels around the text transparent, but I still get a ring around each letter. How can I get rid of this?

A: You have the dreaded anti-alias halo! If your text is already anti-aliased, you have a little editing to do. See "Mistake Number 3" in Chapter 11, "How to Avoid the Ten Most Common Web Mistakes." Suggestion: Anti-alias *after* combining the text and background.

Q: When I make rounded text, I always end up messing with the pixels around the letters. How can I just work on the letters?

A: The best strategy for adding text to anything other than a white background is to work on the text in a separate file or on a separate layer. That way you won't be changing background pixels. Combine the text and background when you're ready by copying and pasting or merging layers.

CHAPTER

THIRTEEN

Designing Buttons That Work

As previously discussed, navigation and interface design for the Web is an important aspect of page design. You want users to be able to easily navigate through your pages. The visual appeal of your page is based on the individual elements that are displayed and on the way they are displayed.

The graphical elements on your page are basically one of three types. The first, *inline images*, are simply static nonlinked graphics that appear for clarification, explanation, instruction, or enhancement. The second, *navigation buttons* or icons, are graphic images that let you go from one place to another with a click of the mouse. Finally, *image maps*, which are covered in the next chapter, are graphic images that are divided into regions or hotspots that perform some responsive action when clicked.

Because buttons are such a natural metaphor for navigation, and because buttons show up all over Web pages, an entire chapter is devoted to this topic.

So what makes a button look like a button? How do you get the feeling that when you click on the graphic that it's going to take you somewhere? As you will see, it is really in the small nuances of the graphic. Small beveled edges, consistency in lighting, and other details are what clue you in. Again, much of this intuition is based on our experiences, but unique creations can also be used if they are well designed.

In this chapter, you'll

- ❏ Learn how light, shade, and shadows contribute to the look of a button
- ❏ Learn how to analyze a graphic to determine light, shade, and shadow surfaces
- ❏ Learn how to project a shadow
- ❏ Discover how to create square and round buttons
- ❏ Discover how to create buttons with that squishy or soft look
- ❏ Discover how to create button bars
- ❏ Learn how to create irregularly shaped buttons
- ❏ Find out how to code your page to use your button graphics

This chapter takes a look at how light and its counterparts of shade and shadow affect the design of a button. These characteristics are really what define interactivity. You're going to design a few buttons by learning how to correctly set the surface attributes according to light, shade, and shadow. Honestly, you can make every type of button imaginable from square to round to irregular once you understand lighting and how the small nuances of value create that "button look." It'll be everything you wanted to know about buttons—maybe more than you want to know—but I believe this knowledge will help you no matter what type of button you want to create.

Understanding Light, Shade, and Shadow

Artists are generally called artists because of their ability to re-create what they see or imagine. How is it that we can all be in the same environment and see the same things, but yet when it comes to creating a graphical representation of what we see, we all come up with different results? We all see the same things, but we perceive differently. Individual skill in re-creating what is perceived also differs from person to person. But being really good at creating graphics starts with this matter of perception.

Have you ever taken the time to look at a house or building on a bright and sunny day? How often do you really look to see how the light illuminates the house? Do you notice the shadows and how they fall on the house, the landscape, and the surrounding area?

If you compare an average image and an exceptional image, what separates them? More than likely the lighting has something to do with it. Textures, color, and geometry all contribute to overall effectiveness, but lighting will inevitably separate the excellent from the average.

When dealing with buttons, the shadows and light areas are not as complex as those on a house, but they are equally important to the perception of the graphic. The light surfaces (those receiving direct light) should be lighter than those in shade (surfaces opposite the light source). In addition, there should be a difference in the value between shade surfaces and shadow areas (areas where light is blocked by another object). The location of all these areas is determined by the source and direction of light as shown in Figure 13.1.

NOTE: One of the things that will help you as you start designing buttons or other graphical items is to create a small sketch as a guide. Use the sketch and label it as you define the light source and the light, shade, and shadow surfaces.

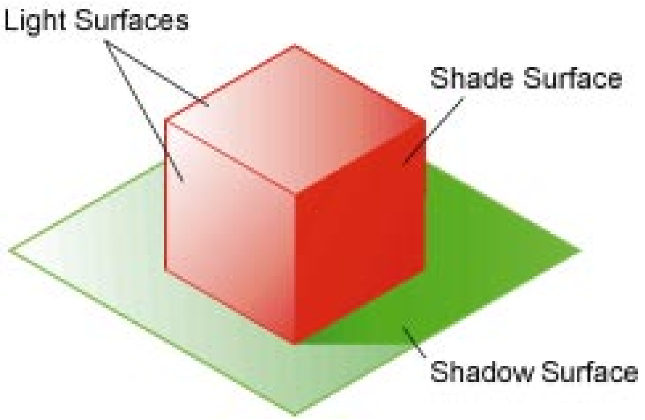


Figure 13.1. *Light, shade, and shadow surfaces.*

The first step in defining each of the surfaces is to determine the direction and elevation of a light source. A light source has both a direction and an elevation. This is used to determine each surface type and to cast the shadows. When you begin designing your buttons, start by deciding on the direction of your light source (see Figure 13.2).

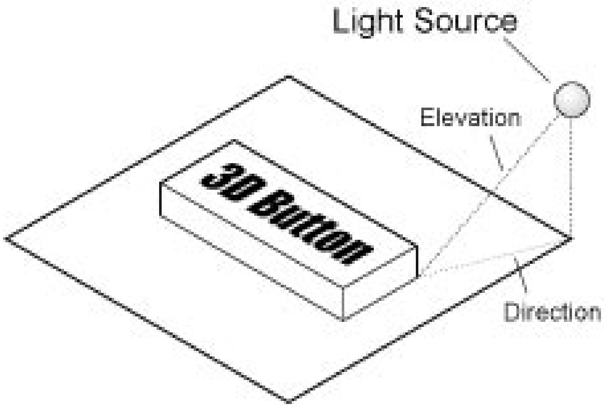


Figure 13.2. *Determining a light source direction and elevation.*

Once you've assigned a light source, determine those surfaces that are directly receiving light. If you are using a sketch, label the light surfaces with a letter *L* to help you (see Figure 13.3). These are the surfaces that are directly hit by the light and will be the lightest in value.

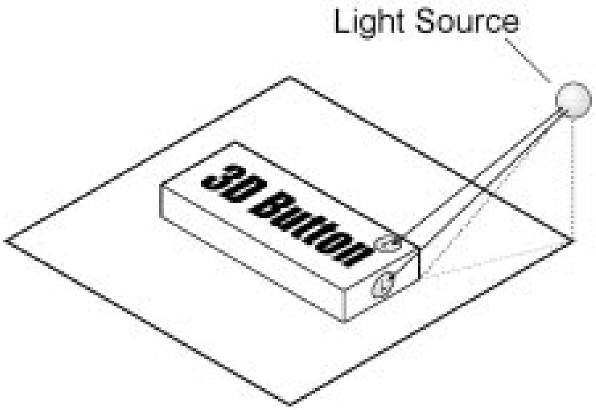


Figure 13.3.
Determining light surfaces.

Next, determine which surfaces on the object will be opposite the light source (see Figure 13.4). Label these surfaces as *S* or shade surfaces. These surfaces will be around a value of 50 percent on a 100-point scale. These surfaces are receiving what is known as ambient light. Ambient light is the amount of light available without the light source.

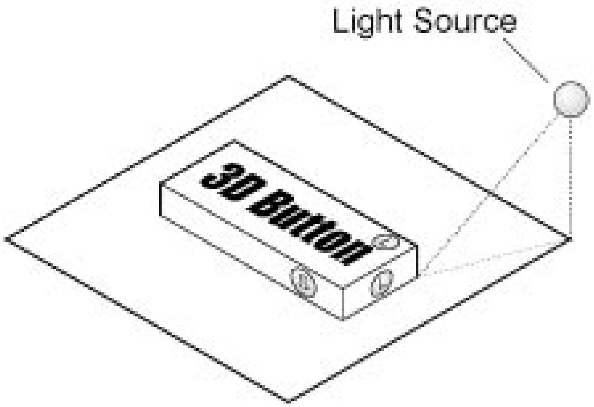


Figure 13.4.
Determining shade surfaces.

Once you have determined the light and shade surfaces, find the intersection of these surfaces (see Figure 13.5). The intersection of these surfaces clues you in to which surface edges will be casting shadows.

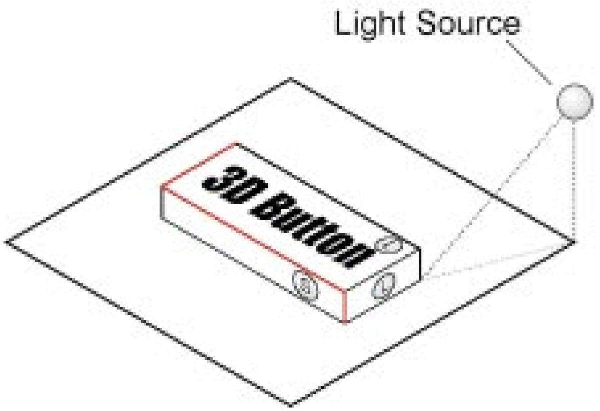


Figure 13.5.
Determining lines that are casting shadows.

Now that you know which edges are casting shadows, you can use the direction and elevation of the light source to project the shadows of the object. Trace the connecting points on the shadow line to the plane the object is sitting on. Project away from the object using the direction vector (light ray) from your light source. Project down from the shadow line point to the direction line using the elevation vector. Connect the dots to create the limits of the shadow (see Figure 13.6).

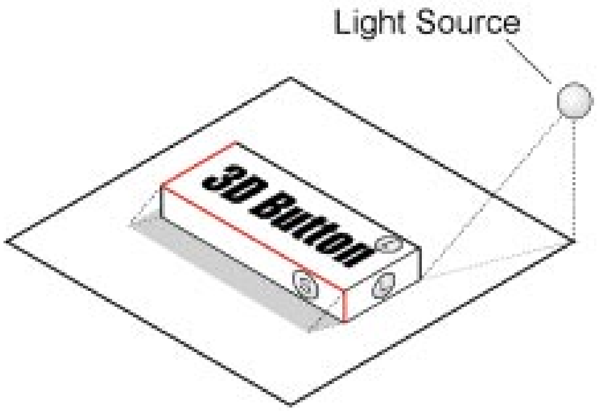


Figure 13.6.
Casting the shadows of buttons.

Realize that this procedure for determining light, shade, and shadow surfaces can be used anytime you are creating graphics and can be used to make sure the lighting is correct (see Figure 13.7). For most of your buttons, you can simply create them without casting the shadow because you might already know what they should look like. The technical term "fudge them in" applies here. Using this projection process every time you need to create 3D objects with shadows would be absurd. However, there may be times when you don't have a clue what the shadows should look like, let alone where they are.

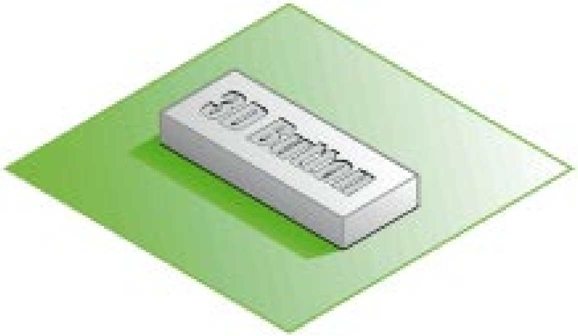


Figure 13.7.
Finished view of the 3D button.

TIP: Once you have visualized the shape of common shadows (prism, cylinder, cone, and sphere), you probably won't actually construct them. Consistent shadows present the user with a consistent interface.

NOTE: The next three steps are general rules to follow when you are casting shadows using projection:

- ❏ Any shadow can be found by projecting multiple points on the shadow line to the surface receiving the shadow and then connecting the points (see Figure 13.8).

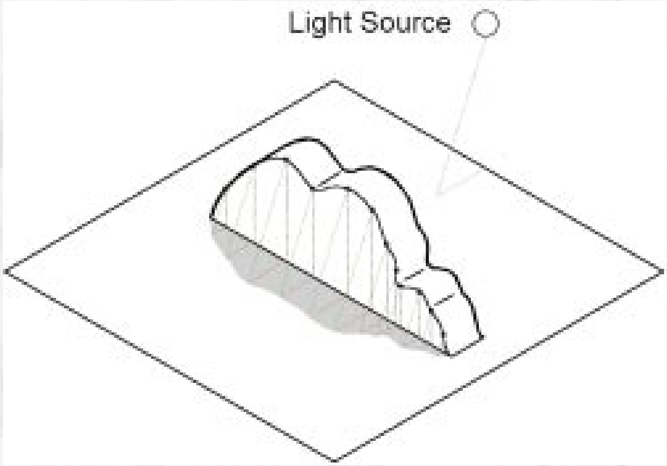


Figure 13.8.
Projecting points to find shadows.

- ❑ If a line casting a shadow is parallel to the surface receiving the shadow, then the shadow will be parallel to the line casting the shadow (see Figure 13.9).

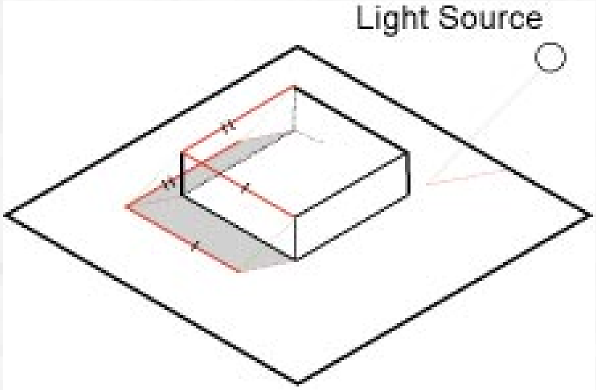


Figure 13.9.
Parallel relationship.

- ❑ If a line casting a shadow is perpendicular to the surface receiving the shadow, then the shadow will be parallel to the direction vector of the light source (see Figure 13.10).

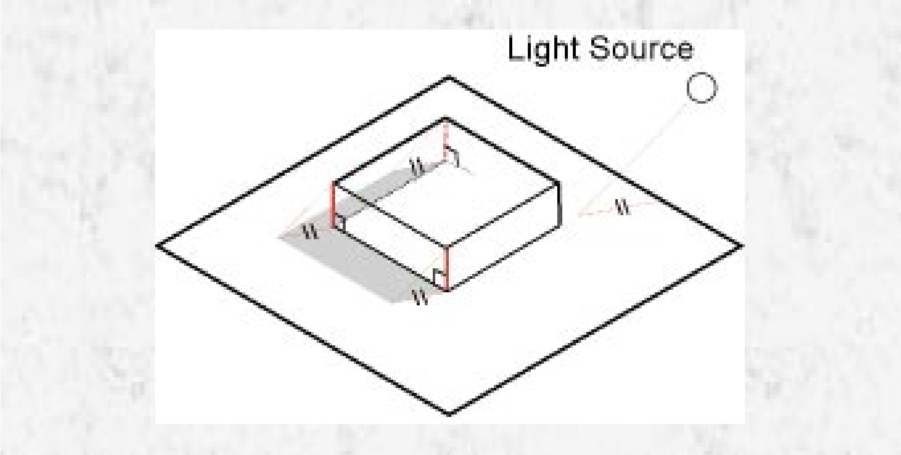


Figure 13.10. *Perpendicular relationship.*

TASK

Making Square Buttons

Square buttons are probably the easiest buttons to make, so let's start with them. It is possible to make buttons in a vector illustration program and then port them into a raster format; however, realism is usually lacking with this technique. Throughout these button-making tasks we'll focus on raster techniques in Adobe Photoshop (not a requirement, just our choice) starting with a blank canvas.

To begin making buttons, it's important to know how big they need to be. If you're already familiar with the type of buttons found on Web sites, you already know what size the buttons need to be. If not, you may want to look at the portfolio of Web graphics presented in Chapter 6, "Presenting Effective Web Graphics," to help guide your button decisions.

To begin making a square button with beveled edges as in Figure 13.11, follow these steps:

1. Open Photoshop or your image editor and start a new file that is 100×30 pixels or whatever size you want your buttons to be. Work in 24-bit mode and then reduce the number of colors when finished. If you can't work in 24-bit mode, make sure the diffusion dither is turned on as you work in 8-bit color.
2. Set an appropriate foreground and background color for the facing of the button. Use a 30 percent gray for the foreground and a 50 percent gray for the background. To set them, click on the Toolbar palette or use the Picker (see Figure 13.12).

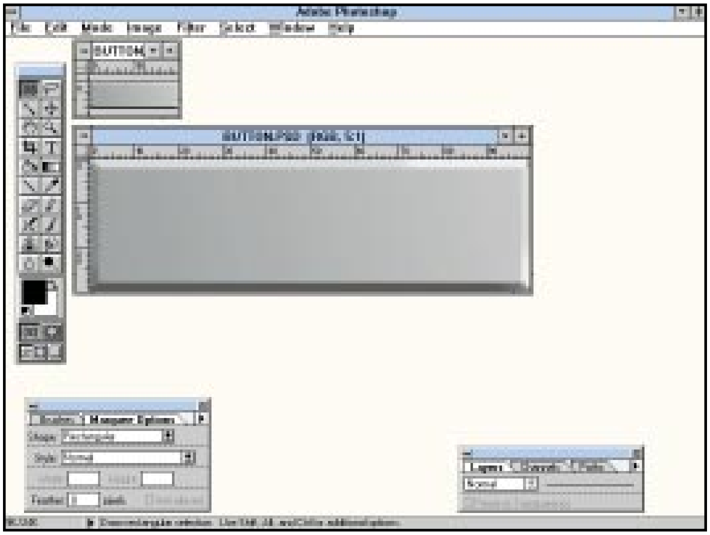
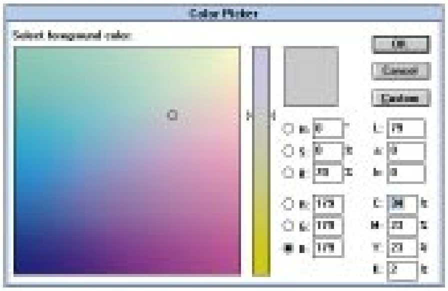


Figure 13.11.
Two views of the square button you'll be creating.



R: 179
G: 179
B: 179

Figure 13.12.
Selecting foreground and background colors.

3. For this task, the light source will project from the upper right to the lower left. Use the Gradient tool to create a blend of 30 percent gray to 50 percent gray from the upper right to the lower left (see Figure 13.13). Click on the Gradient tool. Note that you can double-click on the tool to change the default options. Use the defaults.

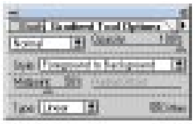


Figure 13.13.
Click on the Gradient tool to select it. Double-click for options.

4. Use the Gradient tool and click and drag from the upper right to the lower left. This will create the blend for the button facing (see Figure 13.14).

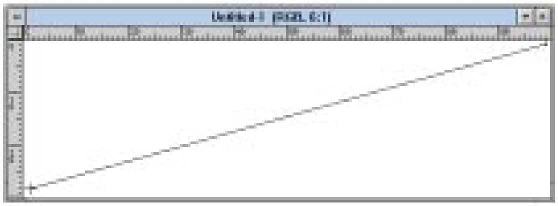


Figure 13.14. *Create the facing using the Gradient tool.*

5. Once you have filled the facing area, use the Rectangular mask tool to select the area of the button that won't be beveled (see Figure 13.15).

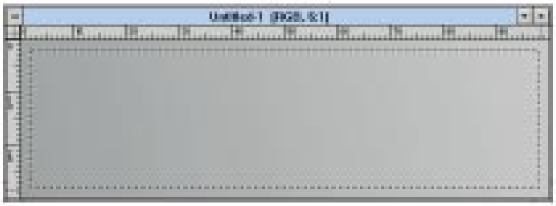
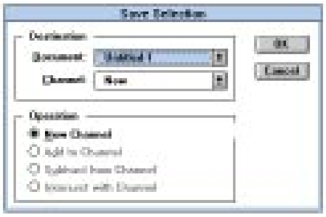


Figure 13.15. *Selecting the area that is not beveled.*

6. Next, use Select | Inverse to select the area that *will* be beveled (see Figure 13.16). Once you have it selected, go to the Select menu and click Save Selection. In the Save Selection dialog box, click OK. You have now saved the selection as channel #4. A channel or alpha channel is simply a saved grayscale selection. You can also think of selections as masks because you are actually masking out part of the image. At any time you can retrieve the selection without having to reselect the area manually by using the Rectangular mask tool.



Save Selection

Destination

Document: Untitled-1

Channel: New

Operation

● New Channel

○ Add to Channel

○ Subtract from Channel

○ Intersect with Channel

OK

Cancel

Figure 13.16. *Inversing the selection and saving it as a channel.*

7. Next, select each separate bevel—top, left, right, and bottom—and save each as a separate selection (a separate channel) so they can be filled with appropriate blends. Do the top one first (see Figure 13.17). Use the Lasso tool to deselect all the pixels except those that would be on the top bevel. To deselect pixels, hold down the Crtl key on the PC or the Option key on the Mac and drag around the pixels you'd like to deselect. If you mess up, you can reload the selection using Select | Load Selection | #4. This is why you saved it earlier.

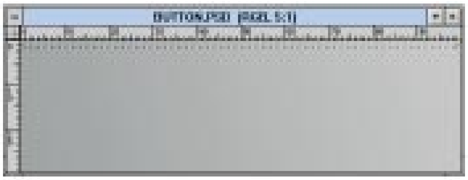


Figure 13.17.
Selecting the area for the top bevel.

8. Once you have completed the selection, use Select | Save Selection. It will be saved as channel #5.
9. Use the Select | None option. Reload the original selection using Select | Load Selection | #4. With the Lasso tool, deselect all the pixels except the right side. Save the selection and repeat for the remaining bevels.
10. Now that you have saved each bevel as a selection, fill the bevels with the appropriate blends. Use the Blend tool and the foreground and background colors to fill each section with appropriate colors. Use Select | Load Section and Select | None to load and deselect as needed. Keep in mind your light source! The top and right bevels should be lighter. The left and bottom should be darker—assuming that your light source is top right. Refer to Figure 13.12 for appropriate values for your bevels.
11. After filling each of the bevel selection channels, you have your button (see Figure 13.18). If all your buttons are the same except for the text on them, use this file as a template. Use the text tool to place the text into a button, and then save each button with a different filename. As you're placing your text, you can also make the letters look beveled or add some sharp white lines to increase the three-dimensionality of your button. Review Chapter 12, "Using Text in Design," where embossed and engraved text methods were discussed. If you have a single background color, you might also add a shadow for the button.

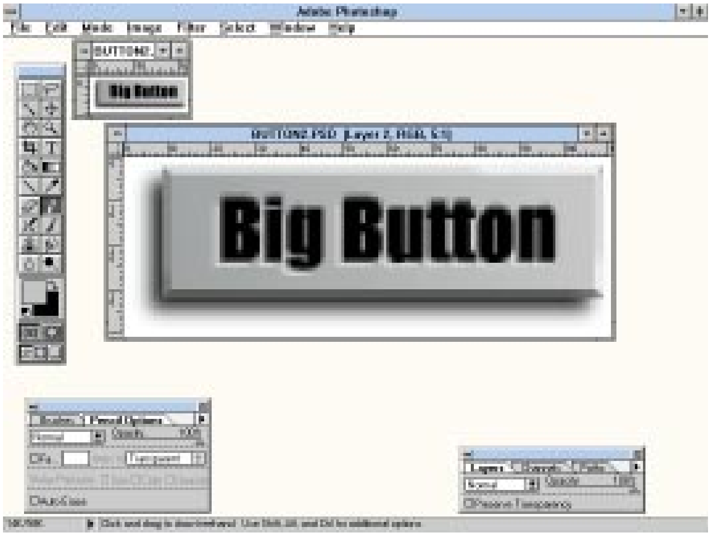

Adobe Photoshop
File Edit Mode Image Filter Select Window Help
BUTTON2
Big Button
BUTTON2.PSD (Layer 2, RGB, 1:1)
Big Button

Figure 13.18. *Two views of the finished button with text and shadow.*

Rectangular buttons come in different sizes and colors. Obviously without the bevel, the button would be easier to create, but it would also be less effective.

TASK

Making Round Buttons

Making round buttons is very similar to creating rectangular buttons, and it requires changing the type of selections that are made (see Figure 13.19). Again, round buttons come in all sizes and colors.

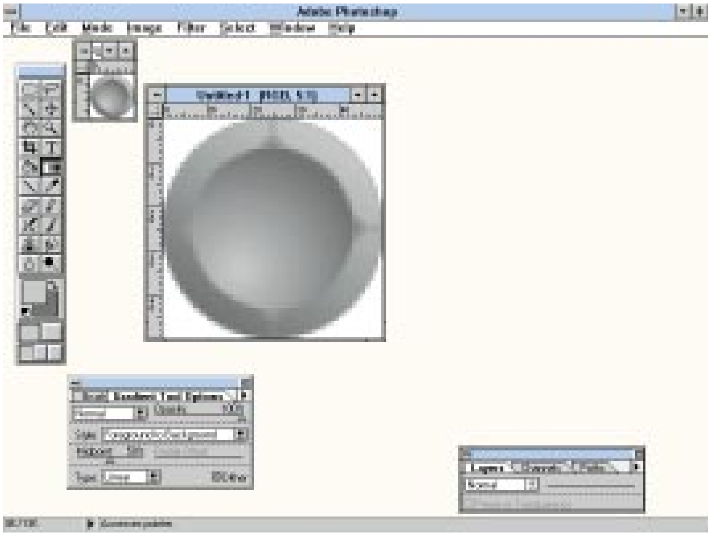


Figure 13.19. *Two views of the round button you will be making.*

To begin making a round button, follow these steps:

1. Begin by opening a new image that is 50×50 pixels at 72 dpi. Keep in mind that the maximum dpi of your monitor is 72 dpi. Any more is overkill.
2. To create a round selection, double-click the Rectangular mask tool. This brings up the Mask Options dialog box. Change the Rectangular option to the Elliptical option (see Figure 13.20).

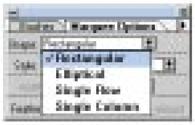


Figure 13.20.
The Mask Options dialog box.

3. Click and drag a circle that fills your 50×50 square canvas (see Figure 13.21). Remember to hold down on the Shift key to constrain the mask to a perfect circle. Then save the selection using Select | Save Selection. It is now channel #4.

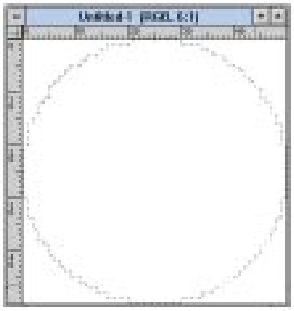
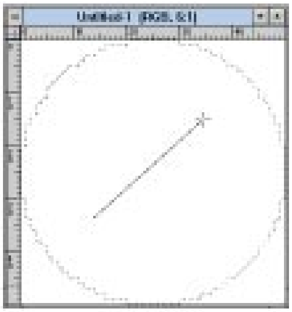


Figure 13.21.
A circular mask on your 50×50 canvas.

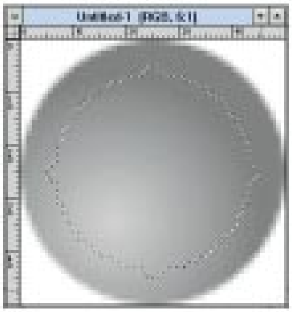
4. Set your foreground and background to appropriate values. I'll use 70 percent and 30 percent gray, respectively. Again, the light source is from the upper right. Once you have set your values, double-click on the Gradient tool to bring up its options. Change the Linear option to Radial.
5. In the circular selection, use the Gradient tool to fill it. Create the blend from the mid-to-lower left to the upper right (see Figure 13.22).

Figure 13.22.
Filling the circular mask.



6. Use Select | Modify | Contract | 6 pixels to make the selection 4 pixels smaller (see Figure 13.23). Then save the selection.

Figure 13.23.
Contracting the selection.



7. Use Select | None. Then load selection #4. Now use Select | Load Selection | #5 and choose Subtract from Selection. This will create a selection that is a Boolean subtraction of channel #4 from channel #5 (see Figure 13.24). Now save this new selection (channel 6).

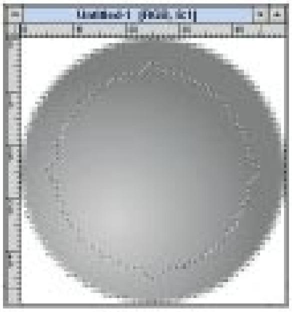
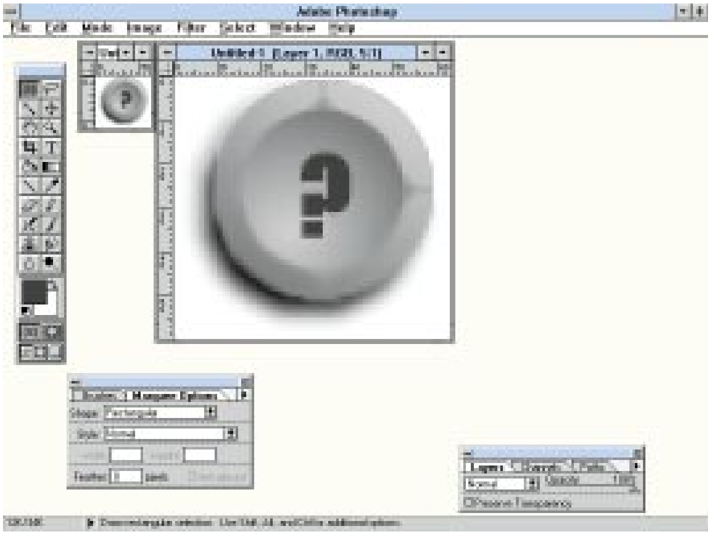


Figure 13.24.
Creating the bevel selection.

8. Once you've selected the area for the bevel, switch the foreground and background colors. Use the Gradient tool with a linear blend from upper right to lower left inside the selection. This creates the bevel values. You may want to use darker and lighter values for a more dramatic effect. Don't be afraid to use trial and error! You can also add a drop shadow and text if you like.



Shape: Rectangular

Style: Normal

Feather: 0 pixels

Draw rectangular selection. Use Shift, Alt, and Ctrl for additional options.

Figure 13.25.
Two views of the finished round button with text and a shadow.

TASK

Making Soft Buttons

Creating soft buttons is straightforward as long as you know the exact color of your background. Soft buttons are those that are feathered into the background color. If you're using a tile bitmap in your background, it may be more difficult to create and use this type of button.

To create a soft button, complete the following steps:

1. Begin by opening a new file that is 100×100 pixels at 72 dpi. You will be creating an oval-shaped button that is feathered into a white background. Again, if your background is a different color, begin by filling the background with that color.
2. Double-click on the Rectangular mask tool. In the Mask Options dialog box, set the Mask Shape to Elliptical. Drag an oval mask on your canvas. Make sure it doesn't go all the way to the edges of the camera (see Figure 13.26).

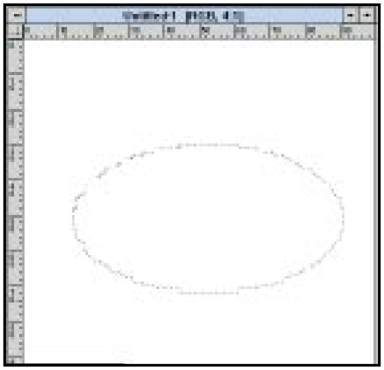


Figure 13.26.
Creating an oval-shaped mask.

3. Now use Select | Feather | 4 pixels to feather the mask. You won't see what the feather does until you fill the mask.
4. Select a light gray foreground, say, 30 percent. Now use the Paint Bucket (Fill) tool to fill the mask (see Figure 13.27).

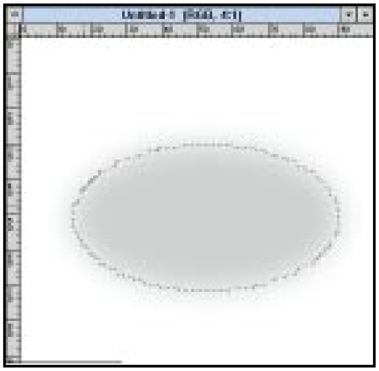


Figure 13.27.
Filling the feathered mask.

5. Now you have a soft button. You can do several things to jazz it up such as adding text or creating blends within the feather (see Figure 13.28). Don't be afraid to experiment!

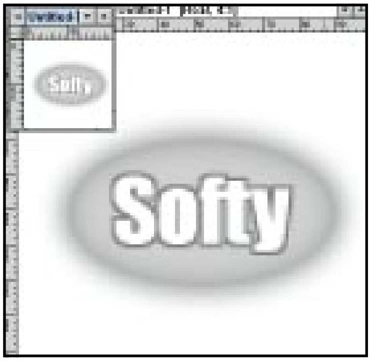


Figure 13.28.
Jazzing up your feathered button.

Making Button Bars

Button bars are usually created so that they can be used as an image map. The buttons you have created thus far would be inserted into a page, and when clicked, they would each take you to a different location or display a resource such as a picture or video. Alternatively, an image map is a graphic that has several links assigned to it. Depending on where you click on the image, it will take you to a respective location.

For ease of explanation, let's use the square button that was created earlier as a basis for our bar. Let's assume that you want two buttons, side-by-side on the page, such as forward and backward paging buttons (see Figure 13.29).

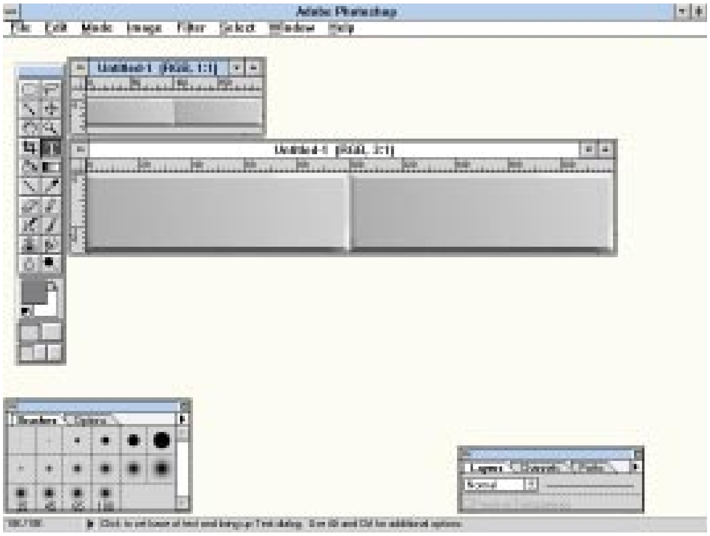
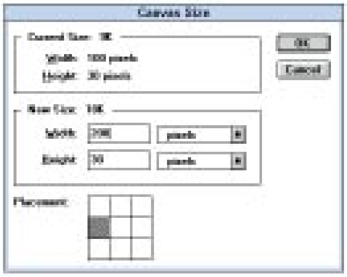


Figure 13.29. *Two views of the button bar you will be creating.*

To create a button bar, complete the following steps:

1. Open your square button file in Photoshop.
2. Use Select | All to select the entire image. Then use Edit | Copy to copy the button into memory.
3. Make sure your background color is set to the appropriate color of your page background (remember hexadecimal?). Now use Image | Canvas Size to change the size of the current canvas. Change the width to 200 and select the left center square at the bottom of the dialog box (see Figure 13.30). Click OK.



