

Digital Restoration from Start to Finish

Digital Restoration from Start to Finish

Second Edition

Ctein

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DEDICATION

To Paula Butler and Laurie Toby Edison

With love and admiration

Now and always

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PREFACE

What's New in the Second Edition

More than one-third of the text in this second edition of *Digital Restoration* is new material, but none of the information from the first edition has been lost. Older material that I cut out to make room for the new is available online at <http://photo-repair.com/dr1.htm> in the form of Acrobat files. I extracted these from the PDF proofs of the first edition of the book, so it's really like you're getting a substantially bigger book (for no additional money).

What's new in this edition? Here are the highlights:

Chapter 3, "Software for Restoration," is entirely new. I'm using many new plug-ins and third-party software that really improve my productivity and make it even easier for me to do great restorations, and they're reviewed there (all the old reviews are online). The same is true for Chapter 11, "Examples," with the old examples moved online to make room for a new crop.

There's a brand-new Chapter 10, "Beautification." Making truly attractive prints from a photograph is a whole art form in itself (one of the many hats I wear it is that of custom printer for a high-end clientele). This chapter instructs you on many of the techniques that I use to make prints that are considerably better than run-of-the-mill.

Figuring out how to tackle a restoration job is often a challenge, so I've added a "Quick Diagnosis" guide to the end of Chapter 1. If you're not sure how to proceed on a restoration, look at the illustrations on these pages and see if there's a photo there that shows the same problem as yours. Next to that photo you'll find pointers to the pages in the book where I take on that problem.

To further help the reader learned how to solve specific problems, I've reorganized the content of the book to better separate the How-To's from the main text. The instructions are more concise and to the point so that you won't have to read as much narrative to learn how to perform specific kinds of corrections.

Finally, because my current computer is a lot more powerful than the one I had four years ago, I'm making a lot more use of adjustment layers and smart filters to do nondestructive corrections, and that's reflected in revised content. Nondestructive editing is the wave of the future, and it's a very good wave to catch.

Enjoy the new and improved *Digital Restoration from Start to Finish*.

pax,

Ctein

INTRODUCTION

Why Restore Digitally?

I love reviving old photographs. I get almost as much pleasure from saving someone's cherished, but presumably lost, photograph as from printing a brand-new one of my own. I enjoy it so much that I even started a second business (<http://photo-repair.com>) just for doing digital photo restoration.

Digital photo restoration is no more magical nor mysterious than ordinary photographic printing ... and no less. It still feels like a minor miracle has occurred when a lovely photographic print, brand-new or restored to life, appears before my eyes. But whether it happens in the darkroom or at the computer, that miracle is based in established routine, using tools and techniques that anyone can learn. Experience and skill count for a lot, which is why I'm a good printer (and restorer), but it's not a secret art. Anyone can learn to restore photographs, just as anyone can learn to print.

Digital restoration recovers and restores a photograph to its proper glory while leaving the original object unaltered. You can restore almost any type of original photograph—color and B&W; slides, negatives, and prints; sheet film, roll film, and glass plates. You can even reconstruct full-color images from color separation films or plates. The restoration process doesn't involve any physical manipulation of the original photograph beyond making a high-quality scan. All the restorative work takes place in the computer, not on the original photograph, which means there's much less risk of damage to the original than with conventional physical photo restoration.

Digital restoration can work wonders; it usually produces much greater improvements in image quality than conventional physical restoration. It's possible to recreate truly beautiful photographs digitally, something that is often impossible with physical restoration. If restoring the image, not the original photograph, is what's important, digital restoration is the safest and the best way to resurrect a photograph.

Digital restoration has one other significant advantage over physical restoration: The results are theoretically permanent. A physical restoration of a photograph is subject to physical deterioration, just as the original photograph was. With modern materials and techniques, physical restorations will probably last longer than the original photographs did, but they won't last indefinitely; no physical artwork does. A digital restoration has a potentially unlimited life. As long as proper procedures and precautions are in place, it can be maintained indefinitely in its pristine and original form.

A physical restoration is a unique object, just as the original photograph was. That rarity may be part of its value, but it's also a curse; the restored artifact is just as prone to loss or destruction as it ever was. A digital restoration can be shared with others as prints or images on a screen, it can be duplicated

exactly, and it can be stored in multiple places. Once a photograph is digitally restored, its prospects for remaining part of our culture become vastly improved.

