



The Complete Guide to
Sony's Alpha 6000 Digital Camera
"The Friendly Manual with Professional Insights"
by Gary L. Friedman and Ross Warner
The Friedman Archives Press

The Complete Guide to Sony's Alpha 6000 Digital Camera

“The Friendly Manual with Professional Insights”

BY GARY L. FRIEDMAN AND ROSS WARNER

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ON THE COVER

Sony A6000, Zeiss FE 24-70 f/4 lens at 26mm, tripod.

ACKNOWLEDGEMENTS

Special thanks goes out to David Redfearn and Larry Rose.

FOR THOSE OF YOU WHO BOUGHT THE PRINTED B&W OR E-READER VERSION

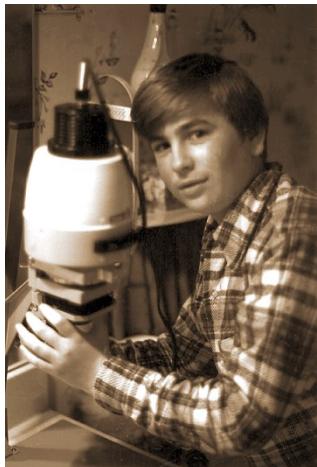
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ABOUT GARY FRIEDMAN



Gary L. Friedman is a professional photographer who has traveled the world with both film and digital cameras. He runs the stock image website www.FriedmanArchives.com, and gives digital photography seminars worldwide aimed primarily at beginners who want to learn the basics and improve their creative photography. (He conducts photo

expeditions around the world too, geared especially for the unique needs of photographers.)

Before graduating to photography he was a rocket scientist for NASA's Jet Propulsion Laboratory, where he patented the image authentication system used in high-end Canon and Nikon cameras. He has been published in books, newspapers and magazines worldwide, and was listed in the Guinness Book of World Records while in college (go ahead and search the FriedmanArchives.com website if you want to find out what he did to get included).



Despite his mastery of the technical background, Mr. Friedman has an approachable and easy-going teaching style that makes his books a pleasure to read. You can read more about his background at <http://friedmanarchives.com/bio.htm>.

Is it true all photographers have beards? :-)

ABOUT ROSS WARNER

Note: Before you read about me, I want to thank Gary Friedman for giving me the opportunity to participate in this exciting project. Also, since this is a collaborative effort, you'll frequently see the use of "I," but please understand this is a collective term that refers to both Gary and me.



a reporter for his hometown weekly newspaper at age fifteen.

He first became serious about photography in 1997 in preparation for his first photography trip to East Africa. After using Hasselblad and Minolta film cameras, scanning the film, working with the files in Photoshop and making digital prints, he moved to digital cameras when Sony finally took over from Minolta. After a series of shoulder operations he sold his DSLR equipment and heavy lenses and made the switch to Sony's mirrorless camera system.

He now spends his time shooting nature, landscape, and travel images. He sells prints through his website <http://www.rosswarner.com> and licenses stock images for publication through <http://alamy.com>.

We hope you learn something while you're here and have a good time doing it.

Prior to becoming a full-time photographer, Ross was a musician, a music recording studio owner and engineer, and a computer software and hardware technical writer. His first two writing jobs were with Ray Kurzweil and at the Artificial Intelligence Technology Center at Digital Equipment Corporation (DEC). Oh, yeah, before that, he was



TABLE OF CONTENTS

CHAPTER 1	THE ALPHA 6000 IN A NUTSHELL.....	21
1.1	NOTEWORTHY FEATURES OF THE ALPHA 6000	24
1.1.1	Fast Hybrid AF	24
1.1.2	Electronic First-Curtain Shutter	25
1.1.3	Great High-ISO Performance	25
1.1.4	Excellent Electronic Viewfinder	26
1.1.5	Supports Legacy Glass (with adapter)	27
1.1.6	Some of the Sharpest Lenses Around	28
1.1.7	Adaptive Noise Reduction	30
1.1.8	Diffraction Reduction	30
1.1.9	Zebra Stripes.....	32
1.1.10	Eye AF.....	33
1.1.11	HDMI and LCD at the Same Time	33
1.1.12	High Dynamic Range (HDR).....	34
1.1.13	In-camera Lens Corrections	35
1.1.14	Peaking Level/Peaking Color	36
1.1.15	Pop-Up Flash	36
1.1.16	Wireless flash	37
1.1.17	No-Compression HDMI Output.....	37
1.1.18	Auto ISO in Manual Exposure Mode.....	38
1.1.19	Sweep Panorama	39
1.1.20	Lock-On AF	40
1.1.21	New Hotshoe	41
CHAPTER 2	MY PERSONAL CAMERA SETTINGS.....	43
2.1	CUSTOM KEY SETTINGS	43
2.2	FUNCTION (Fn) MENU SETTINGS.....	44
2.3	MEMORY REGISTER SETTINGS.....	46
2.4	MY PERSONAL MENU SETTINGS	50
2.5	WHAT'S INCOMPATIBLE WITH RAW?	65
CHAPTER 3	QUICK GUIDE FOR THE IMPATIENT USER	69
3.1	THE QUICK NAVI SCREEN	69
3.2	THE Fn BUTTON.....	70

3.3	FOCUSING ESSENTIALS.....	70
3.3.1	<i>Decoupling Focus Lock and/or Exposure Lock From the Shutter Release Button</i>	73
3.3.2	<i>AF Setup Trick for Portraits</i>	74
3.3.3	<i>DMF and Peaking Level.....</i>	74
3.3.4	<i>More About Face Detection</i>	75
3.3.5	<i>Focus Modes.....</i>	76
3.3.6	<i>Quickly Switching Between Wide and Center Focus Area ..</i>	77
3.4	WHICH DISPLAY?	78
3.5	ABOUT POWER CONSUMPTION.....	79
3.6	CONFIGURING THE DISPLAY	80
3.7	SETTING THE ISO.....	81
3.7.1	<i>ISO AUTO Settings</i>	82
3.7.2	<i>Multi-Frame Noise Reduction.....</i>	82
3.8	SCENE SELECTION MODES.....	83
3.8.1	<i>Portrait</i>	84
3.8.2	<i>Sports Action</i>	86
3.8.3	<i>Macro</i>	87
3.8.4	<i>Landscape.....</i>	88
3.8.5	<i>Sunset.....</i>	89
3.8.6	<i>Night Scene</i>	90
3.8.7	<i>Handheld Twilight</i>	90
3.8.8	<i>Night Portrait</i>	92
3.8.9	<i>Anti-Motion Blur (AMB)</i>	93
3.9	INTELLIGENT AUTO MODES	95
3.9.1	<i>iAuto (Intelligent Auto).....</i>	96
3.9.2	<i>iAuto+ (Superior Auto).....</i>	97
3.9.3	<i>Photo Creativity Mode</i>	100
3.10	P-A-S-M MODE	101
3.11	PANORAMA MODE.....	102
3.12	PROGRAM SHIFT	103
3.13	QUICK SETUP FOR VIDEO	105
3.14	THREE LOW-LIGHT MODES	107
3.14.1	<i>Handheld Twilight and Multi-Frame Noise Reduction</i>	107
3.14.2	<i>Anti-Motion Blur.....</i>	108
3.14.3	<i>Low-Light Modes Compared</i>	109
3.15	FLASH	111
3.16	PLAYING BACK IMAGES	113
3.16.1	<i>Variations on a Theme – The Display Button</i>	113

3.16.2	<i>Magnifying the image</i>	116
3.16.3	<i>Deleting an image (or multiple images)</i>	117
3.16.4	<i>Protecting an image</i>	118
3.16.5	<i>Viewing your images on an HDTV</i>	119
3.16.6	<i>Slide Show using the Optional Wireless Remote</i>	121
3.17	VIEWFINDER EYEPiece DIOPTER CORRECTION	122
3.18	USB AND HDMI CONNECTORS.....	123
3.19	THIRD-PARTY BATTERIES AND CHARGERS	123
3.20	SONY's SOFTWARE	124
CHAPTER 4	USING LEGACY GLASS	127
4.1	MANUAL FOCUS LENSES	128
4.2	AUTOFOCUS LENSES.....	130
4.3	VIGNETTING AND MAGENTA CASTS.....	131
4.4	BEWARE OF LIGHT LEAKS	132
4.5	A SHORT LIST OF THE MOST POPULAR ADAPTERS	133
4.5.1	<i>Sony A-mount Lenses</i>	133
4.5.2	<i>M42/Pentax Screw Mount</i>	134
4.5.3	<i>Leica M/Zeiss ZM</i>	135
4.5.4	<i>Leica R</i>	136
4.5.5	<i>Canon EF (EOS)</i>	136
4.5.6	<i>Canon FD</i>	137
4.5.7	<i>Nikon</i>	137
4.5.8	<i>Minolta MC/MD</i>	138
4.5.9	<i>Pentax</i>	139
4.5.10	<i>Medium Format Lenses</i>	139
4.5.11	<i>Olympus OM</i>	139
4.5.12	<i>Contax</i>	140
CHAPTER 5	WI-FI, NFC, AND APPS	143
5.1	WHAT IS NFC?	143
5.2	SETTING THINGS UP FOR WI-FI UPLOAD	145
5.2.1	<i>Configuring PlayMemories Home</i>	148
5.2.2	<i>Initiate your Upload</i>	150
5.2.3	<i>Throughput Rates</i>	151
5.3	SETTING UP SMARTPHONE FUNCTIONS.....	151
5.3.1	<i>Install PlayMemories Mobile</i>	151
5.3.2	<i>Transferring an Image To your Smartphone</i>	152
5.3.3	<i>Configuring NFC on your Smartphone</i>	153

5.4	Now WHAT?	153
5.4.1	<i>Upload images to your smartphone for social Media</i>	153
5.4.2	<i>Remote Control with Viewfinder</i>	156
5.5	OTHER TETHERED SHOOTING OPTIONS	160
5.5.1	<i>Wi-Fi Upload</i>	160
5.5.2	<i>Remote Camera Conrol Software</i>	162
5.5.3	<i>Lightroom 5 add-on software</i>	163
5.6	APPLICATIONS	163
CHAPTER 6	THE RECORDING (CAMERA ICON) MENU	169
6.1	IMAGE SIZE	169
6.2	ASPECT RATIO	171
6.3	QUALITY	172
6.4	PANORAMA FUNCTIONS	174
6.5	FILE FORMAT FOR MOVIES	179
6.6	RECORD SETTING FOR MOVIES	179
6.7	DRIVE MODE	180
6.7.1	<i>Single-shooting</i>	180
6.7.2	<i>Continuous shooting</i>	180
6.7.3	<i>10s and 2s Self-Timers</i>	181
6.7.4	<i>Self-Timer Continuous</i>	181
6.7.5	<i>Bracketing</i>	182
6.7.6	<i>Bracketing for HDR</i>	183
6.7.7	<i>What exactly changes when you bracket?</i>	184
6.7.8	<i>White Balance Bracketing</i>	185
6.7.9	<i>DRO Bracket</i>	185
6.8	FLASH MODE	186
6.8.1	<i>Flash Off</i>	187
6.8.2	<i>AutoFlash</i>	187
6.8.3	<i>Fill-Flash</i>	187
6.8.4	<i>Slow Sync</i>	189
6.8.5	<i>Rear Sync</i>	190
6.8.6	<i>Wireless Flash</i>	192
6.9	FLASH COMPENSATION	193
6.10	RED EYE REDUCTION	194
6.11	FOCUS MODE	195
6.11.1	<i>AF-S</i>	195
6.11.2	<i>AF-A</i>	195
6.11.3	<i>AF-C</i>	195

6.11.4	<i>DMF</i>	196
6.11.5	<i>MF</i>	196
6.12	FOCUS AREA.....	197
6.12.1	<i>Wide</i>	198
6.12.2	<i>Center</i>	198
6.12.3	<i>Flexible Spot</i>	199
6.12.4	<i>Zone</i>	199
6.13	FOCUS SETTINGS	200
6.14	AF ILLUMINATOR.....	200
6.15	MOVIE AF DRIVE SPEED	202
6.16	MOVIE AF TRACK DURATION.....	202
6.17	EXPOSURE COMPENSATION	203
6.18	EXPOSURE STEP	204
6.19	ISO	205
6.19.1	<i>High-ISO Noise Levels</i>	206
6.19.2	<i>Multi-Frame Noise Reduction (MFNR)</i>	213
6.19.3	<i>ISO AUTO Settings</i>	213
6.19.4	<i>Specific ISO Values</i>	213
6.20	METERING MODE.....	214
6.20.1	<i>Center-weighted and Multi-Segment Metering</i>	217
6.20.2	<i>Spot Metering</i>	218
6.21	WHITE BALANCE	220
6.21.1	<i>Auto White Balance and PreSet White Balance</i>	221
6.21.2	<i>Tweaking the Preset White Balance</i>	225
6.21.3	<i>The Color Temperature setting</i>	226
6.21.4	<i>Custom White Balance</i>	227
6.22	DRO/AUTO HDR	229
6.23	CREATIVE STYLE	231
6.23.1	<i>Frequently Asked Questions</i>	235
<i>Contrast Setting</i>	237	
6.23.2	<i>Saturation Setting</i>	238
6.23.3	<i>Sharpness Setting</i>	239
6.23.4	<i>Combining Settings</i>	240
6.23.5	<i>B&W Mode</i>	243
6.24	PICTURE EFFECT	245
6.24.1	<i>Toy Camera</i>	247
6.24.2	<i>Posterization and Pop Color</i>	247
6.24.3	<i>Retro Photo</i>	248
6.24.4	<i>Soft High-Key</i>	249

6.24.5	<i>Partial Color</i>	249
6.24.6	<i>High-Contrast Monochrome</i>	251
6.24.7	<i>Soft Focus</i>	252
6.24.8	<i>HDR Painting</i>	253
6.24.9	<i>Rich-Tone Monochrome</i>	254
6.24.10	<i>Miniature Mode</i>	255
6.24.11	<i>Watercolor and Illustration Modes</i>	258
6.24.12	<i>How Picture Effects Differ from Creative Styles</i>	261
6.25	ZOOM	262
6.26	FOCUS MAGNIFIER	264
6.27	LONG EXPOSURE NOISE REDUCTION	266
6.28	HIGH ISO NOISE REDUCTION.....	268
6.29	LOCK-ON AF	271
6.30	SMILE/FACE DETECTION	273
6.30.1	<i>Off</i>	274
6.30.2	<i>On (Registered Faces)</i>	274
6.30.3	<i>On</i>	275
6.30.4	<i>Smile Shutter</i>	275
6.31	SOFT SKIN EFFECT.....	277
6.32	AUTO OBJECT FRAMING	278
6.33	SCENE SELECTION.....	280
6.34	MOVIE	280
6.35	STEADYSHOT	282
6.36	COLOR SPACE	285
6.37	AUTO SLOW SHUTTER (MOVIES).....	287
6.38	AUDIO RECORDING.....	288
6.39	WIND NOISE REDUCTION.....	288
6.40	SHOOTING TIP LIST	289
6.41	MEMORY RECALL	290
6.42	MEMORY	291
CHAPTER 7	THE CUSTOM (GEAR ICON) MENU	295
7.1	ZEBRA	295
7.2	MF ASSIST	297
7.3	FOCUS MAGNIFICATION TIME	299
7.4	GRID LINE	300
7.5	AUTO REVIEW	302
7.6	DISPLAY BUTTON.....	303
7.6.1	<i>Graphic Display</i>	305

7.6.2	Histogram.....	306
7.6.3	For Viewfinder (Rear LCD only).....	306
7.7	PEAKING LEVEL AND PEAKING COLOR	307
7.8	EXPOSURE SETTING GUIDE	310
7.9	LIVE VIEW DISPLAY	311
7.10	DISPLAY CONTINUOUS AF AREA.....	312
7.11	PRE-AUTOFOCUS.....	313
7.12	ZOOM SETTING	313
7.12.1	<i>Differences between ClearImage and Digital Zoom</i>	316
7.13	EYE-START AUTOFOCUS (A-MOUNT LENSES ONLY).....	319
7.14	FINDER/MONITOR.....	321
7.15	RELEASE WITHOUT LENS.....	322
7.16	AF WITH SHUTTER	323
7.17	AEL w/ SHUTTER.....	324
7.18	E-FRONT CURTAIN SHUTTER	325
7.19	SINGLE IMAGE AUTO EXTRACTION	327
7.20	EXPOSURE COMPENSATION SETTING	328
7.21	BRACKET ORDER	328
7.22	FACE REGISTRATION.....	330
7.23	AF MICRO ADJUSTMENT (A-MOUNT LENSES ONLY).....	332
7.23.1	<i>How To Test For Focus Issues</i>	333
7.24	LENS COMPENSATION	336
7.24.1	<i>Shading</i>	337
7.24.2	<i>Chromatic Aberration</i>	338
7.24.3	<i>Distortion</i>	338
7.25	FUNCTION MENU SETTINGS.....	339
7.26	CUSTOM KEY SETTINGS.....	341
7.27	DIAL/WHEEL SETUP.....	345
7.28	DIAL/WHEEL EXPOSURE VALUE COMPENSATION.....	346
7.29	MOVIE BUTTON	347
7.30	DIAL/WHEEL LOCK	348
CHAPTER 8	THE WI-FI MENU	351
8.1	SEND TO SMARTPHONE	351
8.2	SEND TO COMPUTER.....	352
8.3	VIEW ON TV.....	352
8.4	ONE-TOUCH (NFC)	354
8.5	AIRPLANE MODE.....	354
8.6	WPS PUSH	355

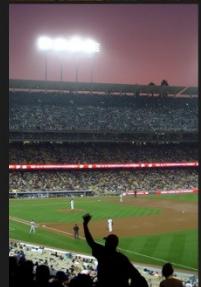
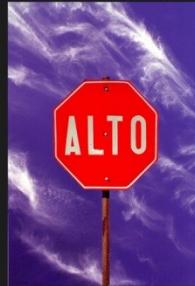
8.7	ACCESS POINT SETTING	356
8.8	EDIT DEVICE NAME.....	356
8.9	DISPLAY MAC ADDRESS	357
8.10	SSID/PASSWORD RESET.....	358
8.11	RESET ALL NETWORK SETTINGS.....	359
CHAPTER 9	THE APPLICATION MENU	361
9.1	APPLICATION LIST.....	361
9.2	INTRODUCTION	362
CHAPTER 10	THE PLAYBACK MENU	365
10.1	DELETE	365
10.2	VIEW MODE.....	367
10.3	IMAGE INDEX.....	367
10.4	DISPLAY ROTATION.....	368
10.5	SLIDE SHOW	369
10.5.1	<i>PhotoTV HD and Bravia Sync.....</i>	369
10.6	ROTATE	371
10.7	ENLARGE IMAGE.....	372
10.8	4K STILL IMAGE PLAYBACK	372
10.9	PROTECT.....	373
10.10	SPECIFY PRINTING.....	374
10.10.1	<i>Printing the Date on the Image.....</i>	374
10.10.2	<i>Canceling DPOF files</i>	375
CHAPTER 11	THE SETUP (SUITCASE ICON) MENU	377
11.1	MONITOR BRIGHTNESS.....	377
11.2	VIEWFINDER BRIGHTNESS	377
11.3	FINDER COLOR TEMPERATURE	378
11.4	VOLUME SETTINGS	379
11.5	AUDIO SIGNALS.....	379
11.6	TILE MENU	380
11.7	MODE DIAL GUIDE	381
11.8	DELETE CONFIRMATION.....	382
11.9	POWER SAVE START TIME	383
11.10	CLEANING MODE	384
11.11	DEMO MODE	385
11.12	REMOTE CONTROL.....	385
11.13	HDMI RESOLUTION.....	387

11.14	CTRL FOR HDMI	388
11.15	HDMI INFORMATION DISPLAY.....	388
11.16	USB CONNECTION.....	389
11.17	USB LUN SETTING.....	391
11.18	LANGUAGE	392
11.19	DATE/TIME SETUP.....	392
11.20	AREA SETTING	392
11.21	FORMAT	393
11.22	FILE NUMBER	396
11.23	SELECT RECORDING FOLDER	397
11.24	NEW FOLDER.....	397
11.25	FOLDER NAME	398
11.25.1	<i>If Standard Form is Used</i>	398
11.25.2	<i>If Date Form is Used</i>	399
11.26	RECOVER IMAGE DATABASE.....	401
11.27	DISPLAY MEDIA INFORMATION	401
11.28	VERSION	402
11.29	SETTING RESET.....	403
CHAPTER 12	MOVIE MODE AND ITS MENU.....	405
12.1	INTRODUCTION	405
12.2	MORE DETAIL.....	406
12.3	EXTERNAL MICROPHONE	407
12.4	EXTERNAL DISPLAY	408
12.5	MONITORING VIDEO AND AUDIO	408
12.6	MANUAL CONTROL IN MOVIE MODE	410
12.7	IMPORTING FILES TO YOUR COMPUTER.....	412
12.7.1	<i>.modd Files</i>	412
12.8	MOVIE FILE FORMATS	414
12.8.1	<i>More About the Formats</i>	415
12.8.2	<i>Choosing a Video Format</i>	417
12.8.3	<i>Why Does my camera warn me when I change formats?</i> 418	
12.8.4	<i>"Can't Record this Kind of Movie"</i>	419
CHAPTER 13	WIRELESS FLASH AND ADVANCED FLASH TOPICS .	421
13.1	INTRODUCTION	421
13.2	FLASH MODELS.....	426
13.3	BOUNCE FLASH	429
13.3.1	<i>Diffusing your Light</i>	430

13.4	HIGH SPEED SYNC (HSS) FLASH.....	433
	<i>How it works</i>	434
13.5	WIRELESS FLASH	436
13.6	AS SIMPLE AS IT GETS.....	439
13.7	THE NEW WIRELESS PROTOCOL	442
13.7.1	<i>How to USE Ratio Flash</i>	446
13.7.2	<i>Advanced 2-Way or 3-way Ratio Flash</i>	449
13.8	GROUPS AND CHANNELS.....	454
13.9	WILL THE CONTROL BURSTS AFFECT EXPOSURE?.....	454
13.10	MANUAL FLASH MODE.....	456
13.10.1	<i>To Put the 60 Into Manual Slave Mode</i>	457
13.10.2	<i>To put the 43 into Manual Slave mode</i>	457
13.11	A PORTABLE STUDIO SETUP.....	458
13.12	TO PROBE FURTHER.....	460
CHAPTER 14	DRO AND HDR	463
14.1	DYNAMIC RANGE OPTIMIZATION.....	463
14.1.1	<i>How DRO Works</i>	465
14.1.2	<i>More DRO Examples</i>	469
14.1.3	<i>Frequently Asked Questions about DRO</i>	469
14.1.4	<i>When Does DRO kick in?</i>	474
14.1.5	<i>When DRO is bad</i>	475
14.1.6	<i>Combining DRO with Sunset Creative Style</i>	475
14.1.7	<i>DRO on Your Computer</i>	476
14.2	HIGH DYNAMIC RANGE (HDR)	477
14.3	DRO vs. HDR	483
CHAPTER 15	DIGITAL IMAGING TOPICS.....	487
15.1	INTRODUCTION	487
15.2	AN INTRODUCTION TO RAW	488
15.3	THE BAYER FILTER AND DEMOSAICING.....	490
15.4	HOW YOUR CAMERA CREATES A JPEG FILE	495
15.5	RAW, TIFF, AND JPEG FILES COMPARED.....	498
15.6	JPEG COMPRESSION ARTIFACTS.....	501
15.7	ARE THERE ANY OTHER BENEFITS TO SHOOTING JPEG FILES?	505
15.8	REDUCING NOISE IN RAW FILES USING CAMERA RAW OR LIGHTROOM	506
15.9	IMAGE SIZE AND RESOLUTION	509
15.10	"HOT PIXELS"	510
15.11	MEMORY CARDS	511

15.11.1	<i>Some Background on MemoryStick Pro Duo</i>	511
15.11.2	<i>Some Background on SD Memory Cards</i>	514
15.11.3	<i>Memory Card Corruption Issues</i>	515
CHAPTER 16	ADDITIONAL RESOURCES	519
16.1	INTERNET FORUMS AND DISCUSSION BOARDS.....	519
16.2	LENS RENTAL	521
16.3	CAMERA AND LENS REVIEW SITES.....	521
16.4	25 WAYS TO “Wow!” E-BOOKLET.....	522
16.5	ADVANCED TOPICS 2.....	524
16.6	AN INTRODUCTION TO SONY’S WIRELESS FLASH (VIDEO).....	525
16.7	WAYS TO “Wow!” WITH WIRELESS FLASH	525
16.8	BOOKS ON OTHER CAMERAS	527
16.9	CAMERACRAFT MAGAZINE	527
16.10	THE FRIEDMAN ARCHIVES SEMINARS.....	529
16.10.1	<i>What Others Are Saying</i>	531
16.11	FACEBOOK, INSTAGRAM, AND THE FRIEDMAN ARCHIVES BLOG	531
16.12	THE ROAD TO CHINA.....	532
16.13	THE MAUI XAPHOON	534
16.14	EPILOGUE	535
APPENDIX A	A CONDENSED GUIDE TO THE BASICS	537
A.1	SHUTTER SPEEDS.....	537
A.2	F/STOP	539
A.3	ISO	540
A.4	FOCAL LENGTH.....	541
A.5	TRADEOFFS	541
A.6	PROGRAM SHIFT	542
A.7	THE HISTOGRAM DISPLAY	544
A.7.1	<i>Brightness range, sensors, and the human eye</i>	544
A.7.2	<i>Using the Histogram for a fin(d)er degree of control</i>	547
A.8	THE “SECRETS” TO LIGHT AND COMPOSITION	553
A.10	WRITING WITH LIGHT	554
A.11	COMPOSITION – THE RULE OF THIRDS.....	556
	<i>Out of place shot</i>	559
	<i>Texture</i>	559
	<i>Classical Portrait</i>	561
	<i>Environmental Portrait</i>	561
	<i>“Hey, Look at Me!”</i>	561

APPENDIX B	A “COOKBOOK” FOR SPECIAL SITUATIONS.....	563
B.1	INTRODUCTION	563
B.2	FIREWORKS	564
B.3	ARTISTIC WATERFALLS.....	565
B.4	STAGE PERFORMANCES/ROCK CONCERTS	566
B.5	NIGHTTIME TIME EXPOSURES	567
B.6	SHOOTING IN SNOW	568
B.7	OUTDOOR GROUP PORTRAITS.....	569
B.8	STREET PHOTOGRAPHY	570
B.9	SUNSETS AND SILHOUETTES.....	571
B.10	THE MOON	572
B.11	NIGHTTIME SPORTS	573
B.12	CHRISTMAS LIGHTS.....	574
B.13	PRODUCT SHOTS	575
B.14	INTERIORS THAT SELL.....	576
B.15	LIGHTNING	577
B.16	CANDLELIGHT SHOTS.....	578
APPENDIX C	TIP CARDS	579
INDEX	580	



CHAPTER 1

THE ALPHA 6000 IN A NUTSHELL



Figure 1-1: Graffiti, Florence, Italy. A6000 out-of-camera JPEG file, resized. Sony FE 35 f/2.8 lens, 1/160 sec. at f/5.6.

Okay, where do I start? Let me first make this blanket statement: *Sony is now officially the most innovative camera company on the planet*. It's not just because of Sony's mirrorless cameras, although these have shaken up the industry as well (as I'll describe momentarily). It's because these mirrorless cameras are the most recent in a long line of out-of-the-box-thinking cameras:

- The Alpha 300, which added Live view by putting a tiny little camera in the pentamirror and pointed it at the focusing screen

- The SLT architecture, which sought to solve the conflicting requirements of phase-detect AF and movies/Live View
- The NEX series in general, which threw out convention and started with a clean slate that was optimized for small size and video
- The RX series of fixed-lens cameras, which offered the largest sensor in a traditionally-shaped no-compromise body
- The A7 and A7R full-frame mirrorless cameras, the world's smallest full-frame (meaning "the sensor is the same size as a 35mm negative") interchangeable-lens cameras, which the world has praised for their outstanding image quality in a teensy weensy form factor

The A7 also introduced several new features that have been incorporated into the A6000:

- Improved hybrid AF (faster and better for moving subjects, and even improved substantially MORE for the A6000)
- Microlenses on the sensor (improved wide-angle lens performance)
- Improved high ISO performance
- Adaptive noise reduction
- Diffraction reduction
- Eye AF (excellent for portraits with shallow depth of field)
- Zebra stripes
- Lock-on AF (an improved method for following a moving subject)

You'll learn more about these features in the next section.



Figure 1-2: You want high-resolution detail and sharpness? Here is a crop from **Figure 1-1.**

Although both the A7 and the A6000 are 24-megapixel cameras, the price of the A6000 is less than half that of the A7. That's an incredible bargain! The A6000 actually offers several improvements over the much more expensive A7.

However, it is true that the A6000 has an APS-C sensor rather than a full-frame sensor, and that it lacks a second control dial and some customizable features that the A7 has. Still, it's possible to set up and use your A6000 almost the same as the A7. If you have both (as I do), you should be very comfortable switching between them.

1.1 NOTEWORTHY FEATURES OF THE ALPHA 6000

1.1.1 *FAST HYBRID AF*

This requires a little explanation. There are two approaches to autofocus: Phase-detect autofocus (commonly abbreviated as PDAF), which is what all DSLRs use, and Contrast-detect AF (CDAF), a slower method which most point-and-shoots use because it is easier to implement. While there are differences in the two methods when it comes to speed, the difference gets even wider when it comes to follow-focusing on moving objects. In this area, CDAF just doesn't cut it (especially with telephoto lenses attached).

Sony has tried to narrow the gap between these two AF mechanisms by “baking in” 179 pixels capable of phase detection right into the sensor. The good news is that unlike in earlier implementations, these phase-detection points are spread throughout the sensor rather than concentrated in the middle. The NEX-6 had 99 phase-detect points that covered about 50% of the sensor, while the A6000 has 179 points that cover 92%.

The A6000 uses phase detection for its initial autofocusing needs, then 25 contrast detection points fine-tune the focus. The improved Bionz X processor paired with the hybrid autofocus system allows the A6000 to shoot continuously at 11 frames per second with subject tracking. This hybrid autofocus method is used with native E-mount lenses.

Sony boasts that the A6000 has the world’s fastest autofocus for all interchangeable-lens digital cameras with an APS-C sensor.

TIP: One of the Achilles' Heels of the NEX-7 was that its CDAF was easily fooled by something called "Specular highlights" – extremely bright reflective parts of your picture which caused the camera to think an out-of-focus picture was perfectly sharp (see image to the right).

Great news! Sony seems to have fixed this problem. I tried to induce this kind of error with the A6000 and it couldn't be fooled. Huzzah!



1.1.2 ELECTRONIC FIRST-CURTAIN SHUTTER

When Sony first introduced the first SLT cameras, for technical reasons the shutter would close and open TWICE for each picture you took. Not only did this make a nice mechanical noise and make the shutter work twice as hard, but it also introduced a noticeable delay between when you first pressed the shutter release button and when the camera took the picture.

Well, to address the shutter lag problem on the A6000, Sony borrowed a technique from Canon: Instead of having to close the shutter and then open it again to initiate a "fresh" exposure, Sony redesigned the sensor so that the first close-open cycle wasn't necessary. So now when you take a picture the sensor will start the exposure electronically but end it mechanically (with a shutter close – that allows the sensor to send its contents to the camera one row at a time without being unduly influenced by new light coming in). This feature is enabled by default.

1.1.3 GREAT HIGH-ISO PERFORMANCE

Sometimes I get amazed at the quality I can routinely get at ISOs in the 4000–6400 range – a speed I never would have worked with just a few years ago.

1.1.4 EXCELLENT ELECTRONIC VIEWFINDER

If you're a DSLR user then your mind might still be revolting about the idea of an electronic viewfinder (EVF). I hear you. But the tiny mirrorless platform you're holding would be impossible without it, and besides, this is one of the best implementations in the industry. Although the A6000's EVF has a 1.44M dot EVF versus the NEX-6's 2.36M dots, many users have said that they do not notice a loss in quality. The number of dots isn't everything!

More important, though, are the advantages of an electronic viewfinder that just aren't possible in the traditional DSLR design:

1. You can see how your image will look before you shoot (exposure/white balance) and whether things will blow out or be too dark.
2. You can see a live histogram or zebra stripes as an additional exposure aid for difficult lighting situations (or you can enable both if you have attention deficit disorder).
3. You can evaluate the picture before you take it without "chimping."
4. The EVF gives you useful tools for focusing manually (Focus Magnifier and Peaking Level functions).
5. The viewfinder is not hopelessly dark when shooting with neutral density filters.

No EVF is perfect, though. When shooting under any kind of fluorescent light (whether it be the older tubular bulbs or the newer compact fluorescent variety), the white balance you see in Live View fluctuates and doesn't always match the final image. Eyeglass wearers shooting outdoors on a bright day with an overhead sun say they sometimes have to shield the sun when it shines between their face and the eyeglasses. And some



Figure 1-3: A usable image at ISO 4000? Yes! (Cropped image at right.) The full-size image in both RAW and JPEG is downloadable here: <http://bit.ly/1yVwsVF>

extreme sports shooters have complained that they have trouble panning in the fastest shooting modes (although I personally haven't experienced any problem during my experiments).

A friend of mine who's a professional event videographer uses another Sony camera with an EVF and just laughs at all the Canon guys who try to shoot video outdoors on bright days (their cameras don't have an EVF, so they have to use the rear LCD screen to shoot with, which is almost always washed out by the sun.) (Just sayin'...)

TIP: *I found the EVF to be a little dark right out of the box, and so the first thing I did was to increase the brightness to +1 which looks much better to me. The menu function to do this is MENU →  1 → Viewfinder Bright. → Manual → +1.*

1.1.5 SUPPORTS LEGACY GLASS (WITH ADAPTER)

Not all mirrorless digital cameras can do this. Sony's E-mount specifications have what's known as a short flange focal distance. What it means for you is that you can buy an adapter for just about any kind of "legacy glass" – outstanding lenses for their old film cameras that no longer fit onto modern digital bodies. Examples include Leica M mount, Canon FD, Minolta MD, Pentax K, the "universal" M42 screw mount, and even medium-format lenses.

Because Sony has openly published the technical specifications for the E-mount since the introduction of the NEX camera line, you can now find a third-party adapter for just about every conceivable lens mount. (And I talk about the most popular ones for a given camera brand, and what caveats to look out for, in Chapter 4.)

Keep in mind that the A6000 uses an APS-C sized sensor, so any full-frame lens that you use will produce a cropped image that uses the center part of the lens field (which is almost always the sharpest part, and has the least distortion as well). Just like a 16mm E-mount APS-C lens, a 16mm full-frame lens yields an effective focal length of 24mm, whether it's a Sony FE lens or a lens that you use with an adapter.

With most of the old lenses you'll be focusing manually, using the Focus Magnifier tool as an aid, and you'll probably be setting your f/stop manually as well, but that's how you used your legacy glass in the olden days, too.

1.1.6 SOME OF THE SHARPEST LENSES AROUND

Don't have legacy glass? Then pay attention to Sony's best E lenses as well as the diminutive but growing assortment of FE lenses, which are intended for full-frame cameras. If you see a full-frame camera in your future (or present), consider investing in FE lenses, which automatically use APS-C format on the A6000 but produce full-frame images when used with a full-frame camera. Keep in mind that the A6000 uses an APS-C sized sensor, so any full-frame lens that you use will produce a cropped image that uses the center part of the lens field (which is almost always the sharpest part, and has the least distortion as well). Just like a 16mm E-mount APS-C lens, a 16mm full-frame lens used with an adapter yields an effective focal length of 24mm.

The FE Prime lenses made by Zeiss may be a little pricey, but they are being heralded by optics-testing websites as being some of the best lenses they've ever tested. Here's a quote from the DPReview/DxOMark review of the Sony/Zeiss FE 55mm f/1.8 lens at <http://bit.ly/Ms2O63>:

"The 55mm F1.8 lives up to its Carl Zeiss branding, returning truly superb test results on the Alpha 7R. It's extremely sharp, shows little chromatic aberration or distortion, and has entirely acceptable levels of vignetting. In fact it comes very close indeed to the astounding (but \$4000) Zeiss Otus 55mm F1.4." Similar praise has come for the Sony/Zeiss FE 35mm f/2.8 prime.

The complete list of native FE lenses that Sony announced along with the A7 cameras appears below:

- 24-70mm F4 Zeiss OSS
- 28-70mm F3.5-5.6 Sony OSS
- 70-200mm F4 Sony G OSS
- 35mm F2.8 Zeiss
- 55mm F1.8 Zeiss

Confused about lens nomenclature like “FE,” “OSS,” and “E-mount?” I explain it all in 0, “Quick Guide for the Impatient User.”

Note from Ross: I should say that when I switched from my full-frame film cameras to APS-C digital cameras when there were no full-frame models available yet, I continued to use my full-frame lenses and actually bought only one APS-C lens, a Minolta 11-18, because I needed the wide-angle coverage. After Sony made full-frame digital cameras available, I never bought another APS-C camera until the A6000, which complements my Sony A7R. Because I have them, I use full-frame lenses almost exclusively on my Sony mirrorless cameras. You can read more about my equipment use history on my web site at http://rosswarner.com/tech_info.html



ISO 1600



ISO 6400

Figure 1-4: Adaptive Noise Reduction example. Look in the shadows and you'll see different amounts of noise reduction applied to the dark, featureless areas vs. the brighter, detail-ridden bricks.

1.1.7 ADAPTIVE NOISE REDUCTION

Usually high-ISO noise and image detail are tradeoffs, and the more aggressively you remove the noise (whether in-camera or in Photoshop), the more you quash your fine details. So, rather than reducing noise with abandon, the camera employs what Sony calls “Adaptive Noise Reduction.” This analyzes characteristics of an image such as “edge” and “texture” and applies noise reduction only to areas without detail, such as an open sky – the places where the viewer is most likely to notice it. (And yes, this is only applied to JPEG files.) **Figure 1-4** provides an example.

1.1.8 DIFFRACTION REDUCTION

Every lens has a “sweet spot” – an f/stop somewhere in the middle of its range where it performs at its best. At an aperture wider than that and the image tends to go soft; smaller than that and you get what’s called “diffraction” – the image looks a little blurrier, and points of light appear more blurred. The A6000 uses an implementation that attempts to reduce the effects of diffraction.

What does Sony’s product literature say? **Figure 1-5** shows their example. Yes, it’s hard to see the difference, but don’t let my inability to show you any meaningful difference keep you from getting excited about this very-difficult-to-correct-for-algorithmically feature.



