Edcasting

creating and delivering multimedia learning experiences

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Contents

Preface

Edcasting is a practical book that takes you through the process of creating effective multimedia products to enhance academic learning. Not only do educators need many of the same skills as podcasters and multimedia creators, but they also need to acquire unique skills and tools that are not addressed in more general books about podcasting or multimedia. Some of the outstanding unique needs of educators include:

- **Bandwidth Issues.** Large file sizes can be a headache for educators at both ends of the delivery process: (1) uploading/storing files on their own server and (2) students having the capabilities to easily download files. Due to the problems of video material in terms of bandwidth and file size, this book looks only at the integration of audio and still images to create multimedia products.

- **Video Not Needed.** If you're watching *King Kong* then it's important to be able to see motion. However, when explaining academic concepts, it's rare that motion is needed. If you're discussing the *Sum of Squares* concept then it may be "nice" to have motion, but what's *necessary* is to have clear and compelling images that integrate the audio track used to explain the concept.

- **Diversity of Academic Needs.** Educators need to use academic multimedia in a variety of formats. In some cases, audio-only podcasting or enhanced podcasting may suffice. In other cases, integrated audio-image movies are necessary. Still, in others, a complete learning package including audio, multimedia, and various documents is necessary. This book addresses how to create and deliver academic multimedia in all of these formats.

Intended Audience

This book can be useful to anyone working in education. Specifically, the intended audience for this book are educators interested in creating academic multimedia but who have limited experience making such products. Educators who have a high level of experience working with multimedia will find some portions of this book extremely helpful, but other portions they'll find the material redundant. I originally wrote this book to teach *my* students how to create edcasts. In a similar vein, you may find this book a valuable learning tool for helping your students.

Operating Systems

I have kept in mind the needs of both Windows and Macintosh users when writing this book. In fact, most of the software products that are recommended work on both operating platforms. However, when software differences occur, I've provided good options in terms of software for each respective system.

What's the Cost?

In **Chapter One** I discuss various options for establishing your own edcasting studio. In that chapter you'll find details about various setups and their costs. However, you should know that you can create your own *bare bones* edcasting studio for only $105. For approximately $65 extra, you can also include Photoshop Elements to create a strong studio environment. Put differently, being able to have a solid multimedia studio for $170 is a great bargain.

You'll need audio recording hardware: and I'll suggest a good $65 starter kit. In addition you'll need audio recording, audio editing, audio mixing, and MP3 compression software. I'll recommend two products that will do all these steps for free. You'll need to be able to view multimedia products and to create visual models. Likewise I'll suggest two pieces of software for doing this that are free. LiveSlideShow, the multimedia software we'll use for integrating images and audio, will cost you $40. You probably already have software products for creating some of your images. Add on the optional, but very powerful, Photoshop Elements and you have a powerful, yet affordable, edcasting studio.

Using This Book

The book is divided into ten chapters. My working assumption is that you want to create academic movies that integrate audio and images. You should read each chapter sequentially as each builds upon the ideas and skills developed in the previous chapter. The next page provides a schematic overview of the structure and essential content in the book. On the pages after the model I provide a short description of the contents of each chapter.

Schematic Overview of Edcasting Content

							Delivery
						Glue	QuickTime Export Options
					Support Images	The Timesheet	Creating Zipped Files
				Title Images	Outline of Support	LiveSlideShow Overview	Web Delivery Options
			Visual Models	Outline of Titles	Photographs	Inserting Images	
		Audio	Tools	Standards for Titles	Scans	Inserting Effects	
	Storyboard	Rehearsal	Nodes & Links	Creating & Exporting	Screen Captures	Inserting Audio	
Startup	Story Development	Recording	Styling the Model		Web Images	Alignment	
Edcasting	Win/Mac OS Preparation	Visual Modeling	Editing	Unfolding Models			
Definitions	LiveSlideShow Preparation	The Script	Mixing	Highlighted Models			
Types	Project Management		Labeling				
Creating the Studio			MP3 Compression				

- **Chapter 1: Edcasting.** In this chapter, *edcasting* is defined. I then discuss various types of edcasts and seven key reasons why you'd want to create an edcast. The chapter also addresses the process used to set up an edcasting studio in terms of needed hardware and software, and discusses getting institutional support to help cover some of the finances involved in creating edcasting products.

- **Chapter 2: Startup.** This chapter describes how to prepare your hard drive for creating edcasts, how to install LiveSlideShow (the multimedia software you'll use), as well as how to project folders, set up project management, and understand the key stages involved in the development of edcasts.

- **Chapter 3: Storyboard.** Before you can create anything, you need to have fleshed out a good idea. This chapter looks at story development, creating hand drawn visual models to help structure your thinking and presentation, creating a script, and finally adding pauses to the script.

- **Chapter 4: Audio.** Now that you have a script and a hand drawn visual model, it's time to record and edit your audio. The chapter covers how to prepare for recording and what to do during a recording session. Included are instructions for using Audacity, a free audio editing software program, that will be used to refine your audio. Finally the chapter describes using the free iTunes software to create a final MP3 product.

- **Chapter 5: Visual Models.** You will have already created a hand drawn visual model. This chapter shows you how to create a digital visual model to use in your edcast, looking at model construction, model style tips, and software tools for creating visual models. Included are examples using Cmap Tools, another free software program, and how to use it to build, refine, and export your visual model. Finally, the chapter looks at the issues involved with creating dynamic models including how to create unfolding models and highlighted models.

- **Chapter 6: Title Images.** Text only images are usually "titles" for a new section or sub-section of an edcast. Specifically, the chapter looks at creating an outline, the hazards of overreliance on PowerPoint, types of images to avoid, various software products that can be used to create title images, key standards to consider, and exporting the images to a JPG format.

- **Chapter 7: Support Images.** Visual models and title images create the visual scaffolding for your edcasts. Support images complete the role of images by providing visual examples and elaborations to an audio track. These types of images fill out your presentation through the use of a digital photos, scans, or other images that support the concepts being presenting.

- **Chapter 8: Professional Images.** This is an optional chapter for those who want to learn how to make their images look professional. The chapter focuses on how to use Photoshop Elements through such key topics as layers, layer styles, layer opacity, layer screens, and masks.

- **Chapter 9: Glue.** Now that you have all the images completed, as well as the audio MP3, you're ready to integrate them into a smooth edcast movie. This chapter takes you through the paces of how to use LiveSlideShow to create academic movies. Specifically the chapter covers creating a time sheet, using the LiveSlideShow template, inserting images into the timeline, inserting effects (or transitions), inserting audio, and aligning the timing between individual images and the audio track.

- **Chapter 10: Delivery.** This chapter looks at how to make your edcasting products easily available to others. Several specific issues are investigated including: exporting the final LiveSlideShow product as a QuickTime movie, delivering edcasts to the instructor, delivering edcasts to your students, general issues involving multimedia in the classroom, continuing your edcasting education, and becoming an educational leader in the 21st century.

Using the Website

Not all of the key learning materials could be put into this book. Other learning materials can be downloaded from my professional website. In addition, I've developed templates to help you work faster, easier, and more efficiently with Cmap Tools, Photoshop Elements, and LiveSlideShow. Further, I and some others have developed several multimedia tutorials (or edcasts about creating edcasts). Finally, I have several movies my students have developed that you can download as example edcasts. You can visit my website at:

http://socrates.usfca.edu/mitchellm/

Choose the *Edcasting* section within the website to find these extra materials.

Thanks

I want to thank both Colleen Checho and Gail Kirby for kindly reading and editing an earlier version of this manuscript. Their numerous suggestions have made this a much better product. Any flaws remaining are my own creation.

Summary

Edcasting is an exciting and important tool for creating powerful learning experiences. The chapters ahead will provide you with important practical and conceptual tools for creating edcasts. With a modicum of practice you'll be able to take advantage of your already established content expertise to create edcasts that increase the probability that more of your students learn challenging material efficiently and deeply.

1 *Edcasting*

Chapter 1

Edcasting

Overview

The purpose of this chapter is twofold. First, the chapter introduces the concept of *edcasting* and how it can serve as a powerful instructional tool. Second, the chapter provides a brief overview about key hardware and software products used to create edcasts. Three price levels of *edcasting studios* are proposed. They are the bare bones, foundational, and prosumer studios, respectively.

Edcasting Defined

Let's begin with the word that started it all: *podcasting*. Bart Farkas in his book *Secrets of Podcasting* defines podcasting as:

> *In a nutshell,* podcasting *is a World Wide Web-based form of broadcasting that allows anyone with a computer and/or a digital media device to download and listen to content. Formed by the combination of the words* iPod *and* broadcasting*, podcasting involves the creation of "radio" shows that are not intended to be broadcast over Marconi's invention. Indeed these podcasts can be downloaded and enjoyed only through access to the World Wide Web.*

Podcasting was such a big phenomena that it was named *Word of the Year* for 2005. Here's an excerpt from an article in MacCentral (dated December 6, 2005):

> *The editors of the New Oxford American Dictionary have selected "podcast" as the Word of the Year for 2005. The word beat out such runners-up as "bird flu" and "IED" (improvised explosive device). . . . Podcast, which is to be defined as "a digital recording of a radio broadcast or similar program, made available on the Internet for downloading to a personal audio player," will be added to the next online update of the dictionary, due in early 2006.*

In about November 2005 a spin-off word was created: *vodcasting*. This new word refers to specially formatted videos which can be downloaded and played on the new video iPods released in late 2005.

In general there seem to be four key features of podcasts:

1. Simple and easy delivery of new content through web-based delivery systems (such as RSS feeds and the iTunes Music Library).
2. Easier methods for finding new content.
3. Easier and better tools for creating podcasts.
4. Overall low cost of creating and delivering content.

I use *edcasting* in a similar manner. Specifically I define *edcasting* as:

> *Edcasting is the creation of academic learning materials in either an audio or multimedia format that is made available to end-users via the World Wide Web.*

Edcasting opens up new opportunities to educators, partly because it makes the pragmatics of creating hybrid and distance-learning environments easier. Yet even more importantly, edcasting offers a valuable tool for almost all educators to enrich and deepen the learning experiences they create for students.

Please keep in mind that while new tools make the creation of edcasts fairly simple, the time and effort involved in doing anything *well* still takes time. An excellent presentation (whether done live with hand written notes, via PowerPoint, or in a multimedia format) takes careful thought, a deep level of content expertise, a careful understanding of students' previous knowledge and misconceptions, and more. Simply put, it's always difficult to do something well. That doesn't change, nor should you expect it to. What *has* changed is the ease with which that planning can then be transferred into a multimedia format to provide your learners with additional ways to learn complex and demanding material.

Types of Edcasts

Edcasting is a generic term that describes any multimedia material that helps with academic learning. Edcasting materials could be used with primary, secondary, community college, or University environments. Let's look at four distinct formats for edcasts that will be addressed in this book.

Podcasts

A straight ahead audio-only presentation. The only difference from a regular podcast is that this material is intended to support academic learning only. Podcasts can be played with any device that will play MP3 files.

Enhanced Podcasts

Enhanced podcasts are podcasts with at least one, or both, of the following enhancements: (a) the podcast is organized into chapters and (b) the podcast includes images.

Imagine you had a 30 minute podcast and someone needed to review only a portion of that podcast. Searching amongst the 30 minutes of material would be time consuming. Podcast chapters, like book chapters, allow you to subdivide a podcast into a discrete number of chapters. Each chapter contains a short descriptive title and gives the time at which it begins. This makes navigating, or reviewing, the podcast much easier.

Sometimes including a few images would increase the effectiveness of a podcast. Enhanced podcasts allow you to include images no larger than 300 x 300 pixels. The images are always connected to a specific chapter title.

Enhanced podcasts *cannot* be played with any MP3 player. Currently the only devices that will play enhanced podcasts are: iTunes, iPods, and QuickTime.

Academic Movies

This is the primary type of edcast you'll be learning about in this book. An academic movie integrates an audio track with an image track to create a multimedia learning experience. In most learning situations it's more effective to combine audio with visual material to communicate difficult conceptual material. Academic movies can be viewed using the free QuickTime Player or QuickTime Pro. However, these movies will not play correctly using Real Player or Windows Media Player. The primary reason for this is that QuickTime is a more open-ended architecture allowing you to use a wide variety of image, audio, and video formats. RealPlayer and Windows Media Player are both more restrictive in terms of the kinds of audio, image, or video formats they allow to be used. As a result, some products viewable in QuickTime are not viewable using the other media players.

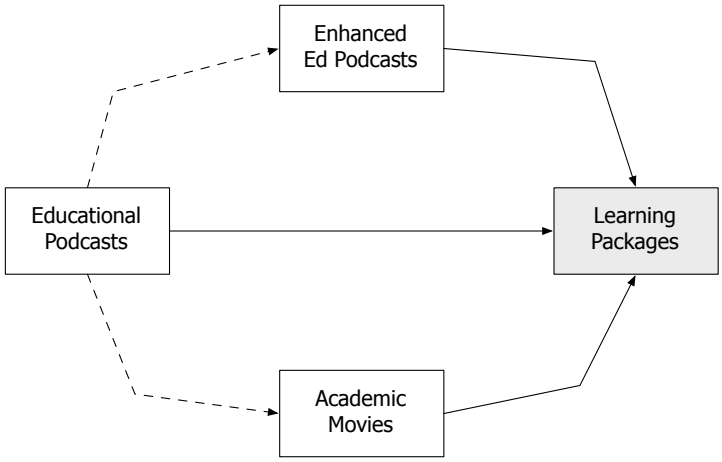
Learning Packages

These are edcasts that include multiple items. A package can include one (or more) podcasts, academic movies, or both. Typically a learning package will also include text-based handouts, such as reading materials, instructor notes, homework assignments, visual models, and more. The text materials are intended to be used while listening to a podcast, or used afterwards as part of a homework assignment.

Relationships

The four types of edcasts presented above are not independent. The figure below illustrates the connections between these edcasting types.

Figure 1.1. *Types of Edcasting*



As the figure indicates, educational podcasts themselves are the foundation for other formats. An enhanced podcast is an extension of the original podcast with either chapters, or images, or both added. Podcasts can also serve as the foundation for an academic movie. Sometimes a podcast can do double duty: students can listen to the podcast only (which gives them much more flexibility in terms of how they listen to the material) or it can be integrated into an academic movie where students listen to the material on a computer accompanied by rich visual material that aids the learning experience. Finally, learning packages are composed of a combination of podcasts, enhanced podcasts, academic movies, and texts. Thus, as the figure indicates, all three of the other forms of edcasts may be used as part of a learning package.

As an aside, creating a script for a podcast tends to be different than a script for an academic movie. In a podcast there is no visual support. As a result, the audio needs to be more descriptive. With an academic movie the script can be shorter because you can take advantage of the visual material to tell part of the academic story. Put differently, in an academic movie the audio doesn't need to do as much descriptive work as in a podcast.

Seven Reasons to Edcast

There are several reasons to consider using edcasting if you are an educator. Following are my own "top 7" reasons for using edcasts.

Reason 1

Edcasting adds the convenience of **when** learning occurs for your students. Students can listen to or view materials at those times

that best fit their learning needs. Students can also view materials in *chunks* that work well for them. Some students may view the complete materials at one go, while others may learn better by listening to smaller chunks of the presentations at different times.

Reason 2

Edcasting adds the convenience of **how** learning happens for your students. Students use these kinds of materials in a variety of ways. Some sit at home and use their stereo systems, some listen to key material while taking a long walk. Some students need to view the materials once, while many others view the materials several times in order to master the content presented. No matter what type of edcast you use, they all offer flexibility in terms of how students digest and interact with the materials.

Reason 3

Edcasts tend to elevate student **motivation**. Since students have greater control over when and how they learn with edcasts, they tend to have an enhanced level of motivation. It's the increased *perception of control* of learning that increases student motivation to learn.

Reason 4

Edcasts tend to create a greater **personal connection** due to the power of voice. Students are able to listen to you, or other experts, outside of the regular classroom setting. This tends to work better than text because the human voice creates a stronger sense of connection and presence. This is especially important in distance-learning or hybrid learning situations. Yet even regular classroom structures tend to be helped by using edcasting as a supplementary learning tool.

Reason 5

Edcasting takes advantage of **dual coding** through the integrated use of audio and images to more effectively explain concepts. The theory of dual coding was first proposed by Alan Paivio. In over-simplified terms, Paivio proposed that our memory encodes information in two ways: in a textual form and in an image form. His claim was that information that was encoded using *both* formats led to easier recall and more efficient coding in long term memory relative to information that is encoded in only one format.

Rich Mayer later proposed a **multimedia** theory of encoding which differed in important details from Paivio's theory. It explained in different terms why information that is presented in both image and audio formats tends to be encoded better than text only, audio only, or image only formats. The bottom line, however, is that when academic movies carefully integrate audio and visual material, complex concepts tend to be learned better.

Reason 6

Edcasting allows educators **greater time flexibility** in how they use classrooms. Lectures, or parts of lectures, can be delivered outside of the regular classroom so that more in-class time is spent on discussions or group activities. Since edcasting creates the pos-

sibility for better learning to occur outside of the classroom, this in turn has an impact on how educators might think about using their live class time. Edcasting also makes the creation of hybrid learning environments or distance-learning environments more feasible.

Reason 7

Edcasting can be an effective way to increase **active learning**. Given the right circumstances, some instructors can ask their students to demonstrate their understanding of key material by developing student-generated edcasts. I've often heard students (especially in a subject like statistics) state that they learned key material at a depth they never thought possible when presented with the challenge of creating edcasts that would teach future students about a key statistical concept.

Edcasting Limitations

I would be remiss if I didn't state the obvious: edcasting is not a silver bullet. Edcasting can enhance the quality of the learning environments you create for students. However, using edcasting *only* may be a limiting way to work with students. Let's consider some of the reasons you probably don't want to use an edcasting-only learning environment.

Learner Needs

Edcasts don't fulfill the needs of all learners. Edcasting is a wonderful additional tool to use in any learning environment. Yet students typically benefit from live classroom settings. Eliminating student discussions (whether live or online), group activities, and other learning experiences may inadvertently decrease student achievement. Learners need a variety of experiences to learn well. Edcasting, typically, can't address all the learning needs of all students.

Textbooks

Texts usually don't fulfill all of the needs of learners. That said, depending on your discipline, texts are a great source of academic learning. While many students will learn better by listening and viewing edcasting materials, other students may learn better when the right text materials are used. You don't want to throw away the baby with the bath water. Edcasting is an important enhancement to effective learning, but edcasting doesn't imply getting rid of texts.

On the other hand, by incorporating edcasting, educators may find they have *more* options in terms of the kinds of text materials they choose to use with their students. This happens because edcasting savvy educators know that the textbooks don't need to do *all* the academic heavy lifting.

The Edcasting Studio

I'm typically asked by people how much it costs to create an edcasting studio. There's no perfect answer to that question. What I'm going to do in this section is to propose three levels of edcasting studio. The first level, the *bare bones studio*, costs approximately $110. The second level, the *foundational studio*, costs approximately $350. The third level, the *prosumer studio*, costs approximately $1,100.

To go to each new level costs about three times what the previous level costs. This is probably a reasonable expectation. Products are changing and improving all the time so it's important that you take the recommendations below as guidelines. It's still important to do your own homework to see if even better products are available before you build your own edcasting studio.

In addition, you can always visit my website to learn about the newest edcasting products. Use the following link to go to my professional website. When you enter the website click on the "Edcasting" option in the navigation menu to find recent information about various edcasting products:

http://socrates.usfca.edu/mitchellm/

- **Assumptions.** Because this book has been written for educators and students, I'm making the assumption that you have a *scanner* and *digital camera* that you can borrow/use at your educational institution. Virtually all colleges and universities, most community colleges, most high schools, and even elementary schools have these two tools that you can use. Unless you are scanning a large quantity of material, you might as well take advantage of the scanners your institution already owns. I realize that many individuals already have digital cameras, but in addition, many educational institutions have digital cameras that instructors, and sometimes students, can use.

- **Audio Hardware.** In the various edcasting studio recommendations each successive configuration builds upon the tools in the previous configuration. For example, the *foundational studio* configuration will assume you already have LiveSlideShow (a software product) which was listed in the *bare bones studio* configuration. Buying software for one level of studio is not wasted if you want to upgrade to the next level of studio. The one exception to this rule-of-thumb is with audio hardware. Each successive studio configuration suggests better audio hardware setup. In turn this makes the audio hardware in a previous configuration obsolete.

Bare Bones Studio

This configuration consists of several tools that are essential for creating edcasting products. With the tools suggested in this con-

figuration you'll be able to create basic, but effective, edcasts. Let's look at each of the suggested tools in turn.

- **Plantronics Audio 40 Microphone Headset.** This is an inexpensive, but decent, audio recording device. The cost will be about $24. This device works equally well with Macs or Windows based computers.

- **Griffin iMic.** This is a very simple in/out box that helps transfer sound from the Plantronics headset into your computer. If you are a Windows user you may not need the iMic ($40). Try recording some audio with just the Plantronics headset, and if turns out to be very noisy or hard to hear, then the most likely culprit is a cheap sound card. One solution to buy the Griffin iMic which will then handle the audio just fine.

  If you're a Macintosh user you'll need the iMic for a different reason: the Plantronics headsets transfer audio at a level that's different from how the Mac is expecting to receive the sound (this has to do with line level versus microphone level issues). Despite the different cause, the solution for Mac users is the same as for Windows users: get the Griffin iMic which will do the conversion from mic level to line level so you can use the Plantronics Audio 40 headset on your computer.

- **Audacity.** This is a free audio recording, editing, and mixing software that works on both Windows and Macs. In the chapter on audio you'll learn where to download this software. The people who have developed this product have done a great job. It can't compete with professional products in terms of key features, but for a novice edcaster this software has plenty of power and features.

- **Cmap Tools.** This is free software for creating visual models or concept maps. It works on both Windows and Macs. In the chapter on visual models you'll learn where to download this software. Like Audacity, this software product can't compete with better professional products, but it nonetheless has a solid feature set and is extremely valuable for creating edcasts.

- **LiveSlideShow.** This is software that integrates your visual and audio material to create a stunning multimedia presentation. The key feature to LiveSlideShow is that you can individualize the timing of each image in your presentation. The details of using this program will be presented in Chapter 8. LiveSlideShow can be bought at an academic price of $40 and works on both Windows and Macs.

- **QuickTime Player.** This is the free software you need to play your academic movies. There are two products that compete with QuickTime: Windows Media Player and Real Player. The reason for choosing QuickTime is that its architecture is open-ended. The

result of this is that third-party software developers can more easily develop multimedia-creation software that works with QuickTime. QuickTime works on both Macs and Windows. Please be aware that only QuickTime *Player* is free, while the QuickTime *Pro* applications costs $30 and has several additional features.

- **iTunes.** This is a free cross-platform software program that you can use for several purposes. However, our main purpose for using iTunes is that it gives us a free, and very good, MP3 compression ability. You'll read more about this in the chapter on audio.

Foundational Studio

This level of an edcasting studio builds upon the *bare bones* studio. It adds important software into the mix. While the Plantronics headset is good for basic audio, at the foundational level I suggest audio recording devices that are a step up in terms of quality and ease of use.

- **Photoshop Elements.** This (and big brother Photoshop) are perhaps the best software programs ever developed. Versions 2, 3, and 4 are all really good. You should be aware that often times companies will bundle Photoshop Elements with their scanners, cameras, or drawing tablets. Photoshop Elements costs $65 and works on both Windows and Mac. However, if you see a scanner you want for $80 that includes Photoshop Elements, then do the math! I went back and forth about whether Photoshop Elements should be included in the *bare bones* studio and finally decided against it. Nonetheless, when you decide to upgrade your edcasting studio, then the first addition should be Photoshop Elements. This book, and especially the accompanying multimedia tutorials, provide a lot of help on how to use this software. Keep in mind that most digital cameras and scanners *assume* you'll be using one of the Photoshop products to refine and enhance photos and scans.

- **SnagIt or SnapzPro.** As a novice you may not realize it, but the ability to take high quality photos of what's on your computer screen is incredibly useful. Sometimes you'll want to show what your computer screen looks like in a piece of software, other times to show what a web page looks like, and so on. Screen image capturing software can be very helpful. Without a doubt the best screen capture program for Windows is Techsmith's SnagIt. And, without a doubt, the best screen capture program for Macs is Ambrosia Software's SnapzPro. Both sell for an academic price of about $25. No other programs come close on either platform in terms of quality, control, and flexibility.

- **Podcast Maker.** To create an enhanced podcast with chapters and small images you either need to know how to do coding or you need software that will help you do it. Podcast Maker is a Mac-only software package ($30) that makes adding chapters and images to create an enhanced podcast very easy. It also does the mundane,

but important, work of creating RSS feed information and XML files for all your podcasts (regular or enhanced). I know of no good product on Windows for creating enhanced podcasts, but this will surely change sometime in 2006.

- **Samson CO1U USB Microphone.** This is one of the first two USB microphones created. It has a very affordable price of $80. You'll also need to get a desktop microphone holder. This is a better studio microphone than the Plantronics: it captures more of the fullness of a voice, has less background noise, and does a better job with rejecting unwanted sounds like plosives (this are caused when you say "p" sounds like "popcorn"). To find out more visit their website.

  http://www.samsontech.com/

- **BLUE Snowball USB Microphone.** This is the second of two USB microphones created and released in 2005. It is better than the Samson product, but also costs more at about $130. BLUE is a company well known for creating high end microphones. You can find out more about the Snowball mic by visiting this site:

  http://www.bluemic.com/

  The secret of both USB microphones is a combination of using a better microphone combined with a pre-amplifier inside the microphone casing. In essence all microphones need to work with a pre-amplifier to increase the level of the sound being passed on to a recording device. The preamps these microphones use are better than those provided by the Griffin iMic or a good sound card.

Prosumer Studio

Let's pretend that you have the money, the interest, and the skills to create a very nice edcasting studio. What I'm going to suggest in this section are products that would fit into the *prosumer* category. Prosumer is a word that implies a high-level consumer, but not *quite* professional, level of quality.

In the arenas of audio and images it's quite possible to spend a lot more money than suggested below. Will truly professional products be better than the ones I recommend? Almost certainly yes, however, that's a big step to take and for the purposes of this book I'm assuming everyone is at an earlier stage of development. If I'm wrong about you in particular, email me or consult the web. There are a lot of good websites to help you navigate professional audio and imaging products.

Here are the products I suggest adding to your edcasting studio at the prosumer level:

- **OmniGraffle or MS Visio.** The first upgrade you'd want to make into the prosumer category is to buy really good visual modeling software. The best product I know in this category is OmniGraffle. It comes in both a standard ($48) and professional edition. Unfortunately it's Mac-only. If you're a Windows user then the best modeling software I know of is Microsoft's Visio (it also comes in standard and professional editions). These are both very powerful programs that will increase the professional look of your visual models.

- **Audition or Peak LE.** Both of these products are powerful commercial audio editors. By using them you'll be able to work faster and better than in Audacity. While Audacity does a lot of things well, both of these programs take effectiveness and power to a new level. Adobe Audition works on Windows, has an academic price of about $145 and includes powerful mixing capabilities. BIAS Peak LE has an academic price of about $100 and provides first class audio editing capabilities. For about $70 more you can add on the BIAS Deck LE program that is a dedicated mixing program.

- **Mbox 2.** This is the lowest-level professional audio interface. The product is made by Digidesign and comes with ProTools LE software (an excellent audio mixing program). You may find Mbox at discounted prices, but resist the urge and pay for the Mbox 2 product at $450. The second version is reported to have vastly improved preamps. You'll also need to buy a microphone, mic cable, and a mic holder. As a prosumer microphone I suggest the Studio Projects B1 microphone. For about $650 total you can have a low-end professional audio recording setup. Given the importance of voice in creating podcasts and academic movies, the payoff is well worth the price.

Institutional Support

I realize most educators don't have money trees in their backyards, but please note that the *bare bones* studio is priced at about $110. This is affordable to many professionals and allows you to get into the edcasting door.

However, in many cases you'll want to check if there's institutional support rather than using your own money. There are several ways that institutions offer support including the following:

- **Talk to Technology Support.** Most institutions have a technology support division. Especially at the University level, most of these technology support divisions have a specific department that provides assistance to faculty members. These faculty support departments tend to be very responsive. Want a USB microphone and can't afford to buy one? Put forward the idea to your educational technology people. They may be able to justify buying 2-3 such microphones that are lent out to faculty members.

- **Use Faculty Development Funds.** Most Universities, and several other academic institutions, provide faculty development support. Find out what financial support is available at your institution. You may need to write a short grant application to the relevant committee, but there may be the money available so you can buy an Mbox 2 with a great microphone.

- **Department or School Purchases.** Sometimes you may not have the money, and there are no faculty development funds, but departments or schools often have budgets that enable them to get some of the software or hardware that's needed to create an edcasting studio. The upside is that it makes it more possible to acquire needed tools. One consequence, however, is that all such purchases need to make sense as a unit-wide acquisition that can be shared amongst many, or most, of the faculty in the unit. This approach makes acquiring decent tools possible, or in some cases it makes possible getting professional-level tools that would be impossible otherwise.

  Consider the case of the HHB FlashMic. This is a high-end microphone that contains a pre-amp and flash drive recording media inside the microphone casing. It's an elegant design, works very well, but costs $1,300. Consider that the HHB FlashMic offers professional level recording, several people can use it, and there are no cables or connections so it can easily be used to record live lectures and discussions, as well as, for more traditional edcasting recording situations. One HHB FlashMic could be shared amongst a group of 15-to-30 faculty. This solution is cheaper than just 2 people buying an Mbox 2 setups that can't be easily shared with other colleagues. Yet, at a price of $1,300, the money for buying

such a product would need to come from a department or school, and would need to be shared with everyone in the academic unit.

There may be other ways to find funding for an edcasting studio such as external grants and other ideas. My point is this: if you see the value of edcasting for your learners then fight for your ability to create an edcasting studio. There is likely to be a way to create such a studio through a combination of monies from several sources, only some of which may be out of your own pocket.

Summary

Edcasting is an exciting extension to podcasting. The tools available now make it much easier for educators to create and deliver academically rich learning materials that are in a multimedia format. There are several distinct formats that an edcast may take including podcasts, enhanced podcasts, academic movies, and learning packages. From an educational perspective there are at least seven reasons for adding edcasting to your teaching arsenal. That said, there are limitations to edcasting that any educator should keep in mind, including the continuing value of well-written textual materials. Fortunately it's relatively inexpensive to create your own edcasting studio and three distinct levels of studio were presented. Finally, there may be several ways that you can find institutional support to help you develop and deliver your edcasts.

Exercise 1

Brainstorm three ways you would want to use an edcast with your learners. Use a paragraph to describe each of these three ways. Give the specifics of the course and where the edcast would meet a unique need within that course. For the purposes of this exercise it would be better (but not necessary) that all three brainstormed uses of edcasts apply to the same course. Write up the three ways and save your responses as a Word or PDF document. Send the document to me as an email attachment. Name your document *myfirstnameStorm.doc* or *myfirstnameStorm.pdf*. So, if your name is Amy I should receive a document titled *AmyStorm.doc* or *AmyStorm.pdf*.

2 *Startup*

Chapter 2

Edcasting

Overview

Getting started with making edcasts can be the most difficult part of the process for some students. I've found that those students who lack fundamental computer skills usually have the most difficulty. There are solutions to this problem if you act early to make sure you have key skills mastered.

Your Computer

There are several basic skills that impact your ability to work with multimedia including: knowing how to copy folders, renaming folders, downloading material from websites and much more. The key starting point to ensure you have mastered basic skills is the **Essential Computer Skills Package** that was given to you as an incoming doctoral student at your initial orientation session.

- **Essential Computer Skills Package.** This is an integrated set of materials intended to make sure all doctoral students have a minimum set of computer skills mastered within their first semester in a USF doctoral program. The set of materials includes:

    1. Table of Essential Computer Skills
    2. Recommended Visual QuickStart Guide (for either Macintosh or Windows)
    3. Multimedia presentations about seven key areas you need to know about regarding *basic* computer skills.

Using LiveSlideShow

This multimedia creation software product is made by Totally Hip Software. It's a simple, inexpensive, effective, and powerful software program that runs on both Windows and Macs. **LiveSlideShow** is the multimedia *glue* that will merge your audio and visual materials into one integrated multimedia product. Here are the basic steps involved in edcasting creation:

1. **Create the script**. This is usually accompanied with a visual model that provides an organizing and conceptual structure to your academic presentation.
2. **Record, edit, compress the audio**. Now the script is made real by the recording session. Editing and compressing the audio will help make it a polished MP3 product.
3. **Create the visual images.** At this stage the final form of all your images are created including: visual model images, title images, and all support images. Images can be created by scanning hand-drawn images, using presentation software, using Photoshop Elements, or several other excellent image creation programs.

4. **Create the multimedia product.** Use LiveSlideShow to merge the audio and visual images into one coherent, well-timed QuickTime movie.
5. **Deliver the movie.** The final step is making sure you deliver your wonderful product to me. Typically the movie will be about 10-to-15 Mb in size. You can deliver it via a CD, or a USB flash drive, or by bringing your laptop to class or my office for the exchange.

Preparation

Based on previous experience I've noticed some key steps that students can take to enhance their efficiency. Three major preparation steps are discussed below.

Monitor Resolution

Be aware that your computer is capable of multiple monitor resolutions. Some computers may go as small as **800 x 600** pixels while others will have a resolution of **1600 x 1200** pixels or larger. When working with multimedia, and LiveSlideShow in particular, you want to make sure that your monitor resolution is high enough.

Typically a resolution of **1024 x 768** will be a little small, so choosing something bigger than that will allow you to see more of the crucial *timeline* in LiveSlideShow. Please refer to the Essential Computer Skills Package (especially the *Customization* movie) for details on how to change your computer's monitor resolution.

Smooth Fonts

Text usually looks ugly on a computer screen. The text will print out fine, but on-screen it looks chunky. The formal term for *smooth fonts* is anti-aliased text. This process makes the text look much smoother on your computer's screen. It also results in cleaner looking images when working with programs such as Photoshop Elements or PowerPoint. You want to make sure anti-aliasing is activated on your computer.

- **Macintosh users.** There's no need to do anything since anti-aliasing is automatically on.
- **Windows-users.** Depending on your computer's set up, font smoothing may, or may not, be turned on. It's best to check if it's activated. Check the steps below to see if font smoothing is on::

    1. Using the Start Menu select Control Panel.
    2. You want to use the *classic view*. If you are in the category-view (i.e. "Pick a Category"), then click on the left hand side of the window you can click "Switch to Classic View."
    3. Scroll down until you find System. Open this control panel.
    4. You'll see several tabs. Select Advanced.
    5. You'll now see three categories. Select the "Settings" button for Performance

6. At the top of the ensuing dialog box you'll find 4 buttons. Select Custom.
7. Now go through the list of features. Make sure that "smooth edges of screen fonts" is checked on. If you want, check or uncheck any additional options you want to change.
8. Press the Apply button.
9. Next press any OK button to get out of the dialog box. Finally close the Control Panel window.
10. That's it. Do it once, do it right, and you'll have better looking fonts on your screen. For some of you the "smooth edges" option was already on and you won't notice a difference.

Transfer

There are several times in a semester when you may want to transfer files from your computer to me, or to receive files from me. There are two good solutions for quick and efficient data transfer. You *need* to have at least one of the below options operational in your computing setup.

- **USB Flash Drives.** This is the number one option. Flash drives plug straight into a computer's USB port. They are small and cost effective. At the time I'm writing this guide you can buy a 256 Mb flash drive (more than big enough) for $25 at **AcademicSuperstore** (www.academicsuperstore.com). Bring your flash drive to class, or my office, and I can put big files on it for you very quickly.
- **High-Speed Internet Access.** A flash drive isn't that important for me *giving* you files if you have high-speed internet access. I can then post big files to my web server, send you an email with the link for downloading the file, and you can download the material in less than 5 minutes.

LiveSlideShow

Early in the semester you will receive your copy of LiveSlideShow. I want you to *immediately* install LiveSlideShow on your computer. There are a few reasons for doing this including: (a) if you have a defective CD we can fix the problem *before* you need to start working with the program, and (b) you can do the **Exercises** at the end of this chapter.

Windows Install

Step by step instructions for installing LiveSlideShow on a Windows computer are given below.

1. Put the CD in your computer.
2. You'll first see a Welcome screen. Click Next.
3. Click Next on the ensuing screens. In the Selected Components screen make sure everything is checked.
4. Click OK for another couple of boxes and the installation routine will begin.

5. If you don't already have QuickTime installed then the installation CD will install QuickTime for you. It will install version 6.5.2. Make sure to choose the Recommended Install option (not Custom or Minimum).
6. You're *almost* done. Now read the section titled **LSS Serial Number** after the Macintosh Install section.

Macintosh Install

Below are step by step instructions for installing LiveSlideShow on your computer.

1. Insert the LiveSlideShow CD into your computer and then double-click on the CD when it appears in the Finder.
2. You'll then see several folders and files. Double-click on the one named **LSS 3.0 Installer**.
3. A splash screen will appear, just press the Continue button.
4. Next you'll see information about the license agreement. Print it out if you want. Make sure to click on the Accept button. Then click on the ensuing Continue button.
5. Finally you're brought to the actual installation dialog box. By default **Easy Install** is selected. Leave it that way. Check the Install Location in the lower left side of the box. This should not be a problem as by default LiveSlideShow is installed in the Application folder on your main hard drive. Just click on the Install button.
6. The installer will then take about 1-3 minutes to install all needed files. It will ask you if you want to register. If you're connected to the Internet, then I suggest registering at this point. This is a very important step for receiving technical help and discounted upgrades for future versions of the software.
7. Now read the section titled **LSS Serial Number**.

LSS Serial Number

LSS is on your computer's hard drive but it hasn't been activated. If you're a Windows user notice that a LiveSlideShow shortcut icon has been put on your desktop. Open LiveSlideShow using the shortcut. If you're a Macintosh user open the Applications folder, then open the LiveSlideShow folder, and then double-click on LiveSlideShow. You may want to create an alias or put LiveSlideShow in the dock. You can't fully startup LiveSlideShow at this point. Here's what happens:

1. You'll be asked for your name, company (not needed) and serial number. Your serial number is located in the physical box that LiveSlideShow came in. It's printed on a white label applied right under the CD inside the box.
2. Once you've inserted the correct serial number then LiveSlideShow will open up. Now you're ready to make multimedia.

User's Manual

The official 96 page manual has essential information on some features that I won't cover in this book including the use of themes and navigation buttons. Check the manual out if you'd like. Furthermore, if you are a computer *novice* then try using this book, then use the LiveSlideShow manual if you need extra support.

Project Folders

For most people the hardest part about using LiveSlideShow is doing all the boring setup steps for your movie *before* you can get going with the cool process of integrating visuals with audio. Over the years I've seen students make many mistakes during this "setup" stage. In response I've developed a very simple **Template Folder**. I won't be teaching you how to go through the initial setup procedures in LiveSlideShow (if you want to learn how then read the manual). Instead the template folder allows you to get to work right away.

Generic Template

There are two generic **Template Folders** that you can download: TemplateB and TemplateW. The two templates are exactly the same *except* that TemplateB uses a black background and TemplateW uses a white background. I highly suggest that you store these template folders in an easy to find location on your hard drive. You'll use one each time you create a new project. The template folders contain the following:

- **Template file.** The is the actual LiveSlideShow template file stored *within* the template folder. This template file tells LiveSlideShow to do several things including: make the presentation 800 x 600 pixels in size, make the background black (or white), make sure the exported QuickTime movie shows the controller, and other important settings.

- **Timing_LSS3.** This is an Excel file. You can use it to figure out your timing. You'll learn later on that it's important to have a very detailed timed accounting of when specific images should appear to match with the audio. I've also included a PDF version of this worksheet for people who don't have Excel. The downside? Excel does automatic calculations for you, the PDF won't.

- **Originals.** This is a folder. You should store all of your original audio and image files in this folder. Typically this will include your original audio file (in an uncompressed WAV or AIF format), Photoshop documents, PowerPoint shows, and other uncompressed images.

- **Buttons.** This is a folder. You won't use the folder, but it needs to be placed in this folder for LiveSlideShow to work.

- **Images.** This is a folder. This is where you will place all of your fi-

nal *compressed* images. Your images will be in a PNG, GIF, or JPG format. If you accidentally place a Photoshop or a PowerPoint file in this folder, LiveSlideShow may have a nervous breakdown and behave erratically.

- **Sounds.** This is a folder. Typically you'll only put your final compressed MP3 audio file here.

Project Templates

Pretend that you're going to start a new project. What I suggest is that you *make a copy* of one of the Template folders. This way, if things go wrong then you can easily go back to the original template folder to start over if needed.

In addition, pretend that your first project is for a course called *Cognition*. After duplicating the Template folder I would rename the duplicate folder something descriptive like *Cognition Project*. Then go inside of this folder and rename the template file. Change it from *Template* to *Cognition*. This may seem silly to you now, but these simple steps can save you headaches later on.

Project Management

You'll get many more details on the mechanics of making multimedia later in this guide. However you want to keep in mind that a key component of making any substantial academic product is good time management and a high level of organization. While these should be "givens," it's important to point out that making multimedia is very different from writing a course paper. People sometimes think of the two in the same manner. Many people assume they can whip together a stellar paper in the last week of class. Such people are wrong about writing a good paper, and they're doubly wrong about creating multimedia. It takes research, forethought, planning, execution, and refinement. Making such a product is quite manageable, but only if you *plan for success*.

Timeline

I suggest creating a semester long timeline. In the timeline put your best guesstimates for accomplishing certain multimedia project steps. You can refer to the **Edcasting Step-by-Step** table (see **Appendix A**) or use the general guidelines presented in the next section. Your estimates will be a guess at this point, but they still allow you to have a timeline that helps guide you through the creation process.

Key Stages

This section provides an overview of the key stages involved in creating a multimedia project. Each stage impacts how you develop your project timeline. These stages are not equal in terms of time demands. Setting an initial timeline of goals for accomplishing

each of these nine stages will help you tremendously.

Idea Development It's hard to make something if you don't have a good working idea of what you want to create. Set a reasonable deadline for when you will have finalized the big idea for your project.

Research Before you can even start writing an audio script you need to have some content. This is your research stage and it must be done thoroughly.

Synthesis This is pulling together the findings from your research by creating a synthesis of those findings. This could be in an outline form.

Visual Model Most academic multimedia projects lend themselves to being conveyed through a visual model. Good visual models display the key concepts but also the *relationships* (if any) between those concepts. This model doesn't have to be fancy or ready for publication, but it should be created before writing your audio script.

Audio Script Next you'll write an audio script. People speak at a rate of between 150 and 200 words per minute. For the sake of simplicity I'm going to assume most of you speak at 175 words per minute. If your multimedia media project is going to be between 7 and 10 minutes that means your audio script should be between 1225 and 1750 words. That's not many words, so make sure to use them well.

Record, Edit, Compress You'll need to physically record your audio script and then edit the resulting audio file to remove any mistakes. The final step will be to compress your audio file into an MP3 format.

Create the Images Now you can make your images. You may use an assortment of software products. One of the key steps will be creating a good looking version of your visual model. You'll also need title images and support images. These images help round out your story by showing images of students in a classroom, signalling that your now talking about a new concept, or whatever is appropriate to the given content.

Glue With the audio and images done, you can create your multimedia project in LiveSlideShow. The first step will be to carefully listen to your audio file noting the times that key images should appear in order to correspond with your audio file. This process is made much easier by using the free, cross-platform, software product **QT Movie Notetaker** which simplifies this process. The second step is to place all of your images, transitions between images, audio, and time settings into the LiveSlideShow timeline. The final step is to press a button and watch LiveSlideShow make a QuickTime movie based on your instructions.

Delivery When the project is done it will need to be exported as a QuickTime

movie. Once in a QuickTime format you'll need to get it to me via a flash drive, a burned CD, or some other method.

Summary

The purpose of this chapter was to provide a brief overview of the multimedia making process including initial preparation, how to install LiveSlideShow, how to use the Template folder, and an introduction to project management when creating multimedia. Making multimedia is an important and useful skill for today's educators to have. Like many complex challenges in life, however, multimedia production involves the skills of preparation, planning, organization, attention to detail, and editing.

Exercise 2

You're going to create your first movie. Here's what needs to be done:

1. Install LiveSlideShow and enter the serial number for the software program.
2. Download and install the Template folders to your hard drive. Copy and rename TemplateB as **Exercise1.**
3. Rename the LSS file within the folder as **YourFirstName1**. So, if your name is Alan, rename it as Alan1.
4. Open the file now named **YourFirstName1**.
5. Check the timeline (bottom of the screen). You should see some images placed in the timeline. If you don't see any images (two will be pure black) then you have somehow *not* used the Template folder. This means you should go back to Step 2 if there are no images in the timeline.
6. You won't need to add anything to the timeline area as I've already put some images in the timeline for you. In the middle of your screen (more or less) you'll see a button that says **Export**. (This should be just above the timeline area.) Click on the **Export** button.
7. You'll see a dialog box asking how you want to name your movie. Call it **YourFirstName1.mov**. So, if your name is Alan the exported file should be named Alan1.mov. Please be aware of where you're saving the movie on your hard drive.
8. When done, send me an email message saying you completed Exercise 1. Make sure to *attach* the movie called **YourFirstName1.mov** with the email.
9. Once I've received your movie I'll check it to make sure everything went right. Once I've done a check I'll send you back an email saying "Congratulations."

3 *Storyboard*

Chapter 3

Edcasting

Overview

The most important aspect of creating a multimedia presentation is to have a good game plan. In this chapter I present a stylized game plan for creating academic multimedia presentations that consists of two interlinked ingredients: the script and the visual model.

- ✓ **The Script**. A script is the backbone of your presentation. It combines what the viewers will hear with what the viewers will see.
- ✓ **Visual Model**. A good visual model works in tandem with the script. It not only provides a source of visual material, but a model provides a natural structure and organization for the audio script.

In this chapter you'll learn about how to create a good *draft* visual model. This means your model can be a pencil and paper drawing. The visual model is so central to the creation of the script that we'll develop the model first. Then the chapter describes how to develop the written script.

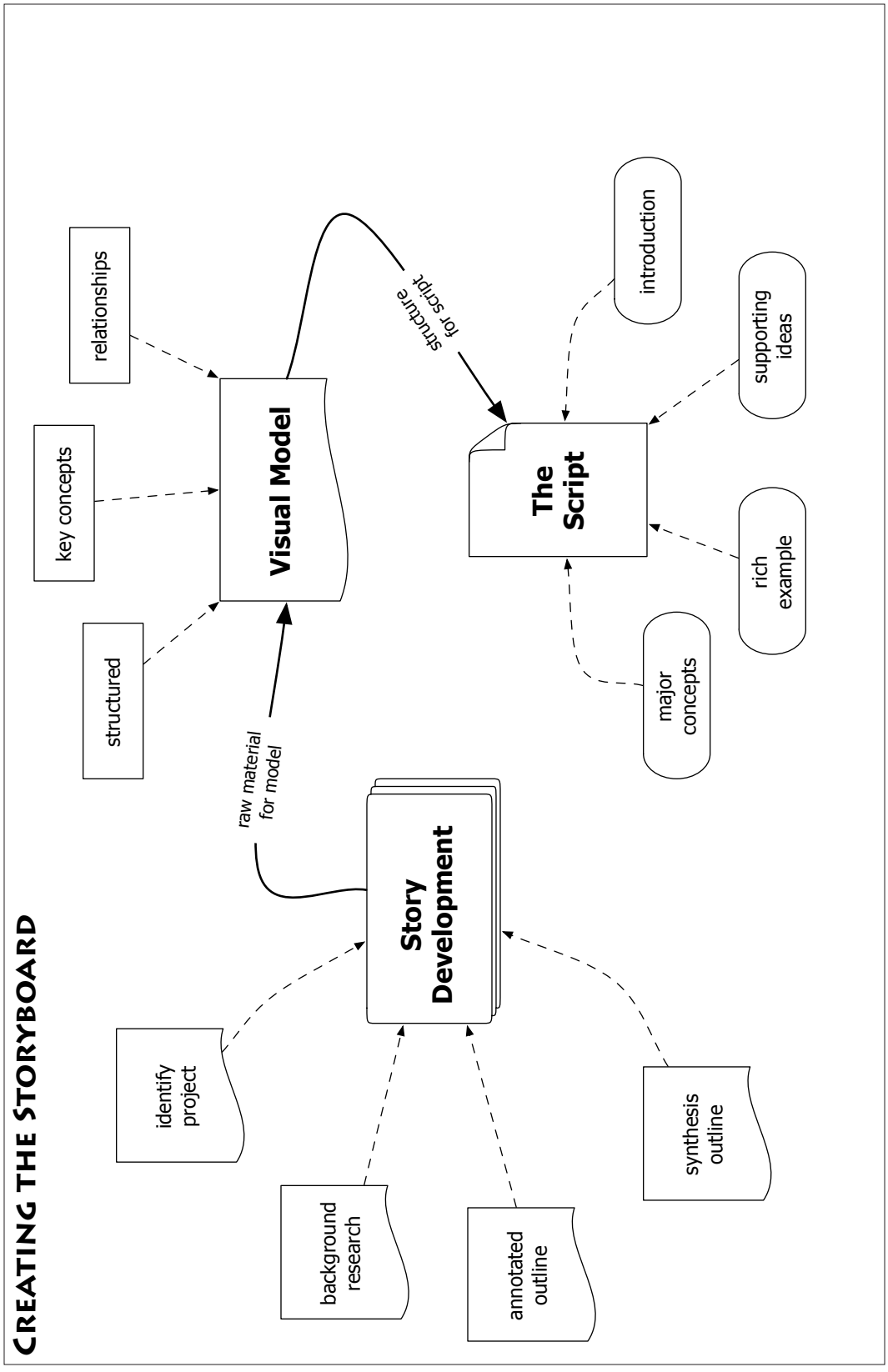
Keep in mind that you're creating a *sustained* multimedia product which means your final product will be between 7 and 12 minutes. This is a relatively long presentation time. It allows you to communicate a great deal of substantive content, but these time limits also demand that you remain *on message* by being succinct and clear in the development of your script.