Current Size: 9K
Width: 100 pixels
Height: 30 pixels

New Size: 18K
Width: 200 pixels
Height: 30 pixels

Placement:

Figure 13.30. *Adjusting the canvas size.*

4. Use Edit | Paste to paste a second button in the canvas. Use the arrow keys to adjust its placement.
5. Finally, add any shadows, text, or icons you'd like into the buttons.

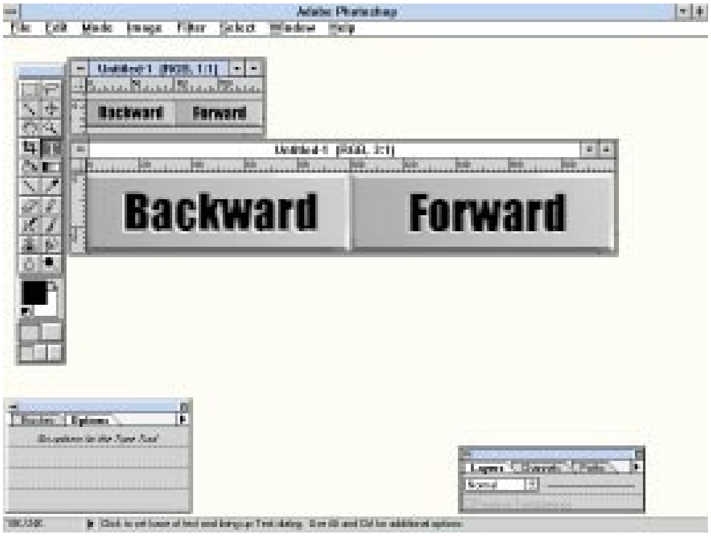
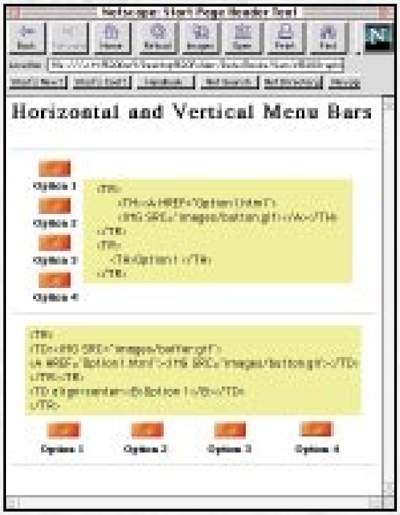


Figure 13.31.
Two views of your finished button bar.

WEB WORKSHOP: If you combine a button, HTML text, and the TABLE structure, you have more control over how your button bar appears on the page. In this example, the same button is cached and used several times to fill out button bars in both vertical and horizontal arrangements. By combining graphic buttons and HTML text, you reduce the number of files you must manage.



```
<TR>
    <TH><A HREF="Option1.html">
    <IMG SRC="images/button.gif"></A></TH>
</TR>
<TR>
   <TH>Option1</TH>
</TR>
```

```
<TR>
<TD><IMG SRC="images/buffer.gif">
<A HREF="Option1.html"><IMG SRC="images/button.gif"></TD>
</TR></TR>
<TD align=center><B>Option 1</B></TD>
</TR>
```

TASK

Making Irregular Clickable Objects

Irregularly shaped objects are generally created in illustration packages and then rasterized so that they can be used as a bitmap (see Figure 13.32). As you're creating them, the most important factor is to make sure that the background color is set correctly so that the anti-aliasing that occurs works to your advantage. To begin creating an irregularly shaped button, complete the following steps:

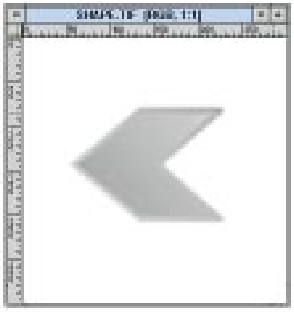


Figure 13.32. *The irregularly shaped button you will create.*

1. Begin by opening a new image 100×100 pixels at 72 dpi. Then use the line tool to create an irregular shape. Or create an irregular path with the Lasso tool and stroke this path in black, one pixel wide (see Figure 13.33).

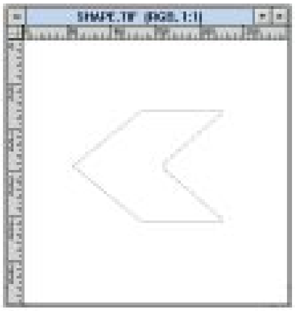


Figure 13.33. *Use the line tool to create an irregular shape.*

Note that by double-clicking on the Wand tool you can open the Options palette for this tool. To increase the color range of pixels selected, increase the tolerance number. The maximum is 255. For this step, a tolerance of 1 was used so that touching pixels with the same, and *only* the same, color would be selected (see Figure 13.34).

2. Use the Wand tool to select the area within the irregular shape by clicking inside the shape. Then save the selection.

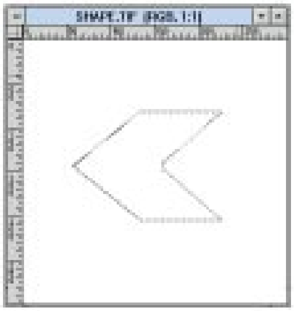


Figure 13.34.
Using the Wand tool to select the inside of the shape.

3. Choose Select | All to select the entire canvas, and then use Edit | Delete to get rid of the lines. Make sure the background color is set to white or whatever your page color should be before you delete!
4. Choose Select | Load Selection to reload the selection in the clean canvas.
5. Next, select appropriate foreground and background colors. For example, use 30 percent and 50 percent gray, respectively.
6. Use the Gradient tool with a linear blend to fill the selection.
7. Choose Select | Modify | Border to create a 6-pixel border around the shape (see Figure 13.35).

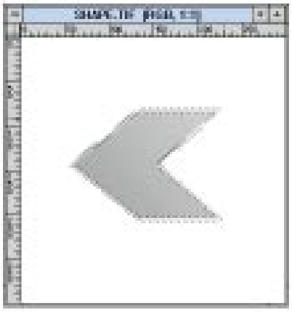


Figure 13.35.
Using the Border option to select pixels that will be the bevel.

Remember that the background of your canvas must be the same color as the background of your page. If it's not, you will end up with discolored jaggies (anti-alias) around your buttons.

8. Next, switch your foreground and background colors and use the Gradient tool to fill the border area for the bevel value.
9. Finish by creating any shadows or other nuances for your irregular button (see Figure 13.36).

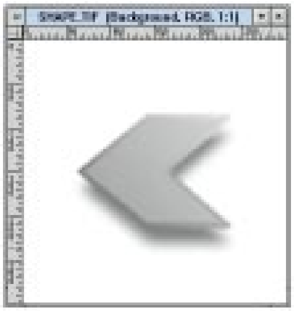


Figure 13.36.
Finishing your irregular button.

Making the Button Hot

The final step in using your buttons is to include them in the coding for your page. To use the graphics in your code, the tag `<IMG SRC>` will be combined with the tag `<A HREF>`.

For example, if you made an image called `Button.gif` and wanted to code it as a button linked to another Web site (uniform resource locator, or URL), the code would look like this:

```
<A HREF="http://some.site.com"><IMG SRC="Button.gif"></A>
```

If I wanted to link a button from one page to another, with both pages in the same location on my server, the code would look like this:

```
<A HREF="nextpage.html"><IMG SRC="Next.gif"></A>
```

Next Steps

Now that you are button savvy, look at the following chapters for additional information:

- ❏ To find out more about creating graphics, see Chapter 3, "Creating Cool Graphics for the Web."
- ❏ For information on calculating screen sizes, see Chapter 7, "Designing Graphical Pages Anyone Can Download."
- ❏ To find out more about icons for navigation, see Chapter 9, "Providing Visual Cues to Web Navigation Through Page Design."
- ❏ To find out more about image maps, see Chapter 14, "Making Image Maps and HTML Frames."
- ❏ To find out more about graphic formats for the Web, see Chapter 16, "Utilizing Inline Graphics to Your Advantage."

Q&A

Q: I've already created some buttons in an illustration program, but how do I get them to a raster format?

A: The best way is to export the illustration out of the program in a bitmap format (TIFF, PCX, BMP). Macromedia FreeHand for Windows does a pretty good job, but the Macintosh version doesn't have this feature. A second way is to export an EPS file out of the illustration package. Photoshop does a very good job of rasterizing EPS imports. However, on the PC side, standardization of the EPS format is very loose—meaning that you may get variable results depending on which illustration program you're using. The last way is to use a screen capture. This is the brute force method, but it does work if you can capture it in 24-bit mode.

Q: I've created my buttons, but there are all these little discolored pixels around the edges. What caused them and what can I do to correct the problem?

A: The problem you are running into is that of anti-aliasing. When you create a line, circle, or any selection, the raster program tries to make your image look better by blurring the edges slightly. This blur occurs between the object and the background colors. If you lay the object on a new colored background, the anti-alias is between the old background and the object that creates discolored pixels on a new background. Take a look at Chapter 3, which describes in depth how to solve this problem in the paint program.

Q: Are there any places I can get stock buttons that look great so I don't have to create them?

A: There are several companies that sell CD-ROMs with stock buttons on them, including companies such as Macromedia and Corel. Another good place to look is at the Yahoo! site. Do a search for `buttons`.

CHAPTER FOURTEEN

Making Image Maps and HTML Frames

In this chapter, you'll

- ❑ Discover what an image map is and how to link multiple sites to a graphic
- ❑ Learn the advantages and disadvantages of using image maps on your page
- ❑ Find out when it's appropriate to use the image mapping function
- ❑ Find out what code makes the image map work in your page
- ❑ Learn the steps you'll have to perform to use an image map as well as learn the software to make it easier

One of the most powerful, yet most crippling, uses of graphics found on the Web is the image map. Image maps are considerably larger graphics than the buttons, icons, and inline images that have been discussed previously, but they give you a few more options than a row of buttons or hotlinked icons across the screen. These fancy images are like lists of hotlinks, except they are visual in nature. Up to this point I've discussed graphic images that are linked to a single site on the Web using an `<IMG SRC>` tag inside an `<A HREF>` structure. In the button scenario, you jump to a single location when you click on it. But wait! There's much more!

Image maps allow you to assign multiple links on a single graphic by defining certain areas as *hot*. These hot areas can be linked to, well, anywhere. Sounds cool, right? Well, there are also disadvantages to using them, but let's get a little further into the chapter first. This chapter looks at how image maps work, and it shows some examples of them in use. The chapter also discusses when they are appropriate for your pages. The code for using image maps will also be presented with a task focused on the steps to utilize the power of the visual image map.

The first part of this chapter discusses the general issues of using image maps, especially in how image maps compare with buttons, button bars, jump lists, and text menus. After this introduction, you will see a specific example of how to set up an image map.

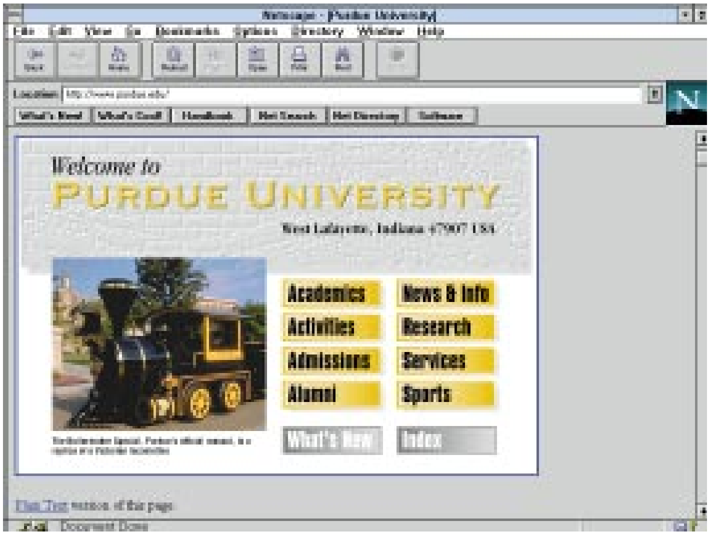
Deciding When You Need an Image Map

As you browse the Web you will find many people are splashing huge image maps on their pages that are generally cool, *once they download*. There are definite instances when image maps are the best solution (see Figure 14.1), but of the hundreds of thousands on the Net, few were the best solution for the instance. Many of the maps could be divided into separate images and used with <TABLE> to make load times decrease. Image maps are frequently overused and many times poorly used. To understand this, let's see how they work.

TIP: Because many image map methods require server-side resources, a combination of a background graphic and transparent table graphics can achieve the same results.

Image maps are regions of your screen assigned to links. Clicking in one area of the image will take you to one location, while clicking in another will take you somewhere else. The graphic that is displayed is just an ordinary Graphical Interchange Format (GIF) or Joint Picture Experts Groups (JPEG) graphic, just like the buttons you created in the last chapter. However, an additional file is kept with the image called a *map definition file*. This is an ordinary text file that contains the definition of where the hotspots on the image are located. This information is stored as coordinate pixel locations with corresponding links.

TIP: In addition to the image and map definition file, an image map needs one more item to work properly: a Common Gateway Interface (CGI) script. This script is a special program that acts as a middleman between your browser and the map definition file. When you click the image map, the CGI script looks in the map definition file to see what to do. It then points the browser in the right direction, and you're on your way to another site (see Figure 14.2).


Netscape - [Purdue University]
File Edit View Go Bookmarks Options Directory Window Help
Location: http://www.purdue.edu/
What's New! What's Cool! Handbook Net Search Net Directory Software
Welcome to
PURDUE UNIVERSITY
West Lafayette, Indiana 47907 USA
Academics
News & Info
Activities
Research
Admissions
Services
Alumni
Sports
What's New
Index
Document: Done

Plain Text version of this page

Figure 14.1.
A sample image map used at a site (`http://www.purdue.edu/`*).*

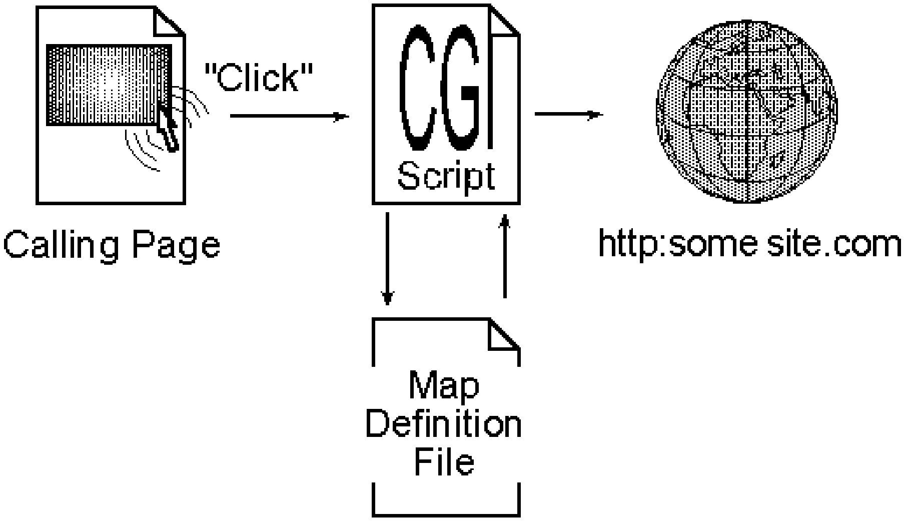


Figure 14.2.
How does an image map work?

One of the nice things about image maps is that you don't have to be a CGI programmer or know how to code the map definition file to use them. Usually the first one you create is the most difficult, but there are several tools designed to aid you in your quest.

The first difficulty is the creation of the map definition file. Not too long ago, manually crunching the code for the map definition would be enough to convince you to do it another way. The definition file looks a lot like PostScript codes that your printer spits out when it chokes on a print file.

NOTE: A typical image map definition file contains several pieces of information for the server's CGI image map routine. Depending on the type of server, the nitty-gritty of the file might be a little different, but in general, the overall contents are the same.

The meat and potatoes of a definition file are lines that start with words like `rect`, `poly`, and `line`. These are the type of areas being defined. For example, a line of map definition code that says `rect /tg/department/index.html 27,20 217,56` defines a rectangular area with coordinates `27,20,217,56` that is linked to `/tg/department/index.html`. If you click in this area on the map, the CGI script sends you to the file. After you've created an image map, take a peek inside. Since it's a text file, you can open it into a text editor very easily.

But never fear! The CD-ROM includes a utility for automatic generation of the map file. If you can draw some lines and know what type of server you have, you can generate a map definition file automatically. A little later, the task talks about these tools more in depth and how to use them.

The second difficulty is the CGI script itself. For the most part, this shouldn't be a problem. Before you start biting your nails and breaking out the CGI encyclopedia and technical manual, talk to your site administrator. More than likely there's already a CGI image map routine waiting for you on your server, or he will know where to find one that's compatible with your server. Just find out where it is and what type of server you have, and it'll do nicely.

TIP: Make sure you check with your system administrator to determine what type of server you have, regardless of the CGI script issue. When you create your map definition file, you'll need to know whether your server is a National Center for Supercomputing Applications (NCSA) or European Laboratory for Particle Physics (CERN) type so you can generate the correct file.

Describing Areas of Your Page

Image maps are frequently used to visually describe the areas at a site (see Figure 14.3). This presents a unique way to engage your audience and give them an overview of your site. It may also be easier to create and link a single image map than to create, arrange, and link several small graphics with an editor and HTML code. But when should you really consider using an image map? Why not splash one on every page?

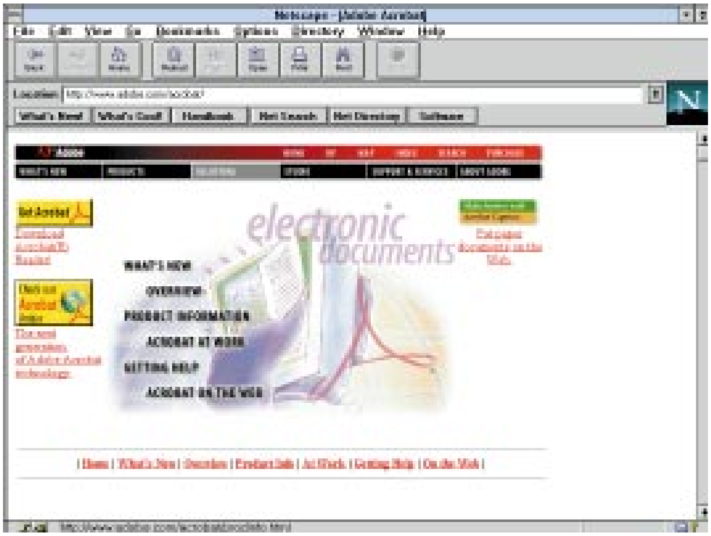

Netscape - [Adobe Acrobat]
File Edit View Go Bookmarks Options Directory Window Help
Location: http://www.adobe.com/acrobat/
What's New! What's Cool! Handbook Net Search Net Directory Software
Get Acrobat
electronic documents
WHAT'S NEW
OVERVIEW
PRODUCT INFORMATION
ACROBAT AT WORK
GETTING HELP
ACROBAT ON THE WEB
| Home | What's New | Overview | Product Info | At Work | Getting Help | On the Web |

Figure 14.3.
An alternative to using an image map—rectangular inline images (`http://www.adobe.com/acrobat/`*).*

Due to their disadvantages, image maps should only be used when you cannot accomplish your visual task any other way. Many times an alternative solution to an image map is creating several inline images that butt up against one another. Even some irregularly shaped graphics can be browser-built from several transparent images (see Chapter 16, "Utilizing Inline Graphics to Your Advantage") such as those shown in Figure 14.4.

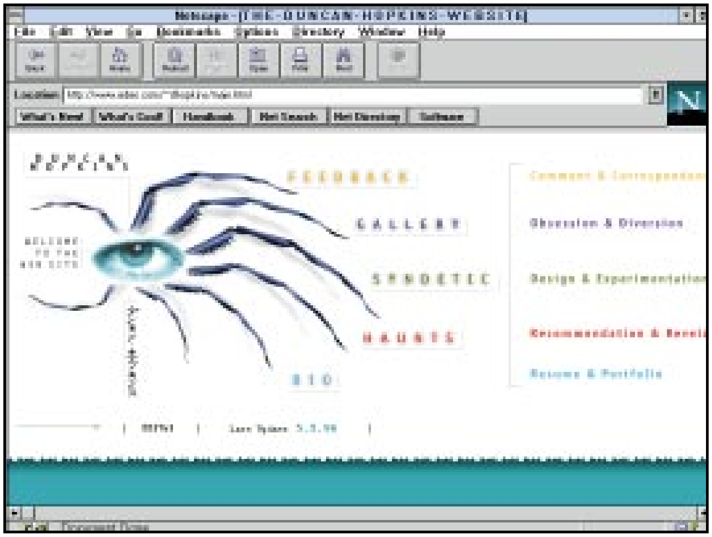


Figure 14.4.
An alternative to using an image map—transparent inline images (`http://www.eded.com/~dhopkins/main.html`*).*

Once you have overcome the hurdle of creating your first image map, you'll see that it can be tempting to use several of them, but keep in mind that image maps are slower to load than several small images that are each individually linked. This is due to the time it takes the CGI script to build the hotspots for the browser from the map definition. Image maps can also create a bottleneck at your site if several individuals try to access a single map at one time. In addition, if your site's hardware changes, so may your image map. A change may require regeneration of the graphic image and the map definition file that corresponds to it.

Writing HTML Code That Recognizes Your Map

The HTML code to make this whole thing work is not difficult as long as you know the following:

- ❑ The name and location of your map definition file
- ❑ The name and location of your image

This code is not much different from our inclusion of buttons in a page except for the use of the CGI script. Okay, time for a real example. Let's say the map definition file I created, called `mymap.gif.map`, is in the same place as my image. My image is in `/tg` and is called `mymap.gif`. If all this were true, my HTML coding would look like the following:

```
<HTML>
<TITLE>home.html</TITLE>
<BODY>
<A HREF="http://www.site/tg/mymap.gif.map">
<IMG SRC="mymap.gif" ISMAP></a>
</BODY>
</HTML>
```

The elements of the code are defined as follows:

- ❑ `home.html`—The HTML page on which `mymap.gif` is loaded with the `<IMG SRC>` tag.
- ❑ `http:/`—The network protocol to be used.
- ❑ `/www.site`—The host server on which the files will be located.
- ❑ `/tg`—The directory structure on the Web server inside which the files will be found.
- ❑ `/mymap.gif.map`—The actual map definition file dividing `mymap.gif` into regions.
- ❑ `mymap.gif`—The graphic that serves as the basis of the image map.
- ❑ `ISMAP`—The HTML tag that signals `mymap.gif` is to be treated as an image map.

This coding isn't much different from a regular clickable button except for the `<A HREF>` tag that specifies the map definition file. Finish the code off with the `<IMG SRC>` tag using the image `mymap.gif` with the `ISMAP` option for the image. This image source tag assumes that the document asking for the graphic is located in the same directory as `mymap.gif`. The path to this document is `www.site/tg/home.html`. Since I'm a graphics animal, I needed to see all this visually before describing it. You can, too, by taking a look at Figure 14.5.

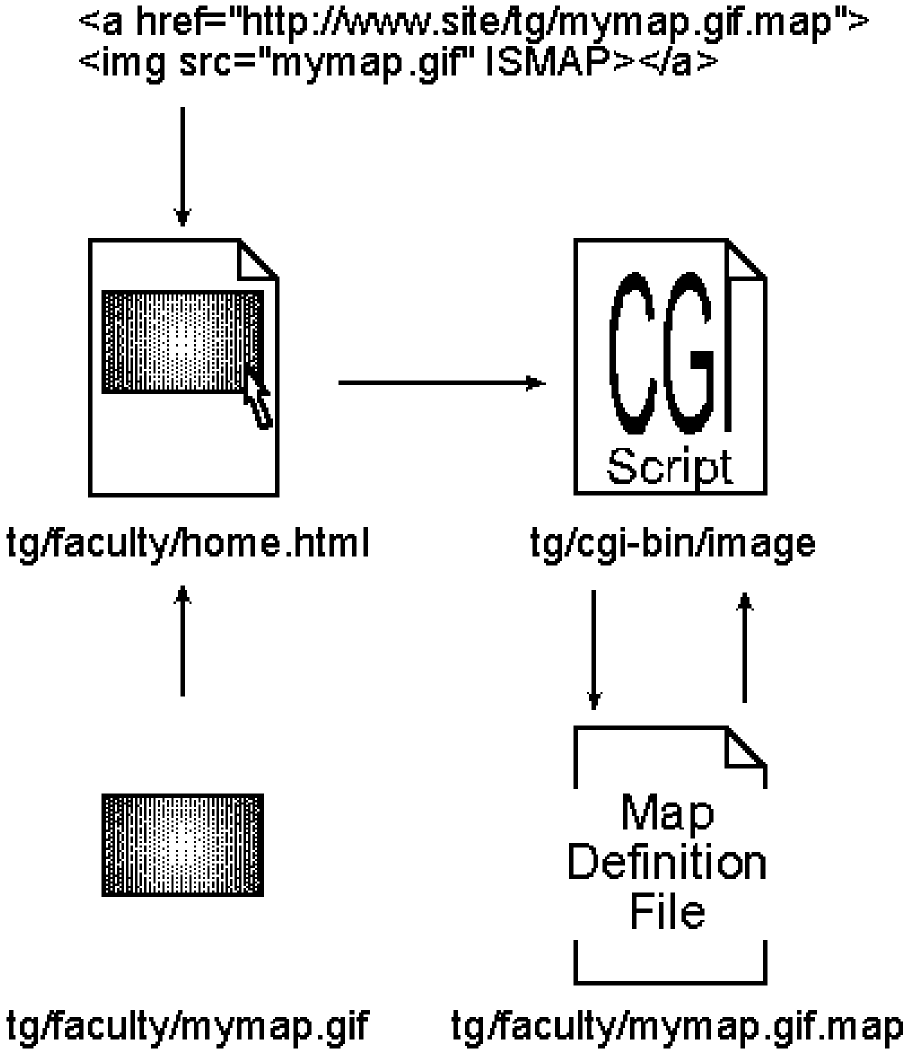
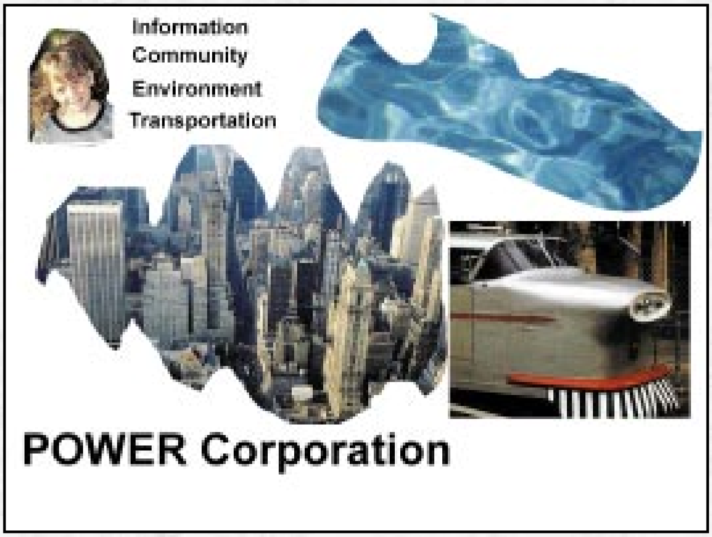
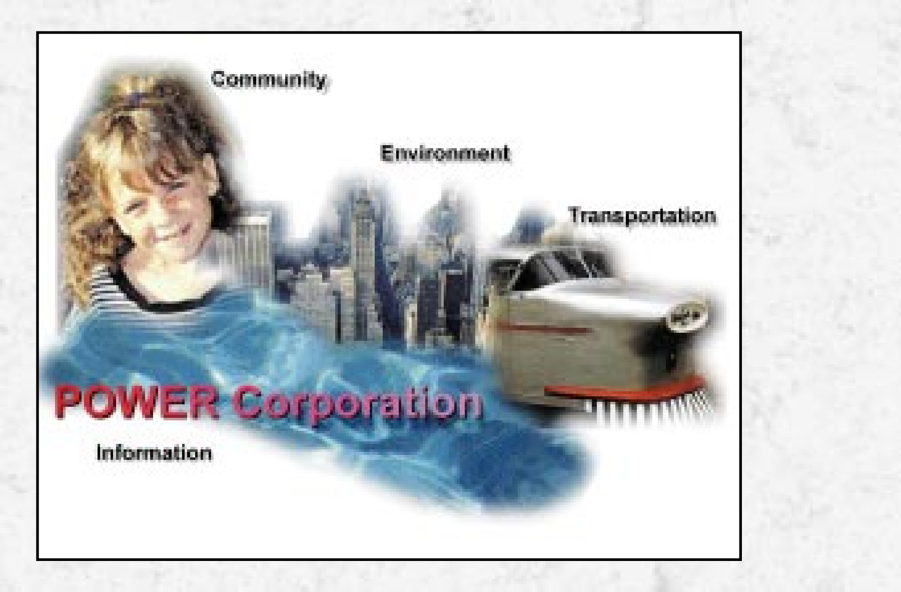


Figure 14.5.
A visual example with my coding.

Once you have generated the code, move your map definition file, image map, and calling document to your server. The biggest drawback to image maps is that they can only be tested on the server because of the Common Gateway Interface (CGI) script. This means that you can't preview your image maps by running them locally on your hard disk—a typical development technique.

WEB WORKSHOP: Preparing a graphic to be used as an image map usually means assembling one or more images into a single graphic. In this example, the first page shows individual components—each a separate GIF file—describing Level 1 links. The second page shows these components assembled in a single image, ready for the mapping coordinates to be applied.





Making an Image Map

The graphic you use as the base for your image map is critical in the success of this technique. To be effective, your graphic must have clearly identifiable areas to click—some may look like buttons, others like floating icons, and others floating text. Look at Figures 6.1, 6.7, 9.1, 10.2, and 10.4 for examples of images that are appropriate for image maps. To begin creating an image map, follow these steps:

1. The first step in using an image map is to create your graphic image. Open your image editor and create the graphic. Keep in mind that a larger image equals slower download for most people. Once you've completed the graphic, save it as a GIF or JPEG file for use as an image map.
2. Contact your system administrator to find out what type of server you have: either NCSA or CERN. Also inquire as to where (the path) the CGI script for image maps is located on the server.

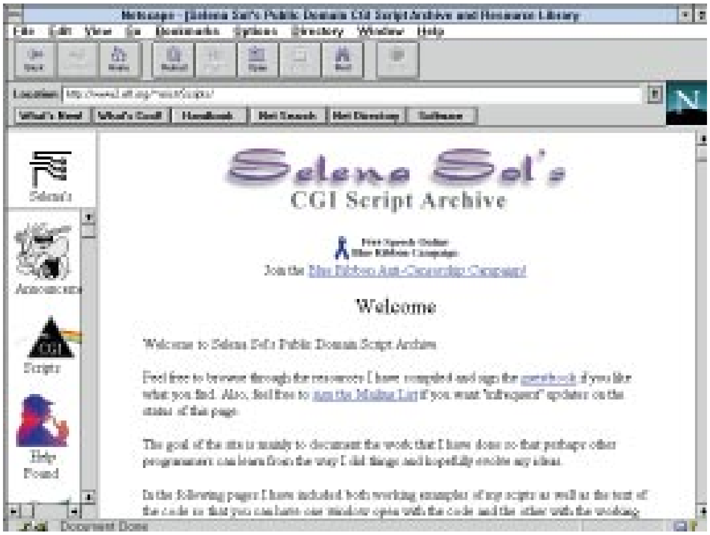
3. On the CD-ROM you'll find an image map utility for the PC, MapEdit. If you decide to use it for more than 30 days, register it to keep these good folks happy.
4. Once you've installed the mapping utility, start it up and open your graphic into it.
5. In MapEdit you'll have to do three things. You'll have to tell the program what type of map definition to generate; draw lines, rectangles, and so on to define your hot areas; and then tell the program what uniform resource locators (URLs) are associated with those hot areas. MapEdit will require you to assign the type of map definition file when you open your GIF or JPEG image.
6. Once you've generated the image and map definition file, you are set to code your calling page. Remember that when you're coding it, the `<A HREF>` tag needs the location of the map definition file and the `<IMG SRC>` tag needs the name of the GIF with the `ISMAP` option.
7. Now that you have coded your calling page, move all three elements to your server and test it. Remember that it can only be tested on your server due to the use of the CGI script.

Using Frames to Organize Your Page

Unlike image maps, frames are a new feature included within Netscape 2.0 and Netscape Gold that are a function of the Netscape browser and don't require any external CGI scripts. Frames allow you to divide the areas of the screen into separate windows, as shown in Figure 14.6. Each window displays a separate Web page. You have complete control over how the areas are divided and can specify their area in pixels, percentages, or a relative size.

The coding for frames may seem somewhat confusing at first, so let's take a look at a simple example and then a more complex one. The first thing to note about frames is that the `<FRAME>` tag replaces the normal `<BODY>` tag. In essence, the frame defining page has no body—the frames replace it. A very simple page's coding would look like the following:

```
<HTML>
<HEAD><TITLE>A simple frame example</TITLE></HEAD>
<FRAMESET ROWS="50%, 50%">
    <FRAME SRC=frame1.html>
    <FRAME SRC=frame2.html>
</FRAMESET>
</HTML>
```


Netscape - [Selena Sol's Public Domain CGI Script Archive and Resource Library]
File Edit View Go Bookmarks Options Directory Window Help
Back Forward Home Reload Images Open Print Find Stop
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
Selena's
Announcements
CGI
Scripts
Help
Found
Document Done

Selena Sol's
CGI Script Archive

Free Speech Online
Blue Ribbon Campaign

Join the Blue Ribbon Anti-Censorship Campaign!

Welcome

Welcome to Selena Sol's Public Domain Script Archive

Feel free to browse through the resources I have compiled and sign the guestbook if you like what you find. Also, feel free to join the Mailing List if you want "infrequent" updates on the status of this page.