Figure 1-5: Sony's product literature showing the benefit from the Diffraction reduction feature. As with many features in these cameras, you really have to "pixel peep" to see a difference.

1.1.9 ZEBRA STRIPES

This is a feature that professional videographers have been using for years. To explain what it does, let me first explain how videographers do their job.

News cameramen do not use any sort of automation – focus and exposure are all done manually. (This is because any kind of unintended changes of settings during a shoot will be very distracting to the viewer.) When it comes to exposure, the shutter speed and ISO are usually preset, so they just change the f/stop until the exposure looks “correct” and start shooting.

How does the camera operator know when it looks correct? Histograms? No. He (traditionally it's a ‘he’) looks at the zebra stripes.

You can configure the Zebra feature in either of two ways:

- 1) You can configure it to tell you if any of your highlights are blowing out before you shoot, and if so WHERE IN THE FRAME THAT WILL HAPPEN. (Live View histograms will only tell you that something is blowing out, but won't tell you where.)
- 2) You can configure it to tell you if the exposure of the subject's skin tone is correct. (Assuming that your subject is a Caucasian-skinned person – again, this function evolved during a time when that was generally true.)

There are a lot of subtleties associated with the Zebra function and its settings and I go into all the details in Section 7.1.



Figure 1-6: Zebra stripe example. It can either show you what's going to blow out (in video – stills have a greater dynamic range) or it can be set to show when a Caucasian face is properly exposed (right).

1.1.10 EYE AF

This feature is a great idea, although it will only make a difference in limited circumstances. If you're shooting portraits with certain lenses, the traditional method of focusing was to switch to Spot AF and focus-lock on the eyes. Well, Sony has modified their excellent Face Detection algorithms (which I have come to rely on now when shooting the grandkids) to hone in on just the eye, doing what you would do normally without having to resort to the focus-lock-recompose-shoot method.

Eye AF is not assigned to any button as the factory default. To use it, you must assign it to a button (I assign it to C2), hold down that button to focus lock, and then press the shutter button without releasing the custom button (C2).

Which lenses does it work with? It's hard to compile a complete list, but I know the lens must be a native E-mount lens and can't be too wide.

1.1.11 HDMI AND LCD AT THE SAME TIME

You won't find a description of this feature in any marketing brochure or the instruction manual, but it's important to me. When you connect your camera to an HDTV or a projector, your rear LCD and EVF still work. This was not the case with most previous Sony cameras.

Why is it important? I travel the world giving The Friedman Archives High-Impact Photography Seminars, a 2-day event which teaches the fundamentals of getting "Wow!"-type photography (plus the technical underpinnings) in a fun, intuitive, and memorable way. (Shameless plug: www.FriedmanArchives.com/seminars). During these seminars I often show people how to control a particular parameter by hooking my camera to a projector and taking a picture (often a portrait



Figure 1-7: You don't need to shoot blind when you hook up your camera to an external display.

when demonstrating Wireless Flash). Imagine taking such a picture with black LCD and EVF – you’re shooting blind! I’d have to point the lens at my subject and then turn my neck around to look at the giant screen to try to compose my shot. (It’s even more difficult if you’re shooting vertically, since the image shows up as horizontal on the screen.)

Anyway, it’s no longer an issue. From now on you’ll be seeing me give seminars using one of these cameras.

1.1.12 HIGH DYNAMIC RANGE (HDR)

In Chapter 14 I’ll also talk about the limited dynamic range of the digital sensor and how our eyes can see a significantly greater range of light (bright to dark) than what the camera can see. Over the past century there have been lots of attempts to correct this intentional artifact of photographic representation of real light, trying to render the image so it looks more like how we saw it. The latest technique for trying to achieve this wider dynamic range comes in what’s become known as High Dynamic Range (HDR) photography.



Figure 1-8: In-camera High Dynamic Range can turn difficult light with blown-out highlights and too-dark shadows (left) into something a little closer to the way you remember seeing it (right).

The time-honored way to create an HDR image is to put the camera on a tripod and take 3 (sometimes more) pictures of the same scene, each at different exposures – some darker, some lighter. Then, you merge them all

in your computer so it sort of looks like the way you saw it in real life. An example of HDR photography appears in **Figure 1-8**.

Up until now, HDR photography was labor-intensive and unintuitive – in fact, I once wrote a whole article on the subject and gave real-life examples of how to create these images in my Advanced Topics 2 e-booklet (available from www.FriedmanArchives.com/ebooks). (Sorry for the shameless plug! ☺).

That was HDR the old way. With recent Sony cameras, this useful feature is significantly easier to use. For starters, there's no need for a tripod anymore. With the feature enabled, you just point the camera at your subject, and press the shutter release button once. The camera will take three sequential pictures at different exposures (one lighter, one darker, one “normal”) and merge them in the camera for you. No computer needed. What's more, this feature can shoot up to a six-stop range. And just as with the Handheld Twilight function, *the camera will automatically try to align the three images for you* before merging them into a single JPEG image. That's pretty impressive stuff. This feature is discussed more in 14.

1.1.13 IN-CAMERA LENS CORRECTIONS

If you're a lens perfectionist, then you'll probably appreciate this feature. The A6000 has the ability to correct for the three most common types of optical deficiencies of lenses: vignetting, distortion, and chromatic aberration. It does this the same way that high-end and expensive desktop workflow software does: inside the camera firmware is a database of a small but growing number of lenses and their optical characteristics (and the corrections needed) even taking into account different focal lengths for supported zoom lenses. You can find more about this feature (including which lenses the camera knows about) in Section 7.24.

1.1.14 PEAKING LEVEL/PEAKING COLOR

The A6000 also provides two great manual focusing aids. The first is the Focus Magnifier (which shows you a magnified area of the image so you can fine-tune your manual focus), and the other is a *very useful* feature called Peaking Level (and its counterpart, Peaking Color). When you are in manual focus mode (or after focus is achieved in DMF mode), areas that have high contrast (which equates to sharp focus) will be highlighted in the color of your choice. It's much faster than using the ground-glass focusing screens of 1960's era film-based SLRs! (**Figure 1-9.**) I talk about Peaking in greater detail in Section 7.7.



Figure 1-9: Peaking Level and Peaking Color work together to make manual focusing easy again. Things that are sharp (= high contrast) are highlighted in the color of your choice.

1.1.15 POP-UP FLASH

The A6000 features a convenient pop-up flash. An added (but undocumented) feature is that you can use your finger to angle the flash upward and use bounce flash technique (in landscape orientation only). The pop-up flash has a guide number of 6 (effective to 6 meters at ISO 100). It's most effective as fill flash – it can't trigger wireless flash.

1.1.16 WIRELESS FLASH

I cannot emphasize enough the significance of this feature. (In fact, this topic is so important that I have devoted an entire chapter to it!) Professional photographers understand that probably the worst place to put a flash is on top of the camera facing forward. The best place? ANYWHERE ELSE! Walk into a professional portrait studio and you can see that lights are placed in all sorts of places. But those lights all have to be manually calibrated.

So now imagine that you can do the same thing as the professionals, all without wires and all with automatic exposure (i.e., no calibration)! With wireless flash the camera can communicate with off-camera flashes using long and short flash pulses, and has the ability to determine exposure automatically. It offers endless creative possibilities requiring almost no technical knowledge, and puts a lot of the fun back into learning and experimenting. I'll bet you'll get a kick out of playing with it.

Wireless flash is covered in 13.7.



Figure 1-10: Wireless flash is a joy to use and a real catalyst to creativity!

automatically. It offers endless creative possibilities requiring almost no technical knowledge, and puts a lot of the fun back into learning and experimenting. I'll bet you'll get a kick out of playing with it.

1.1.17 NO-COMPRESSION HDMI OUTPUT

Full 60p HD video can produce a lot of data. To allow a lot of it to fit onto an internal memory card the A6000 employs some level of compression, which a lot of pros don't like. A preferable option if you appreciate the quality difference is to attach an external hard disk recorder to the camera's HDMI port to capture uncompressed video.

1.1.18 AUTO ISO IN MANUAL EXPOSURE MODE

“What could be more useless than Auto ISO in Manual Exposure mode?” I used to ask myself. “After all, you only use manual exposure mode at times when your exposure meter would fail (when the scene wasn’t evenly lit, or the subject was predominantly white or black). Giving the camera license to make things look ‘average’ in such situations completely nullifies the purpose of a manual exposure mode!”

Well, it turns out that there *are* situations where it can come in handy, one of which is illustrated in **Figure 1-11**. Of the three variables of exposure (F/stop, shutter speed, ISO), sometimes you have good cause for nailing down the first two, and still want the camera to give you a good, average exposure automatically. This is one of those features that doesn’t appear in the product brochure. Sony has given it to us stealthily.



Figure 1-11: A use for Auto ISO in Manual Exposure mode. I knew I wanted to use a slow shutter speed (1/25th of a second) to show blur on the rotating gingerbread house, and I also knew my lens was sharpest at f/5.6, which I wanted to use. Having nailed down two variables like that, in situations like this it’s handy to have the camera make the ISO whatever it needs to be to make the exposure right. Former Nikon shooters have been clamoring for this feature for years.

1.1.19 SWEEP PANORAMA

Sweep panorama is no longer the amazing algorithmic exercise it once was, but it's still extremely convenient and I still use it frequently. It's a way of taking panorama shots without needing a tripod, careful alignment, or needing to stitch things together manually on your computer later. Just rotate the Mode dial to Panorama mode (the icon looks like a stretched rectangle), put the camera up to your eye, hold down the shutter release button, and "sweep" the camera from left to right (or in another direction you can specify). The camera shoots continuously, capturing all the detail it needs, aligning the images even if you have an unsteady hand, and then

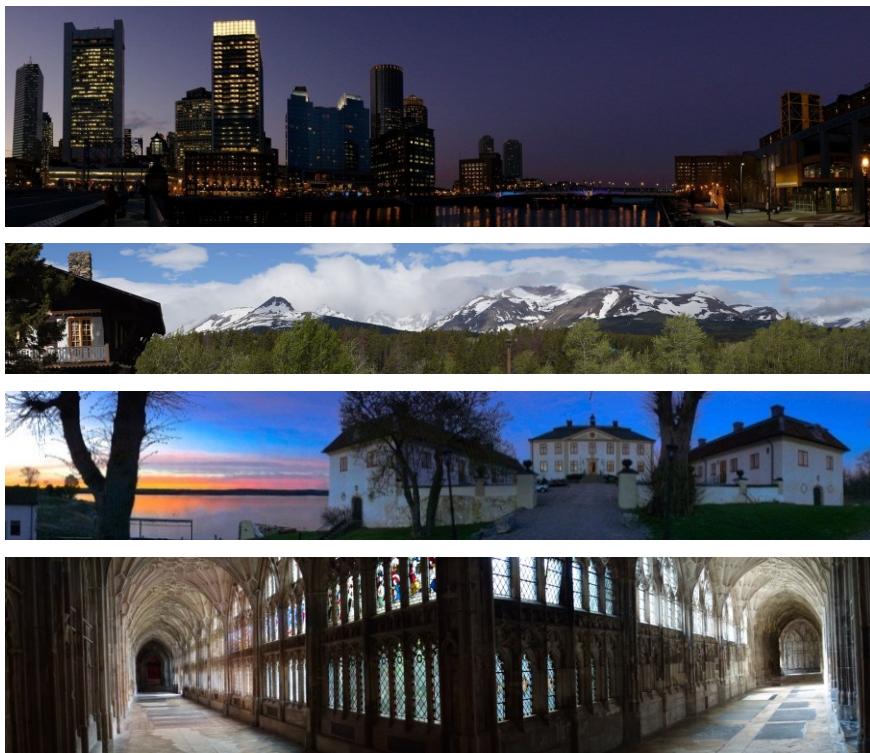


Figure 1-12: The handheld panorama mode makes images like these exceptionally easy. No tripod, no alignments, no post-processing on your home computer. Images are aligned and stitched together in-camera (even if you have an unsteady hand!) The top image had exposure compensation set to -1 to make it look like it looked to my eye.

stitches them together in the camera for you, producing one very-high-resolution image! Some samples of Panorama images appear in this section.

More information about this feature can be found in Section 3.11.

1.1.20 *LOCK-ON AF*

The camera can effectively track a moving object. (Mind you, it must be a *slow* moving object, but it will track it.) I find this feature most useful when shooting video. To use it, place your subject in the center of the image and press the Center button of the Control Wheel to identify it (**Figure 1-13**). If the subject starts to move, the camera will move that square (telling you it's tracking it) and the camera will continue to focus on that subject as it moves across the screen.

To achieve this, the camera has to analyze the live view feed in real time. (I remember when Northrop Corp. spent millions of dollars to develop this very object-tracking technology using a huge infrared camera. Trust me, it's not an easy problem. And Sony has squeezed the solution into your camera!)

You can also let the camera choose the subject if you set Lock-on AF to On (Start w/shutter) when you're in AF-C focus mode.

How agile is the object tracking feature? Let's just say that it works reasonably well for people who are walking, but a galloping horse might be too much for it. More about this feature can be found in Section 6.29.



Figure 1-13: Object tracking can automatically track a slow-moving subject across the frame (and will focus on it too if it's behind a focus point).

1.1.21 NEW HOTSHOE

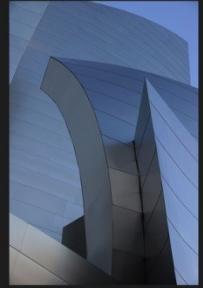
Here's the executive summary: In 2013, Sony changed their flash hot shoe standard to appeal to non-Sony users and provide a common accessory interface for their camcorders and still cameras. And while those are lofty goals, their new design has some disadvantages:

- 1) The new foot which is compatible with this new hot shoe has a lot of tiny pins which are easily bent and must be pampered by their owners. Gone are the days when a wedding photographer could just throw his flash into his camera bag with abandon and run to get the next shot.
- 2) You cannot use the new flashes (with the new hot shoe, like the F60 and F43) with "dumb" radio triggers for flash. The new flash foot will not fit into anyone else's ISO Standard hot shoe. Therefore if you're going to use dumb radio triggers you can only trigger studio flashes and not accessory flashes.



Figure 1-14: The new Multi-Interface Shoe can not only accommodate a standard third-party flash accessory, but it can also provide data for an external EVF, microphones, GPS, Wi-Fi, or whatever else the future may hold. But now you have to pamper your flash.

The new hot shoe design can do more than just accommodate flash. I talk about it at length in my blog post at <http://bit.ly/OxHGNq>.



CHAPTER 2

MY PERSONAL CAMERA SETTINGS

I know there are a lot of features to absorb and settings to understand, and I'll try to explain each one to you properly throughout the course of this book. But, I know from history that the most often-referenced part of Gary Friedman's previous books has been "My Personal Camera Settings," and so I'm including mine (Ross's) here just to give you a jump-start and help walk you through some of the features at the same time. Of course I change these settings a lot depending on what I'm shooting, the light level, and the effect I want to achieve. But these represent my "standard" configuration.

2.1 CUSTOM KEY SETTINGS

The A6000 has seven customizable buttons. Sony provided these because no two people shoot the same way or have the same needs to have quick access to functions.

Below is how Ross has configured his camera's assignable buttons. Note that the Up button is permanently assigned to the DISP function and can't be changed. For more complete information check out Section 7.26.

Button	Setting
AEL button	AF/MF Control Hold. I use this for back-button focus in MF mode.
C1	Focus Magnifier. This is in the same position as Focus Settings (a very similar feature) on the A7 and A7R, so it's the first place I instinctively go.
C2 (Trashcan)	Eye AF. To use Eye AF you need to hold down the assigned button while you press the shutter, so this is an ergonomically good location.
Center Button	Standard. If Focus Area is set to Wide, pressing the Center button changes to Center Focus and does an AF-S type focus lock.

Left Button	Drive Mode. A well-labeled and useful default.
Right Button	AF/MF Toggle. In AF modes, I like to switch to MF when the subject-to-camera distance isn't likely to change, or to see Focus Peaking. Conversely, when in MF mode I can switch to AF mode easily.
Down Button	Focus Area. If you find that you change Exposure Compensation more often than you change Focus Area, you may prefer to set this button to Exp. Comp.

2.2 FUNCTION (FN) MENU SETTINGS

The Fn menu is completely customizable using **MENU → ⚙ 6 → Function Menu Set**, and in this book I reference changing features through the **Fn** menu frequently. You can read detailed descriptions about each menu function in Section 7.25.

TIP: To adjust settings not configured in the Fn menu, use the Fn button with the Quick Navi screen displayed (Figure 3-1). Just press the Fn button, navigate to the variable you'd like to adjust in the Quick Navi screen, hit the Center button and adjust it. Then confirm the change by pressing the Center button again.

A few important settings don't appear in the default Function menu, and they aren't settable in the Quick Navi ("For Viewfinder") display on the LCD, either – which means to set them you would need to use the menu system. If you find you need to access any of these settings regularly, you'll probably want to add them to the Function menu (replacing less-used settings):

- Peaking Level
- Peaking Color
- Zebra
- SteadyShot
- Shoot Mode (useful for Movie and Memory Register modes)

Here's how Ross has his Function menu set:

Function Upper1	Focus Mode
Function Upper2	Focus Area
Function Upper3	Drive Mode
Function Upper4	Metering Mode
Function Upper5	Exposure Comp.
Function Upper6	Flash Comp.
Function Lower1	Peaking Level
Function Lower2	ISO
Function Lower3	Zebra
Function Lower4	DRO/Auto HDR
Function Lower5	Creative Style
Function Lower6	SteadyShot

This is what Ross's Fn menu looks like on the screen:

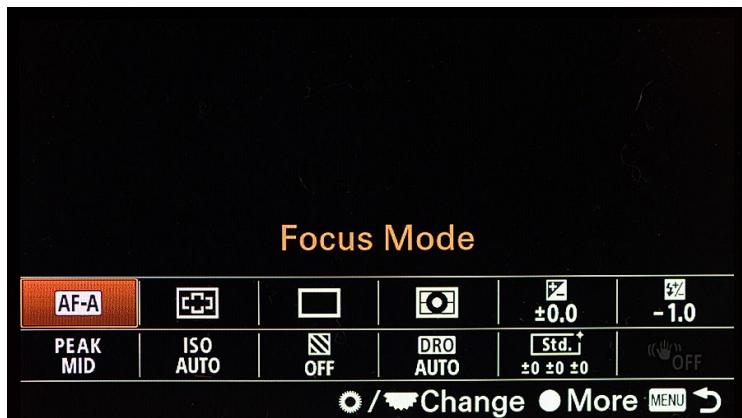


Figure 2-1: Use the Function (Fn) menu for quick changes to settings you access frequently. Some settings aren't available in the Quick Navi screen, so you may want to put them here to avoid going to the

menu system to change them: Peaking, Zebra, and SteadyShot (lower-right, grayed out here). If you find you don't need to access some of the settings here, substitute others you need more.

2.3 MEMORY REGISTER SETTINGS

For a more detailed description of how the MR setting on the Mode Dial works (and Gary's Memory Register settings), see Section 6.42. However, in keeping with the spirit of "My Personal Camera Settings," here is how Ross has configured the three Memory Registers on his A6000:

1. Memory Register 1: this register is configured for Action. It uses Continuous AF (AF-C), Wide Focus Area, Face Detection, and Lock-on AF set to "On (Start w/shutter)." I adjust Drive Mode using the Left button as needed, depending on the type of action. Aperture is set initially at f/5.6.



Figure 2-2: Memory Register 1: this register is configured for Action. It uses Continuous AF (AF-C), Wide Focus Area, Face Detection, and Lock-on AF set to "On (Start w/shutter)."

2. Memory Register 2: this register is configured for Portraits. It uses Single-shot AF (AF-S), Wide Focus Area, Face Detection, Lock-on AF set to “On,” and Eye AF. (The AF-S Focus Mode allows me to use C2 for Eye AF.) Aperture is set initially at f/2.8, but I often open up more if the lens allows it.

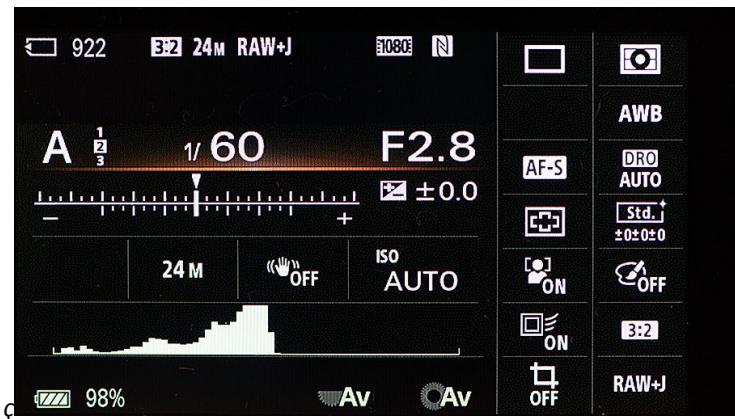


Figure 2-3: Memory Register 2: this register is configured for Portraits. It uses Single-shot AF (AF-S), Wide Focus Area, Face Detection, Lock-on AF set to “On,” and Eye AF.

3. Memory Register 3: this register is configured for Back-button focus. It uses Manual Focus (MF) and Wide Focus Area. I use the AEL button to trigger Back-button Focus (the AEL button is set to AF/MF Control Hold). Face Recognition and Lock-on AF are Off. Aperture is set initially at f/5.6.

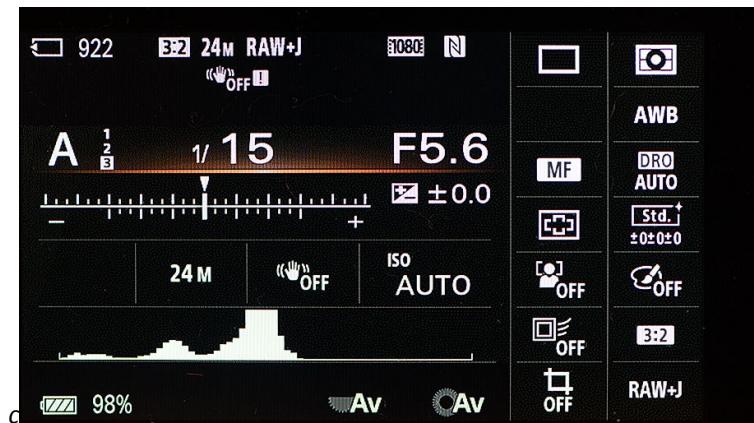


Figure 2-4: Memory Register 3: this register is configured for Back-button focus. It uses Manual Focus (MF) and Wide Focus Area. I use the AEL button to trigger Back-button Focus (the AEL button is set to AF/MF Control Hold).

Memory Register 3 is very versatile. I use the Right button, which I have assigned to AF/MF Toggle, to switch from MF with Back-button focus to AF-S focus mode with the Shutter. (While I'm temporarily in AF-S mode I can hold the AEL button to briefly see Focus Peaking.) Pressing the Right button again puts me back in MF mode. (In MF mode, AF/MF Toggle switches to AF-S – it doesn't use other AF modes.)

Memory Register 3 is actually the same as my default way of working in the PASM modes, except that in PASM modes I generally set one of the autofocus modes rather than manual focus. I can still switch to MF mode using the button assigned to AF/MF Toggle, but this setup is less confusing. Behavior is the same as described above except that Back-button focus is not available – I always focus using the Shutter. Using the PASM modes, I can just switch the Focus mode to MF to get the same setup as with Memory Register 3 and use Back-button focus.

I find Memory Register 3 especially convenient when I've changed a lot of my PASM settings and I need to get back to my normal way of working in a hurry! I can call up Memory Register 3, set it to whatever Focus mode I want to use, and everything is familiar again.

Memory Register 3 enables two of the focus methods that Gary discusses beginning in Section 3.3.6. (I don't need to decouple focus from the shutter button because autofocus is inactive in Manual focus mode.)

2.4 MY PERSONAL MENU SETTINGS

Note that Gary and Ross agree on these settings with very few exceptions, which are pointed out.

Recording Menu 1

Function	Setting
Image Size	L: 24M. It's always best to shoot at the highest quality and resize later. (Section 6.1)
Aspect Ratio	3:2. I'd shoot 16:9 if I knew my work would only be seen on an HDTV, but 16:9 actually chops off part of the picture. More is better. (Section 6.2)
Quality	RAW & JPG, although for casual shots I'll sometimes shoot Fine. (Section 6.3)
Panorama: Size	Standard, unless I'm looking for an extremely wide view (Gary prefers Wide). Available only when Panorama mode is selected on the Mode dial. (Section 6.4)
Panorama: Direction	Either Down or Right depending on whether I'm shooting in portrait or landscape orientation (you can also choose Down or Left). (Section 6.4)
 File Format	MP4. The other option is AVCHD, which many may prefer, but it's harder to deal with. (Gary prefers AVCHD as his default.) (Section 6.5)

Recording Menu  2

Function	Setting
 Record Setting	The more information captured the better. If I have MP4 selected I choose 1440 x 1080 12M; in AVCHD mode I choose 60p 28M(PS). (Section 6.6)
Drive Mode	Single Shooting for static subjects; Continuous Shooting – Mid Speed for moving subjects (and I delete a lot of images afterward). Mid is a convenient speed for most things that change, including people shots. (Section 6.7)
Flash Mode	Fill-flash. I switch to Wireless or other modes as needed. (Section 6.7)
Flash Comp.	Works like Exposure Compensation ("Make it lighter! Make it darker!") except that you're varying the intensity of the flash. I keep this set to -1 except when I'm using it as fill flash, in which case I set it to -2.7. (Section 6.9)
Red Eye Reduction	Off, unless needed when using the pop-up flash. I hate this feature! (Section 6.10)
Focus Mode	I usually keep it set to AF-A (Automatic AF) or MF (which confirms focus using Peaking level, as described in Chapter 3). (Gary generally prefers AF-S or DMF.) If I'm shooting anything that moves, such as sports, kids or pets, I set it to AF-C (Continuous AF). (Section 6.11)

Recording Menu  3

Function	Setting
Focus Area	Wide. I change it when specific situations come up. (Section 6.12)
AF Illuminator	Off (Gary prefers Auto). This specifies whether the bright orange light in the camera body should be used as a focusing aid when the light levels are too dark. I find that people find the light too distracting. (Note: The near-IR LED's in the optional accessory flashes cannot be used in mirrorless cameras for technical reasons). (Section 6.14)
 AF Drive Speed	Normal. (Section 6.15)
 AF Track Duration	Normal. (Section 6.16)
Exposure Compensation	0.0 unless compensation is needed. (Section 6.17)
Exposure Step	0.3EV (personal preference). (Section 6.18)

Recording Menu  4

Function	Setting
ISO	My default setting is usually Auto (100 minimum, 1600 maximum or 3200 maximum in low light), then that's one of the first things I'll change in the process of making the shot better. (Section 6.19)
Metering Mode	Multi. (Section 6.20)
White Balance	I keep this on Auto as my default. If the lighting is very tricky, I use Custom White Balance. (Section 6.21)
DRO/Auto HDR	DRO Auto (which is the factory default). (Chapter 14 discusses DRO and HDR.)
Creative Style	Standard (Std). My preference is to do any image tweaking by computer rather than using these Creative Style settings. (Occasionally I shoot RAW & JPG with Black & White Creative Style. (Section 6.23)
Picture Effect	Off – see above explanation for Creative Style.

	Sometimes it's fun to use Picture Effect (but you can't shoot RAW or RAW & JPG). (Section 6.24)
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Recording Menu  5

Function	Setting
Zoom	1.0, which essentially means "don't zoom." This feature does a "digital zoom," cropping away valuable pixels in order to simulate zooming in, then it upsizes the image back to 24 megapixels. I never use this feature, preferring to do any cropping on my computer. (Section 6.25)
Focus Magnifier	Much better when assigned to a custom button rather than used in a menu. In MF mode, this feature does what you might think – it magnifies the live view so you can focus critically. (Section 6.26)
Long Exposure NR	On, unless I'm shooting fireworks. Reduces noise for exposures longer than one second using a technique called Dark Frame Subtraction. (Section 6.27)
High ISO NR	Normal. (Section 6.28)
Lock-on AF	Off, except in certain situations. I turn it On for action and portraits with Face Recognition On and store the settings in Memory Recall banks 1 and 2. Also very handy for video. (Section 6.29)
Smile/Face Detect.	Off, unless I'm photographing people. (Section 6.30)

Recording Menu  6

Function	Setting
Soft Skin Effect	Off. This feature can smooth acne-ridden skin under certain, very-limited conditions. (Section 6.31)
Auto Obj. Framing	Off. I kept it On while I was working on this book; now that I've seen what it does and have completed the writeup, it's now permanently Off. (Section 6.32)
Scene Selection	When the Mode dial is set to SCN, you can change the scene category using either this menu item or the Control Dial. Initially, it uses your last-selected Scene setting. The Scene mode I use most is Handheld Twilight. (Section 6.33)
Movie	Program Auto (personal preference). When the Mode dial is set to Movie this menu item lets you specify Program Auto, Aperture Priority, Shutter Priority, or Manual Exposure Mode just for movies. (Section 6.34)
SteadyShot	On, unless my camera's on a tripod. This feature is only available when you have an optically stabilized ("OSS") lens attached. (Section 6.35)
Color Space	sRGB. AdobeRGB is for experts whose work is going to be reproduced on a 4-color press. I use sRGB on the camera, ProPhoto RGB on my computer. (Section 6.36)

Recording Menu  7

Function	Setting
 Auto Slow Shut.	On. Enables a slower shutter speed when shooting movies in certain situations. (Section 6.37)
Audio Recording	On. This lets you record audio with your video. (Section 6.38)
Wind Noise Reduct.	Off, unless you're recording a movie and there's too much wind noise. Filters out lower frequencies (where wind noise usually occurs). (Section 6.39)
Memory	Not a setting, use as needed. Stores the current camera configuration (well, most of it) into one of three Memory Recall slots for MR on the Mode dial. (Section 6.42)

Custom Menu  1

Function	Setting
Zebra	Off, but it can be a handy feature in situations with a lot of backlight. This feature is a handy way to know ahead of time what's going to blow out, or whether a Caucasian face is well-exposed. (Section 7.1)
MF Assist	On. This makes Live View automatically zoom in when you adjust the lens focus ring, in order to help with manual focusing. (Section 7.2)
Focus Magnif. Time	No Liimit (Gary uses 5 seconds). Sets how long the MF Assist function (above) maintains a zoomed view. (Section 7.3)
Grid Line	Rule of 3rds Grid. Superimposes a grid over your live view image to aid with composition. (Section 7.4)
Auto Review	Off. Sets whether the camera displays the image immediately after you take it. That can be handy, but I keep it Off most of the time because it can make you miss a shot . To review images I just press the Playback button. (Section 7.5)

DISP Button	Ross selects everything except Graphic Display for both the Monitor and Finder. Lets you specify which of several information screens to cycle through on the rear LCD or on the EVF (the sets can be different) each time you press DISP (Up) button. (Section 7.6)
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Custom Menu 2

Function	Setting
Peaking Level	Mid. A great and quick manual focusing aid – all the high-contrast areas are “lit up” in Live View. (Section 7.7)
Peaking Color	Yellow. Used in conjunction with Peaking Level above. Specifies which color to display when things are in focus. (Not selectable when Peaking Level is set to Off.) (Section 7.7)
Exposure Set. Guide	Off. This determines whether a ribbon display appears when you change things like shutter speed and f/stop in certain modes (it doesn’t do anything useful). I keep it Off because when I’m in manual exposure mode and I adjust the f/stop or shutter speed, this ribbon blocks the histogram so that I can’t see it. (Section 7.8)
Live View Display	Setting Effect ON. Sets whether Live View shows you how your image will look before you shoot. Set it to Off if you’re shooting with studio strobes. (Note that with lens adapters this setting does not show the effect of stopped-down aperture.) (Section 7.9)

Custom Menu 3

Function	Setting
Pre-AF	Off (Gary prefers On). You may want to set this On if you’re shooting sports or action. Sets whether your camera tries to achieve autofocus before you tell it to by pressing the shutter release button half-way. (Section 7.11)
Zoom Setting	Optical zoom only. The camera offers two digital zoom

	features which I don't care for, but you might if you're shooting sports from the top of the bleachers. Works in conjunction with Zoom in Recording Menu 5. (Section 7.12)
Eye-Start AF	Off. This works only when you have an A-mount lens attached via one of the LA-EAx adapters, and tells the camera to start finding focus as soon as you bring the viewfinder to your eye. I disable this feature because the extra battery drain can be excessive. (Section 7.13)
FINDER/MONITOR	Auto. This setting tells the camera to automatically switch to the Viewfinder (and turn off the LCD) when it senses something close to the Viewfinder. (Section 7.14)
Release w/o Lens	Enable. (I like watching the shutter work with the lens removed ☺.) Also, this setting allows the camera to work with a non-native lens attached via an adapter. (Section 7.15)
AF w/ Shutter	On. Sets whether pressing the shutter release button halfway locks the focus; with MF this setting makes no difference. (Section 7.16)

Custom Menu 4

Function	Setting
AEL w/ Shutter	Auto (Gary prefers On). This setting determines whether pressing the shutter release button half-way locks the exposure. (When you're in MF mode, it doesn't make a difference.) (Section 7.17)
e-Front Curtain Shutter	On. Keep this setting On unless you're experiencing occasional mysterious overexposures with non-native lenses. (Section 7.18)
S. Auto Img. Extract.	Auto. When in Superior Auto mode, tells the camera to discard all but the "best shot" when it shoots multiple exposures. (Section 7.19)
Exp.comp.set	Ambient only. Tells the camera to adjust exposure compensation for ambient light only. I prefer to control my flash intensity using the "Flash Exposure

	Compensation” function. (Section 7.20)
Bracket Order	0 → - → + (the default setting). (Section 7.21)

Custom Menu  5

Function	Setting
Face Registration	Allows you can register up to 8 faces for Face Recognition to use, and rearrange their priorities. (Section 7.22)
AF Micro Adj. (A-mount lenses only)	Invokes a feature that can correct for focusing problems when using certain A-mount lenses via one of the LA-EAx adapters. (Section 7.23)
Lens Comp.	I keep all 3 settings set to Auto. Allows you to enable or disable corrections for known deficiencies in lenses the camera recognizes. (Section 7.24)

Custom Menu  6

Function	Setting
Function Menu Set.	Ross's personal Fn menu settings can be found earlier in this chapter. Allows you to customize the top and bottom rows of adjustable parameters that appear in the viewfinder when you press the Fn button. (Section 7.25)
Custom Keys Settings	Ross's personal Custom Key settings can be found earlier in this chapter. Allows you to customize 7 buttons on the camera. (Section 7.26)
Dial/Wheel Setup	I prefer SS, F.no., which assigns control of shutter speed to the Control Wheel and aperture to the Control Dial. This function lets you swap the roles of the Control Wheel and Control Dial. (Section 7.27)
Dial/Wheel Ev Comp	Off. This lets you reassign the Control Wheel or Control Dial to Exposure Compensation. (Section 7.28)
MOVIE Button	Movie Mode Only (Gary prefers Always). This feature was designed to help prevent accidental taking of

	movies. When set to Movie Mode Only, the MOVIE button works only when the Mode dial is set to  (Section 7.29)
Dial/Wheel Lock	Unlock. Sets whether you can disable the Control Dial and Control Wheel by pressing and holding down the Fn button for at least two seconds. It's designed to help prevent accidental dial changing while handling the camera; however it would only slow me down and get me frustrated. (Section 7.30)

Wi-Fi Menu 1

Function	Setting
Send to Smartphone	Not a setting; this initiates sending a photo (or photos) to your mobile device via Wi-Fi. (Section 8.1)
Send to Computer	Not a setting; this initiates sending a photo(s) to your computer via Wi-Fi. (Section 8.2)
View on TV	Not a setting; initiates viewing of photos on a Wi-Fi enabled TV. (Section 8.3)
One-Touch (NFC)	Lets you choose which of the camera's internal apps to launch when you bump it with your NFC-compatible mobile device. (Section 8.4)
Airplane Mode	Off. When it's set to On, it disables ALL Wi-Fi sending or receiving (even that of an Eye-Fi card, if inserted). (Section 8.5)
WPS Push	Some Wi-Fi access points have a mechanism called WPS Push that makes it easy to pair (to borrow a Bluetooth term) a camera to the access point. If yours has it, use this feature to get you going. (Section 8.6)

Wi-Fi Menu  2

Function	Setting
Access Point Set.	Lets you manually choose which Wi-Fi access point to connect to. (Section 8.7)
Edit Device Name	Changes the name that other Wi-Fi devices use to identify your camera. I think the default name ILCE-6000 is pretty descriptive ☺). (Section 8.8)
Disp MAC Address	Every Ethernet device has its own globally unique ID – this function shows it to you. (Yes, Wi-Fi is based on TCP/IP protocols which in turn are based on Ethernet protocols.) (Section 8.9)
SSID/PW Reset	This erases the camera's memory of your paired smartphone connection. (Section 8.10)
Reset Network Set.	This erases the camera's memory of your computer's Wi-Fi connection. (Section 8.11)

Application Menu  1

Function	Setting
Application List	Shows all the apps in your camera, either pre-installed or downloaded from sony.net/pmca. (Section 9.1)
Introduction	This is the first step in acquiring downloadable applications for your camera. (Section 9.2)

Playback Menu  1

Function	Setting
Delete	Not a setting. Used to delete one or more images. (Section 10.1)
View Mode	Date View. Do you want to view stills by Date or Folder, MP4 videos, or AVCHD videos? Using Date View lets you peruse things in reverse chronological order. (Section

	10.2)
Image Index	Lets you choose between seeing 12 or 30 thumbnails per screen when playing back images in Index mode. We both like to set this to 12. (Section 10.3)
Display Rotation	Off – displays all images in landscape orientation (full-screen). The Manual setting displays images according to their orientation information. I use the Off setting and turn the camera to review full-size images that were shot in portrait orientation. (Section 10.4)
Slide Show	Automatically runs a slide show of your still images. Ideal when hooked up to an HDTV. (Section 10.5)
Rotate	Not a setting; it's how you rotate the currently displayed image if you have Display Rotation (above) set to Manual. (Section 10.6)

Playback Menu ▶ 2

Function	Setting
Enlarge Image	Not a setting; it plays back the most recent photo and lets you zoom in and around. Normally I just press the AEL button while playing back – much faster! (Section 10.7)
4K Still Image PB	Got your A6000 hooked up to a 4K TV? This outputs a 4K-sized image when playing back. (Greyed out if not connected.) (Section 10.8)
Protect	Protects individual images from accidental deletion while they're in the camera. (Section 10.9)
Specify Printing	Lets you control what gets printed when you connect your camera or memory card to a compatible inkjet printer. (Section 10.10)

Setup Menu  1

Function	Setting
Monitor Brightness	Monitor refers to the rear LCD panel. I prefer Manual set to +1. There is also a setting called Sunny Weather for bright outdoor conditions (this setting is brighter than Manual +2). (Section 11.1)
Viewfinder Bright.	I also prefer Manual set to +1 (otherwise the EVF looks too dark to me). (Section 11.2)
Finder Color Temp.	Lets you add either a hint of blue or yellow to the EVF to help correct its color. I keep it mine at -2 because that most closely matches what my unaided eye sees (Gary leaves his at 0). (Section 11.3)
Volume Settings	How loud should the volume be when you're playing back movies? I set mine to 7, but you can also adjust it during playback by pressing the Up or Down buttons. (Section 11.4)
Audio signals	Do you want your camera to make noises like focus confirmation chirp or a beep during the self-timer? I like the feedback, so I set this to On (Gary prefers Off). (Section 11.5)

Setup Menu  2

Function	Setting
Tile Menu	Off! Do you want to enable one of the last holdouts of the experimental user interface that graced the original NEX cameras, which experienced users despised? Then turn this On. (Section 11.6)
Mode Dial Guide	This enables one-line "help" memory jogs which you may or may not find useful. I have this set to Off. (Section 11.7)
Delete confirm.	"Delete" first. This setting can save you a step every time you delete an image from the memory card. You may prefer "Cancel" first. (Section 11.8)

Pwr Save Start Time	How long before the camera begins its power-saving regimen? Our preference is usually 2 minutes (your setting depends on how quickly you work and how many spare batteries you carry). (Section 11.9)
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Setup Menu 3

Function	Setting
Cleaning Mode	Not a setting. Vigorously shakes the sensor to loosen (and hopefully shake off) any dust particles that might have accumulated while changing lenses. (Section 11.10)
Demo Mode	Always grayed out (designed for retailers). You can safely ignore this. (Section 11.11)
Remote Ctrl	Do you want to enable the camera's Infrared receiver so you can use the infrared remote control? It consumes extra battery so I always keep this Off unless I'm actually using it. (You don't need to set this if you're using an analog remote control such as the RM-VPR1.) (Section 11.12)
HDMI Resolution	Auto. This function exists in case your TV and your camera can't figure each other out upon initial connection. (Section 11.13)
CTRL FOR HDMI	Enables the your big screen's remote control to control your camera. I keep this set to Off (Gary prefers On). (Section 11.14)
HDMI Info. Display	When the Exposure Mode Dial is set to Movies, and you're hooked up to an external monitor via HDMI, do you want shooting status icons to appear on the external display? I like my external monitor to be free of such distractions, so I keep this set to Off. (Section 11.15)

Setup Menu  4

Function	Setting
USB Connection	How do you want your camera to appear to your computer when tethered via USB? I go for Mass Storage and I explain why in Section 11.16.
USB LUN Setting	This has to do with the fact that the camera can appear as multiple devices when plugged into your computer. I have it set to Multi because the manual vaguely says this is needed when used with Sony's software "PlayMemories Home." Macintosh users should set it to Single. (Section 11.17)
Language	Yo tengo la mía establecido en English. (Section 11.18)
Date/Time Setup	Lets you set the date and time. (Section 11.19)
Area Setting	Lets the camera know what time zone you're in. After you've set the date and time, you can just change this setting when you're traveling and leave Date/Time Setup alone. (Section 11.20)

Setup Menu  5

Function	Setting
Format	Quickly erases all images and movies from the card and initializes it. (Section 11.21)
File Number	Series. Specifies whether the camera resets the file number scheme when you change memory cards. (Section 11.22)
Select REC Folder	If there is more than one directory for holding still images on the memory card, this function lets you choose which one future images will be stored in. (Section 11.23)
New Folder	Creates a new folder to hold new stills. (Section 11.24)
Folder Name	Standard Form. Lets you choose between a cryptic-looking folder name (Standard Form), and one containing the date the images were shot (but in a format that is

	not computer-sortable). (Section 11.25)
Recover Image DB	Attempts to recover a corrupted image database while it's still on the card. (Section 11.26)

Setup Menu 6

Function	Setting
Display Media Info.	Not a setting. Shows you approximately how many more stills can fit on the memory card, and how many more minutes of video will fit using current settings . (Section 11.27)
Version	Not a setting. Shows the firmware version of your camera and of the attached lens. (Section 11.28)
Certification Logo	In the version sold in some countries, this menu item will display some sort of certification information. (I own the USA version and this menu item doesn't appear.)
Setting Reset	Resets some or all of the camera settings. Beware! (Section 11.29)

2.5 WHAT'S INCOMPATIBLE WITH RAW?

I give a good introduction to the benefits of shooting RAW in Chapter 15, but the A6000 offers many advanced bells and whistles that are incompatible with RAW mode. Some of them can't be used while in RAW, while others silently switch the camera to JPEG shooting while you use them and then switch it back when you're finished. Which features are incompatible with RAW, and how does the camera behave for each? A comprehensive table appears below.

