

# Table of Contents

<b>Preface to the Second Edition</b> .....	<b>iii</b>
<b>Acknowledgements to the First Edition</b> .....	<b>iv</b>
<b>Chapter 1 Introduction — The Digital Darkroom</b> .....	<b>1</b>
The Digital Darkroom .....	2
The Computer .....	2
Monitors .....	4
Color Calibration Systems .....	4
External Drives .....	6
Other Hardware Accessories .....	6
Photo Printers and Accessories .....	7
Film Scanners and Software .....	8
Optical Storage Media and the Image Archive .....	9
Image Management (Cataloging) Software and Image Browsers .....	11
Digital Image File Formats .....	12
Image-processing Workflow .....	16
How to Use this Book .....	17
<b>Chapter 2 The Digital Environment and Color Management</b> .....	<b>19</b>
Pixels, Bits and Color Channels .....	19
Color Models .....	22
RGB .....	22
CMYK .....	22
HSB .....	22
Lab .....	22
Grayscale .....	23
Color Spaces and Gamuts .....	23
Adobe RGB (1998) .....	23
sRGB .....	23
Color Management .....	24
Setting up Photoshop for Color Management .....	24
Calibrating Your Monitor .....	28
Monitor Calibration Using Adobe Gamma .....	28
Printer Color Management and Softproofing .....	31
Setting up Photoshop for Softproofing .....	35
Calibrating other Devices .....	36
Photoshop’s Assign Profile and Convert to Profile Commands .....	37
Some Final Thoughts and Tips .....	38
<b>Chapter 3 The Histogram and Levels — Defining Tonal Range</b> .....	<b>41</b>
The Histogram .....	41
Clipping .....	41
“Combed” or “Gapped” Histograms .....	43
Tonal Scale — 16-bit Versus 8-bit Images .....	44
Levels—Setting the Black and White Points of an Image .....	45
Setting the Black and White Points using the Levels Sliders — Introduction to Adjustment Layers .....	48
Setting the Black and White Points “By the Numbers” using Target Values in the Image .....	50
<b>Chapter 4 Adjusting Color and Local Contrast — Introduction to Masking Techniques</b> .....	<b>57</b>
Curves .....	57
Using Curves to Adjust Color Balance and Contrast .....	61
Applying Curves to a Selection — Introduction to Masking and Layer Masking .....	67

Other Tools for Adjusting Color . . . . .	72
The Color Balance Command . . . . .	72
The Selective Color Command and Color Range . . . . .	73
The Replace Color Command . . . . .	74
The Channel Mixer Command . . . . .	75
The Hue/Saturation Command . . . . .	75
<b>Chapter 5 Stacking . . . . .</b>	<b>79</b>
Methods for Combining Stacked Images . . . . .	81
Aligning and Stacking Images Using Photoshop . . . . .	84
Averaging Images Using the Layer Method . . . . .	84
Adding Images Using the Apply Image and Calculations Commands — Measuring Signal-to-Noise Values . . . . .	89
Some Final Thoughts . . . . .	96
<b>Chapter 6 Anti-Vignetting — Balancing Uneven Illumination . . . . .</b>	<b>99</b>
The Subtraction Method — Introduction to Cloning . . . . .	100
A/V Layer Mask Methods . . . . .	103
Multiply Layers . . . . .	103
The Difference Layer A/V Mask . . . . .	104
The Screen Layer A/V Mask . . . . .	106
The Synthetic A/V Layer Mask . . . . .	113
Selective Color Correction using a Synthetic A/V Layer Mask . . . . .	117
Some Final Thoughts . . . . .	120
<b>Chapter 7 Additional Noise Reduction Techniques . . . . .</b>	<b>123</b>
Dust and Scratch Removal . . . . .	123
The Dust and Scratches Layer . . . . .	124
Using Photoshop’s Median Filter for Noise Reduction . . . . .	127
Using the Edit/Fade Command . . . . .	128
Removing Stray Colored Pixels Using the Color Range Command . . . . .	129
Reducing Background Noise . . . . .	132
Photoshop Grain Reduction Technique . . . . .	132
A Quick Grain Reduction Method . . . . .	136
Reducing Green Background Noise . . . . .	137
<b>Chapter 8 Star Techniques . . . . .</b>	<b>141</b>
Fixing Elongated Stars (“Star Shaping”) . . . . .	141
Fixing Elongated Stars — The Basics . . . . .	141
Fixing Elongated Stars with Selective Shaping . . . . .	144
Isolating an Image Area for Editing . . . . .	145
Selective Star Shaping Using Layer Masks . . . . .	146
Star “Shrinking” . . . . .	149
Selective Star Shrinking Using Photoshop’s Minimum Filter . . . . .	150
Star Shrinking to Reduce Blue/Violet Fringing . . . . .	151
Star “Softening” — Restoring and Enhancing Colored Star Halos . . . . .	152
Selective Star Softening using Curves . . . . .	154
Enhancing Star Halos . . . . .	155
<b>Chapter 9 LRGB and Channel Mixing . . . . .</b>	<b>161</b>
LRGB (“Luminance Layering”) . . . . .	161
LRGB — Photoshop Procedure . . . . .	161
LLRGB (“Multiple Luminance Layering”) . . . . .	166
LLRGB — Photoshop Procedure . . . . .	166
Synthetic LRGB (“Synthetic Luminance Layering”) . . . . .	169
Synthetic LRGB — Photoshop Procedure . . . . .	169
Channel Mixing . . . . .	173