The goal of the site is mainly to document the work that I have done so that perhaps other programmers can learn from the way I did things and hopefully critique my ideas.

In the following pages I have included both working examples of my scripts as well as the text of the code so that you can have one window open with the code and the other with the working

Figure 14.6.
Using frames to divide a page into regions.

You will see the following:

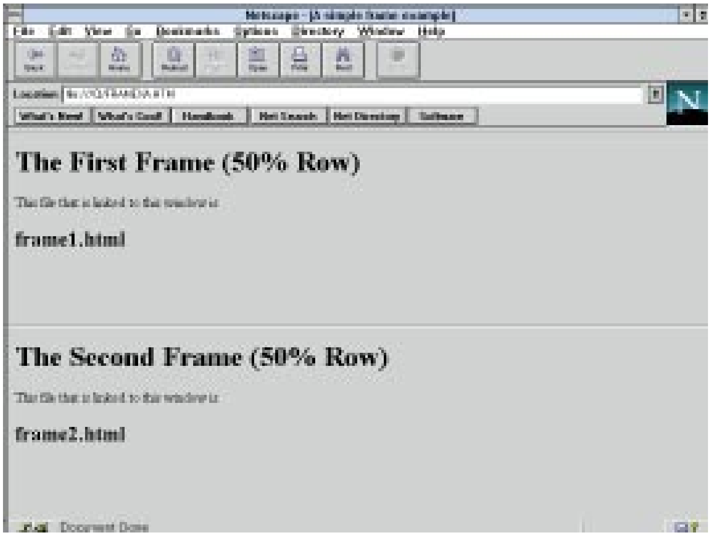
- ❑ `<FRAMESET ROWS="50%, 50%">`—Divides the screen into two rows that take up 50% of the screen.
- ❑ `<FRAME SRC=frame1.html>`—Assigns the first 50% row to `frame1.html`.
- ❑ `<FRAME SRC=frame2.html>`—Assigns the second 50% row to `frame2.html`.

This example would have three files: the page that would include this code, `frame1.html`, and `frame2.html`. The files called `frame1.html` and `frame2.html` could have anything a normal HTML page would have—text, images, links, and so on. The frame page with simple explanatory text would look like Figure 14.7. Note again that each window is assigned to a particular file. In our case, the two windows are assigned to `frame1.html` and `frame2.html`, respectively.

Notice in the previous coding example that you could have used pixel values rather than percentages in the frameset line. Using percentages just made it easier to explain. Based on what you know about sizing images from previous chapters, you should be able to more accurately arrange your frames if need be.

Now, what if we wanted vertical frames instead of horizontal frames? Well, our coding would look like this:

```
<HTML>
<HEAD><TITLE>A simple frame example</TITLE></HEAD>
<FRAMESET COLS ="50%, 50%">
    <FRAME SRC=frame3.html>
    <FRAME SRC=frame4.html>
</FRAMESET>
</HTML>
```



The First Frame (50% Row)

The file that is linked to this window is:

frame1.html

The Second Frame (50% Row)

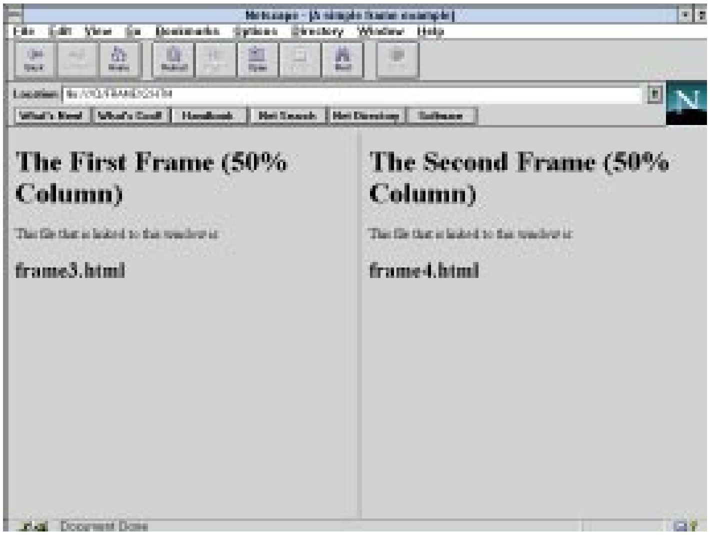
The file that is linked to this window is:

frame2.html

Figure 14.7.
The simple frame page split into two rows.

You will see the following:

- ❑ `<FRAMESET COLS="50%, 50%">`—Divides the screen into two columns that take up 50% of the screen.
- ❑ `<FRAME SRC=frame3.html>`—Assigns the first 50% column to `frame3.html`.
- ❑ `<FRAME SRC=frame4.html>`—Assigns the second 50% column to `frame4.html`.



The First Frame (50% Column)

The file that is linked to this window is:

frame3.html

The Second Frame (50% Column)

The file that is linked to this window is:

frame4.html

Figure 14.8.
The simple frame page split into two columns.

Finally, with frames you can actually divide the screen any way you want. Let's say you want to set up a 20% column on the left of the screen with a stationary logo at the bottom of it. In the other 80% column, you want a menu bar of 20% at its bottom. The coding for this page design would look like this:

```
<HTML>
<HEAD><TITLE>A simple frame example</TITLE></HEAD>
<FRAMESET COLS ="20%, 80%">
    <FRAMESET ROWS ="80%, 20%">
        <FRAME SRC=frame1.html>
        <FRAME SRC=frame2.html>
    </FRAMESET>
     <FRAMESET ROWS ="80%, 20%">
        <FRAME SRC=frame3.html>
        <FRAME SRC=frame4.html>
    </FRAMESET>
</FRAMESET>
</HTML>
```

You will see the following:

- `<FRAMESET COLS ="20%, 80%">`—First divides the screen into a 20% column and an 80% column.
- `<FRAMESET ROWS ="80%, 20%">`—Divides the 20% column into two rows (80% and 20%).
- `<FRAME SRC=frame1.html>`—Assigns `frame1.html` to the first row of 20% column.
- `<FRAME SRC=frame2.html>`—Assigns `frame2.html` to the second row of 20% column.
- `</FRAMESET>`—Tells browser assignment of rows to 20% column is done.
- `<FRAMESET ROWS ="80%, 20%">`—Divides the 80% column into two rows (80% and 20%).
- `<FRAME SRC=frame3.html>`—Assigns `frame3.html` to the first row of 80% column.
- `<FRAME SRC=frame4.html>`—Assigns `frame4.html` to the second row of 80% column.
- `</FRAMESET>`—Tells browser assignment of rows to 80% column is done.
- `</FRAMESET>`—Tells browser assignment of columns to the page is done.

Next Steps

Now that you know about image maps and HTML frames, here's more:

- ❑ For more information about the hardware aspects of Web page design, see Chapter 7, "Designing Graphical Pages Anyone Can Download."
- ❑ To compare inline images with image maps, see Chapter 9, "Providing Visual Cues to Web Navigation Through Page Design."
- ❑ To find out more about transparent GIFs and file formats, see Chapter 16.
- ❑ To find out more about graphic file formats, see Chapter 20, "Converting Graphics for Use on the Web."

Q&A

Q: I checked with my system administrator and we don't currently have a CGI script for image maps. Where can I go to find out how to create one?

A: Being a big Yahoo! fanatic I would suggest surfing over to `http://www.yahoo.com` and doing a search on CGI. More than likely you'll be able to find one that will work with your server, granted you know what you need. If you're a real code junky and want to learn CGI and write it yourself, check out some of the other books published by Sams.net, such as *HTML & CGI Unleashed,* which includes everything you ever wanted to know about CGI scripts.

Q: I used the utility you included to generate the map definition, but the server told me it couldn't read the script. What do I do?

A: Check with your system administrator to make sure you generated the right type of script for the server. Remember that there are two different types: NCSA and CERN. Check to make sure you generated the right type.

Q: I've moved all my files to the server and it's not working. What's the first thing to check?

A: First, check to make sure there are no typographic errors in your HTML code. Second, make sure you are using absolute pathnames for your references to the CGI script, map definition file, and image map. Additionally, check with your system administrator to make sure you generated the right type of map definition file.

CHAPTER FIFTEEN

Designing Backgrounds That Make Sense

In this chapter, you'll

- ❑ Learn to create background panels that look like realistic manufactured products
- ❑ Make dramatic wood grain
- ❑ Create brushed metal panels with which you can apply the emboss and engrave techniques learned in Chapter 12, "Using Text in Design"
- ❑ Make tiles, horizontal rules, and backgrounds that enhance a page
- ❑ Assemble several graphics into a montage

Every Web page has a background. This isn't exactly an eye-opening statement, but it's a very important realization. But because of this, backgrounds sometimes don't even enter into page planning, other than knowing that #FFFFFF produces a white background. But backgrounds can make or break your Web pages. They are an important factor in the readability of your pages and contribute greatly to visual interest.

This has been mentioned before, but it bears mentioning again. The best backgrounds provide a surface on which to display text, graphics, and other visual data. The background is not usually the vehicle that displays information.

Chapter 14, "Making Image Maps and HTML Frames," discussed making image maps. At the heart of an image map is a graphic. Placing that graphic on an effective background is critical. The image map's graphic should become part of the background.

You can use any raster graphics application to create custom backgrounds. This chapter makes reference to operations in Photoshop. Still, these operations have similar and parallel counterparts in any number of raster products. You should be able to easily translate the suggestions we present here to your favorite raster editor. If you have questions about the terms used in describing the operations, refer to the Glossary, where their functions are described.

We, the authors, are partial to white backgrounds for several reasons. All the problems that involve matching graphics from one source with another are minimized by using a white background. The much-discussed anti-alias halo is much easier to correct when the graphic is placed on a white background.

Backgrounds can be categorized into several areas:

- A full-screen single image loads over the `<BODY BGCOLOR=#XXXXXX>` specified in the HTML file.
- A tiled image loads over the `<BODY BGCOLOR=#XXXXXX>` with a `BACKGROUND="tile.gif"` parameter.
- A background is part of a graphic that is loaded over the `<BODY BGCOLOR=#XXXXXX>` specification.

Promoting the Cardinal Rule of Backgrounds

A background should be well planned. *Never* add a background to an already completed page. We feel that if a background wasn't part of the original design, adding it later probably won't improve either readability or visual appeal.

Many rules have not been established in this book, but let's propose one here, based on the fundamental relationship of black text on white paper. Here it is:

For textual passages of 10 to 14 points (like the text normally used in the body of a publication), the difference between text and background should be around 60 percent. This means that black text will still read well on a background that is 40 percent gray or any color with the same value as 40 percent gray. Increase the text size and you can get away with text and background that are closer to the same value.

NOTE: The smaller the type, the greater the `value` difference must be between text and background.

Individual colors alter this rule, however. It's difficult to get some colors bright enough to arrive at the 60 percent difference (deep blues, greens, and browns) and almost impossible to get some colors dark enough to allow white text to contrast with a background (yellow, for instance). Figure 15.1 shows a light (80 percent) tan background with 12-point text with values decreasing from white to black. Where is the text impossible to read?

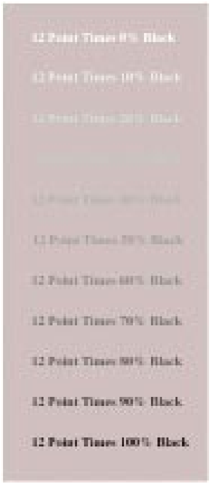


Figure 15.1.
The effect of text and background value on readability.

TASK

Making Panels

Web pages don't have to be dull and boring. With a little effort they can actually look like manufactured products. When you look around, you see all sorts of panels on computers and electronic equipment—even paneling on walls. You might want to display parts of your Web site on something other than paper pages, and panels make an ideal background against which text and graphics can be displayed. Three important factors contribute to a successful panel:

- ❑ The panel has value change, possibly one or more shadows.
- ❑ A consistent direction and position of light is used.
- ❑ The joints in the panels contribute to its realism.

In this task, you are going to create a background panel that has an area in which text will be displayed and an area reserved for a button bar. To create this panel, you would

1. Create foreground and background shades of the same color. This is important for a realistic lighting effect. Do this by starting with a base color and pushing the shade toward black and the highlight toward white.
2. Decide on the direction of light. This must be consistent with the other lighting effects on the page. The last thing you want is the dreaded moving light source.
3. Select the shape of your panel. In this case, you'll want the panel to fill a default 480×320–pixel area. Diagonal blend across the panel.
4. Create a highlight at the same angle as the light by making a selection, feathering it, and adjusting its brightness.

5. Make a rectangular selection for the text display area. Lighten the highlight color. Stroke this selection with 2 pixels and anti-alias on. This is your highlight joint edge.
6. Using the line tool and the original dark blend color, create shadow joint lines above and on the right of the highlights. Again, use 2-point lines with anti-alias on.
7. Repeat for the button bar joint lines. The completed panel with the button bar in place and a blank screen is shown in Figure 15.2.

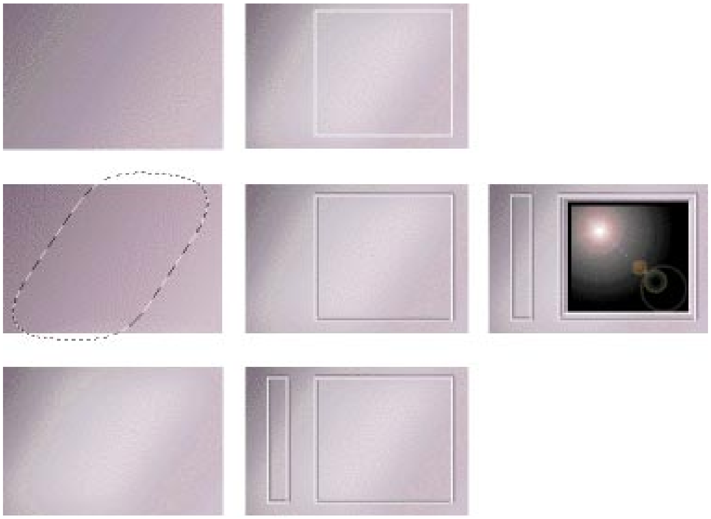


Figure 15.2.
The completed background panel with the button bar in place and text display area.

TIP: If you plan ahead, you can reduce the size and download times of your background by simply making joint lines on a transparent background. Select a background color totally different from the joint highlights or shadows. Use the Graphic Converter utility on the CD-ROM that accompanies this book to turn the background color transparent.

TASK

Making Rules

The rules available to you with the `<HR>` and `<HR NOSHADE>` tags won't satisfy the creative needs of many of you out there. Therefore, it seems the answer is obvious: Make your own rules.

You are not limited simply to horizontal rules. In this task, you'll create custom rules in both the horizontal and vertical positions and use the <TABLE> structure to divide a page visually with these elements. Figure 15.3 shows the rule we have grabbed from our clip art library, ready to colorize. The gallery in Figure 15.4 displays some possibilities for graphic rules.

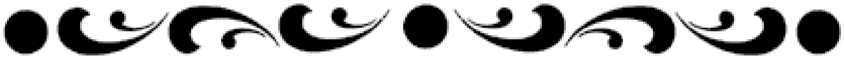


Figure 15.3. *The black and white rule art ready to be colorized.*

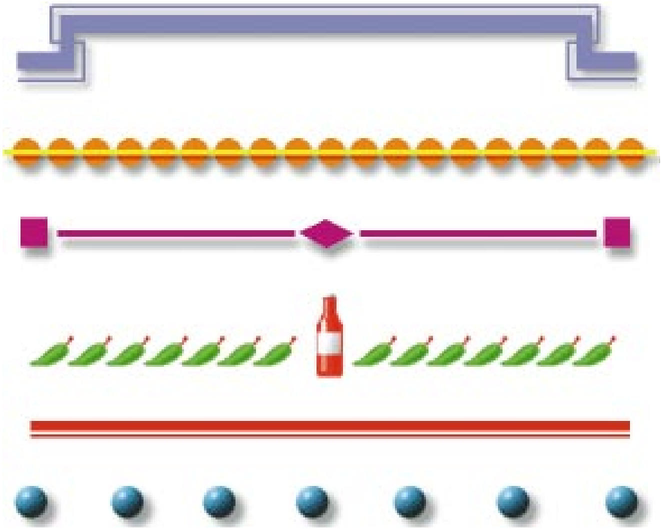
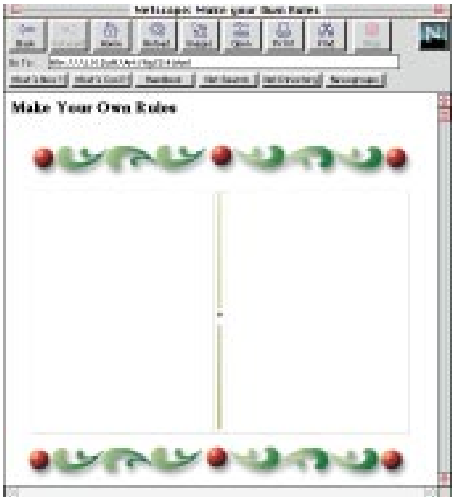


Figure 15.4. *A gallery of graphic rules.*

There are numerous resources available to use for rules. Many of the clip art resources cited in Chapter 3, "Creating Cool Graphics for the Web," provide elements that can be used as rules. Don't be afraid to combine interesting shapes to come up with new solutions!

To turn this graphic into a rule, follow these steps:

1. Bring your rule art into a raster editor and crop to the width you desire.
2. Select elements in the art, and use Edit|Fill and lighten or darken to change their color. Add a drop shadow if you think it will be effective.
3. Repeat this until you're finished. Avoid white in your rule because you are going to make the background transparent.
4. Figure 15.5 shows the new rule in place above and below a table that uses another rule to vertically divide two columns.



Make Your Own Rules

Figure 15.5.
Custom graphic rules used both horizontally and vertically.

TASK

Making Bumpy Textures

Your world isn't smooth, and neither should be all your pages. Bumpy textured backgrounds are appropriate for splash pages and for selected areas of your pages. The texture shouldn't be so coarse as to diminish the readability of any text displayed on top of it.

> **TIP:** The bumpy texture technique can produce results ranging from smooth sand to rough troweled plaster. By experimenting with noise level, blur, contrast, and emboss height and amount, highly different results can be achieved.

Several products are available specifically for making textures, including Kai's Power Tools and Specular's TextureScape. With a little effort, raster programs such as Photoshop, Photopaint, and Fractal Painter can achieve much the same results—with greater satisfaction and savings of hundreds of dollars. To make a basic stucco texture, follow these steps:

1. Create a strong black and white sunbeam background (see Figure 15.2). Make this with strong contrast as shown in the first panel of Figure 15.6.
2. Select the area to be textured. Choose Filter|Noise|Mono|Gaussian|95 to add high contrast black speckles.
3. Choose Image|Adjust|Contrast|+90 to make the edges of the texture bumps more pronounced.

4. Choose Filter | Blur | Blur More to smooth out and flatten the noise.
5. Choose Filter | Emboss | Height 3 | Amount 150% to interpret the grayscale information into a bump map.
6. Add color blend with light opacity to colorize the texture.

Figure 15.6. *The development of a panel of bumpy texture.*

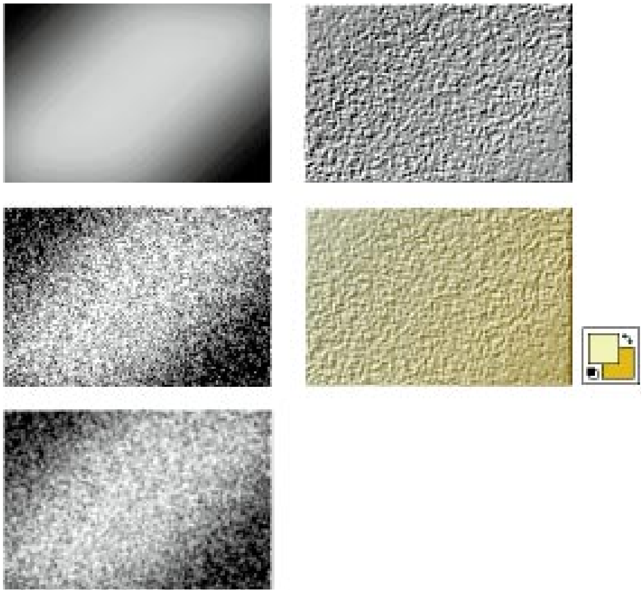
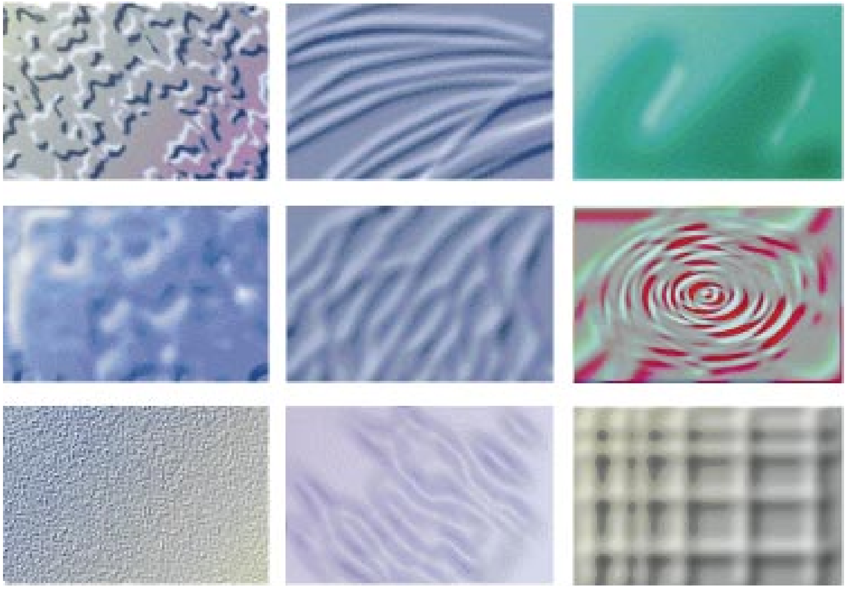


Figure 15.7. *A range of bumpy textures produced in Photoshop.*



Making Wood Grain

Wood grain gives a natural, warm-textured background and is best used as a contrast with text in another material such as metal or shiny plastic. Because wood grain has a wide range of colors, use the Adjust|Brightness technique for making shadows. Follow the examples in Figure 15.8 from top to bottom, left to right. To make a weathered textured wood, follow these steps:

1. Select a small vertical panel on one side of your canvas.
2. Fill this with color noise, value 215.
3. While the panel is selected, choose Image|Effects|Scale and stretch the panel across the canvas.
4. Blur the canvas.
5. Select All. Choose Distort|Wave|Generators 7|H:100% V:50%, wrap around selected, with the sine option.
6. Lasso select for knots. Feather 20 pixels. Repeat wave filter.
7. Cut out what you want. Clear the background. Paste and enlarge as necessary.
8. Increase contrast 40 percent. Choose Filter|Emboss|Height 3|Amount 100%|Angle 135°.
9. Pick highlight and shade colors of the wood. Blend across the wood grain with approximately 50 percent opacity.
10. Figure 15.8 shows these steps and a final panel with joint lines and highlight and shade edges.

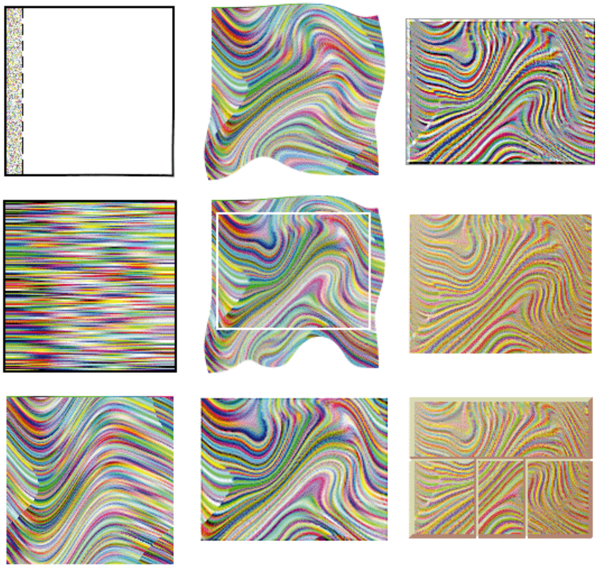


Figure 15.8.
The development of background wood grain.

TASK

Making Metal

You saw metal created in several examples in Chapter 12. This task leads you step-by-step through the process that can result in a metal texture that would make a pizza oven proud. To make realistic-looking metal, follow these steps:

1. Build a high-contrast sunbeam in gray.
2. Add uniform color noise to a level that keeps the highlight visible. Try a value of 80 to start with. The color noise introduces an element of prism in the image as small brush marks in the metal surface refract light into color components.
3. Increase contrast + 20 percent.
4. Motion blur at the same angle as the sunbeam.
5. Gradient fill a light blush of color (blue or magenta) to give it some color.
6. Copy this texture to the clipboard. Select an area and choose Edit|Paste Into. Figure 15.9 shows the finished product with metal pasted inside letters.

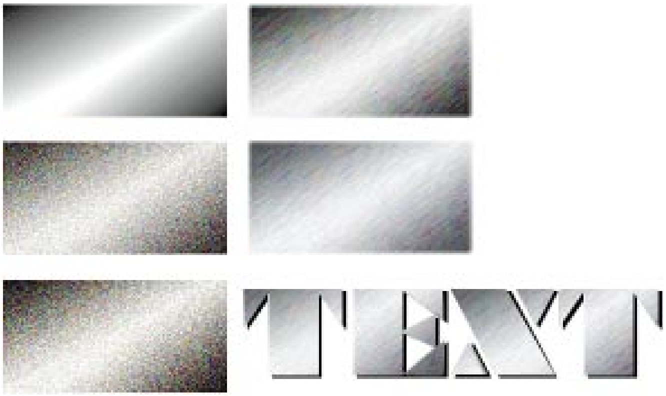


Figure 15.9.
Developing a metal texture. The texture is used to produce the effect of brushed metal text.

TASK

Tiling a Graphic

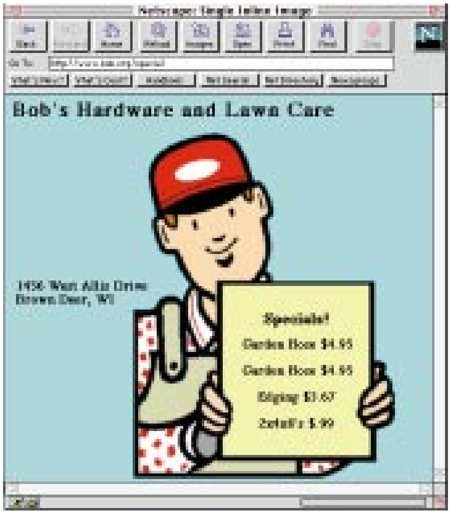
When is a tile not a tile? A background can be a single image, or will be tiled (repeated) if its dimensions are less than that of the browser's open window. In this task, you will create a background image over which HTML text can be displayed using the <TABLE> structure. Think of this as a full-page tile. This allows you to use a common background and to vary images displayed on top. This is particularly effective for changing product specials, figures, names, or data. To create a full-page tile, follow these steps:

1. Develop a plan for a graphic that will be stable under changing information. In the example in Figure 15.10, the background image is a cartoon worker holding a display card. The information on the card might change daily.

2. Create your graphic with a hexadecimal background color in mind. In our case, we've picked `#00FFFF`, a medium aqua (R=0, G=255, B=255). We will match this background color in our raster editor so that anti-alias haloing is minimized.
3. Specify this color in your `<BODY BGCOLOR>` tag.
4. Using any utility that produces transparent Graphical Interchange Format (GIF) files, turn your background aqua transparent. If you use the same aqua as the solid color, your tile will appear out of the background with the correct anti-alias.

> **TIP:** Turning the background transparent has the added benefit of reducing the number of pixels in the file. The background graphic in Figure 15.10 was reduced from 33KB to 17KB when the aqua pixels were made transparent.

5. Create a table in HTML that places cells in the correct locations on top of your background. You want the text inside the cells to appear on top of the card. This may take anywhere from a little to a lot of experimentation.
6. If successful, you will be able to easily change the information without changing your background.



Bob's Hardware and Lawn Care

1456 West Allis Drive
Brown Deer, WI

Specials!

Garden Hose $4.95

Garden Hose $4.95

Edging $3.67

ZetaFix $.99

Figure 15.10.
A lightweight (small file size) background with table graphics and text overlaid.

Making a Montage Graphic

A montage is an image made from several other images. On Web pages, montages are used as the underlying graphics for image maps. If you're designing Web pages, you should know how to make a montage. To give yourself the greatest flexibility, create the montage in 24-bit RGB color. To create a montage graphic, follow these steps:

1. Assemble the components of the montage. You may be able to use images from PhotoCD, digital photographs, or frame captures from video.

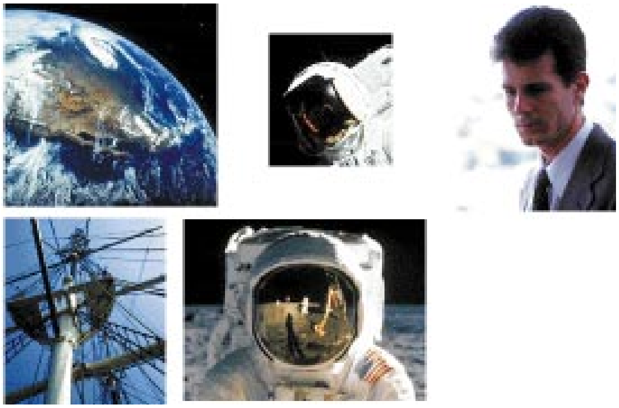


Figure 15.11. *The PhotoCD resources to be used for a montage (Expert Software).*

2. Assign each component to a separate layer in your graphic application program.
3. Arrange components in position while viewing all the layers.
4. Lasso select a component. Feather the selection 10–20 pixels at 72 dpi.
5. Cut the selection and remove the extraneous pixels. Paste the feathered selection back into its original position. It will have a soft edge based on the feather distance.
6. Repeat for all the components. Add text as shown in the final example in Figure 15.12.
7. As a final step, merge all layers and save in RGB, Joint Picture Experts Group (JPEG) format. If you need, this image can be sampled down to 8 bits and GIF format.

8. Match the hexadecimal background of your montage with the HTML background. Use the montage as the base graphic for an image map or as a background over which table graphics are displayed.

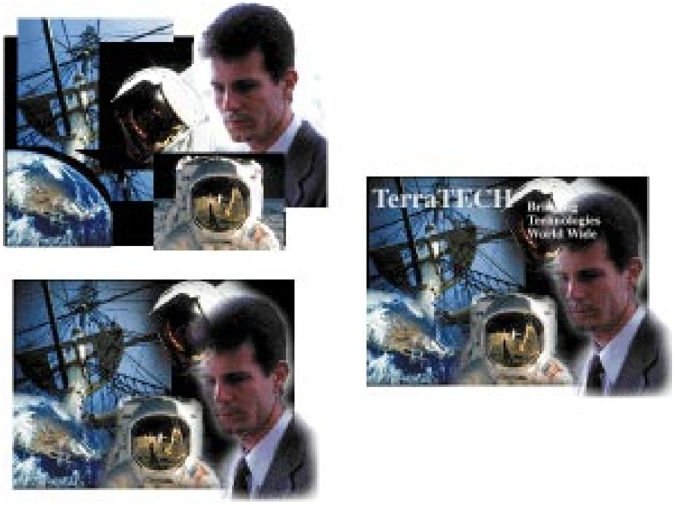


Figure 15.12.
The completed background panel with overlaid text in place.

TIP: By loading simple transparent GIFs into cells of a table, you can `<A HREF>` them to other pages and have the montage act just like an image map without dealing with client- or server-side mapping coordinate resources.

Next Steps

Now that you have become background savvy, consider

- Chapter 16, "Utilizing Inline Graphics to Your Advantage," where alternative graphic styles are explored.
- Chapter 18, "Delivering Animations at Your Web Site," so that you can take advantage of the latest Web developments.
- Chapter 20, "Converting Graphics for Use on the Web," to make optimum use of existing graphic resources.

Q&A

Q: I've tried to make a textured background, but the pixels are too large when displayed on my Web pages. What went wrong?

A: Make sure that you have set up the background file at 72 dpi so that each pixel on your texture is mapped to a screen pixel.

Q: The single background graphic tiles instead of displaying the full screen. How can I make sure it's the right size?

A: What is your target browser and screen dimensions? Determine this and measure the open screen area (usually around 400×300 pixels). Set up your background graphic with the same size canvas.

Q: My backgrounds come in too slowly. Is there a way of speeding them up?

A: Are your backgrounds JPEG graphic files? Do you need JPEG or can you produce well-dithered GIF graphics? The GIF graphic will load faster. Consider an interlaced GIF (see Chapter 16). Also, consider matching your hexadecimal background color with the canvas of the graphic. That way you can get by with a much physically smaller image, resulting in shorter download times.

CHAPTER SIXTEEN

Utilizing Inline Graphics to Your Advantage

In this chapter, you'll

- ❑ Learn to plan the size of an inline graphic
- ❑ Know when interlaced Graphical Interchange Formats (GIFs) and progressive Joint Picture Expert Groups (JPEGs) are effective
- ❑ Understand the relationship between resolution, file size, and canvas dimensions
- ❑ Use Hypertext Markup Language (HTML) to display low-resolution thumbnail placeholders and be able to create your own
- ❑ Understand how helper applications augment your browser

Inline graphics are the heart of Web pages. They may take the form of a photo, line drawing, chart, or graph. Because they are seen when the page loads, their ability to communicate information is more immediate than a graphic linked either to a thumbnail or to a textual reference.

The capability of the Web to display an almost endless page is both a positive and a negative as far as images are concerned. Although the Web isn't constrained by traditional page sizes, you should take care when you plan how information is presented to Web patrons. Unless planned carefully, many of your inline graphics may display partially inside and partially outside your browser window. This means that in order to view the image, a person must constantly scroll up and down until the correct amount of information is displayed in the window. Remember how irritated you became when reading a traditional textbook and you had to flip around to find an illustration because the figure and the text weren't on the same or facing pages? It made you mad, right?

The same can be said about well-designed Web pages. Text and the accompanying graphic are always kept within the reader's field of vision. However, because Web pages are variable both vertically and horizontally, their design can be more difficult. If you always put yourself in the place of your most novice user, you run a better chance of designing for content, not for style.

Planning Ahead to Fit the Page

By now you have a good idea about how a graphic gets on your Web page, and you know several ways to position the graphic and its supporting text the way you want. You've also been hit over the head repeatedly with the fact that all browsers are not created equal. It's difficult, if not almost impossible, to plan for *every* possibility.

NOTE: One of the reasons *intranet* (a Web inside a company or organization) development is an erupting volcano is that with an intranet, Web publications are simplified when everyone has the same hardware and software resources. Intranet may end up being as big as or bigger than the Internet.