Function	The camera switches to “Fine” JPG automatically	The camera prevents you from invoking it
Multi-Frame Noise Reduction (MFNR)		✓
High-Dynamic Range		✓
Handheld Twilight	✓	
Auto portrait framing		✓
Sweep Panorama mode	✓	
Image Size		✓ (RAW only)
Picture Effects (all of them)		✓
ClearImage Zoom		✓
Long Exposure noise reduction		(It's allowed!)
High ISO noise reduction		✓ (RAW only)

(When an item is labeled “RAW Only” it means that the feature is selectable if you have RAW & JPG enabled, but the effect applies only to JPEG files.)



CHAPTER 3

QUICK GUIDE FOR THE IMPATIENT USER

YES, IT'S BASIC, BUT I'LL BET YOU'LL LEARN AT LEAST ONE NEW THING BY READING THIS CHAPTER. ☺

3.1 THE QUICK NAVI SCREEN

If you're like me and you're constantly going back and forth between different cameras, it can be VERY easy to get confused and say, "Now how do I change that particular setting again? Is it in a menu, or on a button, or in the Function menu, or...?"

So, here's a timesaving feature: turn the camera On and press the DISP (Up) button several times until the screen in **Figure 3-1** appears. This is the kind of screen that most DSLR users are accustomed to seeing on the back of the camera when they shoot. If you like this screen, you can keep it this way – when you put your eye up to the viewfinder you'll see your subject in the Viewfinder just as you expect. I keep the Quick Navi screen displayed on the LCD most of the time.

With the Quick Navi screen displayed (**Figure 3-1**), you just press the Fn button, navigate to the variable you'd like to adjust, hit the Center button and adjust it, then confirm the change by pressing the Center button again. (It's the next best thing to having a touch screen.) You can also use the Control Wheel to adjust the highlighted field without first pressing the Center button, then press the Center button to confirm the change. However, you may need to press the Center button to access related settings such as Auto ISO or Flexible Spot options.



Figure 3-1: The Quick Navi screen helps you quickly change settings faster than trying to find them in the menu.

TIP: In certain situations the LCD may go dark for no apparent reason, as if your camera has gone into power-saving mode. This is likely because something is in close proximity to the IR sensor below the viewfinder and you have **FINDER/MONITOR** set to Auto. This happens frequently if you are holding the camera at your waist or chest, or if the camera strap is dangling near the viewfinder. DON'T PANIC! Just move the strap out of the way or change the camera position.

3.2 THE FN BUTTON



Figure 3-2: The most commonly used settings are in the Fn menu by default. (This shows my customized layout.)

You can access several of the most important settings through the Fn menu displayed in the viewfinder. Just press the Fn button and the screen shown in **Figure 3-2** appears. The viewfinder Fn menu is actually customizable, and I talk about how to change it in Section 7.25. Using the Quick Navi screen is easier for most changes, but the benefit of using the Fn menu in the viewfinder is that you don't need to take your eye away to look at the LCD.

3.3 FOCUSING ESSENTIALS

The A6000 has a very useful feature called Face Detection. If you turn Face Detection On, when it finds a face it will try to focus on it.

With Face Detection Off (or when there are no people in the shot), the camera has no idea of what to focus on, and usually has to guess. Although the camera will usually guess correctly for common compositions like the kind shown in **Figure 3-3**, there are times when it will have no clue and you will have to tell it specifically which focusing sensor to use (like in

Figure 3-4). How do you tell it which focusing sensor to use? **Fn → Focus Area → [Choose either Center or Flexible Spot].**

Because the camera requires contrast in order to focus properly, you may find that you can easily fool the autofocus logic by pointing the camera to a blank, featureless wall. If there is no contrast, the camera will try to focus for about a second, and then “give up,” not having found any contrast to focus on. When the camera “gives up,” a flashing green dot appears in the lower left corner of the display or viewfinder. Fortunately, the camera will still let you take the picture even if it can’t find autofocus (that would really stress me out if it wouldn’t – sometimes something can be in focus and the camera just won’t realize it). Unlike many previous Sony cameras, the A6000 doesn’t have a setting to choose either Focus Priority or Release Priority – the camera is always set to Release Priority.

Conversely, if focus is successful, the green dot illuminates and it will also verify focus lock via a cute little “chirp” sound effect – a great feedback mechanism (unless you’ve turned off the Audio Signals option).



Figure 3-3: Wide Area Focus Example. The wide-area autofocus algorithms do an outstanding job for the vast majority of snapshots like this one.



Figure 3-4: Another situation where the Wide Area AF setting will be fooled. Switching to Spot AF allowed me to tell the camera, “Focus on the fowl, not on the fence!”

TIP: Your camera can focus in the dark! When the ambient light is too low for the autofocus mechanism to work properly, the A6000’s built-in orange L.E.D. will shine a light on your subject (unless you’ve disabled it or it’s blocked by a lens adapter). If your subject is close, and if it has contrast (which CDAF needs to work properly), then you’ll be able to achieve focus.

“But what about those big red LEDs on accessory flashes that project a pattern onto the subject, so that even blank, featureless walls can be focused upon?” I hear you ask. The answer is “The A6000 disables those LEDs on the flash. Theoretically the light they emit can’t be seen through the IR filter in front of the sensor.” Okay, but they should still work when you attach an A-mount lens with an LA-EA4 adapter! (Unfortunately, the accessory flash’s LEDs are still disabled in this mode.)



3.3.1 DECOUPLING FOCUS LOCK AND/OR EXPOSURE LOCK FROM THE SHUTTER RELEASE BUTTON

The A6000 lets you decouple focus lock and/or exposure lock from the shutter release button. This is great news for those DSLR shooters who were used to pressing one button to autofocus and another to take the picture.

Here are the menu settings that control these variables:

MENU → ⚙ 3 → AF w/ Shutter → OFF

If this is set to OFF, pressing the shutter release button will NOT autofocus. Instead, you'd have to assign AF to another button. Most people will want to assign AF to either the Center button of the Control Wheel or to the AEL button. (Setting up the camera to focus without using the shutter is commonly called "Back Button Focus.")

- To set AF to the Center button: **MENU → ⚙ 6 → Custom Key Settings → 1 → Center Button → AF On**
- To set AF to the AEL button: **MENU → ⚙ 6 → Custom Key Settings → 1 → AEL Button → AF/MF Control Hold**

Another thing you can decouple from the shutter release button is the locking of the exposure when you press the button. Many people view exposure lock with the shutter as a good thing, but you might be the kind of shooter that likes to control every variable separately. You can decouple the two functions via:

MENU → ⚙ 4 → AEL w/ shutter → Off

(Normally it's set to Auto, which locks the exposure with the shutter unless you're in AF-C focus mode). With the Off setting, the exposure will always be reassessed up to the moment you take the picture. If you're not happy with the exposure that you see in Live View, then you can tweak it using all the usual tools: the Exposure Compensation dial, using the AEL button, or switching to Manual exposure mode.

Decoupling both autofocus and exposure lock leaves the shutter release to just take the picture, and nothing else.

3.3.2 AF SETUP TRICK FOR PORTRAITS

Here's an unobvious yet very useful configuration for shooting portraits. If you're like most users, you'll autofocus on the subject just before you take the picture – *each and every time you take a picture*. This is kind of a waste of time since the distance between the camera and the subject isn't changing. It makes sense to just focus once, and then you're always ready to shoot the instant the expression is genuine. You need to refocus only if the camera-to-subject distance changes.

I find this combination of settings is great in this scenario:

- **Fn → Focus Mode → MF** (Manual Focus)
- **MENU → ⚙ 6 → Custom Key Settings → 1 → AEL button → AF/MF Control Hold**
- **Fn → Focus Area → Flexible Spot** (and choose an AF point closest to the eyes)

When you're ready to start shooting, move the AF point over the eyes and press the AEL button until autofocus is achieved. Then let go of the button and shoot away. Did the model move, or did you change position? Just press the AEL button momentarily to focus again. This is much faster than any other AF/MF switching method I've ever used.

TIP: *This is my usual way of focusing using back-button focus. By setting things up this way, you can switch from AF with the shutter in AF mode, and back-button focus in MF mode, just by changing the focus mode. –Ross*

3.3.3 DMF AND PEAKING LEVEL

Here's another unintuitive combination of features that I have found to be essential, especially on cameras that use contrast-detection autofocus:

- **Fn → Focus Mode → DMF**
- **MENU → ⚙ 2 → Peaking Level → Mid**
- **MENU → ⚙ 2 → Peaking Color → Yellow**

The last two settings, when combined, make for a wonderfully stress-free experience when you're shooting things quickly. Recall that the peaking function shows you what's in focus when you're in Manual Focus mode

(or, more accurately, it shows you the high contrast areas, which correlate strongly with sharp focus). And the previous setting told the camera to immediately go into Manual Focus mode just as soon as it gets focus confirmation. With this setup, as soon as the camera locks focus, you see instantly what it decided to focus on (especially handy if you have Wide Area Focus set, which is the factory default). And while you can tweak it if you want to, I've found it handier to actually move back or forth a little to fine-tune the focusing. MUCH faster and with more peace-of-mind than in the old days! (Note: DMF is described in greater detail in 6.11.4.)

3.3.4 MORE ABOUT FACE DETECTION

If you've never played with Face Detection before, I encourage you to try it – I found it to be quite valuable when shooting the kids, and it's faster than my tried-and-true focus-lock-recompose-shoot method that I've honed over the decades.

Not only will it quickly hone in on its subject and know what to focus on, it will also bias the overall exposure so that the face is properly exposed. This means it can get the exposure right in a great many more difficult lighting situations than before (**Figure 3-5**).

In order for Face Detection to do its job, the faces have to be of a reasonably large size (not specks on a football field), must be facing the camera, and be unobscured (no sunglasses, hats with large brims, or veils).



Figure 3-5: When the camera finds a face it will try to focus on that face and prioritize the exposure for that face. This means the camera will get the exposure right even when backlit (a tricky situation for most other cameras).

Face Detection is on by default, but if you want to change it, go to **Fn → Smile/Face Detect.** → [On, On (Regist. Faces), or Off]. See Section 6.30.

3.3.5 FOCUS MODES

The A6000 has five focus modes to choose from, which you can set using the Fn menu – **Fn → Autofocus Mode → [Choose one]**

- AF-A (Automatic AF) is the factory default focusing mode. It automatically switches between AF-S and AF-C modes depending on the movement of the subject.
- Single-Shot AF mode (AF-S) tells the camera, “Focus on a subject, and then lock focus until I take the picture.”
- AF-C (Continuous AF) mode is effective when you’re shooting sports or toddlers (or anything that moves). When AF-C is enabled you are essentially telling the camera “My subject is moving, so even when you’ve found focus, keep trying to focus on the subject because it will not remain still!”
- DMF (Direct Manual Focusing) allows you to use autofocus and manual focus in combination.
- Manual Focus.

Focus modes menu are covered in detail in Section 6.11.

TIP 1: If you’re shooting in continuous mode and your buffer fills up, the camera will prevent you from shooting again until there’s enough memory in the buffer (or memory card) for one more image. (This is a huge improvement over the A99, which wouldn’t let you take another picture until the entire buffer emptied first!)

TIP 2: Unlike with most of Sony’s previous cameras, if you set your camera to Manual Focus via the Fn menu, focus on something and then turn the camera off, when you turn the camera back on again the lens’ focus motor won’t change. (Again, this is an important improvement over previous cameras.)

3.3.6 *QUICKLY SWITCHING BETWEEN WIDE AND CENTER FOCUS AREA*

Here's another unobvious but incredibly useful tip for quickly handling situations like the example in **Figure 3-4**. Out in the field, I find it time consuming to have to Fn menu just to switch between Wide and Center focus. Here's a very handy shortcut:

- First, make sure to set **MENU → 6 → Custom Key Settings → 1 → Center Button → Standard.**
- Then set your default autofocus area to **Fn → Focus Area → Wide.**

Whenever you need to switch to Center AF quickly, **just press and hold the Center button**. The camera autofocuses on whatever's in the center and locks focus until you release the button (be sure to hold the button while you press the shutter release). While you hold the Center button the camera behaves functions in AF-S focus mode, even if your AF mode is set to AF-C or AF-A (an even handier thing)! When you release the Center button, the camera reverts to Wide autofocus area.

Note: Gary likes to press the Center button using the middle joint of his thumb, but Ross likes to use the end of his thumb because otherwise he sometimes activates the Drive (Left) button.

3.4 WHICH DISPLAY?

Okay, enough about focusing. Everyone asks me “Which is better to use – the LCD or the EVF?” The answer is that there is no best choice; each provides its own advantages and disadvantages. The following table summarizes the benefits of each.

LCD Display	EVF
Great for shooting at unusual angles (or kids at eye level).	Great for shooting movies (you tend to hold the camera steadier if it's next to your eye) .
Can be difficult to see on bright days, even if you use the Sunny Weather setting under Monitor Brightness via MENU → 📂 1 → Monitor Brightness.	A better choice for bright days, unless you're wearing glasses and the sun is shining <i>directly</i> between your glasses and the EVF.
	Preferred for shooting sweep panoramas (the algorithms work best when the sensor is close to the axis of rotation).
Consumes slightly less power than the EVF.	Consumes a little more power, but you can configure the camera to turn off BOTH displays when you're not looking through the EVF via MENU → ⚙️ 3 → FINDER/MONITOR → Viewfinder.
Essential when showing your pictures to others.	
Can be configured to show all relevant shooting variables on one screen.	Can be configured to show <i>most</i> relevant shooting variables on one screen.

TIP: In certain situations the LCD may go dark for no apparent reason, as if your camera has gone into power-saving mode. This is likely because something is in close proximity to the IR sensor below the viewfinder and you have FINDER/MONITOR set to Auto. This happens frequently if you are holding the camera at your waist or chest and trying to compose using the LCD, or if the camera strap is dangling near the viewfinder. DON'T PANIC! Just move the strap out of the way or change the camera position.

3.5 ABOUT POWER CONSUMPTION

The A6000 is something of a battery hog, so I recommend you always carry at least one spare battery when you're out shooting. For a full-day shoot, you really should carry several spare batteries! You can buy third-party batteries and a battery charger for a reasonable price on the Internet: <http://amzn.to/1nVphI> . \$27.99 USD gets you TWO batteries, a charger, and a car charger as well. They say that the batteries hold only about 85% as much power as the Sony battery, but at this price who cares? ☺

I prefer to always carry several spare batteries and not worry much about power consumption – *after all, the batteries are rechargeable!* However, if you're obsessive about extending battery life, you should configure your camera to get the best use out of those little, lightweight NP-FW50 batteries.

- Turn the camera off with the Power switch when you're not using it. If you're wearing the camera on a strap and the camera is not in power-saving mode, your body may activate the sensor that turns on the viewfinder, which uses a lot of power.
- Even though the EVF uses more power than the LCD, use it instead of the LCD (especially in sunny weather) and turn the LCD off: **MENU → 3 → FINDER/MONITOR → Viewfinder**. When you're not using the viewfinder, the camera turns both displays off.
- Set Power Save Start Time to as short an interval as you can stand without annoyance, taking into account the type of shooting you are doing: **MENU → 2 → Pwr Save Start Time → [Desired value]**. But remember, if you miss that “decisive moment,” it really doesn't matter how much power you've saved!
- Be sure that the Remote Control function is set to Off if you're not using an infrared remote control: **MENU → 3 → Remote Ctrl**.
- Avoid use of the Smart Remote Control application, as it needs to use Wi-Fi, which consumes power. Also, when Smart Remote Control is running, the camera won't use the Power Save function.
- If you're not using any Wi-Fi functions you can safely set Airplane Mode to On: **MENU → 1 → Airplane Mode → On**. However, this setting actually makes no difference if you don't specifically invoke a Wi-Fi function.

Some settings make very little difference in battery consumption:

- Brightness settings for the Viewfinder and Monitor
- The lens used, although OSS lenses will use more power when SteadyShot is On

3.6 CONFIGURING THE DISPLAY

When you're composing a picture using either the LCD or EVF, the A6000 gives you several choices regarding how much information it can show you. Just press DISP (the Display button) several times until the screen you want appears.

There are actually up to five different screens that you can cycle through on the LCD with the DISP button (four for the EVF), and you can specify which screens you want the display to cycle through by using **MENU → ⚙ 1 → DISP Button** (Section 7.6).



Figure 3-6: You can choose which displays the DISP button cycles through via this screen.

items). In order to have your settings take effect, though, you MUST click the Enter button on the screen to exit – pressing anything else (such as the shutter release or MENU button) will exit the screen, but the camera will not record any of the changes you just made!

Notice that the selection screen for the Finder doesn't have the For Viewfinder option on the right. “For Viewfinder” refers to the white-on-black Quick Navi display, which is only available on the LCD.



Figure 3-7: The Display button.

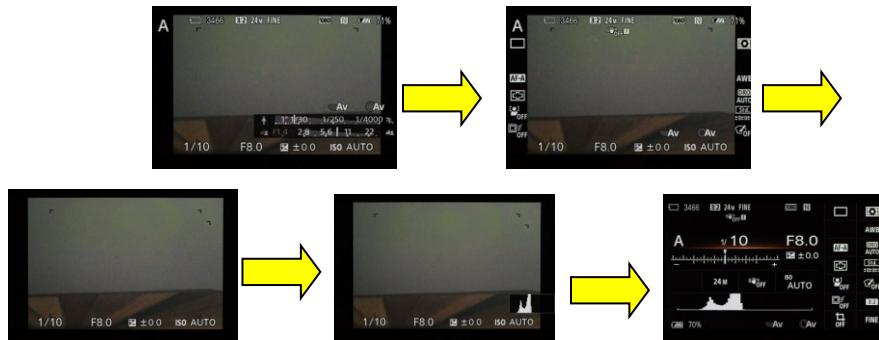


Figure 3-8: The five display screens available. Pressing the DISP button cycles from one screen to the next. The last screen is not available in the EVF, and is the one that includes the Quick Navi feature.

3.7 SETTING THE ISO

Yes, ISO is a simple function, but there are two subtleties to it, and this is the best place to explain them.

Recall that ISO specifies how sensitive the camera is to light. With higher ISO the camera is more sensitive to light, but also records more digital noise. To change the ISO, you can use the Fn menu in the viewfinder (if the camera is configured to have ISO appear there), the Fn button and the Quick Navi screen, a custom button (if you've assigned one), or **MENU → 4 → ISO → [Choose between MFNR, AUTO, or a numerical value]**.

3.7.1 ISO AUTO SETTINGS

You can use ISO AUTO in Manual Exposure mode (that should make lots of Nikon users happy). You can also configure the Minimum and Maximum value that ISO AUTO will use. Why would you want to? Some people just can't stand the idea of digital noise; and so they set the Maximum ISO to something like 1600 and go with slightly longer shutter speeds. Of course, your situation may be different, and so the camera gives you options. Use these steps to change the ISO AUTO Minimum and Maximum settings:



Figure 3-9: The smoothest waterfalls require the longest shutter speeds, which in turn require the smallest lens openings and the lowest ISOs. You can also use a ND or polarizer filter to allow a longer shutter speed.

1. First, call up **MENU →  4 → ISO** (or get to the ISO screen using one of the other methods mentioned above).
2. Use the Up and Down cursor buttons to select AUTO (NOT the first item, ISO AUTO, which is used to set MFNR).
3. Hit the Right cursor button once; use the Up and Down cursor buttons to adjust the ISO AUTO Minimum. I can't think of a good reason to move this away from 100.
4. Hit the Right cursor button again; use the Up and Down cursor buttons to adjust the ISO AUTO Maximum. Use the Up and Down cursor buttons to get to your desired value and then hit the center button to confirm. (The values increment in the opposite order of what I would expect – pressing the Up cursor button decreases the numerical value.)

3.7.2 MULTI-FRAME NOISE REDUCTION

The very first option on the ISO menu is MFNR (which may be grayed out if you're shooting in RAW or RAW & JPG mode). MFNR stands for

Multi-Frame Noise Reduction, and it sets the camera to shoot several pictures in quick succession, align them, and then merge them all together in the camera before writing a single file to the memory card. It leverages a time-honored astronomical technique of averaging several shots together – the random noise gets averaged away, but the pixels that are consistent from shot to shot are reinforced.

When you select MFNR, press the Right cursor button and then select the ISO you'd like the camera to shoot at, from ISO AUTO all the way up to ISO 51200 (which is not normally available as an ISO value). I talk more about MFNR later in this chapter where I talk about the various low-light modes in Section 3.14. You can see how well this function works by looking at the first two images in **Figure 3-36** (a few sections from now).

TIP 1: *I actually recommend setting the Maximum ISO to something low like 1600 for day-to-day use because this camera, unlike previous Sony cameras, would rather crank the ISO up to 25600 before even THINKING about dropping the shutter speed below 1/60th of a second. (This is regardless of whether you have a wide or a telephoto lens attached.)*

TIP 2: *MFNR ignores the self-timer setting. The camera will always start firing as soon as you press the shutter release button.*

3.8 SCENE SELECTION MODES

When you move the Mode dial to SCN you can turn the Control Dial to select one of the nine Scene Selection modes by recognizing its graphic icon. These are designed to quickly implement a combination of the camera's settings that are ideal for each of the identified shooting scenarios. You can also select modes as follows when the Mode dial is set to SCN: **MENU →  6 → Scene Selection**. This gives the advantage of showing the name of each mode as you select it, along with a description.

Since these modes were designed with the point-and-shoot crowd in mind, many useful parameters (like exposure compensation, autofocus mode, white balance, and other features) *cannot be tweaked*. Notice that most settings on the Quick Navi screen are grayed out – you can't change those settings. So, use the Scene modes for what they were designed for, but

you'll have to go back to P, A, S, or M mode in order to regain full control of your camera.

Okay, enough disclaimers. Let's go over what they do.

3.8.1 PORTRAIT

Like the Sunset mode (Section 3.8.5), Portrait mode (**Figure 3-10**) can take advantage of knowing the kind of picture you're trying to take and help you along. Portrait mode does three things:

1. It emphasizes shallow depth-of-field, which often contributes to a pleasing portrait (by setting a large aperture such f/2.8).
2. It assumes the largest portion of your image is your subject's face, and concentrates its exposure calculation on that.
3. It adds a little warmth to the color balance, which usually makes for a more pleasing portrait.



Figure 3-10: Portrait Mode.

To get the most out of this mode and end up with a classical-looking portrait, it is best to use a lens with an effective focal length of between 85mm and 200mm (55mm-135mm for APS-C format cameras such as the A6000), AND make sure that you have "good light" such as that provided by a large, north-facing window. (Use a south-facing window if you're in the southern hemisphere!) Use a diffused wireless flash if you don't have any windows at all. **Figure 3-11** shows some examples of good existing-light portraits taken in this way.



Figure 3-11: *Portrait Mode Examples.*

3.8.2 SPORTS ACTION

Sports Action Mode (**Figure 3-12**) will choose the fastest shutter speed possible for the given amount of light. Not only is it ideal for sports, but it also excels at shooting kids and pets (two more groups that don't sit still for *anything*). Sports Action mode will invoke the following camera features:

- Auto ISO (Maximum value is automatically set at 3200)
- Wide AF area
- Continuous Drive mode (Mid-speed, but you can also use Lo or Hi)
- Strives for the fastest possible shutter speed



Figure 3-12: Sports Action Mode.

Sports mode may be handy but it has a huge drawback: the camera will bump up the ISO to insanely high levels to get as fast a shutter speed as possible. For example, when I was shooting in Sports action mode with plenty of light, the camera chose 1/1000th of a second f/4 ISO 2000. Unnecessarily noisy! So if you're after better quality, instead of using Sports Action mode I highly recommend using the FARBSS (Friedman Archives Recipe for Better Sports Shots) method, which you may want to commit to a memory location:

- Set your camera to A (Aperture Priority) mode (yes, APERTURE).
- Set the F/stop all the way open (lowest number).
- Set ISO to something reasonable depending on your light. Your target goal for shutter speed is 1/2000th of a second or faster.
- Set Focus mode to AF-C.
- Set Focus Area to Wide.
- Set Drive Mode to Continuous Shooting in Mid- or Hi-speed mode.

3.8.3 MACRO

Macro mode (**Figure 3-13**) is almost identical to Portrait mode, in that it tends to favor shallow depth-of-field. “Macro” is photographer-speak for “taking pictures of things up close” like insects and flowers. It is best used with a special-purpose macro lens (you can use adapters for such classics as the Sony A-mount 50mm f/2.8 or the outstanding 100mm



Figure 3-13: Macro Mode.



Figure 3-14: “Macro” means “taking pictures of things up close.” A special Macro lens will produce the best results, and Macro Mode will set the camera’s parameters for a striking shot.

f/2.8), since other lenses may not have the ability to focus so closely to a subject. An example of a Macro shot can be seen in **Figure 3-14**. Macro mode sets the camera to AF-S (single-shot) mode.

3.8.4 *LANDSCAPE*

Although the instruction manual is kind of vague when it describes what Landscape mode does (**Figure 3-15**), my own tests reveal that it increases the contrast a little bit and also increases the intensity of the colors mildly – not as intense as the Vivid creative style (described in Section 6.23), but it is similar. (See example in **Figure 3-16**). The effects are subtle when shrunk down in this example. In fact, you might prefer the “out-of-the-box” look if you shot all images using Landscape mode.

You might think that Landscape mode would emphasize small f/stops to get everything in focus, but in my tests it behaved rather similarly to Program mode in bright light.



Figure 3-15: Landscape mode.



Figure 3-16: An urban scenic taken in Program mode (left) and in Landscape mode (right). Landscape mode increases the contrast and the color saturation, and just might be your preferred shooting mode for all of your photos.

3.8.5 SUNSET

Sunset Mode (**Figure 3-17**) is designed to make your sunsets look a little more spectacular. When in Sunset mode, the reds and yellows of the image – the very colors that are responsible for the beauty of a sunset – are enhanced a little to make the image just that much more pleasing. A foolproof sunset!! (See **Figure 3-18**.)



Figure 3-17: Sunset Mode.

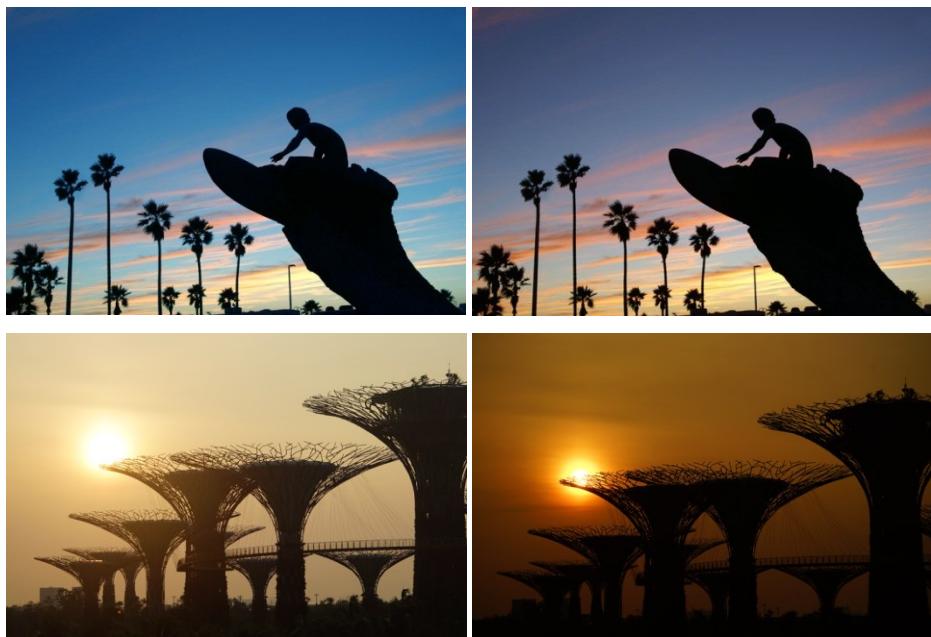


Figure 3-18: Sunset Mode Examples, without (left) and with (right). You can sometimes save really bad light by switching to Sunset mode and underexposing a little (bottom set).

3.8.6 NIGHT SCENE

Seriously, I have no idea what this feature does (**Figure 3-19**). It's supposed to "shoot night scenes clearly." However, test shots I took at night yield results that are indistinguishable from shots taken in iAuto mode. Sony says to use a tripod, and that this mode takes shots "without losing the dark atmosphere."



Figure 3-19: Night Scene Mode.

3.8.7 HANDHELD TWILIGHT

This is one of the four low-light modes that I'll discuss later on in this chapter. Handheld Twilight mode (**Figure 3-20**), which is extremely similar to Multi-Frame Noise Reduction (MFNR), uses a similar technique to HDR in that the camera takes multiple sequential images at high ISO and then merges them in the camera. It's designed for the times you forgot to take your tripod with you but you still want to try to get a handheld low-light shot. It's not a panacea, but it will give you better odds of success under poor lighting conditions.

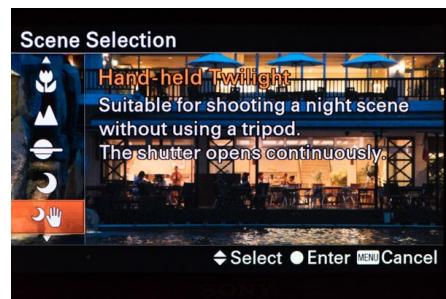


Figure 3-20: Handheld Twilight Mode.

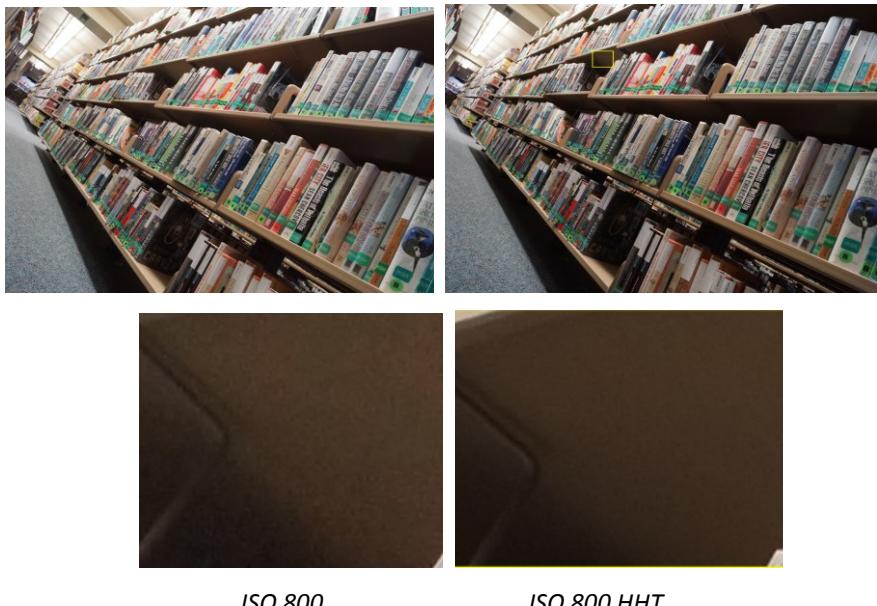


Figure 3-21: Handheld Twilight mode allows you to take a sharper low-light picture without using a tripod. It takes four consecutive exposures, aligns them, and then merges them in-camera, providing you with a lower-noise image than you would otherwise attain. The left image was taken in program mode, the right using HHT. Notice that HHT also factors out any fuzzy frames, leaving you with a slightly sharper image and about three stops less noise.

3.8.8 NIGHT PORTRAIT

Night Portrait mode (**Figure 3-22**) is the same thing as using flash in Manual mode with a long shutter speed. Also known as “Slow Sync” in the rest of the photographic world, Night Portrait Mode uses the flash to illuminate your subject properly, but then leaves the shutter open a little longer so the sensor can “absorb” the light from the background. The result is a nicely balanced picture, with both foreground and background equally represented.

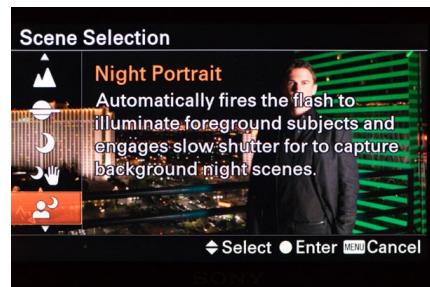


Figure 3-22: Night Portrait Mode.

The result is a nicely balanced picture, with both foreground and background equally represented. **Figure 3-23** shows an example of a normal flash picture in “P” mode, and a flash picture using Night Portrait Mode which brings out the background lights.

Note that if you don't use flash Night Portrait mode can't do much, but doesn't give you a warning.

One caveat of this mode is that you must instruct your subjects to remain



Figure 3-23: Night Portrait Mode Example. The left image was taken in P (Program) mode with flash. The right was taken in Night Portrait/Night View mode with flash, which enables you to “burn in” the background, providing a picture that is a little closer to the way you probably remember how the subject looked.

still even after the flash has gone off – because the shutter will remain open

for several seconds after the flash has fired, and moving subjects can cause an eerie and undesirable ghost effect.

3.8.9 ANTI-MOTION BLUR (AMB)

Anti-Motion Blur mode (**Figure 3-24**) is designed to make

things look less blurry in borderline situations. It works almost identically to Multi-Frame Noise Reduction (MFNR, Section 3.7.2) in that it, too, takes four sequential images and attempts to merge them in-camera. But AMB applies a little more intelligence to the merging, analyzing each individual shot, looking for the sharpest parts of each. If an object is sharp in one of the frames but blurry in others, only the sharp part will be included in the merged image. This results in a sharp picture with relatively low noise in most of the shot.