Chapter Model

The next page presents a visual model of the chapter's content. The model emphasizes three major phases in developing a final storyboard for a multimedia presentation:

- ✓ Story Development
- ✓ Visual Model
- ✓ The Script

The story development phase involves developing your basic idea through research and organizing your thoughts. The visual model phase helps solidify and give extra structure to your presentation. Finally, based on the visual model it then makes sense to engage in the final phase of writing the script that will then be audio recorded. This chapter briefly describes the story development phases as this is already familiar to you. The chapter then provides more detail regarding developing both a visual model and the writing of the formal script.


CREATING THE STORYBOARD
relationships
key concepts
structured
Visual Model
structure for script
introduction
supporting ideas
The Script
rich example
major concepts
raw material for model
Story Development
identify project
background research
annotated outline
synthesis outline

Story Development

How do you develop a story? This depends on the specific challenge within a particular course. Nonetheless, the essential challenge is not that different from writing a paper. You want to *identify* the key points to present, you want to *organize* your material, and you want it to be *engaging*. There are many ways to combine all these factors into an effective multimedia presentation. As with writing a paper, the most difficult part is probably at the beginning when you are developing the core idea around which the rest of your presentation will unfold.

Identify

You first want to define the project you're going to develop within a fairly short amount of time. I would advise students to choose a project specialization within the first 4 to 6 weeks of the academic semester. This typically gives you enough time to consider a variety of potential topics. In some courses (such as *Applied Statistics*) you are given the specialization topic. Yet in most courses (such as *Cognitive Psychology* or *Multimedia Learning*) you have a wide array of possible choices for a topic.

Research

Once you have an area of focus then you need to conduct suitable background reading on the topic. This will typically mean reading what your course texts have to say on the topic, finding relevant research articles and books that might supplement your understanding of the topic at the library. In addition it's useful to conduct a general web search to see if there are any additional sources that might provide useful information about your specialization area.

Annotated Outline

I suggest maintaining an evolving annotated outline of your readings. After you've read an article make sure to immediately add the important and relevant points from that article into your project outline. Later when you've finished all your background readings you can then reorganize the outline so the articles are grouped into a natural order. This organization should be based on the key themes that emerge from your readings.

Synthesis Outline

Once you've completed all your background readings construct a second outline. This outline should be a synthesis of all the key topics and issues that have emerged from your readings. Once you have this much shorter outline completed you can rearrange the order and structure of topics so they best highlight the key issues in your specialization area. You're not done structuring your presentation, but the synthesis outline will help you construct the next needed element: the visual model.

Visual Models

The visual model serves as the organizing structure for your audio script. An additional bonus is that a strong visual model can serve as the source for 30 to 50% of the images needed for your presentation. You'll learn more about how to create *polished* visual models in a later chapter (*Chapter 5: Visual Models*). For now what you'll want to develop is a solid model using pencil and paper that can help guide the development of your script.

One of the biggest problems I've seen with novice multimedia creators is they have difficulties creating images. That's a natural problem. However, if you create a good draft visual model you'll alleviate this problem that many novices face. For example, if your script has been organized around the visual model, then there will be a natural synchronicity between what the viewer of your edcast sees (the visual model) and hears.

Definition

Visual models have been defined in many different ways. However, for the purposes of an academic presentation I'm going to define a visual model thusly:

> *Visual models are structured graphical representations that help explain the key concepts, and the relationships between those concepts, for a well-defined body of knowledge.*

This definition contains essential elements: structure, graphical representation, concepts, and relationships. We'll look at some examples of visual models (below) later in this chapter. All of the examples, while different, will share the similarities of those essential elements described above.

- **Joseph Novak.** Joseph Novak (see *Learning How to Learn* by J. Novak and B. Gower, 1984) has conducted research into a specific kind of visual model he calls a *concept map*. A concept map is a more restrictive visual model that is structured according to a hierarchy of concepts. Novak's general definition of a concept map is very useful:

  > *A concept map is a schematic device for representing a set of concept meanings embedded in a framework of propositions.*

  More importantly he followed up this definition with the following clarification:

  > *Concept maps work to make clear to both students and teachers the small number of key ideas they must focus on for any specific learning task.*

Novak's supporting statement is important because it highlights that the purpose of a visual model is to help clarify what is (presumably) a difficult body of knowledge for the intended audience to understand. You can imagine that a good visual model, combined with substantive audio elaboration of the model, can go a long ways towards helping an audience develop a better understanding of conceptually challenging material.

Standards

When creating a visual model there are some key simple mechanical standards you should keep in mind. They include:

1. Structure is apparent in the resulting model. The structure should be clear *to you*. Later, based on your script, you should be able to succinctly explain that structure to your viewer.
2. One purpose of the model is to highlight key concepts. Try to choose only those concepts which are *essential* to explain a body of knowledge.
3. Use only one page in landscape mode (horizontal).
4. Concepts are generally represented as boxes or circles. In the research literature these shapes are referred to as *nodes*.
5. Connections (or relationships) are represented as connecting lines between concepts. Sometimes those lines have arrows when there is directional causality or there are distinct ordered steps in a process. In the research literature these lines are referred to as *links*.

Visual Model Examples

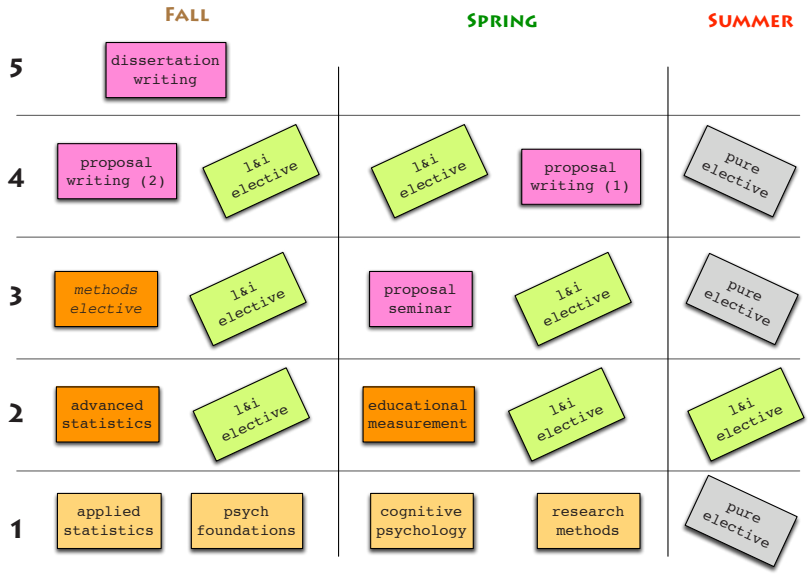
This section looks at three examples of visual models. Full sized versions of each of these example models can be found in **Appendix C**.

Dissertation Planning

This is a model of the structure a specific doctoral program in education. Notice in the figure (below) that there are no connecting lines. While this is rare in visual models, it can occur. The visual model has a structure. Part of the structure is provided by the numbers 1 through 5 (far left) to indicate a particular year in the program. Another level of structure is provided by semesters within years (Fall, Spring, Summer).

Color-coding has been implemented to distinguish *categories* of courses. In this case yellow is used for mandatory first-year courses, orange for methodology courses, red for dissertation courses, green for program-specific elective courses, and blue for University-wide elective courses. Thus color-coding provides an additional level of structure to the model.

Figure 3.1. *Dissertation Planning.*



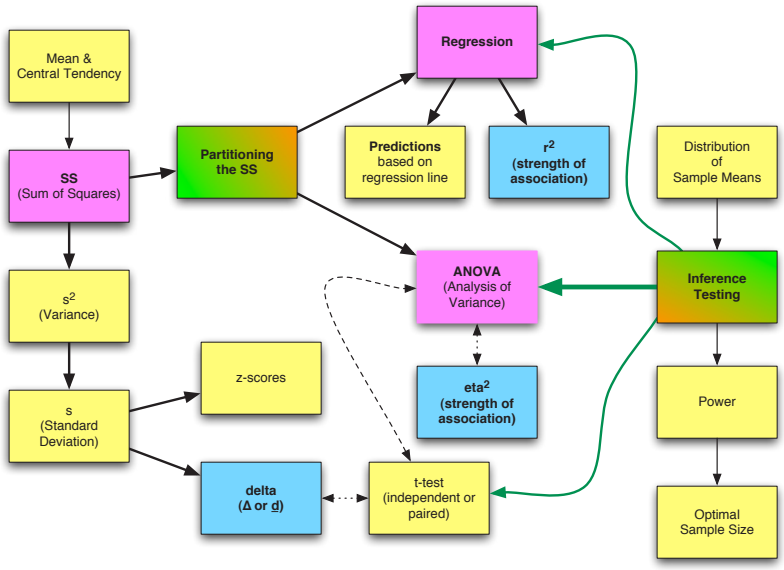
Finally, the model reduces any ambiguity in the program structure by using the analogy of refrigerator magnets (this is in the title of the full model but is excluded in the figure above). People intuitively know that refrigerator magnets can be moved around. As a user listens to the multimedia movie about dissertation planning they understand how most of the courses can be moved to different locations on the program "refrigerator." Thus using an analogy can add yet another level of clarifying structure to the model.

- ❏ **Dissertation Planning Movie.** *This movie was created to orient students to the program requirements of one doctoral program. The movie uses only one visual model that is presented in a variety of ways to highlight the various requirements and stages of the program.*

The Roadmap

The second model is an overview of the essential content in a foundational level statistics course. This map is structured in a more conventional manner. Lines (especially the arrowed lines) indicate a conceptual order where certain concepts come before others.

Figure 3.2. *Statistics Roadmap.*

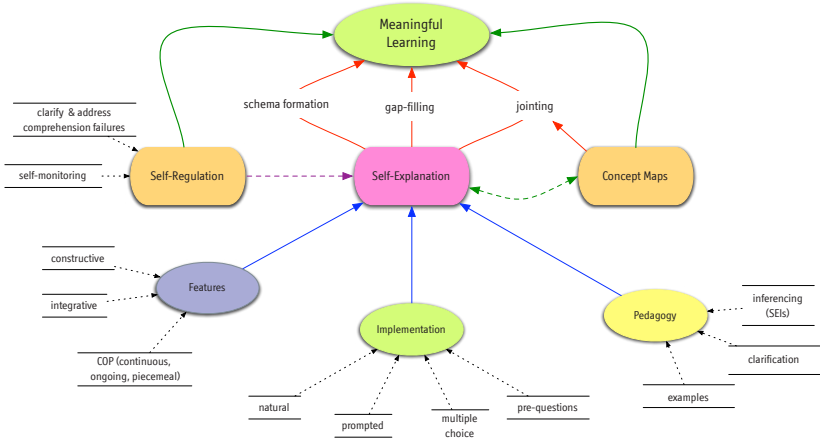


❏ **Statistical Roadmap Movie.** *This movie explains what is covered in each of the course sessions. This is done by showing only that part of the complete model that will be covered in a particular session. The images are all variations on the complete visual model.*

Self-Explanation

This model summarizes the research regarding the cognitive construct of *self-explanation*. This model has a distinct bottom-up structure. At the lower levels self-explanation is explored in terms of its key *features*, *implementation* of the concept, and *implications* for pedagogy. At the next level up the relationship between self-explanation and other key cognitive concepts (self-regulation and concept maps) is shown. Finally, the connection between these three related concepts and the larger construct of *meaningful learning* is highlighted.

Figure 3.3. *Self-Explanation*



These three visual models are by no means exhaustive. There are many ways in which visual models can be formed. That said, a visual model needs a clear structure that helps the viewer focus on key aspects of the concept under study.

❏ **Shana on Concept Maps Movie.** *This is a student created movie about concept maps. This movie is useful because it provides additional information about the purpose and uses of visual models. In addition Shana does a wonderful job of using two complex visual models in a compelling manner within the body of her presentation.*

Draft Visual Model

The purpose of the rough draft is to create a structure and to visualize the key concepts and their connections in your area of specialization. Here's the key mechanical considerations to keep in mind when creating your model:

1. Use pencils (regular or colored). They are easier to erase.
2. Use white paper in landscape (or horizontal) orientation. You're doing this because your polished visual model will be almost the exact same size as a piece of paper in landscape position. You'll learn about creating the polished model in *Chapter 5: Visual Models*.
3. Have lots of pieces of paper to work with. You won't get things ordered in the way you want right away. Don't be afraid to draw and redraw.
4. Now that we have those mechanical considerations out of the way, let's now look at the major substantive steps involved in creating a visual model.

Think & Plan

Use your synthesis outline to think about what might be the best visual structure for your draft model. At this point you may end up eliminating some extra stuff from your outline. Remember, you won't be able to draw many boxes in your visual model. A model is not trying to tell the full story, instead it attempts to highlight the major concepts and their relationships.

Draw Boxes

Now draw boxes for the major concepts. If you have a well-ordered outline then your major concepts are those concepts at the first level of an outline. Any indented concepts are not "major" but are *supportive*. You should have plenty of room on your page for all of the major concepts. If you don't then you have too many of them. If you have too many major concepts then you'll need to reduce the number of major concepts redraw your draft model. As a rule of thumb, you shouldn't have more than about 7 major concepts.

Create Labels

The outline may say, "Self-efficacy is important for academic achievement." But you're not putting all that information into a small box! Instead convert your sentences to labels. In some cases you'll have enough room to use the label *Self-Efficacy*, but other times you'll simply have to use the label *S-E*. Remember that you'll be talking about each box in your model so you'll need to explain to your viewers what *S-E* stands for if that's the label you end up using.

Draw Connections

Put in connections (lines or arrows) between major concepts when appropriate. If everything is connected to everything else then you have a very complicated model. Moreover it will look complicated to your audience. If there are no connecting lines then make sure that you have a structure that works to clarify the relationships between topics or concepts.

Critique & Restructure

Sit back and critique how your model looks after putting in the major concepts. Typically I start off with an initial drawing and end up redrawing this model about 3-5 times to refine and emphasize both the relationships between major concepts and also to make it easier for a viewer to understand.

Supporting Concepts

Now that you have a basic structure for your paper & pencil model, start adding in the supporting concepts (also as boxes). Typically this is where most people have to make key deletions. Most students find there's not enough room to include all supportive concepts in their model. It's your job to simplify and clarify your area of specialization. In 7-12 minutes you *can not* communicate everything that's relevant to an area. However, you can explain the guts of a theory in that amount of time. Keeping this in mind, use your own judgement to determine which supportive concepts get the axe and which get put into the draft model.

Add Links

Now add in the final lines or arrows. Typically all supportive concepts should be linked to a major concept. Are any of the supportive concepts linked to each other? If so, please indicate. Are any of the supportive concepts linked to other major concepts? If so, please indicate.

Get Feedback

Now that you've gotten this far it would be useful to get feedback from one or two colleagues. A model should be pretty clear to them but won't be completely "obvious" (otherwise there would be no need for your audio narration which completes the story). There are a number of ways to get feedback. Probably the most effective approach is to sit down with a colleague and ask them to talk aloud regarding what the model seems to be conveying to them. If you've used lots of labels then provide a sheet that let's them know what each label stands for. Then, just by listening to them talk through the model, you can start to see if there are any general problems with the structure of the model.

Final Draft

Take 2 to 7 days off. Return to the model and see if it still seems clear. Make revisions and changes as seems appropriate given your own refreshed critical eye and any feedback you've received from others. You're still using simple boxes and lines at this stage. What you want to end up with is a visual model that serves as the structural organizer for your audio script.

The Script

There are several good ways to develop an audio script. What I'll be describing is a stylized approach that's useful for many students.

Script Length

People typically talk at a rate somewhere between 150 to 175 words per minute (wpm). This means if you are trying to create an 8 minute presentation then it should have no more than 1,400 words if you speak close to 175 wpm. If you speak at 150 wpm then you should use no more than 1,200 words. Any way you look at it you don't have a lot of words to work with. Use them well.

What I've done in the two tables below is to break down the script structure. Specifically I've suggested that you use about 50% of your script for *major concepts*, 25% for a *rich example*, 15% for *supporting concepts*, and 10% for your *introduction*. These percentages are general guidelines only. Nonetheless these suggested percentages can be helpful indicators about whether you're generally on track in terms of time.

Table 3.1 assumes you speak at 150 wpm, while Table 3.2 uses a rate of 175 wpm. You can get a good sense of your rate of speaking by reading a passage of a known word count. Make sure to time yourself. Then divide the total word count read by the number of

minutes or number of seconds used. If you divide by number of seconds then make sure to multiply this result by 60 to get your personal *words-per-minute* speaking rate.

There is nothing magical about the numbers and percentages in the two tables. They simply provide decent indicators to help you during the development of a script. Most of the software programs you might use for script writing (such as Microsoft Word, Nisus Writer, and others) provide you with word counting tools. Thus it's usually fairly easy to do rough checks on the actual word count of your complete document, or just portions of the script.

Notice that even if you do a long presentation of 12 minutes you still don't have that many words (1,800 or 2,100) to work with. Multimedia presentations are most successful when the images and audio complement one another. The end result is you don't *need* as many words, and the words you do use need to be very clear and focused.

Table 3.1. *150 wpm estimates.*

		8 min.	10 min.	12 min.	14 min.
Major Concepts	50%	600	750	900	1,050
Rich Example	25%	300	375	450	525
Support Ideas	15%	180	225	270	315
Introduction	10%	120	150	180	210
		1,200	**1,500**	**1,800**	**2,100**

Table 3.2. *175 wpm estimates.*

		8 min.	10 min.	12 min.	14 min.
Major Concepts	50%	700	875	1,050	1,225
Rich Example	25%	350	438	525	613
Support Ideas	15%	210	263	315	368
Introduction	10%	140	175	210	245
		1,400	**1,750**	**2,100**	**2,450**

Scripting Hints

This section addresses some key hints for developing the physical structure of the script.

- **Think in Sections.** Sections sometimes are the same thing as paragraphs, but need not be. A section is a conceptually complete thought. You'll have to judge what determines a section for yourself as you go through your script. However, you should know that at some point you'll end up numbering your script sections (done either by software or by hand). Typically a script won't have more than about 20-to-25 sections for an 8-to-14 minute presentation.

- **Font & Font Size.** I would suggest setting up your word processor or outlining program so that it uses an easy-to-read font (Times or

Times New Roman) at 14 points at 1.5 or double line spacing. This is big, but it's exactly what you want when reading a script aloud.

- **Margins.** Use margins of at least 1" or 1.25" all around the page.

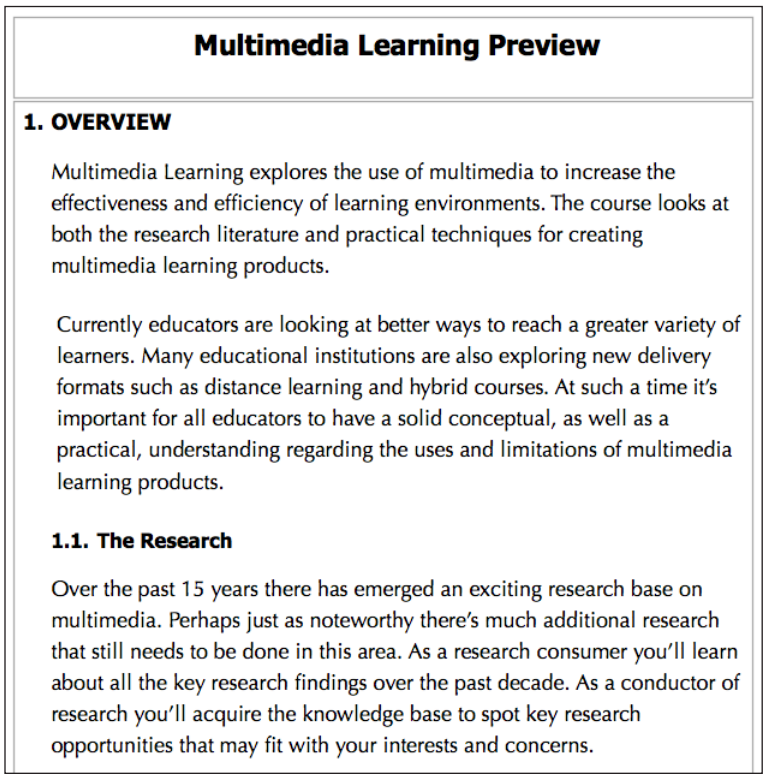
- **Emphasize with Bold.** When you want to emphasize a point use bold font. That's much easier to see and read during a live recording session compared to *italics* or underlines or ALL CAPS.

- **Stapling.** Don't staple the final script. It needs to be very easy to switch from one page to the next on a reading easel as you record.

- **Number Sections.** If your software allows you to easily and flexibly number sections of your script (not line numbers, and not necessarily paragraphs) then you should activate this feature. For example, I number all of the sections of my script with my word processing software. The figure (below) shows part of a resulting page using this numbering feature. Notice that in this example the first section is two paragraphs long. If you don't number your sections using your software program, then you'll end up numbering sections by hand at a later point. It's not terribly difficult or time-intensive to number your script sections, but it makes the process of organizing your materials (especially the images) much easier if there are mechanical and clear ways to associate images with specific sections of a script.

  Using these suggestions will result in a script that's much easier to read when you sit down to do the live audio recording.

Figure 3.4. *Numbered script sections.*



Multimedia Learning Preview

1. OVERVIEW

Multimedia Learning explores the use of multimedia to increase the effectiveness and efficiency of learning environments. The course looks at both the research literature and practical techniques for creating multimedia learning products.

Currently educators are looking at better ways to reach a greater variety of learners. Many educational institutions are also exploring new delivery formats such as distance learning and hybrid courses. At such a time it's important for all educators to have a solid conceptual, as well as a practical, understanding regarding the uses and limitations of multimedia learning products.

1.1. The Research

Over the past 15 years there has emerged an exciting research base on multimedia. Perhaps just as noteworthy there's much additional research that still needs to be done in this area. As a research consumer you'll learn about all the key research findings over the past decade. As a conductor of research you'll acquire the knowledge base to spot key research opportunities that may fit with your interests and concerns.

- ❏ **Script Template.** *You can download a script template if you wish. It's an RTF (rich text format) file that can be read by Microsoft Word, but also by a large variety of other word processing or outline programs.*

Script Structure

Scripts can be organized in a number of different ways. However, in general it's useful to think of the script you're creating as having four distinct components. They are: (1) the introduction, (2) the major concepts, (3) the supporting concepts, and (4) a rich example to make the concept "real" to your viewers. My suggestions for writing a script suggest *not* writing the script in this order, primarily because the introduction itself is the hardest thing to write and it's best to do this part last. Specifically I suggest you write about the *major concepts* first because, after all, this is the heart of your presentation. Next I suggest developing a *rich example* to include in your script. Again, in terms of priorities, the major concepts will always be helped when accompanied with a rich example. Third I suggest including supporting concepts into the script. How many supporting concepts, and how many words you can devote to them, will be highly dependent on how many words you've already used developed the previous sections. Finally, once you know all of the material that will actually now make it into your script, you can write the *introduction* which is a relatively short and pithy bridge into your subject.

❑ **Example Script.** *You can download a PDF file that shows one of the scripts I developed. The content is not important, but you'll get a sense for how a final script might look like in terms of content organization.*

Major Concepts

Remember the major concepts that went into your model? That's where you're going to start writing. Write about each of the major concepts in a sensible order. At the same time explain links between major concepts. In some cases it may be best to explain all the major concepts first, then go back to explain the links between them. In other cases explaining a concept and relevant links simultaneously may be best. You'll have to judge what type of organization will work best in your case. Develop your rough draft, then edit and refine.

► **Word Count.** Once you have a refined draft of the major concepts do a word count. In multimedia production this is called a *reality check*. As a rough rule-of-thumb you want no more than about 50% of your script devoted to main ideas. Let's pretend you're aiming at an 8 minute presentation. If we use the default rate-of-speech as 175 wpm (or *words per minute*) then your complete script should be right about 1,400 words and you should have no more than about 700 words maximum devoted to the main ideas themselves.

► **Problem Solving.** Let's pretend the word count based on your draft containing only major concepts is 1,200 words. This means you have very little space (only 200 words left) for describing supportive details, developing an introduction, or using an example to give the viewer a practical sense of what the concepts look like in practice. What should you do in a case like this? You should *not* try to read your script at a faster rate! This always leads to disaster. You want to talk at your normal rate. However there are some possible positive options to consider:

✓ Consider lengthening your presentation. This only works if you planned on 8 minutes so you have some time to expand into. It doesn't work if you have 12 minutes of material and need to expand even more.

✓ Reduce the number of words devoted to the major concepts by at least 20%.

✓ Eliminate the supportive concepts from the presentation and focus on major concepts only.

✓ Plan on developing a very short and pithy introduction.

✓ Focus the remaining words on providing a good example that helps the viewer see what the concepts mean in a real-life setting.

It's better to make hard decisions early in the script writing pro-

cess. The script problems won't go away. It's better to face them, decide on a course of action, and then your subsequent work will go much smoother.

Rich Example

If you're going to make an academic presentation it's important to have at least one *rich* example that helps the user see the concepts in action. In a 7-12 minute presentation you typically don't want multiple examples as this will confuse the reader. Choose a good real life example that is likely to make sense, and resonate, with your audience. As you go through the presentation you can *unfold* your example by making references between a new major concept you're discussing and how it plays out in the example you've provided. Thus an example may be a standalone portion of the script, or it may be weaved into the script at various points.

Write the additional script material for your example. Typically you might provide some of the example *before* you start talking about the visual model. Then you'd add new paragraphs using the example after the presentation of a main concept, or after the presentation of a group of main concepts. When you're done review your complete script. Edit and refine until it seems to flow smoothly.

- **Word Count.** Conduct a word count. Let's pretend you're still aiming for a 8 minute (or 1,400 word) presentation. As a very general rule-of-thumb you "ideally" want your script to take up no more than 75% of your words.

- **Problem Solving.** If your script at this point adds up to only 400 words then you have a problem! Supportive details should *not* be accounting for most of your presentation. This situation indicates you need to put more "meat" into your description of the main concepts or expand the level of detail you give for your example. If you're at 1,300 words then you know you'll have to eliminate the supportive details and focus on writing a good introduction. If you're at about 800 words then you know you have space for describing some of the supportive details.

Supportive Concepts

Add on information about supportive concepts just as you did for the major concepts and the rich example. The word counts you've conducted should help give you a sense of how many words you can afford to give to describing supportive details. Once done, do a word count and problem solve. Decide if the word count needs to be reduced or not.

Introduction

In this fourth step you can write your introduction. Why are you doing this last? Mainly because until this point you actually don't know what will make it into your final product! In general it's good to plan on a lead that's about 150-175 words long. Put differently, your introduction should be about 1 minute long. If it's 2 minutes

long that may not be a problem, but if your introduction takes 4 minutes out of an 8 minute presentation then that won't work. The introduction should succinctly tell the viewer what the presentation is about, why it's important, and perhaps introduce the rich example to stimulate the interest of the viewer.

Create Pauses

Your final script in terms of the wording is done. However you have one more step to complete in the scripting process: creating pauses.

In addition to words, it's useful to think about where you want pauses in the audio: a transition to a new section, you want to the user to view an image but not hear words, or simply to give some the audio breathing *space*. While you can add pauses to your audio file at audio editing stage, it's *much simpler* if you note where you want pauses at the script development stage and later edit out any excess pause lengths.

Consider this: if you've already notated where you want pauses in your script then during the audio recording you can simply remain quiet for the time periods indicated in your script. If you want a 2 second then sit quiet for 2 or more seconds. If the pause turns out to be too long, it's very easy to cut out the extra space later. Indeed, much easier and more effective than creating pauses at the later audio editing stage.

Perhaps the easiest way to indicate a pause in your script is to add centered bold text that exists in it's own paragraph like this:

2 seconds

If you make these pause notations standalone paragraphs in your script they're much easier to see and execute for during the live recording session.

The most natural place to add pauses of about 5 seconds would between major chapters in your script. What might be designated a chapter is typically comprised of several sections. For example, you might have natural chapters embedded in your script like Introduction, An Example, The Theory, What Research Says, Application, and Summary. Often you'd want a longer than usual pause at the start of a new chapter as: (a) it signals that you're transitioning to a new area of focus, and (b) it creates a natural way to include a title image without any distracting audio.

Adding pauses to a script has several important benefits including:

1. Pauses make audio editing easier since you can easily see the pauses in sound file.
2. Pauses make creating labels during audio editing much easier since it's easy to see the beginning and end of key sections.
3. Pauses make using title images easier since then chapter images don't need to compete with a voice over.

Section Numbering

You may have done this already, but if not, then now is the time for you to identify and number the sections in your script. Your script is really divided up into "conceptual sections." A section is a conceptually complete thought. Several times a paragraph and a section will be the same thing. However, many times a section will actually be composed of several paragraphs. On a practical note, if your audio is about 10 minutes long then you probably want to divide your script into about 20 sections. Don't get mechanical about this however. There's nothing magical about 20 sections. But consider the pragmatic effect of identifying several sections: a 10 minute movie when divided into 20 sections means that each section will be about 30 seconds long. Notice how I have now divided a 10 minute problem into several 30 second problems. Later, when you're trying to integrate images with audio, solving these 30 second problems will be much easier than tackling the whole 10 minute problem at one time.

I tend to using numbering in a way that's natural for me: whole numbers represent major sections and numbers with decimals represent subsections within a major section. So I might have a section called "2 A Quick Survey" and then later have "2.1 The first 10 Years." The "2.1" section is a subsection of the "2" section. However this approach might seem awkward to you. No problem! Then just start numbering with "1" and going through to your last section number. If we both have 20 sections, this second approach would have sections numbered 1 through 20. Using my approach, however, there might only be six major sections and then several subsections under them. I still have 20 sections, but they're organized a bit differently. The bottom line is that the numbering approach needs to be simple and clear *for you*.

- **Software Auto-Numbering.** Some of you may have used software that allows you to identify sections and number them sequentially for you. If your software has this option then take advantage of it and go back and divide up your script into sections. Remember the real reason for this is to create a number of smaller problems to solve rather than scrambling to solve the one big problem.

- **Pencil Markups.** Many of you will either not have software that can insert section numbering, or you won't know how to find or use this feature. No problem. As long as you have a pencil, you can

still accomplish the same thing. First, print out your script. Read it over and pay attention to natural transitions that represent a new section. Number the sections in the left margin from "1" to the end.

The Final Script

When you put in all the words, added standalone bolded indicators for pauses, then you have a final script! Print out the script and check that the font size and other issues make it very easy to read for your eyes. In addition, take the time to read the script aloud. For instance, sometimes I find that I've included words that I'm very familiar with but unfortunately I nonetheless have a hard time pronouncing. This last check of speaking the script aloud will allow you to make minor refinements to wording in the script so it's user-friendly for you to read aloud.

Exercise 3

Develop your first script. This script will be different from the real course challenge because you don't need to develop a visual model for this exercise.

The Script

Develop a 90-to-120 second script that tells us (the rest of the class) something about you personally or about your professional life. Remember that talking at a rate of 175 words per minutes translates into a script that should be 350 words *at the most*.

Please make sure to include relevant pause indicators in your script.

Delivery

Send your script to me as an email attachment. The script should be either a Word document or in a PDF format. Make sure to name your script as: *YourfirstnameScript.doc* or *YourfirstnameScript.pdf*. So, if your name is Ed then you should be sending me a document titled either EdScript.doc or EdScript.pdf.

In later exercises for *Chapter 6* and *Chapter 7* you will develop images that go along with this audio script. Don't worry about this now, but I want to let you know in advance that we'll be building upon this exercise to create a short 90-120 second multimedia movie about yourself.

4 *Audio*

Chapter 4

Edcasting

Overview

Audio is the backbone of an effective multimedia presentation. The primary source of audio for your presentation will be your voice. "Oh great," you say, "audio is so important and yet I hate the sound of my voice." That's a natural reaction. However, most people have not heard their voices recorded at a professional level. They implicitly compare their recorded voice (usually done with an inexpensive tape recorder) against an audio CD narration done by James Earl Jones. In comparison they do sound pretty lame compared to Mr. Jones. But when your voice is recorded well it will have a high level of interestingness.

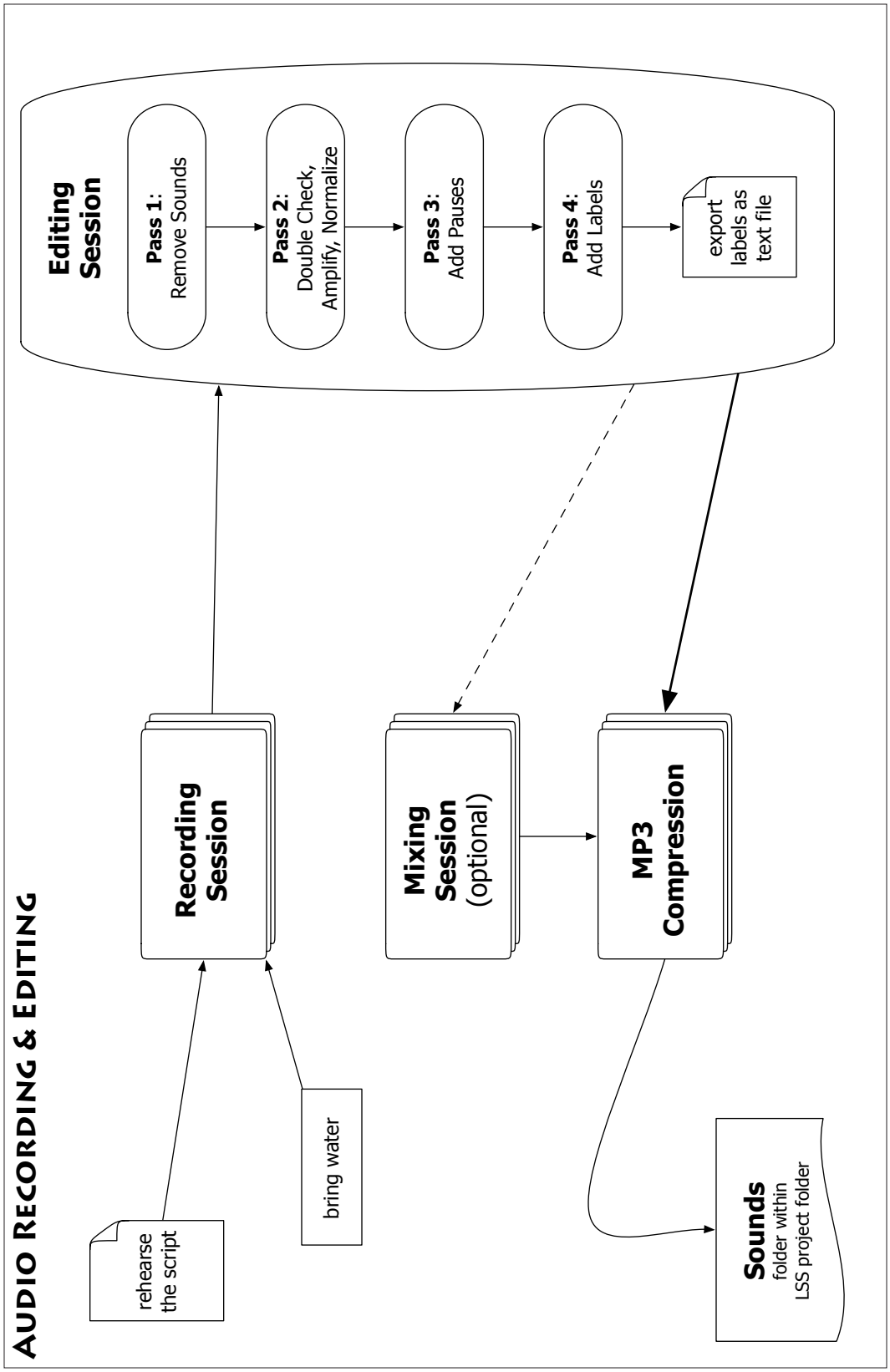
People create audio problems when they don't speak in their natural rhythm. If you force yourself to speak too fast (or too slow) then that alters many aspects of your voice, usually so it sounds worse. Start to listen to how narrators use their voice (whether it be on a PBS show or in a television advertisement). Good narrators are able to take advantage not only of *how* they say words, but also to create pauses when appropriate. That's important to keep in mind. Sometimes you want something to "sink in" or you want the viewer to actually look at an image (e.g. a table of statistical findings). You can take advantage of pauses to supplement your voice and increase the effectiveness of your multimedia product.

Chapter Model

The next page presents a visual model of the chapter's content. The model emphasizes three major phases when developing your audio file: (1) audio recording, (2) audio editing & mixing, and (3) audio compression.

This chapter first looks at various practical considerations to keep in mind before the audio recording session. However, this chapter does *not* provide details on how to do your own recording. There are simply too many variables that can change depending on the specific equipment you use. Please consult the documentation that came with your recording equipment for details. If recording directly to your computer then you can use Audacity or other inexpensive software programs to handle your recording needs. (Note: several people have experienced problems using Audacity as a recorder, especially on Macintosh computers.)

Most of the chapter describes how to use Audacity software to edit your audio file. In this phase you want to eliminate unwanted sounds and generally improve the quality of the file. There is an optional additional step called *audio mixing* where someone might combine their voice with some background music. The last phase involves audio compression. Audio files are very large and as a last step you want to make sure to reduce the size of that audio file without compromising audio quality to any noticeable degree.


Audio Recording & Editing
rehearse the script
bring water
Recording Session
Editing Session
Pass 1: Remove Sounds
Pass 2: Double Check, Amplify, Normalize
Pass 3: Add Pauses
Pass 4: Add Labels
export labels as text file
Mixing Session (optional)
MP3 Compression
Sounds
folder within LSS project folder

Practical Reminders

Before delving into the process of creating and editing an audio file, I want to present three key practical tips:

- ✓ Dialogues work well
- ✓ Your voice forges connections
- ✓ Get over yourself

Let's look at each of these tips in greater detail.

Using Dialog

A simple technique that often creates a more engaging presentation is to use two voices that go back and forth as in an everyday dialog. This tends to create a more engaging and intimate setting. You can work on a presentation with another person, or write a script that includes two people and recruit another student to be the second voice. News shows (whether on the radio or television) almost always use the two person dialog approach these days to create the sense that you're listening to a conversation. Recording two people at once is tricky and so you'll need to record a two person dialog at my office.

Remember that you are creating a *sustained* multimedia product. Your products will typically be between 7 and 12 minutes in length. This length allows you to communicate a great deal of substance, but you also have to be on message and succinct to use that time well.

Primacy of Voice

The use of voice is very important in educational settings. The teacher's voice, Big Bird's voice, and your voice. Voice helps to create a connection with an audience. In this way it can help to *connect* or create a sense of personalized instruction. Voice can also reduce cognitive load. It takes a lot of attention to read text and to do something extra like pay attention to a diagram. When you use voice instead of text then most people experience an easier and more effective ability to integrate the spoken word with visual images compared to reading text and looking at images in a back and forth fashion.

Get Over Yourself

Your voice is fine. The issue, as many voice coaches have noted, is not with a person's voice but in *how* they use their voice. I'll only cover a few basics of how to use your voice later in this chapter. In addition, a very good book to consult is *The Broadcast Voice* by Jenni Mills (Focal Press, 2004).

Rehearsal

This is the act of sitting down and reading your script. While it may seem simple and boring, doing a good recording necessitates key planning strategies.

You need to be prepared *before* coming to a sound studio. You want to have practiced your story orally. This has two purposes. First, it gets you used to talking out loud and allows you to find those parts of your script that may be easy to read, but are difficult to pronounce when talking. In this way you can revise your script so that it is more user-friendly for an oral presentation. Second, this practice allows you to get a decent sense of the length of your presentation. You want to make sure your voice is natural (i.e. that you don't end up talking either slower or faster than is "natural" for you).

Practice

The most important single factor influencing the quality of a recording is whether the individual has practiced their script *out loud* several times before the recording. Reading the script silently to yourself does not help. Reading the script out loud at a faster-than-usual pace helps very little. Specifically you need to practice reading your script at the same pace you plan on using when recording. During your practice sessions you may encounter some of the following:

- **Hard to Pronounce Words.** You'll find that some of your written words are hard to pronounce (at least for you). In this case I suggest changing the word or phrase so that it's easier to pronounce.
- **Automaticity.** By practicing reading the script out loud it will become second nature, or automatic, to you. This means you're likely to make many fewer mistakes during the live recording session. Don't expect perfection, but limiting vocal mistakes will greatly facilitate the audio editing stage of your project.

Sit Up, Talk Up

How you sit and how your head is positioned greatly affects your vocal quality. Try to sit comfortably but with a straight back. You want to practice, if possible, viewing the script straight ahead of you because your voice sounds better when the voice box is opened up. Looking down at a script tends to close the voice box a bit.

Your voice will sound more personal and engaging if you think that you're talking to a particular person. So, think of a friend or colleague. Have them visually in your mind. When you start recording pretend that you're talking directly to that one person. This will result in a tone of voice that's more warm and engaging.

Your voice level doesn't have to be loud when recording, but it should be at a decent level. Imagine that the person you're talk-

ing to is across the room: in this way you can make sure that your voice is loud enough not only for the imaginary friend to hear but also to capture a good recording with the audio equipment.

Throat Tips

There are a bunch of tips that voice coaches suggest for making sure you're ready for a recording performance. These include:

- ✓ **Drink plenty of water**. Bring water with you to a recording session. Take a break every 5 minutes and take a drink of water.
- ✓ **Warm up your voice**. Practice talking aloud before recording. This might mean reading your script (or anything else) in another room where you can speak up.
- ✓ **Relax**. On a physical level one way to relax the vocal cords is to yawn. One coach (Ann Utterback) recommends yawning then saying, "How many hats does Henry have" several times. Repeat as needed.
- ✓ **Green apples**. Another coach (James Alburger) recommends taking a bit of a green apple to help cut through mucous buildup in the mouth and to clear the throat.

The Recording Session

The recording session itself will take place either at my office or at your home. If you are fairly comfortable with computers you may want to try recording at home. I'll have a USB microphone and a Plantronics headset kit that people can borrow and use at home. Below are some tips for recording:

- ✓ **Accept Mistakes**. Mistakes are a natural part of life. If you've practiced the script then you'll only make a few. If you *worry* about making mistakes then you'll make many more! Worrying doesn't help.
- ✓ **Stop & Rewind**. When you do make a mistake simply stop, wait 2 seconds, then start again at the beginning of the sentence where the mistake was made. For subsequent editing reasons you'll make life easier for yourself by simply starting at the very beginning of the sentence where the mistake happened.
- ✓ **Pause & Drink**. Designate places in your script where there are natural pauses: the end of a section for example. Take a short break, drink a bit of water, relax, and then begin recording the next section. Editing out these breaks is very easy to do. The idea is to take a 1-2 minute break.

Session Setup

If you are recording at my office I need to do a few quick things when you come in to do the recording. However, these same steps should be done even if you are recording at home. They include:

- ✓ Getting you seated comfortably in the chair.
- ✓ Arranging the microphone so it's within 6 to 10 inches of your mouth but just off to the side.
- ✓ Arranging the document easel so you can read the script while also maintaining good body posture.
- ✓ Do a sound check so I can make sure I have the recording equipment set to the right sound levels for your voice.

These quick check points should take about 3 minutes to conduct. I will then leave you in my office to record with the office door closed so you have privacy. You don't have to worry about turning on or off any equipment. I'll take care of that.

Receiving the Audio

You will edit your audio recording on your own computer. I can give you the audio file in one of two ways: (1) bring a flash drive and I'll put the audio file on it (typically the audio file will take up 50-100 Mb) or (2) I can put the audio file on my web server and you can download it at home (this only works if you have a faster-than-a-modem connection).

Audio Editing

In this section I provide general strategies. I'll also show you the specific steps to take when using Audacity 1.3 software (for both Windows and Macs). These general strategies apply when using any other audio editor.

Use Headphones

Unless you have really good computer speakers (and most people don't) then the only way you'll be able to listen to your audio to hear the details is by using headphones. You probably already have a decent set of headphones at your home. If you don't, I'd recommend getting the excellent Sennheiser HD202 headphones. They cost $20 and can be bought at Amazon.com and several other places.

Software Packages

There are three major software programs that I would suggest for doing recording and editing of spoken-voice material. One of the programs is free and so it's natural that everyone would be attracted to using it.

- ► **Audacity.** I would suggest using this free program to start with. If you then want to pursue using audio in future ventures you may want to try the more powerful and effective commercial programs. For me time really is money. Since I work much more efficiently with a commercial program than I do using Audacity, within a

fairly short amount of time the commercial software has become *cheaper* for me than Audacity. Audacity is currently at version 1.3 and is open-source software. The program works on both PC and Macintosh platforms. It does audio recording, editing, and mixing. You can download it at:

http://audacity.sourceforge.net/

- **Peak LE.** Currently at version 5 , Peak was created by BIAS Software. This is a Mac-only audio recording and editing software program that is academically priced at $90. BIAS offers a trial version. You can download a movie about Peak and the trial version at:

  http://www.bias-inc.com/downloads/freeTrials/

- **Audition.** Currently at version 2.0 and owned by Adobe Software. This is Windows-only audio recording, editing and mixing software that is academically priced at $140. Adobe offers a trial version of the software that can be used for 30 days free. You can download a trial version at:

  http://www.adobe.com/products/audition/

Editing Strategies

Editing is akin to sculpting: you're not adding anything, you're simply trying to eliminate the stuff you don't want. If you're a novice I would suggest doing your editing in four passes. When you become more comfortable with the editing process you can do all the necessary operations in one or two passes, but take a little bit more time right now and make it easier on yourself by using the following suggestions below. I'll provide specific instructions on how to do each of these steps in Audacity later in the chapter. Right now, however, I want to provide you with a conceptual overview of the editing process.

- **Pre-Editing: Backup & Save.** *Before* editing create a duplicate of your audio file. Thus, if worse comes to worse and something gets really screwed up, you can start over with a file in it's original form. Second, please remember to consistently save your work after every 5 minutes of audio you edit. I've seen grown doctoral students become blabbering sobbing students because a computer crashed and they lost their editing work.

  - ✓ Saving and backing up are two key ways to protect yourself.
  - ✓ Make sure to name your audio file in a way that is distinctive. For example, MyAudio is not distinctive. However, something like AboutMetacognition is distinctive. This will make it easier to find the file to use later on.

- **Pass 1: Remove Unwanted Sounds.** All you're doing is listening for unwanted sounds such as coughs, extra space (when you took a

break), mispronounced words that you subsequently redid in a repeat sentence, and any other mistakes.

- **Pass 2: Double Checking.** In this second pass you're trying to make sure that you actually removed all the unwanted audio. At this point you can remove smaller mistakes if needed.

- **Pass 3: Adding Pauses.** Okay, so I exaggerated a bit. Editing is *mostly* about getting rid of unwanted material. An additional aspect of editing is making sure there's a good rhythm to the audio. Sometimes you'll have too little empty space between one paragraph and another. Ideally you would *not* need to do this pass because you had already inserted plenty of relevant silences in your live recording. The advantages of including silences in the recording are: (1) it's easier to delete extra silence than to create it, and (2) the pauses will sound more natural because the "silence" includes the *room tone* of where you recorded. It's important to understand that every room has a sound to it. Thus, there is a difference between complete silence and the silence that is room tone. The two processes described below help create silence but the result is a completely "dead" silence that does not sound the same as a natural *room tone* silence in your recording. Nonetheless, you may need to end up doing these two things during the third pass:

  - ✓ **Inserting silence**. This may be used to create a smoother, more harmonious audio file. Peak calls this "inserting" but Audition and Audacity call the same process "generating" silence. Either way you're adding a few seconds of silence to the audio.
  - ✓ **Convert to silence**. There may be sections of your audio that have an appropriate length of silence but there's some annoying sounds that you want to get rid of such as paper shuffling. In this case you don't need to add silence, but you need to convert the audio region to silence.