The communication quality and visual appeal of a page can be ruined by poor planning. Take, for example, the exhibit of poor planning shown in Figure 16.1. You don't know what options are available, and you have to scroll to find navigation and contact information. Compare this to Figure 16.2. Note that the scrollbar is inactive, meaning that all the page's information is being displayed. This displays better planning and more effective communication—what every Web page designer should aspire to.

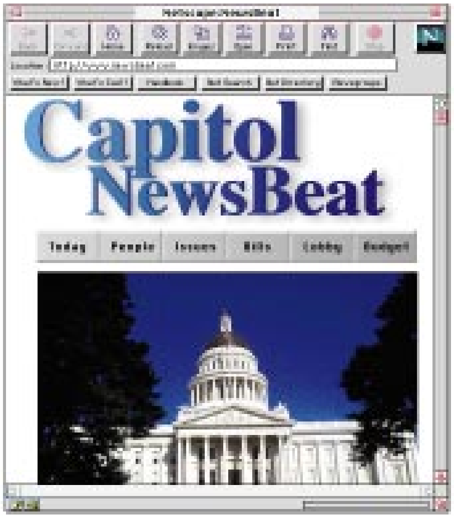


Figure 16.1.
Poor planning can take away from the effectiveness of an inline graphic.

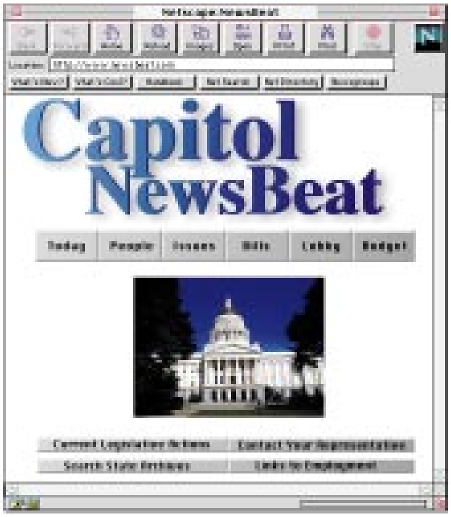


Figure 16.2.
A better plan includes resizing the inline graphic so that important information is displayed on one screen.

Anticipating the Need for Interlacing GIFs

You're a good designer and you always attempt to create the smallest, most efficient graphic possible, which assures short download times. Right?

But occasionally, you may need to use a larger graphic (50KB and above). Rather than making the user wait until the entire image has been downloaded to their computer before beginning the display (which may take between a minute and several minutes), the technique called *interlacing* begins displaying ⅛ of the graphic's final resolution and continues until full resolution is achieved. Figure 16.4 shows a graphic as it is displayed in increasing interlaced resolution.

Once the client sees the graphic, he can make a decision to either continue or stop the download. Considerate, no? Some Web designers interlace *every* GIF graphic, achieving a sort of cheap animation technique. Reserve interlacing for graphics that need it.

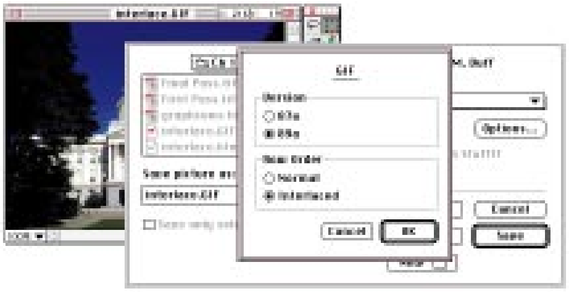
An alternative to interlacing is to use the `<LOWSRC>` tag. If your target browser recognizes this tag, it's an HTML option to interlacing. `LOWSRC` works just like the HTML `<IMG SRC>` tag except that the image (with lower resolution but the same physical size) is loaded with the text and then replaced with the higher resolution version. The client can read the page as the `<IMG SRC>` graphic loads. If done effectively, the reader isn't really aware that other images are being loaded.

TASK

Making an Interlaced GIF

Interlacing a GIF graphic is easy and straightforward if you have the correct utility. To create an interlaced GIF file, follow these steps:

1. Create your GIF file in normal fashion. You may decide to use a slightly larger, higher-resolution graphic knowing that interlacing will be done.
2. If your graphic program includes an option for saving in interlaced GIF format, do this. Or, this may be handled as a plug-in.
3. If your graphic program doesn't have interlacing capabilities, open the file in a program such as *Graphic Converter* for the Macintosh or *LV Pro* for Windows.
4. Save the file with the interlacing option turned on (see Figure 16.3).
5. Call for the graphic from your HTML file in the normal way, using the `<IMG SRC>` or `<BACKGROUND=>` tags.

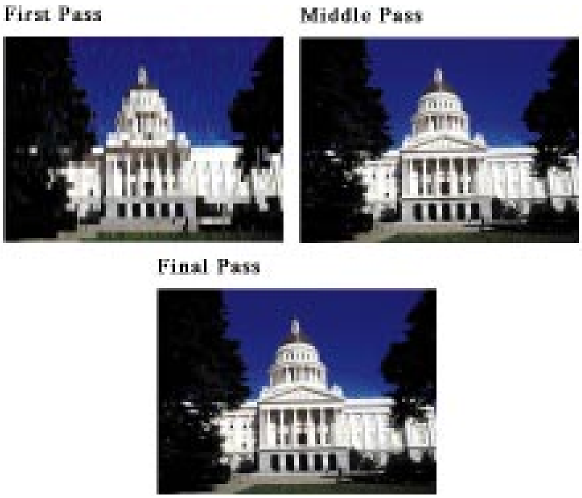


GIF

Version
○ 87a
● 89a

Scan Order
○ Normal
● Interlaced

Figure 16.3.
The interlacing option in Graphic Converter.



First Pass

Middle Pass

Final Pass

Figure 16.4.
An interlaced graphic in its beginning, middle, and end display.

Aileen Crowley, writing for *PC WEEK* magazine, suggests keeping full-page graphics to 40KB and reusing graphics as often as possible. Sounds like she's been reading our mail!

Understanding When to Size the Graphic

You are probably wondering why you would want to size a graphic in your image editing program rather than use `HEIGHT` and `WIDTH` parameters when loading the image. First, it takes a little effort to determine the height and width in pixels, especially if you don't know the graphic's original dimensions. Second, it is unfair to place the burden of resizing on the user's browser. The user may be on a 9,600 baud line and may have enough trouble just getting the graphic from the Web server, let alone trying to remap the image to his browser. It is just the best practice to presize the graphic.

One exception to this is when you reuse a graphic many times within a Web site. If you download the file each time it is requested because it's a different size, you violate the download once, reuse many rule. So it's a trade-off. One suggestion is to keep the original image at full scale and in its native format. Resize the image at 75 percent, 50 percent, 25 percent, and 10 percent using parallel filenames. Figure 16.5 compares the characteristics of two files, one at 100 percent and another at 50 percent.

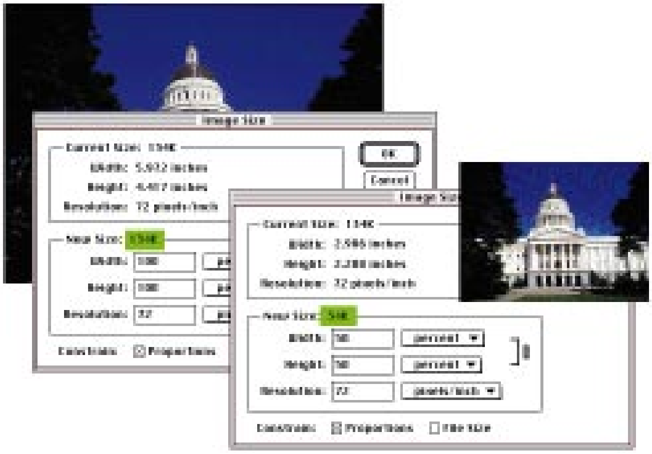


Image Size

Current Size: 134K
Width: 5.972 inches
Height: 4.417 inches
Resolution: 72 pixels/inch

New Size: 134K
Width: 100
Height: 100
Resolution: 72

Constraints: ☒ Proportions

Image Size

Current Size: 134K
Width: 2.986 inches
Height: 2.208 inches
Resolution: 72 pixels/inch

New Size: 34K
Width: 50 percent
Height: 50 percent
Resolution: 72 pixels/inch

Constraints: ☒ Proportions □ File Size

Figure 16.5.
The relationship between canvas size and resolution with constraints.

TASK

Resizing a Graphic

It is unusual to find graphics at the perfect size you want to put onto your Web page. They will either be too large or too small. Too large is better because in reducing you actually increase resolution. Too small is not good because in enlarging you decrease resolution. To resize a large graphic, follow these steps:

1. Open the graphic into an image editor such as Photoshop.
2. Choose Image | Image Size and enter your new size in either the height or width fields.

3. Keep proportions constant so that you can enter either height or width, whichever is the critical dimension.
4. Limit resolution to 72 pixels/inch so that the image will map correctly to a 72 pixel/inch monitor.
5. Click OK. The image will be resized (scaled) and resampled (resolution adjusted to 72 pixels/inch). Because file size was not constrained, file size should have been reduced.

Figure 16.6 shows an original JPEG graphic weighing in at 884KB at a beefy 8.8×6.5 inches—physically too large and in an inappropriate format for an inline graphic. Note what has happened in Figure 16.7. By saving the file in GIF format and resizing to an appropriate 2.5×1.83, the file size has dropped to a svelte 24KB. Now that's an inline graphic!

TIP: Use filenames that let you easily determine the content, scale, and format of your graphics. Can you tell what `cap100.gif`, `cap50.gif`, and `cap25.gif` are?

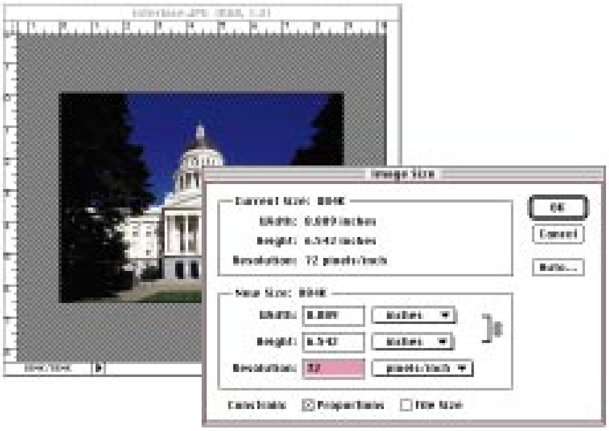


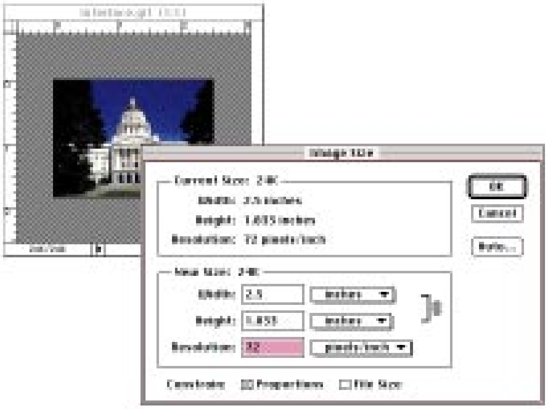
Image Size

Current Size: 884K
Width: 8.889 inches
Height: 6.542 inches
Resolution: 72 pixels/inch

New Size: 884K
Width: 8.889 inches
Height: 6.542 inches
Resolution: 72 pixels/inch

Constrain: ☒ Proportions ☐ File Size

Figure 16.6.
Our JPEG graphic in its full size.



Current Size: 24K
Width: 2.5 inches
Height: 1.655 inches
Resolution: 72 pixels/inch

New Size: 24K
Width: 2.5 inches
Height: 1.655 inches
Resolution: 72 pixels/inch

Constrain: ☒ Proportions ☐ File Size

Figure 16.7.
Our JPEG graphic converted to GIF and reduced for page display.

Answering the Great Question of Transparency

You can solve the great transparency problem by always creating your graphics on a white canvas and displaying them on a white Web page. Wow, what a boring world it would be! You *must* be able to create transparent background graphics because you probably won't know ahead of time the color of *every* background on which it will be displayed.

Fortunately, with the help of any of several little utilities this problem is easily surmounted. Plus, almost all new releases of raster editing software include transparency as an option.

The key in transparency is planning. Figure 16.8 shows a graphic which has interior colors the same hue as the background. When the background is turned transparent, so are the interior pixels, leaving holes in your graphic. The solution is to make the background pixels a color that doesn't appear in the body of your graphic. Figure 16.9 shows the same graphic with a uniquely colored background and the result of transparency.

If the graphic has an anti-alias edge (halo) between its exterior and the background, the fringe will remain after transparency because only one hue can be made transparent. The solution? Either remove the anti-aliased pixels and turn them the same color as the object, or load the graphic on a background having the hexadecimal specification of the graphic's background canvas. If you choose this last solution, you didn't need to make the background transparent in the first place! Figure 16.10 shows our graphic with its mismatched anti-alias fringe.

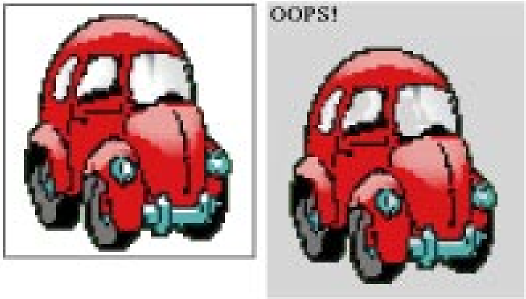


Figure 16.8.
Transparency without concern for interior colors.

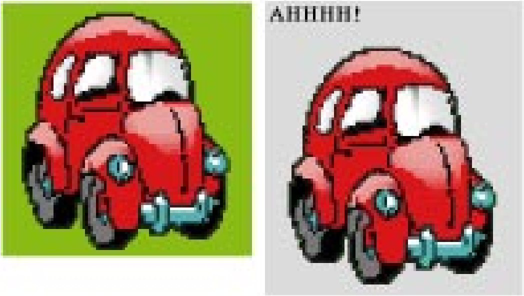


Figure 16.9.
Transparency that keeps interior colors.

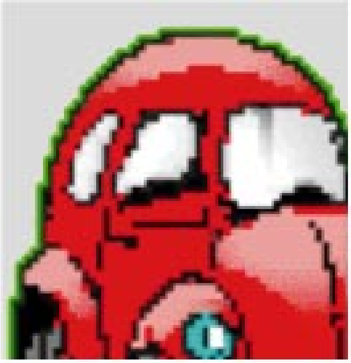


Figure 16.10.
A transparent GIF with mismatched anti-alias.

TASK

Making a Transparent GIF

Once your graphic is the right size and in GIF format, making the background transparent is a simple process. This description assumes that your raster editor doesn't have a transparency option and that you have to use a utility to get the job done. Figures 16.11 through 16.13 show the development of a transparent GIF. To create a transparent GIF graphic, follow these steps:

1. Plan ahead and make the background of your GIF file a unique color. This is important because the GIF format will make only one color transparent. To make life simple, a unique color such as a bright green is easy to strip out as the transparent color.
2. Open the GIF file in a program such as Aaron Gile's Transparency. The example in Figure 16.11 uses a unique background color that will preserve interior detail.
3. Click and hold the cursor on a background pixel. A palette appears with that color selected.
4. Release the mouse button and all pixels of that hue are made transparent (see Figure 16.12).
5. Save the file with another name to preserve the source GIF file.

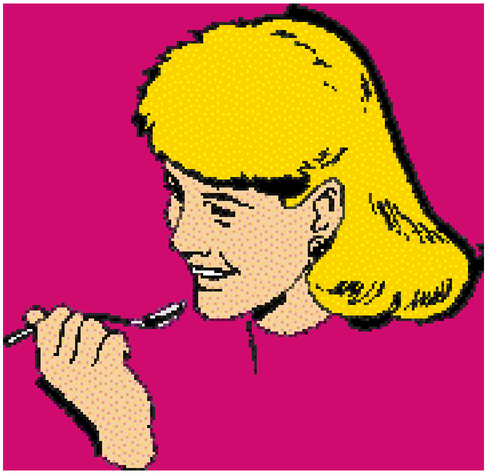


Figure 16.11.
The GIF graphic ready for action.

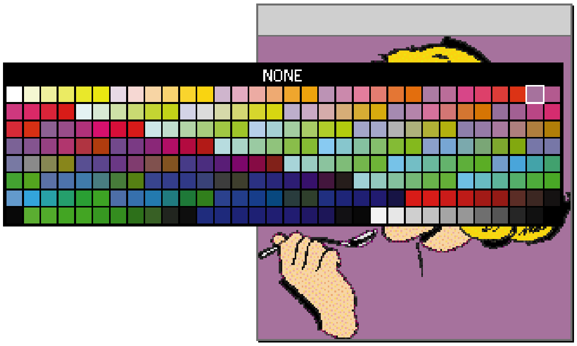


Figure 16.12.
Identification of background color.

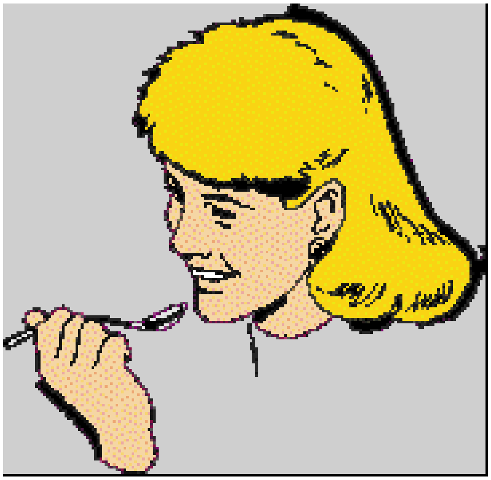


Figure 16.13.
The result of transparency operation.

TIP: For best results, make your graphic transparent before interlacing and always test against various backgrounds.

Progressive JPEG Files

BoxTop Software (`http://www.aris.com/boxtop/ProJPEG/`) offers a Macintosh Photoshop–compatible plug-in that does for JPEG images what interlacing does for GIFs. ProJPEG does more than just bring a JPEG graphic into progressively increasing resolution. It also provides more control over JPEG lossy compression with the benefit of smaller files sizes than you would expect out of your raster editor.

You would want to use the progressive JPEG format when the image fidelity of JPEG is required and the file is larger than roughly 40KB. Or take the safe route—interlace all your GIFs and make all your JEPGs progressive and you'll never be accused of wasting a surfer's time!

Thumbnails to External Graphics

Because the default size page you'll be working on is roughly 400×300 and 72 dpi, almost all images you display will be thumbnails to some degree. For most purposes, a well-dithered GIF graphic accomplishes all intended communication goals.

Occasionally, you'll want to keep the real image on a separate page or in a file format that the client's browser won't burp (fail to load) on if it can't display that format. Use a thumbnail graphic for any of the following reasons:

- To give the client the *option* of viewing the graphic rather than forcing him to browse through it.
- To shorten overall download times.
- To make graphic resources available for viewing or downloading that the occasional client wouldn't normally have the ability to access.

Figure 16.14 shows a graphic in its full glory and in a low resolution thumbnail. The TIFF file is 24-bit, full-screen 320×240 and 150 dpi. The thumbnail is 80×60 at 72 dpi. Note the large difference in file size.

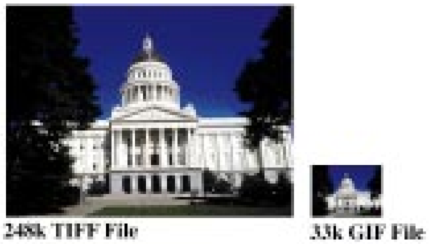


Figure 16.14. *A thumbnail and its referenced graphic. Note the differences in file size.*

Making a Thumbnail of Your Graphic

Always start with a graphic that has as much information as possible to make your thumbnail. You'll be sampling the image down both in resolution and in bit depth. To create a thumbnail graphic, follow these steps:

1. Open the original image in Photoshop or your favorite image editor.
2. Choose Image | Image Size. Leave the proportions constraint on.

3. Switch the measuring system to pixels and enter either width or height. If you analyze the graphic, you'll see that the larger dimension controls its resizing.
4. Enter 72 as the resolution.
5. Click OK.
6. Choose Mode and change to Indexed Color. Save the thumbnail in GIF format.

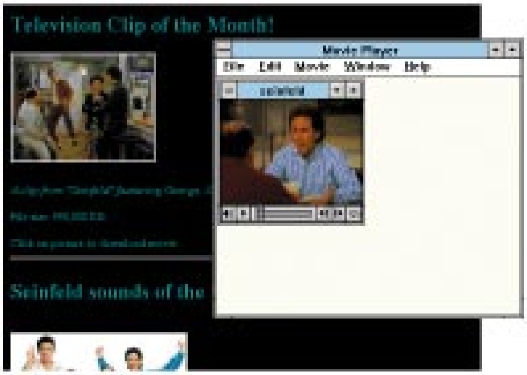
TIP: You might get by with an even smaller thumbnail and scale it up in HTML code. This makes for a super small file and effectively reduces the dpi below 72. The penalty you pay in terms of download time with scaling is often offset by the smaller file size.

Expecting Helper Applications?

By extensively using GIF and JPEG images you can ensure the greatest readability for your clients. However, graphic files come in a large number of formats, most of which are not directly supported by Internet browsers.

TIP: Great Web sites include links to resources that potential clients might not have. You can include these with an `<A HREF>` structure that points to a specific word in another site's HTML code. Many of these resources are free. Others require registration and are active for a specified length of time.

Your browser may have the capability to associate files of certain types with applications on your hard disk that are capable of viewing them. For example, your browser may not be able to display a JPEG graphic or a QuickTime movie directly on the page. Inform your browser that these helper applications are available. When a file of that type is loaded, control is switched from your browser to the helper application. Figure 16.15 shows `http://members.aol.com VideoLinks/index.html` with a QuickTime movie file open under Movie Player.



Television Clip of the Month!

Seinfeld sounds of the

Figure 16.15.
A helper application displaying a digital movie in a separate window at `http://www2.cybernex.net/~mps/VideoLinks/index.html`.

Next Steps

Now with all this information about how to get great graphics on your Web pages, you can look at these chapters:

- ❏ To review sources of graphics for the Web, review Chapter 3, "Creating Cool Graphics for the Web."
- ❏ To learn techniques for producing effective backgrounds, see Chapter 15, "Designing Backgrounds That Make Sense."
- ❏ To see a portfolio of the pieces making up Web sites, see Chapter 17, "A Portfolio of Graphics from the Web."

Q&A

Q: I don't know how big a graphic will be since I haven't designed my pages yet. What size should I save them in?

A: You know you won't need more than 640×480 pixels. You'll probably want to capture as many colors as possible (24 bits) so that when you reduce the image both in size and in bit depth, your raster editor (or browser if you make it do the work) will have the most visual information to work with.

Q: I don't have a program for interlacing my GIF files. Where can I find one?

A: Try `http://www.group42.com/webimage.htm` for a commercial product or `http://www.aris.com/boxtop/PhotoGIF` for a shareware product.

Q: It's me again! How about resources for transparency?

A: Go for `http://www.homepages.com/tools/`, or better yet, use `http://www.inf.fu-berlin.de/~leitner/trans/` for over-the-Web transparencies.

Q: When I resize my graphic, my dpi jumps around. What's happening?

A: You have file size constraint on. As you enlarge your canvas, the dpi will drop. When you shrink the canvas, the dpi will climb.

Q: I want to include animation and other cool things on my Web pages. How can I make sure my clients have the helper applications or plug-ins?

A: Provide information on your splash page (or even a pre-splash page) that says your site has these features, and provide the client means to link to sites that provide these resources.

CHAPTER SEVENTEEN

A Portfolio of Graphics from the Web

In this chapter, you'll

- ❑ See examples of backgrounds and tiles that change the look of your Web pages
- ❑ Look at montage graphics that combine several images into one graphic that can be used under an image map
- ❑ See buttons, buttons, and more buttons so you plan your own controls
- ❑ Look at button bars and arrange options for easy identification
- ❑ Study varied graphical devices for navigating inside and outside your Web site
- ❑ See graphics and text combined into icons and logos
- ❑ Look at little spot graphics that add interest to your pages
- ❑ See examples of graphic files used as horizontal rules
- ❑ Notice jump lists where linked text and inline graphics are combined for navigation
- ❑ Study pages designed to combine Hypertext Markup Language (HTML) text and graphics using table formatting

There's nothing like seeing examples of great graphics to spur your creativity. The following pages contain a portfolio showing the range of graphics currently found on the Web. Each example is accompanied by its Web address so you can go out and look at it in its true environs.

This portfolio is reproduced at screen resolution so you can see the raster techniques and dithering patterns. We think you will get a better idea of your own graphics if you see examples, warts and all.

The Web represents a dynamic, fluid, and evolving publication environment. The authors acknowledge that the best sites are constantly changing and that the graphics used today might not be the graphics used tomorrow. Go ahead and visit sites of interest, but expect the following:

- ❑ Site uniform resource locator (URL) names may change as companies become more savvy to the importance of matching a URL with their company name or product. What used to be found at `http://www.`*`product`*`.com` might be found at `http://www.`*`company`*`.com`.

- The site simply doesn't exist anymore. Maybe it wasn't unauthorized. Maybe it wasn't profitable. No matter which, it's gone.
- Server names may change due to competition among Internet service providers. What used to be found at `http://www.`*`company`*`.com` might be now be found at `http://aol.com`.
- Backgrounds may change or disappear altogether. In version 2.0 of a company's Web site, readability might be more important than visual appeal.
- JPEG or GIF graphics might be replaced by video or animations, necessitating a newer version of your browser and helper applications. Or what used to be in a table is now in an image map.

Pages of the portfolio are arranged in a somewhat logical order. That is, we start with backgrounds, tiles, and textures, add montage images, buttons, button bars, directional icons, graphic text, and finally text layout.

You'll find the address for each site below its graphic. Use these URLs with the reservations previously listed. You might want to rapidly peruse some of these examples by editing the URL line in your browser. For example, I go to `http://www.yahoo.com` whenever my browser starts up. By editing the address after `http://www.`, I can quickly jump to the various sites.

Along with the URL for each portfolio entry, we have referenced the subject back to specific sections of this book so you can flip back and see how to create the graphic. Enjoy!

Backgrounds

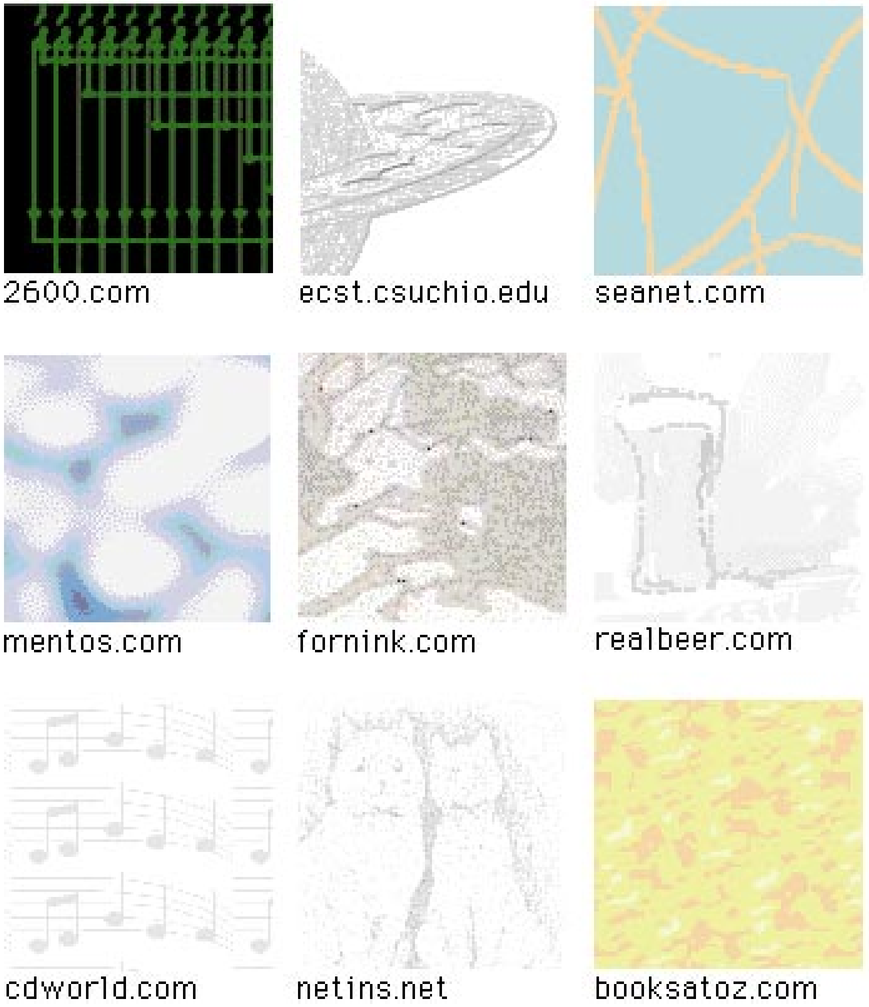
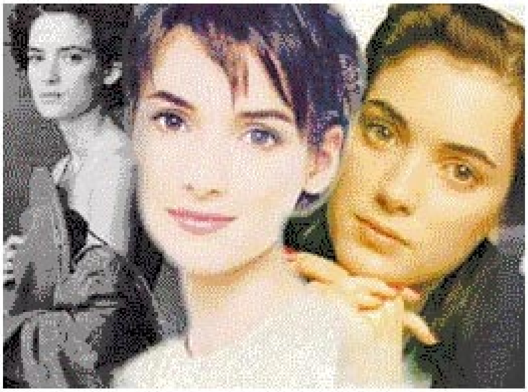


Figure 17.1.
Background textures.

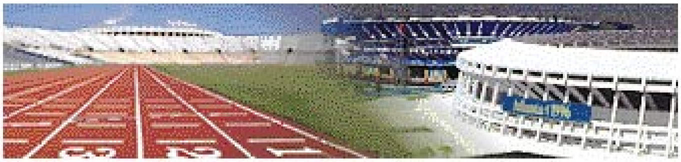
Reference: Chapter 15, "Designing Backgrounds That Make Sense."

Montage Graphics

Figure 17.2. *Montage graphics suitable for image maps.*

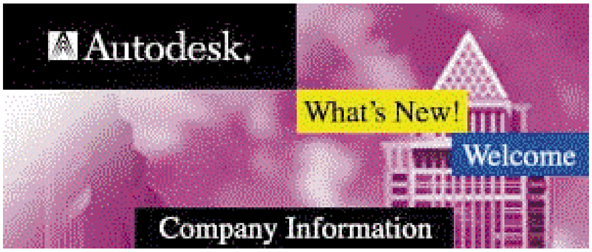


auburn.edu/~harshec/WWW/Winona

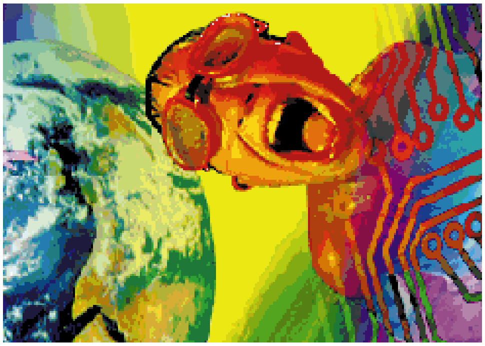


atlanta.olympics.org

Figure 17.3. *Additional examples of montage graphics.*



autodesk.com



ucsu.colorado.edu/~adamsjr

Reference: Chapter 15.