The only real differences between MFNR and AMB are that with MFNR 1) you can use the MFNR feature at ANY ISO, resulting in even less noise at any given setting (or resulting in a very high 25,600 ISO), and 2) you have full control over the camera's features, such as exposure compensation, ISO, White Balance, spot metering, etc.

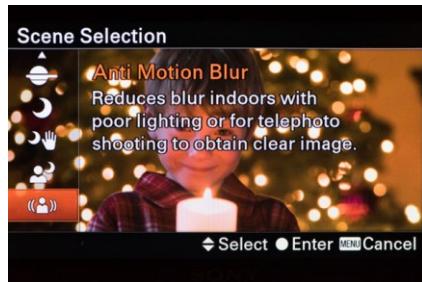


Figure 3-24: Anti-Motion Blur Mode.



Figure 3-26: A moving subject in low light as captured in Program Mode (left) and AMB mode (right). AMB takes four shots at any given ISO in rapid succession, and merges areas that don't move (reducing noise in those areas), but not including areas of images that contain blur. If you look closely, you can see higher ISO noise around the pendulum, but not around the areas that didn't move.



Figure 3-25: Things that move during the four AMB exposures will be noisy, but the things that don't move because the things that were blurry didn't get averaged (and therefore didn't help average out the noise). If you look carefully, the sky immediately surrounding both of these sky buckets is higher than the sky.

Figure 3-25, which shows an image that was taken in *extremely* low light, provides a little more insight as to what is going on inside the camera when it handles subjects that move. Both of the sky buckets were moving during the four shots, and if all four shots had been averaged together you would have seen one big blur. The camera, while processing the four shots, noticed the movement, and concluded “I can’t merge these – it’ll be a blur!” So, it picked one frame where they were sharp, and just didn’t merge that part of the image from the other frames. You can see evidence of this if you look really closely at the parts that are moving – the noise level in and immediately around the sky buckets is more intense than the other, non-moving areas immediately around them.

3.9 INTELLIGENT AUTO MODES

There are many times when I’m handing my camera to someone else (“Hey, would you take a picture of me and my wife?”) and it would be GREAT to be able to have the camera emulate a point-and-shoot. Well, the A6000 actually gives you two point-and-shoot modes: iAuto (Intelligent Auto) and iAuto+ (Superior Auto). (**Figure 3-27**). The way to invoke them is to move the Mode dial to either iAuto (the green icon) or iAuto+ (the orange icon). Although the iAuto modes take most control functions away from you, the A6000 has a new feature called Photo Creativity for use with the two iAuto modes. Photo Creativity allows you to control at least a few parameters while the camera takes care of everything else. See Section 3.9.3.

Note that iAuto modes do NOT reset your custom settings such as key assignment, lock w/ shutter, etc., that might be confusing to a stranger!



Figure 3-27: The Mode dial lets you choose intelligent Auto and Superior Auto.

3.9.1 IAUTO (INTELLIGENT AUTO)

iAuto mode (**Figure 3-28**) will reset almost every user-changeable feature, so you can shoot the moment and not have to worry about, “Did I remember to reset mode x?” When you’re finished shooting you can move right back to your previous exposure mode (probably P, A, S, or M) and all of your previous settings are restored.

Here is a summary of what camera settings are reset when you select iAuto mode (don’t worry; many of these concepts will be explained more thoroughly in 6 and 7):

- Metering mode is reset to Multi
- Focus area is reset to Wide (the camera determines the subject)
- Drive mode is reset to Single
- Flash compensation is reset to 0
- Exposure compensation is reset to 0
- White balance is reset to Auto
- ISO is reset to AUTO (which in this case means between 100 and 6400 and no, you can’t change it)
- Creative Style is reset to Standard (contrast, sharpness, and saturation are all set to 0)
- High ISO Noise reduction is reset to Normal
- Long Exposure Noise Reduction is reset to On

Features that are NOT reset are:

- Image Quality – if you were shooting RAW before, it will still shoot RAW in AUTO mode.
- Focus Mode – If you put the camera into Manual Focus Mode (for instance), iAuto will not override it.
- Image Size (Large, Medium, or Small)
- Red Eye Reduction mode
- Aspect Ratio (3:2 or 16:9)
- Pre-AF (whether the camera starts autofocusing before you’re ready for it)



Figure 3-28: iAuto (“Intelligent Auto”) setting.

Note that any Drive mode that involves bracketing is not supported in iAuto mode.

Probably one of the most important characteristics of iAuto mode is that the camera gives you little or no control at all over some very important settings, such as ISO and white balance – in other words, if you know what you’re doing, iAuto mode can get in your way. That’s why it’s great for beginners but a nuisance to experienced photographers. A better option if you’d like to go the full automation route might be Program mode, which is essentially “iAuto mode with benefits” (i.e., you can control more things).

3.9.2 IAUTO+ (SUPERIOR AUTO)

Like iAuto, iAuto+ (Superior Auto, **Figure 3-29**) does the same thing, but in addition it will automatically decide whether or not to invoke one of several advanced shooting modes that I will discuss in detail later on. So, it might be a little irresponsible to discuss it so early, but let’s give it a try.

In a previous section I discussed the Scene Selection modes in which you tell the camera the kind of picture you’re taking and it tries to make the necessary adjustments for you. Later in this chapter I’ll discuss the Über modes like High Dynamic Range shooting, Handheld Twilight, and other functions where the camera takes several pictures in rapid-fire sequence and then aligns and merges them in-camera as a means of dealing with difficult light.

I like these features a lot. And it’s true that you do have to understand what they do technically in order to know when to invoke them.

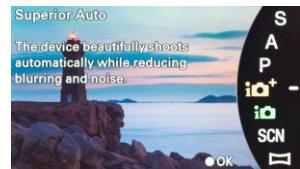
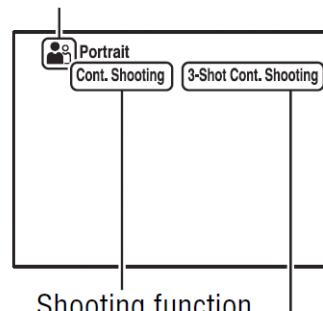


Figure 3-29: iAuto+ (“Superior Auto”) setting.

But what if you didn't even want to understand what those functions did in order to benefit from them? Extrapolating this thought process further, what if you didn't even want to know WHERE these functions existed in the menus in order to invoke them?

Welcome to iAuto+ mode, where the camera will analyze the scene you're looking at, figure out which of the advanced scene modes is appropriate (listed below), and then automatically invoke it for you. It's a point-and-shoot on steroids. With iAuto+ mode, you can get all the advanced benefits your camera has to offer, without really needing to know much about photography. Just be aware that there will be times when you think you're going to take one picture but you'll hear the camera take three (**Figure 3-30**). You'll get used to that, and after a while you'll thank the camera for taking better pictures than your friends were able to get with their pedestrian point-and-shoots.

TIP: If you shoot in RAW or RAW & JPG mode, note that iAuto+ WILL NOT TAKE MULTIPLE SHOTS AND MERGE THEM. To take full advantage of iAuto+ mode, you must shoot JPEG. If you shoot RAW & JPG, you'll have the RAW files to work with later, but Superior Auto cannot do as much to "fix" the JPEG files.



Number of images to be shot

Figure 3-30: iAuto+ mode will tell you if it has selected a special shooting mode, and if necessary, how many shots it will fire off (so you won't be too surprised when it takes multiple shots instead of one).

Although it may not mean much to you now, here's a list of the different shooting modes that iAuto+ is capable of invoking on its own:

Night Scene	Tripod Night Scene	Landscape	Backlight Portrait
Portrait	Night Portrait	Backlight	Macro
Spotlight	Low Brightness	Infant (?!)	Daylight Sync

Hand-held Twilight	Auto HDR	Slow Sync (flash)	Slow Shutter (movies)
--------------------	----------	-------------------	-----------------------

Interestingly, there are modes here that aren't selectable from any menu, such as "Backlight," "Backlight Portrait," "Daylight Sync" (what does *that* do?) and my favorite, "Infant"(!!). Since I can't invoke these iAuto+ modes on command, I can't be completely sure what the camera does when it decides to use them. (I guess the joy of any Auto function is that you don't really need to know.)

However, I can explain this menu item that appears only when iAuto+ is invoked: **MENU → ⚙ 4 → S. Auto Img. Extract. → [Choose from Auto or Off]**. (The S stands for Single.) When you use iAuto+ mode and the camera decides to shoot continuously, the camera either saves all of the shots it takes (Off) or saves only what it thinks is the best one (Auto). Again, this function has no effect if Superior Auto chooses Auto HDR or Handheld Twilight multi-shot modes. The factory setting is Auto, and I can't see any good reason to change it (unless you think you can make a better choice than the camera).

I consider the iAuto and iAuto+ settings to be a sort of safety net. Sometimes a great photo opportunity pops up and you know you have just a few seconds to capture it, but you're in a PASM mode with some odd settings. Just quickly switch to iAuto or iAuto+ and grab the shot – those odd settings will be reset in the iAuto(+) mode, yet still be waiting for you when you switch back to the PASM mode. Very cool!

If this brief section left you feeling a little confused, don't worry – all will be explained in more detail later on. I have included it here because iAuto+ was designed to be effective in the hands of people who don't know what it does. In that light, it makes sense to introduce it here before I get into more of the details of your camera.

TIP: One sure-fire way to keep iAuto+ from surprising you with multiple-exposure effects shots is to set your camera's Quality setting to RAW or RAW & JPG mode.

3.9.3 PHOTO CREATIVITY MODE

When the Mode dial is set to iAuto or iAuto+ pressing the Down button on the Control wheel enters Photo Creativity mode (note the icon of a camera with three little stars next to it). Photo Creativity displays an additional screen that lets you control five parameters along a continuum using the Control wheel:

1. Defocus: adjusts the blurring of the background from Defocus to Crisp
2. Brightness: adjusts brightness from Dark to Bright
3. Color: adjusts color from Cool to Warm
4. Vividness: adjusts color saturation from Softer to Vivid
5. Picture Effect: selects a Picture Effect as in the Fn menu (you can choose between Off and 11 different Picture Effect settings, but some settings such as Illustration are not included)

All settings begin with Auto mode selected, and when you select a parameter you can control its setting by turning the Control wheel. To go back to the Auto setting for any parameter, select the parameter and press the C2 (Trashcan) button. You can use some settings together by adjusting one parameter after another. You can see the effect of changes you make in the viewfinder and LCD

After changing settings, shoot without pressing MENU to exit; pressing MENU cancels the changes you have made! The camera continues to display the settings at the bottom of the screen even while you are shooting until you press MENU to cancel them. That's a little confusing! To shoot still images, press the Shutter button; to shoot a movie, press the MOVIE button.

Photo Creativity Restrictions:

- When you record movies using Photo Creativity, you cannot change any settings during the recording.
- If you change the Mode dial, settings return to their defaults.
- When you use Photo Creativity Mode with iAuto+ mode, the camera does not perform overlay processing of images.

3.10 P-A-S-M MODE

Program mode is almost identical to the iAuto mode (not iAuto+) described two sections ago. The P setting puts the camera into Program mode. In Program mode, the camera does the basic decision-making for you – it decides what combination of shutter speed and f/stop to use based on the ambient light, the currently set ISO sensitivity, and the lens focal length. The main difference between Program mode and iAuto mode is that *Program mode allows you to change important settings (such as exposure compensation, ISO, or white balance)*, whereas iAuto mode does not.

For this reason, as you read through the rest of this book, I recommend you keep the camera set to P (Program) mode as you try out the different features and settings. In Program mode you'll rarely get a message that says "This operation or setting not available as follows" (as will so often happen in iAuto or many Scene Selection modes).

What are the other P-A-S-M settings on the Exposure Mode Dial for?

A	Aperture Priority – you set the f/stop using one of the controllers and the camera chooses the correct shutter speed for the amount of light and the current ISO.
S	Shutter Priority – you set the shutter speed using one of the controllers and the camera chooses the correct f/stop for the amount of light and current ISO.
M	Manual Exposure – you're on your own! The Control Dial controls the shutter speed and the Control Wheel controls the f/stop, unless you have reversed their use.

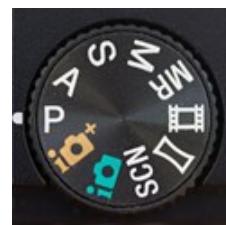


Figure 3-31:
Program exposure mode.

TIP: The f/stop and/or shutter speed will start to blink when you've specified a parameter and the camera is not able to make a "correct" exposure using that parameter. The blinking parameter is the camera trying to tell you "I can't change this parameter enough to make the exposure 18% gray!" (If you use ISO AUTO, the camera can often prevent this situation.) That may or may not

be a problem depending on the mood you're trying to create. The camera will still take the picture regardless of whether it thinks the exposure will be correct.

3.11 PANORAMA MODE

It's not as novel as it once was, but your A6000 has the ability to shoot, align, and stitch together panoramas, all handheld, all without needing a tripod or a computer with additional software, and the resulting image quality is impressive.

Using this feature is insanely easy. First, turn the Exposure Mode Dial to Sweep Panorama (**Figure 3-32**). Then do the following:

- 1) If you have a zoom lens attached, zoom it to a wide-angle setting (the camera does its best panoramas when there's a lot of overlapping information in adjacent images).
- 2) Hold the camera as close to your body as possible and use the electronic viewfinder. The stitching algorithms work best when the camera is closest to the axis of rotation (you). So, whatever you do, don't hold the camera at arm's length!
- 3) Find your subject (which may or may not be at the very left of your composition) and press and hold the shutter release button halfway. This locks the focus, exposure, and white balance.
- 4) Move the camera to the left of where you want the left part of your panorama to begin. Notice that the left third of the EVF looks grayed out – that portion of the image will NOT appear in the final picture.
- 5) Press and hold the shutter release button down and start to sweep (or pan – same thing) the camera from left to right. The camera actually starts the stitching process internally after the first two images are taken, and if you're going too fast or too slow it will let you know immediately. You'll get the hang of what the correct panning speed is



Figure 3-32: Sweep Panorama mode.

after a few tries. (Officially, Sony recommends covering 180 degrees over a period of six seconds.)

- 6) Once you're finished, hit the Playback button and you'll see the entire image on the rear display. To see it close-up, press the center button of the Control Wheel and the image will start to scroll right before your eyes. If you did it well, and there were no moving objects in your shot, the entire image will look quite seamless.

If you have your panorama mode set to Wide (**MENU → 📸 1 → Panorama: Size → Wide**), what you get is a high-resolution panorama picture – 12,416 pixels x 1,856 pixels (**Figure 3-33**). Most impressive! (Interestingly, these are the same dimensions as what other Sony cameras produce regardless of sensor specs – a bigger sensor doesn't result in a bigger panorama.)

There's much more to say about the Panorama features – and I'll continue this subject in Section 6.4.



Figure 3-33: A sample Sweep Panorama shot. No tripod or computer is required.

3.12 PROGRAM SHIFT

In Program mode, moving either the Control Dial or Control Wheel enters what's called Program Shift mode, where both the f/stop and shutter speed change in equal amounts so as to provide the same *total amount* of light to the sensor (well, as much as the camera can manage, anyway). For example, let's say you're pointing at a scene and the camera shows you the following f/stop and shutter speed combination:

Shutter speed	f/stop
1/250	f/5.6

But let's say you want to have shallower depth-of-field to really make your subject stand out (and you were too much in a hurry to switch to Aperture Priority mode): Just turn either controller until you see this:

Shutter speed	f/stop
1/1000	f/2.8

Notice that as the f/stop opening gets larger (letting in more light), the shutter speed gets correspondingly faster, letting in the same amount of light, but now the f/stop gives you the shallower depth-of-field that you wanted. Notice also that no matter how much you turn the f/stop wheel, the f/stop won't get larger (a smaller number) than the largest aperture that your particular lens can deliver (in this case, f/2.8). Sony calls this P* mode, since it's still a program mode where you can shift to the desired aperture.

P* mode resets once the camera information display times out, so it's a very temporary setting.

Program Shift is a very handy function which lets you change to a different f/stop and shutter speed combination than what the camera recommended *very quickly, without having to press a lot of buttons or turn a lot of dials*. Program Shift does not work when flash use is enabled.

Something similar to Program Shift also takes place in Manual exposure mode if you are using ISO AUTO. As long as the ISO Minimum and Maximum limits are sufficient to keep the exposure within range, or if you have locked exposure using AEL Toggle, you can change aperture or shutter speed (or both) and ISO AUTO will take care of ensuring the correct exposure.

TIP: Using Manual Mode with ISO Auto allows you to set a faster shutter speed, overcoming the fact that Sony didn't implement setting a minimum shutter speed with ISO Auto mode in A or P modes. Many users have complained that they can't set a minimum shutter speed faster than 1/60 second – this is how you can do it!

3.13 QUICK SETUP FOR VIDEO

If you need to start shooting video RIGHT NOW and don't want to plow through the book looking for how to set this and that feature, here is the Campbell's Condensed version of everything you need to know to get started (with references to Sections for more information):

- For point-and-shoot style videos, just press the Movie button on the right side (with the red dot in the center). This is full-Auto and can be accessed from ANY Mode dial setting as long as **MENU →  6 → MOVIE Button** is set to **Always**. (You can't shoot still images while you are taking a movie.)
- If you want some control over shooting parameters, start by moving the Mode dial to Movie mode (). In this mode Live View automatically switches to 16:9 so you can accurately frame your shot before you shoot. You still need to use the red button to start/stop movies. (You can never shoot still images in any Movie mode.)
- [NEW FEATURE!] Normally the AF during movies is intentionally slow so the changing focus doesn't call attention to itself. This can be frustrating because it can take the camera a while to find focus on your subject while it's filming. With the A6000, when you press the shutter release button halfway during filming the camera's AF-S autofocus kicks in and it can zero in and lock focus on your subject very quickly. It'll stay focused there until you remove your finger from the shutter release button, at which time it will continue its slow-focusing object tracking. (Pressing the shutter release button all the way down does nothing – you can't take a still picture in any Movie mode.)
- To adjust the white balance, go to **Fn → White Balance** and choose from a slew of preset values. Note that you CANNOT set a custom white balance in this mode – you have to switch to a PASM mode first, store a custom white balance, and then switch back and select the stored setting. (More information in Section 6.21.)
- To adjust the ISO, invoke it from the Fn menu or a Custom button if you've assigned it. If you don't know what value to use, choose Auto (Section 6.19.3).
- You can set your f/stop, shutter speed, or both (essentially putting it into Aperture Priority, Shutter Priority, or Manual Exposure mode) when the Mode dial is set to "" by (**Fn → Shoot Mode → [Choose**

from A, S, or M mode. You will then use one or both of the controllers to vary the setting, even while recording (Section 12.6). Note that to choose a Movie mode you must have Shoot Mode in the Fn menu, or select Movie in Recording Menu 6, or have Mode Dial Guide set to On.

- Focus Mode: The factory default of Wide Area is usually best (**Fn → Focus Area → Wide**). Other options are explained in Section 6.12.
- Finally, choose a video format. Unless your footage is ultimately destined for Blu-ray or you have a specific reason for doing otherwise, I recommend the factory default of **MENU → 1 → File Format → MP4** and **MENU → 2 → Record Setting → 1440 x 1080 12M** for non-videographers. (For more options and my reasoning for this recommendation, see Section 12.8.)

3.14 THREE LOW-LIGHT MODES

Over the years Sony has developed several technologies to help their cameras get a decent shot in low light without a tripod. Is one better than another? Let me go over what the tools are, and then I'll do a side-by-side comparison.



Figure 3-34: Handheld twilight allows you to take low-noise, low-light images without a tripod. This was taken from the inside of Los Angeles International Airport's iconic "Theme Building."

3.14.1 HANDHELD TWILIGHT AND MULTI-FRAME NOISE REDUCTION

Shooting in low light and don't have a tripod handy? Hate noisy pictures, whether in good light or bad? For years professional photographers (astrophotographers in particular) had a trick up their sleeves when it came to reducing noise in static images – they would take several different shots in succession, and then merge them all in Photoshop. The underlying principle here was that each frame had the same subject but completely random noise, and by combining the images the noise would just get “averaged” away, while the subject, which appeared consistently in each shot, would be reinforced.

Using the same intelligence found in the panorama stitching algorithms mentioned above the A6000 can use this very same technique, except you don't need a tripod and you certainly don't need a computer. Using either Handheld Twilight mode or the Multi-Frame Noise Reduction (MFNR) function, the camera will take four (it used to be six!) handheld shots in rapid succession, line them all up (in case your hand wasn't perfectly

steady), merge them all together, and produce one high-resolution, low-noise, low-light image – all in-camera!

What's the difference between the two? With MFNR you can tell it what ISO and white balance to use, whereas with Handheld Twilight mode you have no control.

These are both very innovative features and you can see examples of Handheld Twilight mode in **Figure 3-34** and **Figure 3-35**. Handheld Twilight mode is discussed further in Section 3.8.7 and MFNR is covered in detail in Section 3.7.2.

3.14.2 ANTI-MOTION BLUR

Yes, a third merge-multiple-shots method. AMB (don't you love all these acronyms?) analyzes all the images and does NOT merge portions that are blurry. This mode is mostly intended for use when your subject may move during the multiple exposures. More details are given in Section 3.8.9.



Figure 3-35: Handheld twilight allows you to take low-noise, low-light images without a tripod. This was taken from the inside of Los Angeles International Airport's iconic "Theme Building."

3.14.3 *LOW-LIGHT MODES COMPARED*

This seems like as good a place as any to compare a standard exposure in Program mode with examples of the multi-exposure low-light modes (**Figure 3-36**).



Standard exposure in Program mode ISO 6400



Program mode with MFNR ISO 6400



Handheld Twilight ISO 6400



Anti-Motion Blur ISO 6400

Figure 3-36: The three low-light exposure modes compared. All examples were taken handheld, as these modes were intended to be used. It's a near tie between the three low-light modes, so I'll always choose MFNR because then I can control my other variables (unless there's a good reason to use one of the other modes instead).

Conclusion: Multi-frame Noise Reduction, Handheld Twilight and Anti-Motion Blur all improve on plain Program mode at the same ISO. It's

probably best to use these in the situations for which they are designed – MFNR for general-purpose noise reduction, HHT to employ a faster shutter speed in low light, and AMB for times when your subject is likely to move a bit. (This test does not show off the real strengths of Anti-Motion Blur – read more about this mode in Section 3.8.9.)

Mind you, none of these fancy features beats low ISO with a tripod. (Well, that's not quite true...you can use MFNR at low ISO *with* a tripod and get even lower noise than you usually would!) MFNR is covered in more detail in Section 3.7.2.

3.15 FLASH

The A6000 includes a pop-up flash with an effective range of 6 meters at ISO 100 (guide number 6). Unfortunately, the pop-up flash cannot trigger Sony's wireless flash (which I like a lot, and which is described in 13.7). You can attach a more sophisticated (and higher-power) compatible flash to the hot shoe, and optionally use that to control wireless flash. Still, the pop-up flash is a very handy thing to use, especially when all you need is a little bit of fill light.

You can control flash operation using the **Fn → Flash Mode** menu. You can also control the flash intensity using the **Fn → Flash Comp.** setting right next to it.

Now seems like a perfectly good time to talk about how the new generation of Sony cameras handles flash exposures differently than flashes from about four years ago. Have a look at the gray card test shots of **Figure 3-38**. The more experienced among you will know that the camera is programmed at the factory to reproduce an 18% gray card as 18% gray, and in fact the older cameras used to work that way. Newer cameras, however, tend to put more light on the subject – about one stop more, according to my tests. But I grew up thinking that flash should not really call attention to



Figure 3-37: The default flash setting is a little strong for my taste.

itself (see my blog post at <http://bit.ly/1hI5msS>), and so this new look just won't do.

The remedy for this is pretty straightforward:

1. **MENU →  4 → Exp.comp.Set → Ambient Only**
2. If the flash is the sole source of light in a dark room, then use **Fn → Flash exposure compensation → -1**
3. If the flash is to be used as fill light, set **Fn → Flash exposure compensation → -2.7**. (For a more detailed explanation, see my blog post at <http://bit.ly/1eTFV7d>)

Notice that list item 1 above sets the exposure compensation control to handle ambient light only (as opposed to Ambient and Flash). I keep the two parameters separate because there are times I want to tweak things by different amounts, for instance if the subject is backlit.



Figure 3-38: An 18% gray card should look like an 18% gray card when you take a picture of it (flash or no flash), as it did with the A700 and all earlier cameras (left). Recent Sony cameras (like the A99 shown above, and the A6000 as well) have been overexposing flash subjects by about 1 stop (center), and so to go back to the look I like I usually set my Flash Exposure Compensation to "-1" (right).

TIP 1: The fastest shutter speed you can shoot using pop-up flash is 1/160th. However, with an accessory flash you can also use High-speed sync (HSS).

TIP 2: When the ISO is set to AUTO, the A6000 tends to choose high ISOs when shooting flash because it tries to avoid the “well-exposed-subject-with-a-black-background look. But in doing so it also increases noise. (Life is full of tradeoffs!) If this kind of noise “a-noise” you, I recommend setting the ISO to something fixed, or setting a low ISO Maximum value, to keep the noise low.

TIP 3: When an accessory flash is attached and your camera is set to anything except P, A, S, M or a memory bank that uses one of those modes, the camera will decide when to fire the flash and when not to. (Hey, “Auto” means AUTO!) Other flash options may also be limited.

3.16 PLAYING BACK IMAGES

To view pictures you took while they’re still in the camera, press the Playback button next to the lower-right-hand corner of the LCD screen, and then use the left and right arrow keys to view “previous” and “next” images. Press the Playback button again to return to “Record” (taking pictures) mode, or press the shutter release button halfway.

TIP: When your camera is in “sleep” mode (after a timeout), you can wake it up by pressing the Playback button, the MENU button, or pressing the shutter release button halfway. Don’t press two briefly – a quick press doesn’t always work. It seems to me that pressing for half a second wakes up the camera most reliably.

3.16.1 VARIATIONS ON A THEME – THE DISPLAY BUTTON

The Display button (Section 3.6) controls how the playback images appear on the screen. Pressing the Display button multiple times while in playback mode will cycle through three display modes as shown in **Figure 3-39**:

- Picture Only

- Picture plus overlaid text showing the date, time, image number, total number of images, image size, and other characteristics
- Histogram mode, which emphasizes technical aspects of the picture and shows only a small thumbnail along with separate histograms for luminance, red, green and blue channels. If any areas of your image are overexposed or underexposed those parts will blink at the rate of once per second. (Histograms are covered in Section A.7.)

You can also press the Down button while in Playback mode to display 12 or 30 thumbnails images at a time for browsing. Set how many thumbnails to display by going to **MENU → □ 1 → IMAGE INDEX → [Select 12 Images or 30 Images]**.) When you are in the thumbnails screen, click on a picture to make its image fill the screen.

TIP: When playing back a movie, pressing the Down button brings up some playback controls. When just browsing through stills or movies (but not playing them), pressing the Down cursor button brings up the Image Index or Volume Settings.

Sony has changed the way the index mode behaves, and to good effect. Notice that thumbnails are now sorted by date.

In addition, if you scroll all the way to the left, there's a thin orange bar with three icons. While the cursor is in this strip, pressing the Up cursor button does a Page Up (scroll up one page), pressing the Down cursor button does a Page Down, and pressing the Center button chooses Go to Calendar View. In Calendar view you can quickly navigate to pictures taken on a specific day. To the left of the calendar is a thin strip that lets you change months for browsing. At the far left you can choose icons for Calendar view, Stills only, MP4 movies only, or AVCHD movies only. (Notice that this menu won't show you AVI movies that are created by the Time-lapse app. Strange!)

Notice that although the Index view lets you sort by date, you can no longer just look at things within a specific folder.

OBSCURE TIP: Earlier I said that when the playback screen shows the histogram view things that are overexposed blink. But what is the definition of “overexposed?” Most people think it’s when any of the values hit the right edge of the histogram (corresponding to 255 for any 8-bit JPEG channel). Surprise! The threshold is actually 235. That means you could have an overexposure warning for highlights that are actually recoverable. Thanks to reader Koen Rowies for pointing out this behavior.



Figure 3-39: The Display button cycles between 3 different screens when in Playback mode.

3.16.2 MAGNIFYING THE IMAGE

While viewing your images in Playback mode, you can also magnify them (zoom in for a closer look) or just delete them. Just press the AEL button (which has a magnifying glass icon next to it - **Figure 3-40**). Some tidbits:

- The image instantly zooms in, and in the lower-left-hand corner you will see a thumbnail of the image with a tiny red square within it. The red square represents the small part of the whole picture you're currently viewing, and you can move it via the arrow buttons.
- To zoom in further, press the AEL button multiple times. You can also use the Control Wheel to increase or decrease the zoom level.
- Finally, press the Playback or MENU button to go back to seeing the full image.



Figure 3-40: Press the AEL button to zoom in during playback, and use the Control Wheel to change the zoom level.

TIP 1: While you're zoomed in, you can use the Control Dial (not Control Wheel) to go to the previous or next image. This comes in very handy when you've shot several similar pictures and need to evaluate the same small area of each of them for critical sharpness.

TIP 2: If you took a vertical shot and the resulting picture appears sideways when viewing it in playback mode, you can rotate by selecting **MENU → □ 1 → Rotate** and then pressing the Center button. Each press rotates the image 90 degrees; pressing four times returns the image to its original orientation.

TIP 2.5: The camera employs an orientation sensor, and stores the information (vertical or horizontal) inside the image file, so when it plays it back "properly" on the screen, a vertical image just looks too tiny to evaluate. Therefore, rather than using **Tip 2** above, I find it makes more sense to tell the camera to never rotate an image during playback via **MENU → 1 → Display Rotation → Off**.

3.16.3 DELETING AN IMAGE (OR MULTIPLE IMAGES)

There are two different ways of deleting images in playback mode:

- 1) While in Playback mode, while you are displaying a single image you want to delete, press the C2 (Trashcan) button to the right of the Playback button. A message will pop up giving you the choice of deleting or cancelling. Use the Up or Down cursor buttons so that Delete looks orange with white letters, and then hit the center button of the controller. Your image will evaporate, leaving you looking at the next picture.
- 2) While in Playback mode, choose **MENU → □ 1 → Delete → Multiple Img**. The display will then let you scroll through the images again, but this time pressing the Center button lets you mark that image for deletion – an orange check mark icon appears in the left part of the image. (Pressing the center button of the controller again undoes this marking, so you can change your mind if you want.) Continue to scroll and select other images for deletion. When you've finished marking images for deletion, press the MENU button, and then confirm the deletion by selecting the OK button on the screen and pressing the Center button to confirm. All of your selected images will evaporate.

TIP: The display doesn't have the brightness range that the image sensor has (although it is significantly improved over its predecessors!). Pictures that look "too white" or overexposed on the rear LCD might actually be perfectly well exposed. For example, have a look at the images below. When seen on the camera's LCD display (left), the white areas of the image look washed out, and the whole image in general appears a tad overexposed. However, after you bring it home and view it on your computer screen (or make a print, right image), the picture turns out to be perfectly exposed!

The moral of the story is, "Think twice about deleting any pictures in-camera just because you think the exposure might be off." (Better to consult your computer or the histogram display, explained in Section A.7.)



3.16.4 PROTECTING AN IMAGE

An image can be "protected" as an extra measure against accidental deletion. The way you mark pictures for protection is remarkably similar to the way you mark pictures for deletion:

Go to **MENU → □ 2 → Protect →** and choose from Multiple Img., All with this date, or Cancel All with this date.

If you choose Multiple Img., the camera lets you scroll and mark individual images for protection the same way you mark images for deletion (as described in the previous section).

Images are only protected while in the camera; after you copy them to your computer, they have no special protection against accidental deletion.

3.16.5 VIEWING YOUR IMAGES ON AN HDTV

I find this feature very handy when reviewing group portraits (and also when shooting video so that the person speaking has a live monitor. The procedure is simple:

- Connect the camera to an external HDTV using an accessory HDMI cable such as Sony's VMC-15MHD or VMC-30MHD (5 feet and 10 feet, respectively). (Or you can use an affordable cable. See what the connector needs to look like in **Figure 3-42.**)
- Turn the camera on. Most HDTVs will automatically sense that there's a new input source attached to it, turn itself on, and configure itself to display the new HDMI feed. (If that all doesn't happen automatically, then you must manually turn the TV on and tell the HDTV to accept an input from the HDMI IN port rather than from the antenna or cable.)
- The camera will automatically sense that an HDTV is hooked up to it, and it should communicate with the TV using the proper video parameters (1080i, 720p, or another appropriate setting combination). Then it will automatically re-route all information from the rear LCD screen to the HDMI cable.
- Have a 4K TV? This camera can play back still images with 4K resolution! Just invoke **MENU → □ 2 → 4K Still Image PB** when connected.
- You can still use the camera as you normally would, however both your rear LCD and the EVF will be black while hooked up to an HDTV in playback mode.
- You can play back images one at a time as you normally would, or you can use **MENU → Playback □ 1 → Slide Show** to have them play back automatically in sequence. You will see a screen where you can



Figure 3-41: Letting subjects see the first batch of images on an HDTV can loosen them up for the next batch.

set the interval (how often a slide changes if you're showing stills) and whether the whole show will repeat when finished, and the types of pictures (only 3D images (taken by another camera) or everything). Finally, select Enter and press the Center button to start the show.

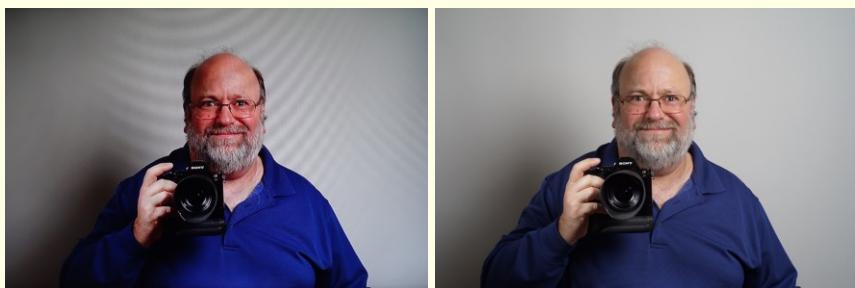
- To stop a slide show, press the shutter release button halfway. Note that there's no way to pause a slideshow, unlike with some previous generations of Sony cameras.

I've found that the "view on a (HD)TV" feature comes in especially handy when I'm taking studio portraits of couples or families. It allows a large group to review the shots taken in small batches. After the subjects get "instant feedback" through the magic of digital, the next batch of pictures in the studio almost always yields more relaxed, spirited portraits. (See **Figure 3-41**.)

TIP: *Images from this camera look very impressive to the layperson when viewed on an HDTV, but anyone who is a stickler for color and dynamic range accuracy will be completely turned off by this feature. The contrast and color intensity looks like it has been bumped up and the image has been sharpened (which most normal people like). Most of this heresy is the result of adhering to video standards – normal HD video just can't display the subtleties that your camera can produce.*



Figure 3-42: Here's where to hook up the HDMI cable (yellow rectangle).



TIP 1: When connected to the television, your camera's Power Save setting (**MENU → 2 → Pwr Save Start Time**) is automatically switched to 30 minutes. Disconnecting the TV from the camera restores your previous setting.

TIP 2: If you hook up your camera to an HDTV and see the error "Mode Not Supported," you need a high-end HDMI v1.4 compatible cable, not v1.3.

3.16.6 SLIDE SHOW USING THE OPTIONAL WIRELESS REMOTE

Sony sells an optional infrared remote control called an RMT-DLSR2. The buttons on this Wireless Remote Commander are analogous to controls on the camera. However, the Remote Commander has an extra button that makes the slide show experience a little better: just above the Up cursor button is the Play Slide Show button, which bypasses the need for you to futz with menus to start the show. Just press this button, and the camera will start a slide show no matter what mode it's currently in. Press it again, and the camera goes back to the standard Playback mode. (This only works when the camera's hooked up to an HDTV.)



Figure 3-43: The Wireless Remote Commander (left) and the IR receiver built into the grip (right).

TIP: The A6000 is **VERY** picky about images it will play back. If you have tweaked some images or have renamed them on your computer, and then uploaded them to a memory card hoping to use the slide show feature to display them, you may find that those images will not display. This is indeed unfortunate – you should be able to show off tweaked images as well.

3.17 VIEWFINDER EYEPIECE DIOPTER CORRECTION

Although it's hard to find, the A6000 has what's called a Diopter Correction element built into the back of the EVF.

The most basic kinds of eyesight disorders are nearsightedness (myopia) and farsightedness (hyperopia), and if that's all you have (and if you only have a mild to moderate case of it) then your camera can provide a correction for you so you need not wear your eyeglasses while shooting. Correction for such disorders is commonly measured in units called diopters, and the diopter numbers in your prescription represent the amount of correction needed to provide 20/20 vision.

Interestingly, all camera viewfinders have a built-in optic that makes the focusing screen (which is physically very close) appear to be very far away, allowing your eye to focus to infinity. You can verify this for yourself: set the zoom on your lens to around 58mm focal length, and look at your subject with BOTH EYES open (one looking through the viewfinder, the other not). The images from both eyes should appear in focus. This means that if you're farsighted, you really shouldn't need any diopter correction at all in your viewfinder.

The EVF has a mechanism built in that can provide diopter correction, mostly to help nearsighted folks. The correction ranges from -3 (nearsightedness) to +1 (slight farsightedness). To adjust it, do this:

1. Grab your camera and press the MENU button. (Any menu screen will do.)
2. Look through the viewfinder and turn the diopter adjustment wheel until the menu screen looks sharpest to you.

Note that if you have more than a mild astigmatism (another common disorder that can't be corrected using simple "spherical" optics), the built-in diopter correction will probably not make things look much clearer to you.

3.18 USB AND HDMI CONNECTORS

Since we're talking about hardware, we might as well talk about what's new with the little connectors on the left side of the camera.

That door in **Figure 3-44** hides two connectors:

- The top connector can accommodate the micro-USB cable (which Sony calls Multi because that's also where you plug in their wired cable release).
- The bottom connector is for the micro HDMI (type D) cable used to connect to an HDTV or projector.



Figure 3-44: One Door,
2 connectors.

3.19 THIRD-PARTY BATTERIES AND CHARGERS



Figure 3-45: The Wasabi battery kit and charger is the antidote to Sony's expensive spare batteries.

Sony's batteries are expensive, and the NP-FW50 is so small that you're definitely going to need spares if you plan on shooting all day in the field.