Digital restoration can have many goals (see Chapter 1, “The Big Picture”), but the primary objective is to resurrect the photograph that was originally there. The heart of what I do is not painting, drawing, or hand-tinting. Restoration is never a matter of mere retouching. The only time I “create” parts of a photograph is when that area in the original is so badly damaged that there is nothing of the image to be recovered.

When you are restoring a photo, you’re doing much more than simply performing technical manipulation. Your goal may not even be strict restoration; you may also be reinterpreting the original photograph for different sensibilities and times, as you would when printing any photograph. Always think like a photographer, and never forget that you are working on a photograph made by some other photographer. Don’t lose sight of this; you want to be “in their head,” with the objective of making a beautiful photograph, not just a serviceable rendering.

You won’t always know where you’re going when you’re doing a restoration, because originals are often so badly deteriorated that you can’t even get a sense of what the photograph must have looked like until you’re halfway done. That’s different from most crafts, where the skilled artist can pretty well visualize what the final artwork should look like before ever picking up a tool. Nonetheless, when you start out, you’ll have some idea in your head of where you want to take the work. Always maintain an aesthetic sensibility about what you are doing and why, and always remember to take that mental step back from the work, look at it, and ask yourself, “Does this photograph look *good*?”

About This Book

I’m big on workflow. As my friends The Flying Karamazov Brothers put it, “It doesn’t matter how you get there if you don’t know where you’re going.” That’s why this book is much more than just a compendium of image processing tricks and techniques. I think it’s important to understand the entire job of creating a digital restoration from start to finish. The core of restoration is the magic you perform digitally in your favorite image processing program, but that core means little if you don’t have a good grasp of the complete work path, from getting the deteriorated photograph into the computer to preserving the restored image for the future. I want to make you aware of the context in which you do restoration and how to set up your working environment to do it.

This book mirrors the workflow as much as possible. The first three chapters set the stage on which you’ll work. That’s where I talk about your objectives and requirements for a restoration job, what computer hardware will best let you meet those goals, and what software is especially valuable for the restorer. I devote the fourth chapter to the subject of converting the photograph to digital form, because

extracting the maximum useful amount of data from the photograph is the key to achieving a good restoration.

The heart of the restoration process (and of this book) is the digital techniques and tools that actually work the magic of restoration. Chapters 5 through 10 will teach you the “moves.” You can read this book as an extended single course in restoration (that’s kind of how I wrote it) or you can mine it for particular tricks and techniques you need to solve specific problems. Each chapter starts off with a list of “how-to’s.” Each how-to points to a place in the chapter where you can learn how to accomplish a particular task. All the how-to’s are listed in their own table of contents (at the end of the regular table of contents) for easy reference.

What comes next is learning how to put those moves together to create a complete “performance.” Chapter 11, “Examples,” presents complete, step-by-step restorations that start with originals and proceed through to fully restored images. Chapter 11 sets a very high bar; I’m a perfectionist. Chapter 11 demonstrates the ultimate level of quality I can achieve in a restoration, but you don’t have to go that far. Most of the time you’ll find that considerably less effort will turn out great results. Many of the how-to’s and examples in the other chapters are sufficient unto themselves. It doesn’t take a lot of work to do a very satisfying restoration.

Once the restoration is complete, you’ll need to get it back out of the computer. So, I finish the book with chapters on printing and archiving. It’s not enough just to make a good print of the photograph you’ve restored. You should also take steps to ensure that the restoration file endures.

I could no more write a book about digital restoration that didn’t focus on Adobe Photoshop than I could write a book on business planning that omitted Microsoft Excel. Photoshop is the big player in digital photography, and I’ll be the first to acknowledge that it offers capabilities nothing else does.

I prepared most of the photographs and restorations for this book using Adobe Photoshop under Windows and Mac OS. Most of the software tools and techniques in this book work just as well under either OS (with a few exceptions); for the most part, the only difference is certain keystrokes.

Most of my methods work with earlier versions of Photoshop, although the further back you go, the more limitations you’ll run into as far as what tools you can use. To prove that a restorer doesn’t need the latest and greatest, one example in Chapter 11 is a restoration I did in the 1990s with Photoshop 5.5 running on a 233 MHz Pentium machine.