Buttons

Figure 17.4. *Buttons used on Web pages.*

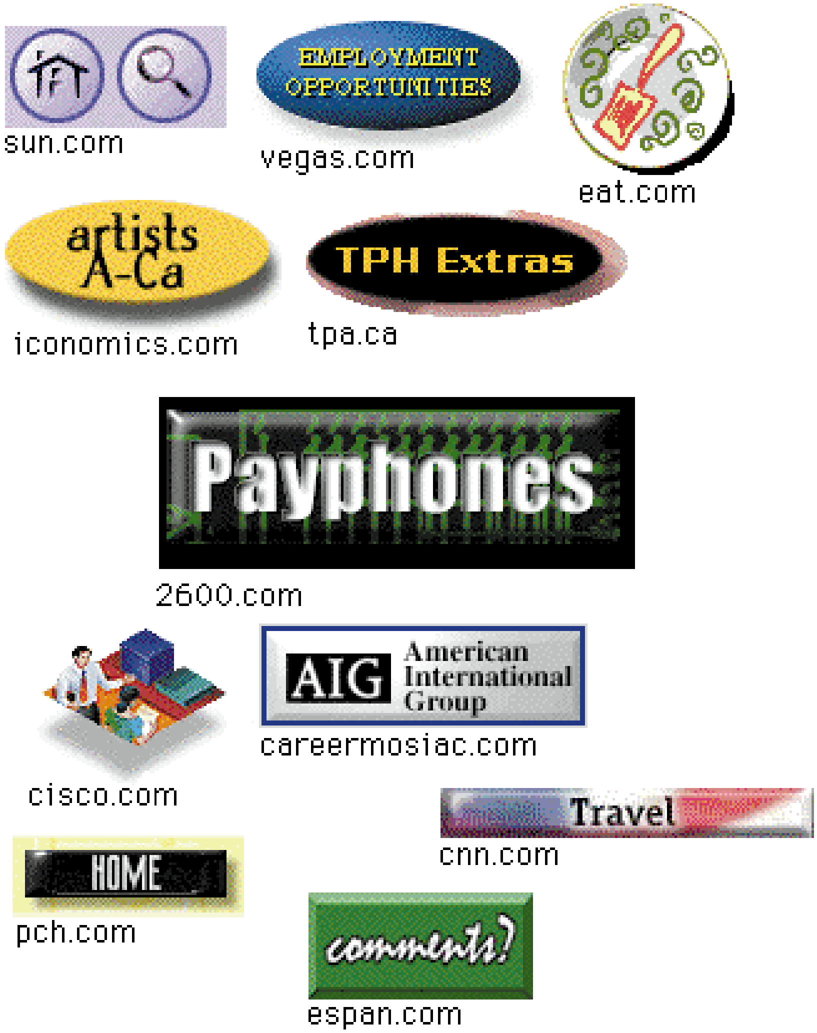
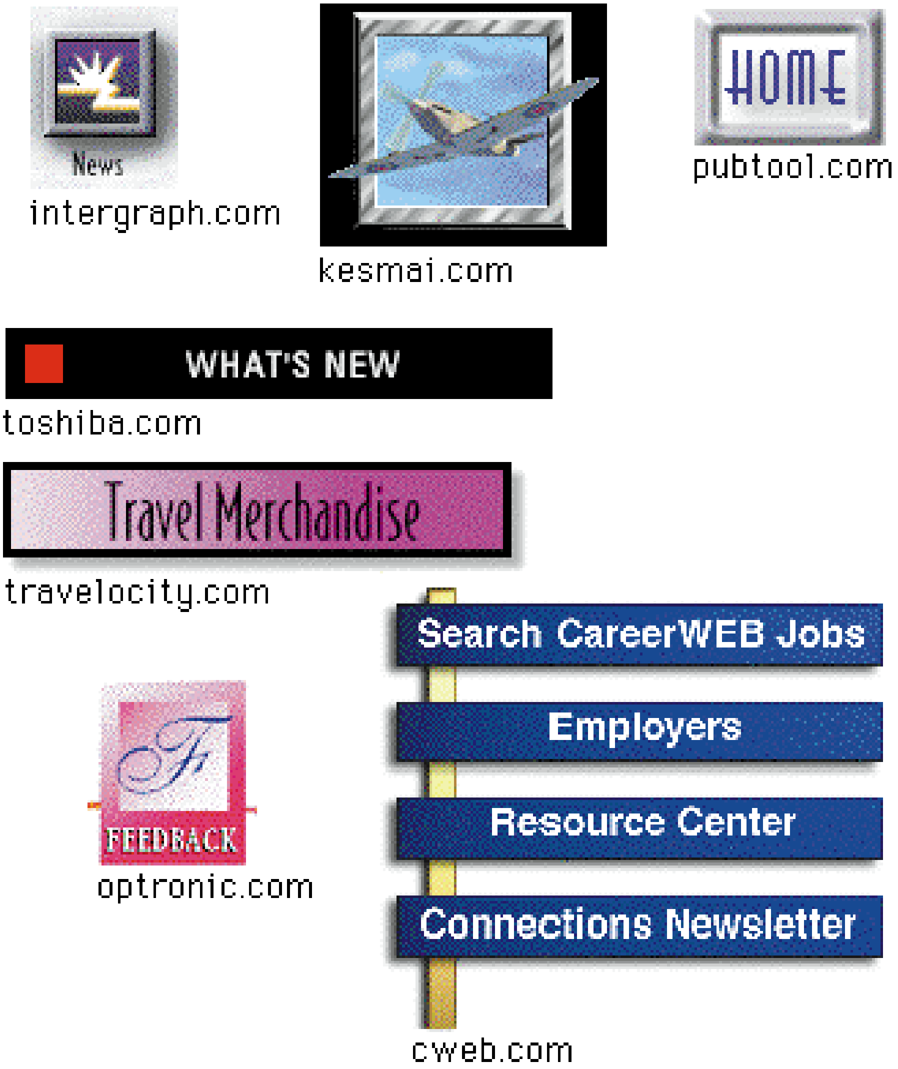


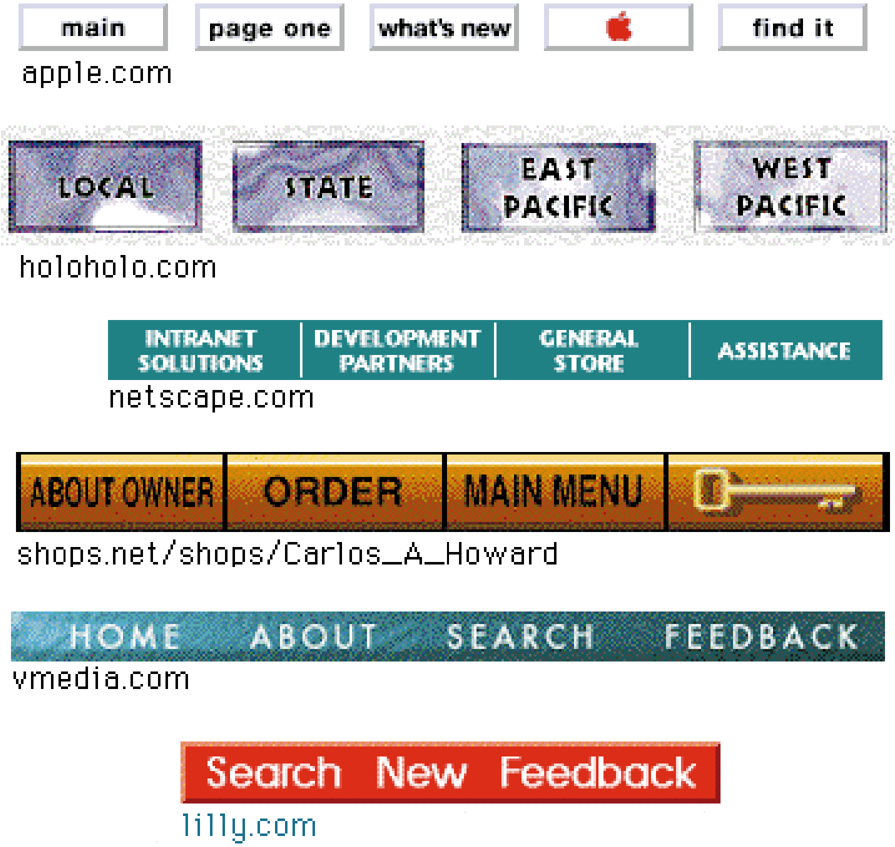
Figure 17.5.
Additional examples of Web buttons.



Reference: Chapter 13, "Designing Buttons That Work."

Button Bars

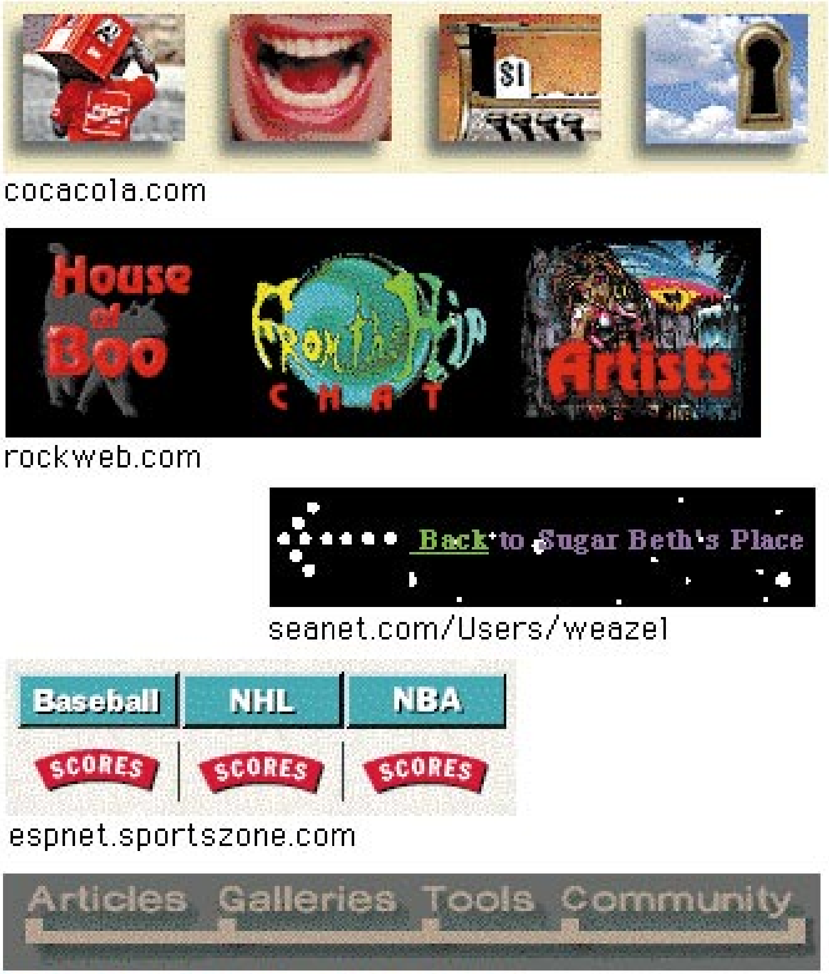
Figure 17.6.
Button bars used for navigation.



Reference: Chapter 13.

Navigation Graphics

Figure 17.7.
Navigation graphics.



cocacola.com

rockweb.com

seanet.com/Users/weazel

espnet.sportszone.com

home.dti.net/shadow/imagesoup

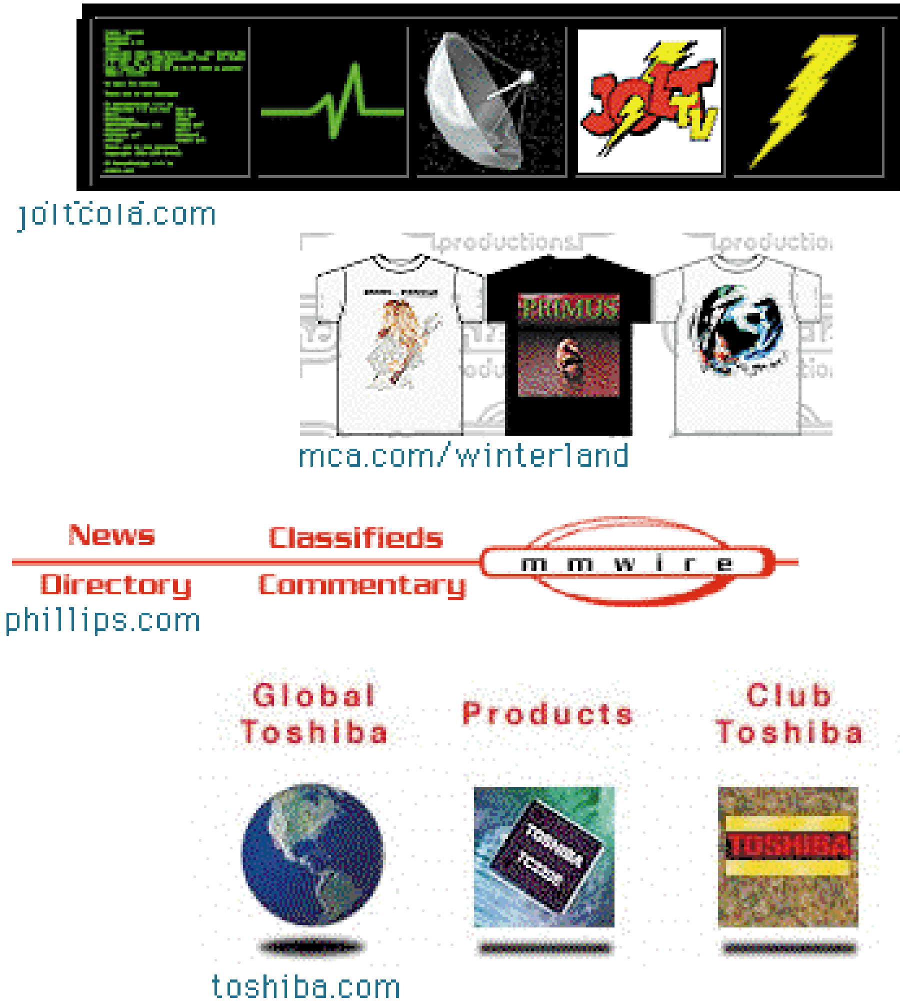
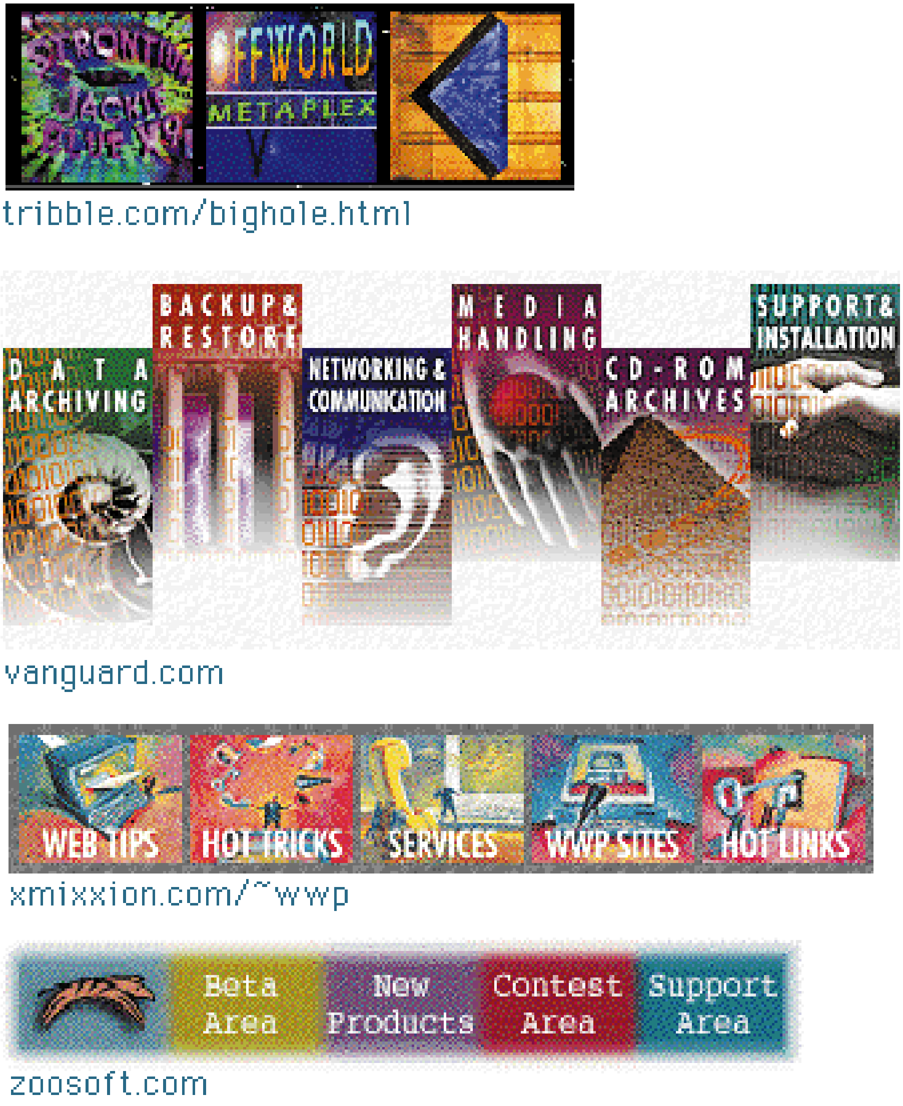


Figure 17.8. *Additional examples of graphics used for navigation.*

Figure 17.9.
Still more navigation graphics.



tribble.com/bighole.html

vanguard.com

xmixxion.com/~wwp

zoosoft.com

Reference: Chapter 9, "Providing Visual Cues to Web Navigation Through Page Design."

Logos and Icons

Figure 17.10.
Web page logos and icons.

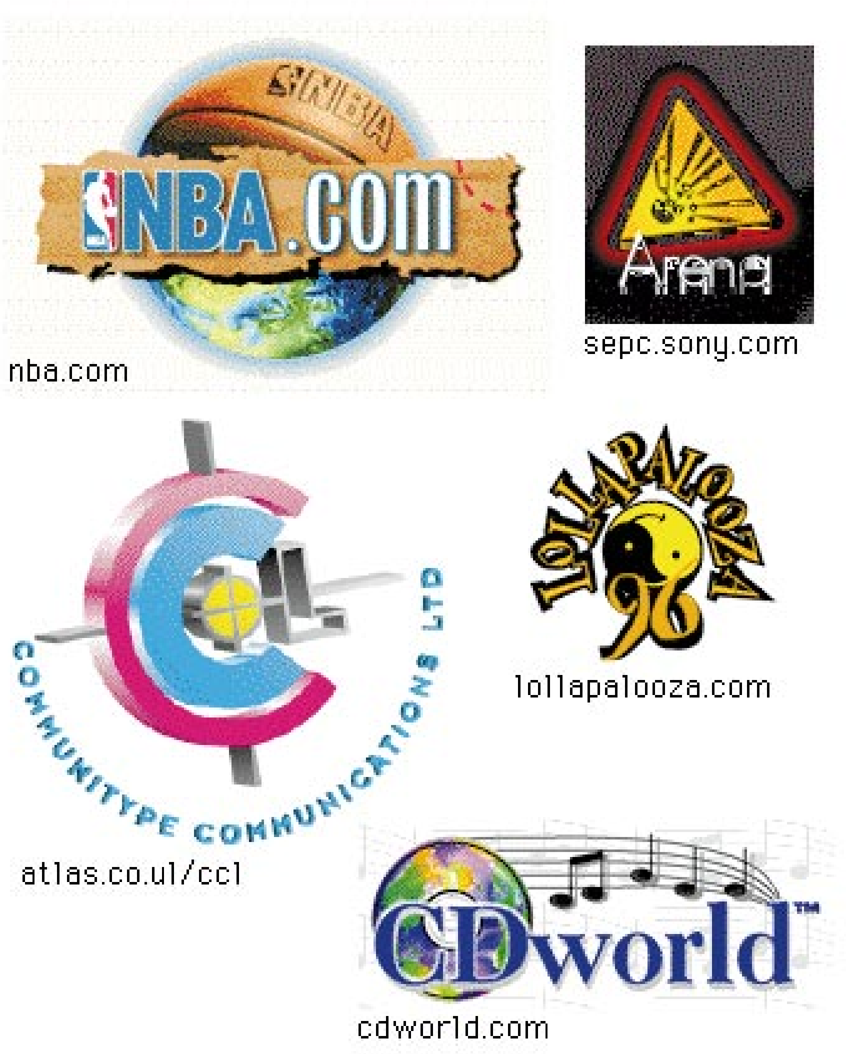
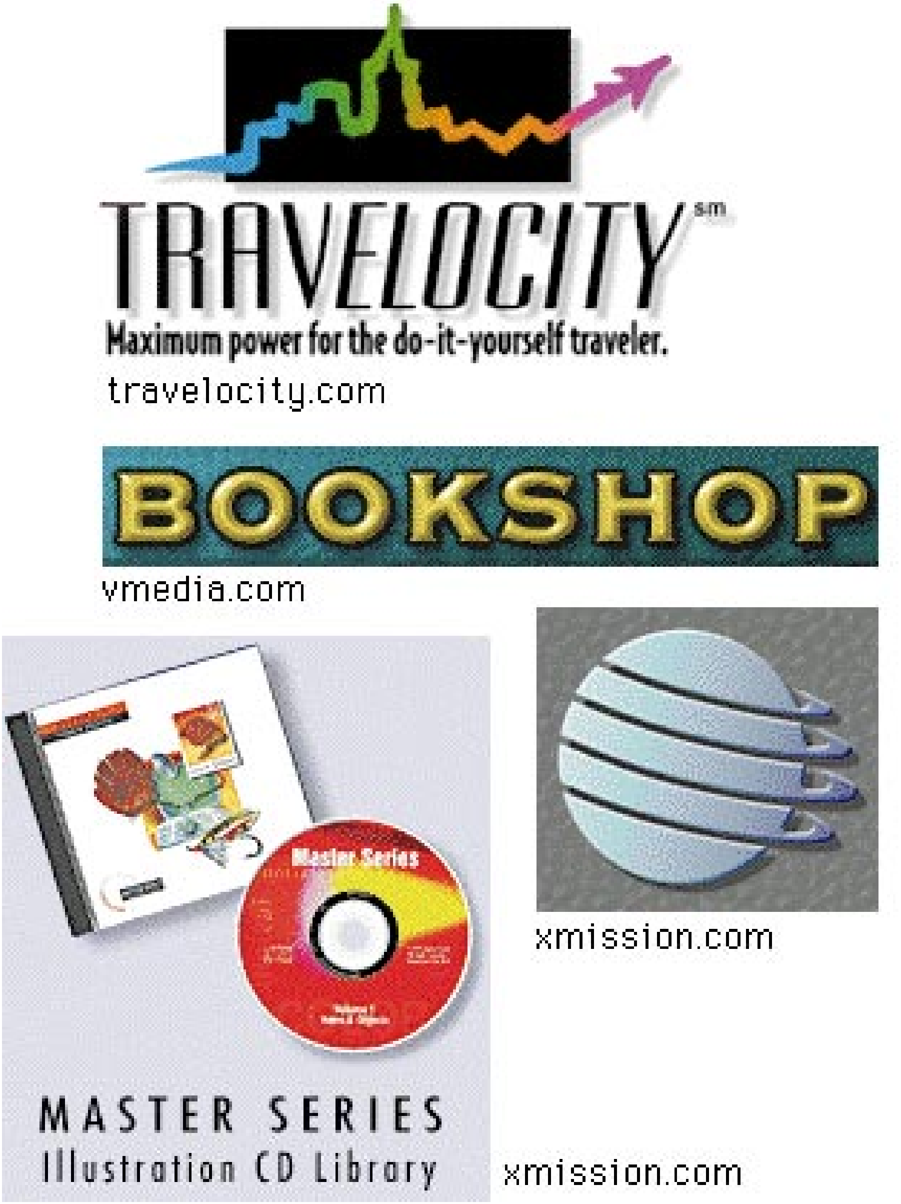


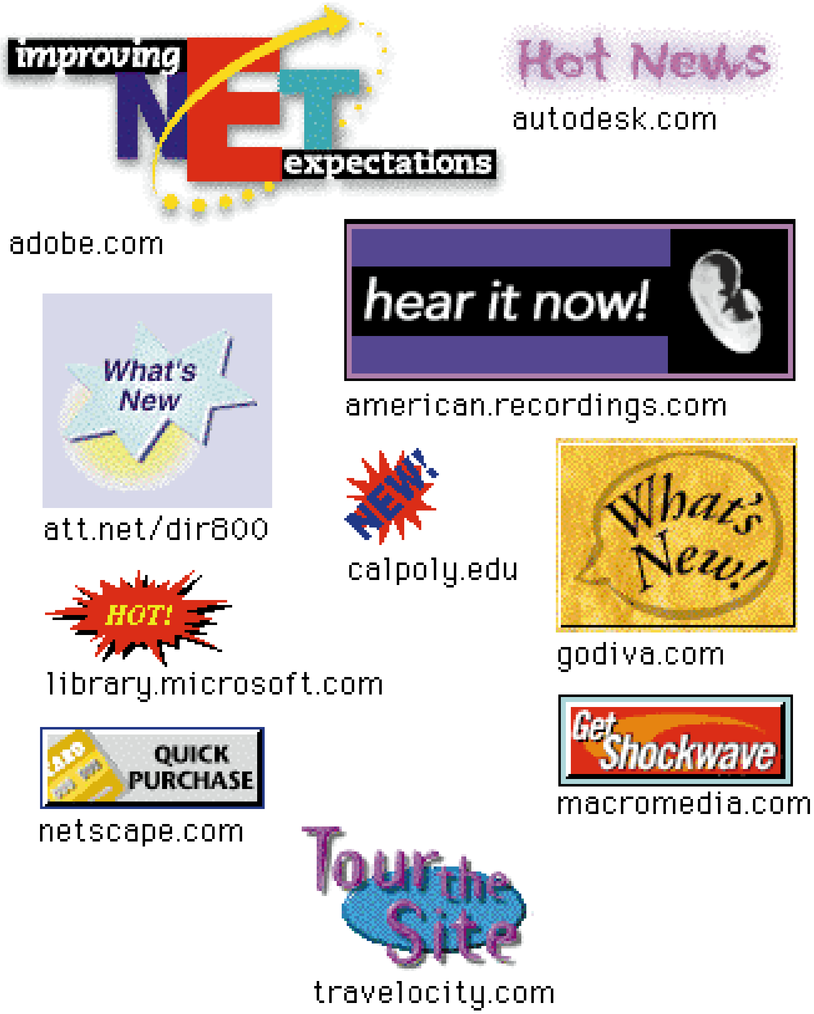
Figure 17.11.
Additional Web page logos and icons.



Reference: Chapter 12, "Using Text in Design."

Eye Catchers

Figure 17.12. *Graphics used to attract your attention.*



References: Chapter 2, "Designing an Effective Web Site," and Chapter 9.

Rules

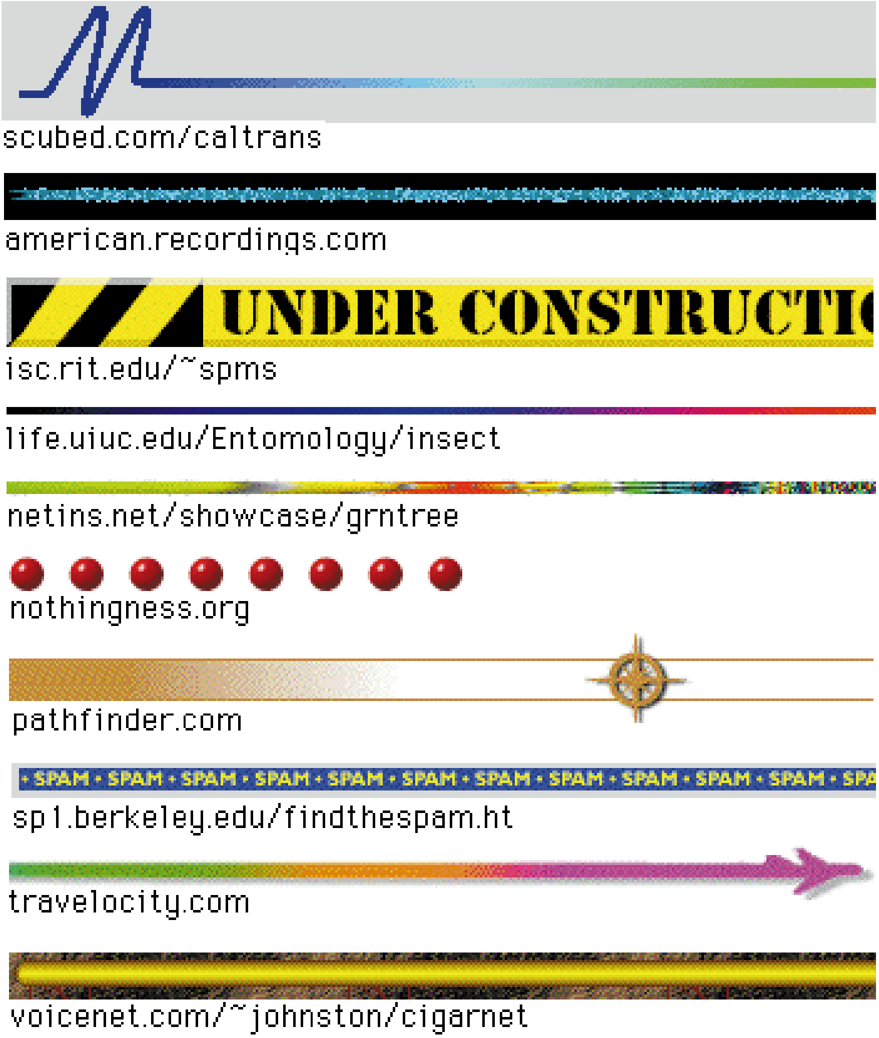
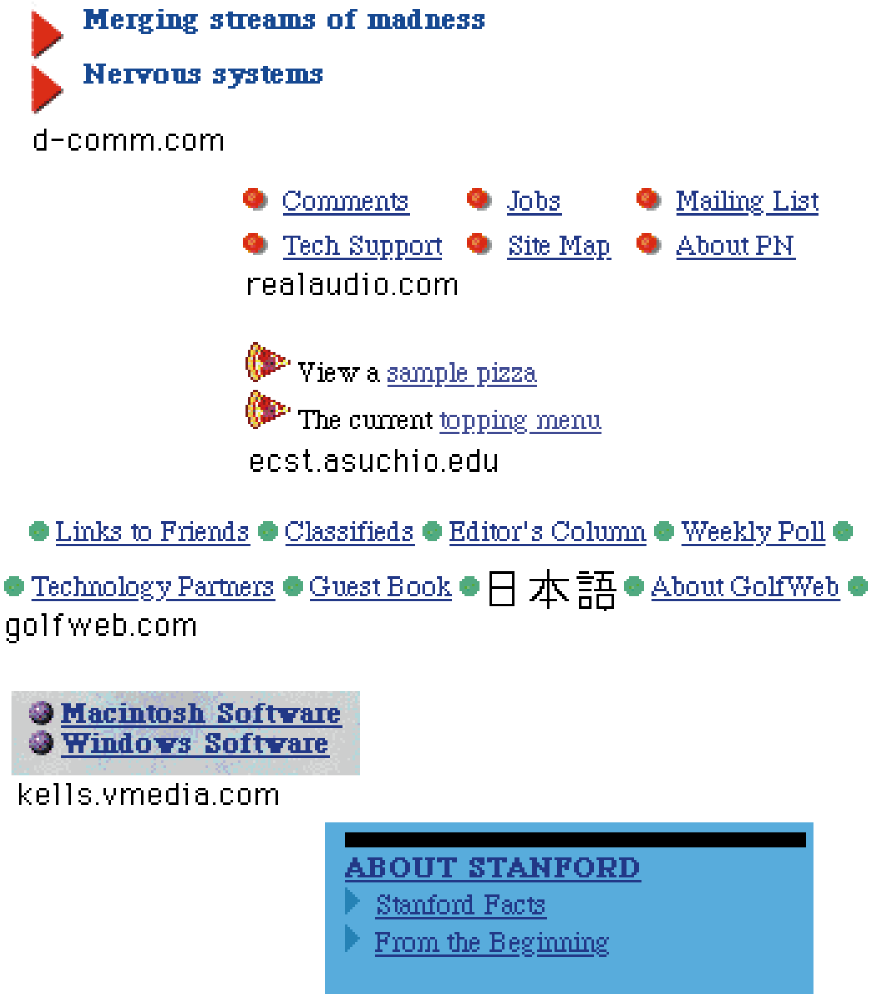

scubed.com/caltrans
american.recordings.com
UNDER CONSTRUCTI
isc.rit.edu/~spms
life.uiuc.edu/Entomology/insect
netins.net/showcase/grntree
nothingness.org
pathfinder.com
• SPAM • SPAM • SPAM • SPAM • SPAM • SPAM • SPAM • SPAM • SPAM • SPAM • SPAM • SPA
sp1.berkeley.edu/findthespam.ht
travelocity.com
voicenet.com/~johnston/cigarnet

Figure 17.13. *Graphics used as horizontal rules to separate the page.*

Reference: Chapter 15.

Jump Lists

Figure 17.14.
Combinations of graphic icons and linked text in the form of a jump list.



Merging streams of madness

Nervous systems

d-comm.com

● Comments ● Jobs ● Mailing List

● Tech Support ● Site Map ● About PN

realaudio.com

View a sample pizza

The current topping menu

ecst.asuchio.edu

● Links to Friends ● Classifieds ● Editor's Column ● Weekly Poll ●

● Technology Partners ● Guest Book ● 日本語 ● About GolfWeb ●

golfweb.com

● Macintosh Software
● Windows Software

kells.vmedia.com

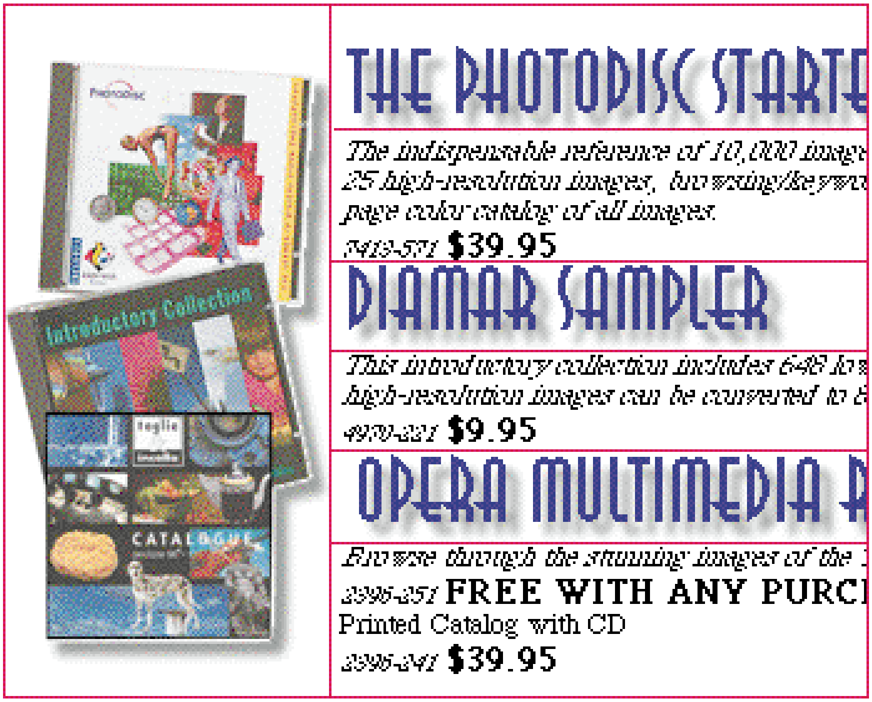
ABOUT STANFORD
Stanford Facts
From the Beginning

stanford.com

Reference: Chapter 8, “Creating a Map of Your Web Site.”

Page Layouts with Text and Graphics Using Tables

Figure 17.15. *Page layout that combines text and graphics inside cells of a table.*



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high-resolution images can be converted to 6

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Printed Catalog with CD

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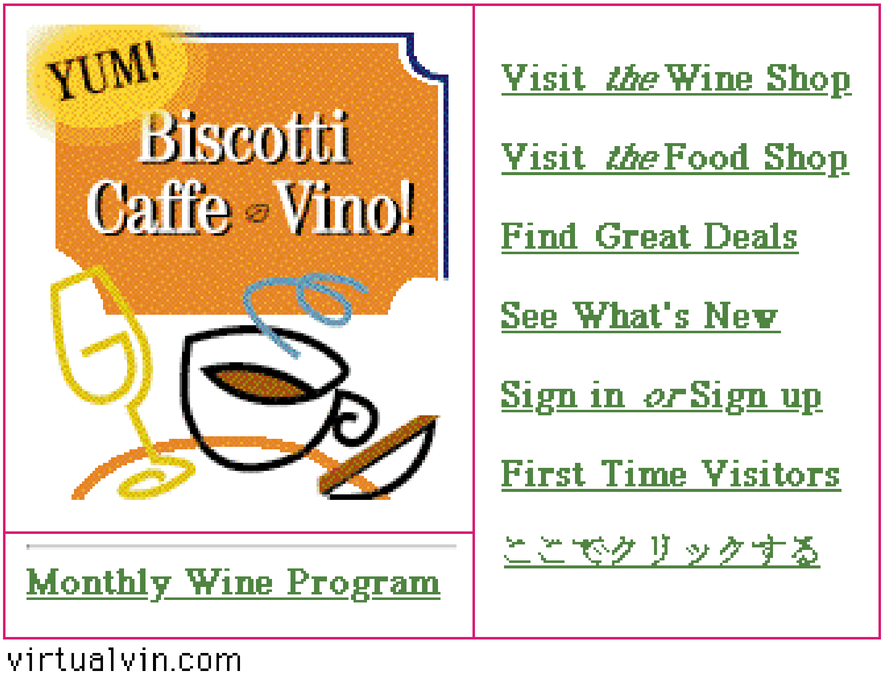
pubtool.com/catalog/software.html

Figure 17.16.
Another example of text and graphics together inside a table.