There is a 3rd party battery kit compatible with the A6000 that has been getting pretty good reviews online. It is the Wasabi Power Battery (2-Pack) and Charger for Sony NP-FW50, available at Amazon here: <http://amzn.to/1nVphI>. \$27.99 USD gets you TWO batteries, a charger, and a car charger as well. They say that the batteries can only hold about 85% as much power as the Sony battery, but at

this price, who cares? ☺

TIP: The USB charger that came with your camera is not a universal USB charger. It won't charge my Sony RX-100 MK2, nor will it charge my Samsung smartphone (but it will charge my wife's smartphone, ironically also a Samsung).

TIP 2: It takes about 5 hours for a battery to charge via the USB port. A dedicated wall charger can do it in about half the time.

3.20 SONY'S SOFTWARE

Sony cameras usually come with two programs to help edit and tweak your images: Image Data Converter and PlayMemories Home. Historically, these programs have not been too popular among Sony's customers, but they *are* free, and they have two things going for them:

- 1) I find the PlayMemories Home program handy because it can import



Figure 3-46: You can use your Wi-Fi-enabled smartphone as a remote control (and remote viewfinder) for your A6000 – as you can see it captured quite an expression on the test subject (left). There's also a wired option called the RM-VPR1 (right) that plugs into the camera's Multi port.

both movies and pictures at the same time (they're actually stored in different directories on the memory card), and it can show me some of the more esoteric camera settings in the EXIF information, such as

whether I had Multi-Frame Noise Reduction turned on. Also, PMH is available for Macintosh!

- 2) As of this writing, the Image Data Converter software (which is actually quite capable) is the most universal way to open Sony's new A6000 RAW file format, since not all popular image editing programs know how to read them (the most recent versions of Lightroom and Adobe Camera Raw do know.)

You can download all the software you need from Sony's Japan website:

For Windows <http://support.d-imaging.sony.co.jp/imsoft/Win/us.html>

For Macintosh: <http://support.d-imaging.sony.co.jp/imsoft/Mac/us.html>

The website also makes available a remote app for the PC and Macintosh called PC Remote that has been made compatible with the A6000, but there's no live view associated with it. Some might want to consider using it for tethered shooting, since it can automatically upload photos as you take them to a known directory on your computer. (Currently there's no conventional tethered shooting support for Lightroom the way Canon and Nikon handle it.)



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CHAPTER 4 USING LEGACY GLASS

There's a good chance that you were drawn to Sony E-mount cameras because you have some old glass from your great film camera gathering dust somewhere. Or maybe you inherited such a set. Many people report that using their old manual focus lenses brings them closer to the essence of photography (or at the very least brings them back to their youth – either way it's an enjoyable experience and a great mental exercise). And the A6000 has features to help in this regard which make precise focusing much easier than in the old days.

In this chapter, I'll be talking about the tools that the A6000 gives you to make using legacy glass a breeze, and then will discuss the lens mount adapters available for most of the popular camera brands. I will also be giving a very high level info of lens mount types

for each brand for those of you who inherited legacy glass and want a better idea of what you have. Of course the list can't be exhaustive but it will be enough to get you started.



Figure 4-1: An adapter for every conceivable need.

Keep in mind that the A6000 uses an APS-C sized sensor, so any full-frame lens that you use will produce a cropped image that uses the center part of the lens field (which is almost always the sharpest part, and has the least distortion as well). Just like a 16mm E-mount APS-C lens, a 16mm full-frame lens used with an adapter yields an effective focal length of 24mm.

4.1 MANUAL FOCUS LENSES

In general there are two broad categories of old glass that can be used on the A6000: manual focus lenses (including rangefinder and film SLR lenses before 1985), and autofocus lenses. I'll talk about manual focus lenses here.

One of the great things about using this new camera body for old lenses is that it can help you out in ways that your old film camera body just couldn't:

- **Peaking level** – this feature shows you what's in focus by highlighting the highest contrast areas of your image (which correspond to the sharpest parts) in the color of your choice. I recommend **MENU → ⚙ 2 → Peaking Level → Mid** and **MENU → 2 → Peaking Color → Yellow**.
- **Focus Magnifier** – for even greater focusing accuracy, the camera will show you a magnified view of any portion of your frame, allowing you to focus critically. (Peaking Level can still work here too, but too often the contrast isn't high enough to show the color.) This is a function that you assign to a button – I recommend the C1 button. (**MENU → ⚙ 6 → Custom Key Settings → C1 → Focus Magnifier**. To use, press C1, then use the arrow keys to select the area of the viewfinder you want to magnify and press the Center button. Focus critically. Want more magnification? Press C1 again. Press the shutter release button halfway to go back to Live View and shoot at your leisure. For fewer headaches, I also recommend setting **MENU → ⚙ 1 → Focus Magnif. Time → No Limit**.
- **Live View Display** – Unlike an ordinary viewfinder, the Live View Display can show you how your exposure and white balance will look even before you shoot. (Too bright? Too dark? Color balance OK?) Set **MENU → ⚙ 2 → Live View Display → Setting Effect ON**. The downside to this feature is it's difficult to focus first if your exposure is

way off. That's why in the procedure below I recommend you adjust your exposure first and then adjust your focus. (Note that with lens adapters this setting does not show the effect of stopped-down aperture.)

- Make sure **MENU → ⚙ 3 → Release w/o Lens** is set to **Enable**. Otherwise, the camera won't take a picture if it doesn't see a native E-mount lens attached.
- For a lot of reasons, I also recommend that you set your ISO to something fixed (i.e., anything but AUTO). If you're really a beginner and don't know what to set it to, start with 400 and see if you like the results.

When using Manual lenses, only the A (Aperture Priority) and M (Manual Exposure) modes on the P-A-S-M dial will work. (Well, "P" (Program) mode works too, but when the camera realizes that it doesn't recognize the f/stop, it defaults to Aperture Priority mode.) In Aperture Priority mode, you set the f/stop on the lens and the camera will choose a shutter speed automatically for the amount of light and the ISO that you have set. If you want to go back to caveman days you can switch to Manual exposure mode. In Manual Exposure you have to choose both the aperture and shutter speed.

Here is the recommend procedure for taking a photo using old MF lenses in Manual Exposure mode:

1. First, adjust your exposure. (Usually you focus first but it's difficult to focus if your Live View is showing an image that's too light or too dark.) There are many different ways you can do this:
 - a. "Match Needle:" Adjust your f/stop and shutter speed (front and rear Control Dials) until the +/- display on the bottom of the screen shows "+/-0" (plus or minus zero). This means that an average scene is well exposed.
 - b. Use the Histogram: Hit the DISP button several times until you see the histogram in the lower-right-hand corner. Adjust your f/stop and shutter speed (front and rear Control Dials) until the histogram looks right for the kind of shot you are pre-visualizing. (Not familiar with histograms? I cover them in Section A.7.)

- c. Use the Zebra stripes feature to help you evaluate proper exposure in the field. (See Section 7.1.)
 - d. Don't like all this complex histograms/zebra stripes/match needle stuff? Just use your eyes. Adjust your f/stop and shutter speed until everything looks the way you want it to.
2. Then, focus. Use the focus magnifier function if you need to, but with Peaking Level and a small f/stop you'll get as close as you ever could with an SLR or rangefinder camera.

Here is my recommend procedure for taking a photo using old MF lenses in Aperture Priority mode:

1. First, focus. Use the focus magnifier function if you need to, but with Peaking Level and a small f/stop you'll get as close as you ever could with an SLR or rangefinder camera.
2. Then, adjust your exposure. Use exposure compensation to make it darker or lighter, if necessary.

4.2 AUTOFOCUS LENSES

Here's where things get fun. Not all autofocus lenses will autofocus on this camera. It depends on the lens and it depends on the sophistication of the lens adapter used. At the time of this writing, only three types of autofocus lenses can actually autofocus using commercial adapters: Canon EF lenses, Contax G lenses, and Sony A-mount lenses. Of these, the Sony A-mount lenses are the only ones that can autofocus quickly (when you use the LA-EA4 adapter). The others can't perform fast AF because they were designed for phase-detect AF and this camera can only offer Contrast-detect AF (its baked-in phase-detect array is not when an adapter is in place).

Furthermore, most modern autofocus lenses don't have an f/stop adjustment ring – they rely on electronic signals from the camera body to set the f/stop automatically. A sophisticated adapter will have the smarts and the electrical contacts inside to communicate and set the f/stop automatically so the lens thinks its attached to a native camera body. Other adapters don't even try to talk to the lens, and instead build their own user-adjustable iris into the adapter. Still others offer a ring that controls the lens f/stop mechanically.

Again, here's where the sophistication of the lens adapter will dictate whether you have control of your f/stop or not. I'll talk about specific implementation details later on in this chapter.

So, here's the thing: if your adapter can control both your lens autofocus and f/stop (as can the Metabones adapter for Canon EF and the LA-EA4 adapter for Sony A-mount), then you don't need to think about anything else – just put the lens on your camera, switch to program mode, and shoot as you normally would. If your adapter can't take care of both AF and f/stop, then you'll need to refer to the previous section on using manual lenses in order to make your legacy glass work.

4.3 VIGNETTING AND MAGENTA CASTS

Unlike other mirrorless cameras, the distance between the front of the lens mount and the sensor (the “flange distance”) is so short that it allows for an adapter to be made for just about every proprietary lens mount ever made for the 35mm format.



Figure 4-2: The closer the rear optic is to the sensor (as is usually the case with wider-angle lenses), the more extreme the angle of light is when you get to the corners.

There are some caveats you need to know about, though, when adapting your old lenses to your new digital wonder. First, your adapter may or may not be able to support autofocus and lens aperture control for your old lenses. (There are a lot of “it depends” situations, and I’ll get into those when I talk about adapters for each camera brand below.)

Second, while the A6000 has a phenomenal track record of doing justice to most older optics, there are some instances of increased vignetting with some older wide-angle lenses. (This is not usually an issue for full-frame wide-angle lenses because the image edges are cropped by the APS-C sensor.) To understand

why, let me repeat a diagram from Chapter 1 showing light paths from different kinds of lenses (**Figure 4-2** and **Figure 4-3**).

Some wide-angle lenses have a design where the exit pupil is very close to the sensor, resulting in rays of light hitting the corners at rather extreme angles. While this didn't matter at all in the days in film (film doesn't care about the direction of light), digital sensors definitely prefer the rays of light to hit them perpendicularly if possible.

To help mitigate that problem, Sony has placed a tiny hemispherical lens atop every pixel element on the sensor. See **Figure 4-3**.

While the offset microlenses do help, there are still many reports of older high-end Leica wide angles producing dark corners and a magenta color shift as you get closer to the edges of the frame.

As I write this hobbyists the world over are trying out their legacy glass on this new platform and posting their findings about which lenses work best. Your best bet is to Google the camera and the lens you have and see if others have posted test reports on using them. (Or, just try it!)

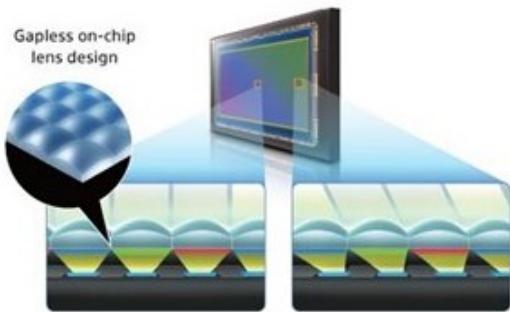


Figure 4-3: Sony has placed a microlens array on top of the A6000 sensor to better capture such light. Notice how the lenses are shifted somewhat as they get closer to the edge and corners.

4.4 BEWARE OF LIGHT LEAKS

The adapters that are mentioned in this chapter are the most popular ones for any given lens, although they might not necessarily be the cheapest.

Be careful about purchasing the cheapest adapters you can find on Ebay! There have been occasions where such adapters have caused light leaks due to poor manufacturing tolerances. You already have outstanding optics and

a great camera body to mount them on; I assert that it's unwise to skimp on an adapter.

4.5 A SHORT LIST OF THE MOST POPULAR ADAPTERS

It's impossible to compile an exhaustive list of everything out there, for by the time this book is published it would probably be outdated. However, I can give you a short list of what are proving to be the most popular adapters for the most popular lenses.

Keep in mind that the A6000 uses an APS-C sized sensor, so any full-frame lens that you use will produce a cropped image that uses the center part of the lens field (which is almost always the sharpest part, and has the least distortion as well). Just like a 16mm E-mount APS-C lens, a 16mm full-frame lens used with an adapter yields an effective focal length of 24mm.

4.5.1 SONY A-MOUNT LENSES

Before Sony designed the E-mount for what were originally called the NEX line of very small but very high quality cameras, their interchangeable lens cameras used the A-mount, which Sony inherited when it bought Minolta's camera division.

Sony makes two different adapters that allow you to use A-mount lenses on an E-mount camera: The LA-EA3 and the LA-EA4. Discontinued (but still usable) are the older models LA-EA1 and LA-EA2.

Ignoring the poetry of the names for a moment, the difference between these two adapters is that the LA-EA4 completely mimics one of its older SLT camera bodies (specifically the Alpha 99) – it has a semi-transparent mirror (called translucent by Sony) that deflects about one-third of the light to a complete phase-detect array built into its base. This means the LA-EA4 can focus your A-mount lenses very, very quickly – as fast as a DSLR.

In contrast, the LA-EA3 lacks any autofocusing sensors but does retain the electronic communication and f/stop control mechanism. Although cheaper, it will only work on A-mount lenses that have built-in focusing motors like the SAM and SSM variety and will NOT work with the older screwdriver-blade-driven lenses. Furthermore, all of the autofocusing intelligence is

done by the camera via contrast-detect AF, and it's technically very difficult to quickly drive a lens designed for phase-detect AF with a camera body that employs contrast-detect AF. Consequently, not only will the LA-EA3 adapter not work with all A-mount lenses, but its focusing speed is slow and jerky.

The upshot: Although it's pricier and a little bulkier, the LA-EA4 adapter is the one I strongly recommend if you want to use your A-mount lenses. It offers FAST AF.

There are no special modes necessary to use A-mount lenses on your A6000 – you can use them with all of their automatic features (autofocus and program mode included). However, the camera does provide some tools that are helpful for working with A-mount lenses:

Aperture Preview – This isn't in a menu, but you can assign it to a button by going to **MENU → ⚙ 6 → Custom Key Settings** (Section 7.26). When pressed, the camera invokes a classic depth-of-field preview function, stopping down the lens so you can see what's going to be in focus (although the Live View display may get darker – just like with an optical viewfinder. ☺)

[There is also a sister function, called Shot Result Preview, which works on E-mount lenses and also shows you how the shot will look when certain automatic settings are invoked. Shot Result Preview doesn't stop down the lens aperture when you use an adapter.]

Micro-AF Adjust – This function allows you to adjust for autofocus errors (front-focus and back-focus) with the A-mount and LA-EA4 adapter combination. (Native E-mount lenses don't need this since the sensor is doing the focusing, not some disconnected phase array.) You can read more about this in Section 7.23.

4.5.2 M42/PENTAX SCREW MOUNT

The M42 mount is a screw mount originally developed in 1949 for the East-German Zeiss Contax S (later Praktica) and later used by Pentax (until 1975), Zenit, Voigtländer, Fujica, Olympus (the FTL model), and Yashica. While the nickname “universal screw mount” was once true, in the early 1970s the standardization forked as different manufacturers tried to adapt the mount to accommodate automation. I can't go into all the instances

here, however, know there are some later versions of M42 lenses from some manufacturers that will not fit onto the adapter because of additional flanges or levers. (Specifically those from Olympus FTL and Fujica.)

Since these lenses are purely mechanical (they have no electronics), they can be mounted and used in either Aperture Priority or Manual Exposure mode as outlined at the beginning of this chapter.

The most popular M42 lens adapter is the [Novoflex Adapter for M 42 Lens to Sony NEX Camera](#), \$157.99 available at <http://bhpho.to/1cKyNuV>.

4.5.3 LEICA M/ZEISS ZM

This is a bayonet lens mount used on all of Leica's rangefinder cameras from the Leica M3 (film based) to the modern M9 (digital). The identical lens mount was used on the Zeiss Icon camera, which took Zeiss ZM lenses. Konica and Voigtländer (now owned by Cosina) also got into the act. Unlike the later M42 lenses described in the previous section, all M-mount lenses are interchangeable.

The lens specification hasn't changed since 1954, and all Leica M lenses still use pure manual focus and manual f/stop control via a ring at the front of the lens.

The most recommended adapter for M-mount lenses is the [Novoflex Adapter for Leica M Lens to Sony NEX Camera](#), currently selling for \$258.85 at B&H. (Don't let the name fool you; consider "NEX" to be the equivalent of "E-mount" – it will work on full-frame E-mount camera bodies also.) <http://bhpho.to/1ne7RrN>

There is also a Metabones adapter which is rumored to be just as high quality but for a significantly lower price: \$89. Users say it has a tight fit. <http://bhpho.to/1cKRG0s>

But wait! The Voigtländer VM-E Close-Focus adapter is a little bit thinner than the above adapters, allowing classic lenses to focus on average 30cm closer than with other adapters (without messing with your lens' ability to focus at infinity). I'll leave it to you to decide if that's game-changing enough for you – at USD \$400, that's about \$13/cm. <http://bit.ly/1lsraJg>

4.5.4 LEICA R

Once upon a time Leica made an SLR camera called the “R” series, consisting of cameras called the R3 through the R9. (Then they stopped making them.) Lenses for earlier Leicaflex will not work with this adapter.

[Metabones Leica R Mount Lens to Sony NEX Camera Lens Mount Adapter II \(Black\)](http://bhpho.to/1eme834) \$99 <http://bhpho.to/1eme834>

4.5.5 CANON EF (EOS)

The Canon EF lens adapter from Metabones is only one of two adapters (the other being the LA-EA4 adapter for the Sony A-mount) that retains the lens’ ability to autofocus and control the f/stop. And to add icing on the cake, the image stabilization feature works too if the lens has it!

That’s the good news. The bad news is that it only works on Canon EF lenses made after 2006 and that the AF is slow and jerky, due to the fact that the camera’s contrast-detect autofocus is driving a lens that was designed to be driven by phase-detect (it’s clearly a hard problem to solve – see my diatribe on Sony’s LA-EA3 adapter earlier in this chapter). There’s a third drawback, too, in that it tends to drain the camera’s battery a lot (although the adapter has the ability to disable some features to address this issue.)

[Metabones Canon EF Lens to Sony NEX Camera Lens Mount Adapter III](http://bhpho.to/P6tBXM) (<http://bhpho.to/P6tBXM>). \$399

Most of the other Canon EF adapters out there don’t have the guts (literally) to drive autofocus, and so your fancy EF lens will be a manual focus affair (and f/stop adjustment will either be impossible or via an iris within the adapter itself).

Announced but not yet shipping: Falcon from DEO-TECH <http://www.deotech.com/> this is the only adapter I’ve seen that has Bluetooth 4.0 built in. (Why? For firmware updates, primarily. But they also plan to offer a wireless focus controller feature in the future. Supports Image Stabilization. Stay tuned!)

4.5.6 *CANON FD*

Before Canon switched their entire SLR camera line to the EOS mount in 1987, they used the manual-focus FD mount. Being backward-compatible with earlier lens mounts such as the Canon FL, FD mount lenses were in production starting with the Canon F-1 in 1971 and continuing to 1990 with the Canon T60 (the last camera to offer the FD mount).

Novoflex Adapter for Canon FD Lens to Sony NEX Camera \$211.99

<http://bhpho.to/1i1A4g5>

Canon also made an R-mount camera lens for their very early Canonflex SLRs. Regretfully there are no known adapters for the Canon R-mount lenses.

4.5.7 *NIKON*

Nikon is the only camera company on the planet that has been using the same lens mount since 1959. They did this to ensure that anyone who has invested in previous Nikkor lenses will still be able to use them on a modern Nikon body. There is an alphabet soup of generational lenses' feature names, and the sheer number of compatibility exceptions between older lenses and newer bodies is mind-boggling, however for the purposes of adapting them to your A6000 there are only TWO kinds of Nikon adapters that warrant mentioning:

- Nikon's G lenses are modern lenses that do not have a conventional ring around the base to control the f/stop. Instead, the camera body is in charge of this function.
- All other lenses ("Non-G" or "AF-D-series").

Note that none of the adapters mentioned below support autofocus or auto f/stop, nor will they support the lens' Vibration Reduction (VR) feature if it has it. No electronic signals are communicated to the lens. You have to focus manually, and you control the f/stop either from an iris built into the adapter or with a blue ring.

Adapters that work only with the G series

Metabones Nikon G to Sony E-Mount Adapter \$139
<http://bhpho.to/1IriEKJ>. (This adapter does *not* work with Nikon F mounted lenses with an aperture like AI-s or AF-D series lenses.)

Adapters that work with Any Nikon F lens

FotodioX Adapter for Nikon G to Sony E-Mount \$59.95 It has a blue ring which controls its own built-in f/stop. The literature says it's only for the G series however one user reported that it works with older lenses too. This model does not have a tripod mount (something most of the other adapters offer). <http://bhpho.to/1lrkOtA>

Novoflex Adapter for Nikon Lens to Sony NEX Camera \$292.99 at <http://bhpho.to/1em66zw>. It's three times the price as the Metabones model, works with ANY Nikon lens, and has a special blue ring for manual adjustment of the f/stop.

Adapters for Non-G lenses

Metabones Nikon F Mount Lens to Sony NEX Camera Lens Mount Adapter II \$99 <http://bhpho.to/1fQS1Q0> This is a purely physical adapter with no electronic connectors. For use with lenses that have aperture rings.

“Universal” Nikon Adapter

Have both types of Nikkor lenses? This one doesn't have a brand name but seems to be popular: <http://bit.ly/NQDvLy>

4.5.8 MINOLTA MC/MD

FotodioX Adapter for Minolta MD/MC/SR Rokkor Mount Lens to Sony NEX Mount Camera \$41

No aperture coupling. This is a pure mechanical adapter and you're on your own for adjusting the f/stop.

http://www.bhphotovideo.com/c/product/994952-REG/fotodiox_md_nex_p_adapter_for_minolta_md_mc_sr.html/6784/KBD/7355

4.5.9 PENTAX

Pentax, like so many others, also has changed their lens mount over the years. In the early days of their Spotmatic F SLR, Pentax used the M42 screw-mount lens (covered earlier in this chapter in Section 4.5.2). Then they switched to the bayonet-based K-mount, sometimes called the “PK mount,” in 1975 (starting with the infamous K1000) and it is still in use, although with various upgrades to allow for increased automation.

Neither of these adapters supports autofocus.

Voigtlander Adapter for Pentax K Lens to Sony E Mount Camera \$199

<http://bhpho.to/1h8h5yy>

Novoflex Adapter for Pentax K Lens to Sony NEX Camera \$292.99

<http://bhpho.to/1fIKEPh> This one allows you to control the f/stop on the latest series of K-mount lenses without f/stop rings.

4.5.10 MEDIUM FORMAT LENSES

Really? A lens for a medium format camera adapted to the equivalent of an APS-C camera body? Yes! Google them and you’ll find adapters for Pentax 645N, Hasselblad V and Mamiya 645 lenses. Of course the crop factor is insane...

4.5.11 OLYMPUS OM

Olympus’ SLR cameras in the 1970’s were legendary for their small size and their superb Zuiko optics. The best-known cameras of this era were the OM-1, OM-2, and the OM-10. Any OM Zuiko lens can be fitted to the A6000 via one of these two adapters:

Novoflex Adapter for Olympus OM Lens to Sony NEX Camera \$211.99
<http://bhpho.to/1IQ9f2b>

FotodioX Adapter for Olympus OM Lens to Sony NEX Mount Camera \$59.95 (quite a difference in price!) <http://bhpho.to/1eml2xk>

Most Zuiko lenses were manual focus, but even those that are autofocus will have to be focused manually with these adapters.

4.5.12 *CONTAX*

Lots of Contax lens formats are available:

4.5.1.12 Contax G

The Contax G series was a modern rangefinder-style camera with autofocus and the option of an automatically-controlled f/stop. And the Zeiss optics were some of the best rated lenses for 35mm cameras ever produced. There were only two camera bodies made – the G1 and G2 - before the camera brand was discontinued in 2005 by its parent, Kyocera.

There were only 7 lenses made (spanning between 16mm to 90mm primes, plus one zoom).

Like the other adapters which try to enable autofocus on lenses, the A6000's CDAF is the brains for the autofocus and therefore it might hunt more than if the lens were mounted on a G1 or G2. Manual focusing is done via focus-by-wire (the same way it's done via a native FE lens – you turn a ring, but the camera sends electronic signals to the lens' focus motor.)

Performance reports for this adapter are mixed among users – manual-everything operation is great; auto-anything seems to have various problems depending on the lens and the parameter you're trying to automate. Here are two discussion forum threads which talk about users' reactions:

<http://www.rangefinderforum.com/forums/showthread.php?t=133697> and
<http://www.dpreview.com/forums/thread/3520707#forum-post-51848140> .

TECHART DEO TECH Auto Focus Contax G Lens to Sony NEX Series Camera Adapter \$295

Manual focus options for the Contax G

Metabones Contax G Mount Lens to Sony NEX Camera Lens Mount Adapter \$129 <http://bhpho.to/1lQdRpa>

FotodioX Adapter for Contax G Lens to Sony NEX Mount Camera \$89.95
<http://bhpho.to/1fR0cvH> (No AF and no auto diaphragm).

4.5.2.12 Contax/Yashica

Contax' history is as long as Leica's in the 35mm photographic world. And their Zeiss lenses were just as good (some say better, but I don't want to start a religious war here).

If you have some of the Zeiss T* lenses that were designed to fit the Contax RTS or later, or Yashica SLR (same mount), then this adapter is for you:

Novoflex Adapter for Contax/Yashica Lens to Sony NEX Camera \$211.99

http://www.bhphotovideo.com/c/product/737839-REG/Novoflex_NEX_CONT_Adapter_for_Contax_Yashica_Lens.html/6784/KBID/7355

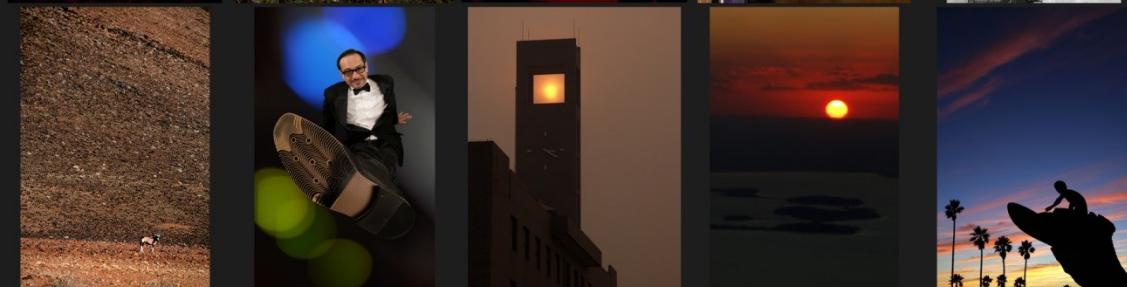
Interesting Historical Note: Although none of the lenses in the Contax/Yashica mount were capable of autofocus, Contax did develop the AX body, which achieved autofocus by moving the film plane forward and backward instead of rotating a lens element. They also developed a vacuum system behind the film plane that promised sharper images by sucking the film flat against the pressure plate! It's tough being a pioneer.

4.5.3.12 Contax N

The Contax N-mount was the company's push into autofocus, with a brand new lens mount that was not backwards compatible with their RTS system lenses. The N-mount used electronically controlled f/stop and autofocus.

FotodioX Adapter for Contax N Lens to Sony NEX Mount Camera 89.95
<http://bhpho.to/1lQiUG8>

As with most of the other adapters mentioned in this chapter, autofocus doesn't work, and the aperture cannot be controlled at all. Instead the adapter has a built-in iris whose opening you control using a blue ring.



CHAPTER 5 WI-FI, NFC, AND APPS

This is a brave new world for connected cameras. Mobile Phones and cameras are merging – already we have the Samsung Galaxy Phone, where you can email a picture directly from the phone. You'd figure Sony wouldn't take such conservative steps getting there, since they also happen to have a well-respected mobile phone division. Anyway, the built-in Wi-Fi and NFC is certainly a nice first step.

Very quickly, here's what this chapter will talk about:

- How to initially configure your camera
- Cool things you can do and how to do them:
 - Uploading a picture to Facebook via your smartphone
 - Using your smartphone as a remote control and remote viewfinder for your camera
 - Uploading images to your home computer wirelessly

All of the smartphone examples I show in this chapter are done with my Android phone (a Samsung Galaxy S3 (yeah I'm a luddite)). An iPhone experience should be very similar except the NFC option will not be available. And a Microsoft Windows phone experience will be VERY different since Sony hasn't yet released a PlayMemories Mobile app for that platform (which is necessary for your smartphone to interact with the camera.) (This puts you spiritually closer to us old Minolta owners, who got used to the fact that the 3rd party world would never accommodate them when new accessories were announced.)

5.1 WHAT IS NFC?

You're probably already familiar with Wi-Fi, but what's NFC and why should you bother with it?

The short answer is “NFC is the TLA (Three-Letter Acronym) for ‘bump,’ and once it’s configured, it can shorten the time to initiate something with the smartphone.” For example, in order to send a picture I’m looking at on the back of the camera to my smartphone, all I have to do is touch the N

logo on the grip-side of the camera to the back of my smartphone. (Both have to be turned on, of course.) The app starts automatically on my smartphone, and the image ends up on my phone seconds later, ready for me to share it with the world. So it can save a little bit of fumbling on both the camera and the smartphone.

The allowable distance between NFC sensors for configuration is intentionally small – the official specification is no more than two inches. This was done to minimize the very real possibility of someone standing next to you in a crowded room and slurping up your phone's contents without your knowledge or consent. (I sure wish the folks who decided putting RFID tags into U.S. Passports had

taken that scenario into account before deciding it was a good idea.) Anyway, on this camera the distance is less than an inch. The sensor itself lies directly beneath the N logo on the camera's right side. And at least with my smartphone the N logo must be placed EXACTLY where my NFC sensor is in my phone (which is completely unmarked, so I have to slide the phone around a little bit until I hear the “I found you!” sound - **Figure 5-1**).



Figure 5-1: The NFC transceiver is located directly behind the fancy N logo on the camera's right side. Once it's aligned with the NFC transceiver on the back of your smartphone, you can separate the two devices, and the Wi-Fi transfer will initiate. (A7 camera pictured.)

TIP: Beware that there are some mobile phones (the Samsung Galaxy S3 being one of them) where the NFC antenna is actually built into the camera battery. That's not so bad, but when it comes time to buying third-party batteries,

there's a good chance that they won't contain this antenna. So if you have a third-party battery installed and you find yourself unable to "bump" your phone with your camera, you'll know why and you'll have to initiate the connection manually. (The yellow rectangle below shows where the NFC-compliant batteries are marked.)



5.2 SETTING THINGS UP FOR WI-FI UPLOAD

Before you can upload images to your home computer, you need to tell the camera what router to use (and any passwords necessary to log in). You only have to do this once per access point. The camera can memorize many different access points, but I've yet to discover what the maximum number is.

(NOTE: If you only plan on transferring pictures and using the remote control with your smartphone, then this step is NOT needed.)

There are two methods of pairing with a Wi-Fi access point: the traditional way, and the easy way (which requires that your access point has a "WPS" button, as in **Figure**



Figure 5-2: The screen you see to set up your Wi-Fi access the traditional way. (You can skip this method if your Wi-Fi router has a "WPS" button.)

5-4). I'll outline the traditional way first.

The Traditional Way

Go to **Menu → 2 → Access Point Set.** After a few seconds the camera will show you a list of all the Wi-Fi access points it detects. Select the one you want to connect to using the cursor keys and press the Center button. A configuration screen appears (**Figure 5-2**).

Unless you're an IT Admin guy I recommend you keep the settings as shown in **Figure 5-2** and skip to the next paragraph. **IP Address Setting** set to Auto allows the camera to automatically be assigned an IP address via the router's DHCP function. Many corporate IT departments have DHCP turned off to keep unapproved devices from accessing their network, so you'll have to work with them to get an IP address and assign it manually when this function is set to Manual.

Priority Connection is designed to give your Wi-Fi signal priority when other devices try to communicate at the same time. (Usually this mechanism is used when streaming movies from one Wi-Fi device to another.) Keeping it On will move your pictures faster in theory, but your particular network configuration and activity will determine how much of a speed increase it will get you (if there's any increase at all).



Figure 5-3: If your Wi-Fi router needs a password (and shame on you if it doesn't! ☺), you'll see these two screens to help you enter it. The bottom screen shows success.

After setting up configuration click OK. The camera will try to access the Access Point, and if necessary it will eventually ask you for a Wi-Fi password (**Figure 5-3a** and **b**). The camera supports WEP, WPA and WPA2 format passcodes, which are the industry standard for Wi-Fi routers. Here's where a touch screen would have been handy; instead you have to enter your passcode old-school cell phone style: press the ABC button three times to get a "C," etc.

Finally, all your hard work will be rewarded with the confirmation screen you see in **Figure 5-3c**. Henceforth, the camera will remember this access point and you shouldn't have to reconfigure it.

The Easier Way

If your Wi-Fi router/access point has a button on it labeled "WPS," then the registration of a Wi-Fi Access point becomes a two-step operation:

1. On the camera: **Menu →  1 → WPS Push**
2. On the Access point: Press the WPS button within 2 minutes

You'll briefly see the screen in **Figure 5-4** (bottom) and then you'll get a confirmation screen. That's it!

WPS was originally designed to make setting up a secure network a push-button affair (without having to enter any SSID's or long passphrases). Wi-Fi Protected Setup (WPS) goes by other names too – Wifi Simple Config (WSC), or Push 'n' Connect. But the idea is you just press two buttons while the two devices are near each other and then that's that.



Figure 5-4: Many modern Wi-Fi routers possess a WPS button to make the setup of secure networks a push-button affair (above). Just push the button and then initiate "WPS Push" from the camera (bottom).

TIP 1: Your Wi-Fi access point must support WEP, WPA or WPA2 encryption standards (most do) in order for the WPS Push function to work.

TIP 2: The access point also has to have its “Beacon” set to ON in order for your camera to find it.

TIP 3: You can’t use the home router connection to send pictures to Facebook or Twitter. For that, you’ll have to use a competing Wi-Fi solution called Eye-Fi (which the camera supports).

TIP 4: MENU → 1 → Airplane Mode must be **OFF** in order for any Wi-Fi feature to work.

5.2.1 CONFIGURING PLAYMEMORIES HOME

Next, in order to transfer images to your home computer you MUST be running Sony’s PlayMemories Home software. (No two ways around that!)

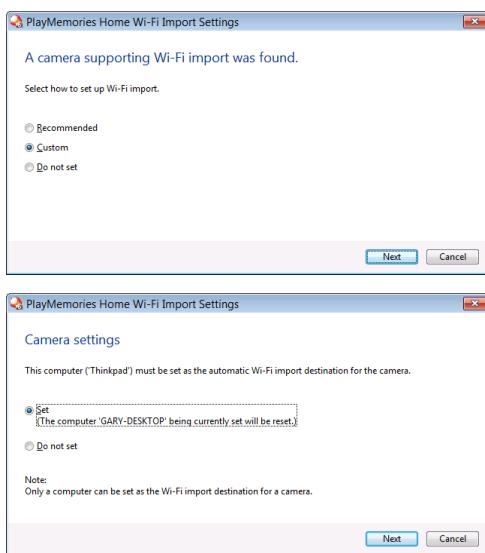


Figure 5-5: Two mandatory setup screens when you configure PlayMemories Home to be the recipient of Wi-Fi downloads.

So if you haven’t yet installed PlayMemories Home on your computer, now’s a good time, and you can download it from here: <http://sony.net/pm>. Then open the software, connect your camera to your computer using a USB cable, and turn the camera on. After a few (or more) seconds you should see a message saying, “Hey, I detected a new camera! The following new functions will be installed:” and then an empty box showing no new functions is shown. Hit OK anyway, then after a few more seconds the screen in **Figure 5-5a** appears. It’s saying “This new camera can do Wi-

Fi. Do you want to configure automatic Wi-Fi importing?" Go ahead and hit "Custom" and then "Next."

Then you'll see **Figure 5-5b**, asking that you Set the current computer to be the de facto Wi-Fi recipient. (You can't have more than one machine configured to receive Wi-Fi downloads. So if you have a desktop and a laptop that could work, you have to choose only one.) Choose the Set button then hit Next.

Next you get an unintuitive Windows Firewall setting screen (if you're using a Windows computer), which is essentially telling you that it's unwise to do this Wi-Fi upload thing at Starbuck's (or other public hotspots) because it opens your computer up to potential security threats. So make sure you're doing this just on your home network (check the "Private or domain networks" box and leave the "Public Networks" box unchecked) and hit Next. Then there should be a Windows "Are you sure you want to do this?" confirmation screen (say Yes) and then finally you hit Finish. Should you ever need to bring up that "Configure Wi-Fi screen" again, hook up the camera with a USB cable, select the camera supporting the Wi-Fi function from [Cameras and media], and then click on [Wi-Fi Import Settings] on the right-hand side.

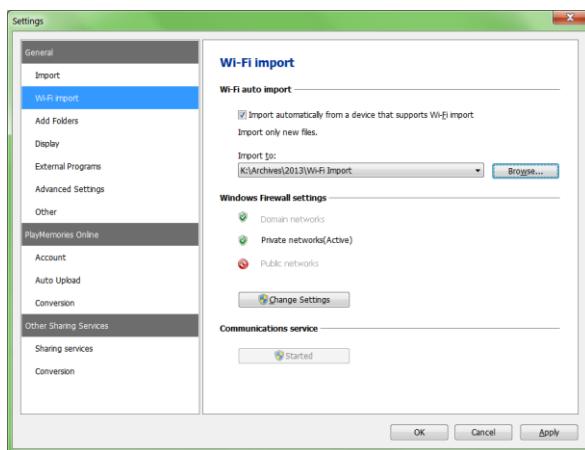


Figure 5-6: Avoid frustration later by telling PMH where you want your Wi-Fi files imported to.

One last configuration: You have to tell PMH the directory for uploading images. Go to Tools → Settings... and then click "Wi-Fi Import." The screen in **Figure 5-6** appears. Click the Browse... button and specify a destination directory.

You can then exit PlayMemories Home

and go about your business.