- **Pass 4: Creating Labels.** Labels (also called "markers" or "cues" depending on the software you use) are text descriptions of a portion of your audio. The *huge* advantage of labels is that they include the name, the start, and the end times for the audio portion associated with the label. You already know what your label names will be: use the section descriptions from your script. This pass won't improve your audio, but instead it will end up giving you all the key timings you'll need to use to integrate the audio with the images when creating the final multimedia product.

Audacity Overview

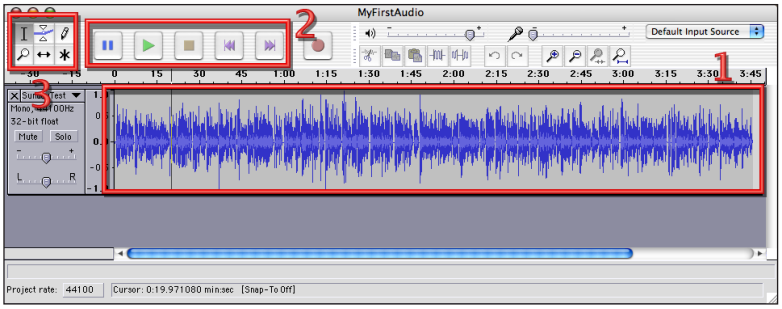
This is the software program I'm expecting every student to use because: (1) it's free and (2) it works on both operating systems. While all audio editing programs work in a similar manner, you should be aware that Audacity works in a slightly funky manner compared to professional editing programs like Peak or Audition. Professional programs will be more stable, contain more features, and will tend to operate in a more intuitive manner. That said, Audacity is wonderful and powerful audio editing software for a beginning multimedia student.

The Screen

In the figure below you see an overview of the basic screen after opening an audio file in Audacity. You'll become very familiar with this screen, but notice a few key things right away:

1. You can see the waveform of the audio file.
2. You can see the basic navigation buttons just above the wave file.
3. You can select various tools, most importantly the **selection tool**.

Figure 4.1. *The Audacity Screen*



Basic Tools

There are only a few basic tools. Realistically you won't use many of these tools. In fact the tool you'll use about 100% of the time is the one already highlighted (in area 3 in the figure above and in the figure below): the *selection tool*. Ignore the other tools in this area for now. The selection tool is just like the cursor in a word processing program. Place the selection bar where you want to start listening to an audio file, then press Play and you'll hear audio from that spot onwards.

Figure 4.2. *The Basic Tools*

Play & Pause

You need to know how to navigate (play, pause, et cetera) your audio file. Audacity works is a somewhat unintuitive fashion in this regard, but once you understand how Audacity "thinks" then you'll be able to navigate easily. First, be aware of the key navigation buttons (shown below).

Figure 4.3. *Navigation Buttons*

The navigation buttons from left to right include:

1. Pause
2. Play (also the Spacebar will activate Play)
3. Stop
4. Go Back to the Start
5. Go Forward to the End
6. Record

Here's the unintuitive part: in most programs pressing the spacebar will engage Play starting wherever the selection tool is located in the file. Audacity does this too. However, in other programs if you press the spacebar again then the audio stops playing *and* the selection tool is moved to that point where you have stopped playing audio. In Audacity if you press the spacebar then the audio will also stop, *but instead* of shifting the selection tool to where the audio has stopped Audacity will return the selection bar back to it's original location. Thus if you press the spacebar again you'll then hear the audio portion again from the beginning.

- **Workaround.** Starting with version 1.3 of Audacity a workaround to this problem was built into the software. On your keyboard you have two keys that type brackets. The left bracket ([) is located just above the apostrophe key on the far right side. The right bracket (]) is just to the right of the first bracket key.

- **Move Cursor to Current Location.** Whenever you press the left bracket key ([) the cursor (or selection tool) is moved to the current location in the audio file. This means you can play your audio file when you notice a problem or want to move the cursor for any reason, just tap on the left bracket key and the cursor is automatically moved! Now when you press the stop button (or press the spacebar) the cursor will be located wherever you last positioned it using the left bracket key.

- **Dynamically Select an Audio Region.** If you want to identify an audio region then the right bracket key (]) should be used. Audacity

keeps track of where the cursor is. Whenever you press the right bracket key Audacity selects the region defined by the cursor location and also indicates the current time of the audio file. If you continue to play the audio and find the region should be a little longer then just press the right bracket key again and the region selected will become larger.

- **Left Bracket, Right Bracket.** Don't forget these two keys. They are probably the most valuable tools you have to move the cursor or to select an audio region.

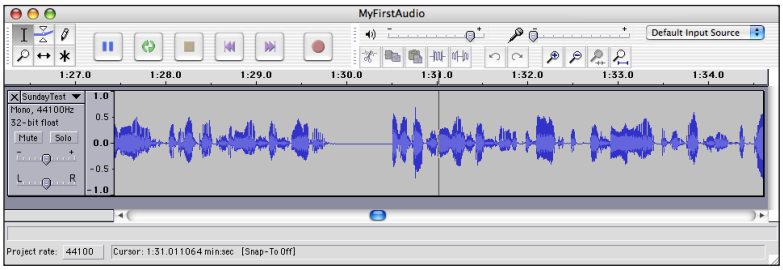
Magnification

Just above the waveform (on the top right of the toolbar) you'll find the four icons shown in the figure below. The first two icons (left to right) zoom in and zoom out, display a detailed level of the waveform. The third button won't be very useful to you, but the last button creates the big picture view that allows you to see your complete audio file at one glance.

Figure 4.4. *Viewing Tools*

In the next figure you can see what Audacity looks like after the *zoom in* tool has been clicked on a few times so that you can see only about 7 seconds of audio.

Figure 4.5. *The waveform viewed as a 7 second interval*



Notice how you get a much better view of the audio using a 7-second window of time rather than using the big picture view as shown in Figure 4.1.

MP3 Compression

Audacity offers the ability to convert your audio into an MP3 file. This involves downloading an extra plug-in. However, I would suggest *not* using Audacity for the final MP3 compression as iTunes does a better job of MP3 compression.

Keyboard Shortcuts

Some of you are familiar with keyboard shortcuts for commands that you use often. Suggested keyboard shortcuts are presented for some commands in Audacity just to the right of the selected menu option. However, you can change these keyboard shortcuts,

or create keyboard shortcuts for commands that don't already have a shortcut sequence assigned to them. Here's how to do it:

1. Under the AUDACITY menu select the **Preferences** option.
2. In the ensuing dialog box you'll find several options presented as tabs arrayed horizontally along the top of the dialog box. Choose the Keyboard tab.
3. Scroll through the list of commands. When you find a command you want to assign a keyboard shortcut, then just type that shortcut into the *Key Combination* column.
4. Be careful not to create key combinations that will conflict with general computer operating system commands. For example, don't use Control-Q (or Command-Q) because this is the command that tells virtually all software programs to quit. However there are not that many key sequences you need to avoid and you're probably aware of all the ones you use frequently.

Audacity Projects

Most audio editing programs work on a specific file and will save your changes to that file. Audacity works differently. With each project it creates two files and one folder:

1. The *Project.aup* file that stores information about changes made to the original file.
2. The *Project.aup.bak* file that is a backup file.
3. The *Project Data* folder that contains the actual audio.

- **Project.aup.** This file only contains information about key changes and additions to the audio. It is *not* the original audio file. This file contains info about changes to the audio *plus* information about the original audio itself.

- **Project.aup.bak.** There's a second file named something like *project.aup.bak* and this is a backup of your original project information which Audacity automatically creates every few minutes.

- **Project Data folder.** You'll find a folder named something like *Project Data* that contains the actual audio file. Audacity breaks up your original audio file into a bunch of different chunks of audio. Don't worry about this, Audacity will put all the chunks back together into one seamless file when you do export your audio after editing.

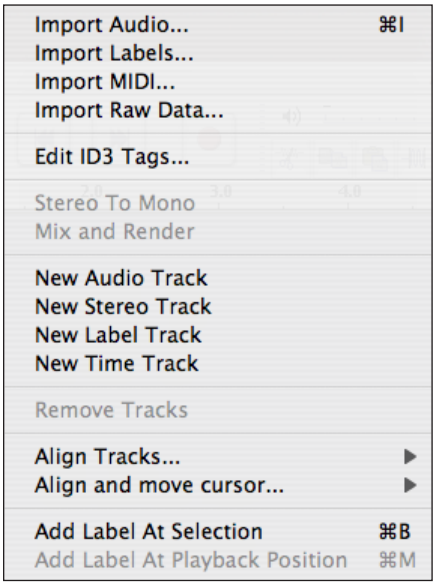
Commercial editing programs give you two views at once: a big picture view (so you can see you entire audio file at one glance) and a detailed view (so you can focus on editing a 10 second sequence of audio at a time). Audacity projects only gives you one view. You can change the view so you see the entire audio at once or see a shorter detailed look at your audio. Most of the time, for most ed-

iting purposes, being able to see about 8-11 seconds of audio at a glance is optimal for spotting problem areas in your audio.

The Project Menu

The PROJECT menu is where you'll go to *add* material to your project. In the figure below you can see the many options you have when clicking on the PROJECT menu.

Figure 4.6. *The Project Menu options*



The two options you'll use the most are **Import Audio** and **Add Label At Selection**. Notice that both of them have keyboard shortcuts because they're used so often. (If you're a Windows user you'll see Control-I and Control-B respectively.)

Importing Audio

When you open up Audacity it creates a "project" and automatically gives you a blank audio track. Since you will have received your raw audio file from me, what you'll do first is use the **Import Audio** option. You'll then see a dialog box that allows you to navigate to wherever on your hard drive the audio file is located. Click on the desired file and then press the Open button. Audacity will take a few seconds to read the file and place it as a new track within your Audacity project.

Adding Files

You can always add tracks to a project. In your case the two most common types of tracks you may add area: (1) a label track or (2) a music MP3 that you want to add as background music to your presentation.

To add new audio, use the **Import Audio** option again and find the relevant audio file. To create a labels track, use the **New Label Track** option.

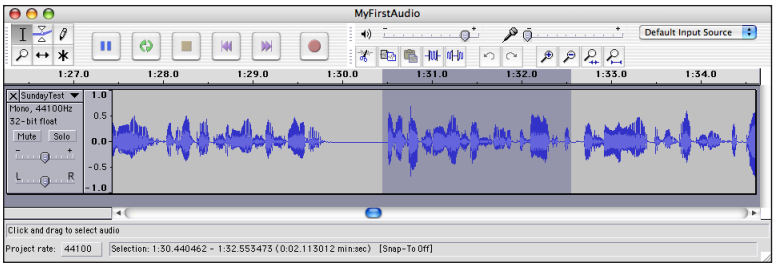
Audacity Editing

The editing process consists of selecting and deleting unwanted audio material, converting some passages to silence, and adding silence to an audio file. The steps on how to do each process in Audacity are described below.

Select & Delete

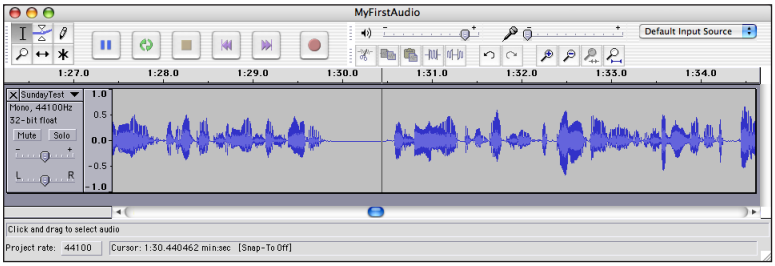
You've listened to a portion of the audio or you noticed a bad passage and want to eliminate it. Move the Selection Tool to where the bad passage begins. Click the mouse down and drag to your right until you select or highlight the entire region containing the bad audio. When you've made your selection it will be highlighted and look like the screenshot below:

Figure 4.7. *Selecting the audio region*



Notice how the selected audio is highlighted in dark grey. The process of highlighting unwanted audio is about 90% of what you'll be doing in an audio editor! Now press the Delete or Return key on your keyboard. The audio passage is deleted and the remaining audio after the deleted region is automatically moved over to the left.

Figure 4.8. *Audio file after deleted unwanted selected audio*



You'll be repeating the select and delete steps often. In summary, the key steps are:

1. Start playing the audio. Listen for bad audio.
2. Move the selection tool to the beginning of bad audio.
3. Using selection tool click and drag from the beginning to the end of the bad audio segment.
4. Press delete on the keyboard.
5. Repeat as needed.

6. Remember to save your changes every 5-10 minutes.

Convert to Silence

Sometimes you may want to *convert to silence*. In this case you want to get rid of noise, but you don't want to eliminate the space that exists in the audio. In essence you want to replace "noise" with "silence." For example, perhaps you can hear the sound of papers being turned. You want the pause, but not the page turning sound. In this case *select* the offending audio (click and drag) and instead of using your Delete key you'll press on the Silence button in Audacity. The three figures below show you the silence button, and the before and after versions of what happens when you use this button. The keyboard shortcut for converting to silence is to use Control-L (Win) or Command-L (Mac).

Figure 4.9. *Silence Button (far right).*

Figure 4.10. *The selected audio region before converting to silence.*

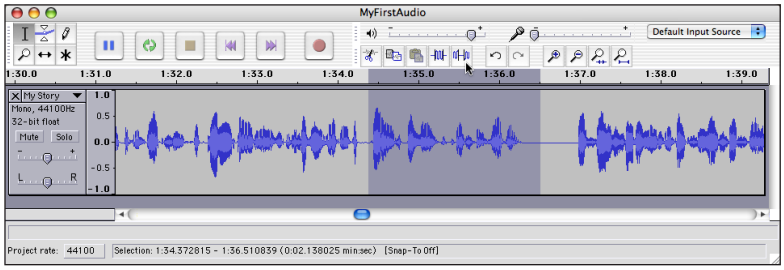
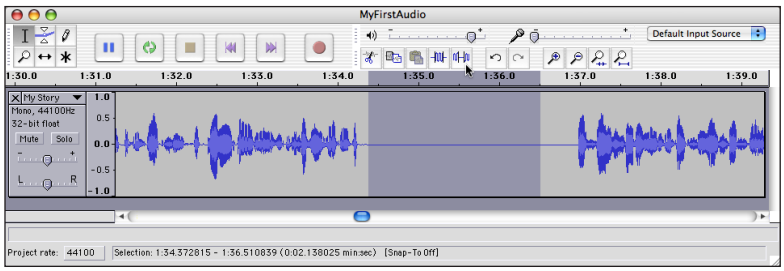


Figure 4.11. *The audio region after converting region to silence.*



Adding Silence

Another technique you may want to use with an audio editor is to refine your audio by adding silence. One of the key reasons to *add* silence is to create a sense of calm and space in your audio. For instance, sometimes people go too quickly from one paragraph to the next when recording. In order to make the audio feel like it has natural pauses (when appropriate) adding silence is a great tool if you didn't already create silence during the recording process.

The next few figures show how to use the *Generate Silence* option. Please note that you need to first put the selection tool at the point in the audio where you want additional silence. When you select the *Generate Silence* option then a dialog box pops up. Enter the

amount of silence you want in seconds. You can only enter a number in terms of seconds. If you want, you can use decimal and enter numbers such as 1.7 or 2.5 seconds.

Figure 4.12. *Selection tool at "adding point" in audio*

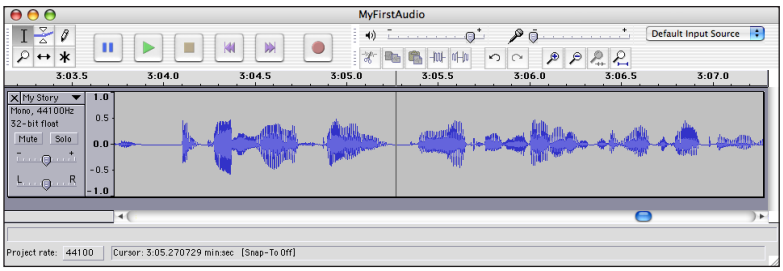


Figure 4.13. *Generate Silence option*

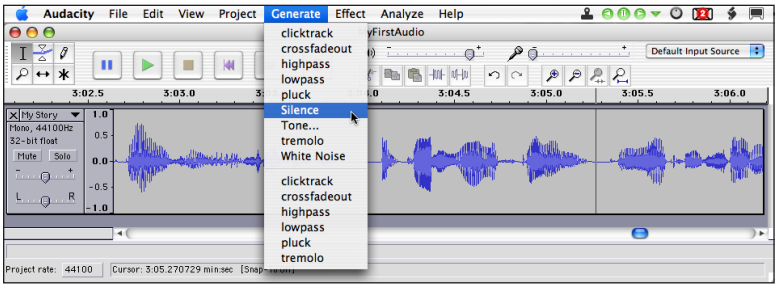
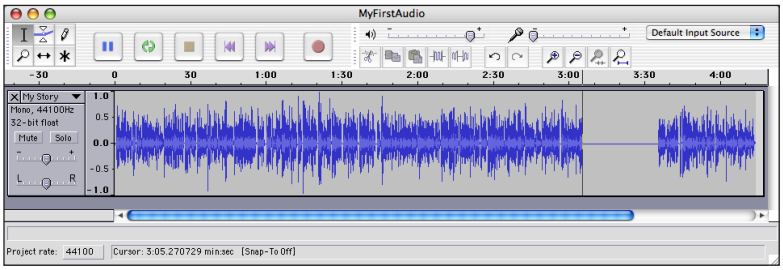


Figure 4.14. *Silence added to file*

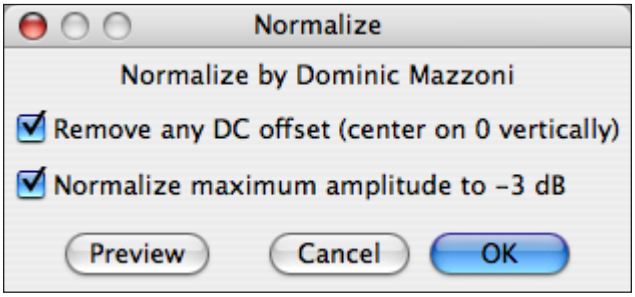


Normalizing

The term "normalizing" refers to a technique for increasing the overall volume of your audio file. There are a variety of techniques for normalizing, but Audacity offers you only one of these ways. That's perfectly fine for beginners. Here's how the normalizing process works in Audacity:

1. Select the audio you want to normalize. Typically this will be the complete audio file, but sometimes it may be just a portion of it.
2. Go to the EFFECT menu. Choose the **Normalize** option.
3. Up comes the dialog box shown below. Make sure both options within the dialog box are checked.
4. Click the OK button. Audacity will take a few minutes to analyze and then normalize your audio.

Figure 4.15. *Normalize Dialog Box.*



So what really happens? The first checked box (Remove any DC offset) actually has nothing to do with normalizing. Sometimes when recording the audio can be compromised by other electrical circuits in the room. In essence this option checks to see if there's been any DC offsetting due to the electrical setup in the recording and then corrects it. This is always a good thing to check and repair.

The second checked box actually does the normalizing. Specifically it looks throughout the complete selected audio and finds the audio with the highest peak (or greatest loudness). It then shifts the entire audio selection so that this highest peak is at -3 dB. This is a perfectly good option so I won't go into other normalizing options.

However, here's what you should be aware of: does your audio have a great variation in terms of maximum peaks compared to typical recording peaks? If so, normalizing will have only a small effect. In essence, it won't raise the level of your "typical" audio level much because normalizing bases it's calculations on the maximum peak found in a selection. However, if there's not a great deal of volume variation in your audio file, normalizing does a good job of optimizing the sound volume for your listeners.

If your sound file does have a lot of peaks and valleys, then you may want to talk to me about other options for normalizing. In many cases I may recommend doing nothing and you should just live with it.

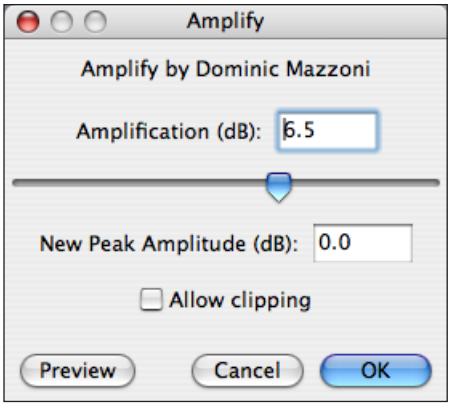
Amplify

In some extreme cases where an individual has very high peaks, but 90% of their audio is at a very low volume level then you may want to take advantage of the **Amplify** option under the EFFECT menu. Intuitively you might think this option amplifies, but it can also be used to reduce the sound levels. If most of your audio is at a relatively similar volume, but you have 3-to-6 places where the audio is quite loud, then I suggest you select each of those 3-to-6 audio snippets and reduce the sound level of each. Then, afterwards, you can normalize the whole audio file.

Here's how to do the sound volume reduction:

1. Select the audio region where you want to reduce the volume.
2. Go to the EFFECT menu and select the **Amplify** option.
3. As the default amplification is set to +9.0 decibels, click in that box and change it to either -3 or -6. You may have to try both of these suggested options to see which works best. Don't reduce the volume by more than -6 decibels because then the audio will tend to sound strange in the selected area.
4. Click the OK button and Audacity will take a few seconds to change the volume of the selected audio region.
5. If you typed in -3 dB and that was not a sufficient reduction then undo the amplification (Control/Command-Z). Go back to Amplify and now insert -6 dB.
6. Repeat these steps as needed. An important caveat is that you should not be doing this in more than about 3 to 6 places with your audio. If peaks and valleys occur often in your audio, just live with it as this is a natural part of your speaking voice.

Figure 4.16. *The Amplify dialog box.*



Please note that amplification is not a free lunch. When you raise the volume of an audio selection you *also* raise/lower the level of the background sound. When the amplify option is used judiciously then the listener won't notice that you altered the audio. However, when reductions are done at extreme levels (greater than -6 dB), then your listener may become aware that the audio file has been doctored. Anything that distracts your listener from the actual content you're trying to convey is not good.

Audacity Labels

When you get to the point of creating your multimedia product you'll need to know exactly when each of your 20-50 images should show up on the screen. Audacity has a powerful feature called *labels* that can greatly aid in this process.

Label Regions

A label is a specific point in time. A label *region* is defined by a specific start and end point. Simply stated, a label is a moment in time but a label region has a length to it. Essentially the label regions feature allows you to mark specific regions in your audio with descriptive text. For example, starting at 31 seconds and lasting until 1:04 you might find the audio that corresponds to *Section 2* in your script if labeled this way. By creating a label region in Audacity it becomes easy to mark the exact start and end points for each of the 10-25 sections in your script.

Now if all Audacity did was create these label regions it wouldn't be of much use. However, the kicker is that Audacity will export your label regions as a text file. This text file contains the name of every label region **plus** the exact time where that region begins and ends. In essence you'll get a printout of your needed timeline! You'll need to do some further refinement of this timeline outside of Audacity since a section may contain more than one image. However, by creating label regions and then exporting them as a text file in Audacity, you'll greatly simplify the multimedia creation process.

Subproblems

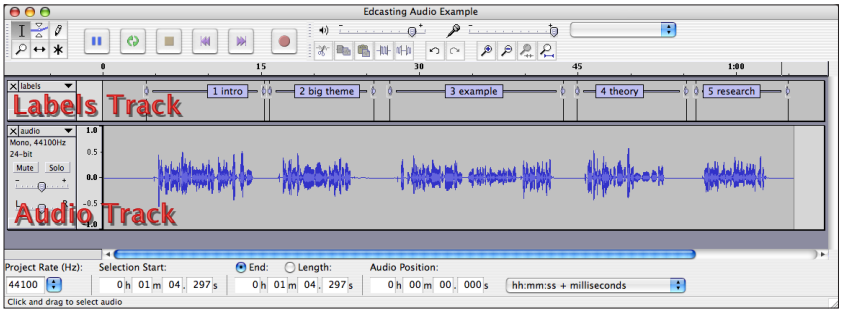
Putting together a 10 minute presentation that integrates audio with images is a complex problem. One approach is to tackle the issue as one big problem. Generally speaking this doesn't work well. Another approach is to divide the big problem into a series of smaller problems. The result is that while you have more "problems" to solve, each one is pretty simple and straightforward. The cumulative result is that the vast majority of people find it much *easier* to solve 15-to-20 small problems as compared to trying to solve one very complex problem. This section describes the initial steps for breaking down your multimedia creation problem into a series of small easy-to-solve problems.

Creating Labels

Now that you have identified discrete sections for your audio script you'll want to open up your uncompressed audio file in Audacity. One of the key aspects of creating multimedia is knowing how long a particular image should appear on the screen. What we're going to do with label regions in Audacity greatly simplifies this process. When label regions are added your audio file will look like the figure below. Notice the label track above the audio track. Furthermore notice how you can see beginning and end points for each region, and that each region is named in a pithy but clear

manner ("1 intro" or "4 theory").

Figure 4.17. *Audio with label regions.*



- **Create the Label Track.** Select New Track Label from the PROJECT menu. I personally like the Label Track to be positioned above the audio file. To do this click on the *down arrow* just to right of the label track name. You'll see an option that says **Move Track Up**. Select this option to reposition the label track above the audio file.

- **Creating Labels.** Click at the very beginning of your audio track. To create a label at this point use the **control-B** (or command-B) key sequence. You can also choose **Add Label at Selection** from the PROJECT menu. When the label is inserted it's automatically ready for you to type in a description. The easiest thing to do is type in "1" and a very brief text descriptor. In the example above I used "1 intro" as my name. You already know the "1" stands for "section 1." Play the audio. When you identify the next section stop the audio, move the cursor to that point, and add a new label. Continue as needed.

- **Creating Label Regions.** Label regions are defined by a starting *and* end point, whereas labels are defined only by a starting point. They are easy to insert. In addition, by clicking on the name of a label region the portion of audio for that region is automatically selected. This makes it easier to identify and listen only to specific audio later on. I suggest that you create label regions instead of labels because of their extra functionality, but the decision is up to you.

  To create a region you have to select *both* beginning and end points of a section and then use the Control/Command-B key sequence. Audacity automatically knows in these cases that you want a region. Type in a number and short descriptor as with regular labels. Continue as needed.

- **Creating Labels on the Move.** One way to create all the subsequent labels is to listen to the audio and then *between* the end of one section and the beginning of the subsequent one create a label without pausing. The way to do this while the audio is playing is to use the **control-M** key sequence if you use Windows. Unfortunately, if you use Macintosh the command-M key sequence conflicts with

the system-wide command to *minimize* a screen. But, at least for Windows users, the control-M key sequence allows you to listen to the audio straight through and create labels as you go along. Mac-users can choose to select the PROJECT menu and then the *Add Label at Playback Position* option.

After listening to the audio you'll then need to enter descriptors for each label. To do this click on the first unnamed label and put in your descriptor (e.g. "1 example") the press the tab key. You'll automatically be taken to the next label. Type in the descriptor and tab again. Repeat until finished.

Working with Labels

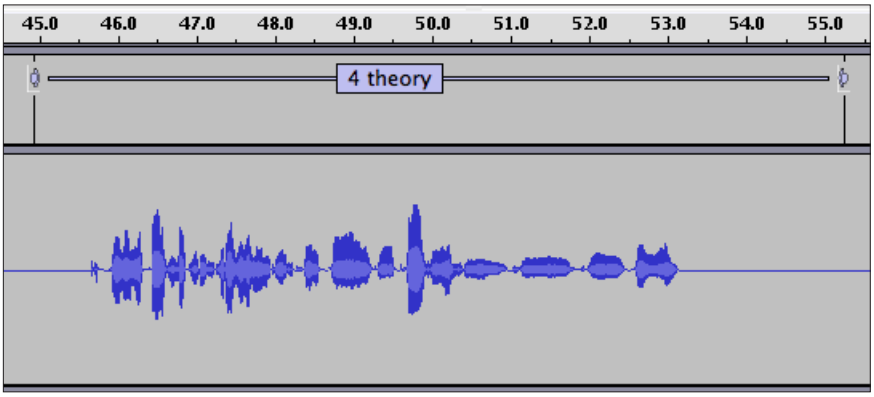
You can move labels or label regions. Below I describe three ways to move the location of labels as well as how to delete labels.

- **Moving Labels.** If you created a label and have the position wrong then you can move it. Click on the label box icon (just to the left of the text description) and drag to your *right*. You may have to magnify the audio wave form and listen carefully to get the adjustment correct.

- **Transforming Labels to Regions.** If you created a label, but really want a region you can make it so! Click on the label box icon (just to the left of the text description) and drag to your *left*. You can see how you now have two label box icons. To adjust the region start and end points read below.

- **Moving Region Start and Ends.** You can adjust the start and end times of a specific region. By default Audacity interprets the left side box as the beginning and the right side box as the end of a region. Click on the right side box first and move to a new end location if you want. Click on the left side box and move to a new begin location if you want. The figure below shows one specific label region ("4 theory"). You can see the adjustment boxes at each end of the region area.

Figure 4.18. *Detailed view of the labels track.*



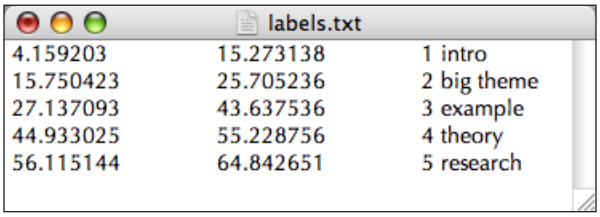
- **Deleting Labels.** To delete labels involves a trick. First select the area containing all the labels you want to delete. Now use the EDIT menu and choose *Silence*. That command will delete all the selected labels in the highlighted area. Another way to delete a single label is to first click on it, press the Delete or Backspace key until you've deleted all the characters in the label, then press Enter (or Return).

Exporting Labels

Let's quickly recap. My script has 20 sections so my label track should end up with 20 label regions. Now I want to export the label track. This exported information will include 3 columns for: the label name, the exact time in seconds where the label begins, and the exact time in seconds where the label ends.

Go to the FILE menu and select **Export Labels**. In the subsequent dialog box be very careful *where* on your hard drive you save this text file. Then click Save. You can now open this text file using Word or even Excel. The image below shows what my exported label track looks like.

Figure 4.19. *The exported label text file.*



Notice that the document has 3 columns. The first column gives the time in seconds when a label or label region beings. The second column gives the time in seconds when a label or label region ends. The third column gives a list of the names I put in for each label or label region.

You'll use this information in **Chapter 8** to figure out when, and how long, each of your images should appear on the screen.

QT Movie NoteTaker

If you use another sound editor other than Audacity, or if you simply find the labels feature of Audacity too frustrating, then there's a great alternative for noting down the timing in your audio called **QT Movie NoteTaker**.

This is a free cross-platform program that allows you to open a QuickTime movie within it. It also contains a notepad area. Just by using the right bracket key (just above and slightly to the right of the comma key) you can start and stop your movie. But wait, it even does more! Each time you stop it places the *exact time* of the stop in the notepad area and you can add whatever comments you want in addition to the timestamp. You can save all your times and notes as a text file that can be easily printed.

The program was created to work with digital video and QuickTime movies. (In fact, you'll be using QT Movie NoteTaker when doing the final stages of editing in LiveSlideShow. See Chapter 9 for details.) However, it also works with AIF, WAV and MP3 files.

Currently the program is at the 0.5 stage which means it's not even at version 1. However, it's free and despite some quirks works amazingly well. One quirk you should know about is that the program currently says it can not open a sound file when you try to do so This is a known bug and is incorrect. In fact the program does open these types of files. Ignore the warning it gives. Just go ahead and use the right bracket key to move through the audio to note key times.

You can download QT Movie NoteTaker at:

http://www.dvcreators.net/qt-movie-notetaker/

Audacity Mixing

Mixing is the process of combining a group of sounds into one coherent audio product. Only a few of you will want to learn about this procedure. In creating a multimedia project you might want to enhance your audio by having music or ambient sounds that play in the background as you are speaking. Mixing will allow you to combine your voice with music or ambient sounds into one audio file. The sections below describe how to do a very simple mixing project. Please be aware that mixing can be quite complicated. For example, you could have tracks for 20 different instruments and voices that all have to be combined into one song. This section *won't* describe how to do these more complicated mixing projects.

Adding Music

The first step is to add audio to your project. You must already have the audio in an MP3 format. If you have the desired audio on a CD then use iTunes to first import and convert the audio into an MP3 file.

To add additional audio go to the PROJECT menu and select the **Import Audio** option. In the ensuing dialog box you'll then need to find the audio on your hard drive. Once you've done this step then Audacity will open the MP3 file and place it below your current tracks.

Trim and Adjust

Typically the imported audio file will either be too long, or you only want to use a portion of the song, or the song will not be situated where you want to use it. By default when Audacity imports new audio it makes sure the audio starts at 0 seconds. However, you may want to only use 30 seconds of the audio starting at 2 minutes. In these types of cases you'll need to trim the audio file to get rid of the unwanted material and adjust the start location of the song. Here's how to do it:

1. First we'll trim the song. Listen to it carefully. Click on the **Solo** button (just under the track name) then when you play the audio you'll only hear the song and not your voice. (Later, of course, you'll click on the Solo button again to deselect this option. In the end you want to hear *all* of the audio tracks.)
2. Identify the start and begin point of the audio area you want to keep by using the selection tool.
3. Use the trim tool (2nd from right on toolbar as shown in Figure 4.20). By selecting (as shown in Figures 4.21 and 4.22) you'll delete any audio that is *not* currently selected.
4. You still need to position the audio to where you want it relative to the spoken voice track. To move the stereo track around you'll want to use the **Timeshift tool** that's located with the Editing Tools (see Figure 4.23 below). Click on the stereo audio file with the Timeshift tool. Using the click-and-drag technique you can move the audio file anywhere you want either to the right or left. You may have to magnify the audio view to place the start of the audio exactly where you want it relative to the spoken voice.
5. You're done. Figure 4.24 shows what our trimmed music file looks like when it has been repositioned using the timeshift tool.

Figure 4.20. *The Trim Button.*

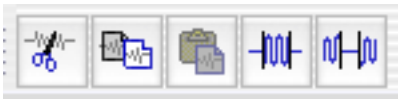


Figure 4.21. *Before Trimming.*

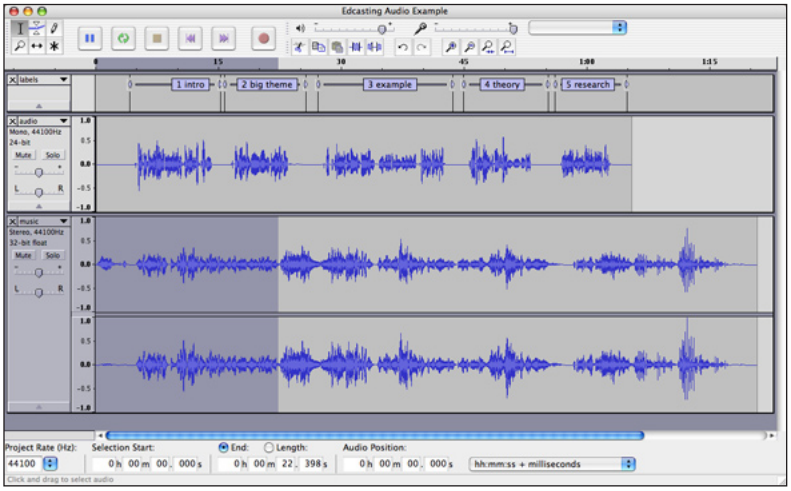


Figure 4.22. *After Trimming.*

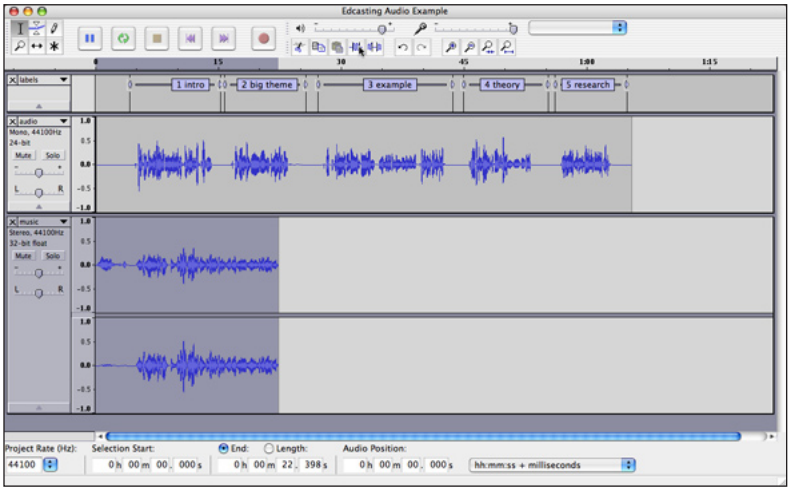
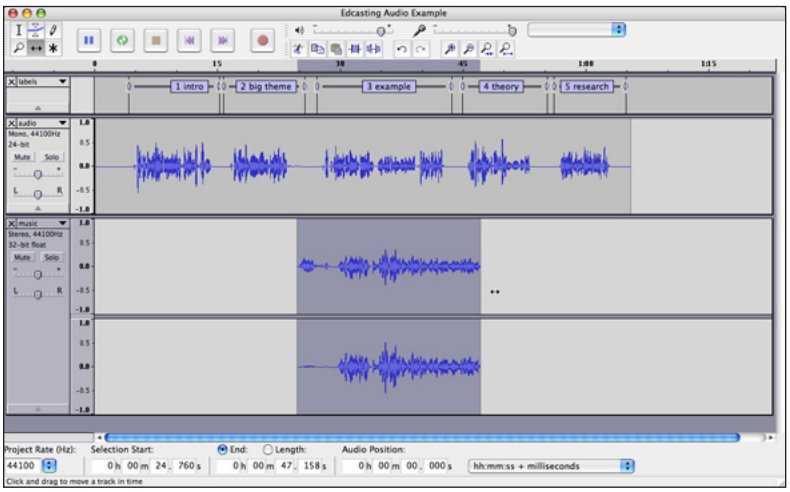


Figure 4.23. *The Timeshift Tool (highlighted).*

Figure 4.24. *Timeshifted music.*



Fade In and Out

Now that you have some music trimmed and placed where you want it you face an additional problem. It's likely that either at **both** ends of your music selection the volume is too loud and sounds unnatural (as if you've just walked into the middle of a song). You can clean up this problem by using fade in and fade out to make a smoother transition out of your music. Here's how to do it:

1. Select a portion of your beginning audio. I suggest selecting the first 5-10 seconds. (The one exception is if you're using the actual beginning of a song that probably already fades in quite nicely.)
2. Choose EFFECT menu, then the **Fade In** option. A *fade in* starts with silence and progresses to full volume by the end of the designated audio region.
3. Audacity will create the *fade in* within 10 seconds.
4. Now go to the end of your music selection. You'll go through the same three steps as above except now you'll select **Fade Out**. A *fade out* starts at full volume and decreases to silence over the length of the selected audio segment. You should choose the last 5-10 seconds of your music segment to fade out.

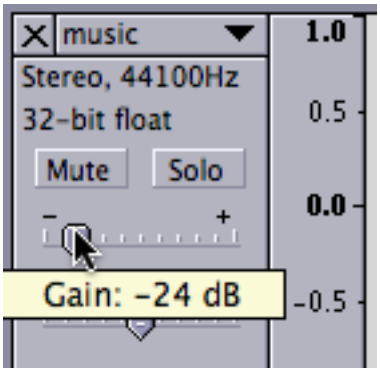
The Gain Slider

If you play your Audacity file you may find that the music competes, or overwhelms, the spoken voice. That's no good. You want the music to be subtle and to sound like it's in the background. This is easy to control by using the gain slider. Specifically I'd suggest setting the music to be somewhere between -21 dB and -30 dB, lower than the spoken voice (which is currently set at 0 dB). Here's how to do it:

1. Go to the track with the music.
2. Click on the gain slider (see figure below).

3. Move the slider to the left. Start at -21 dB. Listen to the voice and music together. If it doesn't sound right, move the slider either down or up as appropriate. Make sure that you listen at a point when the music is at its loudest when checking for how to adjust gain levels.

Figure 4.25. *Gain Slider moved to -24 decibels.*



Exporting

Once you have your audio file completed you'll want to export it. If you are a Mac user you'll export your file as a AIFF uncompressed audio file. If you're a Windows user you'll export your file as a WAV uncompressed audio file. Here's how to do it:

1. Go to the FILE menu and choose **Export as AIFF** (Mac) or **Export as WAV** (Windows). (Special note: on the Mac the file may result in an AIFF or an AIF extension depending on the software you use. Both are the same format.)
2. In the ensuing dialog box you'll be asked where you want to save the exported file on your hard drive. Choose a suitable location.

About Stereo Files

If you only export your spoken voice audio then you'll end up with a mono file. However, if you added music then you'll end up with a stereo file. Stereo files are twice as big as mono files. Your next step will be to create an MP3 compressed file which will make the file much smaller. However, if you are concerned about big sizes, and you have a stereo file, then contact me. I have ways to change your file from stereo to mono (and thus I can reduce the file size by 50% for you).

MP3 Compression

You've finished editing your file. Now you have a fine-tuned *uncompressed* audio file. Since it's uncompressed it's quite large in size. We're going to create a second version of your audio that's *compressed* into an MP3 format (this is a very specific and common compression format). Generally speaking your MP3 compressed file will be about 10% the size of an uncompressed AIFF or WAV file.

Some students naturally ask: "Why don't we start off using a compressed file?" When you compress a file it loses some of it's original quality. The more you compress, the more quality is lost. If you started off with a compressed file, did several edits and then did several saves of the file, you'd end up with audio that was nicely edited but would sound ugly. With an uncompressed file you can edit and save to your heart's content with *no loss in quality*. Thus, compression is always done as the *last* step. This is true with visual images as well. In addition, you always want to keep a backup of the final uncompressed file because you may need to make changes to it again at some later point.

You may have noticed that it's possible (with some extra downloads) to create an MP3 file from within Audacity. So why are we using iTunes? Two reasons. First, the quality of the iTunes MP3 export is better than Audacity. Second, iTunes gives you important options about how you encode your MP3 file (this affects tradeoffs between quality and file size) that Audacity doesn't provide.

iTunes

iTunes is free and the quality of the MP3 compression is high. Let's look at the steps involved.

- **Set Preferences.** First you need to set the iTunes Preferences so it knows to use the MP3 compression technique. You only need to do this once. Here's how to do it:

    1. Start iTunes. Go to Preferences. On the Mac this is under **iTunes: Preferences** and on Windows this is under **FILE: Preferences**. See Figure 4.26 below.
    2. In the next dialog box you'll see several options along the top. Select the **Advanced** option. You'll see three tabs labeled General, Importing, and Burning. Select **Importing**.
    3. For the option bar labelled **Import Using** click on the selection bar and choose **MP3 Encoder**. Note: as a default iTunes is set to AAC Encoder.
    4. For the option bar labelled **Setting** click on the selection bar and choose **Higher Quality (192 kbps)**. See Figure 4.27 below.
    5. Click the **OK** button at the bottom of the dialog box. That's it.

Figure 4.26. *The Preferences Panel*

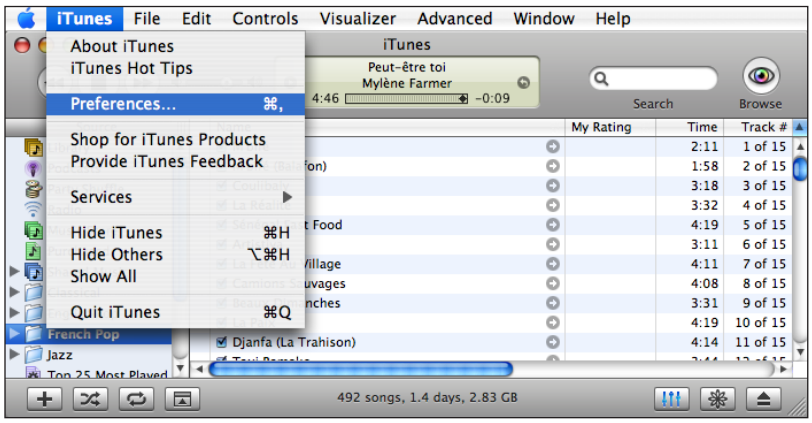
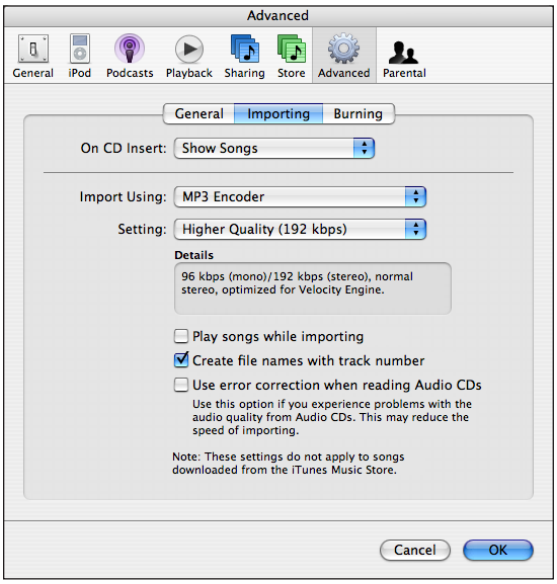


Figure 4.27. *Importing Preferences set correctly.*



MP3 Compression

Each time you want to convert an audio file you first need to add the audio file to the iTunes library. Here's how to do it:

1. Go to the **FILE menu. Choose the Add to Library** option (see Figure 4.28 below). Alternatively you can use Control-O on Windows or Command-O on Macs to implement the same command.
2. In the ensuing dialog box navigate to where your uncompressed audio file is located. Click on the file, then click on the **Choose** button.
3. iTunes now adds the audio to its library. Depending on the length of the audio file this may take between 10 and 60 seconds. (Specifically iTunes makes a copy of the original uncompressed file and adds that copy to its library of songs.)

4. Click in the **Search box** of iTunes (see Figure 4.29 below). Type in the first few letters of the name of the audio file. In the figure below the term "fast food" has been used in the search box. When you see your audio in the library list click on it to make it the active selection. You'll see a bright medium blue highlight added to the audio information when you click on it.

5. Use the **ADVANCED: Convert to MP3** menu option (see Figure 4.30 below). It will take iTunes between 20 and 60 seconds to compress your audio. When it is done you'll see two audio files with the same name. One is uncompressed, the other is in an MP3 format.

Figure 4.28. *Adding to the iTunes library.*

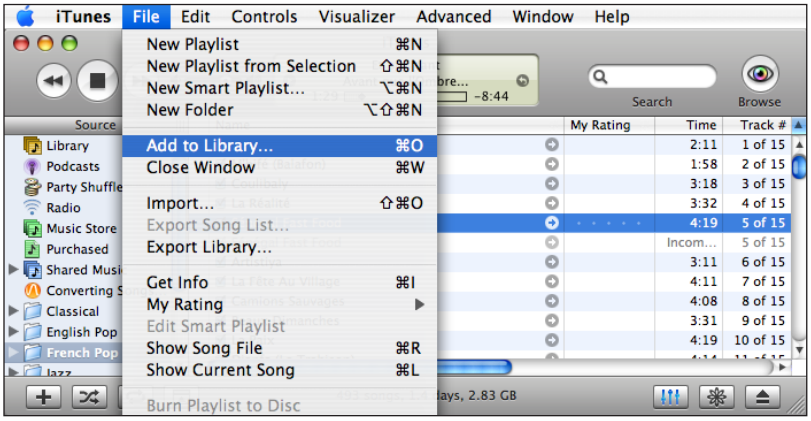


Figure 4.29. *Using the Search box to find the audio file.*

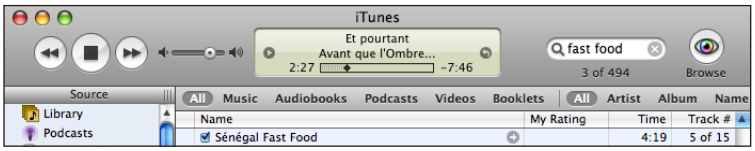
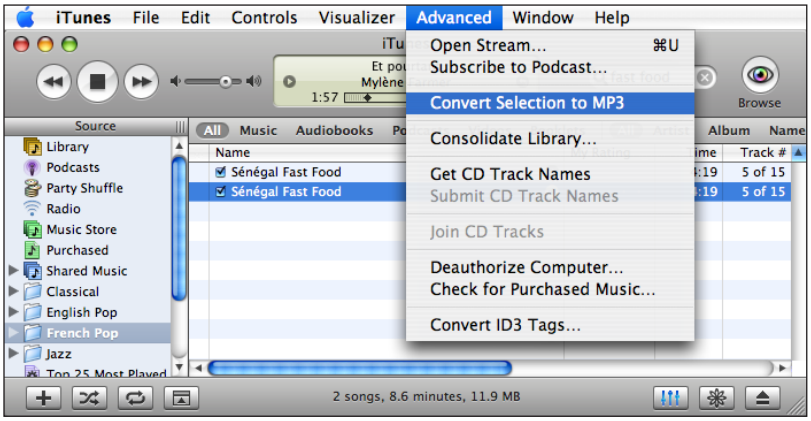


Figure 4.30. *Choosing the song.*



Find & Move

Now that the audio has been compressed you need to locate the MP3 file and move it into your multimedia project folder. Here's how to do it:

1. If you're a Mac-user press down the Control button and click with your mouse on either one of the files. If you're a Windows-user then right-click on either one of the files. Either way, after about three seconds a small dialog box will pop up. Choose the **Show Song File** option (it should be third down from the top in the list of options). Refer to Figure 4.31 below.
2. You will be taken to your computer's desktop/finder area and the folder containing both audio files will be automatically opened up for you. Copy or move the MP3 file from that folder into the Sounds subfolder within your Project folder. See Figure 4.32 below.
3. If you can't tell which file is the MP3 version, then choose the List View (if a Mac-user) or the Details View (if a Windows user). These views tell you what kind of file you're seeing and one of the two files will be listed as an MP3 file.
4. That's it. You've now successfully recorded, edited and compressed your own audio file. Congratulations!