Monthly Wine Program

Visit *the* Wine Shop

Visit *the* Food Shop

Find Great Deals

See What's New

Sign in *or* Sign up

First Time Visitors

ここでクリックする

virtualvin.com

Reference: Chapter 5, "Using Multimedia and Special Effects on the Web."

PART IV

Additional Graphic Topics

CHAPTER EIGHTEEN

Delivering Animations at Your Web Site

Most of the discussion on Web page design has been focused toward static development—graphics that don't change over time. But there is much more that you can integrate at your site given the appropriate resources. Chapter 5, "Using Multimedia and Special Effects on the Web," touches on some ways of adding various multimedia elements using Shockwave and Java, but this chapter talks about animation and video via the Web, aside from those created with Shockwave and Java.

The biggest difficulty with Web animation and video is the bandwidth issue. In other words, how wide and how fast is the pipe that is feeding your machine? To get an understanding of why it is an issue, you have to look inside the digital animation and video files to understand why the pipe limits what can be delivered efficiently and effectively.

This chapter looks at the basics of animation and video: how they are created. Then it covers the four ways animation and video can be integrated on the Web. These include client pull, server push, streaming via plug-ins, and externally linked files. It also looks at some of the existing digital video formats that can be used with external helper applications.

In this chapter, you'll

- ❑ Learn the difference between animation and video, and learn what creates the visual and audio effect you receive
- ❑ Understand what controls the playback in the four techniques for inclusion on the Web
- ❑ Discover what client pull animations are and how they work
- ❑ Discover what server push animations are and how they work
- ❑ Find out how to stream animation and video files as well as incorporate external digital formats on your page
- ❑ Discover the difference between Video for Windows (AVI), QuickTime (MOV), and Motion Picture Experts Group (MPEG) files
- ❑ Find out how to create video files in common packages
- ❑ Learn what Virtual Reality Modeling Language (VRML) is and how it works

Paying the High Price of Gee-Whiz Spinning Logos

The concern of file size that applies to static graphics also applies to animations and video. Okay, let's get real. Everything that is delivered via the Web is primarily an issue of *file size*—how long it is going to take to download. No matter what you are downloading, much more than a couple hundred kilobytes will leave you wishing you hadn't started.

With animation and video, this presents a significant problem and here's why. Animations are nothing more than a series of singular images that are sewed together. Each image has slightly different iteration of the portrayed elements, which gives the appearance of movement over time. Each additional image or frame adds to the file weight (which translates to user wait). The larger the file, the larger the weight (and wait) no matter how you are accessing the Web. With uncompressed video, the addition of audio approximately doubles the file size. Remember that a 1MB video, animation, or graphic file will take around 10 minutes to download for your dial-up access users with a 14.4 modem. So your first concern is the size of the file, but what affects that size?

With animation and the graphic portion of video, there are three things that affect the digital file size: the image dimensions, the number of frames, and the bit depth of the images, as shown in Figure 18.1.

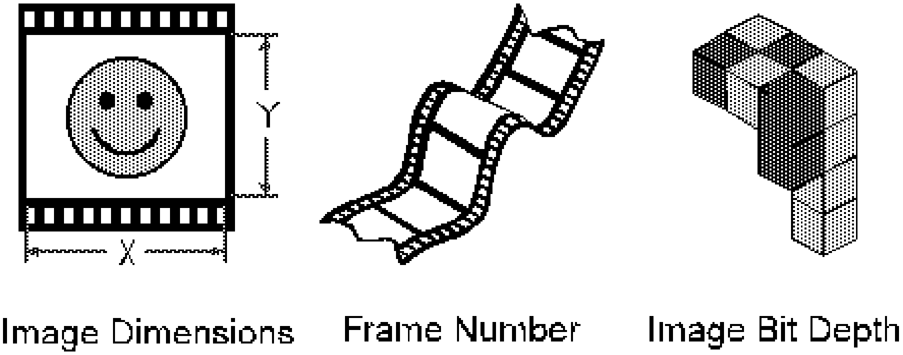


Figure 18.1.
What affects animation and video file size?

The image size is the biggest contributor to the size of the animation or video file. With Web animation or video, developers are always talking about a very small portion of the screen. Surfers don't expect Web animations and video to be much more than 160×120 pixels. Why? Well, let's look at what is known about the graphics you've created thus far.

A single Graphical Interchange Format (GIF) image at 640×480 pixels, even at 256 colors, is approximately 100KB. Multiply that by 50 or so frames, and you've just overshot your allotment by 4900KB. So when you deliver animations or video they must be small (less than or equal to 160×120 pixels). Take a look at Figure 18.2 to see the relationship of sizes.

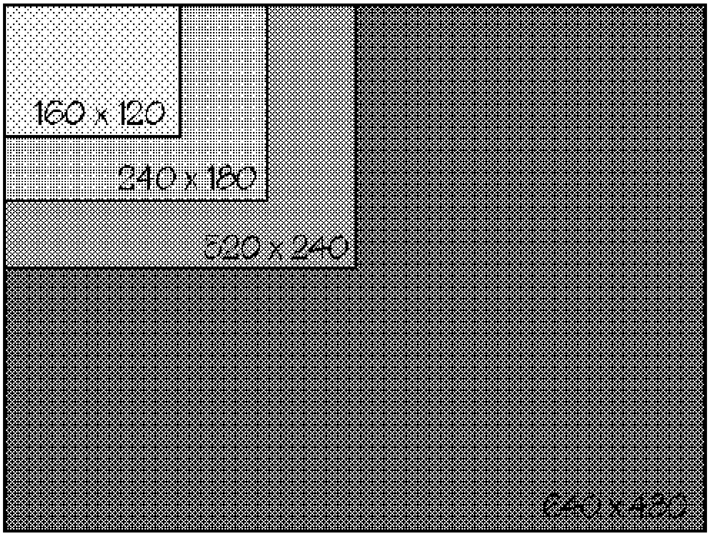


Figure 18.2. *Relationship of sizes compared to a 640×480 window.*

The second concern is the number of frames in the animation or video. The number of frames is like the number of singular images in the file. This can be a significant contributor if there is no compression used in the particular digital file format. Most animations delivered over the Web are less than 200 frames at 160×120, and most video with audio is less than 100 frames at 160×120. This allows you to hit the respective 200KB or 100KB file size parameter.

When discussing frames, you must also consider the rate at which those frames are played back. The rates are significantly less than what you might see on a television or in a video studio. Frame rates in these instances are usually 30 frames per second at 60 fields per second. But what about with Web video? Hardly! Usually Web video, which may play sporadically at the low end, ranges from 5 to 15 frames per second. Remember that you must work within your capable means.

The final contributor to file size is that of image bit depth in the animation or video. Remember that bit depth simply describes how much data is allotted to describe a single instance in the file. The higher the bit depth, the more descriptive the digital sample and the more representative it is of the original analog source.

NOTE: Graphics, video, and audio all have a bit depth. When you scan an image, capture video, or digitally record audio, you are transferring the object from analog to digital. This is a process known as *sampling*.

This sampling process occurs in small pieces. Take an analog chunk, digitally convert it, and digitally write it down. Take another chunk, convert it, write it down, and so on. The frequency with which you take these chunks is called the *sampling rate*. The more frequent the chunks (the higher the sampling rate), the better the digital representation of the analog source.

Once you have a chunk, you have to describe it digitally. The more digital bits you can use to describe each chunk, the more the final digital representation will look or sound like the original analog chunk. Thus, the higher the bit depth and the sampling rate, the more representative the digital image, sound, or video clip are of their analog counterpart.

Note, however, that you're only as strong as your weakest link. A high sampling rate with a low bit depth gives you more frequent samples, but a poor description of those samples. A high bit depth and a low sampling rate give very detailed descriptions of infrequent samples. The best-case scenario is to sample at your highest capability and then digitally resample to the desired deliverable. This is why we suggest working in 24 bit (if possible) and then changing the mode to 8 bit (which is resampling, so to speak).

The maximum bit depth for an animation or video file is dependent on the compression algorithm that is used. Some algorithms allow higher bit depths, which in turn give you better-looking playback. Others restrict you to a particular bit depth per certain circumstances. A later section shows how compression affects these two variables and the file size.

Animation Versus Video

The beginning of this chapter has implied that animation and video are somehow different. Well, in fact, in the minds of most people, they are. Definitions across the board vary so let's give you ours.

Generally, the most distinct difference is that animation has been painstakingly created, either via a three-dimensional model or two-dimensional painting and keying techniques. Video, on the other hand, is captured via a still camera, recorder, or other device and then manipulated. Most often animations require greater time input.

The term *digital video* normally connotes that there is sound involved within the particular file, while animation may or may not have sound. Concerning animation, it usually depends on your chosen file flavor. For example, animations stored in Autodesk's `.flc` (`flic`) format will not have audio, while an animation in `.mov`, `.avi`, or `.mpg` may have.

When discussing animation and video with someone else, it may be a good idea to clarify what you mean when you say animation and video. To many there is a difference (see Figure 18.3).

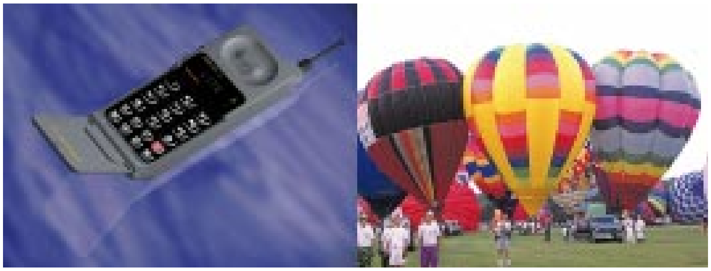


Figure 18.3.
Created animation versus captured video.

Understanding the Four Methods

There are several methods of utilizing animations on the Web. Let's look at each a little closer. Realize that animation and video effects occur either internally in Netscape (or with the help of a plug-in) or externally via a helper application. If you don't have Netscape, this section may not be for you, but you may be able to find plug-ins or nifty features like pull or push for your browser if you look in the right Web spots.

Netscape Animation—Client Pull

Client pull is a feature integrated into Netscape that allows you to program your pages so that one page automatically jumps to another after a specific amount of time—without the intervention of the user. Due to download time, however, client pull barely classifies as animation; it's pretty sporadic. Some would argue that it is not animation, but I have seen some pretty good animated effects pulled off with client pull. Note that client pull is most effective on pages with very few graphics (see Figure 18.4).

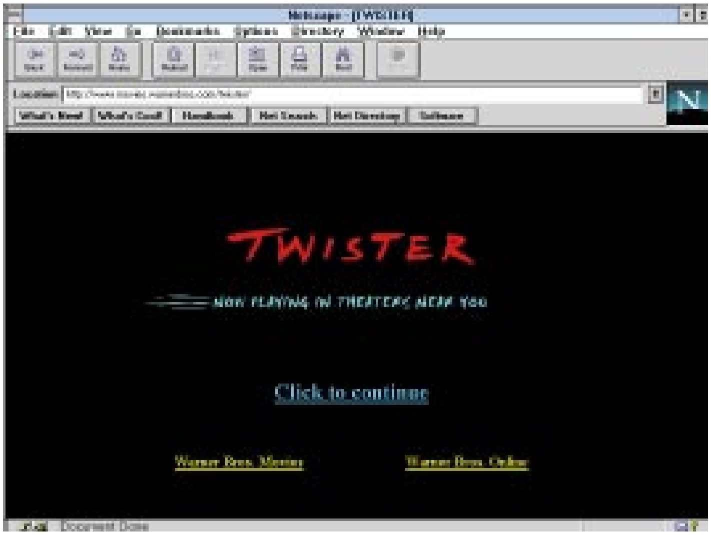

Netscape - [TWISTER]
File Edit View Go Bookmarks Options Directory Window Help
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
TWISTER
NOW PLAYING IN THEATERS NEAR YOU
Click to continue
Warner Bros. Movies
Warner Bros. Online
Document Done

Figure 18.4.
A page that uses client pull (`http://www.movies.warnerbros.com/twister/`*).*

So why use client pull? If it's only good for text pages, why include it in a book about graphics? Well, the idea behind this feature is to allow a quick splash screen to appear when the user first enters your site. It would then send them to the first real page of the site. It was intended to be used much like splash screens that appear when you execute applications like Adobe Photoshop or Premiere (see Figure 18.5). Keep in mind, nonetheless, that it will only work in Netscape. If a browser other than Netscape sees the code, it will ignore it, so make sure there's an escape link on the page. If not, non-Netscape users will be stopped dead in their tracks.

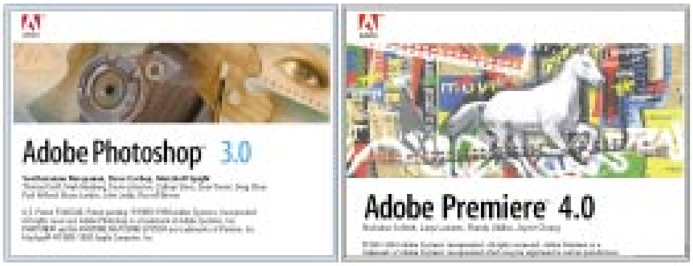


Figure 18.5.
The splash screens of some common applications.

Client pull is nice if used sparingly. Users can become uncomfortable if they lose control of their browser for extended periods of time—one of our major interface design concerns. Several pages strewn together via client pull is a real pain, not to mention having to backtrack through those pages.

Although it can be used effectively, client pull does have disadvantages. Each automatic jump from one page to another requires downloading of the new page. During this time you may notice a momentary flash of browser gray. Depending on the access route and speed of the machine, the flash length varies (see Figure 18.6). Keep this in mind if you decide to use this technique.

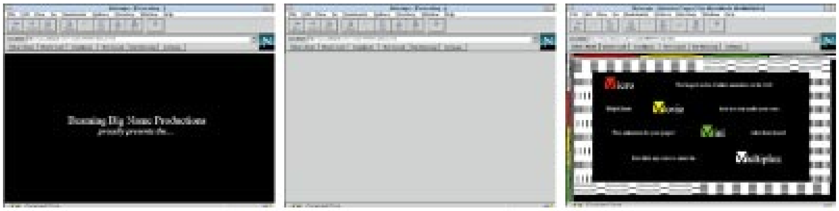


Figure 18.6.
Client pull causes the screen to flash gray.

The code for client pull is relatively simple and does not require any additional software. The information for client pull is stored in the `<HEAD>` tag at the beginning of the Hypertext Markup Language (HTML) code. Basically, a simple client pull would look like this:

```
<HTML>
<HEAD>
<META HTTP-EQUIV="Refresh" CONTENT="1;
➥URL=http://my.site.com/my_real_1st_page.html">
</HEAD>
<IMG SRC="mypict1.gif"
</HTML>
```

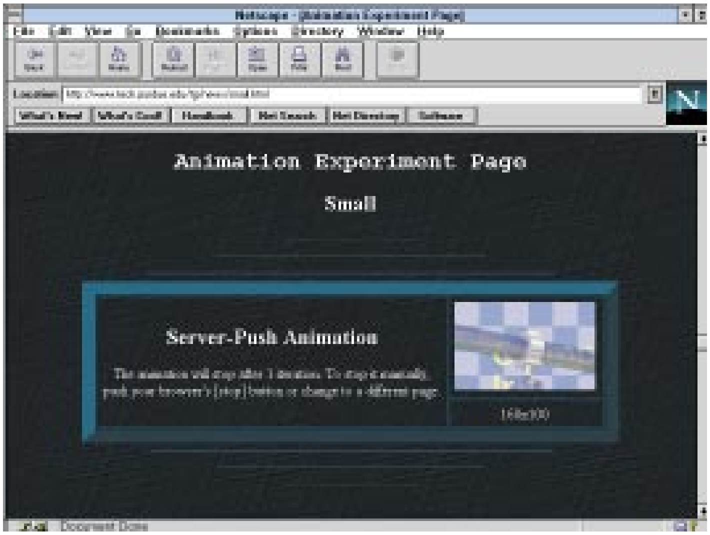
Huh? Let's look a little closer at the code you just cranked:

- ❑ `META HTTP-EQUIV="Refresh"`—Designates client pull
- ❑ `CONTENT="1`—Tells the browser to pause for 1 second
- ❑ `URL=http://my.site.com/my_real_1st_page.html"` —The next jump to location

As you can see, it would be possible to create multiple pages that jump from one to another. But to be honest, multiple page jumping will simply frustrate the user. The constant flashing that occurs while the next page is downloaded is irritating as well. Be careful to not overuse this feature!

Netscape Animation—Server Push

For most of the animation effects that you'll want to do, you probably don't want to animate and redraw the entire screen as with client pull. Alternatively, server push refreshes only the elements that change. Usually small bullets or *dancing* elements (called sprites) are good uses for server push (see Figure 18.7). Chapter 5 talks about how many Shocked sites have dancing bullets and small animated elements. This is an alternative to server push, but Shockwave is not the only way to achieve this effect. You can achieve it with Netscape extensions as well.



Netscape - [Animation Experiment Page]
File Edit View Go Bookmarks Options Directory Window Help
Location:
What's New! What's Cool! Handbook Net Search Net Directory Software
Document: Done

Animation Experiment Page

Small

Server-Push Animation

The animation will stop after 1 iterations. To stop it manually, push your browser's [stop] button or change to a different page.

160x100

Figure 18.7.
A sample page of sprites using server push (`http://www.tech.purdue.edu/tg/news/small.html`*).*

To use server push, CGI scripts must be talked about again. Much like image maps, server push uses external CGI scripts to process the animated imagery that occurs on the screen. For most of us, including myself, crunching CGI scripts is not what we like to do. Several places on the Web distribute public domain CGI scripts for server push. For example, look at the following sites for CGI scripts that you can use:

```
http://www59.metronet.com/cgi
http://www.worldwidemart.com/scripts
http://www2.eff.org/~erict/Scripts/
http://128.172.69.106:8080/cgi-bin/cgis.html
```

Using most of these CGI scripts simply requires you to make a listing of the images associated with the sprite and the order in which they appear. Each is a little different, but most come with brief documentation so you can begin using them pretty quickly.

Before you start scanning for scripts, you'll have to know what type of server you have: whether it is National Center for Supercomputer Applications (NCSA) or the European Laboratory for Particle Physics (CERN). Heck, talk to your site administrator because there may already be a server push script available for use.

Netscape Animation—Plug-In Streaming

One of the most promising means of delivering animation and video over the Web is via plug-ins. Plug-ins like Apple's QuickTime and Microsoft's Video for Windows add a deeper level of possibility on the Web. These plug-ins, like the RealAudio plug-in, allow data to be streamed across the Net and played back in real time. Streaming simply sends small compressed portions of the file while concurrently beginning playback. It works pretty well right now, but as hardware capability increases you'll see more and more of it.

Many streaming plug-ins for audio and video are still under construction, but in the near future you'll see many more available. Keep your eye on Apple's and Microsoft's Web sites for news about plug-ins for video and animation (`www.apple.com` and `www.microsoft.com`).

Helper Animation—Externally Linked Files

The most common method for distributing animation and video over the Net is through links to external files. In this scenario, the file is completely downloaded and then played through a helper application (see Figure 18.8). The only restriction is that the user must have a player or viewer capable of opening the animation or video file once it is on his machine.

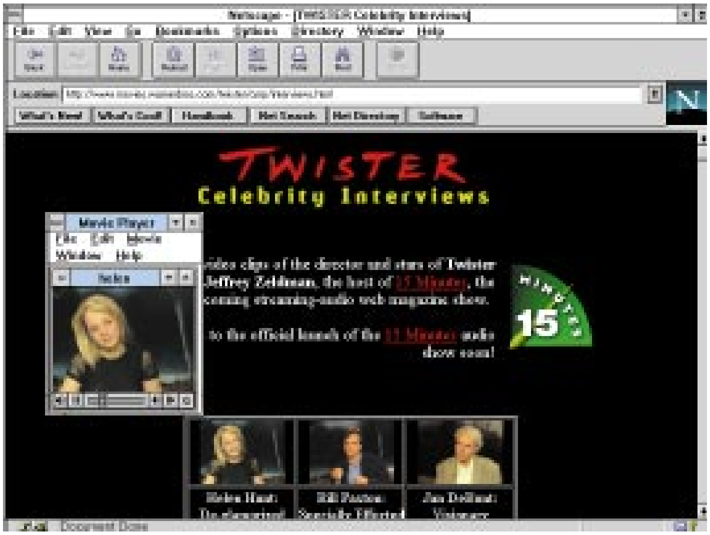


Figure 18.8.
An example of helper application playback.

Due to limited bandwidth, this is probably the best way to distribute your animation and video files to your audience. The same procedure you used for high-resolution images in Chapter 7, "Designing Graphical Pages Anyone Can Download," will be used here. To integrate an external file, create code that looks like this:

```
<A HREF="mymovie.mov">Click here to download the movie</A>
```

In the previous coding example

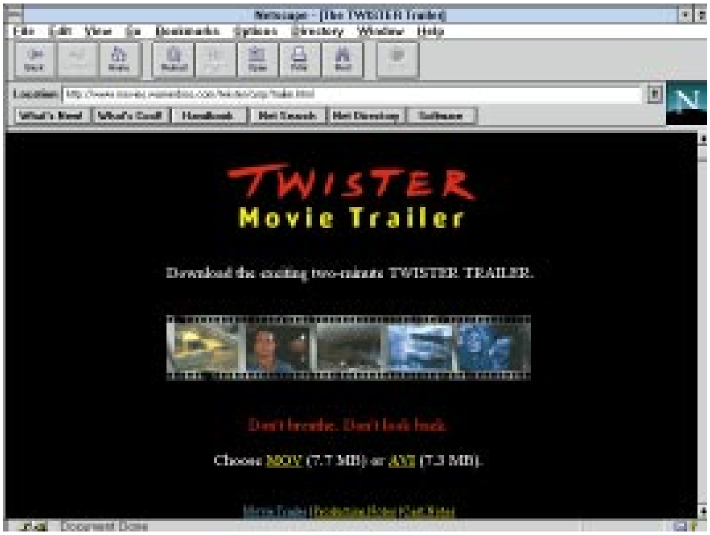
- `A HREF=` creates the link to the file
- `"mymovie.mov"` is the movie file
- `Click here to download the movie` is the text that can be clicked on

Most of the time it is advantageous to show the user a representative image from the movie they will be downloading (see Figure 18.9). This helps them determine if they want to download or not. The code would look like this:

```
<A HREF="mymovie.mov"><IMG SRC="mymovie.gif">
Click here to download the movie</A>
```

In the previous coding example

- `A HREF=` creates the link to the file
- `"mymovie.mov"` is the movie file
- `IMG SRC=` inserts the sample image
- `"mymovie.gif"` is the name of the sample image
- `Click here to download the movie` is the text that can be clicked on



Download the exciting two-minute TWISTER TRAILER.

Don't breathe. Don't look back.

Choose MOV (7.7 MB) or AVI (7.3 MB).

Figure 18.9.
An example of a preview image for an animation.

TIP: Whenever you distribute an external file that requires a Multipurpose Internet mail extension (MIME) type and helper application, provide a link for the user to get the appropriate helper application so he can view your file. For example, in addition to a link to your QuickTime file, provide a link to download the player for QuickTime.

Understanding Digital Formats

Most animation and video files utilize compression to help reduce file size. As you found with Joint Picture Expert's Group (JPEG) images, some image data is discarded to help maintain smaller file sizes. The data that is discarded is either redundant or acceptably lost.

Remember that lossy compression schemes lose a certain amount of data to attain smaller digital file sizes. Lossless compression doesn't lose any data. When a lossless file is uncompressed, it creates an exact replica of the original file.

As with JPEG images, digital animation and video files are always compressed for distribution. However, the compression occurs over a range of images rather than within a single image. All compression techniques use an algorithm called a compressor/decompressor (codec). The amount that a particular image compresses with a codec is called the compression ratio—a ratio of sizes before and after. Compression ratios range from 2:1 to 200:1.

NOTE: When discussing digital compression, realize there are three main levels of compression that can occur: internal file compression, external file compression, and drive compression. Each functions a little differently.

All the compression talked about in this chapter is internal file compression. JPEG, LZW (Lempel-ZivWelch), and packbits are internal file compression; occurring inside the particular image file. The compression scheme is knowledgeable about the data in the file—which is what allows it to compress at all. Knowing what type of data to drop or substitute for is vital. At this level, the compression may be either lossy (like JPEG) or lossless (like LZW).

The second type of digital compression is external compression. Products like PKWARE's PKZIP or Aladdin's StuffIt Deluxe classify as *external compression*. External compression means that the compression occurs without knowing what is actually in the file. It simply looks for redundancies in the binary data of the file. Compression at this level is lossless. Lossy compression would destroy the readability of the file to its native application.

The final type of compression is drive compression, which includes products such as Stacker and DoubleSpace. These products strive to store all data as compressed on a particular drive or disk. They then uncompress data as it is needed for use. All compression at this level is lossless because data lost at this level would undoubtedly cause system errors.

Each digital video format is argumentatively different. Each gives different (but similar) visual results, and each gives different compression ratios. Which is the best? Well, it depends on who you talk to, but the most prevalent on the Web are QuickTime, AVI, and MPEG. Viewers for various platforms are available on many sites. Some will argue that there aren't players for one platform or another. But I hesitate to say that any one in particular dominates the Web. However, most of the latest versions of viewers for all three are at `www-dsed.llnl.gov`. The best way to access the site is via File Transfer Protocol (FTP). Then take a look in the `pub/programs` directory. You'll see that the programs are divided by platform, and there are resources for Macintosh, Windows, and UNIX boxes.

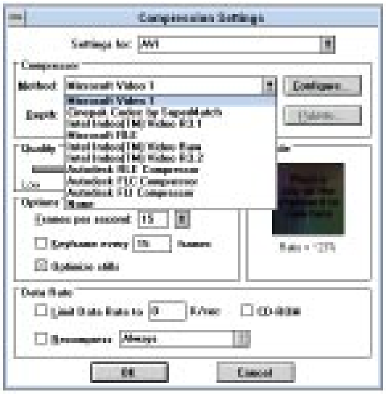
As you are striving to set up your helper applications in your browser, jump to `http://www-dsed.llnl.gov/documents/WWWtest.html`, which will help you test your browser to make sure it is recognizing the proper MIME types and applications.

Video for Windows—AVI Files

Video for Windows or `.avi` files were designed to distribute video in the Windows environment. The advantage to using Video for Windows files is the ease with which they can be distributed and used on Windows 3.1, 3.11, and Windows 95 machines. Microsoft's Media Player will automatically recognize video segments saved in VfW format. In addition, there are ways to either directly view or convert `.avi` files for use on other platforms.

The `.avi` format allows a couple of different codecs to compress the file, even though it is an "AVI file." People who view the file will not know that it is compressed with a particular codec. But if you're creating video and saving in the VfW format out of a package like Adobe Premiere, realize that the codec you choose can affect the viewed output.

The two primary codecs for AVI files are Cinepak and Indeo. In general, Cinepak is better at compressing animations and video that are predominantly composed of solid colors, while Indeo is better at recorded video with a large range of colors. Both are lossy and will drop certain amounts of detail, but they each function better at certain tasks. If you're using a product like Premiere to save animation or video, you can easily set the save routine to output in your chosen codec (see Figure 18.10).



Compression Settings

Settings for: AVI

Method: Microsoft Video 1

Frames per second: 15

□ Keyframe every 15 frames

☒ Optimize stills

□ Limit Data Rate to 0 K/sec □ CD-ROM

□ Recompress: Always

Figure 18.10.
Using a specific codec at save time.

Apple QuickTime—MOV Files

Apple's QuickTime format, the first format available for desktop users, is very similar to Video for Windows. If I were to say any particular format was most used, it would probably be QuickTime. This is chiefly due to it being the oldest format of the three.

The real differences in file size and playback quality are difficult to distinguish for us general users, but I'm sure the technoweenies at either company could lay it out for us and tell us why AVI or QuickTime is better, but do we really care? Most of us are tired of the Mac versus PC scenario. Which should you choose? Are you a Mac user or PC user? Choose the one that fits your audience and your platform. Enough said. If you pick the right software, platform choice is unimportant.

QuickTime, like Video for Windows, allows you to choose your codec. Again, the most frequent are Cinepak and Indeo. Remember that Cinepak should be used for generally solid colors and Indeo for recorded video.

Motion Picture Experts Group—MPEG Files

The newcomer to the heated battle is MPEG, a slick digital format that has proven to be a pretty good contender in the market. Currently, MPEG-based video machines are appearing everywhere. The biggest problem, as with all newer technologies, is that they are pretty pricey. Encoders for MPEG files, which are the boards that allow you to record and/or save digital files, range from $500 to $500,000, but for most MPEG files found on the Net, playback can be performed without the aid of additional hardware.

MPEG, unlike VfW or QuickTime, doesn't have options for assigning codecs when you're saving. You simply save in MPEG format. Many times when you run across MPEG files on the Net, you'll find that the audio and video portions may be separate files, but the frequency of this is decreasing as availability and price of hardware is decreasing.

Using Programs That Create Animations

As indicated earlier, animation files generally require more time to create than simply sampling video for desktop use. However, adding complicated audio effects or video transitions can push video creation time to a level equivalent with animation, particularly if you are talking about broadcast-quality video. But with animation, there are two basic methods of creation: two-dimensionally and three-dimensionally based.

Traditional cel animation, a two-dimensional technique, requires the creation of specific key frames in the animation by drawing and painting each frame. The key frames are the main action points in the animation. The animator then hand generates the frames in between the keys, a process called *in-betweening*. For the most part, this is a two-dimensional process that requires drawing each frame either digitally or by hand. An example of these two-dimensional animation packages would be Autodesk's Animator or Macromedia Director.

The second method requires the creation of a three-dimensional model of the objects, characters, and background environment. Then surface textures and materials are pasted onto the objects in the model. The animator then sets up key frames by physically moving the objects in the three-dimensional database, while the computer creates the in-between frames based on the user's placement of those objects. The animator can then tell the computer to render out an animation file based on the database. Examples of these types of packages would include Autodesk's 3D Studio Max, Macromedia's Extreme 3D, Strata Studio Pro, and Crystal Graphics Topas.

Generally speaking, three-dimensional environments allow a greater degree of realism than two-dimensional techniques. That's not to say that you cannot achieve realism with two-dimensional techniques. However, achieving realism with two-dimensional techniques requires greater artistic ability and a greater amount of time.

Today there are some crossover and convergence of the two techniques. Sometimes it is advantageous to model portions of the background content so that an infinite amount of detail can be automatically generated. An example that sticks in my mind is from the Disney animation feature *Beauty and the Beast*. In the movie, there is a scene of the two characters dancing in a large ballroom where the background is extremely ornate and detailed. A three-dimensional model was used to generate a more photo-realistic effect without having to painstakingly create hand-generated artwork.

Using Programs That Create Digital Movies

Programs that create digital video are quite frequent; however, most high-end, broadcast-quality packages are very expensive. This chapter focuses on the low end of digital video, that which can be delivered over the Net. The most powerful package for desktop video creation is undoubtedly Adobe Premiere.

Packages for digital video most often allow the user to import all types of files including static graphics, animation, raw video, and sound files. Most will also allow the user to sample video, audio, or both right in the package. Depending on the package, the user may also be able to create video and audio effects like complex transitions, chroma keying, or other video special effects. Be aware, nonetheless, that the price of the package will reflect the added features. You get what you pay for.

TASK

Designing a Digital Video for the Web

The process of creating digital video most often requires sampling the video and audio and then combining it in the package. You may also simply want to overlay sound to an animation you've created. Let's focus on designing a video file that will be created from an animation you have. Let's combine a little audio and save it as an Indeo AVI and an Indeo QuickTime to get a file size ratio. To create a digital video file for the Web

1. Open Adobe Premiere and begin a new project at 160×120 pixels (see Figure 18.11).

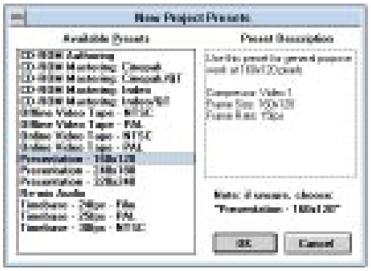
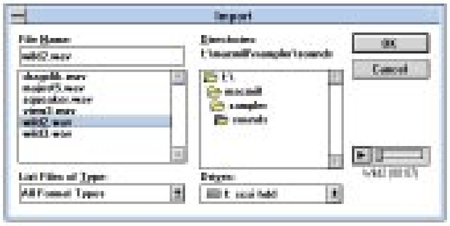


Figure 18.11.
Creating a new 160×120 file.

2. Import your animation and sound files into the new file (see Figure 18.12).



File Name: wiki2.wav

All Format Types

Figure 18.12.
Importing the sound and animation files into the project.

3. Drag your animation to the first video channel and drag the sound to the first sound channel (see Figure 18.13).

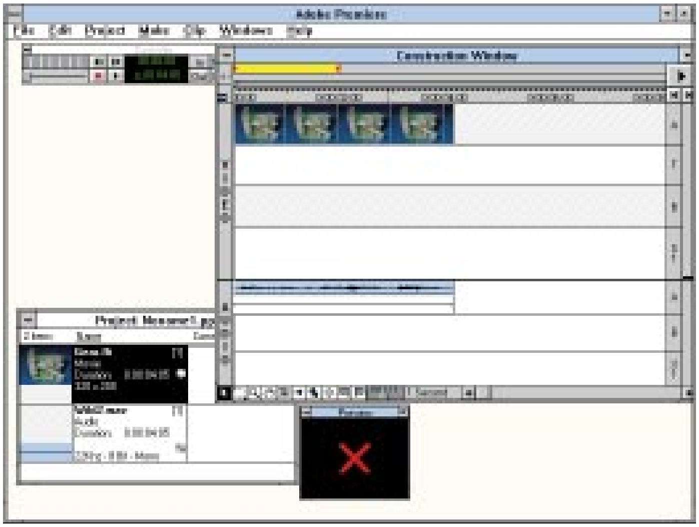
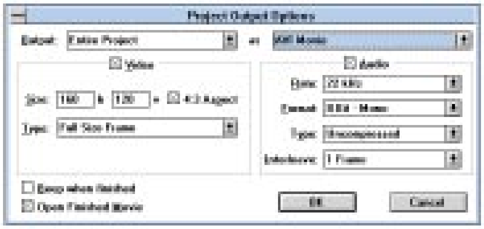


Figure 18.13.
Dragging the animation and sound files to the timeline.