If you can't do an upload, your anti-virus or firewall program may be blocking the connection. This is where I leave you in a lurch because every firewall is different and it's impossible to give you step-by-step guidelines on how to fix it. The high-level advice is "Change the settings so that communications can be made using UDP port 1900 and TCP port 2869."

5.2.2 INITIATE YOUR UPLOAD

Once all of this is set up (and again, you only need to do the above once), you can upload your pictures wirelessly by doing the following:

- **MENU →  1 → Send to Computer**
- Wait.

The camera will first establish a connection to your Access Point, then to your computer running PlayMemories Home, then it will start a pre-upload process, and then the actual transfer will begin. PMH does NOT need to be running beforehand – it should wake up by itself and start importing to the directory specified during the setup process.

The camera will turn itself off after the transfer is finished.

TIP: *I've found the process of uploading images to the computer via Wi-Fi to be a fickle process at best. Even after a successful transfer, a subsequent attempt might be unsuccessful. Sometimes just moving the camera from one side of my desk to the other solved the problem, telling me the connection is very susceptible to stray radio sources and interference. Sometimes I had to reboot my Wi-Fi router in order for the connection to be successful. I've found the Eye-Fi SD card (which does similar things) to be more consistently reliable when it comes to connecting to your computer (but just as slow in transference speeds).*

I've found this to be the fastest and most reliable method of all for uploading files to your computer: connect your camera using a USB cable and use PlayMemories Home!

5.2.3 *THROUGHPUT RATES*

And now, a First World Problem: The camera has 24 Megapixels and the images are so detailed that it will seem to take forever to transfer the images over to your computer (this is especially true if you're sending RAW files). In one of my tests it took 6:34 minutes to transfer 236 MB of images; this works out to be a speed of 4.7 megabits per second.

“4.7 Mbps? Isn’t my 802.11n Wi-Fi rated at 300 megabits per second?” Well, that’s a maximum theoretical rate and your actual speed depends upon a great many factors, including the distance from the router, building materials between devices, the number of devices that are actively communicating (especially devices that are streaming movies at the same time), and what else your computer is doing. Plus there’s the protocol overhead involving preamble, error detection and correction, and packet retransmission on noisy networks. My network is pretty modest so I’d say it’s healthy to expect no more than 5 mbps throughput rate.

5.3 SETTING UP SMARTPHONE FUNCTIONS

5.3.1 *INSTALL PLAYMEMORIES MOBILE*

You can get this essential piece of software from the usual places: the App Store for the iPhone, or the Google Play store for Android.

You can’t do much when you run the app by itself, but I encourage you to do so just so you can change one setting. With the app running, hit the MENU button or icon (it varies from phone to phone) and choose Settings. The first option will be Image Quality. For a lot of reasons I recommend setting this to 2M if it’s not there already – that will mean your smartphone will receive an image of 1616 pixels wide x 1080 pixels high. Downloading the full-sized image just to post on Facebook is really overkill. (Why is it called “2M?” Because the image is roughly 1.7 MP, and they just rounded up. The JPEG compressed version takes up only about 500 KB though, making it ideal to send over your phone’s expensive data plan.

If you’re traveling in a foreign country and your roaming data plan is something like \$20/megabyte (it used to be that bad, and I’m sure it still is in some countries), then you might want to consider using the VGA option

instead. VGA resolution is 640 x 480 pixels. (Which doesn't sound like much, but you didn't complain about it much in the 1980s, when that was the standard computer screen resolution.) The file size when compressed as a JPEG file will be about 75 kilobits – perfect if you want to conserve as much of your data plan as possible (and most people won't think it's a bad-looking image).

5.3.2 TRANSFERRING AN IMAGE TO YOUR SMARTPHONE

With PlayMemories Mobile running, you should see a screen that says “Run the Wi-Fi Function on the shooting device.” The phone is now looking specifically for a Wi-Fi enabled camera.

Turn your camera on and play back an image, and go to **MENU →  1 → Send to Smartphone** (or just hit the **Fn** button – it's pre-assigned). Then choose **Select on This Device** and then **This Image**. The camera will set up its own Wi-Fi hotspot and it should appear on your PlayMemories Mobile Screen. (Mine shows up as “Direct—4AE0:ILCE-6000.”) Select the camera it found by tapping it with your finger. The phone should then show “Connecting...” and then the image will transfer, ending with a confirmation screen like that shown in **Figure 5-7**. Hit OK on the phone and on the camera to finish.

Congratulations! You just experienced some instant gratification.

TIP 1: You can transfer still images (JPEG files only) or MP4 movies (not AVCHD) to your smartphone this way. If you're shooting in RAW, the camera converts the RAW file to a JPEG file first before transferring it over.

TIP 2: If you're connected to your camera via PlayMemories Mobile on an Android phone, and you put the program in the background (to take a call, for example), the Wi-Fi connection to your camera will terminate. Not good software design in my opinion.

TIP 3: Some users get the error “Not able to-connect to Android phone via WiFi.” The solution (at least on the Samsung Galaxy S3 and S4) is to make sure “Auto Network Switch” in Advanced Settings on the Samsung S3 and S4 WiFi settings is NOT checked.

5.3.3 CONFIGURING NFC ON YOUR SMARTPHONE

This part's easy. All you have to do to enable NFC on your smartphone. On Android 4.1, just go to SETTINGS → Connection → NFC → ON. (Or

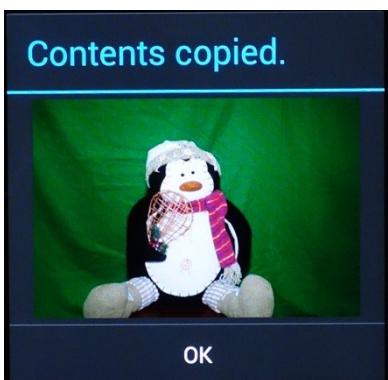


Figure 5-7: What you see after a successful image transfer.

it might be in SETTINGS → MORE SETTINGS → NFC → ON.) (Of course, this will appear only if your device has a built-in NFC transmitter.)

Now let's try the very same image transfer from the previous section. This will now only take two steps:

1. Turn the camera on and play back any still image.
2. Turn on your smartphone and bump the two together (making sure the NFC sensors are properly lined up.)

That's it! Once connected your smartphone will make an "I've

connected with you!" sound. At that point you can separate the two devices (up to about 10m/33ft) while the image transfers. And then, after just a few seconds, you'll see an image similar to **Figure 5-7**.

5.4 NOW WHAT?

I have a few favorite uses for this capability:

5.4.1 UPLOAD IMAGES TO YOUR SMARTPHONE FOR SOCIAL MEDIA

When I'm on vacation, and I take a great photo, I can share it on Facebook almost immediately. Using Wi-Fi (and optionally, the NFC feature to make the process faster) I can transfer a downsized version of the image to my smartphone and have my phone upload it from there using its 3G or 4G data connection.

(Why upload a smaller version to Facebook? Because computer screens need far, far fewer pixels than printing or enlarging. So 24 MP are a great

thing if you want to make big enlargements to hang on your wall. But it's overkill for social media.)

Here's how to do it, step-by-step:

If your phone has NFC:

- 1) Play back your images on your camera, and stop when you see an image you want to share.
- 2) Touch the N logo on the side of the camera to the back of the phone until you hear the "I found you!" sound and see the PlayMemories Mobile app start.
- 3) Watch in awe as your image automatically transfers over.
- 4) Once the transfer is finished, exit the app. The image(s) you just transferred can be found in your usual pictures directory with whatever picture-browsing app you usually use. (Don't you love instructions that are extremely specific?) On my Android phone, I use the Gallery app, and it's in a subdirectory called PlayMemories Mobile.

If your phone doesn't have NFC:

- 1) Play back your images on your camera, and stop when you see an image you want to share.
- 2) Go to **MENU →  1 → Send to Smartphone**.
- 3) The camera will then ask you to choose between "Select on This Device" or "Select on Smartphone."
- 4) For simplicity and to save time, choose "Select on this device," which leads you to a further submenu with the choices "This Image," "All Still Images on Date," or "Multiple Images." I'd like to think that these three are pretty self-explanatory. For this example I'll choose "This Image" (meaning the one displayed in Step 1 above).



Figure 5-8: If you don't have NFC in your smartphone, you can still establish Wi-Fi communications the old fashioned way by using the SSID and Password shown to you on the back of the camera.

- 5) You will see a screen like that in on the back of the camera, indicating it's waiting to hook up with a phone it knows about.
- 6) Start the PlayMemories Mobile app on your smartphone. It will start to scan local Wi-Fi access points and will look for the camera it already knows about. When it finds it, it will automatically connect and the image transfer will commence.
- 7) You'll see "Contents Copied" and the photo on your phone. Hit OK to accept and then you can exit the app.
- 8) Turn off the camera.
- 9) Had you chosen "Select on Smartphone" in Step 3 above, the camera would have sent you tiny thumbnails of all pictures in the current directory; you can then select the ones you want and then hit either "Copy" (which means "Copy to smartphone") or "Share" (which means "Copy to smartphone, and then either email or post to a variety of social media apps on your phone.") Choosing "Share" will still leave a copy of the sent picture in your photo gallery.
- 10) Once the transfer is finished, exit the app. The image(s) you just transferred can be found in your usual pictures directory with whatever picture browsing app you use. (Don't you love instructions that are extremely specific?) On my Android phone, I use the Gallery app, and it's in a subdirectory called "PlayMemories Mobile."

TIP: If Wi-Fi is turned off on your smartphone, PlayMemories Mobile will automatically re-enable it for the duration of the transfer, then will shut it down again upon app exit.

5.4.2 REMOTE CONTROL WITH VIEWFINDER

This is my second-favorite Wi-Fi feature, because it holds the possibility of taking cool shots that were much more difficult to do previously. Think of it as tethered shooting, but without the tether.

If your smartphone has NFC

1. First, you need to tell the camera “Every time you do an NFC bump, start a specific app on the camera.” **MENU → 1 → One-touch (NFC) → Select Application**. Use the arrow keys to select **Smart Remote Embedded** and hit the center button. You only have to do this once.
2. Turn your smartphone and the camera on and touch the “N” on the grip side of the camera to the NFC spot on your phone until you hear the “I



Figure 5-9: Starting the Smart Remote Embedded screen. If your phone doesn't have NFC, you would use the SSID and Password (just once) to manually connect your smartphone via Wi-Fi.

found you!” sound. The App starts on the phone and the camera automatically invokes the built-in **MENU → 1 → Application List → Smart Remote Embedded** app.

If your smartphone doesn't have NFC

Manually invoke **MENU** → **■ 1** → **Application List** → **Smart Remote Embedded**. You'll see a screen similar to the one shown in **Figure 5-9**.

Now turn on your smartphone and start the PlayMemories Mobile app. The app will automatically scan Wi-Fi for cameras it knows about and automatically connect when it finds yours.

Continuing...

On your smartphone, a screen similar to the example you see in **Figure 5-10** appears. From here, you have the following options:

- Tell the camera where to focus by touching your subject on the smartphone screen.
- Take the picture! Press the Camera icon in the silver circle near the right (or bottom if the phone is held vertically) of the screen.
- After you take the picture you'll see the image you just took with a quick note saying "Resized Image has been saved" in a PlayMemories Mobile folder. Hit Back to take another image, or Share to send it off via a variety of phone-specific options. (Sharing the image entails disconnecting from the camera.)
- You can view all the pictures your camera took (and uploaded to your phone) by hitting the thumbnail in the lower-right-hand corner.
- You can also control some settings by pressing the icon that looks like a wrench and a screwdriver in the lower-left-hand corner of the screen, but it's pretty boring stuff. From there you can:



Figure 5-10: The PlayMemories Mobile screen lets you take a picture and adjust a few parameters, but not much else.

- a. Enable/Disable a 2-second self-timer (The orange lamp on the front of the camera even goes off beforehand, just like it should!)
- b. Choose whether you want to save the image on your smartphone for sharing later. (If you say no, you can only look at the image you just took on your phone, but you can't share it.)

TIP: For more control over camera settings, press the Menu button on the camera while you are using Smart Remote Embedded. The Smart Remote Embedded menu appears on the camera, with menu items on pages 2-5 for controlling things such as Quality (so you can shoot RAW or RAW & JPG if you want), Image Size, Aspect Ratio, Drive Mode, Flash Mode, Compensation settings, White Balance, etc.

Sony's official specs say that the maximum distance between the camera and the smart phone is 10m/33ft, but of course this will be reduced depending upon what is between the two devices.

If you're shooting RAW only, the camera will convert it to a JPEG file for you and then send it off to your phone (only because it's a near certainty that your phone can't read RAW files, and even if it could, it would take much too long to send it over!)

How long can the camera last on a full battery charge? (You know I tried it.) The camera battery lasted about 2.5 hours with the rear LCD turned off (**MENU → ⚙ 3 → FINDER/MONITOR → Viewfinder**); although my smartphone's battery (Samsung Galaxy S3) died about 2 hours into the experiment. Every smartphone is different.

Important! Most of these camera Apps take over the camera completely. When you have the Smart Remote Embedded application running on the camera, it remains in that mode until you specifically disable it. Not even turning the camera off and then on will get rid of it. (Most of the time.) So to exit the application, press the MENU button, then hit Exit Application on the screen and you're back to camera control. Having said that, the Smart Remote Embedded app has an additional exit mode: Just press the camera's shutter release button halfway and you're back to your old camera.

You can use your imagination for the kinds of unique shots you can get with this untethered remote feature. Here are some ideas to get you started:

- Wedding photographers used to get up on high ladders to shoot large groups from high up with a wide-angle lens. Now you can do it without the ladder!
- Take a self-portrait and know that you've framed yourself properly before taking the shot!
- Shoot high above a large crowd using a long pole like the one shown in **Figure 5-11**.
- Find a bird's nest and shoot when the time is right. (Chances are your patience will be exhausted long before the batteries die.)
- Street photography – put the camera on top of a newspaper stand, point it at where pedestrians are apt to be, and shoot at the decisive moment from around a corner. (I didn't try this because I'm philosophically against street photography, plus both of these cameras make so much noise when they shoot that the irked people being photographed would surely do something undesirable to my camera once they see it. Also, you risk somebody stealing your camera.)
- Hide the camera among some presents under the Christmas tree, and get shots of your kids as they hover near the package to pick it up. (And make sure that the area under your tree is well lit.)
- Have some cool pictures you've taken with this feature? Email me your best ones and they might appear in a future update of this e-book!



Figure 5-11: One thing you can do with this new remote viewfinder/shutter release feature is to spy on people through high windows. (Not recommended.)

TIP: If you don't see the options of changing shutter speed, f/stop, or ISO in the phone app (**Figure 5-10**), then you need to upgrade the Smart Remote Control application that's on your camera. For instructions on how to download applications (which also covers upgrades), see the "Applications" section later in this chapter, Section 5.6.

5.5 OTHER TETHERED SHOOTING OPTIONS

Tethered shooting refers to the ability to hook up the camera to a personal computer and have all of the images you take transfer instantly to the computer for rapid, detailed inspection. It also refers to the ability for the computer to control all aspects of the camera, including autofocus, parameter setting, and taking the picture. In a perfect world, it would further refer to the ability for the user to SEE the live view image from the computer as it was being controlled. (Unfortunately, that last bit is not available for these cameras.)

There are three ways you can use tethered shooting on the A6000:

5.5.1 WI-FI UPLOAD

You can't do automatic tethered shooting via the camera's built-in Wi-Fi. You can send one or many photos after they've been taken (via **MENU →**  **1 → Send to Computer** as discussed at the beginning of this chapter), but there's no automatic upload. I used to think this would be viable until I actually tried it. It takes minutes for each image to be uploaded (after at least one minute to establish the wireless connection). Having such a high-pixel-density camera doesn't help any. In my opinion, for studio work this option is just too slow.

You CAN upload images automatically if you have an Eye-Fi card (an SD card with built-in Wi-Fi – a popular solution before this feature was built-into cameras), but rest assured it's still a painfully slow process.

TIP: If you're a Macintosh owner, know that Sony is starting to support your platform. They have released Wireless Auto Import software ver. 1.2 for the Macintosh, which is available for download here: <http://support.d->

imaging.sony.co.jp/imsoft/Mac/wai/us.html. Some Macintosh users have complained that the program cannot find their camera, whereas those who have gotten it to work say it's an all-or-nothing thing, just like the Eye-Fi option on the PC.

5.5.2 REMOTE CAMERA CONROL SOFTWARE

Your A6000 came with a new version of Sony's Remote Camera Control software, and it works for both Macintosh and PC. (You Linux users are out in the cold – yeah, so what else is new?) You can download the program from here: <http://bit.ly/1dNxqts>

To use it, your camera must be set to **MENU → 4 → USB Connection → PC Remote**. Attach the camera, turn it on, start the software, then the control screen in **Figure 5-12** appears.

At this point much about how to use this software is obvious. In addition to being able to adjust all of the settings shown on the screen, you can also just keep using the camera as you normally would and your images will instantly be transferred to the directory specified in the Save To field (and not saved to your memory card).

You can use this program to start and stop movies, too! But the movies stay on the camera's memory card.

TIP: If you really, really want to see the Live View image while controlling the camera remotely, you can always use an external monitor and an HDMI cable. (But then you'll have two screens.) At least you'll have the option. Note that if your laptop has an HDMI port, it is most likely an OUTPUT port and you will not be able to use it as an input port.

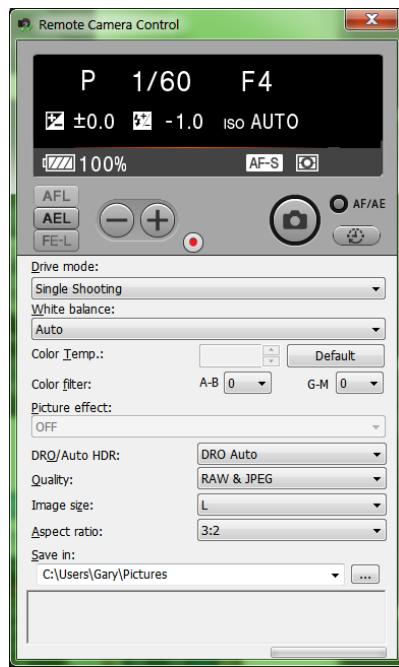


Figure 5-12: You can control your camera remotely via the Remote Camera Control software (which is part of the Image Data Suite.)

According to the documentation, tethered shooting in this way works best when a memory card is inserted into the camera, to give it a bigger buffer.

5.5.3 *LIGHTROOM 5 ADD-ON SOFTWARE*

Dslrsoftware.com publishes a Lightroom 5 plug-in designed specifically for the A6000 which offers less control than the Remote Camera Control software described above (it only lets you look at f/stop, shutter speed, and ISO) and just one Shoot button that loads the image directly into Lightroom. You can download a demo version to try it out for yourself at <http://bit.ly/OrhiEm>.

5.6 APPLICATIONS

This is the fourth generation of cameras (the Sony NEX-6 was the first) to allow downloadable apps to provide additional functionality to your camera. Whether this is a wonderful thing or not depends on who you talk to – many complain that some of these functions used to appear for free in previous cameras, and now have been removed from the native menus and it costs you money to get these features back. Others complain (and I'm among them) that Sony really should open up a programmer's API so 3rd parties can write apps that are truly imaginative and useful. Sony is finally starting to publish some parts of the API.

But I digress. Your camera can download applications and I'm going to show you how to download your first one. There are two ways to do it: 1) By tethering your camera to an Internet-connected computer via USB cable, or 2) by establishing a Wi-Fi connection to your router and downloading to the camera directly.

You'll also need to set up a PlayMemoriesOnline.com account first. First I'll tell you how to go about doing that, then I'll talk about some of the more noteworthy apps that are available as of this writing.

1. Go to the PlayMemories Camera Apps website at: <https://www.playmemoriescameraapps.com/portal> and set up your account. The same login information for this website should also apply to the PlayMemories Online website (www.PlayMemoriesOnline.com)

where you will also need to have an account. If you plan on purchasing any applications, you'll have to register a credit card here by clicking Add Funds to Wallet.

2. Go to the Apps website to download the camera applications; you will also find user manuals for each app there.

(The PlayMemories Online website is one of the places your photos (and videos) can be sent when you use the Direct Upload app on your camera. Here you can also share an album or send a postcard with an image and message of your choosing via email (messages on the card are rather limited at 50 characters)).

If your camera is connected to your computer via USB

Once your accounts are set up, just log in to the PlayMemories App store on your computer, choose your camera model from the drop-down list (you may have to scroll down to see it), select the app you want (I started with the Time-lapse app, which was hyphenated for no good

reason), select the Install link on the left side of the screen and follow the instructions. On my PC (Windows 7/Chrome browser) it installed a downloader program, which involved several popups and browser restarts. This only needs to be done once.) Then you hit the Install button in the browser. Then you're told to turn the camera on and connect it to your computer via a USB cable. After the download, the app automatically installs on your camera and you're ready to go. To install additional apps, just leave the camera connected and select the next app you want.



Figure 5-13: The currently available Camera Apps.

TIP: Some of the apps are free, but others are priced at \$4.99 and \$9.99, so you may want to add money to your account at Sony ahead of time.

If your camera is connected to the Internet via a Wi-Fi router

If you want to set up the camera so it can download apps over a wireless connection as discussed at the beginning of this chapter, either using **MENU → 1 → WPS Push** or **MENU → 2 → Access Point Set**.

Then select **Menu → 1 → Application List → PlayMemories Camera Apps**. The camera will connect to the Internet via your Wi-Fi router (reboot your router if it's having connectivity issues), and give you a list of all available apps. Make sure you select All in the tiny vertical tabs on the left (Figure **Figure 5-13**). Then scroll to the app you want to install and click on it. It's a pretty smooth process other than the fact that you have to sign in the first time using that awful cursor-driven keyboard. (That keyboard is a good argument for making short, insecure passwords.)

Here are the apps that are available for the A6000 at the time of this writing:

Name	Price (USD)	Description
Star Trail	\$9.99	Shoots a series of starry sky still images, then combines them into one movie. Adds the synthetic starry sky background to the subject you shoot. (Rather gimmicky, I think.)
Smooth Reflection	\$4.99	Creates a long-exposure effect by combining a series of shots into one photo. (No ND filter required!)
Sync to Smartphone	Free	Whenever you turn the camera off, this app automatically transfers the photos on the camera to a preregistered smartphone or tablet. (iOS devices require you to manually launch the PlayMemories Mobile app.)
Liveview Grading	\$9.99	Lets you fine-tune the color of your movies and see the results in real-time as you adjust.
Direct Upload	Free	Post images to the online photosite of your choice (such as PlayMemoriesOnline or Flickr, whose app you'll need below).
Flickr Add-on	Free	Lets you upload pictures directly to Flickr.
Motion Shot	\$4.99	This one's kind of cool. Takes a sequence of shots of a moving object and merges them into one image.

		
Portrait Lighting	\$4.99	I'm not impressed with this. All it does is darken the corners of your image.
Light Shaft	\$4.99	Add beams of light (and you can specify intensity, width, and direction) to a picture that's already been taken. Definitely a special effect. 
Bracket Pro	\$4.99	Unique features being offered here are flash exposure bracketing (something that should have been included in the original firmware), automatically take one shot with flash and one without, and focus bracketing.
Time-Lapse	\$9.99	Provides a limited Intervolometer function which takes pictures at regular intervals. It will even make an .avi movie for you (which, oddly, the camera doesn't know how to play back!) after the sequence is finished.
Multiple Exposure	\$4.99	Emulates something that was easy to do back in the film days – expose one frame of film more than once. I know someone who

		used to use this feature a lot: http://bit.ly/OssSz5
Lens Compensation	\$9.99	This gives your camera the ability to build profiles and correct for lenses that the factory firmware doesn't know about.
Smart Remote Control	(Built in)	Allows your Android or iOS smart phone to trigger your camera wirelessly with Live View. (Stills only.)
Photo Retouch	Free	Allows you to do basic things like exposure adjustment and cropping in-camera. Can apply soft skin effect or straighten an image after-the-fact. Might be a handy thing before you share the picture via social media.
Multi-Lingual Keyboards	Free	New languages are being made available all the time.

TIP: Remember that these are separate applications running on your camera's "computer system" and as such you will experience some slight delays in their operation. They don't start instantly but may take a couple of seconds to get going. Once the selected app is up and running, it takes over completely – you have to exit the app to regain control of your camera again. Merely turning the camera off doesn't exit the app.



CHAPTER 6

THE RECORDING (CAMERA ICON) MENU

6.1 IMAGE SIZE

Menu Position MENU →  1 → Image Size

What it Does Dictates the pixel dimensions of the captured image – you can choose from Large (24 MP), Medium (10 MP), or Small (6 MP) images

Recommended Setting L:24M (the largest the camera can capture)

Constraints Not selectable when shooting RAW only or in Movie mode

There may be times when you won't necessarily want to shoot large and very detailed images. (Posting product images to Ebay, for example, where 24 MP is quite simply overkill.) And so your A6000 allows you to take pictures that have about the same number of pixels as the Alpha 100 (10 megapixels) or the Konica Minolta 7D (about 6 megapixels, assuming your 7D hasn't been stricken by the famed First Frame Black problem ☺). And then you can switch back to high-resolution whenever you want – quite versatile!

The three options that are available to you are shown in the following table:

Setting	Pixel Dimensions	Large enough to print (at 300 dpi)	Approx. file size produced on your memory card (your mileage may vary)
L:24M (Large; 24 Megapixels)	6000 pixels (horizontal) by 4000 pixels (vertical)	20" x 13.3"	Standard: 6.3 MB Fine: 7.78 MB RAW: 24 MB
M:13M (Medium; 12 Megapixels)	4240 pixels (horizontal) by 2832 pixels (vertical)	14.1" x 9.4"	Standard: 4.3 MB Fine: 3.9 MB RAW: 24 MB
S:6 M (Small; 6 Megapixels)	3008 pixels (horizontal) by 2000 pixels (vertical)	10" x 6.7"	Standard: 4.2 MB Fine: 2.2 MB RAW: 24 MB

Note that this function affects the sizes of JPEG files only. If you're shooting in RAW (or RAW & JPG), the RAW files produced will always be the largest size possible. (In fact, when you shoot in RAW only mode, the image size option is grayed out – you can't change it.)

Note also that there are very slight differences in some of the RAW file sizes – in theory that shouldn't be, but in reality Sony is using a compressed RAW format which is so indistinguishable from the original that you have to go out of your way to devise a very specific you-don't-see-this-every-day test to be able to see it.

Notice that the image sizes listed in the tables above don't correspond to the file sizes the camera produces on your memory card. The file sizes are smaller because every file type (yes, including RAW) involves some sort of variable image compression.

Other variables that control file and image sizes are Aspect Ratio and Quality (next two sections).

6.2 ASPECT RATIO

Menu Position MENU →  1 → Aspect ratio

What it Does Sets the shape of images taken as this  (3:2)

or as this  (16:9)

Recommended Setting 3:2 – you can always crop photos to 16:9 ratio later

Constraints Not selectable in Panorama mode

The aspect ratio is simply the ratio of the width to the height. A standard 6" x 4" print, for example, has a ratio of 6:4 which, when reduced, yields 3:2. Analog television screens have an aspect ratio of 4:3, whereas the new generation of High-Definition TV is a bit wider, at 16:9.

The A6000 LCD monitor has a 16:9 aspect ratio, which means that movies fill the entire LCD but stills with 3:2 aspect ratio have black bars on the left and right side. This affects display only!

When you switch from “Normal” (3:2) to “Wide” (16:9) aspect ratio, the top and bottom of your composition gets chopped off in the JPEG file. This setting only affects JPEG files, though. If you’re shooting a RAW file, the camera still captures the entire image, but makes a note that you shot it in 16:9 aspect ratio. It is up to the program that opens the RAW file to look for that flag and know what to do with it. Sony’s IDC software, for example, shows you the entire RAW file but, noting that you shot in 16:9 mode, visually “grays out” the top and the bottom, although the image is still a 3:2 image.

When you’re shooting in 16:9 aspect ratio the camera uses crop marks to show you what the final composition will look like as you compose your shot.

6.3 QUALITY

Menu Position MENU →  1 → Quality

What it Does Changes the kind of image that is written to the memory card. You can choose between two kinds of JPEG files, RAW, or both RAW & JPG

Recommended Setting This is an intensely personal choice. RAW & JPG might be the best of all worlds, but it also takes up a lot of memory (and writing time) per shot

Constraints Not selectable in Panorama mode, Movie mode, or HDR mode.

Chapter 15 explains the tradeoffs between shooting with JPEG and RAW. In a nutshell, though: JPEG images are compressed to take up less space on your memory card at the expense of some level of visual degradation (although in modern cameras it's extremely difficult to see ANY visual degradation – see my blog post at <http://bit.ly/1qtUW4f> and <http://bit.ly/1iy0Z6t>).

RAW, on the other hand, captures all the information directly from the sensor and shoves it onto the memory card without any processing at all. With RAW, standard image processing functions such as applying the white balance, sharpness, contrast, color space, etc. settings happen later, on your computer. RAW will give you the highest possible quality that the camera is capable of capturing, but it requires computer post-processing to make the images look great. RAW is also a proprietary format, and not all image editing software will know how to open this newest version of .ARW (Alpha RaW) files.

As a file size comparison, I set up the camera on a tripod and took four shots of a single scene, with Image Size set to L:24M, Aspect ratio set to 3:2, and ISO set to 400 to produce an average amount of noise. (JPEG images tend to take up more space when they have more.) Then I compared them all to the equivalent JPEG Quality compression settings used in Photoshop. See the table below to find out how they compare. This is the nature of JPEG files – the file size is very much content-dependent. (These numbers show relative sizes for a single image and make for good ballpark comparisons.) Here are the different file sizes for each format:

Image Format	File Size	JPEG Quality Equivalent in Photoshop
Standard (.jpg)	5.7 MB	Quality = 8 (!)
Fine (.jpg)	9.4 MB	Quality = 9
RAW (.arw)	25 MB	
RAW & JPG (produces two files)	25 MB (.arw) + 9.4 MB (.jpg)	

The size of JPEG files can vary greatly according to image content (which explains why they're different from the numbers listed in the "Image Size" section). If you try this experiment yourself, don't be surprised if your numbers are off by a factor of two or more. This is why the Images Remaining counter shows you conservative numbers – often you can fit more images on a card than the camera shows you when an empty card is inserted. The camera never knows how large your JPEG files are going to be. It is also interesting to note that, even for the Standard (lowest quality) JPEG files setting, the compression is very conservative, and the image quality is still quite high. The JPEG image quality setting has no effect on RAW files.

So, in my personal opinion, it's always best to record your images at the largest size (Fine and/or RAW) that you can afford; as you can rarely predict ahead of time if a 4"x6" print or a 20"x30" poster will be needed. Memory cards are pretty cheap (compared to what you just spent on this camera) and the cost of hard disks in terms of dollars per megabyte continues to drop.

6.4 PANORAMA FUNCTIONS

Menu Position MENU → 1 → Panorama: Size, Panorama: Direction

What It Does Specifies how wide the final sweep panorama image will be (and indirectly the maximum number of images the camera will capture in order to create the sweep panorama)

Recommended Setting Wide

Constraints Selectable only when the Mode dial is set to Panorama

In Chapter 3 I gave you a basic overview of how to take a panorama image using the Sweep Panorama mode. To recap, just turn the Mode dial to the long rectangle (the icon for “Sweep Panorama,” **Figure 6-1**), press and hold the shutter release button, and pan from left to right. (There are slightly more detailed instructions than that – and they were listed in Section 3.11 because I wanted to include some instant gratification for this feature early in the book. ☺)



Figure 6-1: The Sweep Panorama mode).

You can modify some of the parameters for taking panorama pictures – for example, you can tell the camera that you want to sweep right-to-left instead of left-to-right. Or you can even sweep up-to-down or down-to-up (useful in vertical orientation, see **Figure 6-4**). You can change these settings by **MENU → 1 → Panorama: Direction → [Choose from Right, Left, Up, or Down]** (or just rotate the front Control Wheel while in Panorama mode).

You can also change the aspect ratio of the image by doing **MENU → 1 → Panorama: Size → [Choose between Standard and Wide]**. All this setting really does is control the number of shots the camera takes before it quits. The more shots, the wider the panorama becomes. Have a look at **Figure 6-2**. For both of these images I started in the same position and tried to take the same panorama. It’s almost as if the camera started with the wide shot and then just chopped off the right side at some point. Now that I understand this difference, I now keep my Panorama Image Size parameter



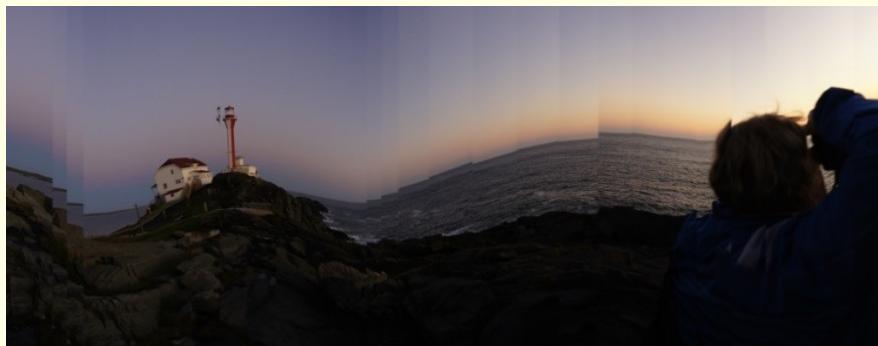
Figure 6-2: Comparison between Wide and Standard Panorama sizes. Both started from the same point; it's just a matter of how long the sequence goes.

set to Wide at all times, which (according to Sony) covers 226 degrees. If I ever want it narrower, I'll just crop it later on my computer.

You may find in panorama mode that the camera is a little temperamental. It might complain if your panning speed isn't just right. Or it won't complain but will just leave a giant gray rectangle near the end of your panorama sweep. Why is the camera so fussy?

Well, it turns out that the camera starts aligning and stitching the images together *while you're still shooting*. In fact, if you look very closely at the

TIP: *If you don't make the motions too extreme, you can rotate the camera slightly as you pan to get this seasickness-inducing image (inspired by the sample I saw on dpreview.com). You can see just how hard the camera works to align overlapping objects in adjacent images.*



dark gray horizontal bar in the lower half of the display, it is kind of like a

progress bar – it gets longer the more you sweep, and if it's getting longer at a constant pace then you know you're sweeping at the right speed.

If it's having too much trouble making the ends of adjacent pictures match up, it will stop the process and complain, saying something about it can't create the panorama, and sometimes it will also give you a specific thing you can do to fix the problem, such as shoot more slowly or more quickly. (Sometimes it doesn't.) It is a process that takes practice.

Another thing to watch out for is subjects that move while you're panorama mode. A moving subject can appear in more than one adjacent frame and look quite unnatural. **Figure 6-3** shows a real-world example.

This is one of the few scenarios where the camera *won't* yell at you if you try to invoke it while in RAW mode. The camera will switch to Fine JPEG Quality automatically and then when you exit Panorama mode it will switch back to whatever you had set previously.



Figure 6-3: Above is an outdoor panorama that had a moving subject. These are the problems that occur when things move along the stitching boundaries. The camera does its best to eliminate those artifacts but sometimes it's just not possible. Don't let this happen to you! Try to use still subjects when shooting panoramas.



Figure 6-4: Not sure how to compose your landscape? Sweep panorama gives you more options. Top: Standard image. Bottom: Sweep Panorama set to Wide. Center: A panorama of a slightly different aspect ratio. I made this by holding the camera vertically, setting **MENU → 1 → Panorama: Direction → UP**, and sweeping from my right to my left.



Figure 6-5: Wide-angle lens? You don't need one - you've got Sweep Panorama! Setting it to "Up" or "Down" and holding the camera in portrait orientation gives you an image that looks more like a 16:9 shot and less like a panorama.

TIP 1: Use the EVF when shooting panoramas. The algorithms work best when the axis of rotation is close to the sensor plane.

TIP 2: Don't forget to focus-lock on your subject before moving the camera and starting your panorama! (This is especially true if your subject is at a different distance from what's on the left.) The camera won't try to autofocus or change its exposure after the panorama shot has begun.

TIP 3: Try to avoid shooting panorama pictures under fluorescent light. Such lights are known for their flickering and can produce uneven lighting and varying shot-to-shot color balance as you sweep across your scene.

TIP 4: Panorama shots come out best when they're taken under bright light. Low-light can cause all sorts of problems with blurriness and noise (depending on the lens you have attached).

TIP 5: The same techniques used in "panning" apply to shooting panoramas as well: point your feet toward the END of your panorama, twist your body so it points to the START position. As you move through the panorama, your body position will become more comfortable and you will have a consistent smooth motion, and your panorama will be more level as a result.

TIP 6: When shooting still life like vistas or landscapes, sweep as slow as the camera will allow you. The camera layers more images closer together and you get a better resolution result. Conversely, when sweeping across panoramas that have movement in them (like people), sweep as fast as the camera will allow. Then, the layering images will be far apart with only the edges overlapping. This will result in a lower probability of getting double images in your panorama.

TIP 7: When framing your panorama, the camera will likely capture LESS vertical information than what you see in the viewfinder. Why? Sometimes if you're not perfectly level the distortion correction can get out of hand and the camera will crop the final image so that there's no dead space, like the yellow rectangle below. So make sure that no important subjects are anywhere near the top or bottom of your frame, and stay as level as you can!



6.5 FILE FORMAT FOR MOVIES

Menu Position MENU →  1 →  File Format

What it Does Lets you choose between AVCHD and MP4 video formats

Recommended Setting MP4

Constraints Even though it's selectable, the Camera may not take AVCHD movies if the memory card wasn't formatted in the camera

I'll be discussing the different video formats in Chapter 12, but I'll provide a summary for you quickly: just as most people can't hear the difference between WAV and MP3 audio files, so too most people cannot see a difference between AVCHD and MP4 files. MP4 files are more universally readable and require less processing power to play or edit. For that reason, unless you have a compelling reason to shoot AVCHD, I recommend keeping this one set to MP4.

6.6 RECORD SETTING FOR MOVIES

Menu Position MENU →  2 →  Record Setting

What it Does Tells the camera the frame rate and the bit rate to use for shooting videos

Recommended Setting I use the default, which for NTSC countries is 60i 17M(FH)

Constraints Cameras designated for different countries may present different options

All the different permutations (and what they mean) are covered pretty thoroughly in the chapter on Movies, Section 12.8. People who intend to burn their movies to Blu-Ray will want to choose the highest setting (60i/50i 24M (FX)); whereas those who love the jerky look of moving

objects will want to choose 24p 24M which emulates the 24-frames-per-second used in conventional motion picture cameras.