Figure 4.31. *Control-click (Mac) or right-click (Win)*

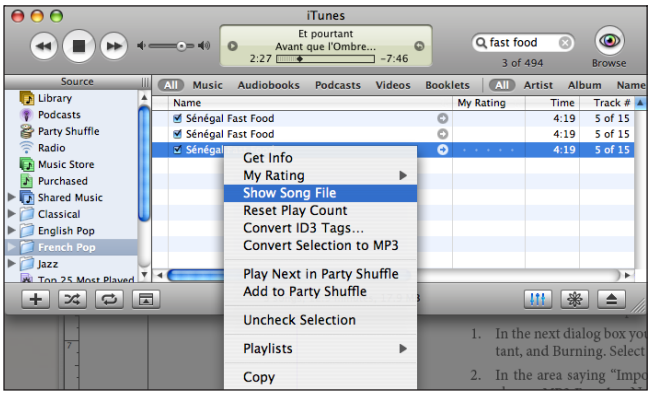
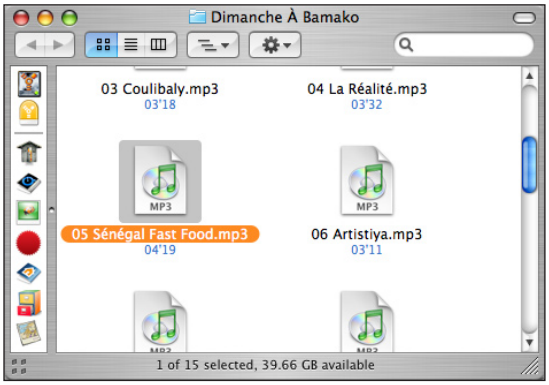


Figure 4.32. *The MP3 file on your hard drive.*



Summary

In this chapter you've been presented with a conceptual overview of audio editing, as well as the practical steps needed to do basic editing. Furthermore you've learned about mixing audio tracks and compressing audio files to create a high-quality MP3 files that you can use in your movie or share with others as a podcast.

Exercise 4

You are going to record your first script developed in Exercise 3.

The Recording

Here's the steps you'll need to go through in terms of the audio recording:

1. Record at my office or at home. If you want to use my office, then you'll need to make a reservation to do so. If you're interested in trying to do a home recording then ask me about the Griffin iMic: Plantronics microphone recording set or the USB microphone that I will lend out to students.
2. Edit the audio file at home (no matter where recorded) using Audacity.
3. Compress into an MP3 using iTunes.

Delivery

Send the final MP3 file to me as an email attachment or bring to class on a Flash drive. Name the file as **yourfirstname.mp3**. So, if your name is Helen, then name the file Helen.mp3.

5 *Visual Models*

Chapter 5

Edcasting

Overview

This chapter tackles the first type of image you'll be creating: the visual model. In essence a visual model (sometimes called a *concept map*) shows the guts of a concept both in terms of essential components and its connections to other concepts. Within a visual model the nodes (representing key concepts or main points) are important, but just as crucial are the *links* (physical lines or arrows) that exist between concepts.

A good visual model makes it easier to present difficult concepts. The audio can supply the needed detail and examples, but the visual model keeps the viewer oriented and focused. The visual model is similar to a geographical map: it helps the learner know where they are located, know where they are going, and know how to navigate difficult conceptual material.

Some people focus on the big picture, others focus on details. When tackling the learning of new conceptual material, an instructor needs to pay attention to both. A visual model tends to focus on big picture material. Within the audio and other visual content of a multimedia presentation you'll provide important supportive detail by:

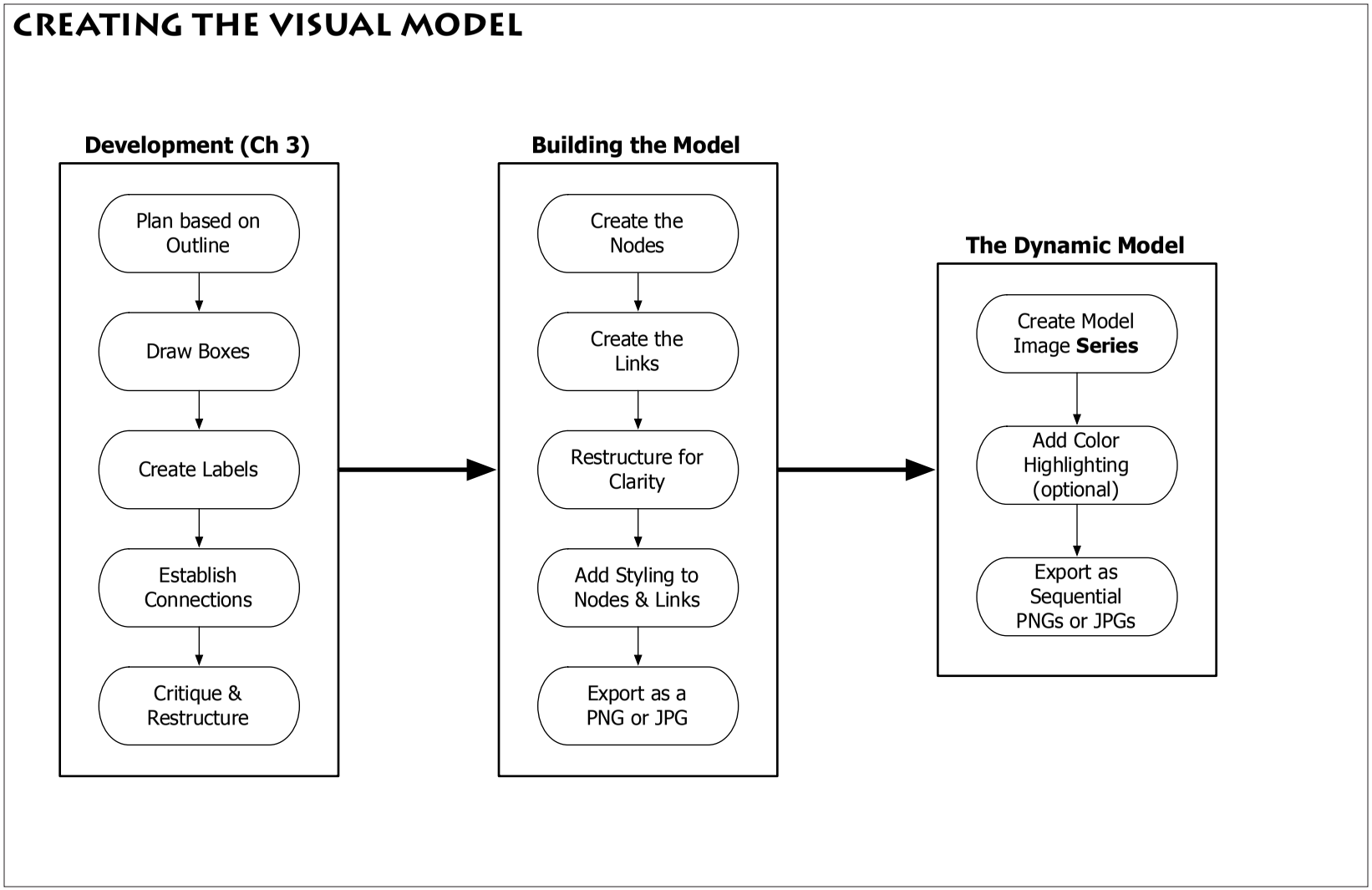
1. Synchronizing audio narration with the visual model that deepens understanding of the concepts to be learned.
2. Adding additional information (typically in the form of an example or two) that fills out the basic concepts and their linkages as described in a visual model.

Your visual model doesn't have to do *all* the work for you, but it does serve as an important foundation for your multimedia presentation. As such, it needs to be simple, clear, and effective.

Chapter Model

The next page presents a visual model of the chapter's content. The model emphasizes three major phases when developing your audio file: (1) developing the model, (2) building the final version of the model, and (3) creating a dynamic visual model.

Chapter 3 (Storyboarding) already covered the rationale and steps to consider when developing a visual model. This chapter assumes you have a good draft model already developed. So Chapter 5 starts by looking at how to build your final spiffy version of the model using Cmap Tools or any other visual modeling software program. The last part of the chapter then addresses two different ways to increase the visual intrigue of your multimedia movie by using either *unfolding* models or *highlighted* models. Both techniques result in a model that appears dynamic because its appearance changes as the narrator explains various facets of the model.


CREATING THE VISUAL MODEL
Development (Ch 3)
Plan based on Outline
Draw Boxes
Create Labels
Establish Connections
Critique & Restructure
Building the Model
Create the Nodes
Create the Links
Restructure for Clarity
Add Styling to Nodes & Links
Export as a PNG or JPG
The Dynamic Model
Create Model Image Series
Add Color Highlighting (optional)
Export as Sequential PNGs or JPGs

Model Construction

You've *already* created a visual model for your presentation. At this point you may want to tweak your model a bit using pencil and paper. Remember, however, that the model has to be entirely consistent with the audio you've already recorded. Thus only tweaks that don't conflict with the audio narrative should be done.

There are three ways to get your model ready to use in a multimedia movie: the hand drawn model, the Cmap Tools model, and the other software model. Each of these three approaches is described below.

Hand Drawn Model

In this approach you re-draw your model in color on good paper and then scan the final model to digitize the model. Although you could use colored pencils, in general you want to use some sort of marker because thicker lines scan much better than thin lines.

> *Tombo and Sharpie both make great sets of colored drawing pens. The Sharpie color pack is easily available at most office supply stores, while the fancier Tombos are more expensive and usually found only at art supply stores. If you choose to use Sharpies make sure to use only the fine point markers as the thicker Sharpies are too thick.*

Once the drawing is done you can then scan the model (either at home or at my office).

- **Drawing Strategy.** When using hand drawn models, be careful to make sure all shapes and lines are independent of one another (i.e. that they don't cross over one another). This makes it much easier if you want to create a *dynamic* visual model (discussed later in this chapter).

Cmap Tools

Cmap Tools is free software that works on both operating systems. Cmap is academic slang for "concept map." (Sometimes you'll also hear about Kmaps for *knowledge maps* which are similar to concept maps). This software was developed by academics (not professional software developers) so it has some rough edges. That said, it works very nicely. Since this software tool is free, this chapter will show you how to create visual models using Cmap Tools.

Other Software

There are lots of software programs that have been developed to create basic vector illustrations including Adobe Illustrator, Macromedia Freehand, Corel Draw and many others. These programs tend to be too general for your purposes however. If you already know how to use a program like Illustrator, then you're welcome to use that program to create your visual model.

In addition there are several software programs available for creat-

ing visual models. Some of these programs have been developed primarily as *mind mapping* software. In general the mind mapping software programs are too restrictive. There are also several programs aimed at creating *flow charts* and visual models. I will briefly discuss a few of these software programs in the section titled *Mapping Tools* later in this chapter. The two software leaders, however, are Microsoft Visio (Windows only) and OmniGraffle (Macintosh only). Both of these excellent software programs can be bought at an academic price of approximately $65 and $48 respectively. Both of these programs are very powerful and worth the financial investment if you anticipate creating visual models often.

Model Style Tips

Before we look at commercial software for creating visual models and then explore Cmap Tools in detail, there are some general model style tips that you should always keep in mind no matter what software program you use to create you visual model.

Page Setup

You are trying to create an image that will show up optimally on an 800 x 600 pixel screen. This is approximately the same as a regular letter size page that is in a horizontal (or landscape) orientation. In fact, 800 x 600 pixels converts to exactly 11.11 x 8.33 inches.

Font Styles & Sizes

When students have problems with their visual models it's typically because of a poor choice of font, or font size, or font style. Here's some basic recommendations:

- ✓ For all nodes use a font size of 14 points or larger.
- ✓ For all link labels use a font size of 12 points or larger (but label fonts should be smaller than concept node fonts).
- ✓ Use a sans-serif font. For instance this document uses the Minion Pro font. It's serif because it has little curls in the letters. This makes the printed page easier to read. However, for movies and multimedia it's much easier to read sans-serif (i.e., without the curls) fonts. There are several choices, but the best sans-serif fonts would be: Arial, Verdana, or Helvetica.

Mapping Tools

There are a variety of other software tools out there that you can use for creating visual models. Here's some of the software programs that you could use.

Visio

This is Microsoft's dedicated flow-charting program. It works well, but it has a fairly steep learning curve for some people. In addition, it's Windows-only software. You can buy Visio Standard at an aca-

demic price of $60. As far as I know there is no trial version of this software, but it is the *standard* for creating flowcharts and visual models on the Windows platform.

OmniGraffle

This is fantastic and powerful visual modeling software. It works easily, it thinks like a real graphics program, and it gives you great control over the final look of your visual model. The downsides? It only works on Macintoshes and it is commercial software (the academic price is $48). I highly recommend this software program.

Inspiration

This is a very popular cross-platform software (especially at the K-12 grade levels). The software was created to help students primarily with writing and, in that regards, it works very well. In essence, Inspiration toggles between two modes: a visual model mode and an outliner mode. Students can thus first develop a visual model and then see what the outline of the model would look like. This text outline, in turn, can help structure their writing projects.

Unfortunately your challenge is not organizing or preparing for writing, but rather to create a good visual model. In this purely graphic aspect Inspiration is "okay" at best. It has some of the same problems with exporting images at pre-specified sizes that Cmap Tools has. If you choose to work with Inspiration, please download the template I'll make available to help you know you are creating a model of the correct size.

PowerPoint

Microsoft PowerPoint doesn't think like Cmap Tools or Visio or OmniGraffle. But you can create *faux* visual models by using the box, oval, and other shape tools along with the line and curve line tools within PowerPoint. You won't be able to insert labels for the links automatically. Instead you'll need to insert little text boxes near the lines. PowerPoint also doesn't automatically connect a line from one shape to the other. You'll need to draw a line or curve that goes from one shape to the other, but since there's no way to have the resulting line snap to each shape you'll then need to make sure the shapes are positioned at the **front** of the drawing and the line or curve is back. However, it is possible to create a decent visual model using PowerPoint's drawing tools.

I would suggest using PowerPoint only if you *already* know the program well and you find Cmap Tools too frustrating. Otherwise stay with Cmap Tools or consider Visio and/or OmniGraffle as an alternative.

Keynote

Apple Keynote is Macintosh-only presentation software. Just as with PowerPoint, this software is not intended as a visual model creation tool, but it can be used to create visual models. All the same caveats that apply to PowerPoint also apply to Keynote.

As with PowerPoint, I suggest creating visual models using Keynote only if you find Cmap Tools too frustrating to use and don't want to buy OmniGraffle. It's possible to create decent visual models in this software program.

Cmap Tools Overview

The good news about Cmap Tools is that it's free and that it does help in the development and refinement of visual models. That said you should *not* expect Cmap Tools to work as easily, or with as much power, as a very good commercial modeling program such as OmniGraffle or Visio. Below is an overview on the good, the bad, and the ugly with regards to Cmap Tools.

The Good

Cmap Tools is free software developed with input from Joseph Novak (*the* visual model researcher) and is easy to use. Cmap Tools also comes with good online help. The online help has also been collated into one PDF document which you can download from the Cmap Tools website.

The Bad

While Cmap Tools does accomplish all the basics of creating a visual model, it is very limited in the types of options it gives you. You can only draw rectangles and ovals but not other kinds of shapes. There are more substantive downsides to the software (from a multimedia creation perspective) that include:

- ✓ You can not set the page size of a visual model. This means you have to visually guess at the size of the map and whether it will fit well into your multimedia presentation. The solution to this problem is to use the **Cmap Template** that you can download from my website.
- ✓ It does not offer the option of *layers*. This affects how you go about doing your final refinement of the map (as described in the Dynamic Models section later in this chapter).
- ✓ The coding for the software is not done very efficiently. This means that Cmap Tools ends up being a RAM-hog (i.e. it demands more resources from your computer than it really should). For most people this may mean they need to make sure all other software programs are closed and only have Cmap Tools open when using it.

Key Limitation

One key limitation to Cmap Tools software is that it *requires* you to use linking words when you create a connecting line between two nodes. Other software programs like Visio and Graffle make no such requirement. If you want no linking words in your model then you should consider creating a nice hand drawn model, or using alternative software products such as Visio or OmniGraffle.

Installation

Go to the Cmap Tools download webpage at:

http://cmap.ihmc.us/download

Once you've selected Windows or Macintosh, you'll then be shown information about operating system requirements for using the software. Please read carefully. It's unlikely, but some of you with older computers (i.e. 3 years or older) may have problems using Cmap Tools due to the system requirements it makes on your computer. It's best to know this early on (when we can make alternative plans) rather than facing the agony of not knowing why your computer is crashing, freezing, or otherwise behaving badly. Finally, click to download the software. Please note that the Macintosh download is about 21 Mb and the Windows download about 50 Mb. If you use a modem then it may be difficult or impossible for you to download the installer. If so, let me know via email and I'll make alternative arrangements for you. In addition, the server for Cmap Tools seems to be slow so even people with high-speed access should be patient during the download process.

A rather generic name for the installer is given. Double click on the installer to begin. You'll then be taken through the full installation routine. The installation routine is pretty slow, so be patient. It may be especially slow if the program also needs to run the Java environment on your computer. Whatever the case, just go and fold laundry or wash dishes as it will take awhile.

- **Startup Funkiness.** On the Macintosh Cmap Tools starts up in a manner that is both long and funky. Specifically you'll see the Cmap Tools icon in the Dock, then the icon will disappear for a few seconds, then you'll see it again. Don't worry about any seeming strange behavior during startup. Just be patient. The program works perfectly fine once it's ready to go. The Windows startup seems to be smoother and quicker.

The Cmap Template

It's impossible within Cmap Tools to set the size of your document. There is no default document size. This can lead to problems for you in trying to size the visual model to fit within an 800 x 600 pixel size. To alleviate this problem I've created a **Cmap Template**. When you open the template you'll see a blank white document except that it has a little orange square at the top left and another little orange square at the bottom right. (If you can't see this second square you may need to widen your viewing area.) These squares serve as *anchors* that define an 800 x 600 pixel area.

When creating your visual model you want to make sure none of the nodes/boxes or links/lines falls outside the perimeter established by these two orange boxes. When your model is finally completed, you'll change the color of the anchor boxes to white (so they seem to disappear) but they'll still work as invisible anchors

telling the Cmap Tools program to export an image at the correct size we want.

Go to my website to download the Cmap Template. Once downloaded here's what you need to do:

1. Move the template to the **My Cmaps** folder. Cmap Tools automatically creates this folder for you. It should be located within your Documents folder (if a Mac user) or My Documents folder (if a Windows user).
2. When you next open Cmap Tools click on the **Cmaps in My Computer** icon. You'll now see the *Blank with 2 Anchors* option. Double-click to open it.
3. Go to the FILE menu and select *Save Cmap As*. In the ensuing dialog box provide a name for the new map you want to create. That's it. Now you have the template installed, renamed, and ready to use.

Building the Visual Model

In this section you'll learn the basics about creating visual models using Cmap Tools. These basic steps are the same for any flow charting or visual modeling software. The details of where tools are located on a toolbar, which menu to use, and so on will change, but the basics remain the same. And those basics include these key steps:

1. Make sure your new document is 800 x 600 pixels.
2. Create the nodes (or boxes).
3. Create the links between nodes.
4. Rearrange the node positions (if necessary) so the diagram has a simple and clear structure.
5. Style the links as simple lines, one way arrows, or double arrows.
6. Style the nodes using color.
7. Export your final image as a PNG or JPG image.

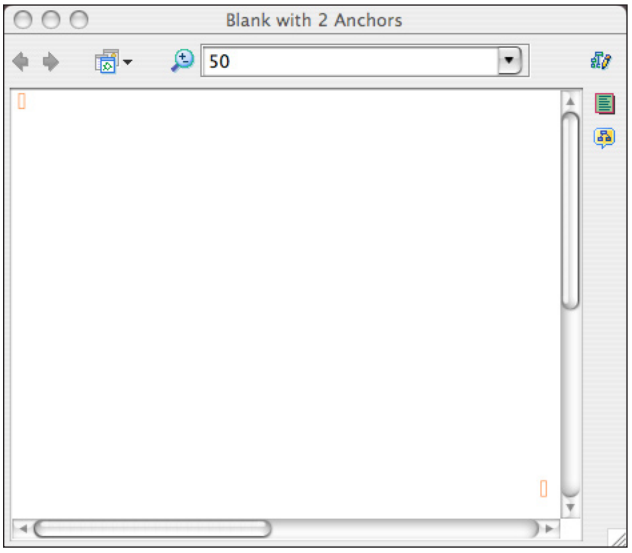
This basic step sequence, and the general instructions for using Cmap Tools, also apply for using Visio or OmniGraffle.

Cmap is very easy to use, and has good online help regarding how to do specific procedures. One of the nice features of any visual modeling software is that it "knows" you want to maintain connections between concepts. This means if you move the location of one node in your visual then any links (either *to* or *from* the node) get automatically moved and adjusted. This makes the process of editing and refining your model much easier.

Creating Nodes

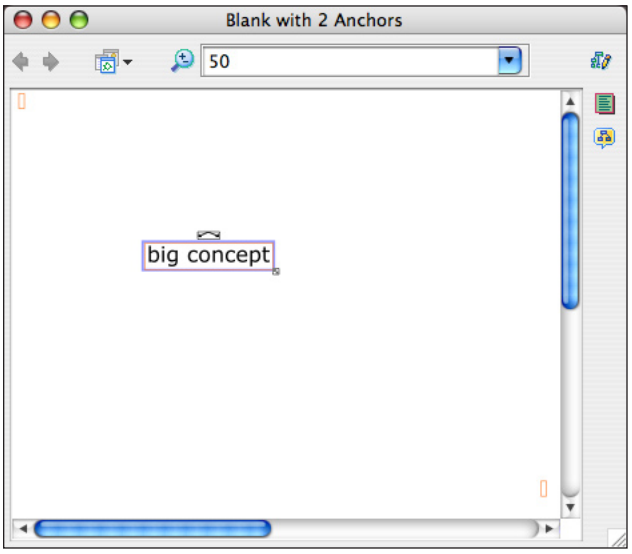
From the **Cmaps in My Computer** area select and open (by double-clicking) the document that you've already made. In the figure below is what your new document will look like. Notice that there are two small orange boxes (or *anchors*) located in the top left and lower right corners. Don't change these anchor boxes as they are used to establish the correct size for your diagram. Make sure that all inserted nodes and links are within the imaginary rectangle defined by these two orange boxes.

Figure 5.1. *The Blank Model.*



To create a node (or concept box) simply double-click anywhere in the document. You'll automatically see a box created that contains question marks. You can type a word or phrase into the box. You can see that I've typed in "big concept" for my first node in the figure below.

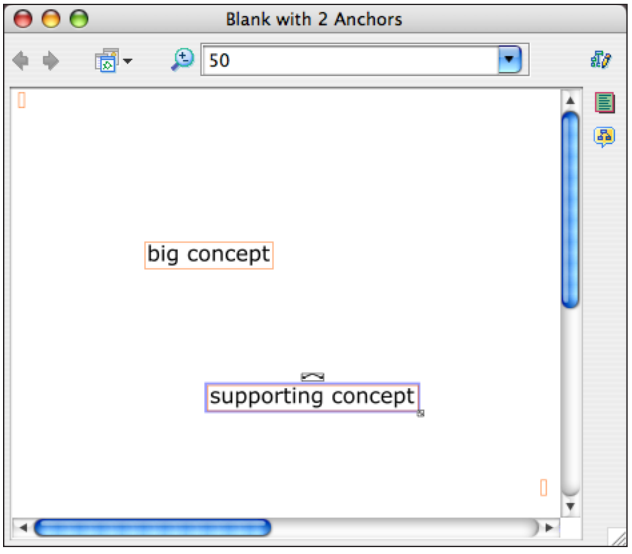
Figure 5.2. *Initial node.*



Notice that above the top of the node there's a curved double-arrow icon, and at the bottom-right there's a small double-arrowed line. You can double-click on the node to edit the text inside. The double-lines above the node are used for connecting the node to other nodes. Since this is the first node there are no connections to make. The small double-arrow at the bottom-right is a tool for resizing the node.

The next figure shows what it looks like after I've created two nodes with labels.

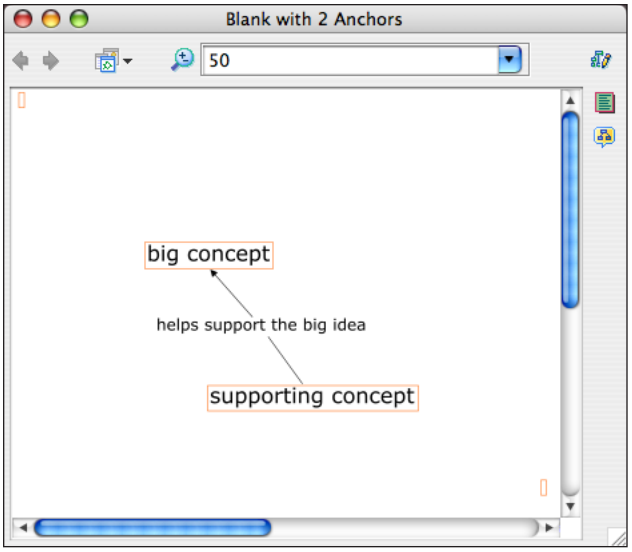
Figure 5.3. *Two labelled nodes.*



Creating Links

In the figure below I've created a link between the two nodes.

Figure 5.4. *Creating the link.*



To create the link I went through the following steps:

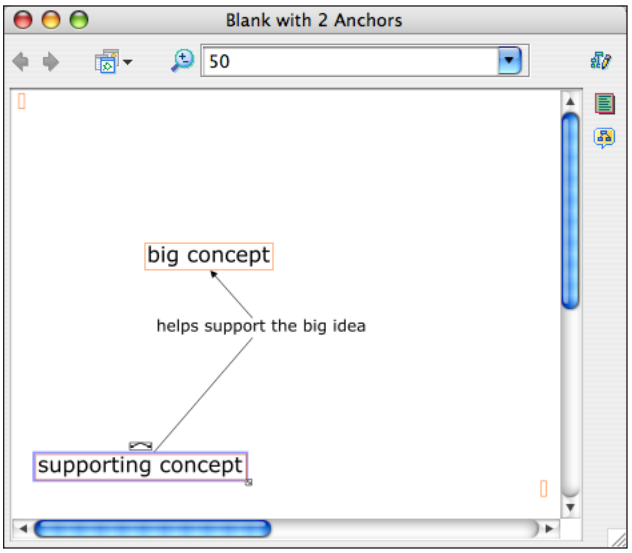
1. Click on the node. You'll now see a link-icon (represented with a curved double-arrow line) just above the node. Click on this link-icon and drag your mouse to the node to be connected.
2. You'll find that this second node shows you several handles where you could attach the link. (In figure 4.4 I chose the handle at the bottom center of the node but I had a number of other possible handles to choose from.) Each handle is like an invisible magnet. Click on whatever handle you want to use for the link.
3. In the middle of the newly created link you'll see a box with a few arrows. Type in your connecting phrase.
4. Repeat as needed.

   Please don't worry too much about the arrow direction, or line styles, at this point. Later you can refine all the styling. You simply want to draw in all of your concepts (nodes) and connecting lines (links) at this point.

Moving Around

Once I've created the nodes and links then I can easily drag the various nodes to rearrange them in my document. The figure below shows what happens if I change the position of the "supporting concept" node: the relevant link is automatically repositioned!

Figure 5.5. *Node moved with automatic link changes.*



You already have a very good idea of what your model should look like based on your hand drawn draft model. Make sure you put in all the needed nodes, links, and connecting phrases. The next section then describes how to take this basic model and refine the look so that the font, font size, color and other characteristics are exactly as you want them.

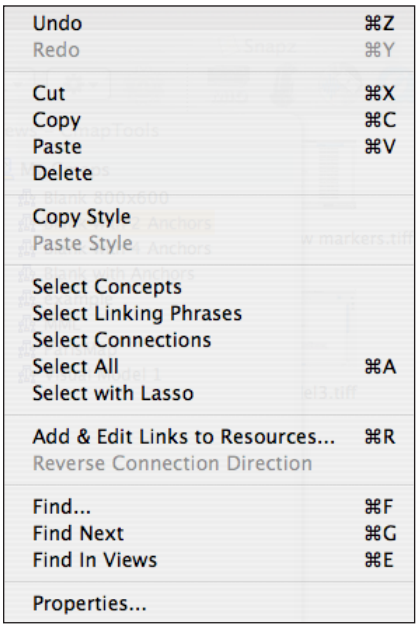
Refining the Model

Now you have the basic structure of your visual model. Unfortunately you may want to change the font, font size, color, line arrows and other features to make the visual model look good to your eyes. Using Cmap Tools you'll control all these refinements using the **Styles** palette. However, *before* learning to use styles, you need to know how to select multiple objects.

Making Selections

One problem is Cmap Tools doesn't offer the regular ways to select multiple objects (such as Shift-clicking on the Macintosh). Thus it could seem the process of styling would be very tedious if you had to style each object one by one. Fortunately Cmap Tools offers good alternative ways to select multiple objects. The key to making intelligent selections within Cmap Tools is to use the EDIT menu (see figure below).

Figure 5.6. *EDIT menu suboptions.*



The middle area of the EDIT menu offers you several ways to select multiple objects. Let's look at each option.

- **Select Concepts.** Using this option allows you to then adjust the style of *all* nodes all at once. If you want all nodes to have a common font and font size, for example, this is a great selection option.

- **Select Linking Phrases.** This option allows you to adjust *all* the linking phrases that are used in the links. If you want *all* the linking phrases to have the same features such as font, font size, color and more then this is a great selection option.

- **Select Connections.** This option allows you to adjust *all* the links. If you want all the links to have common features such as line color and line thickness, then this is a great selection option.

- **Select All.** This option allows you to adjust *everything* at once. Typically, this is not a very useful selection option for most people.

- **Select with Lasso.** This option activates a hidden (and undocumented) lasso function. The lasso works by clicking in the document and the dragging. You'll see some dancing-ant lines that stretch as you drag. In this way you can select multiple objects. This is useful if you want to select only three nodes instead of all nodes for example. I personally find the lasso tool awkward, so you'll have to play around with it a bit. Be aware that once you invoke the Select with Lasso option it stays activated until you go back and select it again (which then deactivates the lasso tool).

► **Design Tip.** The default behavior for Cmap Tools is that if you click and drag in the document window it will start selecting all objects within the area of the rectangle that's defined by your click-and-drag action. Many times when you want to select multiple objects you can do so within the shape of a rectangle. The lasso, on the other hand, let's you select a group of objects in a more flexible manner.

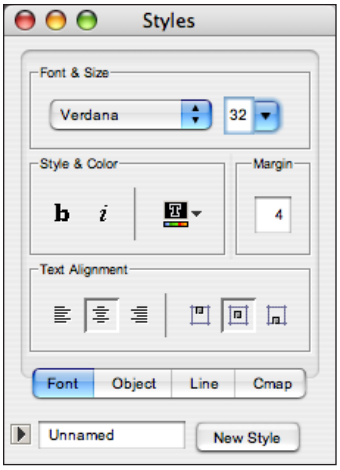
Styles Palette

The Styles Palette is made viewable by going to the WINDOWS menu and selecting *Show Style Palette*. When you open the Styles palette you'll find that it is organized into 4 separate areas each of which can be accessed by clicking on the relevant tab. The 4 style areas are: Font, Object, Line, and Cmap. Let's look at each of these areas in turn.

Font Styling

This is the first tab, and it's also the first type of styling you'll want to do. In general I suggest making all of the nodes have a font size of 14 and to use a font such as Verdana or Arial (i.e. *sans serif* fonts). It also looks best if the connecting phrases for the links have a smaller font (probably 12 will work fine).

Figure 5.7. *Font tab.*

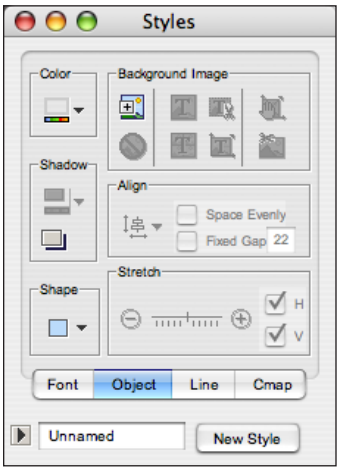


Notice that by using this section you can control (from top to bottom) the font, font size, bold and italic, font color, margin from the edge of the box, text alignment, and vertical alignment. Font, font size, and color will be the most important options for you.

Object Styling

This is second style tab and also represents what will usually be your second area of styling.

Figure 5.8. *Object tab of Styles palette.*



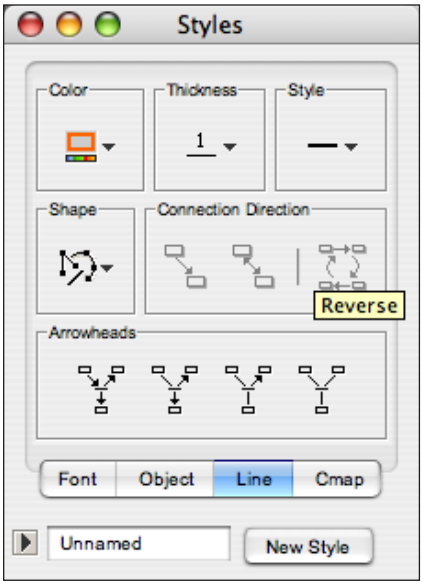
Once you've selected a node you can control it's color, whether it has a shadow, alter it's shape (rectangle or oval) and alter its look (via stretching). If you select multiple objects at one time then you can also control the vertical alignment between those objects and establish a fixed gap between objects (denoted by pixels). The background image option in the tab section will likely not be very useful to you.

- **Object Design Tip.** Most mapping programs offer the ability to create drop shadows with your nodes and links. Resist the urge! Done well drop shadows can be a good way to add emphasis. Unfortunately most mapping programs (OmniGraffle is an exception) make default decisions about how drop shadows are drawn and those decisions don't look good when the model is exported to a PNG or JPG image format. You'll end up with a clearer, more readable visual by ignoring the drop shadow option.

Line Styling

This is the third tab, and it's also the last type of styling you'll likely do. You have several important styling options here for your lines including color, line thickness, style (solid, dotted, and many more), shape (straight or curved), connection direction, and direction/type of arrowheads.

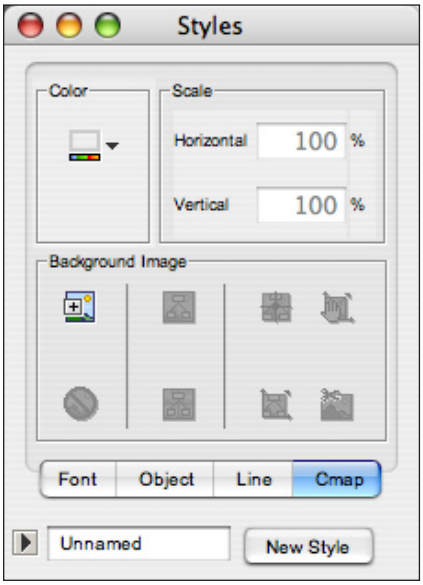
Figure 5.9. *Lines tab of Styles palette.*



Cmap Styling

This is the fourth tab, and it's unlikely you'll use this type of styling. This tab allows you to assign a general background color to the whole visual model, to scale the size of the model, and to insert a background image for the model. There are special occasions where some of these options may be warranted, but I would suggest completely ignoring this tab.

Figure 5.10. *Cmap tab.*



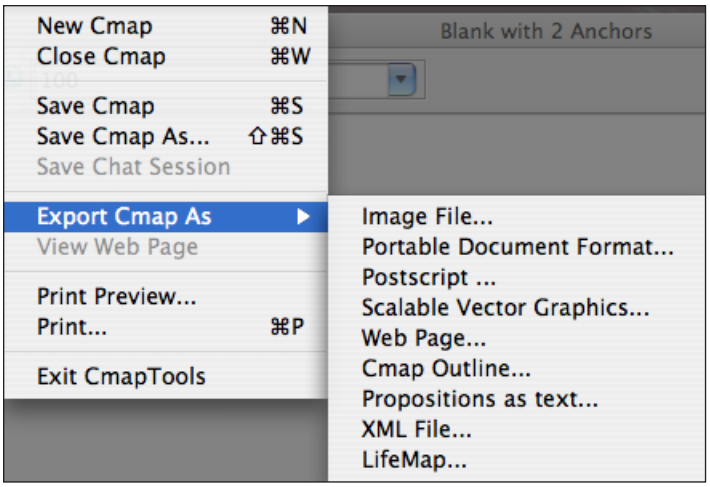
Exporting the Visual Model

You'll save your visual model in the file format determined by the software program. (This is even true of scanned hand drawn models that will initially be saved as a Photoshop document.) Whether scanning, using Cmap Tools or some other software product, you'll want to *export* your final visual model in a format that can be used by LiveSlideShow.

You'll want to export your work as either a PNG, JPG, or GIF image. If you have the options in your software program try all three types of exports and see which one ends up looking best. However, for most software programs the best looking export will occur when you save to a PNG format.

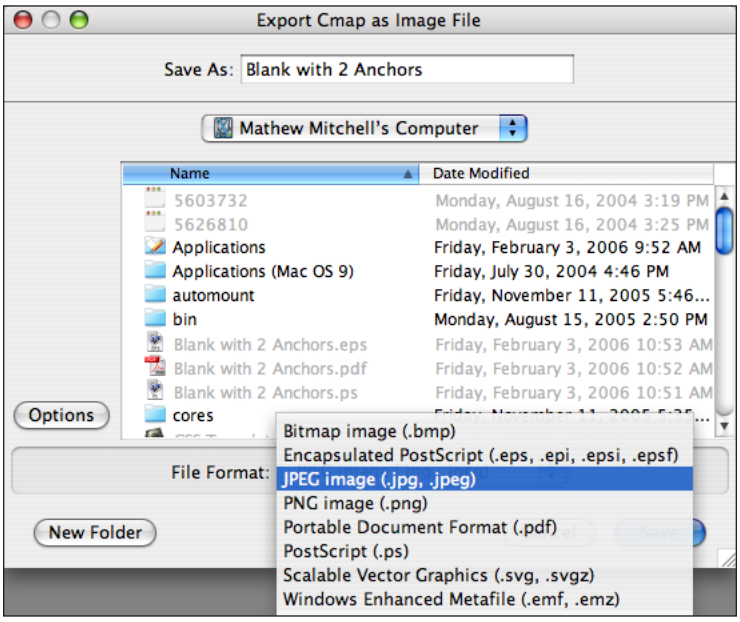
Assuming you're using Cmap Tools you'll want to use the FILE menu and choose the Export Cmap As option. Within this option you'll have several sub-options as shown in the figure below. Choose Image File.

Figure 5.11. *Export Options.*



You'll then be taken to a dialog box like the one below.

Figure 5.12. *Image Options*



In the middle of the dialog box you have a File Format bar that you can click. You'll find many options here. The best option for you is a PNG image. The PNG format is a compression technique the results in *much better* handling of text relative to a JPG. Since your visual model contains several text labels, of fairly small size, you want to make sure your resulting exported image is of the highest quality possible. Finally, remember where you save your exported image on your hard drive!

Dynamic Models

A *dynamic* visual model is one where there is a tight integration between audio and visual. In a dynamic model as the audio narration progresses one sees the visual model building up step by step. One of the main purposes of dynamic visual models is to reduce cognitive load on the learner by letting them see relevant parts of the model only. This doesn't mean that if your model has 20 boxes then you need to create 20 images to visually build up the model. But it will help if your model is chunked into 3-5 sections that appear when needed during the audio narration.

Researchers have labelled the reaction of many people to moderately complex visual models as **map shock**. This means that even somewhat simple models can seem complex and foreign to people. Yet, one of the reasons you created a visual model is to help reduce cognitive load!

To reduce cognitive load it helps the viewer if they can both hear and see your model in chunks. A chunk does not need to be one box in the model. However, one chunk should probably contain

no more than 3-5 nodes and their respective links. You'll have to use your judgement here, but remember the overarching purpose is to help your learner easily digest the visual model along with the supportive details in the audio.

The good news is you have a visual model that looks great. You're not quite done though: we want to incorporate a dynamic visual model into your multimedia presentation. Imagine that when you talk about the first concept, you only see one node. Then when you talk about a second concept, you see a second node with any appropriate links appearing on the screen. Continue this throughout the presentation. The final result is that it looks like the model is being naturally built up as you talk through the model. The result is a more entertaining multimedia product, but more importantly it's easier and clearer for your audience to understand.

You've already created the audio file which takes a viewer through your visual model. To create your multiple images for a dynamic model we'll look at two practical ways to accomplish this: using unfolding nodes and using highlighted models. Each technique is described in the sections below.

Unfolding Models

An *unfolding model* is when you don't see the complete model at first. Instead you see the first part of the model, then as the narration progresses you see part one plus part two of the model. Later part three is added to the visual. This continues until the complete model appears as a visual in the movie.

There are two general approaches to creating an unfolding model: (a) working backwards and (b) using layers. Working backwards is the best technique for most of you. However, if you use a program that has the ability to create layers (such as OmniGraffle or Photoshop Elements) then the *using layers* approach may work better for you. Both of these approaches are described with step-by-step instructions below.

Working Backwards

The working backwards approach in one where you create a final complete model, and then create a series of models each of which is simpler than the previous one. However, in the presentation you first use the simplest model image and build up to the complete model. Thus the approach of *working backwards* describes how one goes about creating the series of images that you'll be using in your multimedia presentation. Here's the approach:

1. Create your final snazzy visual model (you've already done this).
2. Do a conceptual analysis of the model. The working question is, "How many sections should this model be divided into?" At this point you are deciding how many parts you'll use to build up to your complete model. Let's pretend that you've decided your model should include 5 progressive chunks. The fifth section will be the complete model. (Adapt the instructions below if you have more or less than 5 parts.)
3. Export the final visual model as a PNG image. You'll want to name this first exported image as **Model5.png**.
4. Use the Save As command in Cmap Tools and save a new version of the model as Model 4.
5. With Model 4 open use the selection and delete tools to eliminate any parts of the model that *should not* be showing at the fourth stage.
6. Export this Model 4 image as a PNG.
7. Repeat steps 3 through 5 with a Model 3 document.
8. Repeat steps 3 through 5 with a Model 2 document.
9. Repeat steps 3 through 5 with a Model 1 document.
10. You now have 5 PNG images that will look great in a multimedia presentation as Model 1 crossfades into Model 2 and so on.

- **PowerPoint and Keynote.** If you're using this working backwards approach in PowerPoint or Keynote then you don't need to keep creating new documents. Instead you can use the **slide sorter view** to duplicate your slide and then eliminate bits from it, then duplicate that slide and repeat as needed. When you're done (assuming that you have 5 parts you want to emerge when talking) you'll have a PowerPoint file containing 5 slides. Go to **FILE**: *Save As* and choose PNG as the format in the dialog box. PowerPoint will then create a folder containing 5 PNG images for you. The directions are not exactly the same in Keynote, but are very similar.

Using Layers

The most elegant way to create an unfolding visual model is if the software you're using supports the use of layers. Layers are the software equivalent of multiple transparencies. Objects in a drawing can all be assigned to different layers (or transparencies). To make an image look more complex you can systematically add layers to the drawing. Unfortunately most simple drawing programs, and most visual modeling programs, do *not* support layers. One exception is OmniGraffle. If you get OmniGraffle, therefore, set up an appointment with me if you want to learn how to use the layering feature.

Another way to use layers is if you have Photoshop Elements. What you'd need to do is export your model from a program such as Cmap Tools as a PNG image, bring it into Photoshop Elements, and then using a combination of duplicating layers and the eraser

tool to systematically eliminate parts of the model with each successive new layer.

Using layers in a program like Photoshop Elements is the best way to create an unfolding visual model based on a hand drawn scanned image. Here's a step-by-step guide to create a dynamic visual model in Photoshop Elements:

1. Export your Cmap Tools model as a PNG image or use your scan of a hand drawn model.
2. Do a conceptual analysis of the model. The working question is, "How many sections should this model be divided into?" At this point you are deciding how many parts you'll be building up in your final dynamic model. Let's pretend that you've concluded your model should be shown using 5 progressive chunks. The fifth section will be the complete model.
3. Start Photoshop Elements. Create a new document. Make sure it's set to 800 pixels wide, 600 pixels high, 72 pixels/inch, and background contents set to white.
4. Go to **FILE**: *Place* then select the exported PNG image or the scanned document. Photoshop will automatically create a new layer with the image centered. Click on the arrow (the Move tool) and you'll be asked if you want to save the new placed image. Respond "Yes."
5. Name the layer the complete model is on as Model 5.
6. Duplicate the Model 5 layer. Name the new layer Model 4.
7. Turn off the visibility of the Model 5 layer. Go to the Model 4 layer and select the Eraser tool. When you first try to erase any part of the visual model you'll get a dialogue box saying you can't do this until the image is Rasterized. Click "Yes" to have the placed image rasterized. (Note: this only needs to be done once.)
8. Use the Eraser tool to eliminate those parts of the visual model that should not appear in Model 4.
9. Duplicate the Model 4 layer, name the new layer Model 3, and turn off the visibility of the Model 4 layer.
10. Use the Eraser tool to eliminate those parts of the model that should not appear in Model 3.
11. Repeat this two step process of duplicating, hiding, and erasing what should not be showing on the new layer. In the end you should have 6 layers in your Photoshop document: the generic white background layer plus 5 layers for each of the 5 sections of the evolving model you want to show. Using this 1 Photoshop document you'll be exporting 5 PNG images.
12. With only the Model 1 layer visible, go to **FILE**: *Save for Web*. In the ensuing dialog box select PNG-24. Then click SAVE.
13. In the next dialog box give a suitable name (such as **Model1.png**). Make sure you're saving the file to an appropriate place on your hard drive. Then click SAVE.

14. Make only the Model 2 layer visible. Repeat steps 14 & 15 but name as **Model2.png**. Repeat steps 14 & 15 for each section of the unfolding model.
15. When done you'll have 5 exported PNG images that will look great as Model1 cross fades into Model2 and so on.

Highlighted Models

A complementary technique for creating emphasis, increasing interest, and decreasing cognitive load is to use highlighting. Highlighting methods can be used in addition, or separately, from unfolding methods.

Color Highlighting

One basic way to highlight is by the use of coloring. Let's pretend you have a visual model consisting of nodes, links, and labels where the only colors are black (lines, outlines, text) and white (insides of shapes). Imagine that when someone sees your model they see the complete model. However as you start talking through the model in your narration the particular nodes and lines that are the focus of discussion at any point in time are orange in color. This very simple technique allows someone to easily focus on that part of the visual model that you're discussing, and to ignore the rest of the model, while seeing the complete model at all times.

The good thing about the color highlighting approach is that you can use it with any program you use to make your original map. For pedagogical purposes I will assume that the audio narration focused on five areas of the model. Here are the generic steps for doing the color highlighting:

1. If you'll be highlighting 5 areas of the model this means you should plan on creating 6 images (one of those images is the complete model without highlights). Plan on naming the documents as Model1, Model2, and so on. Model6 will be the complete model. You can do this easily right now in your operating system by duplicating the original file 5 times (for a total of 6 documents) and naming appropriately.
2. Let's assume you're working with Model1 which will highlight the first area of your model. Using your software fill all the nodes with colors. Using the same color for the nodes works best. Only use different colors if there is some important reason to do so. If there's no rational behind the color-coding then you'll end up making the viewer more confused.
3. When Model1 is colored as you want it, then Export or Save As (depending on your program) as a PNG image.
4. Open Model2 and color what needs to be highlighted. Then export as a PNG.
5. Continue until all models have been colored and exported. Open Model6 and export to a PNG as it is.

You should *not* make *any* changes to the models once you've dupli-

cated them, aside from coloring. So please make sure that everything about your complete model is as you want it before duplicating and coloring.

- **PowerPoint and Keynote.** You'll essentially do the same steps as above *except* that instead of creating 6 documents you'll create 6 slides total and add coloring. Your final step will be to Export all 6 slides at once as PNG images.