4. Assuming that the sound file and the animation file are the same length, select the Make|Make Movie menu option.
5. You must set the Output Options for the Movie. Click on Output Options. Use Figure 18.14 as a guide for setting the Output Options.



Output: Entire Project as AVI Movie

☒ Video

Size: 160 x 120 ☒ 4:3 Aspect

Type: Full Size Frame

☒ Audio

Rate: 22 kHz

Format: 8 Bit - Mono

Type: Uncompressed

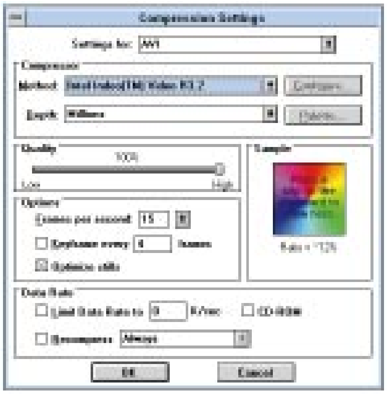
Interleave: 1 Frame

□ Beep when finished

☒ Open Finished Movie

Figure 18.14.
Setting the output options.

6. Now you must set the compression options. Click on Compression and use Figure 18.15 as a guide.



Compression Settings

Settings for: AVI

Compressor

Method: Intel Indeo(TM) Video R3.2

Depth: Millions

Quality: 100

Options

Frames per second: 15

□ Keyframe every 4 frames

☒ Optimize stills

Ratio = [illegible]

Data Rate

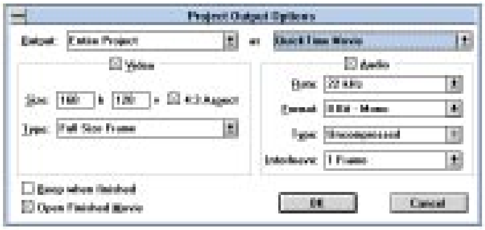
□ Limit Data Rate to 0 K/sec □ CD-ROM

□ Recompress Always

Figure 18.15.
Setting the compression options.

7. Once you've hit OK on compression options, give the file a name and hit OK.

8. Let's go ahead and make an Indeo QuickTime file as well. Go back to Make| Make Movie. Choose Output Options and use Figure 18.16 as a guide for setting the options.



Project Output Options

Output: Entire Project as QuickTime Movie

☒ Video

Size: 160 x 120 = ☒ 4:3 Aspect

Type: Full Size Frame

☒ Audio

Rate: 22 kHz

Format: 8 Bit - Mono

Type: Uncompressed

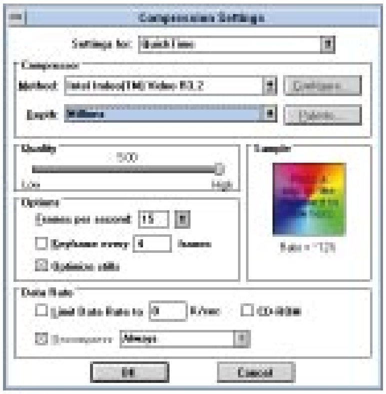
Interleave: 1 Frame

□ Beep when finished

☒ Open Finished Movie

Figure 18.16.
Setting the output options.

9. Set the Compression options using Figure 18.17 as a guide. Then give the file a name and save it.



Compression Settings

Settings for: QuickTime

Compressor

Method: Intel Indeo(TM) Video R3.2

Depth: Millions

Quality: 100

Options

Frames per second: 15

□ Keyframe every 4 frames

☒ Optimize stills

Ratio = [illegible]

Data Rate

□ Limit Data Rate to 0 K/sec □ CD-ROM

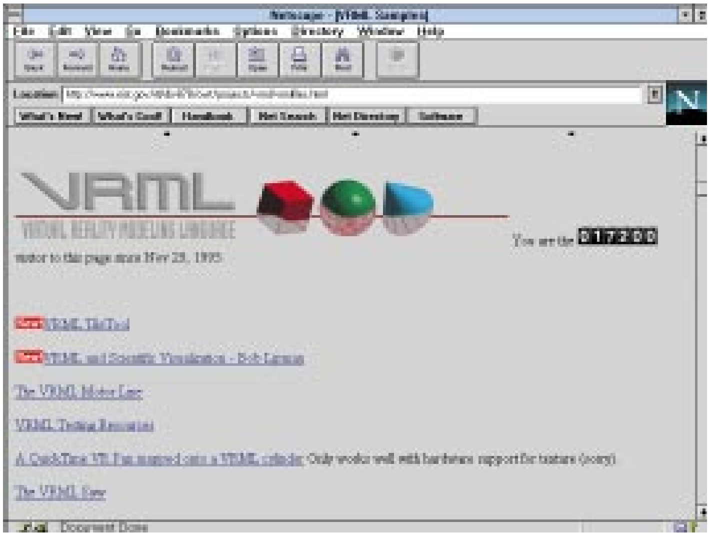
☒ Recompress Always

Figure 18.17.
Setting the compression options.

In the example shown, the final file size difference between VfW and QuickTime was about 1000 bytes; in other words not a whole lot. Both files were about 4KB. The playback of each was not significantly different. Again, the real decision of VfW versus QuickTime comes down to who is your audience and what platform you are developing on. The only significant decision you need to make is between Cinepak and Indeo codecs.

Getting Ready for a Virtual World of Graphics—VRML

VRML (*ver-mul*), or Virtual Reality Modeling Language, is essentially a language design that allows users to create three-dimensional worlds on the Web (see Figure 18.18). It is actually a language that allows three-dimensional description and audio inclusion on the Web. It does, however, require a special browser to view these three-dimensional worlds.



You are the 017200 visitor to this page since Nov 23, 1995

VRML TikiTool

VRML and Scientific Visualization - Bob Lipman

The VRML Motor Lane

VRML Testing Resources

A QuickTime VR Pan mapped onto a VRML cylinder Only works well with hardware support for texture (sorry)

The VRML Eye

Figure 18.18.
A page with several VRML environment samples (`http://www.nist.gov/itl/div878/ovrt/projects/vrml/vrmlfiles.html`*).*

Unlike HTML pages, VRML gives you the first-person advantage. Instead of funneling through pages or even controlling a character through a maze, you are in the maze. You get the feeling of actually being in the three-dimensional environment.

VRML technology is continuing to spread over the Web, and as hardware and bandwidth get faster and wider, you'll soon see that a Web page is not enough. Standards will dictate that your office, home, or operating environment be available via the Web.

Next Steps

Now that you know about delivering animations on the Web

- ❑ To find out more about Java and Shockwave, see Chapter 5.
- ❑ To learn more about hardware concerns in Web development, see Chapter 7.
- ❑ To find out more about CGI scripts and image maps, see Chapter 14, "Making Image Maps and HTML Frames."
- ❑ To discover more about helper applications and MIME types, see Chapter 19, "Understanding Advanced Graphic File Types."

Q&A

Q: What hardware and software do I need to be able to sample my own video?

A: To be able to capture video and record it to your hard drive, you need (a) a video capture board, (b) capture software and, (c) plenty of hard drive space. There are many different capture boards available on the market, and price is associated with quality. Most come with software such as a Limited Edition version of Adobe Premiere or proprietary software. Make sure you have plenty of hard drive space because with digital video the existing space will become a precious commodity.

Q: How does a video capture board sample the video and audio?

A: Video capture boards use a set of chips called Analog to Digital Converters (ADCs). This chip receives input from your NTSC source (camcorder, VCR, or VTR) and digitally converts it. Most capture boards allow you to plug in S–VHS- and RCA-type plugs. If you decide to purchase a capture board, make sure the board accepts the type of cable you'll be trying to plug into it.

Q: I am trying to use a server push scheme to animate a small logo on my page. It is working, but some of the colors in the images I'm using are doing some strange things.

A: Make sure all the images you intend to use in a server push scenario are palletized to the same palette. If various palettes are used for each image, such as an adaptive or optimized palette, you'll end up with palette flash when your sprite images play in the browser.

CHAPTER

NINETEEN

Understanding Advanced Graphic File Types

In this chapter, you'll

- ❑ Learn how to create and provide higher quality JPEG images to your Web audience
- ❑ Discover why the TIFF format exists and why it may provide a better means of distribution
- ❑ Discover what an EPS document is and how to provide it to your audience
- ❑ Learn why Adobe created the PDF format and how you can use it at your site

The paradigm that we've been using to create graphics for Web distribution has been predominantly based on viewing pages via a 72 dpi monitor. All the tasks and examples shown to you are based on screen resolution. But what happens when you try to print graphics at 72 dpi? (See Figure 19.1.) Most of the time, the prints will be much lower in quality than what you desire.

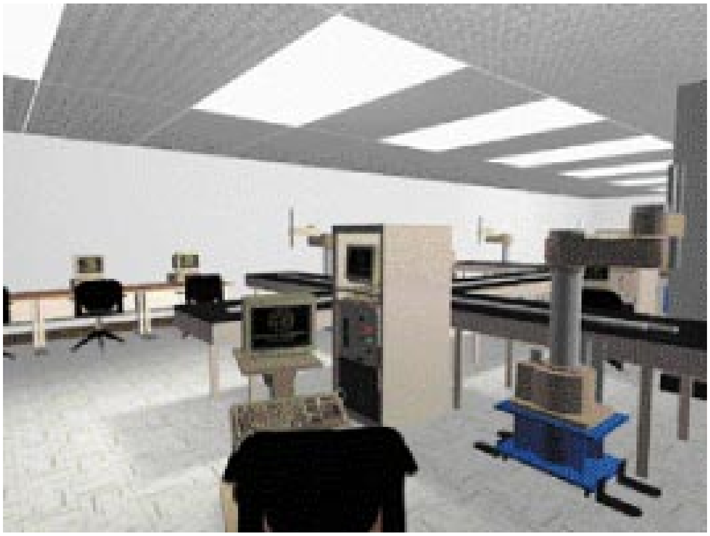


Figure 19.1.
A 72 dpi print at high resolution.

One might think that the solution is to provide bitmap graphics with higher dpi settings, say 300 or 600 dpi. Unfortunately, there are drawbacks to simply increasing dpi, although at times it will work. The biggest problem is exponential file size increase. Remember that with the Web, everything is an issue of file size.

This book talks about many of the concerns you'll be facing when you distribute work to be viewed or printed over the Internet. Fonts, jaggies, and file size top the list. So how can you overcome these specific limitations and still accomplish the task of getting your information out the way you want?

That's why this chapter is here. This chapter discusses the first method that includes providing higher quality Joint Picture Experts Group (JPEG) images to your audience. It also discusses Encapsulated PostScript (EPS) and Portable Document Format (PDF) and how they can help overcome jaggies and font issues.

Linking to Better JPEG Graphics

Due to the 8-bit restriction of the Graphical Interchange Format (GIF) image, you may want to distribute higher quality JPEG images at your site, particularly if you're in the graphics field. Even though JPEG images use lossy compression, they can be set up to retain most of the image data in your original file. Decreasing the amount of compression will help alleviate lost data and in turn will give you better copies of the original data.

But what if you don't want to lose any data? Well, JPEG will always lose some image data when you save. Many times it will be unnoticeable to the eye onscreen. However, if you were to print the image at a high enough resolution, you would be able to see the missing data. Thus, distributing in Tagged Image File Format (TIFF) may be your best alternative if you wish to maintain printability at the high end. TIFF was designed for print media and uses lossless compression, meaning that you don't lose any data.

Publishing TIFF Resources for Your Clients

The TIFF image format is designed to maintain high bit-depth data. Its original intention was to allow scanned image data to be easily transferred cross-platform for the purpose of high-end printing. The file format can maintain bit depths up to 32 bits, which very few of us use; most of us only use TIFF format for its 24-bit capability. It can also store black-and-white or bitmap mode at the low end. The image format follows either RGB or CMYK color models for transfer, which means that it will work well for both screen and print files. An advantage to this format is that it will also allow extra data to be stored internally in the file, including alpha channels, gamma correction data, and other proprietary information.

NOTE: Keep in mind as you're working that you may want to adopt a scheme to save your bitmaps. Use the file format for what it was designed to do.

Lossless File Formats

File Format	*Allows You to Save...*	*Compression Options*
PSD files	64-bit or lower	NONE
	Alpha channels	
	Paths	
	Layers	
TIFF files	64-bit or lower	LZW, CCITT
	Alpha channels	JPEG, Packbits
BMP files	24-bit or lower	RLE
GIF files	8-bit or lower	LZW

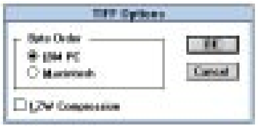
Because the TIFF format allows extremely descriptive data, it is designed to utilize internal compression. Most color TIFF files use Lepel-ZivWelch (LZW) compression. This compression scheme internally marks redundant data and replaces it with tokens. These tokens represent specific series of colors or patterns within the file. When a TIFF file is saved, the creator application will generally prompt the user to ask if he or she wishes to compress the file with LZW. LZW compression is a *lossless* compression scheme, meaning it will not loose any data from compressed to uncompressed file. The TIFF format also allows other types of compression—Comité Consultif International Téléphonique et Télégraphique (CCITT), JPEG, and Packbits. The most common, however, is LZW.

TASK

Creating a TIFF Document

Creating a TIFF document is as simple as saving a particular file. Because the format is designed to accept up to 64-bit colors, no reduction of colors is necessary—unlike the GIF format. To create a TIFF document in Adobe Photoshop, follow these steps:

1. Once you have created the image to save as TIFF (see Figure 19.2), choose the Save As option from the File menu.
2. Set the Save File as Format Type to TIFF.
3. Give the file a filename.



TIFF Options

Byte Order
● IBM PC
○ Macintosh

□ LZW Compression

Figure 19.2.
The TIFF Options dialog box.

4. Once you have clicked the OK button, you will be prompted to choose a platform and whether you want LZW compression in the file. Note that the Macintosh/PC option does not mean that you can't open it from the other platform. It simply means that the file is internally marked to whichever platform the file is written.
5. Click the LZW box if you want to use compression to reduce the file size.

Delivering Technical Artwork in EPS Format on the Web

Generally EPS artwork is not distributed over the Web because browsers, such as Netscape, are not capable of reading the file. Viewing EPS files requires a multipurpose

Internet mail extension (MIME) definition and an external helper application like GhostScript. Nonetheless, most EPS files distributed over the Web are done so that the audience can print them.

EPS files give us an advantage of letting users print an image or file at their printer's resolution. This gives them much better results than a printed bitmap. The problems of jaggies on technical artwork and font problems are also overcome due to the vector description in the EPS file.

EPS files undoubtedly work great on the Macintosh. Standards are pretty much adhered to, but on the PC side, EPS files are probably the worst format to deal with. EPS on the PC comes in so many variations that some programs and printers will regurgitate on foreign EPS files. Use caution with EPS files in the Windows environment.

TASK

Creating an EPS Document

Once you've created artwork within a drawing program, it is easy to export an EPS version. Most packages such as Macromedia FreeHand, Adobe Illustrator, and CorelDRAW! store their native file format in EPS even though, for example, on a PC the extension says something other than EPS. To create an EPS file from Macromedia FreeHand, follow these steps:

1. Choose the Export option from the File menu and select EPS. (Note that in some packages EPS may be under the Save As option.)
2. If given an option, set the intended resolution to the intended resolution of the printer. You may also have the option to include font descriptions in the file as well.
3. Give the file a name and click OK.

Making Documents Portable with Adobe's PDF

Adobe's PDF is probably one of the most ingenious formats created in the past two years. One of the biggest problems in the printing industry, when it comes to digital files, is the font issue. You create a file, take it to someone else's computer (if they even have the same layout program you used), and print it. Everything is screwed up. Widows, orphans, and nasty-looking fonts appear. All the stinking technical glitches mess up your whole design. And in comes PDF (see Figure 19.3).

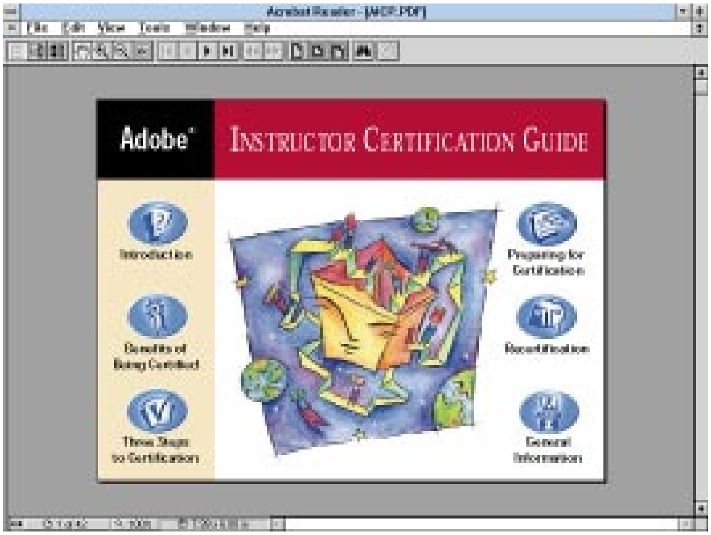

Acrobat Reader - [AICP.PDF]
File Edit View Tools Window Help
Adobe
Instructor Certification Guide
Introduction
Benefits of Being Certified
Three Steps to Certification
Preparing for Certification
Recertification
General Information

Figure 19.3. *The Acrobat Reader interface.*

PDF was designed to allow a means of transporting design and page layout documents from one computer to another, regardless of the fonts used. In addition, the format is designed so you don't have to worry about whether the other computer has the same application for the document to print correctly. The PDF format stores not only all the text and graphics, it also stores the fonts and font characteristics and allows you to print from anywhere. And you can zoom in and out at your own leisure (see Figure 19.4).

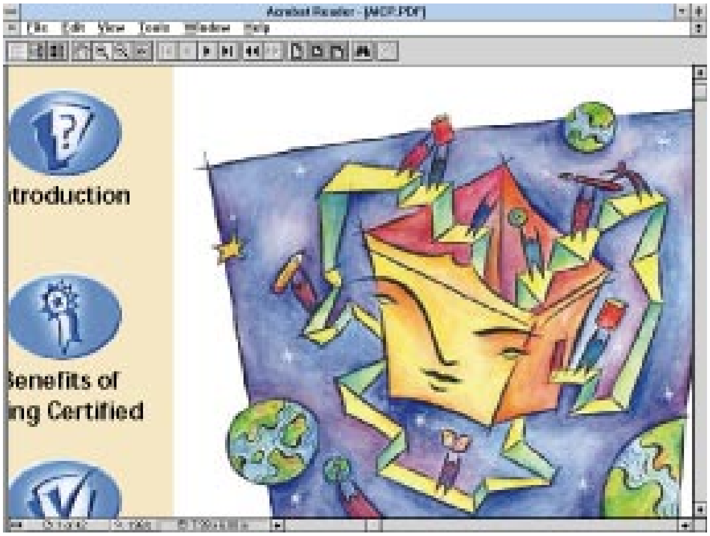


Figure 19.4. *Zooming in on a PDFfile.*

Sound too good to be true? To utilize the PDF format you must have Adobe’s Distiller program. This is the program that actually creates the PDF file. The nice thing is that it’s as easy as printing a document.

Once you have created a PDF document, you can open it into the Adobe Acrobat Reader. The reader is designed much like Microsoft’s PowerPoint viewer. It allows you to play and view any PowerPoint slide file. The Acrobat Reader not only lets you view the document, but it also allows you to zoom in and out, rearrange graphics and text, and print. While maintaining the capability to print, the PDF format provides a slick way of transporting documents from one computer to another without worrying about fonts, graphics, or applications.

TASK

Creating a Portable Document

Once you have installed the Acrobat Distiller product, you will be able to create PDF documents. The Distiller adds a printer driver to your system. When you get ready to create the PDF file, print to this driver, which will write a PDF file to your hard drive. To create a PDF file, follow these steps:

1. Open your page layout program and the file you would like to make into a PDF file. Note that this will not affect the original document layout.
2. In the layout program, set the destination printer to the PDF driver. In some programs this is under page setup while in others it will be an option called Printer Setup in the File menu.
3. Choose the Print option from the File menu. The driver will now create a PDF file generated from the file you currently have open. That’s all there is to it!

Next Steps

Now that you know how to use some of the other graphics formats available

❑ For more information on GIF and JPEG file formats, see Chapter 3, “Creating Cool Graphics for the Web.”

❑ For information on including high resolution file links in your HTML page, see Chapter 7, “Designing Graphical Pages Anyone Can Download.”

❑ For more information on interlaced or transparent GIFs, see Chapter 16, “Utilizing Inline Graphics to Your Advantage.”

❑ For more information on converting graphics from one format to another, see Chapter 20, “Converting Graphics for Use on the Web.”

Q&A

Q: I'm in Photoshop and I'm trying to save my image in GIF format, but it's grayed out. I made sure I was in the right color mode, but it still won't let me save. What's up?

A: You need to make sure you also don't have any extra channels, paths, or layers. The GIF option will remain grayed out until the image is flat—has four channels (R,G,B,Combo), zero paths, and one layer.

Q: I saved a TIFF file out of Photoshop with LZW compression and took it to my older machine to open it up, but the application said, `Invalid File Header`. What does this mean?

A: Whenever you see this message with a TIFF file it means that the application you're trying to read it in cannot identify the file type. Most of the time it means the application cannot read LZW TIFF images.

Q: I created an EPS document and I'm trying to print it, but my printer keeps spitting out a foreign language. What's going on?

A: Make sure that you export as an *Encapsulated* PostScript file and not a *plain* PostScript file. On some PCs and Macintoshes there are both. The PostScript (PS) file is a raw printer file, but EPS is the intermediate file format you're looking for. Use a PostScript downloader such as the LaserWriter utility of the Macintosh.

Q: I am trying to print an EPS file, but I keep getting `Offending PostScript Command`. What can I do?

A: This is generally a result of an illegal command created by the application that created the EPS file. You can try re-exporting the file and printing again or try opening the EPS file into something like Adobe Illustrator. Of course, Illustrator may not be able to get past the offending command either. As a last resort, open the native file into the native application and copy its contents to Adobe Illustrator and export an EPS there.

Q: I created a PDF file, but I can't seem to get the Distiller to open the file? What do I need to do?

A: The Distiller is only for creating PDF files, not opening them. To open a PDF file you need the Adobe Acrobat Reader. You can download the latest version from Adobe's site (`www.adobe.com`) or check on the included CD-ROM. The Reader is freeware but cannot be sold or leased.

CHAPTER

TWENTY

Converting Graphics for Use on the Web

In this chapter, you'll

- ❏ Learn to save your graphics in the richest format possible
- ❏ Understand the differences and similarities between Macintosh, Windows, and UNIX raster files
- ❏ Understand GIF format and how browsers display this format on the Web
- ❏ Know the capabilities of Joint Picture Experts Group (JPEG) format and how to convert it for use in GIF format
- ❏ Learn how to convert the most popular vector formats so they can be used on Web pages
- ❏ Have access to font outlines and convert them to graphics for Web pages

Chapter 3, "Creating Cool Graphics for the Web," discusses sources where you can acquire graphics for your Web pages. You may want to go back and review the section "Copyrights and Fair Use" in Chapter 3 before continuing with this chapter.

Copyrights and their issues are important because unless you're an illustrator, an animator, a photographer, a videographer, and a sound technician, you *will* be using other people's work. You want to make sure you don't misuse the creative property of others.

You'll need to know how to convert graphic files for use on the Web because no one in his right mind creates graphics in Graphical Interchange Format (GIF) on purpose. You'll be concentrating on GIF format graphics for the near future whether you like it or not. Some of the inherent graphic limitations of the Web and its browsers have been addressed by the availability of plug-ins and helper applications. Unfortunately, the vast majority of Web users will *not* have access to these utilities or because of hardware, software, or network limitations, they couldn't make use of them anyway.

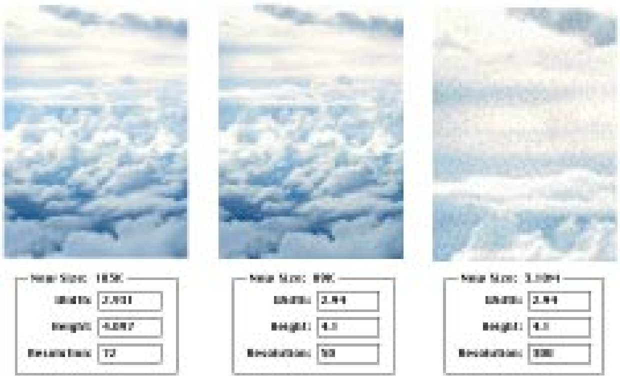
Saving Original File Format Richness

The most important thing to remember about raster graphic files is that they are *resolution dependent*. Additionally, raster files are *bit-depth dependent*. These two factors determine most of what you do when you convert a file in one format into another. Here's how these two factors work.

Assume that you scan a photograph at 72 dpi. It is commonly said that this photograph was *sampled* at 72 dpi. By scanning, its continuous information was broken into 72 samples per inch, and in doing so, some of the richness of the original photograph was lost. If the scan is resampled *down* to 50 dpi, even more visual information is removed. The second sample was based on the first sample—sort of like a photocopy of a photocopy, and you know what happens when you do that! The result is that only 50 samples per inch can describe the same information that was originally described in 72 samples per inch. Information was lost twice.

You might think that by *sampling up*, you would correct this problem. Well, get ready for the facts of life (or the facts of raster, if you prefer). You can't increase the amount of information in the sample just by increasing the dots per inch. You just end up with more pixels describing the same data.

Figure 20.1 shows a section of a scan made at 72 samples per inch (72 dpi), and the same section resampled at 50 dpi. The decrease in detail is due to having fewer pixels to describe the data. The third panel shows the 50 dpi data resampled up at 300 dpi. By increasing the resolution to 300 dpi, you have essentially increased the size of the bitmap by a factor of six. If you were to scale the 300 dpi manually back to 2.94×4.1 inches, you'd have the same image as you had at 50 dpi, just with more pixels. Why? Because the third panel describes the same data as did the second, essentially dividing each 50 dpi pixel into quarters. The bitmap was physically larger because 300 dpi was mapped to fit 72 dpi monitor resolution.



New Size: 183K
Width: 2.931
Height: 4.097
Resolution: 72

New Size: 89K
Width: 2.94
Height: 4.1
Resolution: 50

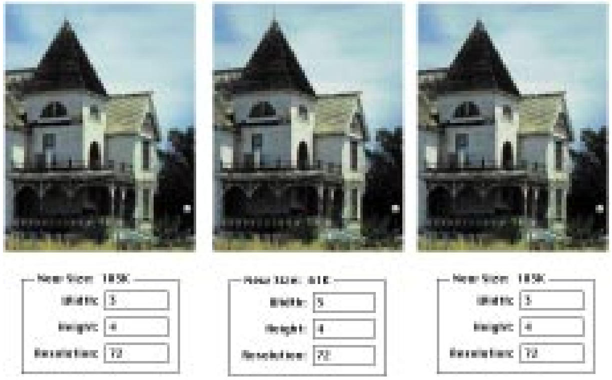
New Size: 3.10M
Width: 2.94
Height: 4.1
Resolution: 300

Figure 20.1.
The effect of sampling a graphic down and then back up.

NOTE: When a raster is sampled down, data (detail and tonality) is lost. When a raster is sampled up, the same visual information is described with more pixels. You don't get more visual data.

The second component of raster graphics is *bit depth*, the amount of information stored at each pixel. Not surprisingly, bit depth behaves much like resolution because of the raster file's resolution dependence.

Figure 20.2 shows three panels of another scan. In this case, all three are at 72 dpi—Web resolution. The first panel is 24-bit RGB color. This panel is capable of displaying 16.7 million colors. (There's not that many in this panel, just the number the scanner detected.) The second panel shows the same image reduced to 8-bit indexed color. In this form, the panel can only display a maximum of 256 colors. If the scan had more colors, some are lost. There has been an obvious reduction in visual data between our two panels. The third panel has been returned to 24-bit, RGB color.



New Size: 185K
Width: 5
Height: 4
Resolution: 72

New Size: 61K
Width: 5
Height: 4
Resolution: 72

New Size: 185K
Width: 5
Height: 4
Resolution: 72

Figure 20.2.
The effect of reducing and then increasing bit depth.

Why has there been no change?

The third panel now has the capability of displaying 16.7 million colors; however, in its change to 8 bits, it now just has 256 colors rattling around in the bottom of a big 16.7 million color bucket. When color depth is gone, it's gone!

NOTE: When a raster file has its bit depth reduced, data (colors and tonality) is lost. Increasing bit depth does nothing for the existing sample but gives the file the *potential* for holding a greater number of colors.

The reason this is important for Web graphics is that almost *all* graphics you repurpose for the Web will arrive at a higher sample (typically 150–300 dpi) and higher bit depth (typically 32,000, 64,000, or 16.7 million colors) than you'll need for your pages. The graphics you actually display on the page will be a 72 dpi, 8-bit 256 color dithered raster (bitmap). You'll normally sample down and reduce bit depth.

TIP: Always keep a copy of your graphic in as rich a condition as possible, using Targa (TGA) or TIFF formats. For scans, this usually means 300 dpi in RGB color. For original raster illustrations, 150 dpi and RGB color produce manageable files.

Becoming a Cross-Platform Whiz

If the world used one computer, there wouldn't be any reason to write this section. But the reality is that if you're making Web pages, you're going to have to deal with multiple computer platforms.

The three major players are Macintosh, Windows, and UNIX. Each handles graphic data in slightly different ways. Macintosh files have two components, or forks—the *data fork*, where the bitmap data usually resides, and the *resource fork*, where program and Macintosh-specific information resides. Web graphics generally use only the data fork portion of Macintosh files.

TIP: The three platforms handle filenames differently also. Windows 3.*x* limits filenames to eight characters in a limited character set. Windows 95 and NT allow greater flexibility. UNIX filenames are case sensitive. Macintosh filenames don't require file type extensions (the .*xxx* at the end of the filename) and can include more characters and characters that would be invalid with other operating systems. You get around this by using simple, lowercase filenames with consistent extensions.

To the rescue come *intermediate file formats*. These are formats that no self-respecting application program would naturally save its data in—TIFF, JPEG, and GIF. But first, let's back up a bit. When you create a graphic in an application program, you create data. When you save, you save in *native format*, a combination of the data and program-specific information needed to operate on the data in that program (information like paths, layers, menu positions, and palettes). Examples of native formats include Photoshop's PSD, CorelDRAW!'s CDR, FreeHand's FH5, and Illustrator's AI. To get a bitmap from program A on platform X into program B on platform Y, you need the data, not the program information.

Always save your graphics first in native format and then in a format you can open in your favorite raster editor.

On the UNIX side, you have little control over the format some obscure raster file arrived in. Your best bet is to try to push the file into a TIFF or JPEG format before it leaves the UNIX environment.

Rather than attack cross-platform difficulties from a hardware perspective, take a software approach. Choose software available on all three platforms, or at least on both Macintosh and Windows. If this isn't possible, choose a software tool with the most extensive list of input and output filters. Canvas for the Mac and CorelDRAW! for Windows can read and write almost all raster and vector files. Say you're stuck with a raster product because your boss thought it was great, but it only reads and writes two types of raster files? Arm yourself with the most powerful conversion utilities available—DeBabilizer and Hijaak Pro. Finally, you'll need the capability to read and write disks from the various platforms. Virtually all modern Macs read and write DOS disks. Products such as MacinDOS provide this functionality in Windows. If you have a UNIX machine, you may not have a disk drive at all.

GIF Graphics

The GIF developed by CompuServe has become the mainstay of Web graphics. Although it's limited to 8 bits of pixel information and 256 colors, it's ideally suited for video display of digital graphics. As part of the format's design, the data receives automatic Lempel-ZivWelch (LZW) lossless compression that substitutes *tokens* for redundant data. This produces an efficient graphic file.

GIF is considered platform independent. In the case of Mac files, only the data fork is used because GIF carries only raster graphic data. It carries no program-specific information, making it ideal for cross-platform and cross-browser applications.

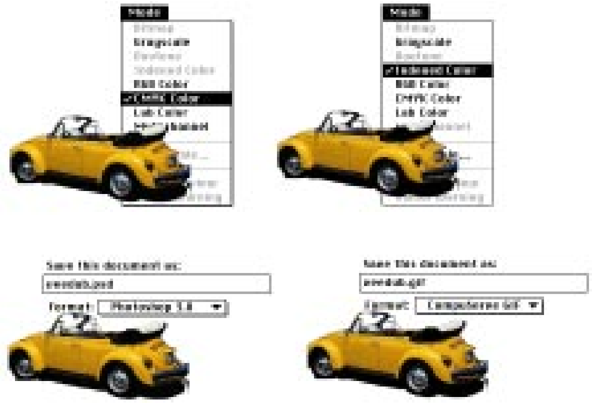
TASK

Converting to GIF Format

The best route to GIF is from other richer raster formats such as TIFF, PCX, or BMP. It's impossible to determine the depth of graphic data actually used to describe an image by only looking at the file's extension. For example, a TIFF file *may* contain only black-and-white bitmap data while maintaining the potential for adding 24-bit color. The Mode option (in Photoshop) controls the bit depth of pixels currently in the file. The file format controls the potential bit depth if you change the mode.

Assume that you have a graphic file and you want to include it on your Web page (see Figure 20.3). You would

1. Open the raster file in Photoshop. If you have a different raster editor, these steps will be essentially the same, but menu and command names will change.
2. Select the Mode menu and observe the mode in which the image was opened.
3. Push the file through modes to RGB: grayscale, indexed color, and RGB.
4. If the file is in CYMK mode, change to RGB.
5. Perform editing in RGB (24 bits). Save this file in native format, and then in your favorite raster format (PCX, BMP, TIFF).
6. Turn the mode down to Indexed Color. Specify 8 bits of data, system palette, and diffusion dither.
7. Perform any last minute editing.
8. Save the file in GIF format.
9. See Chapter 16, "Utilizing Inline Graphics to Your Advantage," for procedures to interlace the GIF file or for instructions on how to make the background transparent.



Save this document as:

Format: Photoshop 3.0

Save this document as:

Format: CompuServe GIF

Figure 20.3.
Converting a graphic to GIF format.

JPEG Graphics

The JPEG file format represents an industry wide attempt to make large 24-bit raster graphics files more manageable. Think of JPEG as TIFF with a twist. The twist is that JPEG includes internal lossy compression and is optimized for the raster output of the data. TIFF is optimized for printing raster data with PostScript devices.

With JPEG, you select the level of compression whose loss of image quality you can stand. The trade-off is that the smaller file must decompress, and in doing so, load more slowly than a similar uncompressed file.