6.7 DRIVE MODE

Menu Position MENU →  2 → Drive Mode

What it Does Lets you specify what the camera does when you press the shutter button (controls single/multiple frames, frame rate, self-timer, and bracketing)

Recommended Setting Single as the default setting for day-to-day use, unless I'm shooting kids or sports, in which case it's Continuous

Constraints Not selectable while in Multi-Frame Noise Reduction, HDR, Panorama, or Anti-Motion Blur modes; some Scene modes and iAuto modes limit option selections

There are three ways to invoke the Drive Mode menu: From the Fn menu, by selecting MENU →  2 → Drive Mode, and by pressing the dedicated Drive Mode button (the Left button, if you haven't reassigned it).

You can then use the Up and Down buttons (or the Control Wheel) to select from several options. In some cases, after you choose a drive mode you can tweak its characteristics by using the Left and Right cursor buttons or the Control Wheel. The various modes are described below.

6.7.1 *SINGLE-SHOOTING*



This is the most basic mode, which works like a point-and-shoot does. Single Shot will take only one picture, no matter how long your finger holds the shutter release button.

6.7.2 *CONTINUOUS SHOOTING*



You can think of “continuous advance” as the modern-day equivalent of a motor drive – if you hold the shutter release button

down, the A6000 will continue to take pictures until the buffer or the memory card is full. If autofocus is enabled, the camera will autofocus between shots unless **MENU → ⚙ 3 → AF w/ Shutter** is set to **Off**. It will also re-evaluate and adjust the exposure between shots unless **MENU → ⚙ 4 → AEL w/ Shutter** is set to **On**.

Use the Left and Right cursor buttons to switch between Hi and Lo speed (about 11, 6 and 2.5 frames per second). To hold the focus and exposure during burst, set Focus Mode to AF-A or AF-C and set AEL w/shutter to Off or Auto. The exposure of the first shot is set when you half-press the shutter button, and is used for the subsequent shots. Is high speed always advantageous? A sports photographer can tell you that there will be times when shooting more slowly is better, and is in better keeping with the pace of activity.

6.7.3 10S AND 2S SELF-TIMERS

 **10** There are actually two self-timer durations. The first one, with a delay of 10 seconds, is ideal for the typical group shot scenario. The second one is a 2-second delay that's designed for macro photography – you're behind a tripod, taking lots of pictures in a row, you don't want your finger-on-the-shutter-release action to induce vibration in the camera, and you're too impatient to wait a full 10 seconds for every shot. Use the Left and Right cursor buttons to switch between the two self-timer modes when in the menu.

In situations like these you could also use a remote release (also called a “cable release”) like the optional RM-VPR1 or the infrared remote commanders described in Section 11.12. It's good to have choices!

.4 SELF-TIMER CONTINUOUS

This works just like your normal 10-second self-timer, except it will take either 3 or 5 images in a row – as fast as it can. So don't be surprised if you end up with 3 or 5 images that are nearly identical.

To select, go to the Drive Mode menu, select Self-Timer Continuous, then use The Left and Right cursor buttons to choose either 3 or 5 images.

6.7.5 BRACKETING

BRK C Bracketing was a concept that was very useful in the days of film – specifically when shooting transparencies, where you had to really nail the exposure in-camera and there was no such thing as post-processing. While in the days of shooting slide film this was an important function, in the era of digital (where you can see a preview of exactly how it will come out before you shoot, and /or examine the results immediately afterward, and whose output you can tweak in Photoshop) its usefulness is pretty limited. However, it *is* useful for making High-



Figure 6-6: Exposure Bracketing Example. Automatic bracketing can help you make sure you have the best exposure when you don't have a lot of time. It is most useful for do-it-yourself High Dynamic Range (HDR) images.

Dynamic Range images the old fashioned way. More about that soon.

For the A6000, the Bracketing function automatically takes a sequence of 3 or 5 shots with exposure tweaked by either 1/3 of a stop (“0.3 EV”), ½ stop (“0.5 EV”), 2/3 of a stop (“0.7 EV”), 1 full stop (“1.0 EV”), 2 full stops (“2.0 EV”), or 3 full stops (“3.0 EV”). Those last three functions – bracketing by one, two, or three stops – are available only for a sequence of 3 images, and are especially useful for HDR.

While in bracketing mode, when you take three pictures in a row, the first will be exposed according to the camera’s recommendation; the second will be underexposed by the amount chosen, and the third will be overexposed by the amount chosen (this order can be changed – see Tip below). Taking five pictures does the same thing in the same order, except you are shooting two more images, one even more underexposed, and one even more overexposed. Bracketing mode remains in effect until you turn it off.

You'll notice that your camera has TWO bracketing modes – one labeled BRK-S (Single) and the other labeled BRK-C (Continuous). In Single mode you depress the shutter release button multiple separate times in order to capture all the bracketed exposures. In Continuous mode, you press *and hold* the shutter release button, and the camera takes all the bracketed pictures continuously as described above.

So, to summarize, when choosing a bracketing mode you have three different parameters to specify:

- Single or Continuous
- 0.3, 0.5, 0.7, 1.0, 2.0 or 3.0 EV stops apart
- 3 frames or 5 frames (5 frames not available when choosing 2.0 or 3.0 EV stops apart)

White Balance and DRO bracketing are also available; see the following sections. That is the reason so many different permutations appear to you as you select from the Bracketing mode menu. To choose among them, first use Up and Down cursor buttons to select either BRK-C or BRK-S, and then use the Left and Right cursor buttons to choose the icon containing the other two parameters.

TIP: You can also change the bracketing order by going to MENU →  4 → Bracket order → [Choose either Normal – Under – Over or Under – Normal – Over].

6.7.6 BRACKETING FOR HDR

As mentioned earlier, your camera has the ability to do automatic bracketing using a much greater range than with previous generations of cameras. It can bracket 3 pictures, each spaced two or three full stops apart in either Bracket-Single or Bracket-Continuous mode. This is designed for High Dynamic Range (HDR) photography – specifically for those people who want to do it themselves and not rely on the camera's über-convenient built-in HDR function. To do HDR photography on your own, you put the camera on a tripod and take three pictures, each two or three stops apart, and then you merge them on your computer once you get back home using

special software. Conventional HDR photography is a large subject, and I talk about it more (and walk you through how to do it) in my “Advanced Topics 2” e-booklet, which can be purchased at www.FriedmanArchives.com/ebooks. But don’t forget that your camera now has this function built-in (described in Chapter 14), so you may want to try that method first.

TIP: When in Bracketing – Single mode, your camera will show you what each exposure will look like before you shoot. So don’t be alarmed if your viewfinder looks a little dark or light sometimes – remember, you told your camera to do this!

6.7.7 WHAT EXACTLY CHANGES WHEN YOU BRACKET?

I already said that the camera will underexpose and overexpose an image when you bracket. How does it do this – by changing the f/stop, shutter speed, or ISO? The answer depends upon what exposure mode you’re in:

- In Aperture Priority exposure mode, the camera keeps the aperture constant and changes the shutter speed.
- In Shutter Priority exposure mode, the camera keeps the shutter speed constant and changes the f/stop. If the camera reaches the end of its f/stop range (for example, if you’re shooting in low light and have the shutter speed set to 1/1,000th of a second), the camera will still take multiple pictures, but some may have the same exposure.
- In Program exposure mode, the camera modifies both the f/stop and shutter speed.
- In Manual exposure mode, if Auto ISO is set, then the camera changes the ISO. If ISO is set to something fixed, then the camera modifies the shutter speed.
- When you use a flash, the f/stop and shutter speed remain constant across all bracketed images – it is the *flash burst* that is adjusted. And, because the camera designers were afraid that the flash wouldn’t be able to recycle in time, when you’re bracketing with flash the camera automatically switches to Bracketing – Single mode (even if you have specifically chosen the Bracketing – Continuous setting).

6.7.8 WHITE BALANCE BRACKETING

**BRK WB
Lo**

Just as it's tough to assess whether the exposure is perfect out in the field (driving the need for exposure bracketing), so too you can sometimes be unsure about the Auto White Balance setting. White Balance Bracketing will take ONE image and store it three different ways: "Normal" (the way the camera would normally shoot the image), a little on the blue side, and a little on the yellow side, as shown in **Figure 6-7**.



Figure 6-7: White Balance Bracketing Examples. The top row is Low bracketing (Normal → blueish → yellowish; the bottom row is High Bracketing. The difference is that High bracketing shifts the color twice as much in either direction.

TIP: Under difficult light, I strongly prefer either using Custom White Balance (Section 6.21.4) or shooting RAW and choosing the right white balance at my computer. I've never seen a situation where WB bracketing gave me a better result.

6.7.9 DRO BRACKET

Chapter 14 discusses the very useful Dynamic Range Optimization function. DRO Bracketing mode is useful if you're not sure which manual DRO setting to use. With this DRO Bracket set to Hi, the camera takes one

picture but saves 3 different images, each taken with the equivalent of DRO Level 1, 3, and 5 to the image. Set to Lo, the Camera applies Level 1, 2, and 3 to the image.

TIP: Shooting RAW & JPG, combined with DRO Bracketing as described above, will result in SIX files on your memory card for every single click of the shutter: three JPEG files (each with different levels of DRO applied), and three identical RAW files (with only slightly different file sizes – that's due to the different EXIF information and thumbnail contained within the file).

6.8 FLASH MODE

Menu Position MENU →  2 → Flash Mode

What it Does Sets different flash modes

Recommended Setting I alternate between Fill-Flash and Wireless

Constraints Some options are only available in certain Scene or iAuto modes.

I talk about flash and wireless flash in great detail in Chapter 13, but I will also talk about some of the various modes here. The following table provides a summary of which flash modes are available in each shooting mode:

Mode	Flash Off	Autoflash	Fill Flash	Slow	Rear
P/A/S/M			✓	✓	✓
iAuto/iAuto+	✓	✓	✓		
Movie					
Panorama					
Portrait	✓	✓	✓		

Anti-Motion Blur				
Sports	✓		✓	
Macro	✓	✓	✓	
Landscape	✓		✓	
Sunset	✓		✓	
Night Scene				
Night Portrait				
Handheld Twilight				

TIP: If you want to use the camera's pop-up flash, you need to raise it by pressing the Flash button next to the MENU button. It won't pop itself up!

6.8.1 *FLASH OFF*

I probably don't have to describe what this does. ☺

6.8.2 *AUTOFLASH*

With Autoflash selected, when the pop-up flash is raised or an accessory flash is attached and turned on, the camera decides whether to use the flash or not, and when it decides to do so it behaves according to the Fill-Flash behavior described below. You can't override the camera's decisions in this mode.

6.8.3 *FILL-FLASH*

Fill-flash will always fire the flash when it's selected (with some exceptions – see the



Figure 6-8: Fill Flash can be used to better capture close action and to give your subjects better illumination. To get this unusually well-lit bird shot I left bread crumbs on the back of a boat that was going close to shore, and waited.

table above). It behaves differently depending on how much light there is in the scene.

Normally, the camera makes the assumption that the flash will be providing the *only* source of light. If you are shooting a dance party in a darkened room this is not a bad assumption and the images will come out well-exposed (well... the *subjects* will be well-exposed, and the backgrounds black).

But when the majority of the subject's illumination comes from another source (such as the sun), the flash gives only a small burst of light, just enough to lighten the shadows a little bit (see **Figure 6-9**). Your camera automatically switches between these two modes when the flash is used. An effective time to use it is when your subject is in shade on a bright day. For example, in **Figure 6-9**, the light was poor and the subject (the face of the fisherman) was in shade, under his hat. It looked fine to me when I was standing there, but because cameras don't see the same range of light as the human eye, fill-flash was in order.



Figure 6-9: A portrait without and with fill flash.

6.8.4 SLOW SYNC

This does almost the same thing as Night Portrait mode (Section 3.8.8) – that is, when you take a flash picture at night, instead of the shutter speed defaulting to 1/30 second, it will be whatever it would normally be had the flash not been enabled. That way you can “burn in” your ambient light, yet still illuminate your subject using the flash.

The only difference between this and Night Portrait scene mode is that with the slow sync function, you can change important parameters like ISO, white balance, exposure compensation, and so forth.

To invoke the Slow Sync function, set up a flash shot as you normally would in PASM mode and then go to **MENU → 2 → Flash Mode → Slow Sync** (or access the Flash Mode via the Fn menu).

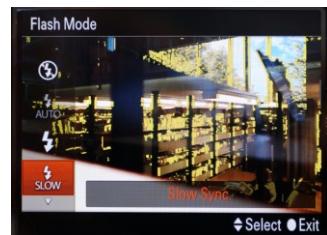


Figure 6-10: Selecting “Slow Sync” from the flash menu will “drag the shutter” and give you a long nighttime exposure along with a flash burst.



Figure 6-11: That Slow Sync function you always wondered about will help you balance out the light from the flash and allow the background (dim as it may be) to show up brighter.

6.8.5 REAR SYNC

Rear Sync is an indispensable tool for certain kinds of shots where ambient light (with longish shutter speeds) is combined with flash. The classic image is a person running in a marathon, with a “ghost” trail behind them.

When you use a fast shutter speed, flash pictures are easy: The exposure starts, the flash goes off, and the exposure stops. Not too hard. But, what if you kept the shutter open for several seconds and you wanted to use the flash? When should the flash fire – at the beginning of the exposure, or at

the end, coinciding with the second or “rear” shutter curtain? Most cameras will only fire the flash at the beginning of the exposure. The Rear-Sync function tells the camera to select the second option: fire the flash near the end of the exposure, at a time when the rear shutter curtain would close. When would you want to do this? See **Figure 6-13**.

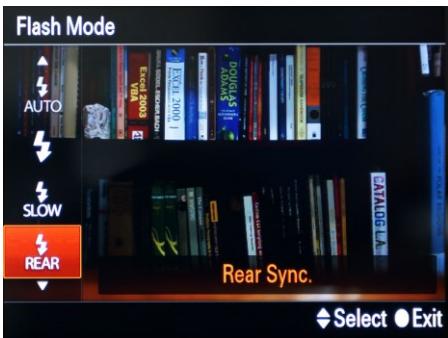


Figure 6-12: Invoking the Rear Sync function.



Figure 6-13: Examples of Normal (left) and Rear (right) Flash Sync.

The idea is that you can control leading or trailing light when you’re using both long shutter speeds (ambient) and flash on a moving subject. Rear sync (right) allows the pedestrian’s trail to show up behind him, whereas with normal settings (left) the trail appears in front of him! Who wants that? For this shot, the shutter speed was set to 1.5 seconds to capture the motion, and the flash still went off to freeze the subject – hence we have both a blur and a “frozen” subject all in the same shot.

(This test sequence also illustrates why photographers hire beautiful models to show off certain features rather than using ordinary-looking people. ☺)

6.8.6 WIRELESS FLASH

Wireless Mode was designed around this simple concept: flash pictures can often look much more dramatic and professional if the light is coming from someplace OTHER than where the camera is. In the old days, having a flash work properly while off the camera involved a lot of hocus-pocus and technical mumbo-jumbo. In the early 1990s, Minolta developed a brilliant system where the flash could be removed from the camera and placed elsewhere in the room, pointing toward your subject, and firing automatically as if it were still attached to the top of your camera, all with automatic exposure!! (See **Figure 6-14.**)

How does it work? When in Wireless mode, the flash that is mounted on the camera doesn't even attempt to illuminate the subject. Instead, it sends out tiny little bursts of light of negligible brightness – kind of like a Morse code – to tell other flashes (which are sitting off-camera), when to turn on and off.

This is such an important and useful feature that I have actually dedicated an entire chapter to this subject. Please see Chapter 13 to get a taste of the realm of possibilities that this innovation offers you (and how to use it).



Figure 6-14: Sample of Wireless Flash image. With the flash off-camera, you can produce shadows that give dramatic results!

6.9 FLASH COMPENSATION

Menu Position Menu →  2 → Flash Comp.

What it Does Allows you to increase or decrease flash intensity

Recommended Setting -1

Constraints None

Just as you can control how light or dark a picture is by adjusting how much light enters the camera (exposure compensation), you can also control how much illumination comes from the flash by using the Flash Compensation setting.



Figure 6-15: Using factory defaults, the A6000 tends to overexpose all flash images by about one stop (left). That's why I generally have Flash Exposure Compensation set to -1. If I'm shooting fill flash, I'll set it to -2.7 to get perfectly lit subjects where it doesn't look like I used a flash (right).

Recall that in Chapter 3 I talked about how the modern Sony cameras will overexpose a flash subject by about 1 stop, a look which I don't prefer. That is why I tend to keep Flash Compensation set to -1 unless I'm doing some serious fill-flash work on a bright day (like at the beach).

On the other hand, if I'm using it as fill flash on a bright day (just to lighten the shadows under the eyes, or under a hat) and I don't want it to look as if I've used a flash, I sometimes will set FEC to as low as -2.7 (See Section 6.9.)

If you change this setting, the camera remembers it until you change it back (even if you turn the camera off). As a reminder, you'll sometimes see the Flash Compensation icon on the rear LCD when the flash is on and you have chosen a display that shows camera setting icons).

6.10 RED EYE REDUCTION

Menu Position MENU →  2 → Red Eye Reduction

What it Does Tries to reduce the natural occurrence of red-eye in flash pictures

Recommended Setting Off, unless using the pop-up flash

Constraints Won't work with Wireless Flash, or with F58/F36 flashes with adapter

Red eye can occur in flash pictures if the flash is too close to the lens. Normally the problem is solved by increasing the distance between the flash and the lens, or fooling the eye into thinking it's bright outside and inducing the pupil to diminish. A smaller window to the eye means a lesser opportunity for the red-eye phenomenon to occur.

Red eye may be a problem when using the pop-up flash, but the problem will never occur when you attach an F43 or F60 flash on the A6000 since the distance between the flash and the lens is sufficient to eliminate this

problem. The only accessory flash that might cause this problem (with certain lenses, under certain conditions) is the F20M flash.

However, since the delays caused by using this feature can lead to stale smiles and poses, I'd rather turn this feature off and eliminate red-eye on my computer, should it actually occur.

6.11 FOCUS MODE

Menu Position MENU →  2 → Focus Mode

What it Does Chooses which of 5 focus modes to enter: Single-Shot (AF-S), Automatic (AF-A), Continuous (AF-C), DMF (Direct Manual Focus, or MF (Manual Focus)

Recommended Setting AF-A, unless you're shooting sports or kids, in which case use AF-C

Constraints Grayed out if third-party lens adapters are used

6.11.1 AF-S

With this mode you focus on a subject and the camera locks focus until you take the picture. This is called Single-Shot AF mode (AF-S).

6.11.2 AF-A

The factory default for focusing modes is Automatic Autofocus (AF-A). In this mode AF-S and AF-C are switched automatically according to movement of the subject. When you press the shutter button halfway down, the camera locks focus if it determines that the subject is motionless, but continues to adjust focus when the subject is in motion.

6.11.3 AF-C

The camera also has a Continuous AF mode setting (AF-C), which can be used when you're shooting sports (or anything that moves). When this

mode is enabled you are essentially telling the camera “my subject is moving. Even when you’ve found focus, keep trying to focus on the subject because my subject will not stay still!” Keep in mind that in Continuous AF mode, when the camera achieves autofocus it will *not* give you a steady green light and an audible “chirp” as focus confirmation. Instead, it will continue to track and refocus (the subject is moving after all, right?) in an attempt to keep the subject in focus until you take the shot. You can always tell when you’re in Continuous AF mode because the green focus indicator in the bottom left corner of the screen is surrounded by two sets of parentheses (which are meant to indicate movement).

TIP: As a shortcut, when you put the camera into Sports Action mode (Section 3.8.2), the camera automatically invokes Wide area focus for you. However, unlike some previous cameras, the A6000 does not automatically invoke Continuous AF (AF-C) mode for you – you must do it yourself.

6.11.4 DMF

Direct Manual Focus mode starts out in AF-S mode (focus on a subject, then stop trying to focus) and *then* it goes directly into Manual Focus mode, where you can quickly tweak the focus using the control ring.

DMF is especially useful when you have enabled Peaking Level (Section 7.7). With Peaking Level enabled, as soon as the camera switches to Manual Focus mode the things that are in focus (areas of highest contrast) appear highlighted in the color specified for Peaking Color. This helps you to verify that the camera is focused on the intended object or objects.

I find DMF to be most useful when shooting objects that are very close – and DMF allows me to either adjust the focus using the lens focus ring, or (even faster) just move my position nearer and farther away until the subject appears most clearly highlighted by Focus Peaking.

6.11.5 MF

Manual Focus probably needs no explanation. Peaking Level (as described above) also works in Manual Focus mode. Also, if your aging eyes need

help focusing, the Focus Magnifier function is available to you (Section 6.26).

TIP 1: Setting MF via the menu function is “sticky” (meaning it will be remembered when you change exposure modes or turn the camera off). Setting MF via a button you have assigned on the camera is “volatile” (meaning it goes away when you change exposure modes or the camera times out). Use the Fn method for setting permanence.

TIP 2: Sometimes I have a hard time remembering if I’m in MF or AF mode (that’s because I use the uncluttered displays most of the time.) With Peaking Level enabled, I can tell by the color highlighting.

6.12 FOCUS AREA

Menu Position MENU →  3 → Focus Area

What it Does Lets you specify which of four focusing selection methods to use

Recommended Setting Wide, and use the center of the multi-selector when you want to quickly switch to Center AF (this requires setting MENU →  6 → Custom Key settings → 1 → Center Button → Standard)

Constraints Some Scene modes will override the Focus Area setting; not settable when using digital zoom, ClearImage zoom, or Movie mode

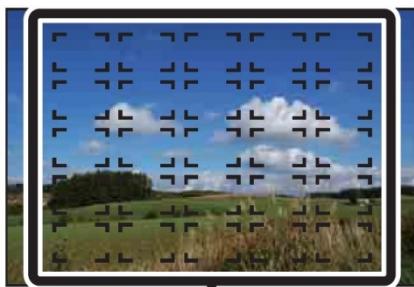


Figure 6-16: The different AF areas available to the camera when Focus Area is set to Wide. There are also overlapping squares, enabling your subject to be found no matter where in the frame it is.

6.12.1 *WIDE*

With Wide focus area the camera decides where the subject is and therefore what to focus on. I find that this mode combined with Face Detection successfully identifies my intended subject 99% of the time.

Unlike larger DSLRs or SLT cameras which have a limited number of focusing points, the A6000 can do contrast-detection autofocus anywhere in the frame. When your AF area is set to Wide and the camera finds a subject, it briefly illuminates in green all of the AF area brackets in which it finds something in focus.

Not in the Manual: I used to prefer using only the Center focus area because I've been using the Focus → Recompose → Shoot method for over 20 years and I found it to be much faster than selecting focusing points using the arrow buttons. Nowadays, I find myself using Wide area focus instead and taking advantage of a feature that is not discussed in the instruction manual: When you're using Wide focus area, you can press and hold the Center button to instantly switch to the Center focus area. The best of both worlds! Holding the Center button down constitutes a kind of focus-lock, during which the shutter release button has no effect on focus. Your thumb acts as autofocus lock, and your index finger takes the picture. Teamwork! This works for Zone focus mode as well.

In order for this feature work you must maintain the factory default setting for the Center button, **MENU → 6 → Custom Key Settings → 1 → Center Button → Standard**. With that setting, pressing the Center button switches instantly to use the Center focus area. Also, if you are in AF-C Focus mode, holding the Center button down switches to AF-S Focus mode until you release it.

6.12.2 *CENTER*

Center focus uses ONLY the Center focus area, ignoring all others. Like spot metering, it's useful in difficult situations where the camera's automation just fails. An example appears in **Figure 6-17**.

6.12.3 FLEXIBLE SPOT

Flexible Spot focus area lets YOU choose which of up to 323 focus areas to use via the arrow keys (which you can change at any time). The actual number of areas you can select depends on the size of the flexible spot (S, M, or L).

To invoke Flexible Spot focus area:

1. Go to **Menu →  3 → Focus Area → Flexible Spot.**
2. Use the Left and Right cursor buttons to select a spot size – Small, Medium, or Large.
3. Press the Center button to choose the spot size. (The spot size is “sticky” until you change it.)
4. Use the cursor buttons to move the focus point.
5. Press the Center button to select the focus point.

Your focus point is now set. If you want to change the focus point, press the Center button and move the point using the cursor buttons. While in the flexible spot screen you can also press C2 to move the focus point to the center.



Figure 6-17: Here’s a situation where the Wide autofocus setting might get it wrong: when shooting an animal (face detection doesn’t work on animals) behind bars. Here it makes sense to use either Center or Flexible Spot area to prevent focusing on the bars. (We ended up adopting this kitty. He’s since clawed up the couch and the curtains.)

6.12.4 ZONE

This is a compromise between Wide and Flexible Spot focus areas. With Zone focus area you choose one of nine overlapping zones and the camera chooses a focus point within that zone. Pressing the center button and then pressing the cursor buttons will change the zone used.

I used to say that this feature is helpful in movie mode since Face Detection doesn’t work with movies; however I’ve since found that the Lock-On AF

feature (Section 6.29) is actually more helpful, and is incompatible with Zone focus area.

6.13 FOCUS SETTINGS

Not available on the A6000!

If you're an A7 user and you're looking for the Focus Settings function, you're out of luck. For some reason, Sony didn't include this setting for the A6000. If you want to assign Focus Settings to C1 (the default setting on the A7), the closest you can come to replicating this functionality is to assign Focus Magnifier: (**MENU → ⚙ 6 → Custom Key settings → → C1 → Focus Magnifier**).

6.14 AF ILLUMINATOR

Menu Position MENU →  3 → AF Illuminator

What it Does Specifies whether the camera uses its AF Assist light when trying to focus in dark places

Recommended Setting Auto, unless you don't want to call attention to yourself at a party

Constraints Many – see *TIP 3* box at the end of this section

The A6000 has the ability to focus in complete darkness. That's because the reddish-orange LED built into the camera's handgrip can shine some light on the subject so the contrast-detect autofocus can do its thing. This setting tells the camera it has the option of using this focusing aid when the light level gets too low (Auto), or it doesn't (Off).

If this focus-assist mechanism is so good, why on earth would you want to turn it off? Well, that little light does call attention to itself (and to you)! If you're not in total darkness and your subject does have enough contrast, the

camera might still be able to find focus on its own – it's actually quite sensitive. At least you have the AF illuminator option as a safety net for totally dark environments.

When this feature is set to Auto, the camera will automatically turn this light on briefly when you press the shutter release button halfway, the ambient light is low, and it's having trouble focusing. This focus-assist beam is very useful and accurate, but is only good for subjects that are about 20 feet away or less. (This light also doubles as the self-timer countdown light.)



Figure 6-18: Can the IR assist light on the accessory flash be used to focus when it's dark? The answer is no – there's an IR filter in front of the image sensor that blocks it out.

TIP 1: “Okay, so the AF Assist LEDs in the accessory flashes can't be used because the filter on the camera sensor blocks out infrared light. I get that. But shouldn't they work when an A-Mount lens and an LA-EA4 adapter are attached? After all, that adapter uses the mirror and phase-detect array like a DSLR and shouldn't have a conflict!”

Answer: You're right. It should work. But the firmware doesn't enable it.

TIP 2: When the AF-assist light is in use the camera temporarily ignores whatever focus area you've set and looks for things around the center of the frame (where the light is most likely to hit.)

TIP 3: The AF Illuminator feature will NOT work in the following situations:

- Smile Shutter is set to On
- The camera is set to AF-C (Continuous AF mode, as described in Section 3.3.5)
- The camera is set to Landscape, Sports Action, Night Scene, Sweep Panorama or Movie mode
- An A-mount lens is attached via an adapter ☺

6.15 MOVIE AF DRIVE SPEED

Menu Position MENU →  3 →  AF drive speed

What it Does Allows you to switch focusing speed when using autofocus in Movie mode

Recommended Setting Normal

Constraints: None

You can set the AF mode for movies to Fast, Normal (the default setting), or Slow. Sony says that Fast is suitable for active scenes such as sports and Slow is appropriate for very smooth (dreamy and impressionistic) focus switching. Use Normal for everything else.

6.16 MOVIE AF TRACK DURATION

Menu Position MENU →  3 →  AF Track Duration

What it Does Sets the duration for AF tracking in Movie mode (how quickly the camera changes the AF area)

Recommended Setting It depends

Constraints: None

Set to Auto Track Duration to High when your subject is moving quickly. Use the Normal setting when you want to keep the focus on your subject even in crowded places or when there may be obstacles between the camera and the subject.

6.17 EXPOSURE COMPENSATION

Menu Position MENU →  3 → Exposure Comp.

What it Does Allows you to lighten or darken the image

Recommended Setting +/- 0

Constraints None

You can set exposure compensation using either this menu item or a button (it's assigned to the Down cursor button by default). The setting is redundant: if you set it using the Down cursor button, the setting you make also shows in the menu, and vice versa. There is only ONE exposure compensation setting! This setting is "sticky" and is retained after power-save or power-off in P, A, S, and M modes.

TIP 1: When shooting movies, the exposure compensation settings are limited to a range of -2 and +2 stops.

TIP 2: "Why does Live View stop showing effect at 3 stops when you can actually control up to five stops?" For a normal scene, underexposing by five stops would make the picture almost pitch black, and overexposing 5 stops could make it nearly pure white. (Try it!) It turns out there are camera owners out there who would set the exposure compensation to something extreme, not know they did it, and then return the camera because the viewfinder was pure black or white. So this safeguard is in place to protect Sony from too many returned cameras.

6.18 EXPOSURE STEP

Menu Position MENU →  3 → Exposure step

What it Does Lets you specify whether you can “dial in” exposure compensation and flash compensation values in $\frac{1}{2}$ -stop increments (0.5 EV), or 1/3-stop increments (0.3 EV)

Recommended Setting 0.3 EV, only because I find that two of these steps (+0.7 EV) is an ideal bracketing amount for digital cameras, and you can’t dial that in when the Exposure Step is set to 0.5

Constraints None

When you change the Exposure Compensation setting via the menu, each click of the wheel or dial can either represent $\frac{1}{2}$ stop in either direction, or it can represent one-third of a stop in either direction depending upon this setting.

Many of you may be scratching your heads, saying “The difference between $\frac{1}{2}$ a stop and one-third of a stop is so minute, why would you ever need to choose between them?” The answer is that such minute differences made more sense in the days of shooting slides, when tiny tweaks were meaningful.

Whenever I tweak my exposures out in the field, I usually use 0.7 stop increments, which is the equivalent of two clicks when this variable is set to 0.3. (Remember, 0.3 is actually 0.3333333 truncated, which is why when you click it two times you get 0.6666666, or 0.7 rounded up.)

6.19 ISO

Menu Position MENU →  4 → ISO

What it Does Specifies how much to amplify the sensor's sensitivity to light. The higher the number, the more sensitive (and the greater the noise)

Recommended Setting Use AUTO and set the Maximum limit for as low as you can get away with (I try to stay below 1600)

Constraints Not settable in Scene modes or Panorama mode

You probably already know everything you need to know about ISO:

Rule: The higher the number, the more sensitive the camera is to light.

Corollary: The more sensitive the camera is to light, the more digital noise appears in the image.

For the highest image quality, your goal should be to use the lowest ISO you can for the amount of light you have and for how fast your subject is moving.

However, you can choose more than just the ISO value when you go to the **Fn → ISO** menu (**Figure 6-19**). There's also an ISO AUTO setting that allows the camera to choose ISO for you from a range of values, and there's an unintuitive feature at the top of the list called Multi-Frame Noise Reduction. I'll get to all those in a minute.



Figure 6-19: The ISO menu also is the gateway to the Multi-Frame Noise Reduction (MFNR) feature.

TIP 1: ISO AUTO can sometimes work against you with this camera, since it has been programmed to raise the ISO as high as possible before it would even THINK of going below 1/60th of a second shutter speed. For this reason I advise that you set the high ISO threshold to something not very high, like 1600 for day-to-day shooting needs.

TIP 2: ISO AUTO is particularly useful in Manual exposure mode, and allows you to specify a shutter speed and an aperture value (ISO AUTO takes care of the rest).

TIP 3: The lowest ISO you can set in Movie mode is ISO 200.

6.19.1 HIGH-ISO NOISE LEVELS



Figure 6-20: This is the image from which the ISO examples that follow are taken.

Let's see how noise increases with ISO values. You can see the tradeoffs in the examples in **Figure 6-21**. These examples show noise in both mid-level light areas and shadows at each ISO level. Noise affects the shadows more than lighter areas – that is where the most noise will be visible. However, some images are best optimized for mid-light level noise, others for shadow noise. And since these examples are designed to show off relative levels of noise, these images were taken with the in-camera noise reduction feature set to Off (**MENU → 5 → High ISO NR → Off**).

I must say that, compared to previous

cameras I've written about, the noise levels at high ISOs are remarkably low. You can read more about how I produce low-noise images at high ISO in Appendix A.

TIME-SAVING TIP: When changing ISO values, you can also use the Control Dial to change by whole stops (ISO 100-200-400-800 etc.), instead of changing by 1/3-stop or 1/2-stop increments as it does when you use the Control Wheel.



ISO 100



ISO 100



ISO 200



ISO 200



ISO 400



ISO 400



ISO 800



ISO 800



ISO 1600



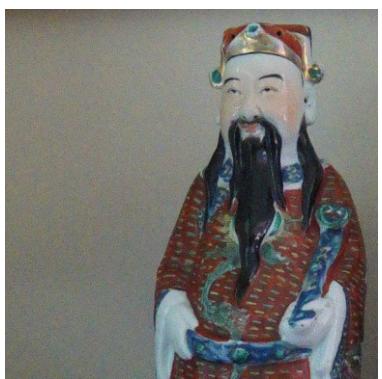
ISO 1600



ISO 1600 MFNR



ISO 1600 MFNR



ISO 3200



ISO 3200



ISO 3200 MFNR



ISO 3200 MFNR



ISO 6400



ISO 6400



ISO 6400 MFNR



ISO 6400 MFNR



ISO 12800



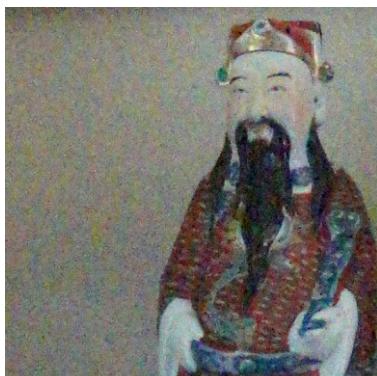
ISO 12800



ISO 12800 MFNR



ISO 12800 MFNR



ISO 25600



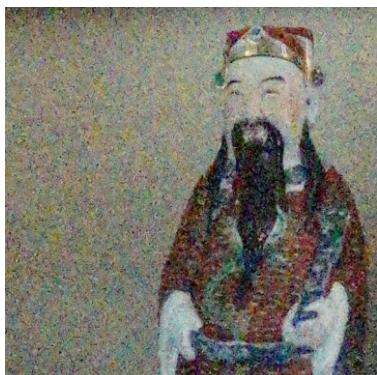
ISO 25600



ISO 25600 MFNR



ISO 25600 MFNR



ISO 51200 MFNR



ISO 51200 MFNR

Figure 6-21: It's a given that the higher the ISO, the greater the noise. But the noise level of the A6000 is remarkably low even up to ISO 6400. JPEG images with ISO higher than 1600 definitely benefit from MFNR!

Let's look at the ISO menu choices, starting from the top:

6.19.2 *MULTI-FRAME NOISE REDUCTION (MFNR)*

Multi-Frame Noise Reduction was discussed back in Chapter 3 in Section 3.7.2.

6.19.3 *ISO AUTO SETTINGS*

As mentioned in Chapter 3, the A6000 allows you to adjust the limits of what ISO AUTO will choose, which is a good thing. Left to its own devices, the camera might routinely choose very high ISO values like 6400, 12800, or 25600 (the top native speed) under common indoor shooting situations. That leads to noisy pictures.

To adjust the Auto ISO boundaries, just go to **MENU → 4 → ISO → AUTO** and then move to the right. Pressing the Up and Down buttons now will change your Minimum ISO AUTO value. Next, move to the right once more and you're adjusting your Maximum ISO AUTO value. Notice that with this feature you can set the upper end of ISO as high as 25,600 (which I strongly discourage). I keep mine set between 100 (Minimum) and 1600 (Maximum) for casual shooting. I'll set the ISO to something higher (and switch to RAW mode) when there's just no other choice.

TIP: Unlike with most previous Sony cameras, ISO AUTO will still work even when you use Manual Exposure mode. See Section 1.1.18 for an explanation.

6.19.4 *SPECIFIC ISO VALUES*

These settings do just what you'd expect – they set the ISO to the specific value you choose. Note that the A6000 doesn't let you set values below 100, the sensor's native ISO.

6.20 METERING MODE

Menu Position MENU →  4 → Metering Mode

What it Does Allows you to select between Multi, Center, and Spot metering

Recommended Setting Multi, unless the light is exceptionally tricky

Constraints Not settable in Scene or Panorama modes, nor when either of the Digital Zoom functions is enabled; forced into Multi metering mode when shooting iAuto or Scene Selection modes, or with zoom functions other than optical zoom

ADVICE: *These metering modes originated during the days of shooting film, when you were literally shooting blind. They're practically obsolete now. See my blog post which explains why using Live View (plus histograms, optionally) is a more intuitive way to handle difficult light: <http://bit.ly/QfsFRT>*

It's easiest to understand the evolution of the different metering modes once you understand the history of determining exposure. It all started with handheld incident-light meters like the one shown in **Figure 6-62**. They measured the amount of light falling onto your subject, and they were always right.

Incident-light exposure meters work on a completely different principle than the ones built into your camera: incident light meters *measure the light that is falling onto your subject*. Built-in exposure meters, on the other hand, *measure the light that is reflected off of your subject and back into the camera*.

Is this a good idea? Well, yes and no. No, because the reflectance of the subject will vary wildly – brides in white dresses, for example, will reflect much more light than, say, a groom with a black tux – and therefore your in-camera meter will give you wildly different values. Yes, because it's infinitely more convenient to have the camera guess the right exposure than to go over and measure it with a handheld meter. And besides, for average

subjects (like pictures of anything except brides and grooms ☺) the reflected method works just fine.

In truth, the camera has absolutely no idea that your subject is bright or dark; white, or black, or yellow. But it has to give a recommended exposure, and so for the sake of simplicity the camera's meter will assume that your subject has a neutral 18% gray brightness.