Color to Monochrome Conversions Using Photoshop’s Channel Mixer . . . . .	173
Channel Mixer — Photoshop Procedure . . . . .	173
Synthetic Color Channels — R(G)B Photoshop Example . . . . .	175
Correcting for Prismatic Dispersion and Misaligned Color Channels . . . . .	176
Re-aligning Color Channels — Photoshop Procedure . . . . .	176
<b>Chapter 10 Composites and Mosaics . . . . .</b>	<b>179</b>
Creating a Composite using Layer Masks . . . . .	179
Creating a Composite using the Layer Style “Blend-If” Sliders . . . . .	185
Color Channel Composites . . . . .	190
Creating a Mosaic . . . . .	192
<b>Chapter 11 Sizing Images for Printing and Web Display . . . . .</b>	<b>203</b>
PPI, DPI, Size and Resolution . . . . .	204
Size and Resolution . . . . .	204
Computer Monitor Resolution, including digital projectors . . . . .	204
Output Resolution (typically print output) . . . . .	205
Resizing, Resampling and Interpolation . . . . .	206
Resizing — Photoshop Examples . . . . .	206
Resampling — Photoshop Examples . . . . .	208
Resizing and Resampling: More Photoshop Examples . . . . .	211
Additional Methods of Resampling Images for Printing . . . . .	216
Stair Interpolation (“SI”) — Photoshop Example . . . . .	219
Sizing Images for the Web and Computer Monitor Display . . . . .	222
Sizing an Image for Web Display — Photoshop Example . . . . .	228
Photoshop CS and CS2 — Additional Resampling Options . . . . .	230
<b>Chapter 12 Sharpening and Unsharp Masking . . . . .</b>	<b>237</b>
“One-Pass” Unsharp Masking . . . . .	238
Selective Sharpening using Layer Style Blending Options . . . . .	240
Sharpening Guidelines and Considerations . . . . .	243
Layer-Based Selective Sharpening Using Layer Masks . . . . .	245
Sequential, or “Multi-Pass” Sharpening using Photoshop Actions . . . . .	248
Separating Dark and Light Sharpening Halos . . . . .	250
Sharpening with the High-Pass Filter . . . . .	254
“Wide Radius-Low Amount” Sharpening . . . . .	255
Edge Masking . . . . .	257
Difference Masking — Working with Layer Sets (Layer Groups) . . . . .	260
<b>Chapter 13 Working with CS2, 3 and 4 . . . . .</b>	<b>265</b>
The Digital Darkroom (Chapter 1) . . . . .	265
Monitors and Color Calibration Systems . . . . .	267
Photo Printers and Accessories . . . . .	267
Scanners and Scanning Software . . . . .	268
Image Archiving and Management . . . . .	268
The Digital Environment and Color Management (Chapter 2) . . . . .	268
Printer Color Management and Softproofing . . . . .	270
Calibrating Other Devices . . . . .	271
Adjusting Color and Local Contrast (Chapter 4) . . . . .	272
Curves . . . . .	272
Masking and Layer Masking . . . . .	273
Other Tools for Adjusting Color . . . . .	274
Stacking (Chapter 5) . . . . .	275
Anti-Vignetting — Balancing Uneven Illumination (Chapter 6) . . . . .	275
Additional Noise Reduction Techniques (Chapter 7) . . . . .	275
Star Techniques (Chapter 8) . . . . .	277

LRGB and Channel Mixing (Chapter 9) . . . . .	278
Composites and Mosaics (Chapter 10). . . . .	279
Sizing Images for Printing and Web Display (Chapter 11) . . . . .	279
Sharpening and Unsharp Masking (Chapter 12) . . . . .	284
<b>Appendix A A Color Management Primer. . . . .</b>	<b>289</b>
Color Space . . . . .	289
Device Color Space . . . . .	289
Color Models . . . . .	289
RGB Color Model . . . . .	290
Abstract Color Spaces in the RGB Model . . . . .	291
CMYK Color Model for Output Devices. . . . .	293
Setting Up and Using a Color Management Environment. . . . .	294
Assigning profiles in Photoshop. . . . .	295
Photoshop's Default Color Management Settings . . . . .	297
Managing Output . . . . .	299
<b>Appendix B — Suppliers and Other Resources . . . . .</b>	<b>305</b>
<b>Index. . . . .</b>	<b>307</b>