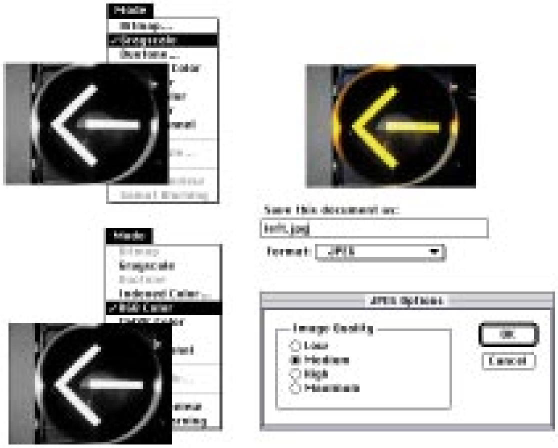
A JPEG raster file contains more data than can be displayed on a typical computer monitor. Is there an advantage to using a JPEG graphic over its lightweight GIF sibling? Not for the vast majority of applications.

TASK

Converting to JPEG Format

To save a file in JPEG format, follow these instructions:

1. Bring the graphic into your image editor and change the mode as necessary to arrive at 24-bit RGB color. See the previous task for the steps (see Figure 20.4).
2. Perform image editing in 24 bits.
3. Save the file in native format. Then save the file in JPEG format. To assure the minimum loss in quality, specify a compression value of 75 or lower. To get greater compression (at the loss of image quality), specify a number larger than 75. In Photoshop, low quality means *high compression*. Maximum quality means *low compression*.
4. Use the JPEG graphic as the basis for your smaller GIF images.



Save this document as:
left.jpg
Format: JPEG

Image Quality
○ Low
● Medium
○ High
○ Maximum

Figure 20.4.
Converting a graphic to JPEG format.

Vector Graphics

Vector graphics are supported neither by the latest release of Hypertext Markup Language (HTML) nor by current browsers. A number of resources are available for viewing vector graphics by means of plug-ins and helper applications. Check out the following sites for vector graphic resources:

- `http://www.futurewave.com`—Displays popular vector graphics (PICT, DXF, FreeHand, Illustrator) with a plug-in called FutureSplash
- `http://www.autodesk.com`—Uses Whip plug-in to view Drawing Web Format (DWF) vector files
- `http://www.glyphic.com/glyphic/projects/macgs.html`—Rasterizes PostScript with Ghostscript
- `http://www.imageclub.com/aps/`—A complete list of Adobe plug-ins for Illustrator, Acrobat, Premier

The reason vector graphics is generally unsupported is because of the very nature of raster display technology. It's relatively easy to map one set of pixels (like a GIF raster file) to another bitmap (like your 640×480 display). It's entirely something else to rasterize lines, arcs, curves, and polygons on-the-fly—especially given the diversity of vector file formats. But good news is on the way! There's lots of action on this front, especially with Adobe's PDF (Portable Document Format).

TASK

Converting Vector Graphics

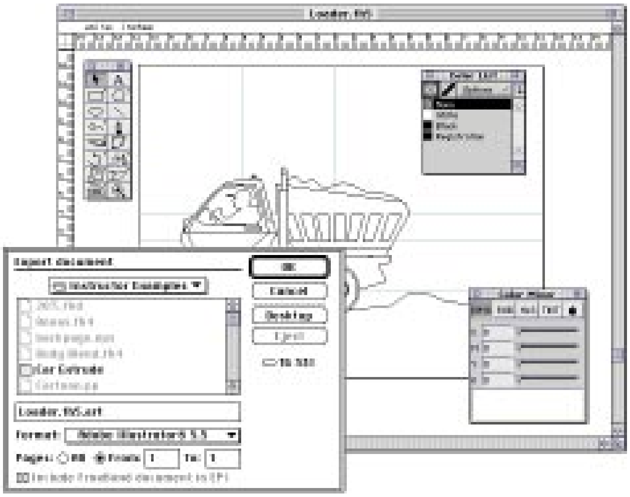
The most consistent vector file you'll run into is Encapsulated PostScript (EPS) format. Its implementation on the Macintosh platform is somewhat cleaner than on Windows. Still, you'll achieve credible results going from EPS to raster.

There are several questions that need to be answered concerning this rasterization process:

- What will the rasterized resolution be and can I control it?
- What will the mode be and can I control it?

The comments here are based on using Photoshop. The best results are achieved by rasterizing Adobe Illustrator (AI) files. This method allows you to specify color mode (bit depth) and resolution. Directly rasterizing EPS files automatically puts you in indexed color mode at 72 dpi. Rasterizing EPS line drawings puts you in bitmap mode at 72 dpi. If you're using FreeHand, Canvas, or CorelDRAW!, export your graphic in Adobe Illustrator 5 format. To turn an EPS graphic into a GIF graphic for use on your Web page, you would do the following:

1. If the file exists in EPS format, open it in a PostScript graphics application.
2. Export the file in Adobe Illustrator 5.*x* format (see Figure 20.5).



Loader.EPS.art
Format: Adobe Illustrator® 5.5
Pages: ○ All ● From: 1 To: 1
☒ Include Placed document in EPS

Figure 20.5.
Export the EPS file in Illustrator 5.x format from a PostScript drawing program.

3. Open the file in Photoshop. Specify RGB color mode and the desired resolution (see Figure 20.6).

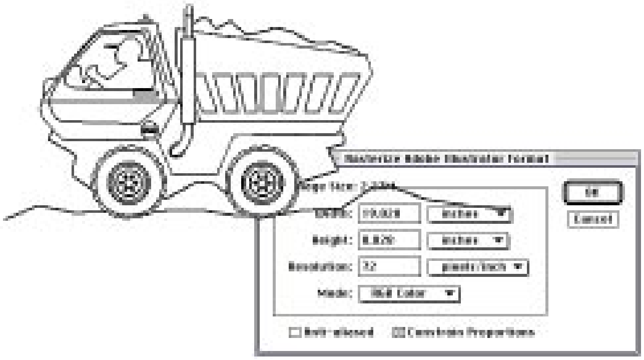


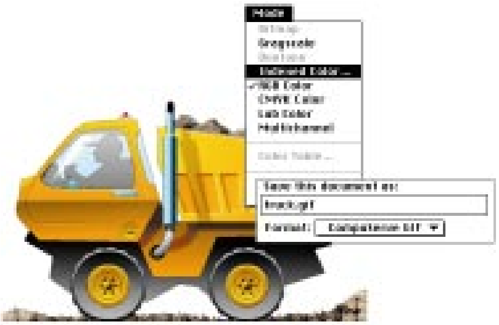
Image Size: 2.22M
Width: 10.028 inches
Height: 8.820 inches
Resolution: 72 pixels/inch
Mode: RGB Color
☐ Anti-aliased ☒ Constrain Proportions

Figure 20.6.
Open the Illustrator file in Photoshop and specify color mode and resolution.

4. Edit the raster file in 24-bit color (see Figure 20.7).

Figure 20.7.
Edit the raster file in 24-bit color.

5. Save in the native Photoshop PSD format. Then, save the file in JPEG format. This is the source file with greater color data (bit depth) that you'll want to keep as the basis for Web graphics.
6. Change color mode to indexed, 8-bit, system palette, diffusion dither.
7. Save in GIF format (see Figure 20.8).



Save this document as:
truck.gif
Format: CompuServe GIF

Figure 20.8.
Change to indexed color and save in GIF format.

Fonts

A font isn't really a graphic (in the sense that a picture is a graphic that you can put on a Web page) unless it's an outline font. Then, it can be converted from the outline to a raster graphic you can edit in a program such as Photoshop. TrueType and PostScript are two examples of outline font technology. Because current implementations of HTML preclude embedding font outline information directly in the file, the best way to get good-looking fonts onto your Web pages is to bring the text in as a graphic using the `<IMG SRC>` structure.

TASK

Converting Fonts to Outlines

To bring in a text design onto your Web page, follow these steps:

1. In a PostScript drawing program such as FreeHand, Illustrator, or CorelDRAW!, set the text in the font you desire.
2. Select the text. Choose Convert to Paths.
3. Choose no fill and hairline black line (see Figure 20.9).

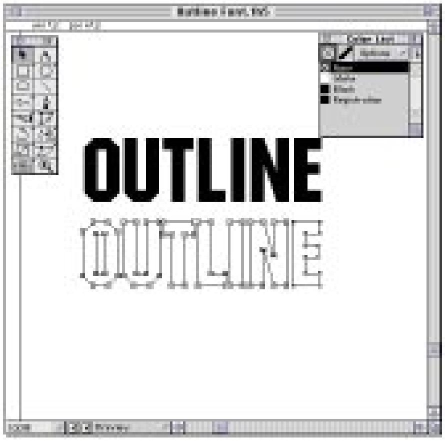
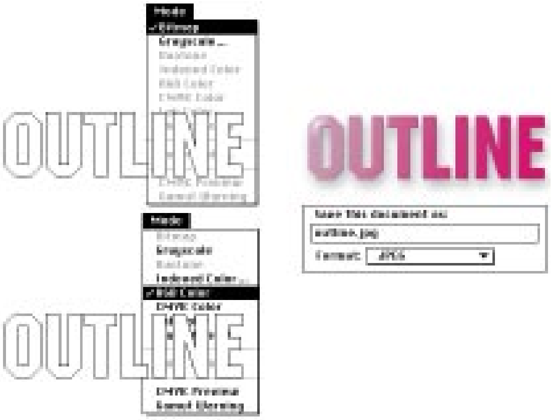


Figure 20.9. *A TrueType font and its converted outline.*

4. Export in either EPS (72 dpi) or AI (you decide resolution).
5. Open the file in your friendly raster editing program.
6. Change mode to RGB. Edit the graphic as necessary (see Figure 20.10).
7. Save in JPEG format.



Save this document as:
outline.jpg
Format: JPEG

Figure 20.10. *The outline font begins as a bitmap. Changed to RGB color, it's saved in JPEG and then in GIF formats.*

8. Change mode to Indexed Color, system palette, diffusion dither.
9. Save in GIF format. Refer to Figure 20.8 for GIF conversion.

Next Steps

Now that you have been shown strategies for converting graphics for use on Web pages, look at these entries:

- ❑ To review where you might find graphics for use on your pages, see Chapter 3.
- ❑ To plan inline images, see Chapter 16.
- ❑ To learn methods for using graphical page elements, see Part III, "Survival Skills for Web Graphics."

Q&A

Q: When I go to save my graphic in GIF format, the GIF option is grayed out and not available. Am I doing something wrong?

A: Not at all. Your file contains data that GIF can't handle. Check to see that the color palette has been reduced to 8-bit, 256 color.

Q: I saved all my page graphics in GIF format, but now when I want to edit them, all my layers are gone. How can I get them back?

A: (Sound of "Taps" being played in the background.) You've been introduced to the hard facts of life. Layer information is program specific, not something GIF is remotely interested in. My suggestion is to change to RGB mode and carefully select and move your graphics to appropriate layers. This isn't much fun, but you will end up (after much editing) with a file that's functionally separated onto layers. Quick! Save this file in native format.

Q: A GIF graphic I'm working on only let's me work in a few shades of blue. When I look at the palette, it has only about 10 colors and they're all blue.

A: This file was saved with less than 8 bits of color, using what is called an adaptive color palette. First, change the mode to RGB color. Then, in your color window, choose "reset default color swatches" or something similar.

Q: I inherited a bunch of graphics once used for presentations, but they're in a format Photoshop won't recognize. What can I do to make them useful on Web pages?

A: Do you have access to the program (PowerPoint, Persuasion, Astound?) that used these graphics? If so, see if you can save the slides as PICT on the Mac or WMF or BMP on a Windows computer. If you can't, but can display the slides, try screen capturing the graphics. You'll be stuck with 8 bit, 72 dpi images, but we've done this several times with good luck.

Q: When I go to convert a font to an outline in FreeHand, I get a message saying that it can't find the font's outline. What gives?

A: To be converted to outlines, you must have the font outline description in the correct Windows or Macintosh directory. You must also have chosen a font for which an outline exists. This is easier with Windows because of its reliance on TrueType fonts for system operation. Just make sure that TrueType fonts are enabled in your Windows Control Panel/Fonts dialog window. On the Mac, stay away from fonts with city names (Chicago, New York) unless you know they have TrueType or PostScript Type I counterparts.

PART V

Appendixes

APPENDIX

A

Directory of Graphic Resources on the Web

NOTE: The following are URLs that we, the authors, commonly visit. The list is by no means exhaustive—only a snapshot. If you find some really great resources, share them with us via e-mail. We'll include them in the next edition.

Graphics

Compression Frequently Asked Questions (FAQs)

http://www.cis.ohio-state.edu/hypertext/faq/usenet/
➥compression-faq/top.html

File Formats FAQ

http://www.cis.ohio-state.edu/hypertext/faq/
➥usenet/graphics/fileformats-faq/part3/faq.html

Graphics FAQ

http://www.cis.ohio-state.edu/hypertext/faq/
➥usenet/graphics/fileformats-faq/top.html

JPEG FAQ

`http://www.cis.ohio-state.edu/hypertext/faq/usenet/jpeg-faq/top.html`

Image Conversion FAQ

`http://www.cis.ohio-state.edu/hypertext/faq/`
`➥usenet/graphics/fileformats-faq/part2/faq.html`

Technical Illustration FAQ

`http://www.cis.ohio-state.edu/hypertext/faq/usenet/graphics/Techill-FAQ/`
`➥faq.html`

Tips and Tricks FAQ

`http://www.cis.ohio-state.edu/hypertext/faq/`
`➥usenet/graphics/fileformats-faq/part4/faq.html`

Helper Applications

Indexes

Yahoo!

`http://www.yahoo.com/Computers_and_Internet/`
`➥Internet/World_Wide_Web/Browsers/Helper_Applications/`

David Lemberg

`http://152.157.16.3/WWWSchools/DistRes/resources.html`

Web Resources

`http://www.webd.com/webd/Generic_Data/resources.html`

NCSA

`http://www.ncsa.uiuc.edu/SDG/Software/MacMosaic/Supplementary/Helper.html`

HTML

HTML 2.0 Specifications

`http://www.w3.org/hypertext/WWW/MarkUp/MarkUp.html`

HTML 3.0 Specifications

http://www.hp.co.uk/people/dsr/html3/CoverPage.html

HTML Information

http://www.yahoo.com/Computers_and_Internet/Software/Data_Formats/HTML/

Multimedia

Multimedia FAQ

http://www.cis.ohio-state.edu/hypertext/faq/
➥usenet/multimedia/authoring-systems/faq.html

Plug-Ins

Indexes

http://www.browserwatch.com/plug-in.html
http://w3.ag.uiuc.edu/AIM/2.0/plugins.html

Acrobat (Amber)

http://www.adobe.com/acrobat/amber/

MIDI

Crescendo

http://www.liveupdate.com/crescendo.html

MIDIShare

http://www.grame.fr/english/MidiShare.html

Motion Picture Experts Group (MPEG)

Action (Win95 & Win 3.1 only!)

http://www.open2u.com/action/action.html

QuickTime

MovieStar

http://www.beingthere.com

View Movie

`http://www.well.com/user/ivanski/viewmovie/docs.html`

KM’s Multimedia Plug

`ftp://ftp.wco.com/users/mcmurtri/MySoftware/`

Shockwave

`http://www.macromedia.com/Tools/Shockwave/`

Sound

RealAudio

`http://www.realaudio.com/products/player2.0.html`

Virtual Reality Modeling Language (VRML)

Liquid Reality

`http://www.dimensionx.com/products/lr/index.html`

Live3D

`http://home.netscape.com/comprod/products/navigator/live3d/download_live3d.html`

Video

AVI

Scientific CD Movies

`http://www.scdm.com/`

MPEG

MPEG FAQ

`http://www.cis.ohio-state.edu/hypertext/faq/usenet/mpeg-faq/top.html`

QuickTime

`http://www.yahoo.com/Computers_and_Internet/Multimedia/Video/Quicktime/`

GLOSSARY

24-bit *See* RGB color.

256-color *See* indexed color.

8-bit *See* indexed color.

adaptive Adaptive is a means of creating an 8-bit color palette within Adobe Photoshop.

Adobe Illustrator A vector-based illustration program.

Adobe Type Manager (ATM) A program for managing, installing, and deleting Adobe PostScript fonts.

Afterburner A filter created by Macromedia that compresses Director files for use on the Web; its file extension is `.DCR`.

algorithm A method or strategy for solving a task.

alignment Refers to the physical location of a paragraph or string of text.

alpha channel An extra level of data that stores the amount of opaqueness for a particular pixel. Values range from 0 to 255.

ambient light The amount of light present without a light source; also known as atmospheric light.

analog Data that is based on continually changing frequencies or values.

analog-to-digital converter (ADC) A chip (or chips) that converts analog frequencies to digital bits.

animation The perception of movement over time caused by a progression of changing frames.

anti-alias To slightly blur the edges of bitmap objects to produce a more visually pleasing image.

AppleTalk A Macintosh network protocol.

applets Small applications programmed in Java or JavaScript that are automatically downloaded and played.

American Standard Code for Information Interchange (ASCII) A file format in which HTML programs are saved; an unformatted, universal file format.

ASCII A file containing textual characters without formatting; the file format used for writing HTML programs; a text format read by most application programs and operating systems.

avant garde Something new or radical that pushes our paradigm of thinking; a sans serif font family.

bandwidth The amount of information that can flow through a specific channel or device over a period of time.

bit depth The number of physical bits used to describe a sample; higher bit depth generates more possible values (grays) or more colors.

bitmap A graphic image composed of pixels. Each pixel is defined in bits.

BMP Windows Bitmap Format. A graphic file format that can contain up to 24-bit color and can be compressed using run-length encoding (RLE).

bookmark A function in browsers that stores the name and uniform resource locator (URL) location of http servers in a menu list.

browser A program designed to interpret World Wide Web page descriptions (HTML code) into a visual representation that can incorporate text and graphics.

byte A series of 8 bits; equals a single character.

cache Temporary storage space for Web images and pages on the user's hard drive; used by Web browsers such as Netscape to reduce download times.

canvas Normally connotes a blank work area in a bitmap application; analogous to an artist's canvas.

cel A single frame in an animation.

cel animation The process of drawing and painting each and every frame to create an animation.

channel A saved selection or mask in Photoshop; also called an alpha channel.

chroma keying A video effect that allows two separate pieces of video to be overlaid; a special color acts as transparent.

Cinepak A common codec used in digital video formats; good at compressing images with solid color information.

client pull A Netscape extension that causes the browser to jump from one URL location to another without the intervention of the user.

clip art Prefabricated graphics that can be bought and used in page designs.

clipboard A location in memory that allows you to copy the contents of one document and paste them in another. The copy is stored in the clipboard.

codec (compressor/decompressor) An algorithm that compresses and decompresses a digital file in real time.

color depth *See* bit depth.

Color Look-Up Table (CLUT) A matrix of color values used in palletized images. Each image pixel is referenced to the matrix by numerical values.

Common Gateway Interface (CGI) A scripting language that can be used to extend a browser's capabilities.

complement The color that when added in an equal amount to another color will result in gray; the color directly opposite a color on a color wheel or within a color solid.

compression The process of substituting for redundant data in a digital file; results in a decrease of file size.

compression ratio A description of the relative worth of a codec. It is the ratio of file size before and after.

Computer Graphics Metafile (CGM) An intermediate file format that stores object-oriented data.

continuity Consistency in Web pages; items that contribute to creating a common look.

contrast The amount of value difference between two adjacent colors.

copy To replicate an object to the clipboard.

copyright infringement Illegal use of the materials of others for professional gain.

CorelDRAW! A vector-based illustration program.

creativity The process of developing a unique new idea, concept, or process.

CYMK (Cyan, Yellow, Magenta, and Black) The colors used in 4-color process printing. Also a color mode in Photoshop.

debug To find and eliminate bugs and errors in program code.

delimiter A symbol of code that marks the end of a command.

dial-up access Internet access that uses a modem to connect to a computer that is in turn connected to the Internet.

dial-up connection Internet access that uses a modem to connect to the Internet.

diffusion dither A dithering process in Photoshop that uses similar colors and scatters them randomly to create unavailable colors.

digital Data that is binary in nature, composed of on and off states.

digital video Connotes captured live action footage combined with audio.

direct network connection Internet access that is obtained via a network card connected to a LAN.

director An authoring tool created by Macromedia that allows the creation of sophisticated interactive multimedia products.

dither To randomly scatter pixels to create the appearance of missing colors.

Domain Name Service (DNS) A naming method used with World Wide Web sites (for example, `www.`*`somesite`*`.com`).

DoubleSpace Microsoft DOS's drive-doubling software.

dots per inch (dpi) A measure of the visual fineness of an output device.

drive compression Compression that occurs over a total storage device.

e-mail (electronic mail) Text messages sent and received via electronic networks such as the Internet.

Encapsulated PostScript (EPS) An intermediate file format that stores image information by vector-based descriptions.

encoders Devices that sample video or audio from an analog device.

environments Connotes various operating systems such as DOS, Windows, Macintosh, or UNIX.

European Laboratory for Particle Physics (CERN) Conseil European pour la Recherche Nucleaire. One of two specific types of http server structures.

external file compression Compression that occurs that is oblivious to the contents of a file.

external graphic A hypertext link to a graphic that is opened into a helper application.

eye flow The process by which the human eye is directed across a page design.

feather To dither or blur a selection in a bitmap image.

field A specific location on an HTML form that accepts text data from the user.

file compression The process of decreasing file size by substituting for redundant or acceptably lost data.

File Transfer Protocol (FTP) A program that allows a user to log in to another computer for the purpose of uploading or downloading files.

filter An algorithm that processes data to create some type of special effect or outcome.

font family A set of characters with similar and specific attributes, such as Helvetica, Geneva, or Avant Garde.

forms Web pages that allow the creator to collect data through the use of enterable fields.

Fractal Painter A bitmap paint program.

frame A single instance in an animation; an HTML tag that allows the user to divide the browser screen into separate windows.

FreeHand A vector-based illustration program by Macromedia.

fringe A blurred or tattered edge remaining after anti-aliasing.

General Protection Fault (GPF) A Windows error caused by two programs overlapping in memory.

genre An accepted style or way of doing something.

Gopher A text menu–based tool for accessing data on servers set up under the Gopher protocol.

graphic image header The beginning of a graphic image file; tells the application what type of file the image is and if it uses compression.

Graphical Interchange Format (GIF) A bitmap file format that allows up to 8-bit color depth and uses automatic LZW compression.

halo A ring of pixels surrounding a graphic caused by anti-aliasing.

helper applications Applications that are external to the browser and extend the capability to view various file types.

hexadecimal The base 16 mathematical description used in HTML to describe colors.

high resolution Generally accepted as image sizes greater than 640×480 pixels with image depths at 24 bits and higher.

home page A WWW site's main content page.

horizontal space The width of the letter *M* in the font.

host computer A computer from which one is receiving information or gaining access to something.

hotlinks Text- or graphic-based items that allow the user to jump to new places in a document or to a new http site.

hotspot An area of a page that is linked to a new place or location.

http servers Computers dedicated to providing Hypertext Transfer Protocol access to HTML documents from remote sites.

human–computer interaction The dynamics of how humans interact with computers in a virtual environment. This interaction is characterized by each party (human and computer) making interactive demands on the other.

hypertext Text with associated links to other text, graphics, video, or sound resources.

Hypertext Markup Language (HTML) A structural formatting language characterized by embedded tags commonly used to describe Web pages.

icon An abstract graphical representation of an object or action. The level of abstraction depends on the connection between the icon and the referent and familiarity with both.

image dimensions The physical size of an image. In the case of raster images, dimensions are usually expressed in horizontal pixels by vertical pixels.

image map A map of screen coordinates, regions assigned to functions, or links. The image map usually is defined over a graphical image that gives the user cues (both graphical and textual) as to the linked action.

in-betweening To fill in missing data by interpolating between known values such as the values between two shades of green.

Indeo A common digital video compression codec that is best used for video (such as live action footage) that has a wide range of colors.

indexed color Color adhering to 8 bits of color data, resulting in 256 individual colors; the color depth required of GIF-formatted graphics.

ingenuity The ability to repurpose or reuse specific parts of a design or process in a new way.

inline graphic A graphic displayed within the lines of HTML code. An inline graphic requires no helper applications to be viewed and uses HTML formatting commands for its position and scale.

instructional icons Graphic abstractions that represent decisions and choices in contrast with navigational icons that represent movement from one page or resource to another.

intellectual property An entity of unique creation; an expression of unique visual, textual, or auditory nature that makes one product different from another.

interactivity A process characterized by direct manipulation of a virtual environment and a two-way flow of information.

interlaced GIF A 256-color raster image that when loaded is displayed in increasing resolution.

internal file compression A technique that removes redundant data from a file automatically without explicitly postprocessing the data. The result is a file with fewer storage requirements.

internal link A link that moves the user from one place in an HTML document to another, from one document to another, or from another resource within the same Web site.

interpolation The process of creating color based on surrounding colors.

intrasite link A link that moves the user from one place in a Web site to another in the same site.

intranet A network of computers and servers within an organization typically used as an advanced communication device.

IP address Internet Protocol address. A series of numbers separated by periods that denotes the location of a computer on the Internet.

ISMAP The HTML parameter within the `<IMG SRC>` structure that alerts the HTML parser that an image map is being used.

jaggies The coarse pixelation characteristic of raster images. Jaggies can be minimized by increasing resolution (dpi) or by using the technique of anti-aliasing.

Java The technology that provides programming resources for delivering small applications over the Web.

Joint Picture Experts Group (JPEG) A specification for 24-bit color raster files with lossy LZW compression.

jump list A list of text items, usually formatted with the unnumbered list `<UL>` structure, linked to Web pages or resources.

Kbps (kilobits per second) A measure of the rate of transmission of data over networks or phone lines; baud.

key frame A frame in an animation where lights, cameras, geometry, and materials are set, allowing the animation program to create the in-between frames.

keying The process of creating key frames.

kilobyte (KB) One thousand bytes; a measure of digital data.

leading The space between successive lines of type measured in points. Type 12 points in height with 2 extra points of space between lines is said to be "12 points leaded 14" or 12/14.

Lempel-ZivWelch (LZW) compression Lossless compression that occurs within a GIF or TIFF file.

letter spacing The amount of space that exists between adjacent letters. Letters can be monospaced (where every letter uses the same space) or variably spaced.

levels The layers in the hierarchical organization of a Web site. Each successive level is further removed from the home page of the Web site.

light surfaces Surfaces on 3D objects illuminated by a light source. Light surfaces are contrasted with shaded or shadowed surfaces.

link A logical association of a text string or object in an HTML document with another Web page, resource, or site.

local area network A collection of computers within a small distance, such as in an office or a department, that are interconnected.

lossless compression Data compression characterized by no degradation in image quality when the data is restored to its original condition; compression with no adjustment of the amount of compression.

lossy compression Data compression characterized by degradation in image quality when the data is restored to its original condition; degradation based on the amount of compression specified.

MacTCP Macintosh network driver software.

map definition file The file of screen coordinates that defines which actions (links) will be performed when a mouse action is detected within a region.

mask A current selection of pixels in a bitmap editor.

Mbps (megabits per second) A measure of the transmission rate of digital data.

megabyte (MB) One million bytes; a measure of digital data.

menu bar Descriptive text in HTML code that is linked to actions and is often arranged with vertical separators to look like a button bar.

montage A graphic collection of different images assembled such that the edges of one image smoothly blend into the edges of other images; a graphic often used as the basis of an image map.

Mosaic A software browser used for accessing information on the Web.

Motion Picture Experts Group (MPEG) A specification for the format of digital video.

movie A digital movie produced in QuickTime format; a file produced in Macromedia Director in MOV format.

multipurpose Internet mail extension (MIME) type A scheme that defines a specific file type and respective application.

National Center for Supercomputer Applications (NCSA) Where the first Web browser, Mosaic, was developed.

National Television Standards Committee (NTSC) Developer of the television resolution standards for the United States.

native format The format used by an application program to save both data and program-specific settings.

navigation bar A graphic used to control navigation throughout a Web site. Navigation bars are usually consistently designed, formatted, and located to increase effectiveness.

navigational icons Icons used in a navigation bar; *see also* icon.

Netscape A software browser used for accessing information on the Web; Netscape Gold is a Web development tool.

network protocol The description of how data is organized and transmitted over a network. The identification of this protocol in the address of a Web site alerts the host computer as to how to interpret the data.

news service A site on the Web providing frequently updated information.

node A remote computer on a network.

packbits The compression scheme components used in black-and-white image files.

PageMaker A page layout and composition application capable of filtering its pages with text and graphics into HTML code.

palette The collection of colors used within a graphics file.

palette flash The sudden and unexpected flash of discolored pixels caused by the use of multiple palettes in a multimedia application.

palletized image An image that uses a specific palette of colors.

Pantone colors Colors specified by using the Pantone PMS Colormatch system primarily used for single (spot) color designs as a way to visualize colors.

paste To read selected data from a temporary memory location and add it to current data.

pattern dither To represent more colors than the monitor is capable of displaying by creating small lines, crosses, boxes, and such that when viewed from a distance (arm's length) give the illusion of a full range of colors.

PCX A 24-bit raster format by PC Paintbrush capable of saving nongraphic settings such as layer information.

Photoshop A raster editing program by Adobe Systems.

PICT Apple's graphic picture description format capable of containing 24-bit raster data, calls to PostScript fonts, and QuickDraw graphics routines.

pixel The smallest object that can be manipulated in a raster program.

PKZIP PKWARE's flexible file compression and decompression utility with the ability to compress data over multiple disks; it's native to the PC.

platforms Computers of unique manufacture, operating system, or design.

plug-in An addition to an existing program that increases its functionality. The plug-in is recognized when the program is loaded and brought into memory when needed.

point size A measure described in points; one point is equal to 1⁄72 inch or .0393701 millimeters.

Point-to-Point Protocol (PPP) A dial-up TCP/IP extension program.

Portable Document Format (PDF) By Adobe Systems; a description of text and graphics in a highly efficient compressed raster format capable of containing hyperlinks and font outline information.

PostScript An interpreted page description language usually resident in an output device. A PostScript driver translates the native format into a PostScript ASCII text file, which is sent to the output device where it is interpreted line by line.

PostScript outline font A text font described mathematically by curves and lines. When text characters are converted to their outlines, they become a graphic and lose all text characteristics.

progressive JPEG A way of saving a JPEG raster file so that it loads sequentially in bands, allowing cancellation of the load in midstream.

public domain The body of work not under copyright protection; work for which the copyright protection has expired; work done for the public by the government; work of no unique creative value, of common industrial design.

QuickDraw Apple's screen imaging language.

QuickTime Apple's digital video standard.

RamDoubler Connectix's productivity utility that efficiently manages memory so that your computer's operating system believes it has twice as much RAM memory as is physically installed.

raster A graphic file type containing a matrix of data points; a display monitor employing raster scan technology.

raster dimensions The number of horizontal and vertical data points in a raster graphic.

raster resolution The density of data points in a raster graphic measured either in dots per inch (dpi) or in the spacing in millimeters from dot center to adjacent dot center (pitch).

RCA A type of video cable connector.

RGB color An additive color model based on red, green, and blue light. The absence of color (R0, G0, B0) produces black. Full color components (R255, G255, B255) produces white.

rule A graphic used to separate areas of a page; usually a horizontal line; vertical line, custom line, or box.

S-VHS A type of video cable connector.

sampling Breaking analog (continuous) data into digital data by recording luminosity and color values at a set interval.

sampling rate Frequency of the intervals at which continuous data is broken into digital data.

sans serif Type characters that lack small horizontal extensions from the end of straight strokes.

saturation The intensity of a color; the amount of pigment in a color; the purity of a color; the presence or lack thereof of a color's complement.

section unity The characteristic of a section of a Web site that ties it to other sections and to the home page by the use of graphic, color, or textual elements.

serif A small horizontal extension from the end of a straight text stroke; a font that has these extensions.

server push The method of sharing Web resources characterized by the Web server making resources available without the direct demand of the client.

shade The portion of an object shielded from direct illumination and on which no shadow can be cast.

shadow The intersection of light rays touching an object in only one place with an intervening surface.

Shockwave Macromedia's plug-in that allows for viewing Director movies over the Web.

site diagram A graphical representation of the structural relationships of pages and resources in a Web site.

SLIP A dial-up TCP/IP extension program.

splash page The opening page of a Web site containing a graphic that draws your attention; can also serve as the home page of a Web site.

stacker A product that automatically compresses and decompresses data on storage media.

Standard Generalized Markup Language (SGML) A platform-independent, embedded-tag, structural formatting language used to build electronic documents.

standards manual A document that establishes the exact manner in which a company's logo, name, or identity will be used. Current standards manuals are just now addressing Web publications.

streaming Using data as it is transmitted as opposed to waiting until all data has been transmitted.

StuffIt Deluxe Aladdin's external compression program for the Macintosh.

subordinance The ordering of information; the placing of data in importance by position, color, size, shape, or resolution.

swipe file A collection of visual elements used to promote creativity.

tag An instruction in HTML delimited by special characters. The HTML parser calls the function between the delimiters `<FUNCTION>`, and acts on the text string between the opening `<>` and closing `</>` tags.

text menu A string of words in HTML linked to other HTML pages or resources. A text menu should always accompany graphical buttons so that nongraphical browsers can navigate your Web site.

thumbnail A miniature of a graphic, often at reduced resolution, linked to the richer file.

TIFF (Tagged Image File Format) A raster file format developed by Aldus and Adobe for the efficient transmission and printing of raster graphics on PostScript printers.

tile A graphic repeated across the background of a Web page.

topology The 3D terrain of a Web site.

Transfer Control Protocol/Internet Protocol (TCP/IP) A set of standards that allow for the transmission of data across the Internet.

transparent GIF A 256-color raster file where one color has been made transparent, allowing the background color of the Web page to show through.

TrueType An outline font technology that creates accurate screen fonts on-the-fly.

unity The characteristic of a Web page where text, graphics, and page design work in harmony.

value The relative lightness or darkness of a color independent of its hue.

vector A line of length and direction; a graphic file type that describes geometry as lines, curves, arcs, and polygons.

Video for Windows Microsoft's digital video format.

Video Tape Recorder (VTR) The industrial-strength version of your home VCR.

Virtual Reality Modeling Language (VRML) A text-based structural tagging language used to pass 3D information and movements to a virtual reality engine.

Webmaster A person responsible for creating and/or maintaining a Web site.

weight (of a font) The boldness of a font character; in HTML, emphasis is established with the `<STRONG>` or `<B>` tags, or by using default heads.

whitespace Areas of your page without text or graphics. Whitespace helps organize the page and divide areas of data.

Windows Metafile (WMF) A metafile capable of containing raster and object data that is used as the standard Windows imaging format. WMF files moved to the Macintosh platform are translated into PICT.

`winsock.dll` The dynamic link library driver for Windows-based networking and Internet access.

Yahoo! A clearinghouse Web site with a powerful search engine used for locating Web resources; generally your first stop on the Web.