Framed Highlighting

Another approach is to create frames (essentially colored boxes) around the current area of the visual model that you're discussing. Like color highlighting this helps focus the viewer's attention. By far the best program for doing framed highlighting is Photoshop Elements. I won't give the detailed steps here, but if you'd like to learn about framed highlighting consult with me or check out some of the multimedia tutorials on Photoshop Elements.

Summary

In this chapter you've been presented with a conceptual and practical overview of how to create and refine visual models that will be integrated into a multimedia product. The suggested software program for creating visual models is Cmap Tools, free cross-platform software. The chapter also looked at various problems you may run into with Cmap Tools and how to address those problems by using the Cmap template. Finally, the issue of creating a dynamic visual model was addressed along with practical step-by-step tips for how to construct unfolding models and highlighted models.

Exercise 5

Create a visual model of your choice. Choose something you know well: how to bake brownies, how to take a photograph, how to avoid being audited by the IRS. The topic is up to you. I suggest developing a rough draft mock of your model using pencil and paper.

Use Cmap Tools

First, make sure to use the **Cmap Template**. You need to find out quickly whether Cmap Tools is a program that will meet your needs. Once you have a rough draft model on pencil and paper then transfer that model to an electronic format using Cmap Tools. When done with your model export the work as a PNG. Make sure to use the Cmap template.

Create Dynamism

Chunk your Cmap model into parts. You won't be creating an audio track, but imagine you had. How would you present your visual material? You can either create a model that *unfolds* or a model that uses *highlights*, but with either method you are practicing focusing attention, reducing cognitive overload, and increasing the

visual intrigue of your model. Remember, you will be creating a series of images that help the viewer build up an understanding of your complete visual model.

Deliver to Me

Put all your images into a folder named *Yourfirstname Model*. Name each image in the folder sequentially using your first name: yourfirstname_model1.png, yourfirstname_model2.png and so forth. So, if your name is Mark then I should receive a folder called *Mark Model* and inside of the folder I should find a collection of images named *Mark_Model1.png*, *Mark_Model2.png*, and so forth. You can send the folder to me attached to an email, or bring it to me on a flash drive.

6 *Title Images*

Chapter 6

Edcasting

Overview

This chapter tackles the issue of creating images that are primarily text. At this point you've completed about 75% of the preparation work needed before you actually put your materials together into a multimedia movie. You still need to create your title images and then your support images. The issue of creating support images will be dealt with in the next chapter.

I'm calling the type of images you'll create in this chapter "title images" since you will see them primarily used as titles to denote specific chapters or sections of your presentation. Another reason for using the phrasing "title images" is that it suggests these types of images should not be used too much. That's true. Your audio narrative is driving the multimedia boat and, thus, your images only need to *support* the content in the audio.

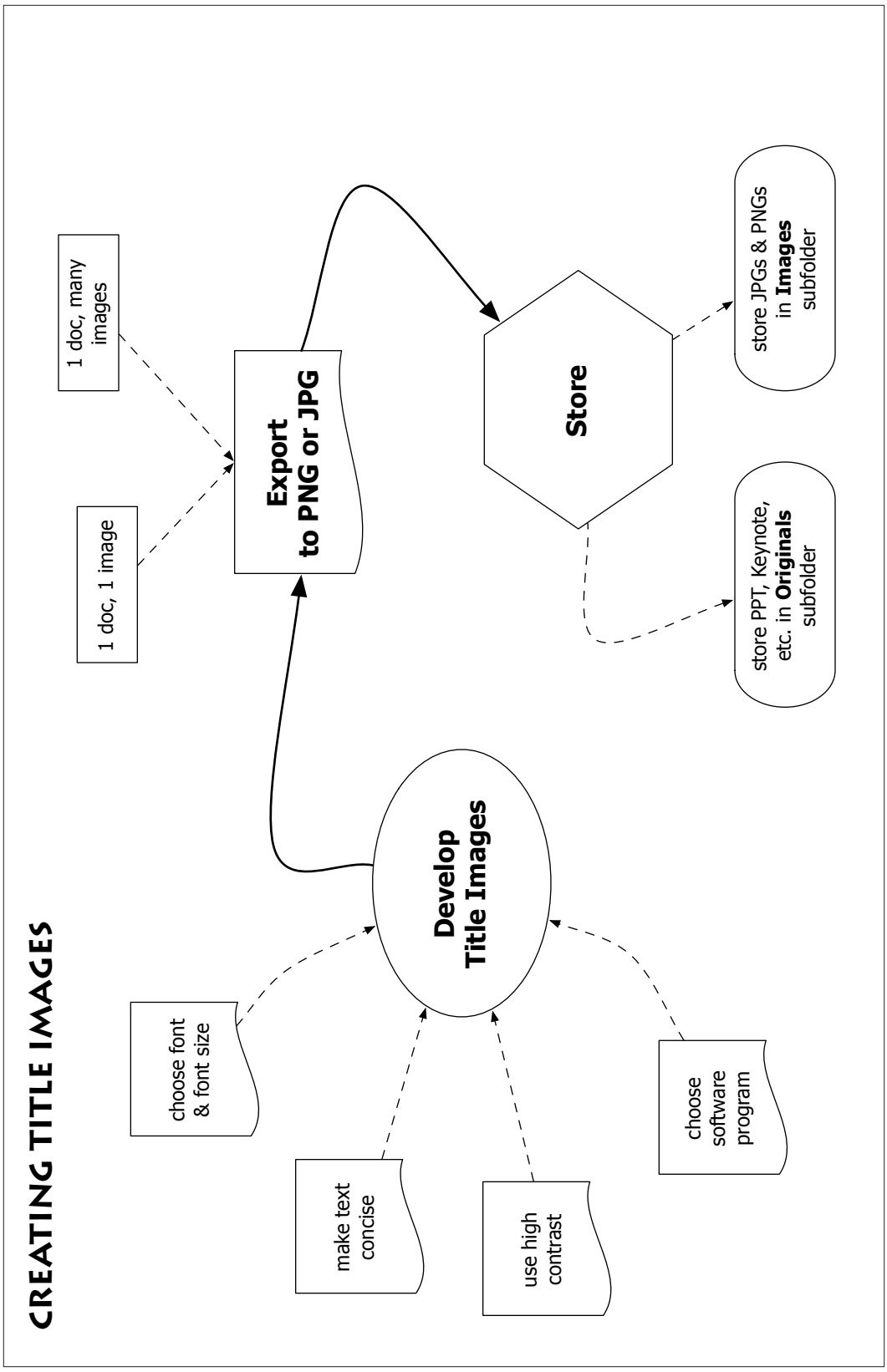
Chapter Model

The chapter model on the next page provides an overview of the key concepts and procedures discussed in this chapter. You can see there are three main steps in the process: creating the title images, exporting them into a PNG or JPG format, and finally storing files in the correct location within your project folder.

Creating titles images is pretty straightforward but involves four key considerations: choosing your font and font size, making the text concise, using a high contrast between font color and background color, and choosing the specific software program you'll use to create the images.

Exporting (or converting) your title images into a PNG or JPG compressed format can take one of two basic approaches depending on the software program you are using. One approach is that each file you create gets exported as one image. This would be typical when using something like Illustrator or a drawing program. The second approach is each file you create ends up being exported as multiple images. This would be typical when using a program like PowerPoint where one file consists of several slides. What you want to do is export one image for every slide.

Storing your title image materials in the correct location is somewhat trivial, but has important negative consequences if done incorrectly. Specifically you'll want to make sure all original work (such as PowerPoint files) are stored in the **Originals** subfolder within your **Project** folder. All exported JPGs and PNGs, however, need to be stored in the **Images** subfolder within your **Project** folder.


CREATING TITLE IMAGES
Develop Title Images
choose font & font size
make text concise
use high contrast
choose software program
Export to PNG or JPG
1 doc, many images
1 doc, 1 image
Store
store JPGs & PNGs in **Images** subfolder
store PPT, Keynote, etc. in **Originals** subfolder

Images to Use

You've already developed an outline and a script. These documents have already created a natural structure to your presentation. In fact your outline and script have natural "titles" embedded in them. All you'll do now is take advantage of that existing structure to create natural visual transitions between one part of your presentation and the next. In addition, you'll probably have to create a small number of text-based slides that provide appropriate credit for the creation of your movie and also provide any relevant academic references such as articles or books.

While there will always be exceptions, in general you have three types of title images you'll want to create: a movie title image, chapter or section title images, and credit title images that go at the end of your movie. In addition there are two types of potential title images that you want to avoid: quotes and lists. These "images to avoid" will be discussed in a section later in this chapter.

- **Presentation Title.** You should have a pithy presentation title. Use that, and include the author(s) name on this title slide.

- **Chapter Titles.** In essence your presentation will be divided up into "chapters" or defined subsections of your presentation. For instance, you may have the following structure:

  - ✓ Overview
  - ✓ The Theory
  - ✓ Evidence for the Theory
  - ✓ Theory into Practice
  - ✓ Summary

  In this example your 7-12 minute presentation has a title plus 5 chapter titles. While not every chapter will be of equal length, if we assume a presentation length of about 10 minutes, then your viewer will be seeing a *chapter title* about every 2 minutes.

  Some presentations will have fewer chapters, some will have more. But, clearly, having only 1 chapter is too few. Alternatively, having 10 chapters over 7-12 minutes is too many. In general your presentation is likely to be divided up into 3-to-6 chapters.

- **Credit Titles.** At the end of your presentation, typically *after* the audio is done, you'll want to show your viewers a small number of *credit* titles where you acknowledge key sources and provide the viewer with guidance regarding key written works or websites. You probably won't need more than 3-to-5 credit titles total. Keep these things in mind:

- ✓ Give credit to yourself for any images created and for the audio.
- ✓ Give credit to any other individuals or websites who helped with the creation of the images or the formation of the movie in any way.
- ✓ Provide key references to articles, books or websites discussed in the presentation. Use a large font size (no smaller than 18 points) and use multiple images instead of cramming all references with a small font size onto one image.

► **Other Images.** There may be other types of text images you want to create such as quotes, lists, and other things. Please read the next two sections first about some typical problems students face when they create inappropriate title images.

PowerPointPhluff

Now that you have an outline, your first instinctive tendency is to develop slides in PowerPoint. Please, resist the urge! Lists have their place in life: they help when shopping for groceries or in creating a "to do" list. What most people create in PowerPoint are lists. However, lists as visual images leave a lot to be desired. One of the problems with lists is that they don't convey important information about *connections* between concepts. There are other problems with list-driven visuals also. If you want to learn more about the problems with lists, and with PowerPoint for communicating conceptually-challenging material, I suggest reading *The Cognitive Style of PowerPoint* (Tufte, 2003). Tufte addresses the issue of what he terms PowerPointPhluff. Specifically Tufte points out three distinct ways that lists encourage us to be lazy: (1) lists are typically too generic, (2) lists leave critical relationships unspecified, and (3) lists leave critical assumptions about how something works unspecified. Tufte's general claim is that, "... PowerPoint is entirely *presenter-oriented*, and *not content-oriented, not audience-oriented*" (p. 4).

Now that I've essentially told you to dump PowerPoint you could feel depressed. (Unless, of course, you don't use PowerPoint and are glad you haven't invested time learning it.) However, keep in mind that software like PowerPoint and Keynote can be *very good* in multimedia presentations for creating title and chapter text images. Such images typically make up about 10-15% of your presentation images. So, don't worry, your PowerPoint skills can be useful for creating some of your images. My warning has less to do with using PowerPoint *per se* and more to do with an *overreliance* on PowerPoint resulting in several unneeded or distracting images in your movie.

Images to Avoid

Let's pretend that you've completed your presentation title, chapter titles, and credit images. You should now have a set of about 7-to-12 images that fit into the "title image" category. Before proceeding to make extra title images, think long and hard about including these types of images:

- **Quotes.** People love quotes. Here's the problem: if people see a quote on the screen and are hearing an audio presentation then they are torn between whether to read or to listen. You're creating cognitive overload. This seems to be true even if what the person is hearing is the *same* as the text on the screen! The problem occurs because people listen and read at different rates. The simplest solution: consider not using quotes. If you must use a quote then try to provide silence in your audio so that even the slowest of readers can read the text without any distracting audio.

- **Lists.** People love lists of things such as the ubiquitous lists made in a program like PowerPoint. As with quotes there are a few occasions where lists are needed such as presenting the steps involved in calculating a statistical procedure. However, in general I recommend avoiding using lists in your presentation. Remember a good visual model will address most (though not all) of the reasons you'd want to use a list.

  If you do need to use a list, consider making a *dynamic list* (similar to a *dynamic concept map*) where the viewer doesn't just see the complete list at once, but each element of the list appears on the screen when the audio narration starts addressing that specific point. Thus if you have a list of 5 points, you'd end up using 5 images. The mechanics of how to do this are exactly the same as the mechanics for creating *dynamic concept maps*. Refer to the chapter on Visual Models for details if you choose to take this route.

Titling Software

There are lots of software programs you can use to create title images. You can even use Microsoft Word (though it's not the most elegant solution). Let's briefly look at some of the options available to you for creating title images. I suggest you use whichever option you're already most familiar with.

PowerPoint

Many students are already familiar with using PowerPoint and it does a perfectly fine job of creating title images. If you know this piece of software already then it is likely to be your most efficient way to create title images.

Keynote

Keynote is a simple no-frills tool like PowerPoint for creating title images. It is Apple's equivalent to PowerPoint. Keynote automatically assumes you want to create images the size of 800 x 600 or 1024 x 768. Since you want your images to be exactly 800 x 600, this option makes life simpler.

Photoshop Elements

Photoshop, and its sibling Photoshop Elements, are both fantastic software programs for creating and refining images. However, I suggest using Photoshop Elements for your title images *only if* you're also planning on using it for the other images that will fill out your presentation.

Since there are always a few students who are unfamiliar with Photoshop Elements but want to use it to develop their presentation images, I have tried to make the Photoshop start up process easier for you by offering some Photoshop-based templates for creating text images. Be sure to check my website to download these title image template files.

Colored Markers

Using color markers and paper can work just fine. Sometimes having titles hand drawn looks more effective than computer-generated text. Just make sure to use good white paper (or colored paper if you want). Also make sure to write on the paper using a horizontal (or landscape) orientation. You can subsequently scan these titles at home or at my office. I can lend you a scanner to use.

Other Software

This short list of software for creating title images is not exhaustive. You may have some favorite software that you think can make title images just fine. You're probably correct, and certainly take advantage of any know-how you already possess. Once in awhile someone asks if they can use Microsoft Word to create title images. The answer: yes and no. You can easily create titles in Word. The problem is that current versions of Word do not allow you to save a document as an image. However, there are two workarounds to this problem.

- **Workaround 1.** A "hidden" feature of LiveSlideShow is that it can actually read one-page PDF files as images. Thus, if you create every title image in Word as a separate one-page document, then you can subsequently convert each of these documents to a PDF format. If you're a Mac-user you can automatically create a PDF (from any program) by clicking on the PDF option when you ask for a document to be printed. If you're a Windows-user *and* have the full Acrobat program (not just the free Acrobat Reader) then you can create your own PDFs. Finally, if you're a Windows-user and do not have Acrobat, then you can send me your Word document files and I can have them quickly converted to a PDF format.

- **Workaround 2.** In both Windows and Macs it's possible to take screen shots. If you have the right software (SnagIt for Windows, SnapzPro for Macs) you can take high quality screen shots. For example, if you've created a title (or any other) image in a program that won't export to an image format such as PNG, then you can take a digital snapshot of that portion of the screen that contains the material you want to use as an image.

Standards

There are very few standards when it comes to creating title images. Titles do *not* have to be centered: either vertically or horizontally. Titles don't have to be in black and white. In fact there are lots of options for how to create good title images. That said, there are three simple rules you want to keep in mind. Each of these guidelines is discussed below.

1. Fonts

Research has found that it is much easier for people to read titles when they are created in a *sans-serif* font such as Arial, Verdana, or Helvetica. Interestingly enough, research has also found that it's much easier for people to read a lot of text (like this guide) when the words are created in a *serif* font such as Times, Times-Roman, or Minion. Essentially *serif* fonts have little curls in them. *Sans-serif* fonts have no extra curls. For short titles *sans-serif* fonts look cleaner and crisper. Consider this example:

The "example" on the left is in Minion. The "example" on the right is in Arial. Look at the "p" in both examples. Notice that the bottom of the "p" on the left example has an extra flourish at the bottom. Now look at the same letter on the right example. Nothing extra. If you look closely you'll also notice that the right example has no variation in width within its letters. However, the left example in Minion has variations in width (for example compare the ending "e" in both examples.) As a general rule-of-thumb, use a *sans-serif* font for titles.

Font *size* is even more important than the type of font. In general, for a title slide you don't want the font size to be less than 48 points. In fact, if the wording will fit, there's nothing wrong with having a font size of 72 or 96 points. Titles should be clear and easy to read. You also don't want to mix-and-match font sizes. By this I mean you don't want one title slide to use a 48 point font size and another title slide to use a 72 point font size. Consistency in the look of your title slides is important.

In practice I'd suggest picking out your longest title. Then with some fiddling, figure out what's the biggest and best-looking font

size for that particular title. Since all the other titles are the same length or shorter, you know you can use this same font size for *all* your title slides.

The exception to this approach comes with the credits. These are more detailed images containing book references and such. With credit images I would suggest going no smaller than 18 points. In fact, just assume you're going to use 18 points with these images unless you have extra room and can use a slightly larger font size.

2. Concise

The most important feature of a title image is that it should be short and concise. In essence, it serves more as a *label* to help the viewer keep in mind the current content being discussed. It doesn't always have to be one word, but titles are best if they involve "looking" but almost no conscious reading.

3. High Contrast

There are lots of ways to create title images with the use of colors. You make reading easier for your viewer if the titles have a high level of contrast between text and background. Here's a short (but not comprehensive) list of good contrast options:

- ✓ White background, Black text
- ✓ White background, Navy blue text
- ✓ Black background, White text
- ✓ Black background, Yellow text
- ✓ Black background, Orange text

On the other hand, light green text against a light blue background may look fine on your computer monitor. But it may not provide sufficient contrast on all types of monitors. Maintain high contrast to help your viewer easily read and not be distracted from the audio track to your movie.

Setup & Export

Creating title images is very straightforward. PowerPoint and Keynote both contain template slides devoted to containing only a title. The Photoshop Elements templates I provide have been created using the assumption that only simple titles would be needed.

The trickier issue for multimedia novices is how to export those final images as PNG compressed images. In general there are two different approaches to doing this.

One doc, one PNG

This is the approach you would take when using Photoshop Elements. If you wanted to create 8 title slides then you'd end up with 8 different PSDs (or *Photoshop documents*). You always want to maintain your original artwork (in this case the original PSDs). Let's pretend that you misspelled one title. If you deleted the origi-

nal you'd have to start all over again. If you saved it as a PSD then you merely need to make a small change and export it as a PNG again.

Remember that all of your original work (such as PSDs) should be stored in the *Originals* subfolder inside your Project folder.

How you create a PNG file may alter from program to program. Sometimes you'll use something like an Export command, other times a Save As command. In the case of Photoshop and Photoshop Elements you'll use the **Save For Web** command under the FILE menu. Details regarding this procedure are given later in this chapter.

One doc, many PNGs

This is the approach you would need to use when working with a program like PowerPoint or Keynote. You must first create one file that consists of several slides. LiveSlideShow can't understand PPT or Keynote documents. Instead you'll need to export your work as PNG images. PowerPoint will create a new folder for you and within that folder will place one image for every slide in your PowerPoint presentation. If you have 8 slides, an exported folder will contain 8 PNG images.

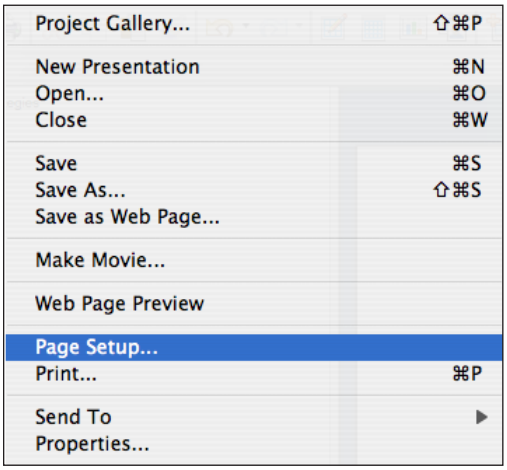
Special Export Setups

This section looks at how export files to PNG or JPG from three software programs: PowerPoint, Keynote, and Photoshop Elements.

PowerPoint Exports

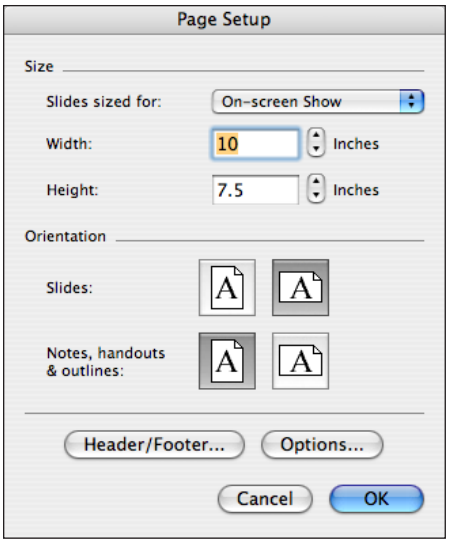
By default PowerPoint creates slides that are sized 720 x 540 pixels. Since your presentation is 800 x 600 pixels it's useful to first change these default settings so your images will be 800 x 600. Here's how to do it.

Figure 6.5. *The Page Setup option.*



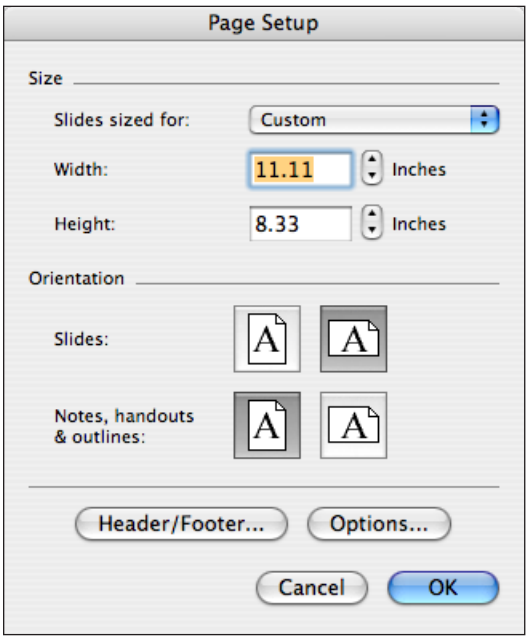
Click on Page Setup and you'll see the next dialog box. Notice how PowerPoint expresses sizes only in inches.

Figure 6.6. *Page Setup default settings.*



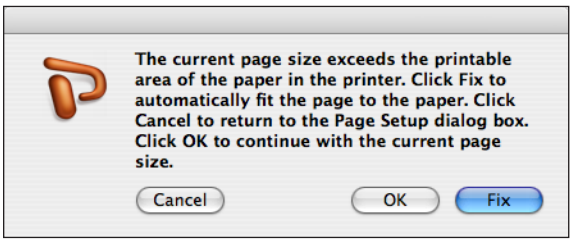
Change these settings. Since 800 pixels is equal to 11.11 inches, and 600 pixels is equal to 8.33 inches, when you've inserted your changes the dialog box should look like the figure below.

Figure 6.7. *The altered Page Setup box.*



You'll very likely then get a warning from PowerPoint after you click on the OK button that looks like this:

Figure 6.8. *Warning message*

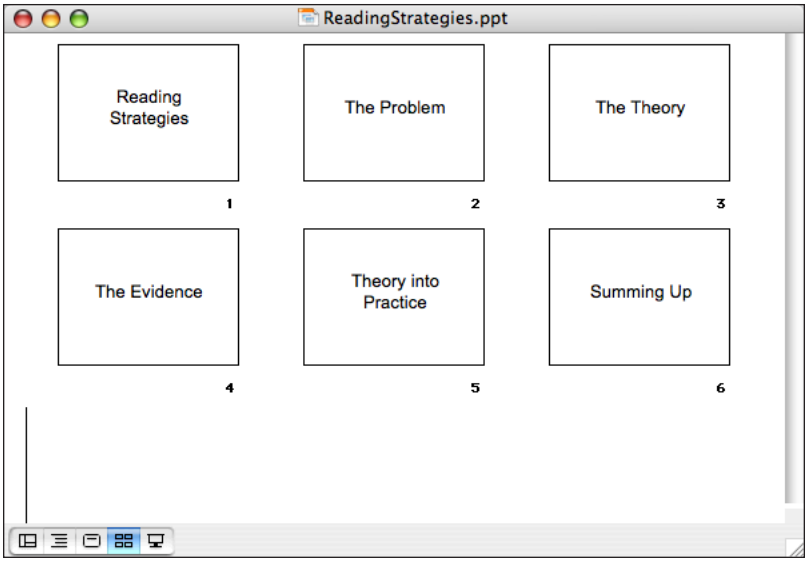


Notice how the default button in this dialog box is Fix. You don't want this! Instead click on the OK button. In essence you don't care about printers and page sizes: you're making images for computer screens so the warning doesn't apply.

Now create your title slides. (I'm assuming here that you have some familiarity with how to use PowerPoint. If this assumption is wrong then you'll need to take the time to learn the basics of PowerPoint or consider one of the alternatives I've mentioned.)

I've created a short set of title slides using PowerPoint as shown in the slide sorter view in the figure below.

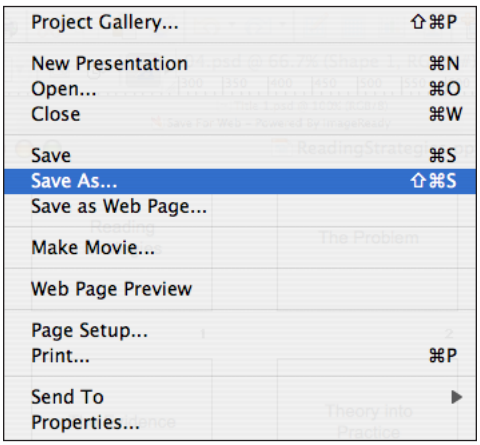
Figure 6.9. *Slide Sorter View.*



These are simple images, but they do the job. The problem is that I now have one "document" that's a PowerPoint file. What I really need is to create 6 distinct PNG images. To create the PNGs go through the steps below.

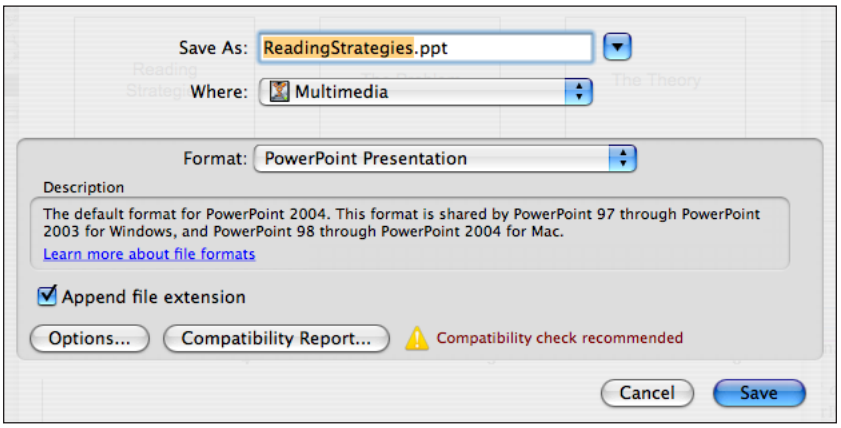
First, select the **Save As** option under the FILE menu

Figure 6.10. *The Save As option*



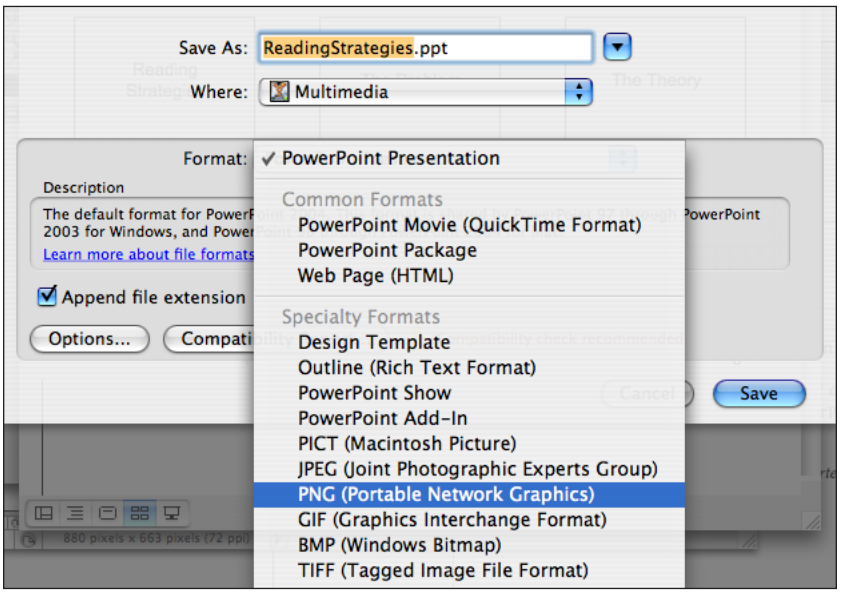
You'll next see the following dialog box.

Figure 6.11. *The Save As dialog box*



Notice that in the middle center of the box there's an option for selecting **Format**. Click on that selection bar (it currently reads PowerPoint Presentation) to see the drop-down menu bar shown in the figure below.

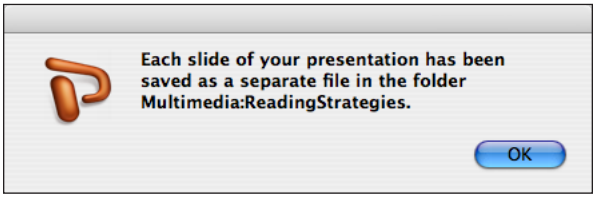
Figure 6.12. *Save as formatting options*



Select the PNG (Portable Network Graphics) option. What PowerPoint is going to do is save each of your slides as a separate image. Before you click on the Save button make sure that the name in the Save As box is the name you want. Specifically this will be how PowerPoint will name the *folder* of images it creates. Next make sure that you know *where* you are saving your folder on your hard drive. From the figure above you can see that I'm saving images to a folder called Multimedia.

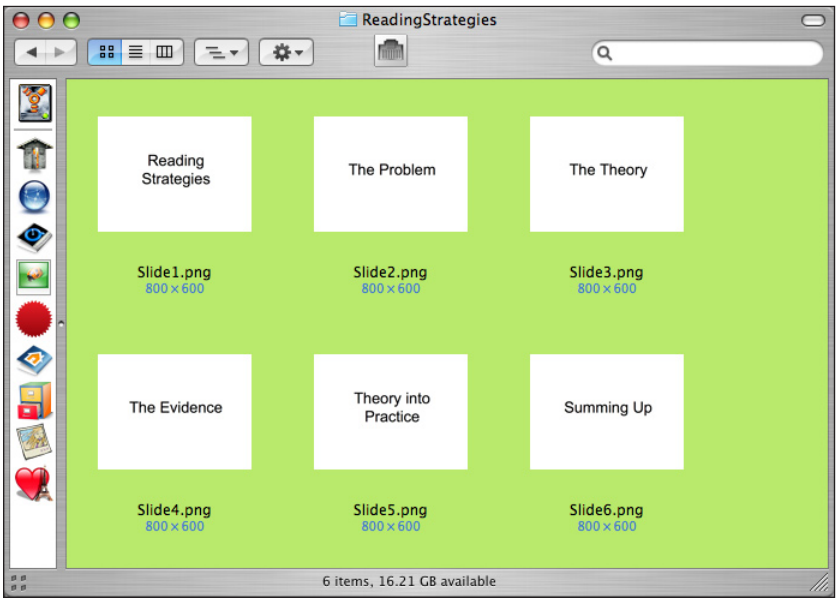
Once you click on the Save button then PowerPoint goes to work. When it's done you'll get a message like the one below.

Figure 6.13. *The completion message*



You can leave PowerPoint and go to the location on your hard drive where the new folder was created. In the next figure you can see how PowerPoint has named each image inside of that folder.

Figure 6.14. *The insides of the exported folder of PNG images*



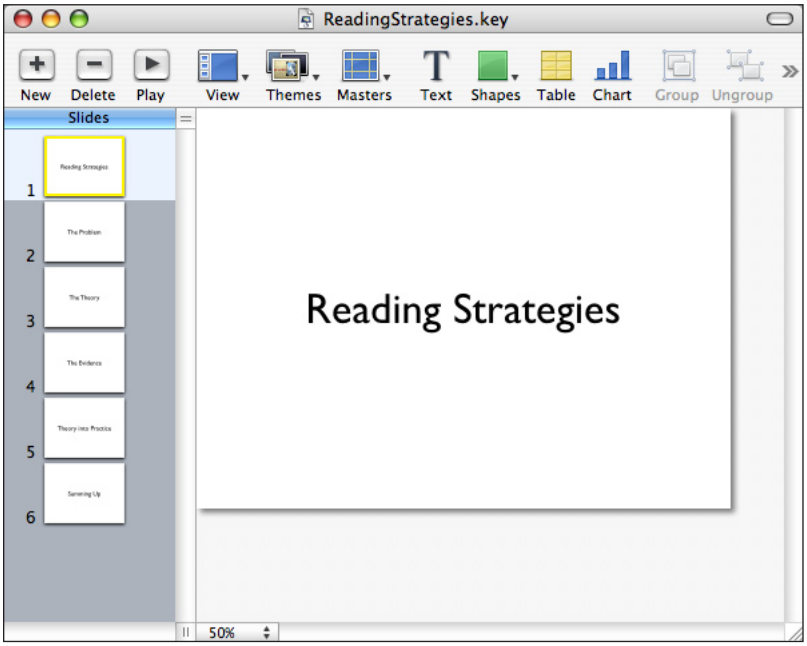
PowerPoint automatically names the images. Notice that all of the images have the PNG extension. In every case PowerPoint will name the images starting with *Slide1* and continue that naming convention until the last image (in this case *Slide6*).

You'll want to rename these images. Do so now if you wish. In addition, make sure you have these images stored in a good place for easy retrieval. Probably the Images subfolder in your project folder will be the best choice. You may want to rename them as Title1, Title2, Title3, and so on.

Keynote Exports

I'm assuming you've created a set of title slides in Keynote. As an example, see the image below for what it looks like in Keynote when I've completed my set of 6 titles.

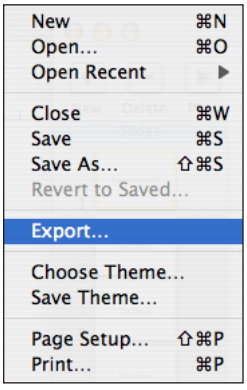
Figure 6.15. *The set of completed slides in Keynote.*



Notice how you see the currently selected slide in the main viewing area, but the full collection of slides in the Slides sidebar (on the left side). Notice that I have 6 images in this area.

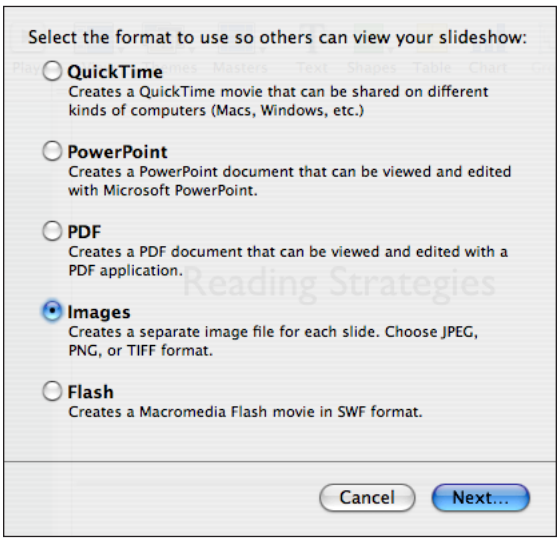
Now go to the FILE menu and select **Export** as show in the figure below.

Figure 6.16. *The Export option.*



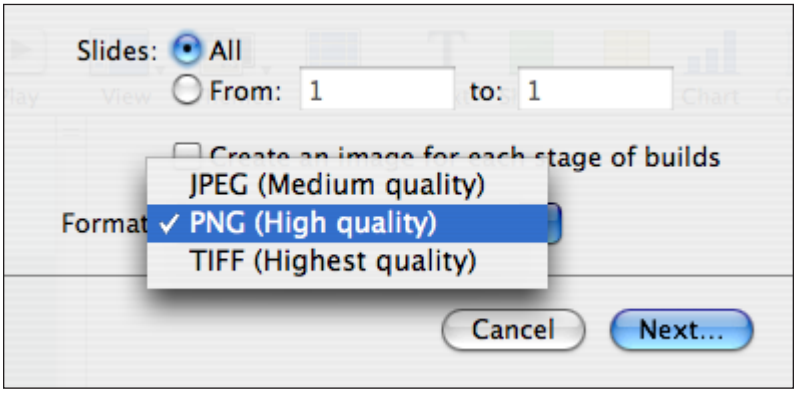
You'll be taken to a dialog box. Make sure to select images from the format options available.

Figure 6.17. *Select the Images option.*



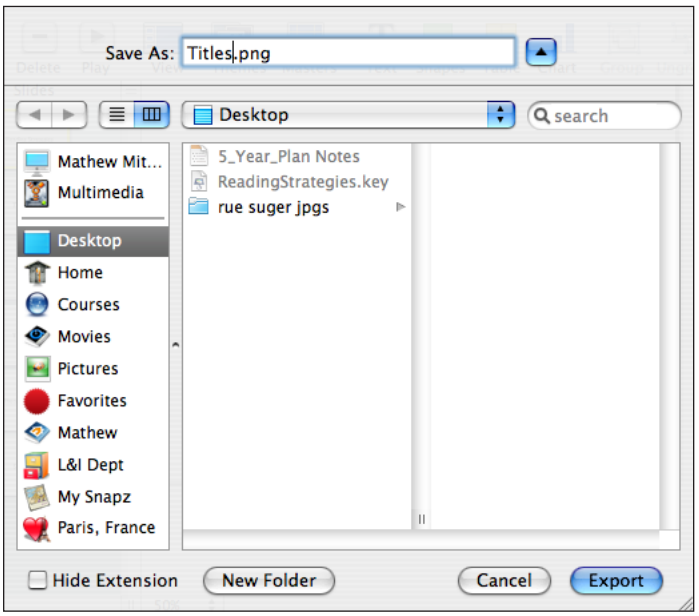
When you click on the next button you'll then be taken to another dialog box as shown below.

Figure 6.18. *Selecting the Image format*



Make sure to click on the Format selection bar and select the PNG (High quality) format. There are some cases, especially when using lots of shadows and other features, where you might want to use the TIFF (Highest quality) option. When done, click on the Next button and you'll then see the following dialog box as shown in the figure below.

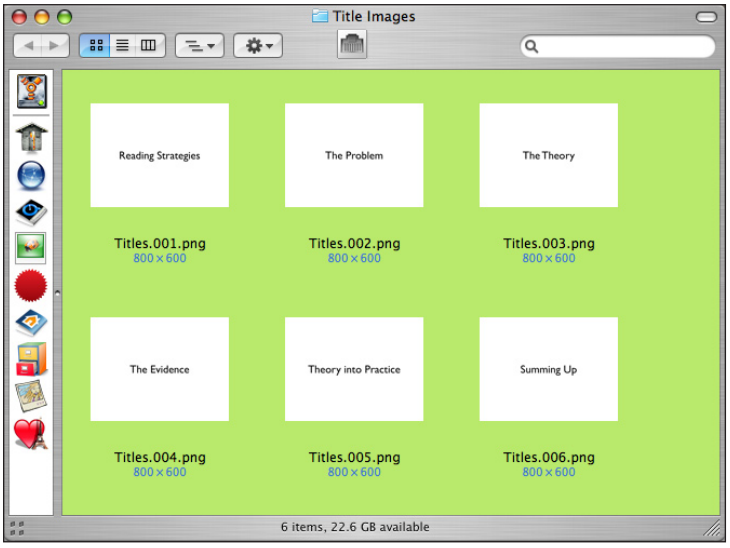
Figure 6.19. *Create the Naming Schema*



You want to be careful in how you name your images. I suggest using "Title" or "Titles." Keynote works differently from PowerPoint in the specifics of how it exports. PowerPoint will export a folder with images inside. Keynote, on the other hand, only exports the images. Given this you may want to first create a folder (e.g. titled "Title Images") in your Finder area, go back to Keynote and then make sure the exported images are saved inside this folder.

Once you click the Export button Keynote will then export all the slides based on the name you provide plus a three-number sequence it will add to the end. The figure below shows what my 6 exported slides look like after being exported.

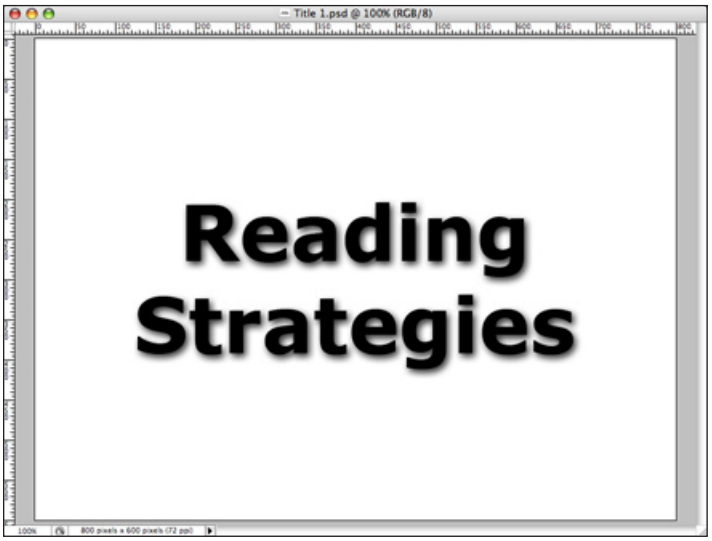
Figure 6.20. *The exported & named images.*



PSE Exports

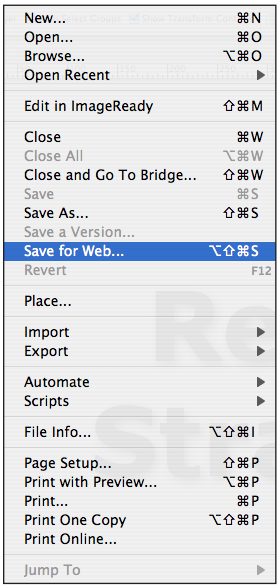
I've used one of the provided Photoshop templates to create a presentation title called "Reading Strategies."

Figure 6.1. *The Photoshop document.*



Once your title is complete then you need to go to the FILE menu and choose Save For Web (see figure below).

Figure 6.2. *Using Save For Web.*

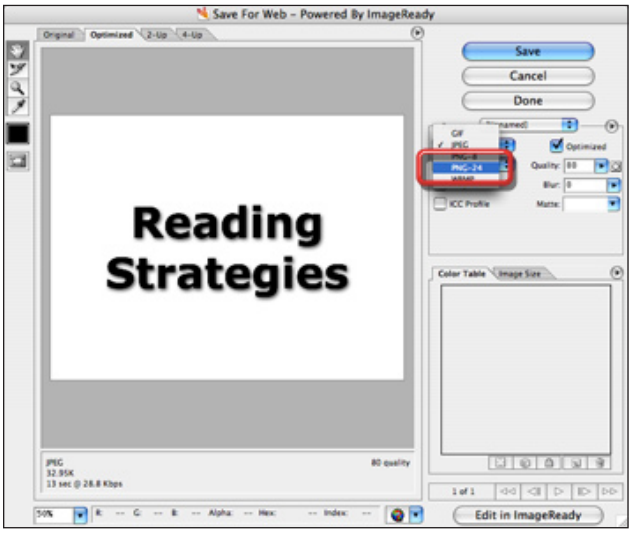


In the ensuing dialog box notice how there's a pop-up box where you can select the exact type of compressed image you want to create (see figure below). You want to select **PNG-24** (as highlighted in the figure).

Conceptually it's helpful to understand that the Save for Web command is really a shortcut that tells Photoshop, "I want to create a

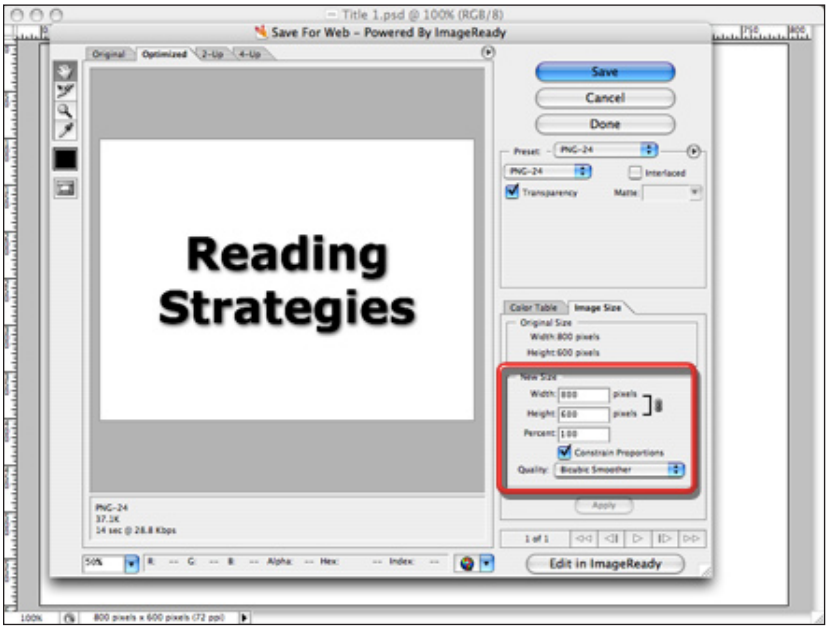
file that's small in size." Most of the time people do this because they want to put the image on a website, but the command is also useful for any situation where people need to create a compressed version of the original Photoshop document. Typically the compressed PNG image will be less than 10% of the size of the original Photoshop document (or PSD).

Figure 6.3. *The Save For Web dialog box.*



Although you won't need it often, it's useful to know that you can change the size of the image if needed. Figure 6.4 shows the Image Size tab being selected (lower right) and the options for decreasing the image size.

Figure 6.4. *Changing the image size.*



There are several ways to compress an image, but the most popular formats are GIF, JPG, and PNG. Each method has its strengths, but overall PNG is the best choice because it tends to retain a higher level of the original image quality.

Summary

There are several ways to create title images. Use the method that best suits your previous skills and experience. If you want to start learning how to use Photoshop Elements, then creating simple title images is a great place to begin.

Conceptually the most important thing to remember with title images is to *not* create too many. Be concise so the title image serves as a *mental placeholder* rather than as a chunk of text individuals need to consciously read as they're listening to the audio. Use clear fonts and use large font sizes. Font and font size is a matter of personal taste, but in general *sans-serif* fonts are easier to read when using 1-to-3 words as in a title. Except for credits (such as book references) you want to use a font size of at least 36 points.

Exercise 6

This exercise complements the work you've done in previous exercises.

Create Titles

Develop 3 or more title images to accompany your "MyStory" audio. Make sure all of the images are exported (or *saved as*) PNG images.

Name the Images

Name the images as yourname1.png, yourname2.png, and so on. So, if your name happens to be Alice, then the images should be titled Alice1.png, Alice2.png and so forth.

Send the Images

Send your images to me. In most cases the easiest way to do this is to attach the images to an email message that you send me. However, you can also bring the images to me on a Flash drive or burned to a CD.