Photoshop isn’t necessary. There are much less costly alternatives that will let you do restoration work efficiently. My goal is to give you skills and knowledge you can apply to do good restorations with any competent image processing program.

A good alternative for the serious worker who wants to spend under \$100 instead of more than \$500 (and is using a Windows machine or emulator) is Picture Window. I've worked extensively with this program as well as Photoshop. It's entirely capable and eminently affordable, and I talk more about it in Chapter 3, "Software for Restoration."

I use many different third-party plug-ins and software utilities for doing my restoration work. Chapter 3 provides summaries of all of them. If one of these tools catches your interest when you read about me using it elsewhere in the book, you can learn more about that program there. These tools and the cases to which I've applied them are also indexed in the back under "software."

About Other Books

Can you have too many Photoshop and digital printing books? Absolutely! I have a shelf full of excellent books, every one of which has something of value to impart. The problem is that you could spend your whole life reading books such as these and only two things would happen. The first is that you would never get any photographs made and printed, and the second is that eventually your brain would fill up and your head explode.

Some folks have undeniably proven themselves gurus in this field. I'll read anything by (the late) Bruce Fraser or Andrew Rodney. If you want to understand the underlying principles of Photoshop specifically and digital printing in general, these gentlemen have it nailed. But the single book that I would say you absolutely, positively need to have on your shelf is Martin Evening's *Adobe Photoshop CS4 for Photographers* (also from Focal Press, just like the book you're holding in your hands). I can't think of a better book for telling you how to actually use the program.

I read it before sitting down to write this book. Every time I read something pertinent that I didn't know, I'd forgotten to include, or that I'd never had explained to me really clearly before, I flagged that page with a Post-It. I flagged a good 40 pages, and it's not as if I'm a beginner; I've been doing electronic (what we called it in the old days) printing for over 30 years. Point made?

The other book that ought to be on your must-buy list is Katrin Eismann's *Photoshop Restoration & Retouching*, third edition, from New Riders. Katrin is brilliant, even though she modestly claims otherwise. Her retouching skills are awesome, as is her ability to create entirely missing portions of photographs out of thin air. I'll never be close to her when it comes to wholesale recreation of absent imagery and fine-art retouching.

If you read and assimilate the two books just discussed and mine, you'll know enough to take over the world.

If you are interested in doing accurate restorations of old prints and want to understand better what they should look like and how they have deteriorated, there is no finer book than *Care and Identification*

of 19th-Century Photographic Prints, by James M. Reilly. Unfortunately, as of this writing, the book's out of print. Used copies are running an insane \$150. Recommended, nonetheless, for the dedicated restorer.

Keeping in Touch

Long-time readers know that I'm always happy to answer questions and provide helpful advice whenever I can. If you have any questions about the content of this book or need any assistance in matters photographic, feel free to e-mail me at ctein@pobox.com. Should that e-mail address change, you'll still be able to reach me through my Websites, Ctein's Online Gallery (<http://ctein.com>) and Digital Photo Restoration by Ctein (<http://photo-repair.com>).

Photo-repair.com has a "hidden" Web page devoted to this book at this URL: <http://photo-repair.com/photobook.htm>. This section of my site contains sample image files from this book for you to work with. The folks who provided their personal photographs for this book have generously given permission for me to put the files online for your private enjoyment. You can download them to practice restoration techniques. These files are for your personal use on your computer only. Do not redistribute them, publish them, post them on your Website, or link to them.

As mentioned in the Preface, all the content I excised from the first edition to make room for new material is available online on a "public" page at <http://photo-repair.com/dr1.htm> in the form of Acrobat files, extracted from the proofs for the first edition of this book.

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About the Author

Ctein is the author of several hundred magazine articles on photographic topics and of *Post Exposure: Advanced Techniques for the Photographic Printer* (Focal Press, 2000). He has been doing darkroom printing for 40 years and is one of the few remaining practitioners of the art of dye transfer printing. He has been making electronic and digital prints for over 30 years. Ctein resides in Daly City, California, in a house that overlooks the ocean, with his companion of 20 years, Paula Butler, along with 20,000 books, too many computers and printers, and four demented psittacines.