7 *Support Images*

Chapter 7

Edcasting

Overview

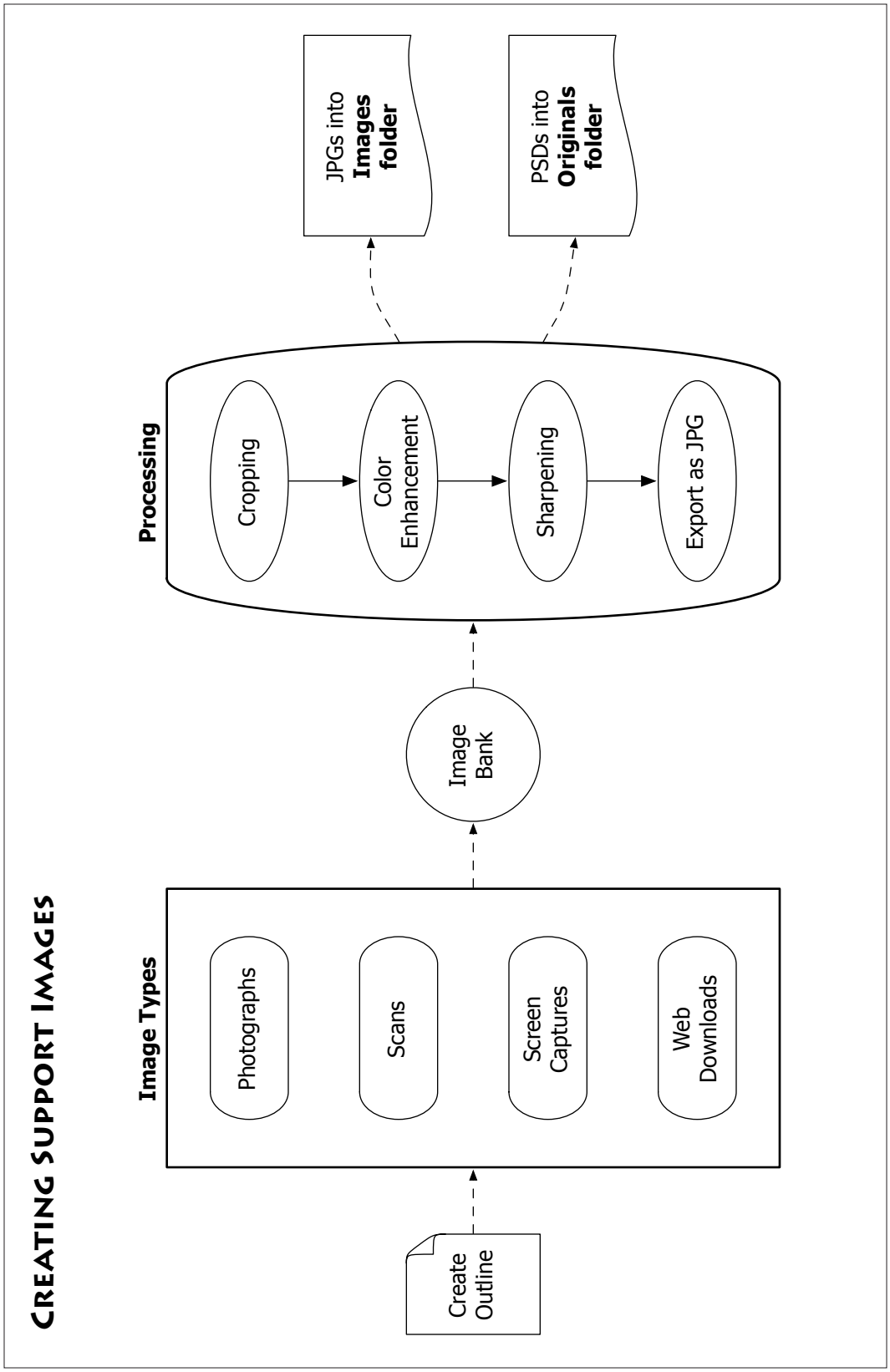
This chapter offers a variety of techniques to consider using when creating support images. The visual model and title images provide the visual scaffolding for your presentation. That is, they make it easier for the viewer to understand the theory and concepts you are explaining in the audio. Support images, on the other hand, round out the presentation by giving a human face (in some cases) or visual concrete examples (in other cases) to the viewer. The type of support images you use tend to make all the difference between a good presentation versus a *great* presentation.

The problem, and the opportunity, is that there are many different ways to create effective support images. The first part of this chapter discusses, and provides general tips, for creating four distinct types of support images: photographs, scans, screen captures, and web images. The second part of the chapter looks at how to *process* images. In general digital photos, or scans, or screen captures *all* need further processing: color needs to be enhanced, they need to be resized, and often the clarity of the image needs to be sharpened. Thus this part of the chapter discusses how to do each of these processing steps in the simplest, most efficient manner. Although there are several software options for working with digital images, this chapter assumes that you're using Photoshop Elements. If you're using another software program then the general steps will still apply, although the specific software steps will differ.

Chapter Model

The next page presents a visual model of the chapter's content. The model emphasizes that this chapter looks at two big issues: the variety of image types you may want to use for creating support images and the essential steps needed to process the raw images that are created.

As a matter of full disclosure, I should note that image processing is a very complex issue. You'll find many books written about digital photography and Photoshop. Most of the content in these books deal with image processing. What I've provided for you, as a novice multimedia creator, are only the fundamental basics for doing image processing. There are more advanced and more effective procedures for processing images that won't be covered in this book. That said, for the interested student, there are several good books about working with digital images.


Creating Support Images
Create Outline
Image Types
Photographs
Scans
Screen Captures
Web Downloads
Image Bank
Processing
Cropping
Color Enhancement
Sharpening
Export as JPG
JPGs into **Images folder**
PSDs into **Originals folder**

Basic Concepts

It's hard to understand many issues with regards to support images if you don't have at least a basic understanding of two essential digital imaging concepts: pixels versus vectors and cropping.

Pixels and Vectors

Digital images essentially come in two different flavors: pixel-based (sometimes called *raster* or bit-mapped) and vector-based. These two approaches to creating digital images are fundamentally different and have important implications for how you think about developing and refining your own images.

The difference between pixels and vectors I provide is a paraphrase of Mordy Golding's excellent treatment of this subject (in *Real World Adobe Illustrator CS2*).

- **Pixels.** Imagine you had a piece of graph paper in front of you. One filled-in square in that graph paper would be a pixel: essentially a square-shaped dot. Combinations of these squares can form an image pattern. So, any pixel-based image is made up of lots of individual squares (dots). There are differences in the quality of pixel-based images and this is largely due to *how big* the individual pixels are. Big pixels result in bumpier (lower quality) images. Small pixels result in finer, more nuanced (and thus higher quality) images. The size of the individual pixels is determined by the number of *pixels per inch* (or **ppi**) in the image. In addition, each pixel can be a different color. However, one pixel can be only one color. Thus, through a combination of color and size, the fineness of your color image is determined. If you try to enlarge a pixel-based image you end up stretching the individual pixels (no matter how large or small they were). This stretching always result in some loss of quality. A small enlargement may not lead to much loss in quality, but even if you enlarge by 50% the loss in quality is quite noticeable.

- **Vectors.** Still image you had that graph paper in front of you. Instead of coloring individual squares on the graph paper to create an image, you set the boundaries of a shape by using specific coordinates on the graph. Then through straight or curved lines you "connect the dots" to create the shape. This is a more mathematical way to create an image. We call this the vector-based approach. Vector images have two distinct advantages over pixels. Vector images are smaller in size. Second, and more important, if you stretch a vector-based image there is *no loss in quality*! All you end up doing is stretching the coordinates that serve as anchors for an image, but the "connect the dot" lines/curves between those coordinates remain smooth and clear.

- **The Bottom Line.** Vector images are mainly created in illustration images (or vector-specific software) like Illustrator, Fireworks, CorelDraw, and others. Almost all of the images you'll work with

(like photographs and scans) are pixel-based. The main implication of this is that any pixel-based image you create can be reduced in size with no loss in quality, but any enlargement will decrease quality. Put differently, enlargement and pixels don't go together.

Cropping

This is a design word that refers to a type of selection process. On your computer when you select something this means you have identified the "stuff" that you want to use. Cropping is a selection process also. Imagine you have a digital photo on your screen. When you *crop* you first select that part of the image you want to keep (just like regular selection). However, when you finalize the crop the rest of the image is deleted. At core, cropping is getting rid of unwanted portions of an image. It works, however, by first identifying what you want to retain.

Image Types

Once you have your visual model and title images complete then you're ready to round out your presentation with any needed support images. Your support images might comprise anywhere from 25 to 75% of the images you use in a presentation.

Photographs

Imagine your presentation is about the reading comprehension difficulties of fifth graders. Wouldn't it be nice to have some images of a fifth-grade classroom and images of these fifth-graders immersed in the reading process? Of course. In practice you may, or may not, be able to use such images based on the school district you work with and other factors. In general, though, these kinds of examples are great for creating a full-bodied presentation. The main way to get these kind of images is through the use of a digital camera.

Scans

Let's pretend that in the presentation you compare the reading instruction methods of an earlier era with some new methods. Wouldn't it be nice to include some dorky pictures of students from an earlier era? Of course. If you have old photos (after all, you and your old buddies can be the source of dorky old classroom photos), then you can scan these images easily enough to include in your presentation.

Screen Captures

Now imagine your presentation gives the example of a particular website that really helps fifth grade readers with comprehension problems. Wouldn't it be nice to have some images of some of the specific pages from this website? Again, of course. Accomplishing this is a lot easier than you might imagine. This involves taking good screenshots of what you see on the computer screen.

Web Downloads

Finally, your presentation discusses how a new reading strategy was developed and refined in Finland. You don't have any old pho-

tos of Finland, you can't easily travel to Finland, and screenshots won't help in this case. It sounds like you now may want to see if there are any images shared on the web that could help your presentation. I don't know how easy it is to find images of Finnish schools and schoolchildren, but you'd have a decent chance to find such images through a judicious use of Google's search engine and some other websites.

Support Images Outline

The purpose of the support images outline is to have a solid idea of both how many images you need and what kind. Once you have the outline then you'll have an organized approach for creating your support images. Before creating the outline, it's useful to keep in mind two general guidelines:

- ✓ A support image should last *at least* 6 seconds on the screen (3 seconds for image, 3 seconds for transition). It could easily last longer. If you guesstimate that you'll need 120 seconds of support images that means you need about 20 images.
- ✓ If you need about 20 images and you create 30 or 40 then you're fine. If you need about 20 and you create 200 then you probably didn't do a good job at refining your outline. Whatever your guesstimate is for the number of support images you'll need, you should create about twice that number. This gives you options if you run into various practical problems later on.

Guesstimate

You can make a decent estimate of how many support images you'll need in your presentation. Let's assume your audio is 8 minutes long. Let's further assume that your core discussion around a visual model will be about 5 minutes, and various title images will take up about 1 minute more. That means you have about 2 minutes to cover in terms of support images. If we further assume that each support image will last about 10 seconds, then this means you should plan on using at least 12 support images in your movie. This will only be a rough estimate, but it's still helpful for getting an idea of how much time needs to be filled with support images. The key factors to use for making a guesstimate are:

1. Find how much time is devoted to your visual model.
2. Find how much time is given to showing title images.
3. Subtract both time estimates for your total audio length. What's left is the amount of time that needs to be covered by support images.

Brainstorm

Think up all the kinds of images that might be useful to *support* the presentation you're creating. Next, organize those brain-

stormed images under your various chapter titles.

Refine

Step away from the outline. Return in an hour, a day, even a week (if you have the time). Now that you have lots of ideas, and now that those visual ideas are organized, start to refine the outline by eliminating ideas. Essentially what you want to do at this point is eliminate what seem to be bad or impractical ideas.

Game Plan

The images left in your outline now form your "game plan" for the kinds of images you want to create. It's always better to have too many images rather than too few. Now that you have a clear game plan you can start gathering the images you want.

Photographs

Digital cameras have evolved tremendously over the past decade. Professional-level digital cameras are used by newspapers and magazines. Yet even $200-300 cameras are often very solid in terms of performance. The topic of digital cameras is far ranging and I won't cover most of the relevant topics in this chapter. For simplicity I'll assume you already have the use of a digital camera and your already know how to operate the camera at a basic level. If I'm wrong, and you're looking to buy a camera, I highly suggest doing your homework with the aid of two websites:

cnet.com

dpreview.com.

Please refer to your camera's manual for further details on how to use that specific device.

In general, more expensive cameras come with better features. Those features include better lenses, better sensors for storing the image, more and quicker ability to take images, and so on. However, there are some basics that you should be aware of, independent of the quality of the camera you are using.

Camera Settings

Every camera comes with options that you can set. The two most important options are *image size* and *image quality*.

- **High Quality.** First, make sure the camera is set to take images at the highest quality possible. (The one exception is if you have a camera that will take uncompressed TIFF or RAW images. Don't use this option unless you *really* know what you're doing.) Typically the camera menu will allow you to take images at 2 or 3 levels of JPG quality. Choose the highest. You'll be able to store fewer images on your memory card, but the quality of what you store will be much higher.

- **Large Size.** Cameras will also give you 2 to 4 options for the sizes of your images. Choose the biggest size available. For instance, my camera is set to take images at over 3,000 by 2,000 pixels. This is much larger than the 800 by 600 pixels that I need. Taking large images accomplishes two important things. First, it allows you to make good quality prints if you want. Second, it gives you *many* more options about how you'll crop an image. Imagine taking an image that includes six students, but you really want just the image with two particular students working together on a project. If you've taken a large enough image, then you've given yourself the extra space needed to be able to crop the two students, throw away the rest, and lose no quality. This is an incredibly important point to understand since any time you *enlarge* a digital image the quality goes downhill quickly. However, taking a large image, then keeping only a portion of it without enlargement, results in a highly focused image that's at the same level of quality as the original. Consider this: about ten **800 x 600** images will fit within an image that's **3,000 x 2,000** pixels. This means you can select about a ninth of the image to crop and lose nothing in terms of quality.

Hold Steady

Unless you have a near professional digital camera, there will be a lag between when you press the button to capture an image and when that image is actually captured. The less expensive the camera, typically the greater the lag time. This is very unintuitive to most people. My general advice: when you click on the "shoot" button, hold the camera steady for 2 to 3 seconds. That way you'll make sure you've captured a sharp image. Newer, cheaper digital cameras are getting much better at shrinking this lag time, but it's always best to plan for the lag and not end up with a blurry photograph.

About Light

Light can be your enemy or light can be your friend. Here are some considerations to keep in mind with regards to light.

- **Natural Light Rocks.** If possible, shoot in natural light (i.e. without a flash). Everything looks better with natural lighting. Only use your flash if the lighting is too low. Unfortunately most classrooms have quite poor lighting and so you may often need a flash in these circumstances.

- **Put the Sun Behind You.** This is particularly true on nice sunny days. Shooting into the light (i.e. the sun is in front of your camera) can work if you know what you're doing. In general, however, you want to make sure the sun is behind you. This makes it much easier for the digital camera to get a true reading of what's going on and to absorb all the colors present.

About People

Models get paid a lot of money partly because they're *photogenic*. This means their faces have angles that look complementary when captured with a camera and their skin absorbs/bounces light in

just the right way for a camera. That's the genetics part. However, the other part of being a good model is managing to look natural even when you're in a very unnatural situation such as the typical fashion magazine shoot. There are plenty of photogenic people who can't manage to look natural. Generally this is a learned skill. This is important to you because it means that getting posed shots from amateurs (your students, your teachers, et cetera) will tend to come out looking very stilted and *posed*.

Is there a solution? In short, yes. The solution is first to ask your subjects (let's pretend you're shooting in a classroom) not to pose. That won't solve the problem, but it does set a tone.

Second, start taking several photographs of many different people in the room. After awhile the people in the room will become bored or accustomed to you taking photos. In essence, taking lots of photos tends to put people at ease. I'd suggest taking photos for 5 minutes or so *before* taking any photos that might be ones that you really want. You're just trying to create a comfort zone in the first five minutes.

Then, after these two steps, take photos at a relatively continuous rate. Some of the photos you'll want, others will be taken to maintain the comfort level in the room. Remember, taking lots of photos is not a problem as you can always throw away the unwanted ones later.

The key to this approach is understanding that a large part of your job as a photographer is to get people to feel comfortable. You can largely do this by taking lots of photos. This provides an important non-verbal cue that what any one individual is doing is not all that special or photogenic. As a natural response, your subjects start to relax and go back to normal modes of behavior.

Scans

Scanning allows you to digitize things that weren't originally made on a computer. For multimedia creation purposes some of the sources of scans would include: hand-drawn images, old photographs, magazine images, and much more. There are lots of good scanners available today. You can get a very good scanner (e.g. the Canon LiDE scanners) for under $80. Before scanning, however, there are some conceptual issues you need to know. The most important is the role of **dpi** (or dots per inch) in producing good scans.

DPI

Setting the right level of **DPI** or *dots per inch* affects both the quality and the size of a scan. Scanning software typically gives the user several options with regards to setting the **dpi**. One option is *72 dpi*. You do *not* want to use this option. It's good enough for a basic

reproduction of the scanned object, but that's all. The higher the **dpi**, the richer the resulting scanned image. In general I suggest scanning objects at 400 dpi. Let's look at why.

- **Better Detail.** By scanning at 400 dpi you'll get a richer, more nuanced reproduction of the object. That's always good.

- **Enlargement Factor.** When you scan at 72 dpi, the image on the computer screen will look the same size as it is in real life. Sometimes this can be fine. But a bonus of scanning at 400 dpi is the object on the screen is much larger, with *better detail*, than a 72 dpi scan. Why should you care? Let's pretend you're scanning an old wallet size photograph. As you know those wallet-sized photos are much smaller than the 800 x 600 pixels you'll use in your presentations. However, if you scan at 400 dpi then your wallet-sized photo will end up being larger than 800 x 600 pixels. By using a higher level of dpi (such as 400) you can enlarge the size of the object *and* increase the quality of the scan. What a deal! The secret to this is that by controlling the **dpi** you end up with a larger scan containing more, and smaller pixels.

- **Crop Factor.** By using 400 dpi you get a clearer and bigger image. This means you provide yourself with room to do cropping. Let's say that old elementary level class photo is scanned. What you really want are you and your two best friends, but not the whole photograph. By making sure you scan an image at a suitably large dpi such as *400 dpi*, then you give yourself plenty of room to crop that photo to include you, your two best friends, little else and the whole thing will take up 800 x 600 pixels without any loss of quality.

Mode

Typically you'll be given a choice of at least three modes to work in: color, grayscale, and black & white. Most of the time you want color. However, if your image is a black and white photo, then use the grayscale option (grayscale will give you an equal quality scan to color but at a smaller size). The black and white option is only for scanning things like text so all one sees is black letters against a white background. This results in the smallest file size, but is only suitable for scanning documents.

Photoshop

Almost all scanning software works with Photoshop and Photoshop Elements. Typically scanners provide you with a Photoshop *plugin* on a CD that comes with the scanner. (You can also check the maker's website for a download of the plugin.) If you have one of the Photoshop products, install the relevant plugin and then you can always do your scanning by opening Photoshop Elements first. What happens is an extra menu item is added to Photoshop Elements (under the **FILE: Import** option). You'll select that option and you're taken to the scanner software. What's nice is that once you're done scanning all of the documents you are automatically

transferred back to Photoshop Elements for extra post-production work (such as cropping, enhancing, and sharpening).

Virtually every scanner offers a Photoshop plugin option because over 95% of the people doing scans on a regular basis use Photoshop or Photoshop Elements to do final editing work on their images after the raw scan has been captured.

Screen Captures

Sometimes you want to be able to show something that appears only on a computer screen. You've made a chart in Excel, or have a set of Excel data you want to display, or a website page you want to share, or you want to show somebody how to do a particular step using Inspiration software. All of these situations, and many more, necessitate the use of screen capture software.

Software

Both the Windows and Macintosh operating systems have built-in methods for doing screen captures (or screenshots). Both methods work at a rudimentary level. It's much more useful if you use software designed to capture screenshots at a higher level of quality and control. Fortunately there is a great solution for each operating system.

- **SnagIt for Windows.** TechSmith makes this software. The academic price is $25. Once installed SnagIt is very easy to use: press the **control-alt-P** key sequence and an image will be taken of your screen. You have many choices about the exact size and type of image that's taken such as the full screen, a specific section of the screen, and more. In general you want to set SnagIt to save all images as PSDs (or Photoshop documents). This means there's no compression, and it allows you to easily open up the images later in Photoshop and add emphasis highlights. SnagIt comes with a variety of highlighting tools (such as arrows, borders and such).

- **SnapzPro for Macintosh.** Ambrosia Software makes this software. The academic price is $29. Once installed SnapzPro is very easy to use: press the **control-shift-3** key sequence and the SnapzPro dialog box will appear. You can easily take images of the whole screen, a specified area set by you such as 800 x 600 pixels, or object (so that you get *just* the dialog box itself for example). You can save the images as PSDs and then later open the images in Photoshop Elements to add emphasis highlights.

Controlling Size

You want an image that's **800 x 600** pixels. One way to do this is to change your monitor's screen resolution. For example, in regular working mode my screen resolution is **1280 x 854** pixels. However, I can change my screen resolution to **800 x 600** pixels while taking screenshots. This has the advantage that I know everything I

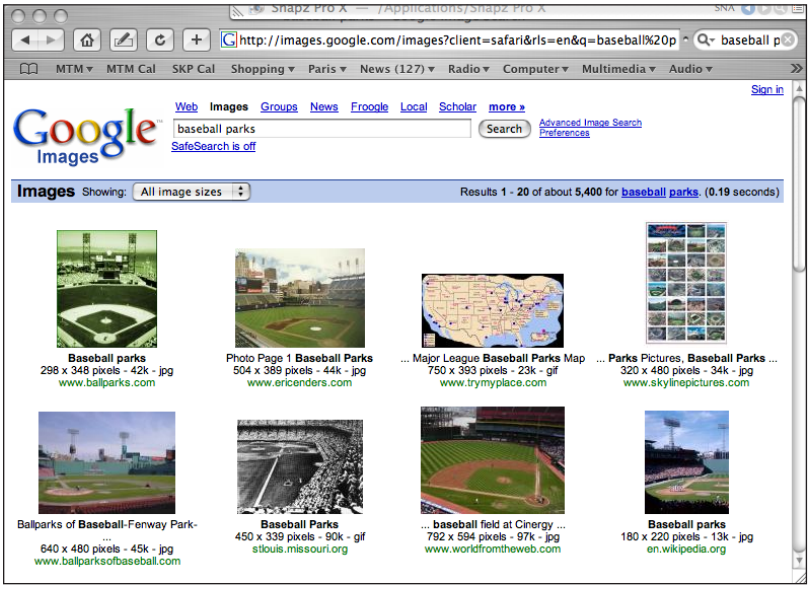
see on the screen will fit perfectly into the size of the movie I'll be constructing.

Alternatively you can also control the image size within SnagIt and SnapzPro. When I'm doing a lot of images in a row (e.g. when showing all the steps involved in using a piece of software), then I find changing my computer monitor resolution to be the easiest way to proceed. If I'm only taking one or two snapshots, then I set the desired size of my screen capture within SnapzPro or SnagIt to **800 x 600** pixels.

Web Downloads

Images downloaded from the web can be a great way to build your presentation, but don't rely on web sources too much. First, you need to respect copyright issues. Second, assuming the images you want to download are not copyright restricted, then the size of the image becomes a critical matter.

Figure 7.1. *Google image search result window.*

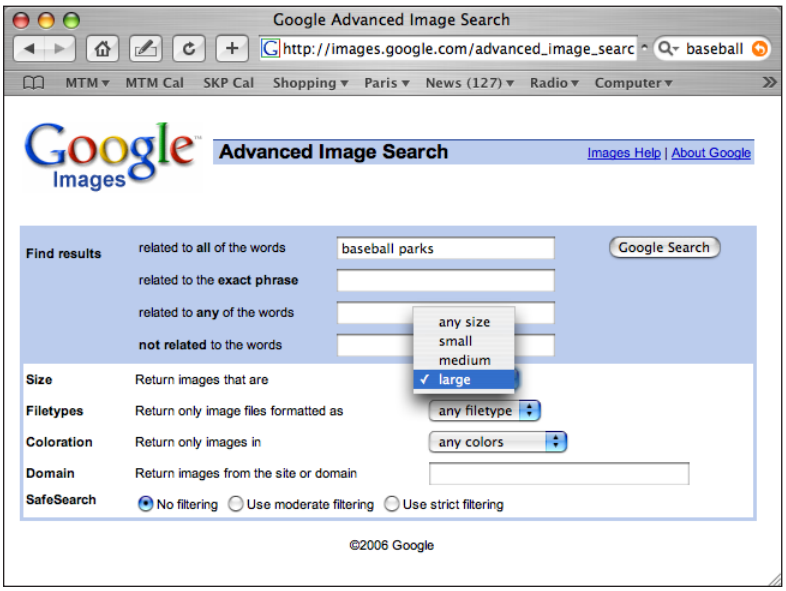


Let's consider a case study. You need images of baseball to round out your presentation. You go to a website like Google and click on their image search area. You type in *baseball parks* (see Figure 7.1 above). In a few seconds a whole load of images are presented on your screen. The images you are viewing are *thumbnails*. A thumbnail is a smaller version of the original image and is only intended to give the viewer a basic idea of what the original image looks like. Most thumbnails are less than **100 x 100** pixels in size.

Underneath the thumbnail useful information is provided including the size of the original image and the website location of the image (see Figure 7.1). Some images will have a size of **200 x 175**,

others **1024 x 768**. You want to use images only if there are close to, or larger than, **800 x 600** pixels. If you click on the **Advanced Image Search** link (see top right side of Figure 7.1 and Figure 7.2), you can specify that you only want to see larger images. This can help simplify your search.

Figure 7.2. *Advanced Image Search in Google*



Once you've identified an image that has the right content and size, click on the thumbnail and you'll be taken to the original image. Once the full image appears then either right-click (Windows) or control-click (Mac) to bring up options for downloading the image to your hard drive. Windows users get an extra option: the format of the image. Make sure that you *don't* download images as BMPs. Set the default for image downloads to be JPG or PNG if you're a Windows user.

Give Credit

Make sure at the end of your production to give credit where credit is due. Tell the viewer where you downloaded web images. Remember, Google is only a search engine and thus is not the website where you downloaded an image. Instead you need to give credit to the individual or organization that posted the image.

Image Processing

Most of the images you work with are bit-mapped images constructed from lots of pixels being put together to form an image (think of a pointillist painting). Bit-mapped images contain a lot of color and a lot of nuance in the image. That's very good for creating a realistic image. The major limitation of bit-mapped images is that if you enlarge a pixel it looks distorted. In practical terms this means it's fine to work with bit-mapped images at their original size, or at a reduced size. However, trying to enlarge a bit-mapped image results in a serious reduction of image quality.

Vector images (sometimes called *scaleable vector graphics*) are essentially composed of lines and a set of directions sent to the computer about how to draw all the various lines. The downside of vector images is they are limited in the amount of detail and nuance they contain. The upside? You can easily *scale* them up or down with no loss in quality.

In this chapter I'm assuming that you're working with bit-mapped images and the processing instructions that follow apply *only* to bit-mapped images. Some of your bit-mapped images won't need additional processing. Such images include screen captures (unless you want to add emphasis highlights to them) and web downloaded images that have already been processed.

On the other hand, digital photographs and scans don't look as good as they could in their native form. As an example, a digital photograph typically needs to be cropped, to undergo some color enhancement, and to be sharpened. Many times the same is true of scans.

The four essential steps you'll go through in working with any photo or scan includes:

1. Cropping
2. Color Enhancement
3. Sharpening
4. Exporting as a JPG

We'll look at each step in turn. By the way, the *order* of steps is important! You want to crop first, then enhance, and at the end sharpen. As a final step (no matter what type of image you're working with) you'll want to export the image to a format such as JPG or PNG that can be read by LiveSlideShow.

Cropping

Cropping allows you to get rid of unwanted material. Specifically, cropping is a procedure where you select a given part of a bit-mapped image and then the software program deletes all the other surrounding bits of the image. In addition cropping allows you to resize your images so they are *exactly* 800 x 600 pixels.

The general idea is that you want to get as full and detailed a capture of an image as you can. For instance, with digital cameras you typically have a choice of various image sizes and image qualities with which to capture your photos. In general you always want to choose the largest size and the highest level of quality that's possible with any given camera. This, in turn, will give you optimum flexibility in terms of how your final image looks.

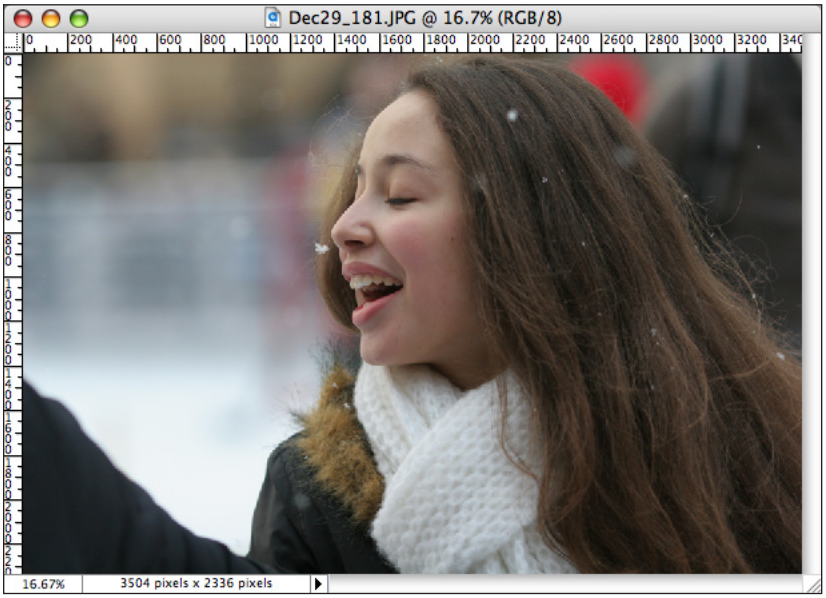
Exact Fit

Let's pretend you've taken a photo that you want to use. It's size is 3,000 x 2,000 pixels. Your presentation uses images that are 800 x 600 pixels. Thus the digital photo is much larger than what's needed for your slideshow. The beauty of cropping is that it allows you to simultaneously choose what portion of the photo you want to keep *and* resize the photo so that it is *exactly* 800 x 600 pixels.

Step by Step

Let's look at how cropping works in Photoshop Elements. First what you'll see is an image that I've opened up in Photoshop Elements. This image is 3504 x 2336 pixels (as you can tell by looking at the information just underneath the image in Figure 7.3).

Figure 7.3. *The raw image in Photoshop.*



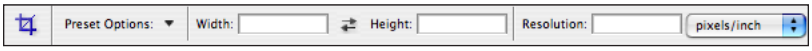
Next you want to select the crop tool (see the gray highlighted tool in the figure below). The symbol for the crop tool is the same in all software programs. In Photoshop Elements it is the fifth tool on the right side from the top. However, the crop tool will be in different locations in other programs (even Photoshop). Nonetheless it will always be offered as a tool, and the icon for cropping will always be the same regardless of the software program you use.

Figure 7.4. *The crop tool*

After clicking on the crop tool, you'll click-and-drag starting at the top left corner of the exact area that you want to preserve. The rest of the image will be cropped (or thrown away).

- **Setting Crop Size.** Before taking the step of cropping let's look at how to resize our image so it's exactly 800 x 600 pixels. Notice that once you've selected the crop tool a new horizontal information bar will appear at the top of the screen as shown in the figure below.

Figure 7.5. *The cropping tool information bar.*

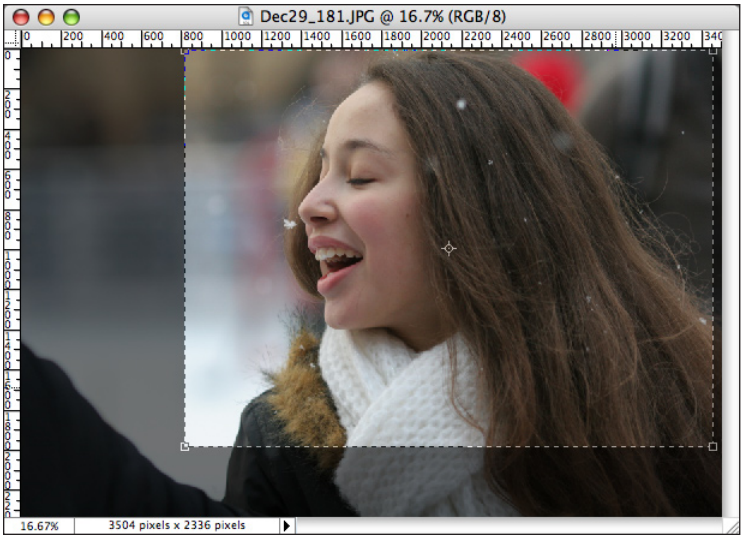


Notice how you can preset the width, height, and resolution of the crop. Make these settings 800 for width and 600 for height.

- **Switching from Inches to Pixels.** It's possible that Photoshop Elements (or another program) is set up to display information in terms of inches instead of pixels. There's two workarounds to this. One option is to select **Preferences** within Photoshop Elements. You'll see several categories of preferences. Choose **Units and Rulers**. When the dialog box appears change the setting for **Rulers** from inches to pixels. Another option is to use the equivalent command in inches where 800 pixels equals 11.11 inches and 600 pixels equals 8.33 inches. Just put these inch equivalents into the crop information box and you'll be fine.

- **Cropping the Image.** Once the size settings are made, click on the image where you want to start the upper left corner of your crop. Keeping the mouse click down drag to the right and down until you've covered the complete area you want to crop. (If you make a mistake you can press the escape key to disengage the crop tool.) Once you've clicked and dragged, let go of the mouse clicker you'll see marching ants defining the boundaries of your crop area as shown below.

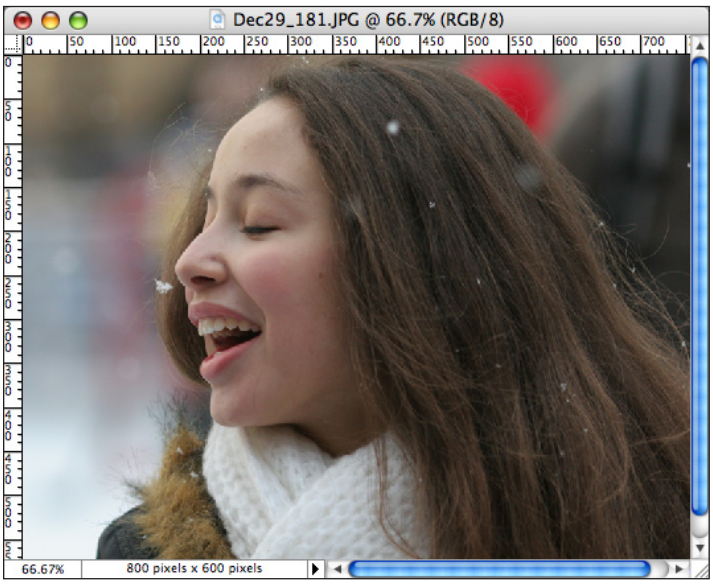
Figure 7.6. *The crop area defined by marching ants.*



Let's pretend that your crop area is not placed exactly as you wanted. You could press the escape key and start again. Or, use the right, left, up and down arrows on your keyboard to *nudge* the designated crop area to get an exact placement. You can also click on the handles at the four corners of the crop area to resize the designated crop.

When you're ready double-click inside the crop area. Voila! The image will be cropped and resized as shown below.

Figure 7.7. *The resulting cropped image.*



Notice how the image is now 800 by 600 pixels (you can tell by looking at the information just below the image itself).

Color Enhancement

This step *spiffs up* your images. It enhances the color in your image, gets rid of haze, makes the color look truer to life, and more. You want to do color enhancements *after* cropping. Then you won't include irrelevant information from the original image that you won't be using anyway. Your image will be enhanced even if the process is done before cropping. But, enhancement *after* cropping will lead to the best results.

There are three specific enhancement processes I'll recommend. In many cases only 1 or 2 of these processes will improve your image. In some cases, none of them will. You need to be an intelligent user of imaging software. Test out enhancements with all your images. Keep the enhancements that lead to improvements, undo those that have no effect or a negative effect.

Camera Quality

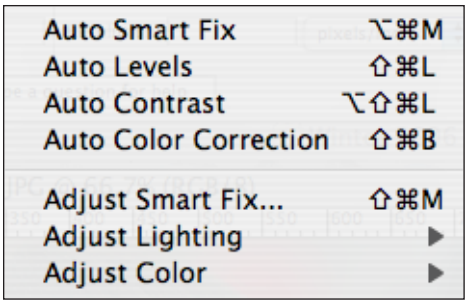
The less you pay for a digital camera, the fewer features you get. Two critical aspects of a camera are: (a) the quality of the lens and (b) the quality of the film used. In the case of a digital camera there is no "film" in the regular sense of the word, but an image is captured and then saved to a storage disk. Better cameras come with better capturing sensors. Better cameras also come with better lenses. The consequence is that if you have a professional Canon or Nikon digital camera then enhancement processes may do nothing to improve your images. However, if you have a good, reliable $250 digital camera then most of your images will be improved

moderately to significantly by using three quick enhancement steps.

Step by Step

We'll go through a three stage enhancement process in Photoshop Elements. Each of the three stages you may use or not, but we'll check out each possibility. In Photoshop Elements use the ENHANCE menu and then you can select Auto Levels, Auto Contrast, and Auto Color Correction in turn as shown in the figure below.

Figure 7.8. *Color adjustments options.*



Ignore the **Auto Smart Fix** option. Do the three other options in order. If you don't like the result of one step, just use the keyboard command of control-Z (Win) or command-Z (Mac) to undo an adjustment. Here's the three steps:

- ✓ Auto Levels adjustment
- ✓ Auto Contrast adjustment
- ✓ Auto Color Correction adjustment

Sharpening

Sharpening is the third enhancement step when working with a bit-mapped image. Most electronic devices take "soft" images, meaning there's a noticeable amount of blur in the image. There's two reasons for this:

- ✓ The extra amount of blur usually leads to better printed images.
- ✓ A user can always sharpen an image to their own taste. By leaving in a little extra blur (or softness), the user can subsequently decide for themselves how much extra sharpening should be done.

Sharpening makes the image look *sharper* or crisper on the screen. It's possible for an image to have *too much* sharpening: the result is an image that looks to harsh or "bitty" to the eye. The trick is to apply just the right amount of sharpening.

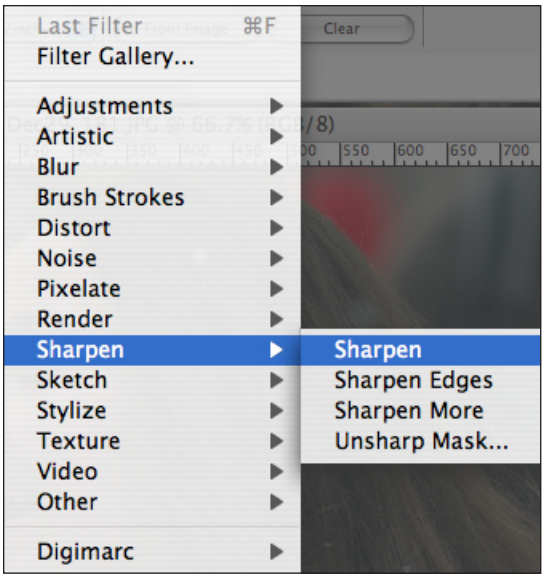
I'm not going to teach you how to apply just the right amount of

sharpening because that takes a good photographic eye, as well as significant practice and skill. Instead I'll give you a shortcut method that typically leads to good, but not excellent, sharpening results.

Step by Step

All digital imaging software programs have an option for sharpening. I'm going to show you what to do in Photoshop Elements. It's only one step, but it's an important one. Go to the FILTER menu and you'll see the selections as shown below.

Figure 7.9. *The Sharpen filter*



Choose the **Sharpen** option and you'll find four suboptions. Within those four suboptions choose **Sharpen** again. Simply stated, you want to choose the **Sharpen-Sharpen** option. The **Unsharp Mask** is the option that professionals use, so you may want to explore this option if you choose to delve into Photoshop Elements at a deeper level.

Save and Export

Once you have made all your enhancements to an image then you want to save the image as a PSD file. As you started with a JPG, why the change in format? JPG is a compression technique that is used on images. The bad news is JPGs aren't very good for editing because each time you save a JPG image the quality of the image goes down. Within a few saves your image will start to look much worse. The trick is to convert the image to a PSD file (or PhotoShopDocument) as soon as possible. The PSD format has no noticeable loss in quality as you save, resave, and make changes to an image. The downside is that PSDs are much bigger, but that's not a major problem.

Save As PSD

Use the FILE: Save As command in Photoshop Elements. You'll then see a dialog box that allows you to choose the name for the image (this can remain the same) and the format. Click on that format bar and several options will pop up. Make sure to choose PSD or Photoshop format option.

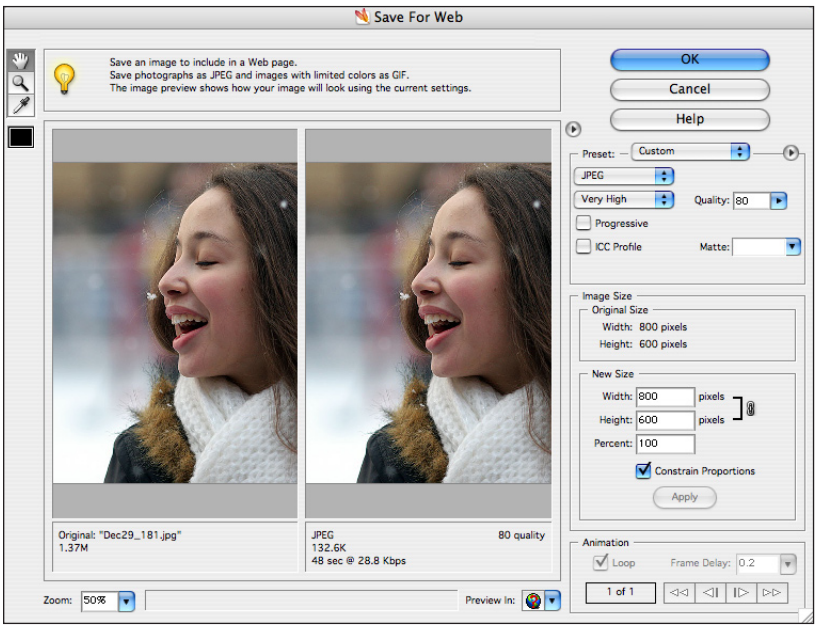
- **My Software Doesn't Offer the PSD Option.** Let's pretend you have a very simple image editing program. It doesn't offer the ability to save as a PSD. Another alternative option would be to save as a TIFF (this is also an uncompressed image format). If the TIFF format is not offered then you need to get creative. Specifically make all the changes you want to your image, then save as a JPG but with a slightly different name. For instance if the image is currently named "MyDog.jpg" then call the new saved image "MyDog2.jpg." By renaming the image you'll avoid the negative consequences of multiple compressions done on the same image.

Export as JPG

Once you've completed all the work done on your bit-mapped images, then the final step is to then save all of them as JPGs. This final step creates smaller file sizes that will result in your multimedia project being smaller and more compact. However, don't do this final step until you're *completely* done with any editing or changes to your images.

The specific command varies from software to software. Some programs refer to this step as "exporting" and others just use the "save as" command. The most efficient way to do all of this in Photoshop Elements is to use the **Save for Web** option under the FILE menu.

Figure 7.10. *The Save for Web dialog box.*



There are several important aspects of this dialog box, but notice

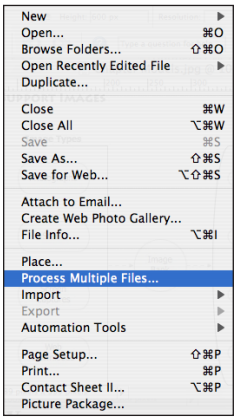
the upper right area (under the Help bar) where you can determine what kind of format will be used (JPG is chosen) and at what quality (*Very High* is chosen). In general using the JPG format at "very high" quality is the route to take.

Batch Processing

Some software programs (like Photoshop Elements) offer you the ability to do *batch* conversions of PSDs to JPGs. What this means is that if all your PSD images are in one folder then by using a simple command Photoshop Elements will convert all of those images (whether it's 3 or 300) into JPGs! This is a big time saver and is becoming an increasingly available option on most photo imaging software programs.

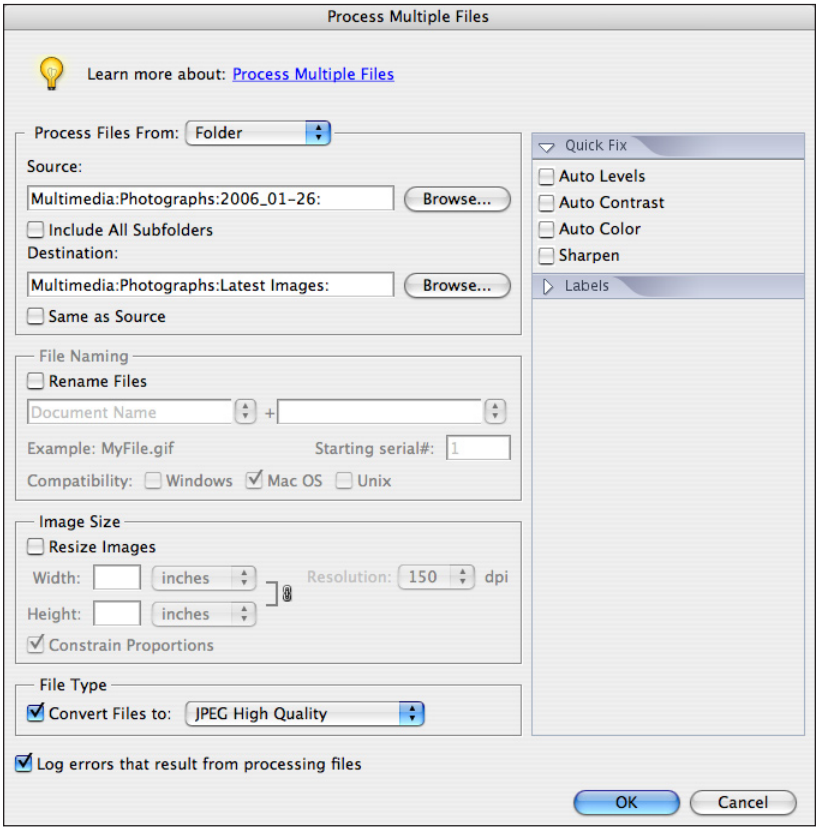
Here's how to do it in Photoshop Elements. Go to the FILE menu and choose **Process Multiple Files** as shown in the figure below.

Figure 7.11. *Batch Processing.*



You'll then be taken to a dialog box that offers you several options as shown in the next figure.

Figure 7.12. *The Processing Dialog Box.*



The two most important features of this dialog box are the top and the bottom areas. The top area allows you to designate two folders: one that contains all the images you want to process and another where you want to store the processed images. So, before starting to use this option make sure you have created a new folder on your hard drive to put the exported JPGs into. As you can see there's an option for **browsing** your hard drive to locate the specific folders to be used as a *source* and as a *destination*. Once you have this part completed, then go down to the bottom of the dialog box. Here you can choose exactly how to convert your files. You can see I've chosen **JPG High Quality**. I suggest you use this same setting. Then click the **OK** button and Photoshop Elements will convert *all* of your PSD documents at once into JPG images.

Summary

There are many different ways to create good support images for your multimedia presentation. The chapter first suggested developing a game plan for the kinds and number of support images you'll need. This chapter then briefly looked at four distinct ways to find or create such images: photographs, scans, screen captures, and web downloads. The chapter then looked at the important process of image processing focusing on three distinct enhancement procedures: cropping, color correction, and sharpening. Finally we looked at the important issues of saving your original work as an *uncompressed* PSD file and exporting your final work for LiveSlideShow as a *compressed* JPG file.

Exercise 7

This exercise complements the work you've done in previous exercises.

Create Titles

Develop 3 support images to accompany your "MyStory" audio. Make sure all of the images are exported (or *saved as*) JPG images.

Name the Images

Name the images as yournamesupport1.jpg, yournamesupport2.jpg, and so on. So, if your name happens to be Alice, then the images should be titled AliceSupport1.jpg, AliceSupport2.jpg, and so on.

Send the Images

Send your images to me. In most cases the easiest way to do this is to attach the images to an email message. However, you can also bring the images to me on a Flash drive or burned to a CD

8 *Professional Images*

Chapter 8

Edcasting

Overview

This chapter is optional. Each year students want to tackle the challenge of making some of their images "special" in some way. In essence they are wondering about how to make their images look more professional. There is, of course, no easy answer to this desire.

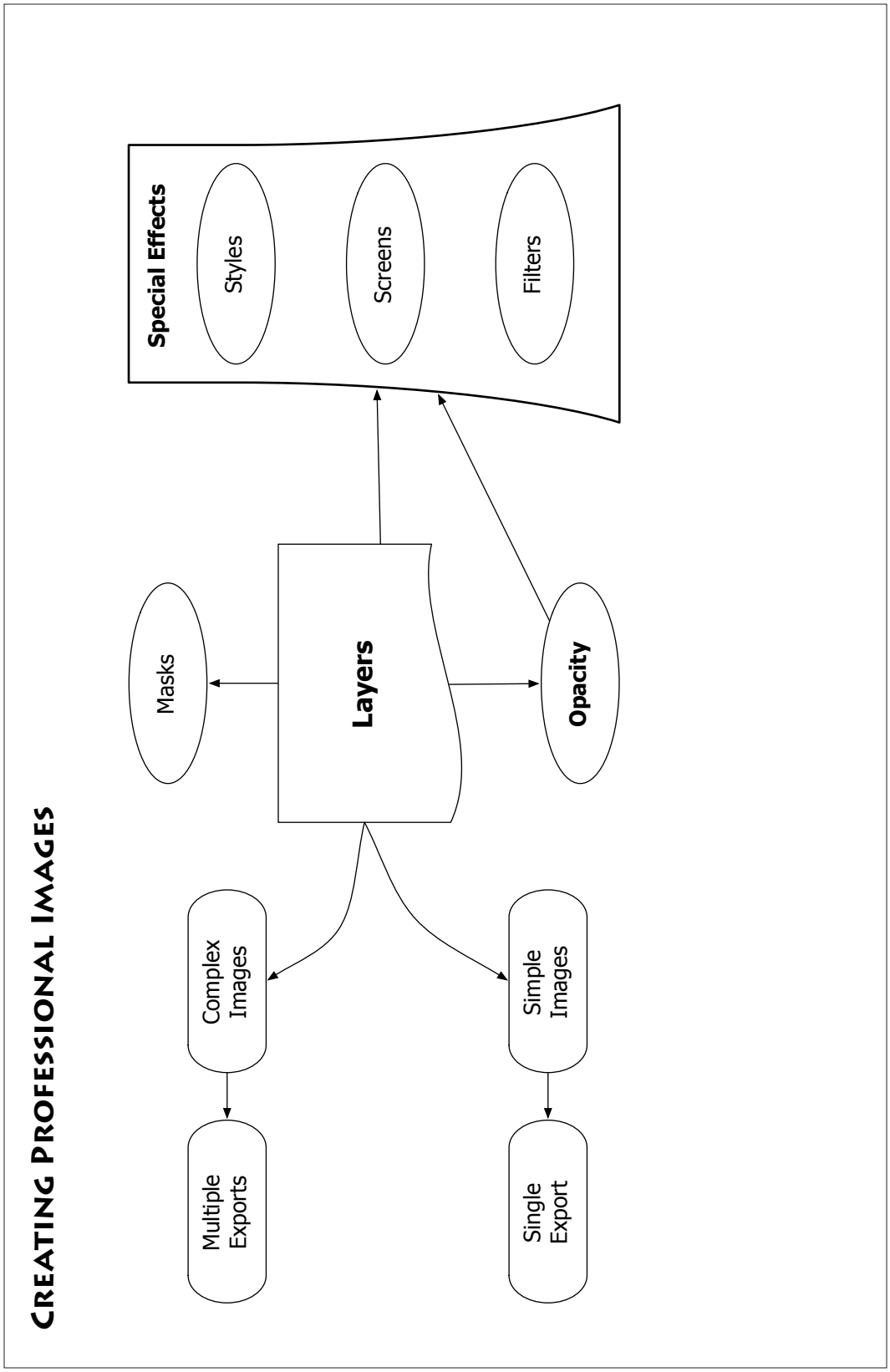
Professional looking images require a number of skills, including the critical ability to think and see like a graphic designer. If you don't already have this skill (and most students don't), then the short answer is you won't become a graphic designer and produce professional images overnight. It takes time and practice. Nonetheless, there are some key practical techniques that can help anyone make their images look *more* professional. This chapter presents those key techniques.

When working with bit-mapped images such as photographs or scans, the software used by at least 95% of professionals is Photoshop. Since Photoshop is expensive, and I'll assume most of you don't have it, I'll focus on it's sibling: Photoshop Elements. While Photoshop Elements can't do everything that Photoshop does, it is very affordable *and* very powerful software for working with bit-mapped images.

Chapter Model

The chapter's visual model (next page) provides an overview of the chapter. As you can tell from the model, the central technique to understand when creating professional images is *layers*. The second most important concept is *opacity*. If you understand these two techniques well, then the other techniques (such as layer styles, screens, filters and much more) will become relatively easy to learn. With the techniques of layering and opacity in your graphics toolkit, your ability to create professional images is limited to your design skills but not your computer skills.

This chapter presents a conceptual overview only. There are many good books that go into detail about how to use Photoshop or Photoshop Elements on a more refined level. I'll provide basic definitions and conceptual overviews of key topics like layers and opacity. Some step-by-step instructions are also provided. Just as important, you can download several multimedia tutorials that go into more detail about how to use Photoshop Elements. The tutorials address scanning, using layers, exporting different layers from one image, using masks and much more. Please download and take advantage of these multimedia tutorials if you want a more detailed understanding of the specific techniques to enhance your images.


Creating Professional Images
Special Effects
Styles
Screens
Filters
Masks
Layers
Opacity
Complex Images
Simple Images
Multiple Exports
Single Export

Photoshop Elements

I've chosen to highlight Photoshop Elements as the graphic design software tool because it is so versatile for multimedia creation purposes. Photoshop can do more than Elements, but both have the capabilities to do all the procedures discussed in this chapter. In some cases the specific labeling used in one program is different from the other (e.g. Photoshop uses the word "styles" and PSE uses "layer styles"). In some cases, the specific menu location or dialog box for a procedure is different in one version than the other. Neither this chapter, nor the multimedia tutorials, will try to cover all these variations. Just be assured, in a worst case scenario, that the menu option or procedure does exist, but may be in a slightly different location, or have a slightly different name, than shown in this chapter.

- **View Basics_of_PSE.** *This 20 minute tutorial provides you with an overview of all the major basic features of Photoshop Elements. It was written for PSE2 (now at version 3 on the Mac and version 4 on Windows). However, all the key concepts discussed still apply to the newer versions.*

Understanding Layers

The idea of layers is important to designing and editing professional images. Not all software programs have the ability to create layers, but the best graphics programs *all* have this capability.

An Example

Imagine drawing an image (e.g. a red circle) on a sheet of transparency paper. Next imagine drawing another image (e.g. a blue square) on another sheet of transparency paper. Now put one transparency sheet on top of the other. If you want to rearrange the position of the blue square you can simply move its transparency sheet and this will have no effect on the position of the red circle. The two figures can be almost on top of one another or pretty far apart depending on how you position the transparency sheets. *Layers are the software equivalent of transparency sheets.*

The Power of Layers

Graphic professionals love layers because layers give them much more control over the final image. Most of this control comes from allowing a person to easily edit an image. For example, let's say you originally wanted to see a red circle overlapping with a blue square. You could simply draw both on one layer in a graphics software program. That's great if you never change your mind (or if a client never changes their mind). However, if at a later date you decide that it would be more effective to have the blue square in the upper left corner of your drawing space and the red circle in the center, then the power of layers kicks in. If everything is on one layer,

then it's impossible (or cumbersome) to change the drawing. On the other hand if the two shapes are on two different layers then it's easy to reposition both shapes because the positioning of one shape is independent of the position of the other shape due to using layers.

3 Reasons to Care

Why might *you* care about layers? There are at least three compelling reasons: editing becomes easier, it's easier to arrange for the presentation of an image in multiple stages, and the ability to create more compelling images.

- **Editing Graphic Images.** Editing and re-editing becomes much easier with the use of layers. When you don't have layers all the elements of your image are *flattened* onto one layer or transparency sheet. Just as good writing is often good editing, that same is true with creating images. Taking away the ability to edit means that it's very hard to create images at a professional level.

- **Multi-Stage Images.** Using layers for multimedia makes it easy to create images which are *built up* during the multimedia presentation. One image in Photoshop created with layers may end up being exported as 5-10 different images representing the step-by-step build up of a model, a formula, or some other graphic. This allows you to present complex graphic material (such as a detailed visual model) in suitable "chunks" that is aligned with your audio track. Instead of seeing the complete visual model at once, taking advantage of layers allows you to create a product where the visual model slowly builds up in several parts until at the end the viewer sees the complete model. This creates visual variation while also allowing the viewer to constructively build up the model in their own minds one chunk at a time.

- **Compelling Images.** Programs like Photoshop Elements provide several tools for creating compelling images. Later in this chapter you'll learn about *filters*. One of the filters included with Photoshop Elements allows you to transform an image with a special effect named *Cutout*. Essentially this filter transforms the image into a flat graphic design object such as one would see on a poster. This effect, and most of the others, provide interesting effects. Here's the problem: the effects can be too overwhelming. What you want, much of the time, is a *partial* application of the effect. By using layers, combined with layer *opacity*, you can increase visual interest by having an effect *partially* applied to an image.

- **View RoadMap.** *I made this movie to provide an overview of the course content in a foundational level statistics. The movie is about 10 minutes long. Only one graphic image is used. The graphic image (i.e. the statistical roadmap) is provided all at once as an overview. Then the model is presented part-by-part to emphasize those concepts in the roadmap that would be covered in a particular class session. In all there were 9 variations to this one* master *image. Thanks to layers this was simple to do.*

Checking for Layers

How do you know if a specific software program works with layers? There are many potential ways to find out: read a review of the product (if it has layers then it will likely be mentioned in the review), look at the specifications for a software package at its web site (they will certainly mention layers as a critical feature), or ask someone who is familiar with the program. The various professional software programs that illustrators and designers use *all* have the ability to work in layers. These software programs include: Photoshop, Illustrator, Freehand, Fireworks, and Corel Draw.

The ability to use layers is also built into several novice-level software programs. For example, OmniGraffle for the Macintosh has the ability to work with layers. If you are considering using some other software program besides Photoshop Elements, then do your homework to check if it uses layers.

There are several well known software programs that have elementary graphic capabilities but do *not* have the layering feature. These programs include Word, PowerPoint, and Excel. Two programs that probably should have layers but don't are Microsoft Works and Apple Works. Both programs offer illustration and painting modules, but neither of them has the ability to work with layering.

Planning is the Key

The main ingredient in creating a layered image is to plan ahead. Even if you are going to create your final image using computer software, it's useful to create a hand drawn sketch of your final master image. This allows you to make mental edits before you get started. It also allows you to mentally plan for how many layers you want to use and which elements should go on which layer.

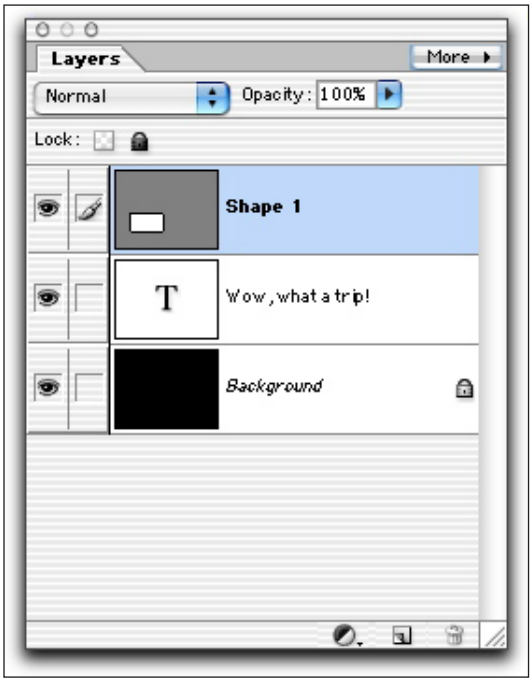
Layers in PSE

In Photoshop Elements the layers tab is usually stored in the top right corner of our screen with several other tabs with names such as How To, Filters, Effects, and so on (see Figure 8.1 below). You'll learn about using the Filters and Layer Styles tabs later in this chapter.

Figure 8.1. *Various tabs in PSE including Layers.*

Working with layers becomes unwieldy if you are constantly clicking on the Layers tab in the tab shelf. One very elegant design feature of PSE is that is allows you to *tear* a tab away from the tab shelf. To tear, click on the far left side of a specific tab, keep the mouse-click down, and drag the tab into a good location on your computer screen. Voila! You'll now see the layers tab always open and ready to use on your screen as shown in the figure below.

Figure 8.2. *The opened Layers palette.*



Notice that in Figure 8.2 the image has 3 layers: the first is the *background* layer which is black, the second is a *text* layer, and the third is a *shape* layer. Every image will have a background layer, but you won't necessarily have text or shape layers with every document you work with.

A great feature of PSE is that it both puts things on separate layers *and* it helps distinguish between the different kinds of material

(such as text, shapes, and so on). Each layer is previewed in the tab. If you want, you can rename each layer so that it has a more intuitive name than the automatic naming PSE provides.

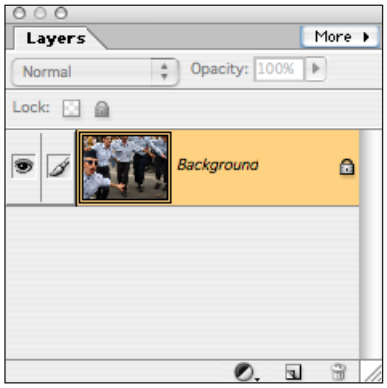
The Background Layer

There is always a *bottom line* layer created by PSE that is named Background. You can never delete or move this layer. I suggest:

1. If starting from scratch, leave the background layer blank and start your image on a new layer.
2. If starting with a photograph, make a duplicate layer of the background photograph and work on that duplicate layer. If anything ever goes wrong, you can return to the original state of the photography that resides on the background layer.

If you insert text a new layer is *automatically* created when you click in the drawing area. If you draw a shape likewise a new layer is *automatically* created when you click in the drawing area. However, if you open a photographic image, then it is placed on whatever layer is currently selected. If a photo is on the background layer just duplicate the layer and work with the newly created layer. The next three figures show you how to duplicate a layer in PSE.

Figure 8.3. *Background layer only after opening a photo.*



Note that the layer named Background has a lock icon (far right side) indicating this layer can not be moved or removed.

Figure 8.4. *Click on More button and select Duplicate Layer.*

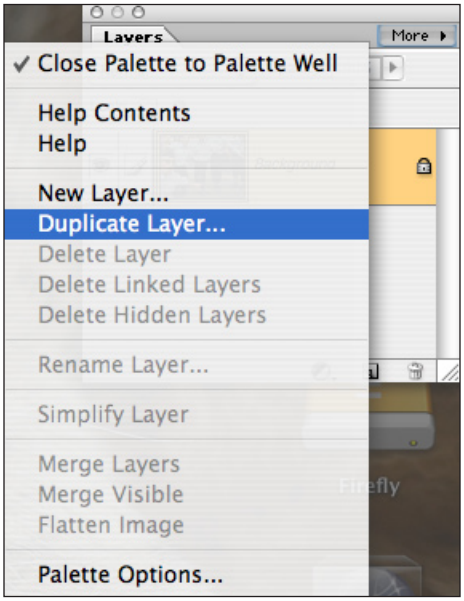
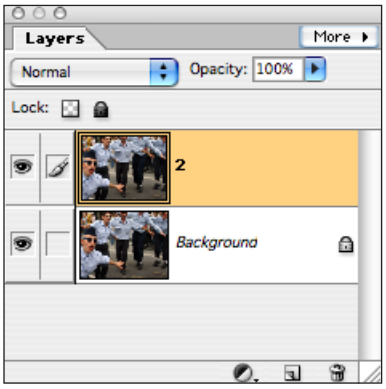


Figure 8.5. *Two layers, one changeable, after duplicating.*



Moving Layers

Layers are like transparencies. One consequence is that you can easily change the order of those transparencies. The order of the transparencies (or layers) controls which objects are above other objects. You may find that you want to change the hierarchy of layers from time to time. It's very easy. Just click on the layer you want to move. Keep the mouse click down and drag the layer up (or down) to the location where you want to place it relative to the other layers in the image.

Scans & Layers

You may want to know how to take a basic scan of an image and turn that into a layered Photoshop Elements document that can then be exported as several images that build-up to the final master image. This can be done fairly easily, but I suggest viewing the movie named *Scan&Layer*.

- **View Scan&Layer.** *This 10 minute tutorial provides you with the step-by-step procedures you would need to do in order to create a layered version of your scanned master image.*

Understanding Opacity

Opacity allows you to control the look that results when two layers overlap or are on top of one another. When the opacity for the top image is set to 100% then that layer is totally *opaqu*e. If both layers contain photographs of the same size, then all you'll be able to see is the top layer photograph, as the bottom layer photo can't show through.

Opacity is used in a number of creative ways, mainly in conjunction with layers. For instance, in the example just given if I set the opacity of the top layer to 50%. In this case a fair amount of the bottom image will *bleed through* and be visible. Sometimes this can look horrible, but in the hands of a graphic designer this tool leads to very interesting and compelling effects. In this chapter we'll only skim the surface of what can be done with opacity.

The example I want to use is that of a photograph to which we want to apply a special effect. However, all the effects we use in PSE are *all or nothing* effects. Sometimes what you really want is about 30% of that effect, not the whole thing. In essence, this is the graphic design equivalent of decaf coffee: we want the flavor and some of the caffeine, but we want to be able to moderate the amount of the caffeine blast.

As a rule-of-thumb, you'll often want to apply about 20 to 30% of an effect to a photograph. However, there's no way to do this without taking advantage of opacity. The next section takes a concrete example of how to apply opacity. Please remember, however, that there are many different times and ways in which you might want to use opacity: the example provided only gives a glimpse of how you might use this technique.

Opacity in PSE

Consider the photograph below. This is the basic image I want to use *after* applying cropping, color enhancements, and sharpening. In this example I'll be using a PSE *filter*. Just go with the directions right now to learn about opacity, but more details about filters will be provided later in the chapter.

Figure 8.7. *Photograph of street dancers.*

1. Duplicate the background layer.
2. Chose the *Dry Brush* filter from the **Artistic** submenu under FILTERS. The resulting image looks like the image in Figure 8.8. Most people would want a more subtle image then the result in Figure 8.8.
3. You can control the amount of *Dry Brush* filtering seen by using the Opacity option. First, select the layer where you want to change the opacity.
4. Click on the layer tab and set the *level* of opacity in the Layers tab as shown in the Figure 8.9. You'll find the Opacity setting in the upper right region of the Layers tab. Notice that in this example the opacity of the second layer is 50%. The result is shown in the Figure 8.10. You can probably see the difference between the original and this altered image.

Figure 8.8. *Photo after the Dry Brush filter has been applied.*

Figure 8.9. *Setting opacity level in the Layers tab.*

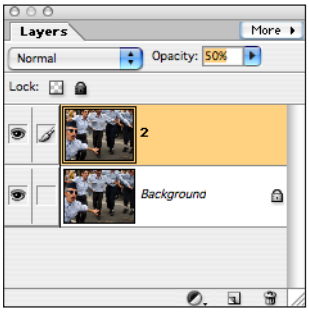


Figure 8.10. *The final image after applying opacity.*

Text with Opacity

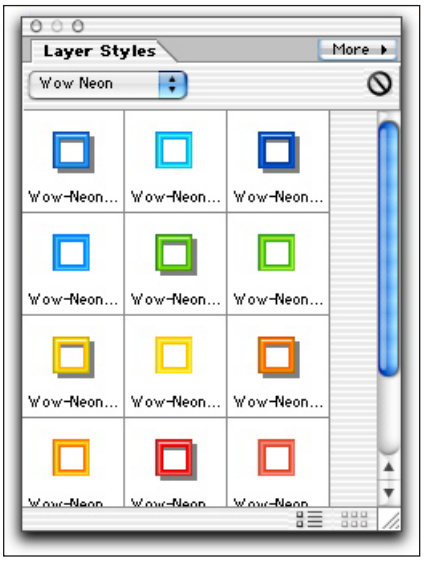
Although opacity is often used with photographic images, it can be used with great benefit in many other situations. One typical use is to control the opacity of text layers so that a block of text shows up in a more subtle ways than it would be possible otherwise. This may be of some use to you, so keep in mind that opacity can be used on *any* layer, even text layers.

Layer Styles

Layer styles provide you with the ability to easily apply professional looking styles to individual layers in your images. When you use a style it's applied to *everything* on the selected layer. Conceptually this reinforces the idea that you want to keep individual components of an image on separate layers.

If you click on the Layer Styles tab in PSE you'll see something similar to the figure below.

Figure 8.6. *The Layer Styles tab.*



There's a selection button just under the wording "Layer Styles." In Figure 8.6 the specific layer styles *set* showing is named *Wow Neon*. If you click on the selector button you'll find several additional sets of styles that can be used in PSE. Styles are not always self-explanatory, so you typically have to try them out to see how they work.

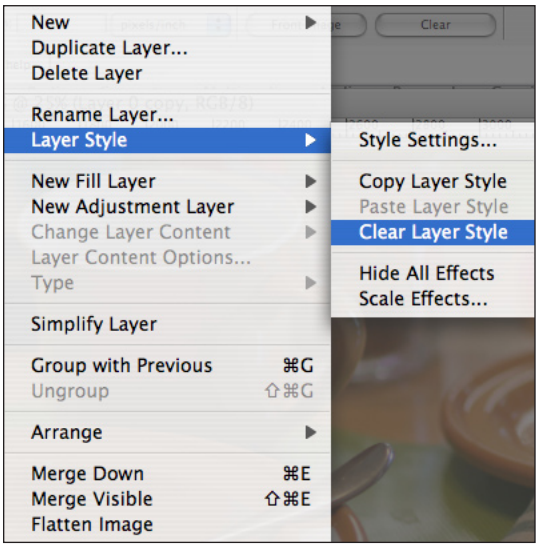
Note that within the current set of *Wow Neon* styles you are given a variety of choices in terms colors and shadows. All of the styles have a missing center. This means that if you have a layer that contains a solid circle, and then you click on one of the Wow Neon styles, then the inside of the circle gets knocked out and the border gets styled with a specific color and shadow effect. Style sets that knock out the middles of objects are great if you want to add em-

phasis boxes or circles in your image. However, most style sets do *not* knock out the center.

Undoing Styles

If you need to undo a style it's quite simple. Notice that in PSE there is a menu called LAYER. Click on this menu and select the **Layer Style** option followed by the **Clear Layer Style** suboptions as shown in the figure below.

Figure 8.7. *Options under the LAYER menu.*



The *Clear Layer Style* command is very useful when experimenting, or making a mistake, while applying a layer style. It's always possible to undo the layer style.

Extra Styles

You can download extra styles that are not already included with PSE. The best source for additional style sets is the *Adobe Studio* website. All of the style sets provided are free to download. The website to use is:

http://share.studio.adobe.com

When at the *Adobe Studio* webpage, click on the Photoshop option. Next click on the Styles suboption. Currently there are over 1,000 style sets listed there. Once you've downloaded a style set to your computer's hard drive you'll need to move the style to a specific location with the Photoshop Elements folder:

1. Within your PSE application folder you'll find a subfolder named **Presets**.
2. Open this folder and you'll find another subfolder named **Styles**.
3. Move any of your downloaded styles into this folder.
4. You need to quit and restart PSE (if it's already open) before the new style sets become available to you within the program.

Some style sets are especially useful for making your text have ex-

tra pizzazz. Typically text-enhancement styles only work well if your font size is at 48 points or more. Nonetheless, through a bit of experimentation, you can find several styles that help enhance the visual attractiveness of your text.

Layer Screens

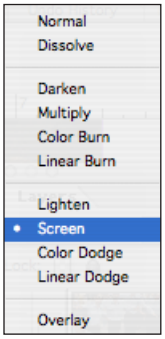
Layer screens are primarily used with photographic material. There are a lot of different screens and I won't attempt to cover all of them. However, there are three specific screens you should know about: multiply, screen, and color dodge.

Screens work by having the *same* photographic material interact with itself. This is accomplished by duplicating a photographic layer and then applying the screen to the layer that is above the original layer. There are two main reasons for using screens:

- ✓ The photograph is too light and you want to add detail and some darkness.
- ✓ The photograph is too dark and you want it to appear lighter.

Select a layer screen by clicking on the bar at the top left of the Layers tab, just to the left of the opacity setting box. The default for layer screens is "Normal." If you click on that Normal option you'll then see several suboptions as depicted in Figure 8.8 (below).

Figure 8.8. *The layer screen options (partial view).*



The only three options we'll look at are *darken* and *screen*. Below you see three variations of an image: the original image, the image after the *screen* screen has been applied, and the image after the *multiply* screen has been applied.

Figure 8.9. *Streetdancers original photograph.*

Figure 8.10. *Photograph after using the Screen screen.*

Figure 8.11. *Photograph after using the Multiply screen.*

You should be able to visually see the differences between the three images. The steps I took to create these screens were:

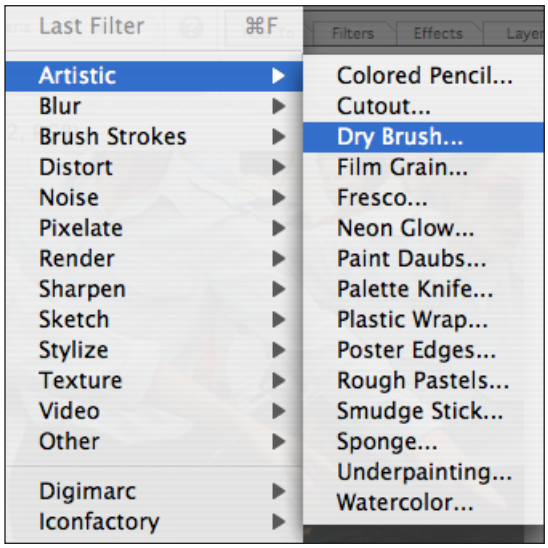
1. Duplicate the layer with the original photograph on it.
2. If the image is too dark then click on the screen tab and choose **Screen**. There is an option called **Lighten**, but it's the **Screen** option that lightens up a photo.
3. If the image is too light then click on the screen tab and choose **Multiply**.
4. Moderate the amount of lightening or darkening that appears by adjusting the *Opacity* setting.

Please remember that opacity is a major technique in Photoshop Elements. It can always be used to moderate the amount of any effect applied to a specific layer. The end result is that by using opacity you gain much more control over the exact look of the final image.

Filters

In addition to styles, PSE offers a large variety of filters. Filters are primarily used with photographs. Notice that there is a FILTER option on the PSE menu bar. If you click on that FILTER menu then you'll see the options presented in the figure below.

Figure 8.12. *The Filter menu options.*



You're already familiar with the **Sharpen** filter that we used to do basic image enhancements to photographs as presented in Chapter 7 on **Support Images**.

However, you can see that there are a ton of filtering options. You can explore these options on your own. Figure 8.12 highlights the suboptions available when you click on the **Artistic** filter option. Every filter option has several suboptions. In general, though, you'll probably find the **Artistic** filters the most useful.

The artistic filters can create intriguing effects when applied to photographic images. The filters you'll probably find most useful are:

- ✓ Cutout
- ✓ Dry Brush
- ✓ Film Grain
- ✓ Poster Edges

The essential steps for using Effects are:

1. Duplicate the layer with the original photograph on it. Make sure you select the duplicated (or top) layer.
2. From the **FILTER** menu choose the specific filter you want to apply. If you don't like the result, choose **Undo** from the EDIT menu.
3. Moderate the effect of the filter by adjusting the *Opacity* setting.

Some people find the variety of filters so intriguing and mesmerizing that they lose countless hours playing around with them. Playing around can be a very productive approach to gaining new skills and insights. That said, I'd suggest just experimenting with a few basic filters during an academic semester. Otherwise you may find that you've been pretty unproductive from an *academic* perspective. Later, when you have more free time during an academic break, then experiment more extensively with the various filter options.

Masks

Masking is a technique that essentially allows you to block out one part of an image to reveal another image on a separate layer. For instance, by using masking you can combine part of a photo of a student with another photo of a school building. Through masking you can create a new image where it looks like the student was photographed at the school building instead of at her home.

Masking can be used to combine images in countless interesting and compelling ways. Mastering the art of masking takes practice. This book will not address this advanced and important skill that professionals use all the time. However, some of the multimedia tutorials do address masking. Here's where I'd start:

- ❑ **View Using Masks.** *This movie, created by Maria Estrada, shows how masks work in Photoshop and how to do a simple mask in a step-by-step manner. I highly suggest viewing this movie just to get a basic idea of what masks can do.*

Multiple Exports

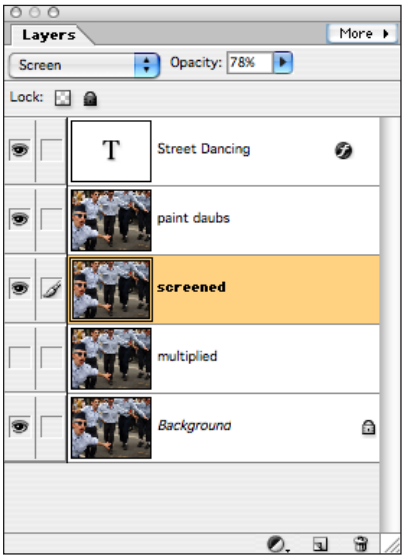
Although you will create a master image, how you export a series of images that can be used effectively by LiveSlideShow needs to done carefully. The essential idea is that you want to export in a systematic fashion. This means that you may want your viewer to first see only the layer that contains the first part of your drawing. Then you may want your viewer to see that first part *plus* the second part added on (usually via a cross fade transition). The image can continue to evolve in this fashion until the viewer sees the final image with all layers visible.

Let's pretend your image has 7 layers. Each layer contains a unique element of your overall image. As an example, let's pretend that you've created your visual model in PSE. Each layer adds important shapes that make up your complete visual model. As you talk through the visual model, you want to create the visual effect of the model being built up so that the viewer sees the beginning part of the model, and then sees successive additions to the model until it is completed.

You need to organize your layers from bottom to top with the top layer containing the final element you want viewers to see and the bottom layer containing the first element you want viewers to see. (I'm assuming here that your background layer has nothing on it.) If your layers are not ordered in this fashion, then click-and-drag the various layers until they are in this order.

In the figure below you see the layers tab. Notice that there are 5 layers in this example. The first 4 layers impact the overall look of the photographic image. The fifth layer adds on text that says, "Street Dancing."

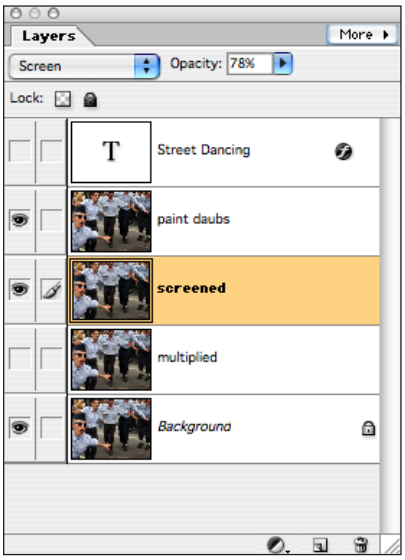
Figure 8.13. *The layers tab.*



What we want to accomplish is that the viewer sees the image only, and then a few seconds later the text will emerge onto the image. To accomplish this effect we need to create two exported images from this one PSD document. Later, in LiveSlideShow, you'll then add the needed cross fade transition between these two images.

Notice that at the far left of each layer is a square where you see an eyeball for the layers. The eyeball means the layer is *visible*. To make a layer hidden, click on the eyeball icon for a specific layer. The figure below shows what the layers tab looks like after hiding the top text layer. Compare this against Figure 8.13 where the top text layer is visible.

Figure 8.14. *Top text layer hidden.*



The figure below shows what the image looks like when the text layer is made visible. You can easily imagine what the image looks like *without* the text layer visible.

Figure 8.15. *Image with text layer visible.*

If the viewer first sees the image (with no text) and then five seconds later sees the "Street Dancing" text emerge via a crossfade this will tend to look more stylish and professional (if done well) relative to having everything show up at once. I'm giving a simple example, but you can imagine more complex examples. Using the same approach a viewer could see a visual model *unfold* in complexity as you talk through it via the audio track. However, to accomplish these kinds of effects you need to make *multiple* exports from one PSD document.

Multiple Export Steps

The number of layers to hide, and the number of images to export, will change depending on the specific PSD document. Below are the *general* step by step instructions for conducting multiple exports.

1. Order your layers so the first object/text you want visible is just above the background layer and the last object/text you want to make visible is the topmost layer.
2. Click on the eyeball by each layer so only the bottom layer and the background layer are visible. (Note: sometimes you may even want the background layer hidden.)
3. Go to the FILE menu and select the **Save for Web** option.
4. Save as a JPG image at 80% quality. You'll want to give the multiple exports sequential names so make sure this first image is named something like model1, 01, title01, or some other appropriate starter name. Save the first JPG image.
5. Click on the layer just above the one you just worked with to make this next layer visible.
6. Go to the FILE menu and select the **Save for Web** option.
7. Save as a JPG image at 80% quality. Provide a sequential name. If the first image was "03a.jpg" then the next should be "03b.jpg" and so on.
8. Repeat steps 5 through 7 as needed.
9. If your complete image consists of 5 key parts then you should end up with 5 exported images that use sequential numbering names.

❏ **View LayeredExports.** *This 8 minute movie shows you how to systematically export your master image in terms of layers in Photoshop Elements. The example master image has 4 layers resulting in 4 exported images. The tutorial also shows what using these layers in LiveSlideShow will look like.*

Summary

This chapter provided a brief introduction to Photoshop Elements and the power of using layers. If you watch the tutorial movies closely you can start making very effective and professional images right away. That said, one of the best ways to learn about how to use PSE (or Photoshop) is to take advantage of the many well written books that are available. The reviews of technical books posted at *Amazon.com* are very helpful for deciding which specific book may be best for you.

9 *Glue*

Chapter 9
Edcasting

Overview

This chapter looks at how to put together all of your raw materials (images and audio) into one coherent, well-timed multimedia presentation. Specifically this is where you learn how to use the LiveSlideShow software. However, more importantly than the software itself, is having a well-organized approach to "prepping" your materials before using LiveSlideShow. For simplicity I'll often refer to LiveSlideShow as LSS in this chapter.

In essence LSS is a form of *electronic glue* that allows you to integrate all your raw materials (images, transitions, and audio) into a seamless well-constructed multimedia product.

I'm providing you with a highly stylized approach to creating a multimedia movie. In fact, LiveSlideShow is much more flexible than is indicated in this chapter. Please understand my reasons for creating this stylistic approach to creating a movie: from experience I've found that most doctoral students tend to feel overwhelmed if they don't have an explicit script for putting together their materials. Thus the approach I provide is helpful in that it greatly reduces the potential for cognitive overload when creating multimedia. But, in the end, it represents only one *possible* way to create multimedia within the LiveSlideShow environment.

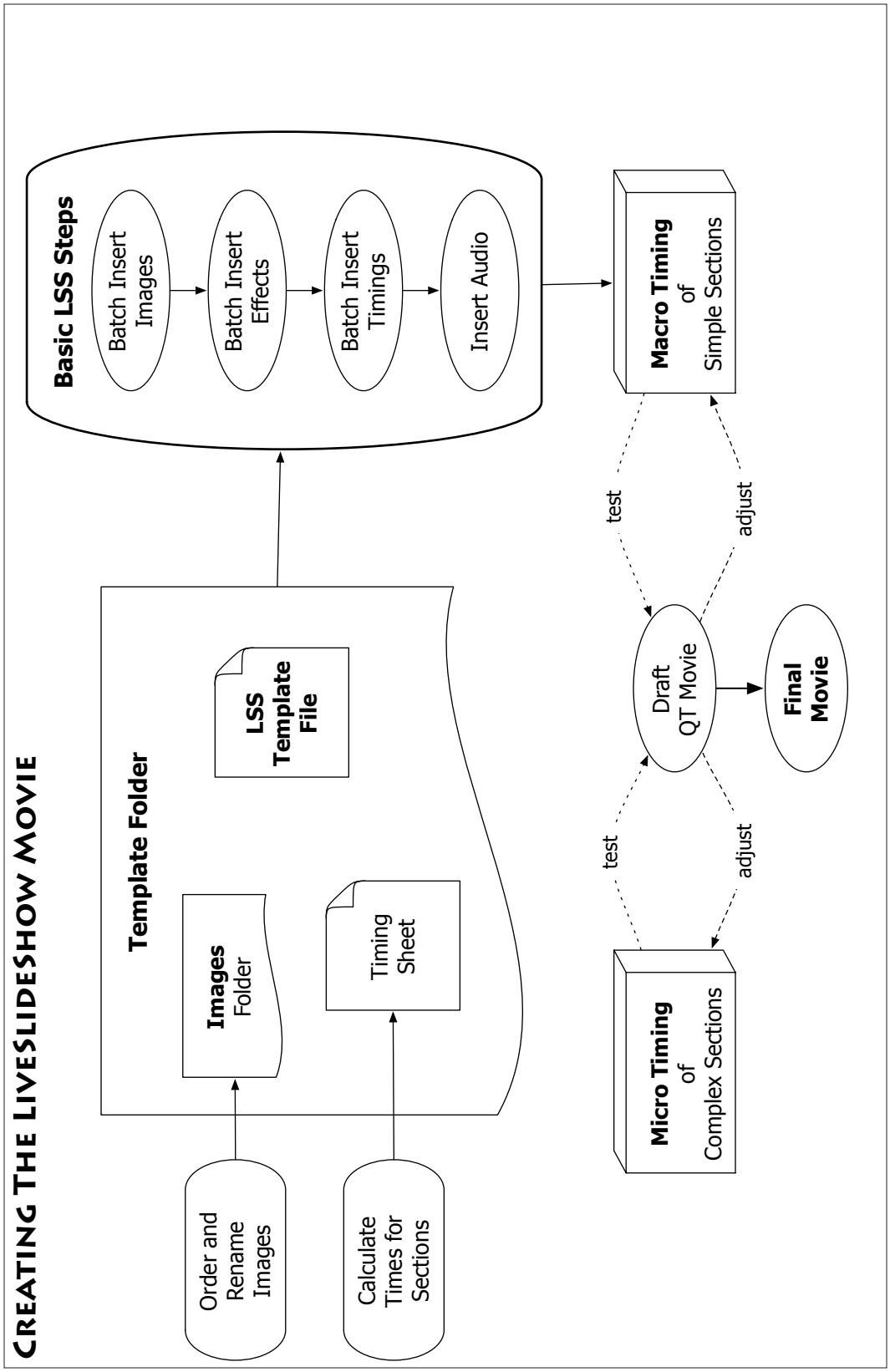
Chapter Model

The chapter visual model (next page) provides an organizational overview of the chapter. The model indicates that there are three primary stages in creating a LiveSlideShow movie:

- ✓ Preparation via the timing sheet and renaming images.
- ✓ Basic LSS steps that can be done very quickly.
- ✓ Alignment of visual and audio content through establishing macro and micro timing.

The skills you need in this chapter are most like that of being a film *editor* rather than a director. Put more prosaically, the creative parts of conceiving the big idea of the movie is done, carrying out the creative aspects of making suitable audio and image content is done, and now you will be engaging in *multimedia accounting*.

Most people find getting the timing between images and audio *just right* to be difficult and time consuming. Yet, if you do the preparation and basic LSS steps stages well, then you'll greatly reduce the time needed to establish the timing. Furthermore, if you do the **macro** timing first, then the subsequent **micro** timing will become much easier.


Creating The LiveSlideShow Movie
Basic LSS Steps
Batch Insert Images
Batch Insert Effects
Batch Insert Timings
Insert Audio
Macro Timing of Simple Sections
Template Folder
LSS Template File
Images Folder
Timing Sheet
Order and Rename Images
Calculate Times for Sections
test
adjust
Draft QT Movie
Final Movie
test
adjust
Micro Timing of Complex Sections

Calculate Section Times

Assembling a 10 minute presentation that integrates audio with images is a complex problem. Rather than tackling this big problem head on, a more efficient approach is to divide the problem into a series of smaller problems. The result is that while you have more "problems" to solve, each one is pretty simple and straightforward. The cumulative result is that most people find it much easier to solve 15-to-20 easy smaller problems compared to one large complex one.

We'll essentially create subproblems based on the section numbers in your script. Each "section" is a mini-movie. If we can get the timing right for each mini-movie, then the whole movie will have correct timing. Our first steps in that direction is to use and translate the *labels text file* you exported from Audacity (see Chapter 4). Then we'll complete the timing sheet that resides inside of your LSS project folder.

Translating

Based on your original script, you divided up your audio into sections. You then exported the labels track from Audacity into a text format that can be read by many word processors and Excel. At this point you want to open your labels text file and do some translation. If you have Excel, take advantage of the time sheet I've provided within the *Template folder*.

For right now it's best just to write on a print out of your labels text file in order to do some translations. When working in LiveSlideShow, and for using the Excel time sheet, it's important to know when each section begins in terms of *minutes and seconds*. However, Audacity has given all your section times in terms of pure seconds. For example, if label "Section 8" was at 125.01 seconds, then you need to translate this into the equivalent number in terms of minutes and seconds.

To do the translations you need to remember that 60 seconds are equal to a minute. Furthermore, since Audacity gives you the time in both seconds and *fractions* of a section, just round off to the nearest second. Since we have 125.01 seconds, we can round off to 125 seconds. Using our handy dandy *Table 9.1* (below) we can see that we have 2 minutes and 5 seconds. We would enter that value into Excel as 2:05. You'll need to do these various translations so you can put the correct number, in terms of minutes and seconds, into your multimedia time sheet.

Table 9.1. *Seconds to minutes quick conversion guide.*

Seconds	Min:Sec
60	1:00
120	2:00
180	3:00
240	4:00
300	5:00
360	6:00
420	7:00
480	8:00
540	9:00
600	10:00

The Timing Sheet

Open up the time sheet (either in Excel or as a PDF file). I will assume you have Excel for purposes of the directions given below. If you only have Adobe Reader then you'll manually have to do some calculations. A blank timing sheet is displayed on the next page.

Notice how the time sheet has 5 columns labeled: section, content, start, length and notes respectively. In my case I know I have 20 sections so I'm first going to enter the number for each section and a very brief description or title for the content in that section.

Using the print out from your labels in Audacity you can next fill in the start times for each section. When entering numbers in the **Start** column you *must* enter a number, then a colon, then a double digit number. If a section begins at 8 minutes and 7 seconds then you *need* to type in: 8:07. If a section begins at 43 seconds then you need to type: 0:43.

Please keep in mind while working in LiveSlideShow it's important to know *both* when a particular image should appear and also *how long* it should appear. Thus the length column is critical for you.

If you're using Excel this will get automatically calculated. Notice that as you fill in the start time for a new section then Excel has enough information to calculate the length of the previous section. This is why it's important to have a time for the ending time of the audio file: so Excel can calculate the length of the last section before the end.

If you're using the Adobe Reader timesheet, you'll need to manually calculate the times and enter them into the *Length* column.

Once all the essential timing information is entered you have a great organizational tool for establishing the timing of each of your sections. Using the timing sheet will greatly simplify the timing problems you face in LiveSlideShow.

MOVIE:

Section	Content	Start	Length	Notes

Order and Rename Images

Your script has been numbered in sections, you audio file has been labeled by section and you've completed a timing sheet. Now you need to rename all of your images to match this coding.

Let's pretend (somewhat unrealistically) that you have 20 sections in your script *and* you use only one image per section. This means you simply find your 20 images and number them from 1 to 20 based on the order they should be in. Make sure that all the images are named use two number places in the name. This means the images should be named something like: 01.jpg, 02.png, 03.jpg and so on.

Now let's look at the more realistic situation where some of your sections have only one image, but several sections use multiple images. The basic numbering approach is the same with a twist. Let's pretend that section 1 uses one image, section 2 uses 3 images, section 3 uses 4 images, and section 4 uses 1 image. Here's how to label the images: 01, 02a, 02b, 02c, 03a, 03b, 03c, 03d, and 04. Depending on your operating system, you may need to add on appropriate extensions (such as ".jpg" or ".png") to each image name.

What's the benefit of this image renaming? Huge. Later, when you are in LSS you'll be able to grab all your images at once and place them into the timeline as a group instead of finding and placing each image one by one into the timeline.

The LSS Template

To make the process of making multimedia projects simpler, I've created a template file for you. This was the file originally named *Template.lss* and it resided within your Template folder. By now you should have renamed both your template folder, and the template file within it, to more descriptive names. For instance, you may have renamed the template file *Reading Strategies*.

Why a Template

One of the good things about LiveSlideShow is that it gives you a lot of options in terms of how your multimedia project should look and exactly what kind of format it should be when exported as a QuickTime movie. However, for beginners all these options can be overwhelming, therefore I've made the process of getting started much simpler by creating a template for you to work with. In essence this means I've made some decisions for you regarding the structure and look of your movie.

Template Features

Underneath the hood the template has several preset options for you that are different from the defaults provided by LSS. Table 9.2 summarizes the key differences between using the LSS defaults

versus the features present in the template I've provided.

Table 9.2. *Comparison of template versus default settings.*

	Default	Template
Presentation Size	400 x 300 pixels	800 x 600 pixels
Image Area	200 x 200 pixels	800 x 600 pixels
Background Color	Light Blue	Black
Controller Bar	Hidden	Visible

What can be especially confusing for a novice is the difference between the presentation size and the image area. I won't describe that difference here, but you can tell from the table that your template makes sure that the presentation size and the image area are exactly the same size. This means your images don't get squashed or take up only a portion of the presentation.

In addition there are smaller differences between the LSS defaults and the template settings.

LiveSlideShow

Before you learn how to do procedures within LSS, it's important that you have an understanding of how the program works. Essentially LSS is a database. As such it collects information about your multimedia movie: the specific order of the images you want to use, the transitions you want to use, and the sounds you're going to use. However, a LSS file does not contain those images, or those transitions, or those sounds. You've stored the images and sounds in a location that makes them easy to find by LSS. The transitions LSS uses are from QuickTime. This is one of the reasons you *need* to have QuickTime installed on your computer in order for LSS to work.

If you were to send me your LSS file, I would be able to tell the order of your images, what transitions you want to use, and the name of your audio, but I would not be able to see any of those objects (except their names). Most importantly, I wouldn't be able to play the multimedia presentation. The final step one takes in LSS is to *export* materials so that all the components (images, sounds, and transitions) are integrated with the LSS database information to create an integrated QuickTime movie. If you sent me the exported QuickTime movie, then I would then be able to see your complete product: images, sounds, and transitions all put together in a well-timed manner.

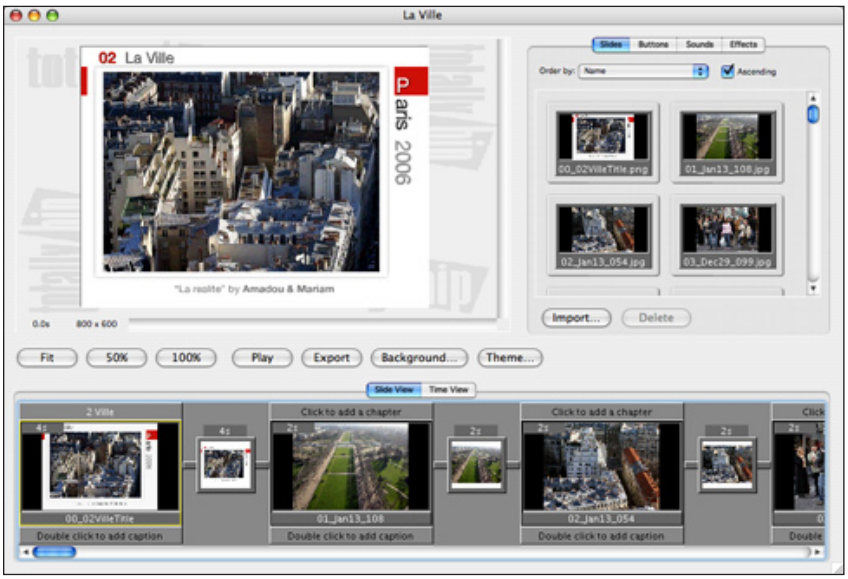
Remember, LSS is a database, and a very cool database at that. One that can, as a final step, create a QuickTime movie for you, but the LSS database *itself* is not a movie.

Basic Landscape

Before we get started with making a multimedia product I first want you to become familiar with LiveSlideShow and how it operates. Click on the LSS file within your project folder to open up the program itself.

LiveSlideShow is organized into three sections: the timeline (bottom of the screen), the assets libraries (right side of the screen), and the preview area (left side of the screen) as shown in the figure below.

Figure 9.1. *The LiveSlideShow environment.*



In addition you can see several buttons on this screen including:

1. Seven buttons below the preview area (middle of the screen)
2. Two buttons just above the timeline area
3. Four buttons in the assets area (top right area of the screen)

Preview Area

This area (left side of screen) includes helpful information. Note the relatively large image: this is a preview of the current selected image in the timeline. Just under the image preview area two bits of key information are provided. The first says "0.0s." This is telling you exactly when the previewed image starts showing up in the presentation. The "800 x 600" just beside it tells you the size of the presentation. Your file should definitely say "800 x 600." If not then you've somehow not used the template file.

- **Buttons.** Just under the preview image is a row of seven buttons. The first three buttons (Fit, 50%, 100%) allow you to control how large the preview image is displayed. For most of you I suggest clicking on the 50% view. The preview is only a rough representation of the image. If an image looks worse than it should in this area don't worry. The preview does not give a faithful reproduc-

tion, just a quick and dirty indicator of where you are in the time line. The next button, "Play," is not useful to you as you'll mainly be using the "Export" button and viewing the subsequent QuickTime movie to check how your movie looks. The "Background" and "Theme" buttons you can ignore.

Assets Area

This area (right side of the screen) includes four tabs that shows all the various assets to be used in a project. The four tabs are labelled as Slides, Buttons, Sounds, and Effects. Let's look at each in turn.

- **Slides.** This includes all of the images you put into the Images subfolder within your project folder. It will also include a few extra images such as the "blank slide" image that shows up black.

- **Buttons.** You can create interactive slideshows that include navigation buttons. You won't be doing this, but that's what this shelf is all about. Read the manual if you'd like to use LiveSlideShow for some future projects where you'd like to include navigation buttons.

- **Sounds.** This includes your MP3 audio file assuming you put it into the Sounds subfolder within your project folder. You'll see other sounds here also that come with LiveSlideShow. Typically your MP3 file will be listed last in the list so simply scroll down until you find it.

- **Effects.** This includes all of the various transitions (or effects) you can use to move from one image to the next. If this is your first multimedia project then I highly suggest simplifying your life by using only one effect for all you images. In particular I suggest using the "Cross Fade" effect. For those of you who are beyond the *complete novice* stage then you can choose to mix and match effects as you want. You'll also notice that it's possible to create your own custom transitions as well. I won't address how to do that in this guide, but you can learn more about this feature in the LSS Manual.

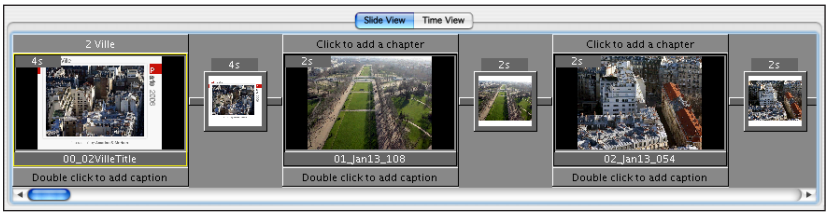
Timeline Area

The timeline is where all the multimedia accounting work takes place. In essence, this is the real brains of the LSS program.

What's especially important to notice is that there are two buttons located just above the images in the timeline area. One button says "Slide View" and the other "Time View." Both of these views are needed to complete a multimedia presentation. Let's look at each one in more detail.

- **The Slide View.** Figure 9.2 shows the timeline in the slide view.

Figure 9.2. *Details of the timeline in Slide View*



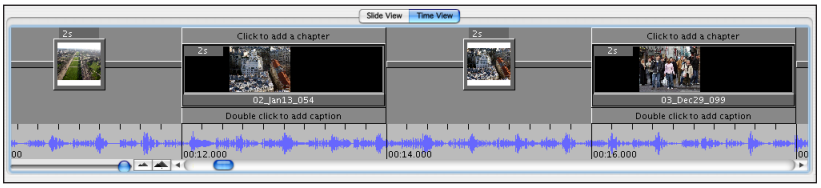
There are several key things to notice about the *slide view*:

- ✓ Each image is enclosed in a box.
- ✓ Each effect (or transition) is placed *betwee*n two images and is indicated by a small square.
- ✓ Each image length (in seconds) is indicated by the number entered in the top left box of each image.
- ✓ Each transition time is indicated by the number entered in the grey box just above the effect rectangle.
- ✓ You can add a chapter to a movie by *single clicking* and typing in the area at the top of each image box.
- ✓ You can insert text inside an image by *double clicking* and typing in the area at the bottom of each image box. You *do not* want to use this feature as you've already developed your text images. (I'm also leaving out the fact that there are some funky aspects to this text insert option that you don't want to deal with.)

You'll use the *Slide View* most of the time, especially for the batch inserting of materials and getting your timings down right.

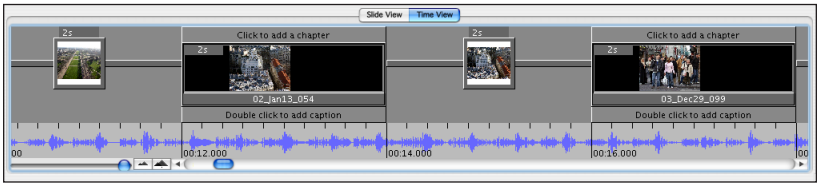
- **The Time View.** If you click on the Time View button you'll then see something similar to the figure show below.

Figure 9.3. *Details of the timeline in Time View*



There is a new element to notice: you now see a light grey area underneath the image and effect boxes. As the text in the image indicates ("*Drop background music here*") this is where your audio MP3 file will be placed in the timeline. You'll locate the MP3 file in the Sounds shelf, then click on it, drag it over to the timeline (in Time View) and drop (or release the mouse click) when the sound icon is over the light grey area. The figure below shows what the Time View looks like after a sound file has been dropped into it.

Figure 9.4. *Time View after inserting an MP3 file.*



The actual form of the sound wave is now visible. You can't actually play the audio in this view, but it's nonetheless very helpful to see. For instance, if after key sections of your audio you paused for 2-5 seconds then that silent section would be easily visible in the sound waveform. This in turn makes it much easier for you to double check whether your timing is correct because you can see where the pauses occurred in your audio.

Modifying LSS

I would suggest modifying the initial look of LiveSlideShow so that your workflow can be much smoother and efficient. You'll need to delete the LSS supplied extra images and sounds at some point. It's easier to do this *before* you begin other work. You want to do this because when you are creating your movie you want to be able to select *all* of the images in the image shelf with one command and then put them *all* into the timeline at once. If you have extra images in your Slides shelf that means you'll later need to search and eliminate them from the timeline.

Delete Extra Images

When you click on the Slides shelf you'll see a bunch of images in the shelf. A small number of those show up because they are included in the template. All template-supplied images start with a number (e.g. "0 black," "101 made with," and "102 black"). All the images you have inserted should also be numbered. You should keep all of these images. However, LiveSlideShow also installs additional cute images in its default slide folder. These all have non-numbered names. These images are probably all located at the end of your Images shelf as they are organized to come after all the numbered images. I suggest selecting each extra image in the Slides shelf and pressing the delete key to eliminate them. Eliminating an image by selecting/deleting in the Images shelf insures they will never show up again when you go into LSS.

Delete Extra Sounds

In a similar manner LiveSlideShow comes with a collection of pre-installed sounds. To find your MP3 file you'll need to scroll down to the bottom of the Sounds shelf. If you want, select all of the pre-installed sounds, press the delete key and get rid of them all at once. In the future when you click on the Sounds shelf you'll only see those sounds you've personally put into the Sounds folder. The issue of extra sounds, however, is a minor annoyance and this step need not be taken if you don't want to.

Batch Insert Images

First you want to create a timeline that contains all the images you're going to use. To insert images you can take two different approaches. If you've pre-named your images so they're ordered, then use the *batch* approach. However, if you have not ordered your images through pre-naming, then you'll need to use the *manual* approach.

Batch Approach

This approach only works if you have pre-named your images so they are *already* ordered correctly before opening LSS.

1. Make sure you have an empty timeline.
2. Make sure the timeline has **Slide View** selected.
3. Click on the **Slides** shelf in the assets area.
4. Use *control-A* (or *command-A*) to select all the images at once.
5. Click and drag this collection of images to the timeline. When the images are over the timeline area release the mouse button.
6. Within a few seconds all of your images will show up in the timeline.
7. If you have not already deleted the LiveSlideShow pre-installed images, then you'll now need to find them in your timeline and delete them. Generally they'll be located at the very beginning or end of your timeline.

Manual Approach

Here are the steps involved for the *manual* insertion of images into a timeline. You generally want to avoid this approach, but may need to do so if you have not pre-named your images.

1. Make sure you have an empty timeline.
2. Make sure the timeline has **Slide View** selected.
3. Click on the **Slides** shelf in the assets area.
4. Find the first image you want to insert in the **Slides** library.
5. Click on that image, then drag the image to the timeline. When the image is over the timeline area release the mouse button.
6. Find the next image you want to insert.
7. Click on that image, drag it to the timeline. When the image is just to the right of the last image then release the mouse button.
8. Repeat as needed.

Extra Notes

You need to know about the manual approach because sometimes you'll want to add a new image to the timeline that was not included in your initial batch of images. Or, you may want to re-order a small number of images. In that case you'll drag an image to its new location in the timeline. You'll also have to delete the image from its old location in the timeline. To do this click on the image

in the timeline and press the delete key.

All of the images have been given a default length of two seconds each. Later you'll individualize the timing of each image.

Batch Insert Effects

You now have a complete set of images in the correct order in your timeline. However, if you played the movie as it is at this point you would see one image *jump* to the next. The movie is fine, but it looks pretty rough. To see for yourself just click on the **Export** button, give the movie a name, and save to your hard drive. Then open up the exported movie in QuickTime and see how it looks.

The way to create a *smooth* movie is to insert transitions (or effects) that take the viewer from one image to the next. While there are many different transitions you can use, for the novice I suggest using the **Cross Fade** effect for all of your transitions. Just as with images, to insert transitions you can take two different approaches.

Batch Approach

Here are the steps involved for the batch insertion of transitions into a timeline. This approach is much quicker than the manual approach.

1. Make sure the timeline has **Slide View** selected.
2. Click on the **Effects** shelf in the assets area.
3. Click on the **Cross Fade** effect.
4. Click on an image in the timeline.
5. Do *control-A* (or *command-A*) to select *all* of the images in the timeline area.
6. Go to the OPTIONS menu and select **Set Transition for Selected Slides**.
7. Within a few seconds you'll now see that there's a transition placed between all the images in your timeline. You can also see that each transition is set to be two seconds in length.

Manual Approach

Here are the steps involved for the manual insertion of transitions into a timeline.

1. Make sure the timeline has **Slide View** selected.
2. Click on the **Effects** shelf in the assets area.
3. Click on the **Cross Fade** effect.
4. Drag the transition to the timeline between two images. You'll see the images move apart to make room for the transition. Release the mouse click.
5. Click on a transition again and drag it to the timeline between two images.
6. Repeat as needed.

Batch Insert Timings

You've created your time sheet so that you can figure out how long each image/effect pair should stay on the screen. You'll make life simpler if you make *all* of the transitions between images the same length. The two second default timing for effects is generally a bit too quick. Especially when using the **Cross Fade** effect, you'll want a longer and smoother transition. In practice a three second cross fade works well. To change the timing of an effect you click in each effect's timing area within the timeline, backspace, and type in 3 (or some other number) instead of two. This is easy but can be boring if you have lots of transitions. Here's how to *batch change* the transition timing:

1. Click on any one transition in the timeline with the **Slide View** selected.
2. Go to the EDIT menu, then chose the **Select** option, then the **Transitions** sub-option. Voila, all your transitions are now selected (as indicated by yellow outlines around each one).
3. Go to the OPTIONS menu. Choose **Set Selected Transition Times**.
4. In the ensuing dialog box enter the number of seconds (e.g. 3) that you want each transition to be.

That's it! Now if you export your work as a QuickTime movie and you'll see that not only are the images in the correct order, but there's a smooth transition from one image to the next.

Insert Audio

This is the last step before you start to work on the detailed timing of each image. Here are the steps you need to take to include your audio in the movie.

1. Make sure the **Time View** button for the timeline is selected.
2. Scroll to the beginning so that the first image shows in your timeline.
3. Select the **Sounds** shelf in the assets area.
4. Scroll down and find your MP3 file. Click on it so that it is highlighted by a thin yellow line.
5. With the mouse button still selected, drag the MP3 file from the **Sounds** shelf to the light grey area of the timeline just under the images and transitions, then release the mouse button.
6. Depending on the length of your audio file it may take LiveSlideShow up to two minutes to render the sound wave for the file.
7. Check exactly where the audio file begins. You may find that it actually starts at something like ten seconds or more. If so (and this is likely) then just click on the sound wave and it becomes highlighted in yellow. Now click and drag the sound wave to the left until the beginning of the sound file starts at zero.

Now if you export your movie into a QuickTime format you'll find that all of your images show the transitions between them are smooth, and the audio plays just fine. What will *not* be working is any synchronicity between the images and the audio.

These first steps of putting images, transitions, and audio into the timeline takes me less than three minutes. It will take you longer because this is your first time creating multimedia projects with LiveSlideShow. However, the point is that these first steps don't take very long. The detailed work of getting the timing for each image correct comes next.

Section Types

It's useful to make a distinction between what I call *simple sections* and *complex sections*.

- **Simple Sections.** This is any numbered section in your script for which you will use only one image.
- **Complex Sections.** This is any numbered section in your script for which you will use two or more images.

If this is your first multimedia movie, then you likely have more *simple* sections than *complex* sections. However, it really doesn't

matter whether you have more simple or complex sections. What matters is that you are able to clearly identify each type of section.

Not sure if a section uses one or more images? It's simple to tell by looking at your image names. If an image is named **12a**, then that's a very good indicator that it's one of several images to be used in section **12**. On the other hand if an image is named **05**, then that's a good indicator that it's the only image used to illustrate that section.

Simple sections are much easier to establish the timing for than complex sections. For this reason we're going to do the timing of the images in two passes. First we're going to treat all sections *as if* they are simple sections. Later you'll return and refine the timing within each complex section. I term this macro and micro timing, and each is defined below.

- **Macro Timing.** This is when you get the collective timing for all the image/transition pairs in a section to be aligned with the audio. Let's consider two case studies of macro timing:

    1. You have a *simple section* that is 17 seconds long. You've set all your transitions to be three seconds long. This means the one image in this section is 14 seconds long and the transition is three seconds, so the image/transition pair equals 17 seconds exactly.
    2. You have a *complex section* that is 17 seconds long. The section contains three image/transition pairs, with each transition three seconds in length. That means you have a total of 17 - 9 = 8 seconds for the three images collectively. It doesn't matter how you divide up the timing for each image as long as their *total* time is eight seconds. For example, you could use a 2-2-4 timing, a 3-3-2 timing, or some other combination. It doesn't really matter at this point as long as the end result is that the three image/transition pairs take up exactly 17 seconds.

    Notice that when doing *macro timing* on a complex section that the timing for the section as a whole will work (i.e. the next section will start at the correct time), but the timing *within* the section is likely to be incorrect.

- **Micro Timing.** This is done only *after* you have successfully gotten all of the macro timings of sections completed. In micro timing you're trying to refine the timing *within* complex sections. Thus micro timing is when you get the timing for all the image/transition pairs in a complex section correct. This involves taking a closer look than you had done previously to the timing within a complex section. You'll make life much simpler for yourself if you first do macro timings for all the sections, then go back and do micro timings of just the complex sections.

Macro Timing

The major work involved in creating a multimedia project is making sure the audio and the images are *aligned*. You have created a time sheet to help reduce the complexity of this task.

Think Pairwise

One place where beginning students get tripped up is that they are very aware of the length of an image, and they are very aware of the audio, but they tend to forget that transitions take time too! You've made all your transitions the same length (let's assume three seconds each). Now what you need to keep in mind is that if your time sheet tells you a particular image should last 27 seconds then what that *really* means is that the image-transition pair should last 27 seconds. Thus the image should last 24 seconds and the transition should last 3 seconds so that you have an image-transition pair that takes up exactly 27 seconds.

Add Chapters

The first thing you're going to do is to add chapters to your movie. This will make the work of checking out draft versions of your movie much more efficient. Chapters are like *multimedia bookmarks*. If you've created chapters in LiveSlideShow then it's easy to check the timing of specific sections in your QuickTime movie by selecting the relevant chapter. If your script had 12 sections then you'll typically want to create 12 chapters in LiveSlideShow.

Let's pretend you know that you have the timing down just right for the first five sections of your movie. You now export a third draft version of your movie. Instead of having to watch the first five sections *again*, you can simply select the chapter for section six and watch the draft movie starting at that point.

Here's how to create chapters in LSS:

1. Make sure the **Slide View** for the timeline is selected.
2. Find the image that will first appear at the start of the first chapter. Typically this is the first image in your timeline. A chapter should be placed with the first image for a new section.
3. Single click in the grey area just above the selected image. Type in the *short* descriptive name for your chapter. At this point it's probably best to use very obvious naming such as "Section 1" and so on.
4. Find the image that will first appear at the start of the next chapter.
5. Single click in the grey area just above the selected image. Type in the short descriptive name for the chapter.
6. Repeat steps 5 and 6 until finished.

Simple Sections

Remember that *simple sections* are sections that contain only one image. Here's how to do the macro timing for your simple sections:

1. Select the **Slide View** for the timeline.
2. Make sure your time sheet is with you.
3. Click on the image that illustrates the section.
4. Check your time sheet (let's assume the time sheet says the section should last 15 seconds). Subtract the number of seconds the transition will last (15 -3 = 12 seconds).
5. Click on the time box within the image (top left corner). You may have to backspace to get rid of the old time. Then enter the new time (i.e. 12 seconds).
6. Go to the next image that illustrates a simple section.
7. Repeat steps 4 and 5.
8. Repeat steps 6 and 7 as needed.

Complex Sections

Remember that *complex sections* are sections that contain multiple images. Here's how to do the initial rough draft macro timing of complex sections.

1. Select the **Slide View** for the timeline.
2. Make sure your time sheet is with you.
3. Click on the first image of a batch that illustrates a complex section. Let's assume that we have three images in the complex section.
4. Check your time sheet (let's assume the time sheet says the section should last 21 seconds). Subtract the total number of seconds the three transitions will last (21 - 9 = 12 seconds).
5. Click on the time box within the image (top left corner). You may have to backspace to get rid of the old time. Then enter the new time for each of the three images. Just make sure their total time equals *section length minus total transition length*. In our example the three images should collectively last 12 seconds. Probably the easiest approach in this case would be to make each image last four seconds.
6. Go to the next first image within a complex section.
7. Go to the next complex section. Repeat steps 3 through 6.
8. Repeat step 7 as needed.

Time View Auditing

As you've probably noticed, we've made very little use of the **Time View** version of the timeline. In fact, so far we've used it only to insert our audio file into the timeline. However the **Time View** is of great value in making sure that our timing is correct. When using the **Slide View** for creating timing you have no way to double-check your input: you can see the number of seconds you've inserted for each image and transition, but you *can't* see exactly where they start in a continuous timeline. The advantage of the **Slide View** is that it's easier and quicker to use because you can easily tab from one image to the next plus the "length" of each image is the same. On the other hand, the disadvantage of the **Time View** is that images mimic their length in this timeline. An image that lasts for 2 seconds will be much shorter than one that lasts for 30 seconds. Yet the **Time View** has the huge advantage of you being able to tell exactly where each image starts along a continuous timeline.

In general I use the **Slide View** for inputting all my basic timing values from my time sheet. I then switch to the **Time View** to double check to see if my timings are actually correct. For example, my time sheet tells me that "Title 02" should begin at 2:17. In the **Time View** I can see if that's exactly where it starts, and if not, how far off the timing is.

The **Time View** allows you to look at the timeline with various degrees of detail. The default setting is that the timeline is marked in 3-second intervals (i.e. you'll see 1:03 then 1:06 and so on). At the far left of the timeline area (just under the actual timeline), you'll find two icons. One looks like "small mountains," the other looks like "big mountains." These icons allow you to change the intervals used to mark up the timeline. Click on the "small mountain" icon and then the timeline will be divided up by 5-second intervals. Click on the "big mountain" icon and the timeline will be divided up into 2-second intervals. I always click on the "big mountain" icon so I see 2-second intervals: this makes it easier for me to know at a glance where an image begins if it falls in between the interval markers.

As general steps this is how I'd suggest auditing your movie's macro timing:

1. Switch to **Time View**.
2. Click on the "big mountain" icon so you see interval markers every two seconds.
3. Scroll to the very beginning of the movie's timeline to make sure that the audio file begins at 0. If not drag the audio sound wave over to the left until it "bumps" into the beginning of the timeline. (Note: if the audio is not positioned correctly in the timeline then all of your timings will look incorrect even if they were placed correctly.)

4. Scroll to the image that begins each section (simple or complex). Check to see that the image begins at the exact time you have written down on your time sheet.
5. If there are any misalignments then make sure to fix the problem. Typically misalignments result in the timing being off by only one or two seconds.
6. Continue until all sections (simple or complex) have been audited and fixed.

Macro Draft Movie

After doing the macro timing and auditing for all of your sections, you're now ready to export your work as a QuickTime movie to check to see if there's a perfect match between the audio and the overall length of each section. (Remember, at this point you *don't* expect a good match between the audio and images *within* a complex section.) Specifically the macro draft movie should have these features:

- ✓ The total length of the images and the length of the audio should match (e.g. the audio should not end and you still see two more minutes of images).
- ✓ Each section (simple or complex) should start and end with the right timing.
- ✓ All simple sections should have perfect timing.
- ✓ The complex sections should have perfect overall timing but will need specific adjustments to images *within* the complex sequence.

If your rough draft movie does not have the above features, then you need to figure our where your rough draft timing went off.

Fix the Draft

In order to fix a bad draft notice where the timing begins to go off (not including specific slides within a complex section) then go and fix the timing for that particular section. Export the movie and play again. Often times when people have "bad drafts" it only means they needed to refine the timing of one to three images. When your draft macro movie meets all of the four criteria above, then go on to establish the *micro timing* for the movie.

- ► **Use Your Chapters.** When you open your QuickTime movie you'll notice the chapter tracks in the controller bar. Let's say you know the timing is fine for sections 1 through 3. Then select "Section 4" from the chapter list and start watching the movie from that point onwards. By taking advantage of chapters makes it much quicker to navigate to problem areas in your draft movie.

Micro Timing

You now have a movie that runs fairly well. The timing gets a bit off when proceeding through complex sections, but the overall timing of each section is correct. The final phase of getting the micro timing for each of your complex sections correct is the most detailed, and for many, the most difficult part of the alignment process. Before we look at specific steps to take, I want to present you with five general tools that may help you with this final stage.

Five Micro Tools

There are five key tools/procedures you should be aware of before getting into the home stretch of the final alignment.

- **The QuickTime Controller.** You'll need to carefully look at the movie in QuickTime and pay attention to *both* the audio and the images. Please note that the QuickTime movie shows you a timer. By listening, looking, and paying attention to this timer you can get a good sense of how to adjust your image lengths within a complex section.

Figure 9.5. *QuickTime playing movie with controller bar visible.*

- **QT Movie NoteTaker.** This is a free cross-platform program. You may want to use it instead of QuickTime. This program allows you to open a QuickTime movie within it. It also contains a notepad area. Just by using the right bracket key (just above and slightly to the right of the comma key) you can start and stop your movie. But wait, it even does more! Each time you stop it places the exact time of the stop in the notepad area and you can add whatever comments you want in addition to the timestamp. This is probably an easier, more efficient way to write down the details of micro timing for specific sections. It recognizes QuickTime chapters, so

you can quickly navigate to only those sections that need micro timing. Currently the program is at the 0.5 stage which means it's not even at version 1. However, it's free and despite some quirks works amazingly well.

You can download QT Movie NoteTaker at:

http://www.dvcreators.net/qt-movie-notetaker/

- **Total Changes Equal Zero.** The overall length of the section must remain the same, but typically you may have to shorten one image by 1 second, another by 2 seconds, and lengthen the third by 3 seconds. Note that the total effect of all the changes within a complex section (-1, -2, and +3) should equal 0 to the overall section timing.

- **Conquer and Divide.** If you have complex sections made up of two images then fix them first (they'll be easiest). Then go on to fix the sections with three images, then four, and so on. It doesn't matter if your only complex section with two images is towards the end of your movie: fixing the shorter complex sections first is a much easier task. Leave the harder tasks for the end. For example, fix that 8 image sequence used in one section, irrespective of where it appears in the movie, last.

- **Export and Check.** When you think you've fixed one or more complex sections then export as a movie and check the timing in QuickTime. Fix a small number of complex sections first, export, check, refine if needed, and solve *before* going on to fix other complex sections. Remember to take advantage of the chapter feature to quickly navigate near the area you want to look at.

Micro Timing Steps

Micro timing need not be difficult if you take an organized approach plus tackle your easier problems first. Here's the basic strategies will be using:

1. Watch the draft movie. Make a note of those complex sections in which the timing is off. Probably most (if not all) of the complex sections will be off in terms of timing within the section at this point. However, your earlier, seemingly random timings will happen to be correct about 10% of the time.
2. Using **QT Movie Notetaker** (or the timer in the QuickTime controller) write when specific images *should* appear within the section. Your first image in a complex section will always start at the correct time, but subsequent images are likely to have faulty start times.

3. Go to each complex section with faulty timing and manually make the changes as needed to individual images. Remember that the total changes within a section *need* to equal zero as the overall timing for the section was already correct in the macro draft movie.
4. Use the **Time View** to check the length and start time of each image within a complex section.
5. Export and check the results of your manual changes. It's advisable that you export and check the movie after fixing 1-to-2 complex sections to make sure there are no mistakes. This is better than making adjustments to 10 complex sections and then finding several mistakes remain. The problem is that it's not always obvious in what specific complex section the problem occurs.
6. Repeat steps 2 through 7 as needed.

Congratulations! You should now have successfully completed your movie except for a few simple finishing touches.

Finishing Touches

Sometimes you'll need to revise your audio or your images *after* you've gotten to the LSS production stage. Changing your audio is a bigger problem than changing your images. Put simply, changing your audio will mean re-doing the timing sheet.

Revising Images

When you need to change or update an image this need not be a big problem. Let's pretend that after showing your movie to a couple of friends they both tell you the title image is too confusing. You then revise this image so it's clearer, uses bigger fonts, and so forth. Redoing your LSS work, however, can be fairly painless.

- **Image Renaming Trick.** The key is that when you create a revised image you give it *exactly* the same name as the one it is replacing. In fact when you put this new image into your Images folder your operating system should ask if you really want to replace the older image with the newer one. Your response should be "yes." When you reopen your LSS project file the new image has automatically replaced the old one in the timeline: same position, same timing. All you need to do is export the movie again!

Final Chapter Names

You don't need many chapters for your end users. For instance, in a 10 minute movie I might have 20 sections but those sections could all be collated into a few chapters such as: Introduction, The Theory, An Example, The Research, and Summary. This means you want to delete many of the chapter names you had inserted before. And the chapters that are left should be renamed so instead of the end user seeing "Section 1" they see something like "Introduction." Once you've finalized the chapter names then export your final movie.

Extra Options

I've presented a highly stylized approach to creating a multimedia project using LiveSlideShow. I've done this because this approach will help most students when they create their first multimedia project. However, LiveSlideShow itself is a powerful and flexible software product that includes features and options that I have not discussed in this chapter.

The Manual

LiveSlideShow comes with a manual on the CD. While the manual covers much of the same material as in this chapter, please be aware that it covers additional features and approaches to using LiveSlideShow that have not been covered in this guide.

LSS Text Option

One of the very seductive options for some students is that LiveSlideShow provides a way to very easily insert text into a slide. This can be a pretty nice feature but beware:

- ✓ Using the "insert text" option means understanding how to use the text box area within a slide. Since we have not covered the issues of text areas, background areas, and image areas then you absolutely need to read the LSS manual first, otherwise you will quickly become frustrated and confused about how the insert text option really works.
- ✓ While the insert text option is a nice add-on, the approach I've given you to create title images leads to a much higher quality in the resulting text images.

For both quality and quantity issues, please don't try to use the text option feature within LiveSlideShow when constructing your first multimedia movie.

Summary

This chapter has provided you with a lean and mean approach to using LiveSlideShow. LSS is your electronic glue to organize and combine all of your images, transitions, and audio into one seamless well-running multimedia movie that you can share with the rest of the world.

The chapter began by looking at how to organize all your raw materials in a methodical and integrated fashion. You then were given a short tour of LiveSlideShow. You were then provided with step-by-step instructions about adding images, transitions, and finally audio to your timeline. The most important part of the multimedia integration process is getting a proper alignment between images and audio. The last few sections provided instructions and strategies for first creating the final movie.

Please note that while most of you have probably created a multimedia movie as part of a course requirement, the same essential steps will allow you to create many other kinds of multimedia products including other products for academic or personal use.

Exercise 9

Using the images and audio that you've already created from earlier exercises, now put them together with proper alignment to create the final multimedia movie titled, "My Story."

Please name your movie, "YourFirstName.mov." So, if your name is Anna then the final QuickTime movie should be named, "Anna.mov."

The final movie may be small enough (under 5 Mb) to send to me via an email attachment, otherwise please bring to class or my office on a Flash drive.

10 *Delivery*

Chapter 10

Edcasting

Overview

This chapter describes the last steps in the multimedia development process and offers some thoughts on the potential role that creating multimedia may have in terms of improving student learning and educational leadership.

The finishing touches you add to a movie in LiveSlideShow are fairly simple and straightforward. However, it's important to do each of the finishing steps in order to optimize the end-user's experience. There are four essential steps: adding/deleting chapters for end users, adding the movie controller option, adding the full screen movie option, and providing the final name for your movie.

Once LiveSlideShow has exported the materials into a QuickTime movie, then you need to deliver your movie to your end users. I provide two scenarios: you as student and you as instructor. Although all the details are not covered, this chapter does give you a sense of how to prepare your movie with other relevant materials into a *learning package* ready to be used by your students.

The chapter then looks at the various skills you've developed through this book and how they can be used to develop six different types of multimedia learning products. Needless to say, this book does not cover all the skills and tools you need to become a multimedia expert. The subsequent section provides suggestions on how to continue your multimedia creation education through the use of books, websites, software, and hardware. The chapter ends by taking a brief look at the key role that multimedia plays in terms of educational leadership.

Chapter Model

The chapter visual model on the next page provides a schematic overview of the key multimedia skills you'll learn in this chapter. Notice that there are four key areas to the model. The first area represents the last few steps you need to take *with LiveSlideShow*. The second area simply represents the exported QuickTime movie that will be on your hard drive. The third area describes the options for delivering the final product to your instructor. The fourth area describes the steps needed if you want to prepare the QuickTime movie to be delivered to your students.

Delivering the QuickTime Movie
Within LSS
Create Chapters for End Users
Add Movie Controller Option
Add Full Screen Movie Option
Final Name and Export
Exported QT Movie
Deliver to Students
Package
Zip Package
Data CD
Website Download
Deliver to Instructor
Package
Flash Drive
Data CD
Website Download

Finishing Touches

Remember that LiveSlideShow is a multimedia *database* that stores information such as which images to use, how long, and so on. The LiveSlideShow file itself is *not* a multimedia movie. To create the movie you need to use the Export button which tells LiveSlideShow to now create a movie based on all its database information. The movie itself always ends up being a QuickTime product. However, before you press that **Export** button one last time, you'll want to add some finishing touches to your movie.

Chapters for Users

If your movie is longer than 7 minutes, chapters are a benefit so the end user can easily navigate to specific sections of your movie. For most of you the problem is you may have *too many* chapters in your final movie. You then must decide which chapters you want to include. Generally speaking, if your movie is between 7 and 12 minutes long then you'll probably want between 3 and 6 chapters. The chapters should be placed at conceptually important places in your movie such as "introduction," "theory," "example" and so on.

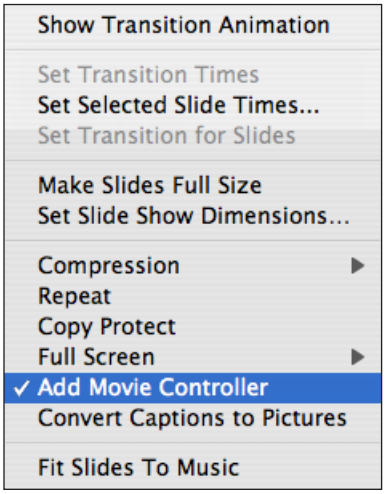
Once you've decided on what chapters you want to include for your end user, then go through the timeline in **Slide View** and remove any extra chapters. (Or, if needed, add the needed chapters.) When you have only the chapters you want in the final product, then go through and make sure they are named exactly as you want them. In most cases it's useful to have a numeric introduction so that a chapter might read, "2 Theory," instead of "Theory." That way the end user knows the chapters are sequentially arranged and instantly have a better idea of how specifically you have partitioned your movie.

Add Movie Controller

If you go into LiveSlideShow and click on the OPTIONS menu you'll notice several choices. You haven't had to use the OPTIONS menu before because if you used the LSS template then I made certain decisions regarding the various choices for you.

On choice under the OPTIONS menu is titled "Add Movie Controller." This should already be activated by a check mark as indicated in Figure 9.1. However, if for some odd reason it has been deactivated then you want to re-activate this option so that your end user sees the movie controller. If the end user does *not* see the movie controller, then they also won't be able to use the movie chapters that are placed in the controller bar.

Figure 9.1. *The OPTIONS menu*

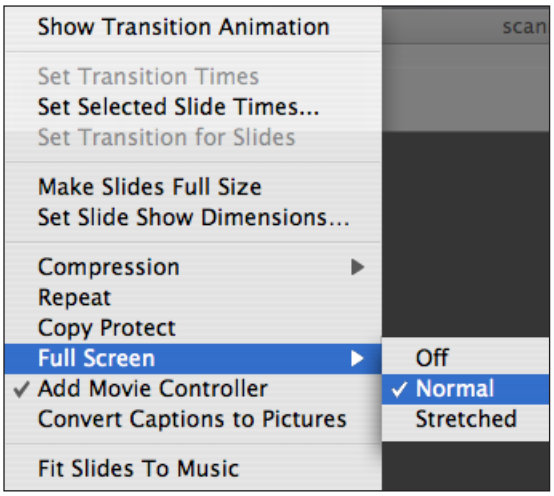


Add Full Screen

When you export a movie it always appears on your screen in "regular" mode and you see the controller bar and the surrounding brushed metal outline of the QuickTime movie player. You've no doubt noticed that all of the example movies you've viewed automatically enter "presentation" mode. In presentation mode the movie automatically takes over the screen. This means the viewer only sees the movie and the rest of the screen is black. This is the preferred look to a *final* QuickTime movie.

To make sure your final movie is in the correct presentation mode, click on the OPTIONS menu and select the Full Screen sub-option as shown in Figure 9.2. Be very sure to make sure that the "Normal" option under Full Screen is selected. Currently Full Screen is selected to be "Off." By the way, the "Stretched" option makes your movie the full size of the screen by stretching all your images, typically making your movie look quite bad.

Figure 9.2. *Set Presentation Mode*



Final Name and Export Now you're ready to do the final export. When the dialog box comes up after pressing the **Export** button, make sure to name the movie in the way you want the end user to see it.

Packaging the Movie

Sometimes you'll simply want to deliver your movie to your instructor (or to your students). However, there are some classes where you'll need to deliver the movie and some additional materials to your instructor. In that case make sure to create a new folder with an appropriate name (e.g. Susan's Project) and make sure the folder contains both your final movie and also any other required products that need to be delivered to your instructor.

The same situation applies to delivering products to your own students. Often you'll want to package the movie along with other instructional materials for your students to use. Again, make sure to create a new folder with an appropriate name (e.g. Session 8 Package or Reading Strategies Package). Then make sure the folder contains *all* of the materials you want to deliver to your students.

Delivering to the Instructor

Your final movie will likely be somewhere between 7 to 30 Mb in size. This means the final movie will be too large to send as an email attachment. There are three good options for delivering the movie to your instructor: flash drive, data CD, or a website download.

Flash Drive Currently flash drives are the least expensive and most portable way to carry electronic information. There are several inexpensive products available such as the SanDisk Cruzer micro (256 Mb which sells for about $25).

Figure 9.3. *The Cruzer flash drive.*

A 7-30 Mb movie will easily fit onto a 256 Mb flash drive. This is the easiest way to bring the movie to me at the last class session or

to my office.

Data CD

The second best way to deliver the movie to me is to burn a data CD that contains the QuickTime movie. You need to make sure that you burn a cross compatible CD (one that can be recognized on both Window and Mac machines). This option is typically only better if you're going to send me the movie. Otherwise you're only using up 7-30 Mb out of the total capacity of about 700 Mb that can be stored on a CD.

Website Download

Some of you may have a website, or access to a website server. If you do then you can easily save the QuickTime movie or package to your server and provide me with the exact web address where the file is located. Although not necessary, it makes things a little easier if you zip the QuickTime movie or package and post it to your server as a zip file. Mac users can download the free *CleanArchiver* to do this (see VersionTracker.com). Windows users can download the free *ZipGenius* (see VersionTracker.com).

Delivering to Students

This is an optional section for those interested in learning how to easily prepare learning packages for your students to use. The most important aspect of this section is being aware of the benefits of zipped folders. Furthermore the section describes where you can find good zipping software for both Windows and Macs.

Using Data CDs

The chapter visual model indicates that one way to deliver learning materials to your students is by burning data CDs. Since CDs are fairly inexpensive, this approach is very attractive. And, if you do not have access to a web server through your own website or a product such as Blackboard or WebCT, then you may need to use data CDs to deliver electronic content to your students.

However, here are some disadvantages of using data CDs relative to using a web server:

1. You need to have the capacity to burn many CDs easily. If you have 10 students in a course, then burning all 10 CDs on your own computer is not a big problem. But if you have 40 or more students, then you'll want to have access to a CD duplicator.
2. Typically most instructors will want to burn a course CD once only: at the beginning of a semester or quarter. The disadvantage of this approach is that you have to have all your materials prepared before the semester begins *and* you have no easy way to add new materials electronically later.

The above disadvantages are huge. Combined with the fact that almost all of your students will have access to high-speed internet access, then the disadvantages become even more glaring. However, in some situations, where you don't have access to a web server

or too many of your end users won't have high speed access, then data CDs are the only way to go.

The rest of this section assumes that you do have access to a web server.

Zipped Packages

Once you've created a package of learning materials, or even if you just have a single QuickTime movie, there are several advantages to zipping the package. A zipped file or folder is a compressed version of the file or folder combined into one "zip" file. Here's some key advantages to zipping:

1. Zipped materials are often 25 to 40% smaller than the original material. This is less true with QuickTime movies, but it's a good rule-of-thumb. Smaller files mean it's quicker to download.
2. Every web browser I know recognizes a zip file as something that should be downloaded to your hard drive. Thus, if you click on a zipped file then a download automatically begins.
3. Browsers vary, especially depending on user-set preferences, on how they handle MP3 files and MOV files. Many are set to play these files within the browser itself. While you can always download these materials to your hard drive, it's not as intuitive or automatic as when using a zipped file.

For these combined reasons, a key step in preparing your learning materials for your students is to put all the materials into one folder and then to zip that folder. Let's look at how to do this on both operating systems.

Windows Zipping

Zipping is very simple in Windows. There are several low-cost or free products for ding this. *WinZip* is probably the best known zipping product: it both zips and unzips. However, there are other good options such as FreeZip and ZipGenius (both are free). Since these products are mainly created and updated by small programming companies or individuals, please go to *VersionTracker.com*, search for zip software, and download 2 or 3 products that seem to be good. Obviously give either FreeZip or ZipGenius a try if you don't already have WinZip. All of these software products work in a simple manner, but you might find that some work more simply and more effectively for you. After some testing (including both zipping and unzipping), choose the product you want to use.

Macintosh Zipping

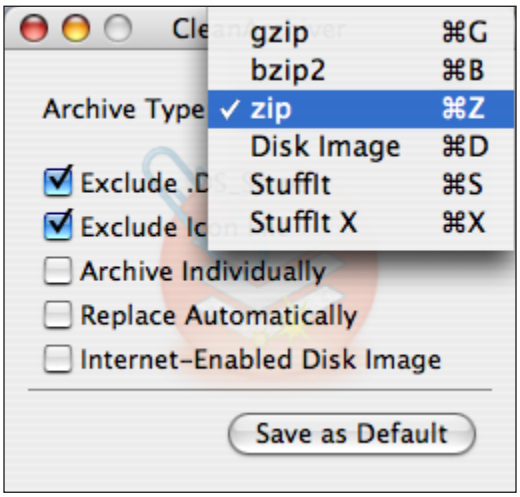
It's trickier to zip files and folders on the Macintosh. The issue is not the zipping *per se* but the problem with invisible files that the Macintosh operating system uses. These files are, well, invisible to Mac users but are visible *and* confusing to Windows users. Specifically these invisible files store information for each file you have regarding how you want to view the file/folder in the operating system: what size you see the icon, how the icons in a folder are ordered, and some other things. Technically speaking these are called **.ds_store** files. They always begin with an underline but

otherwise have the same name as the file/folder they are attached to. Thus to a Windows user it's pretty confusing which one is the "correct" file. Put differently, when you zip for users on multiple platforms you want to make sure to get rid of the .ds_store files. Fortunately there's a free and easy way to do this.

Go to *VersionTracker.com* and find the software product called *Clean Archiver*. Download this software. Once downloaded and stored on your hard drive, start up *Clean Archiver*. You'll see a screen like the one below. Notice that you are given several options.

The first step to take is to set the correct **Archive Type**. If "zip" is not already selected, then click on the bar to the right of **Archive Type** (see figure below) and select "zip."

Figure 10.3. *Clean Archiver compression options.*

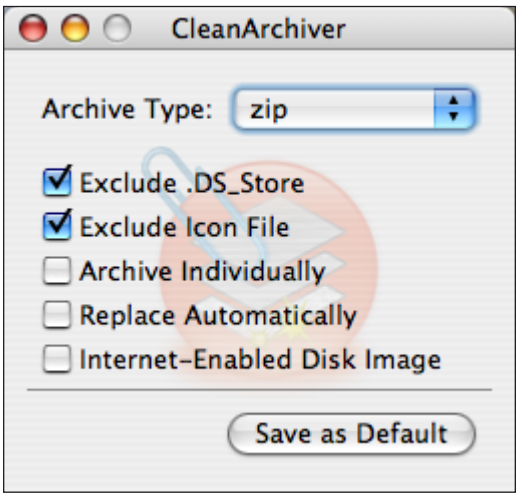


Now that zip has been selected it's crucial that you take three more steps:

1. Make sure the "Exclude .DS_Store" box is checked
2. Make sure the "Exclude Icon File" box is checked.
3. Click on the "Save as Default" button at the bottom of the screen.

Once you go through all of these steps then whenever you open *Clean Archiver* in the future these settings will automatically be made for you as they've now become your default settings.

Figure 10.3. *The Clean Archiver screen.*



Website Download

Some of you may have a website or access to a website server. This could be a personal website or an institutionally supported website structure such as **Blackboard** or **WebCT**. If you do then you can post the QuickTime movie or learning package to your server. If the materials are in a zipped format, then when the user clicks on the relevant link the files or folder will automatically start downloading to the computer hard drive. Since there are so many different website applications, you'll need to refer to your specific software or web-based application (such as Blackboard) for details on how to create links and to upload your files to the relevant server.

There are several advantages to web downloads now that most students have access to high speed downloading. It means that you can update your website on an ongoing basis. Not all of your materials as an instructor need to be completed before the semester begins. If additional reading or other materials become available during the semester then they can easily be included in any learning packages you create for your students.

Data CD

The second best way to deliver materials is by burning a data CD or a data DVD. A DVD will hold 4.7 Gb of information if you're using one-sided DVDs. A CD will hold about 700 Mb of information. As noted earlier in the chapter this approach has several disadvantages mainly in that either all of your materials need to be ready *before* the academic term begins or you'll need to burn multiple disks.

Multimedia in the Classroom

You've made your first educational multimedia product. Now it's time to reflect on the variety of skills you possess. With only some small additional skills you are ready to create six different kinds of multimedia products. Let's look at each of them in order of complexity (simple to difficult).

- **Audio Podcast.** I'm using "podcast" in a loose sense of the term, but from the skills you now possess it's possible to conceptualize an academic storyline, write the script, and audio record that script at a high level of quality. If you have a website and web server account then you can make such an audio available to your students. People often say, "Well, it's only audio!" Consider, as an example, that you've just been diagnosed with a serious illness. The doctor explains the illness and how to treat it in great detail. But you're in shock and can only absorb about 10% of what she tells you. On the other hand, imagine she made a high-quality audio recording of her discussion with you, including answers to your questions. You could play that audio at a later point when you're not so stressed to make sure you really understand the illness and what you need to do. It's only audio, but it can be very helpful.

- **Audio Enhanced Podcast.** An "enhanced" podcast is one that can include small images (300 pixels by 300 pixels) and chapters. For long audio files it's quite useful to have the audio broken up into chapters. For some topics it would be equally useful to see small pictures (especially if the audio were about a technical or scientific topic). You have all the skills for making an enhanced podcast but would need an additional piece of software to help insert the images or create chapters in your MP3 file. This is an area where there's much current software development. The best software I know for creating enhanced podcasts is called *Podcast Maker* (Mac only, $29). However there will be other good products on the market by the time you read this guide.

- **Audio Podcast Package.** This is a variation on the audio podcast. Instead of using audio only, a package would include any other documents or files that you'd want to bundle with the audio to make a complete learning package. Such a package might include PDFs, Word documents, relevant images, and more in addition to the audio podcast.

- **Image-Only Movie.** Effective QuickTime movies need not always have audio. Sometimes effective images, combined with short text images, create a clear and compelling educational movie. LiveSlideShow can easily create such a product for you.

- **Self-Paced Movie.** Sometimes you don't want the audio, or images, in a movie to play at a predetermined pace. Instead you want the

user to *control* the pace. This is accomplished through the use of navigation buttons. A feature of LSS that we did not use was the ability to add such buttons to your movie. The trick in this is that you need to divide your audio into separate MP3s for each of the images. If you have 20 slides that need audio then you need to divide your audio into 20 small clips or regions. This is fairly simple to do via editing techniques in Audacity, Peak, or Audition. The benefit is your end-user can click to move forward to the next image and hear only the relevant audio for that one image, then can click again when they are ready to progress to the next image/audio pair. They can also re-listen to the audio that goes with the current image.

- **Integrated Multimedia Movie.** This is what you made: a self-running movie that integrates audio and visual materials. This is probably the most difficult type of multimedia to make because close attention needs to be paid to the exact timing of each image in the timeline. In addition, making your first integrated multimedia movie is the hardest. It gets easier and easier as you create more.

Although you may not use all of these six formats in your own instructional practice, it's still useful for you to be aware of the many ways you can parlay your current multimedia skill set into a variety of different learning products that may meet the needs of your learners.

Continuing Education

The best way to learn about how to create and use multimedia is to continue to explore making multimedia yourself, and to look at what other people are doing with multimedia. You've got very important and marketable skills up your educational sleeve now.

There are several resources for expanding your skills. Probably the two most important sources are books and websites. However, your institution may offer specialized sessions on key multimedia tools such as podcasting or PowerPoint or other tools. In addition, such learning sessions may be available in the community where you live. Keep your eyes open because these learning sessions (free and commercial) can be a fantastic way to deepen and expand your skill set.

Books

Keep your eyes out for new books. For instance, several books have been published in the last six months about podcasting. That said, the software you will use with the deepest and richest feature sets are your audio editing/mixing software and any professional level image creation program such as Adobe Illustrator, Adobe Photoshop, or Adobe Photoshop Elements. In all of these cases there are typically one or more books available that go into detail about how

to best use these programs.

Review comments at **Amazon.com** can be extremely useful in figuring out whether a specific book may be useful for you. Make sure to read over the comments carefully. That said, here's a very short list of some useful books for furthering your education:

- **BIAS Peak.** This Mac-only audio recording and editing software program recently had a very good book published about it:
  - ✓ *Power Tools for Peak Pro* by David M. Rubin.
- **Adobe Audition.** This Windows-only audio recording, editing, and mixing software has eight books written about it. Several seem to be good, but one in particular seems useful:
  - ✓ *PC Audio Editing with Adobe Audition 2* by Roger Derry.
- **Photoshop Elements.** Not as many books as about Photoshop *per se*, but nonetheless many good choices here. There are general books about Photoshop Elements but also books that specialize in photography. Although there are several good choices, two seem particularly useful:
  - ✓ *Photoshop Elements 4 One-on-One* by Deke McClelland and Galen Fott
  - ✓ *The Photoshop Elements 4 Book for Digital Photographers* by Scott Kelby
- **Illustrator.** Although fewer of you will want to explore a professional illustration program, it can be really worth your while for creating great looking text, visual models, and other vector-based images. The best book I know of in this area is:
  - ✓ *Real World Adobe Illustrator CS2* by Mordy Golding.
- **PowerPoint or Keynote.** While these are simpler programs, it may be useful for some of you to get a good book about how to take full advantage of these programs. Please look over the *table of contents* and the like before buying to make sure the book is at a level that is appropriate for you. If you only need a few key hints about how to use the software you may be better off taking advantage of great information already available on the web.

Websites

There are a lot of websites that provide very specific advice about how to use individual software programs, hardware devices, and hints about creating multimedia. Take advantage of a *Google* search. Once you've found a website or discussion board that's useful for you, make sure to bookmark it and revisit it once in awhile.

Educational Leadership

The future of education is changing. A critical piece of the emerging educational challenge is to develop educational multimedia products that offer more effective and efficient instruction for students. There's no reason to believe the pressure to include effective technology into tomorrow's learning environments won't continue to increase in both the K-12 and higher education levels.

One of the biggest obstacles obstructing a faster implementation of relevant technology into education has been the lack of savvy educational leadership. Typically many of the individuals in leadership positions grew up at a time when technology was not prevalent, nor were computers an integral part of their classroom environments. Many leaders themselves acknowledge this problem, yet that trend is beginning to change.

You should know that your emerging multimedia skills put you in a better position for becoming an educational leader: either as a technology mentor, a decision maker, or as more desirable applicant as a principal, superintendent, or higher education administrator. It's probably fair to say that educational leaders tend to want to be not too far ahead of the curve. Yet it's equally true that they realize there's key negatives associated with being too far *behind* the curve. The multimedia and technology demand curves are moving ahead at a brisk pace, and future leaders need to be somewhat in synch with this ongoing change. Thus, even if you don't continue to *make* multimedia, by having a deeper level of understanding regarding the process of creating multimedia and the variety of circumstances where such products can help learners, make you a much savvier multimedia *consumer*. In turn, this increased level of multimedia savvy can make you a more insightful and helpful educational leader.