Why 18% gray? An analysis of thousands of different snapshots shows that the *average* reflectance of your average subject is about 18%. Therefore, when the camera is looking at the reflected light from your subject, it will assume the subject is average and adjust the exposure so that the average brightness is 18% gray.

The fact that the camera tries to make things look 18% gray explains a great deal of the exposure mistakes you might see your camera make. (Have a look at the next two figures for some startling examples.)



Figure 6-22: Seriously, this is one pixel. Get 24 million of these together and you can make your own A6000.



Figure 6-23: Average subjects in average scenes reflect back about 18% of the light, and so that's what your camera tries to expose for – it is assuming you're shooting an average subject. As an interesting experiment, when you average together hundreds and thousands of normal snapshots, you will eventually end up with a composite image that's about 18% gray.

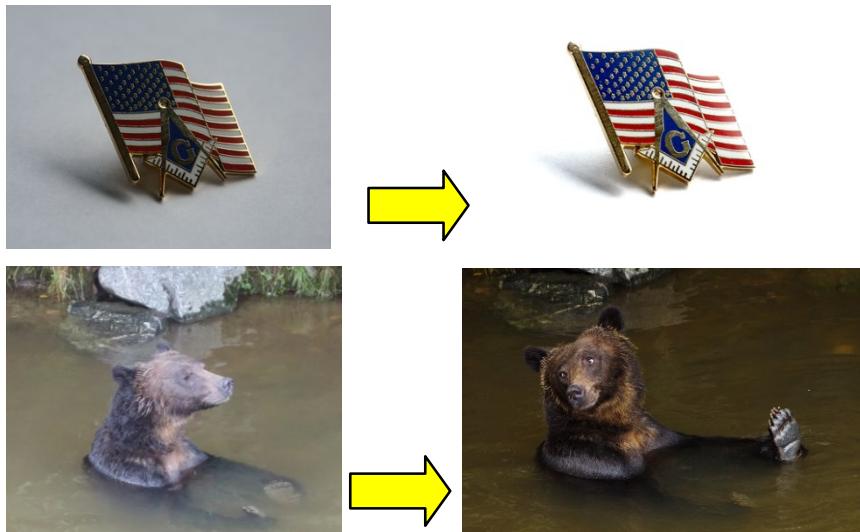


Figure 6-24: Examples of the exposure meter trying to make things look 18% gray (and how using exposure compensation can fix that). These errors never would have happened if an incident-light exposure meter were used! Yet another example of where we trade off accuracy for convenience.

The 18% gray principle works in most situations and most people have been extremely happy with its decisions. (See example in **Figure 6-23**.) And people in the know (and readers of this book) tend to be happy making the occasional override using the Exposure Compensation function when necessary, in exchange for the convenience of NOT having to use handheld exposure meters.

6.20.1 *CENTER-WEIGHTED AND MULTI-SEGMENT METERING*

Since the advent of the “18% gray” principle (in the 1960s!), reflectance meters have been incorporated into cameras. A depiction of the most popular implementation appears in **Figure 6-25a** (left), where the camera would weigh the reflected light coming from the center of the viewfinder more than it would the edges. This “Center-weighted” metering pattern (a Nikon invention) makes the reasonable assumption that your subject (the important thing worth metering) is more likely to occur in the center than in the edges. Center-weighted metering was in use in all cameras throughout the 1970s and 1980s.

Starting in the 1980s there were many attempts to improve upon the accuracy of the built-in exposure meter for scenes that are not “average,” such as subjects that are backlit. Usually these attempts divided the picture into small areas and measured each area in terms of absolute light (with an emphasis on what’s behind the focus point). Then, they compared the values against each other and against a tiny in-camera database of “standard compositions” with rules such as “When the metering pattern looks like this pattern, overexpose by $\frac{1}{2}$ a stop; when the pattern looks like this other pattern, underexpose by 0.75 stops.”

The technique of dividing the frame and evaluating the exposure is commonly known as “Matrix Metering” (Nikon terminology), “Evaluative Metering” (Canon), or “Multi-Segment Metering” (Sony) (**Figure 6-25b**). It tends to succeed in getting the right exposure under a wider set of circumstances than the center-weighted 18% gray method. The earliest versions (Nikon) divided up the viewfinder into 5 segments; earlier Sony cameras had 40 segments, and your camera uses upwards of 1200 segments.

Older professionals disliked Multi-Segment metering at first because they had invested a *lot* of time understanding their 18% exposure meters and

knowing intuitively when they will make bad recommendations and when (and how much) to override them. In their minds, the problem with Multi-Segment metering (and this was quite relevant in the days of shooting slides) is that you can't possibly know how much to set your exposure compensation to since you don't know how the camera's meter is choosing to handle a difficult, non-average composition. ("Should I overexpose this picture of a bride in her white dress, or did the Matrix metering already take

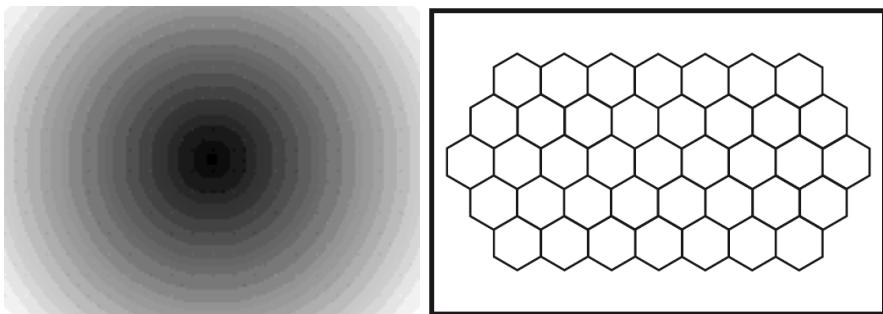


Figure 6-25: The older Center-weighted metering pattern (left) and the modern Multi-Segment metering pattern (right). (Well, the A6000 uses more than 1,200 zones, not the 40 honeycomb cells pictured on the right. But you get the idea.) With the advent of full-time live view it's hard to find a reason to use center-weighted metering anymore. Today you can usually keep it on Multi-Segment and then use Exposure Compensation to get things to look the way you want.

that into account?"") And so, for these folks, camera manufacturers left the old Center-weighted metering system in the camera as an option.

With the advent of digital, and especially full-time live view, you're not working blind anymore, plus the Multi-Segment metering algorithms have a great track record of making the right choices in a wider set of circumstances. That's why I keep my camera set to Multi-Segment metering all the time. And when the composition is really non-average, like a predominantly dark scene, I temporarily switch to either Spot metering (explained in the next section) or manual exposure. I never use center-weighted metering.

6.20.2 SPOT METERING

The third metering mode is called “Spot Metering,” and in fact when you invoke this mode a small circle magically appears in the very center of the live view image. In Spot metering mode, the camera looks only at the very center of the viewfinder when it determines the proper exposure, and ignores everything outside of that circle (see the blue circle in **Figure 6-26**).

Under what circumstances might Spot Metering be useful? **Figure 6-27** provides an example.

Spot Metering by itself isn’t terribly useful unless your subject is in the very center of the image, which is often not a good idea (for you fans of the

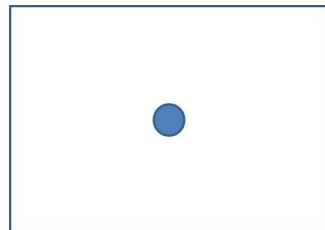


Figure 6-26: The spot Metering sensitivity pattern (blue circle).



Figure 6-27: Spot metering is necessary for situations where only your subject is lit well (but everything else is not). Had I shot this on Auto the exposure would have been several seconds long and horribly overexposed so it would look 18% gray. For this image I spot metered on the subject’s face and locked it using the AEL button. Then I recomposed and shot. Very fast!

rule of thirds compositional rule. You can use using Spot Metering mode in conjunction with the AEL (Auto Exposure Lock) button. In fact, your camera gives you the option of marrying the two functions together – you can have it invoke spot metering mode when you press the AEL button. (**MENU →  6 → Custom Key Settings → AEL Button → AEL hold or AEL toggle.**)

6.21 WHITE BALANCE

Menu Position MENU →  4 → White Balance

What it Does Invokes one of many tools for compensating white balance in light that is not pure white

Recommended Setting AWB (Auto), unless your camera is producing yucky results under artificial light, in which case I strongly endorse Custom WB

Constraints Not selectable in iAuto, iAuto+, and Scene modes

Have you ever taken a picture indoors at night using a film camera (without a flash), and been surprised to see your results come out looking a little yellowish? Or, have you ever taken pictures under a fluorescent light, only to step back in horror when the pictures turned out a ghoulish green? (This happened a lot in the days of film.) If so, you inadvertently witnessed evidence that all artificial light is NOT the same!

It turns out that while sunlight contains all seven colors of the rainbow, incandescent light (that which comes from ordinary light bulbs) and fluorescent light radiate only 2 or 3 colors of the spectrum. Our brains do a wonderful job of adjusting to this different light, but alas, one of the biggest drawbacks of film was that it could not automatically correct for indoor light. You had to use filters, otherwise the result was often strange-colored snapshots.

TIP: Your camera will always make white balance and exposure errors when shooting in the forest. I talk about how to correct for it in 2 easy steps in my blog: <http://tinyurl.com/267m2ka>



Figure 6-28: *White Balance Examples.* Photos taken under normal light bulbs can have a yellow-orange tint, but the proper white balance setting (in this case the Incandescent setting, which adds a LOT of blue) can make them appear the way we remember seeing the subject.

This is where digital cameras are a huge improvement – they have the ability to sense what kind of light they are shooting under, and they can attempt to correct for it automatically. The ability for the camera to adjust to any kind of indoor light is called “Auto White Balance” – it means that if you take a picture of a white wall, it will come out looking white even though it is being illuminated by something other than pure white light.

What the WB function does isn’t rocket science – all it does is add a tint to the image. No intelligence going on at all – just a blanket color cast. You can see this in action as you thumb through the options: Just go to **MENU → 4 → White Balance** and then scroll Up and Down to watch as the parade of color casts is applied to the live view image. (To see the changes, just be sure that **MENU → 2 → Live View Display** is set to **Setting Effect ON!**)

6.21.1 AUTO WHITE BALANCE AND PRESET WHITE BALANCE

Your camera has the ability to look at a scene and figure out what kind of light is being used, and to adjust for it automatically – a feature called “Auto White Balance”. This feature is turned on by default, and under the vast majority of circumstances it will make good decisions and you will never have to worry about it.

BUT, just as no camera can always guess what exposure is right for the kind of picture *you* want to take, no camera can guess the correct White Balance 100% of the time. Sometimes you're shooting in the forest (where AWB will ALWAYS get it wrong and everything will look a depressing bluish). Sometimes there is a mixture of incandescent (yellowish) and fluorescent (greenish) light. Or, what if you're taking a picture of a yellowish wall; how can the camera possibly know that the color is due to the paint on the wall and not the kind of light that's illuminating it? It is for tricky situations like these that the camera allows you to specify what kind of light you're shooting under.

The first 9 options in the White Balance menu (after AWB) are called “Preset White Balance” – they are presets designed to compensate for the most common types of consumer-grade artificial light.

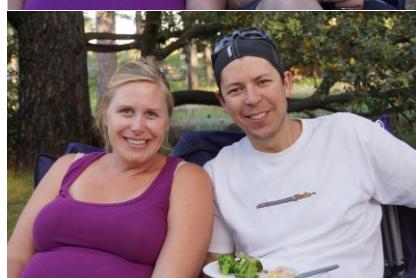
The Preset White Balance functions are:



Daylight – Your subject is being illuminated by all seven colors of the rainbow (i.e., white light). This White Balance setting is designed to render images correctly under this “full spectrum” sunlight.



Shade – although it's not artificial light, a cloudy day tends to be just a tiny bit bluer than a full sunshiny day. (You'd never guess this by just looking at a shady spot, but if you took a scientific instrument which measured the color of the light in open shade, you'd see the difference.) The Shade setting adds some yellow to the image, plus some magenta. (See **Figure 6-29**.)



Cloudy – the light in open shade is kind of like light

Figure 6-29: An open-shade portrait taking using the Daylight setting (top) and the Shade setting (bottom) which blindly adds some yellow.

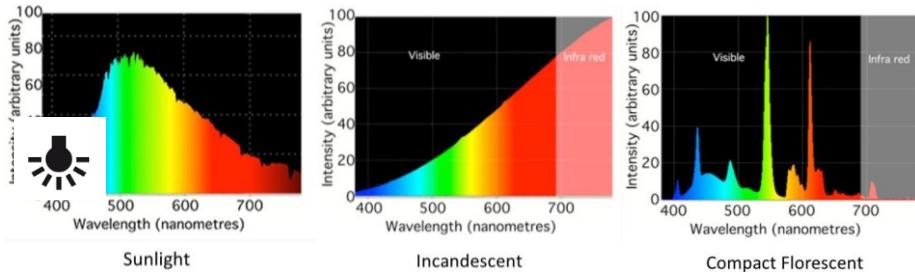


Figure 6-30: A comparison of spectrum put out by daylight (left), incandescent bulbs (center), and Compact Fluorescent bulbs (right). Our eyes and brain adjust seamlessly, but cameras often need help.

on a cloudy day, but not quite as blue. This setting adds a little less yellow to the picture to compensate as compared to the “shade” setting.

Incandescent – another word for “Tungsten” (which in turn is another word for “light bulb”). Incandescent bulbs give light that is predominantly yellow-orange (see **Figure 6-30**, center graph). Setting the camera to Tungsten mode lends a compensating bluish cast to the image.



Fluorescent (Four settings) – There used to be only one type of fluorescent bulb: the long, tubular lights that have graced the inside of office buildings for decades. But in the past few years the Compact Fluorescent type bulbs (which are designed to be screw-in replacements for incandescent light bulbs) have become very popular. When they first came out their color balances were horrid – and the bulb had to stay on for 10 minutes before that color became stable.

CF bulbs today are much improved and have standardized (sort of) on color balances across manufacturers. And so the first three fluorescent settings (“Warm White”, “Cool White”, and “Day White”) were designed to compensate these CF bulbs that use those names to describe their color, whereas the fourth setting, “Daylight”, was designed for the old-fashioned long-tube fluorescent light. (In my experience, the light spectrum from fluorescent lights would vary considerably across manufacturers, and so the preset WB settings for fluorescent lights were never great out of the box. The next section shows how to tweak it, but read ahead to the “Custom WB” function for a faster and more precise method of correcting the color balance.)



Flash -- the camera's electronic flash is designed to send out all seven colors of the rainbow, just as daylight does. However, market research shows that people like their flash pictures to look a little "warmer" (or perhaps more Canon-like, with some yellow added), and so that's what this feature does – add a touch of yellow. (See **Figure 6-31**.)

(We'll cover the rest of the White Balance settings two sections from now. But first I want to talk about the tool that Sony gave you for tweaking the preset white balances.)



Ambient

Flash w/ AWB

Flash with "Flash"

Flash w/ Daylight



Daylight WB



Flash WB

Figure 6-31: White balance was more intuitive in the old days. Once upon a time all of the pictures of a grey card (top row) would have looked pretty similar. But now, in an effort to be more like Canon, Sony has tweaked their "Flash WB" to be a little more yellowish than the daylight version, providing for warmer skin tones. (Also it seems to be overexposing subjects by about one stop, compared to the grey card illuminated by ambient light on the upper left.) The white balance between AWB with flash and "Flash WB" are also slightly different (hard to see it in these tests) – AWB is a tad bit warmer.



Underwater Auto (Seriously?) - This seems to behave identically to AWB so I have no idea what this does.

TIP: While the camera offers you plenty of different ways to correct for non-white light (including the tools described in the next few sections), and while all of these will work well under the vast majority of circumstances, there are extreme circumstances for which no camera will be able to compensate. For example, shooting under those very-yellow, energy-saving sodium-vapor streetlights, or under the all-red lighting of a submarine during an emergency. In these extreme cases, no amount of added green or blue can ever make the image look "normal". For everything else, use these tools!

6.21.2 TWEAKING THE PRESET WHITE BALANCE

When choosing a preset white balance as described above, your camera gives you the opportunity to do a local tweak of the correction. (Even for the Auto White Balance setting.) Just navigate to any of the preset white balance options and then hit the right arrow button. A screen very much like the one in **Figure 6-32** will appear.

Here you can use the cursor to add either Green or Magenta (the Up and Down buttons) or add either Blue or Amber (the Left and Right buttons). How do you know what settings to use? Tweak the settings until the color balance looks right to you in the live view screen.

Keep in mind that the range



Figure 6-32: You can tweak the Preset White Balance settings by moving the arrow key to the RIGHT and then add some local correction: Green to Magenta, Amber to Blue.

of tweaks this setting offers you is rather narrow – you can't, for example, start from the Tungsten preset white balance screen and tweak it enough to equal the Daylight setting.

Although this feature might appeal to those who are obsessed with accurate color, there are actually two much better tools for color accuracy: the



Figure 6-33: Absolute color temperature can be dialed in via the Color Temperature and Color Filter screen.

absolute color temperature setting described next, or (my favorite) the custom white balance, described in Section 6.21.4.

6.21.3 THE COLOR TEMPERATURE SETTING

The next option on the White Balance menu (**Figure 6-33**) is designed for professionals who prefer to work in terms of exact color temperature instead of vague terms like “cloudy” or “shade.” Professionals measure the whiteness of their light by using “Color Temperature” readings, measured in degrees K (Kelvin). For example, an incandescent bulb registers on color temperature light meters as 3400K, whereas daylight is 5500K.

To use it, just go to **MENU → 4 → White Balance → C.Temp./Filter** and then press the Right cursor button once. That will allow you to adjust the exact value by 100-degree increments using the Up and Down cursor buttons.

Press the Right cursor button again and you're now in the tweak screen, where you can do a local tweak of the value you just input. (**Figure 6-33**, right.) Press the Center button to accept your value and exit.

Chances are, if you had to read this entry, you're not in need of this feature. ☺ (I find it faster and easier to use the Custom White Balance function described in the next section.)

TIP: If you shoot in RAW mode you don't have to worry about any of this white balance stuff while out in the field. You can correct it later on your computer.

6.21.4 CUSTOM WHITE BALANCE

Custom White Balance is the control to use when you have a nonstandard lighting source (such as halogen), or a mix of white, incandescent, fluorescent, ultraviolet, and you-name-it types of lights illuminating your subject. Or, when you're under fluorescent lights that are a nonstandard shade of green, or under a soft-white bulb that is a nonstandard shade of

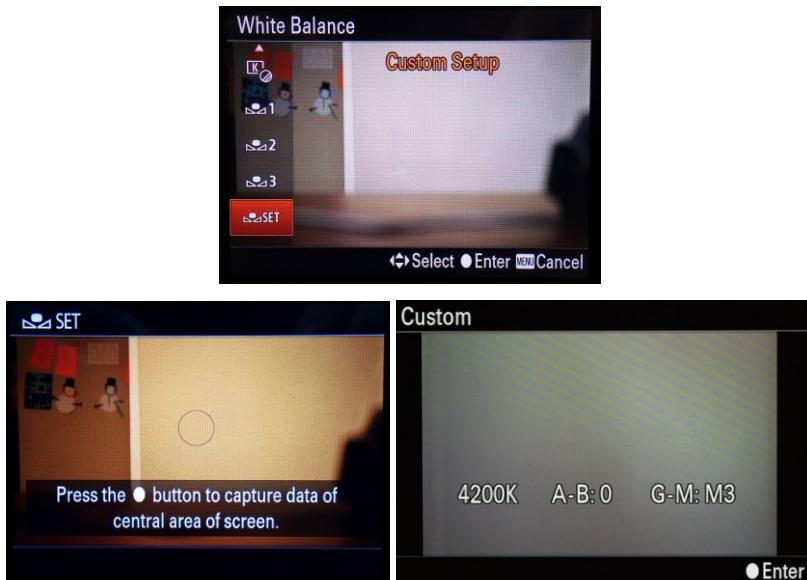


Figure 6-34: The Custom White Balance Control and its associated screens.

yellow. The way Custom White Balance works is pretty ingenious: you aim the camera at a nearby white object (that is lit with the same light that is falling on your subject), preferably a white wall or a piece of paper. (Neutral gray works too.) Then you invoke the Custom White Balance

feature, essentially telling the camera, “Here! I’m showing you a white piece of paper. Add whatever tint you have to add, or remove any tint you have to remove, to make that piece of paper look white!” The camera will measure the amount of the rainbow colors it sees, and then it can compensate automatically for the rainbow colors it doesn’t see. It will make the right choice every time, except in the most extreme sources of light.

To Use Custom White Balance:

1. Go to **MENU →  4 → White Balance → Custom Setup** (the very last option) as shown in **Figure 6-34a**. The screen in **Figure 6-34b** appears.
2. Do as the screen says! Fill the viewfinder’s center circle with your white surface and press the Center button.
3. Notice that the screen in **Figure 6-64c** actually gives you the values of the correction it is about to store on the lower part of the screen.
4. Press the Center button to confirm.
5. From now on, the corrections you just set will be used for all future images when you choose the Custom preset from the White Balance menu (until you store a new setting, of course).
6. As with the preset white balances, you can tweak this setting if you want to by going to **MENU →  4 → White Balance → Custom**, pressing the Right cursor button, and then tweaking the custom white balance using the 4-axis graph.

TIP: *Custom White Balance cannot be set while the Mode dial is set to Movie. To use custom white balance in Movie mode, switch to P/A/S/M mode first, set the custom white balance, switch to Movie mode, then select the stored setting.*

6.22 DRO/AUTO HDR

Menu Position MENU →  4 → DRO/Auto HDR

What it Does Lets you choose settings for two different functions that are designed to “expand” the dynamic range of the sensor (I used the quotes on purpose – see text).

Recommended Setting DRO Auto.

Constraints Doesn’t apply to RAW files, even though the camera lets you change this setting when Quality is set to RAW only. Not selectable in iAuto modes, SCENE modes , or Panorama mode. HDR not selectable with RAW or RAW & JPG Quality.

This menu item controls two features that are designed to address the problem of “Your eye can see much more dynamic range than the sensor can.”

The first is Dynamic Range Optimization (DRO). When this feature is enabled in its default configuration, in certain circumstances after you have taken your picture, the camera will examine the brightness range of the image and, if it feels the image will benefit, it will attempt to lighten some of the shadows. When used properly it can really make your images look brighter and, for lack of a better word, “happier.” You can see an example of it in action in **Figure 6-35**.

DRO does not affect RAW files, so if you shoot RAW & JPG, only the JPEGs will benefit. If you’re not sure which DRO setting to use, you can hedge your bets by having the camera do a “DRO Bracket,” where the camera takes one picture and saves it three times, each with a different DRO value (Section 6.7.9).

DRO is a very powerful tool, but I have found that it takes some experimenting to learn when to use it and how much. I find it particularly beneficial when shooting outdoors when the light is splotchy.

TIP: DRO applies equally well to movies as to stills!

The Second feature for expanding the dynamic range is High Dynamic Range (HDR). It takes three pictures bracketed up to 6 stops apart and merges them in-camera. HDR Auto is not available if you are shooting RAW or RAW & JPEG.

Both Dynamic Range Optimization (DRO) and High Dynamic Range (HDR) functions are described fully in Chapter 14.



[OFF]

DRO Auto

DRO Level 5

Figure 6-35: Dynamic Range Optimization at work. DRO processes the image in-camera and automatically lightens some of the shadows in certain circumstances without touching the highlights (notice the window light still shows the tree).

True Story: National Geographic photographer Michael Yamashita shot many assignments with Sony Alpha cameras. He usually shoots RAW & JPG, and sends the RAW files to the NatGeo staff for post-processing. Mike credits the DRO feature for making the shadows look exactly the way his eye sees them, and he tells his staff to "make the RAW files look just like the JPEG files." On several occasions the staff complained, "We can't!" This reinforces other stories I've heard where it can take an hour or more to do in Photoshop (by experienced users!) what the intelligent DRO feature does in a fraction of a second.



6.23 CREATIVE STYLE

Menu Position MENU →  4 → Creative Style

What it Does Specifies in-camera tweaks to your JPEG file images

Recommended Setting I personally prefer to keep the factory default settings (everything essentially “neutral”) and do any color cast, contrast, or sharpening on my computer later on; for special applications I will save settings in the six numbered Style Boxes

“Creative Style” is a catch-all phrase that means “a collection of tweaks the camera can apply to an image” – tweaks like color cast, sharpness, contrast, and saturation. The degree of change you can invoke by these settings is very small (see comparison shots in the next sections); however, you can achieve noticeable differences by combining several of these variables together and storing them in one of the six numbered Style Box registers that appear in the list after the standard Creative Styles. I’ll give examples of such combinations after the settings are demonstrated.

Note that these settings affect only pictures taken in P, A, S, or M exposure modes and are only applied to JPEG files, although the settings used are written to the EXIF area of RAW files so a program like Lightroom can open them up and automatically tweak the image according to the settings you dialed in if it wants to. (Kind of a time-saving step.)

The first thing I’ll explain is the concept of what Sony calls a “Creative Style.” The A6000 has 13 Creative Styles, plus six customizable slots (Style Boxes) that you can play with on your own. The 13 creative styles are described in the following table:

Creative Style		Comments
Standard		This is the “normal” mode against which all other modes are compared. It is an excellent general-purpose setting from which I rarely deviate.
Vivid		All colors and contrast are enhanced slightly.
Neutral		All colors are muted slightly.
Clear		More vivid than “Vivid.”
Deep		Darkens the image a little.

Light		Lightens the image a little.
Portrait		Similar to Neutral, it gives soft, warm colors which traditionally work well with portraits.
Landscape		Similar to Clear; it enhances the colors and contrast slightly.
Sunset		Adds reds and yellows to the image.
Night View		The colors are untouched; Night View simply lowers the contrast.
Autumn Leaves		Hello, Reds! I actually like using this color setting when shooting time exposures at night (see Figure 6-36.)

Black & White		Removes all color from the image. (Note: It's really gone from the JPEG file! You can't get it back later on!!) But it does more than just desaturate the image – it emphasizes some colors over others so that a Caucasian face comes out more white than gray.
Sepia		Removes all the color from the image and then applies a beautiful light brown color cast, reminiscent of 1800s-style photos. (See note above regarding color not being recoverable in the JPEG file.)



Figure 6-36: A time exposure of downtown Los Angeles on a rare clear evening taken using “Standard” (left) and “Autumn” (right). I kind of like the extra reds added to this kind of a shot.

6.23.1 FREQUENTLY ASKED QUESTIONS

Q: “Are all these choices *really* necessary? Which ones do you use?”

A: Some people love the fact that you can do all these neat things in your camera without ever having to visit your computer later on. I will say that, when combined with other settings (keep reading!), you really can tailor a kind of emotional feel to your subjects using these combinations of settings. Creative Styles are only one component of these combinations.

You can make changes to the settings for any Creative Style and store those settings in the regular location for that Creative Style, but you might want to leave those styles alone and store your changes in the numbered Slot Boxes instead. Then, you can use the numbered Style Boxes in special situations.

To save settings in the numbered Style Boxes, pick up your camera and go to **MENU** → **4** → **Creative Style** (or access it via the Fn menu) and scroll down to the last six choices (they’re numbered). Select one of these numbered memory locations, and then move Right to highlight the Image Style associated with that memory location (an Image Style is the starting point such as Standard or Vivid). You can then use the Up and Down cursor buttons to see them all. Press the center of the multi-selector to select one. These customizable Style Box slots can be handy in case you want to configure six presets using Autumn color palette (just to give an example).

Okay, time for an illustration. Let’s say you want to modify the Creative Style called “Vivid” so that the images it produces have a little more “punch” right out of the box, so they will look most impressive when you plug your memory card directly into your inkjet printer and say “Here, print these!” To achieve this effect, you might want to set the Contrast to +1, the Saturation to +2, and the Sharpness to +1 (in addition to getting Vivid’s



Figure 6-37 The Creative Styles allow you to set your own unique style comprised of a collection of image-tweaking variables: color space, contrast, sharpness, and color intensity (saturation).

enhanced colors) to all the pictures you take. Here's how to achieve this step-by-step:

1. **MENU → 4 → Creative Style → [Click Enter].** Figure 6-37 is seen.
2. Move Down one until Memory Location #2 (Vivid) is highlighted. Use the arrow button to move Right.
3. The first parameter you can adjust is Image Style. It should already be factory set to Vivid, but in case it's not, use the Up and Down cursor buttons to select Vivid.
4. Move to the right to select Contrast (). Once the Contrast icon is highlighted, press the Up cursor button twice and watch the icon's value change to +1.
5. Move to the right again, and press the Up cursor button to change the Saturation icon () to +2.
6. Move to the right again, and press the Up cursor button to change the Sharpness icon () to +1.
7. Then hit the shutter release button halfway to save your settings and return to shooting mode.

You can see the changes you've made to your Style Box by looking at the main display screen (Figure 6-38a – yellow box). Figure 6-38b and Figure 6-38c show a "before" and "after" view, showing that indeed, a collection of tweaks really can make a subtle yet visible difference.



Figure 6-38 Your current Creative Style and its associated tweaks are visible on the main screen (highlighted in yellow). And here is a "before" and "after" shot showing the collective impact of these tweaks.

So, that's the story behind Creative Styles: Creative Styles represent color cast (Image Style), Contrast, Saturation, and Sharpness tweaks to the image, and the camera's six memory locations (called Style Boxes) allow you to store (and instantly recall) customized combinations of these settings. Following, I'll show you some examples of what the settings do.

CONTRAST SETTING

The first variable you can change after selecting an Image Style is contrast. Contrast is a difficult thing to describe, but you know instantly if your pictures don't have enough of it. Basically it is "how white are the whites, and how black are the blacks?" If you are going to have your pictures processed at a 1-hour photo lab, then they almost always adjust the contrast for you and there should be no need to change this setting.

Figure 6-39 gives examples.

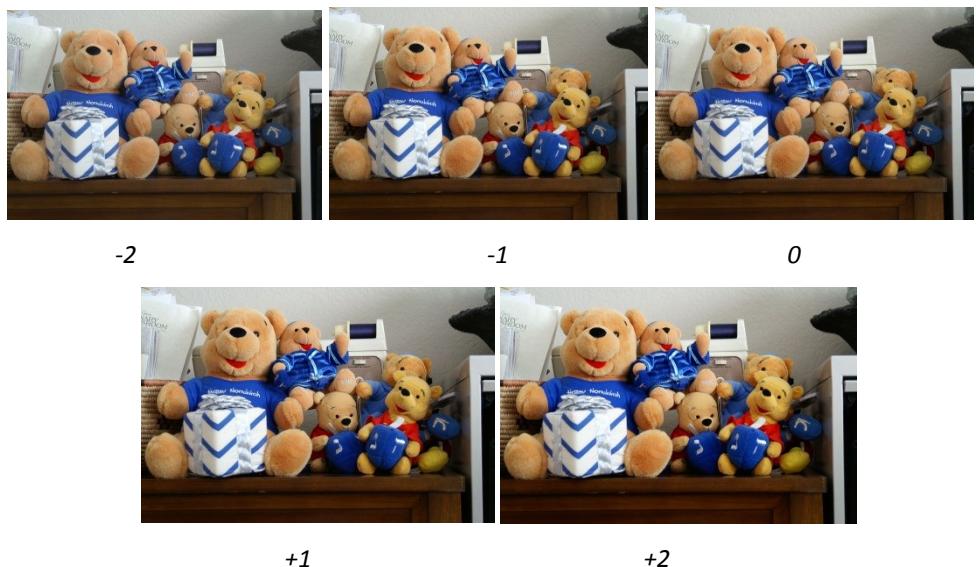


Figure 6-39 The Contrast setting range from -2 to +2.

6.23.2 SATURATION SETTING

This setting increases or decreases the saturation of colors, adjustable from -2 to +2. See **Figure 6-40** for examples.

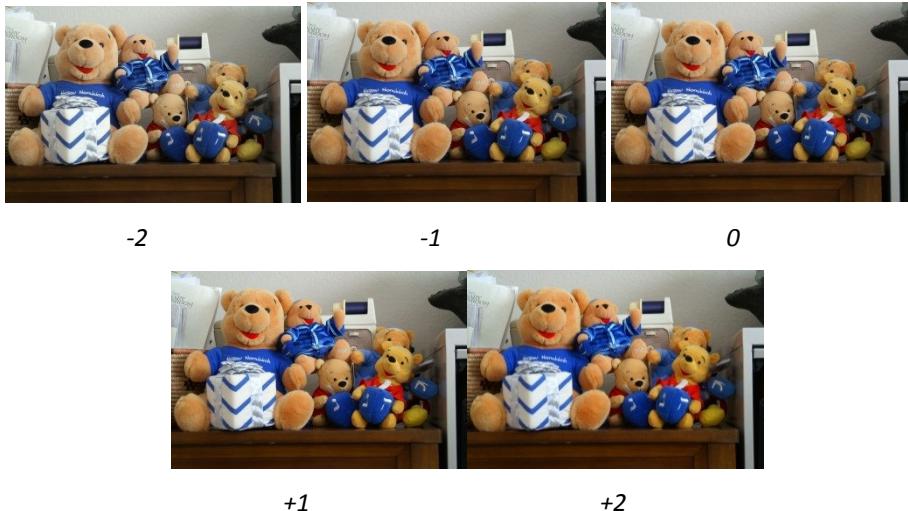


Figure 6-40 The Saturation setting range from -2 to +2.

6.23.3 SHARPNESS SETTING

If you think all these comparison shots so far look alike, just wait until you see the comparison with the sharpness settings in **Figure 6-41**! To make the differences visible, a small portion of each image presented for comparison has been greatly enlarged.

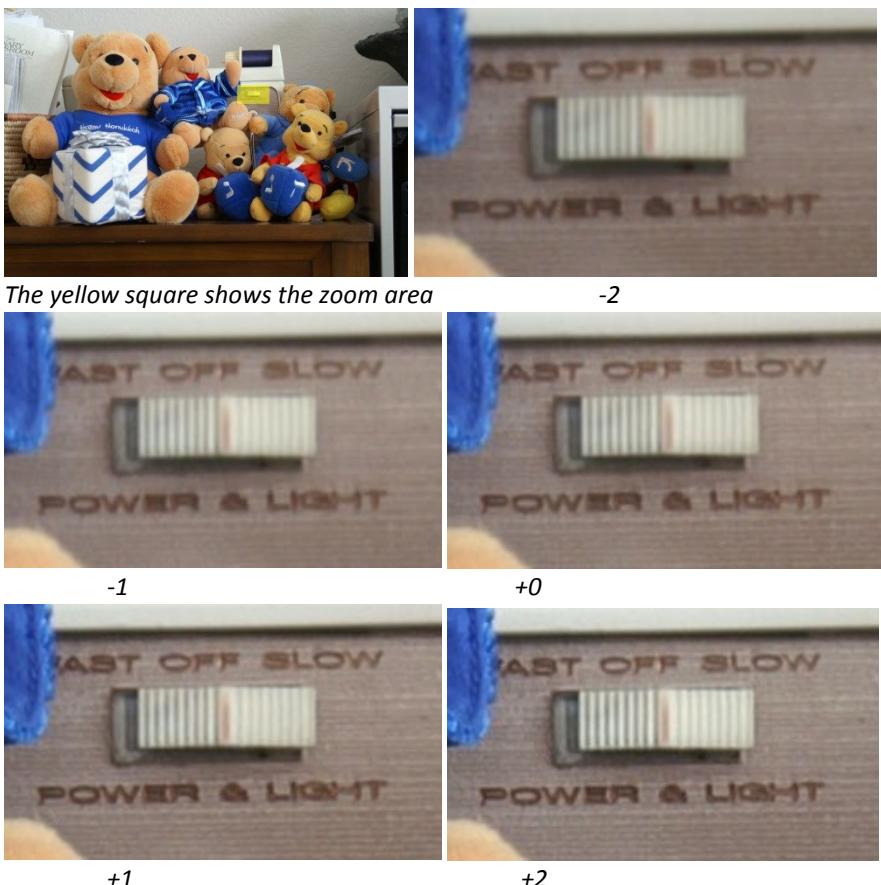


Figure 6-41 The Sharpness setting range from -2 to $+2$. These are enlargements from the small yellow rectangle in the first image. Notice that sharpening can also exaggerate JPEG compression artifacts.

6.23.4 COMBINING SETTINGS

As suggested at the beginning of this section, you can combine these settings to good effect. (In fact, I already gave a mild example of this in **Figure 6-38**.)

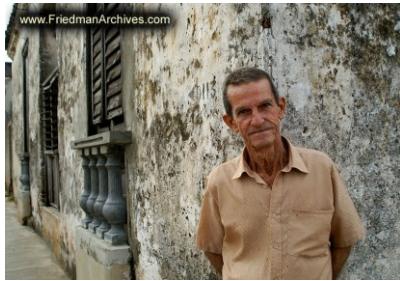
What are some other things you can do with these settings? Here are some ideas and suggestions for combinations you might want to use in your customized Style Boxes:

Image Type	Suggested Settings
Children & Birthday Parties 	<p>Children and bright colors go together. Try this combination of settings:</p> <ul style="list-style-type: none"> • Creative Style: Clear • Saturation: +1 • Contrast: +1 • Sharpness: +1
Sports & Photojournalism 	<p>Most newspapers can't reproduce the fine nuances of a quality photographic print. Here a gritty, high-contrast look that's a good fit for newsprint images:</p> <ul style="list-style-type: none"> • Creative Style: Standard • Saturation: +1 • Contrast: +2 • Sharpness: +2

Portraits & Weddings

Softness and tonal range is best here.

- Creative Style: Portrait
- Saturation: -1
- Contrast: -2
- Sharpness: +1

Travel Photography

It all depends upon the country you're visiting. If you're visiting a land filled with bright colors (Cuba or South America, for example), use the same settings as "Children and Birthday Parties" above. If you're in parts of old Europe or the Middle East (where the muted colors of Agfa film used to reign), then try something more subdued:

- Creative Style: Neutral
- Saturation: -1
- Contrast: -1
- Sharpness: 0 ("Standard")

Of course these settings only serve to reinforce a preconceived stereotype. Sometimes it's best to put your camera away for awhile, look with your eyes, absorb the mood, and then choose settings that convey that mood.

Low-key artistic avant-garde

All settings at minimum value. Or, you might start with the “Clear” or “Sunset” Creative Style for an interesting effect.
☺

Time Exposure Photography

- Creative Style: Autumn
- Brightness: +1
- White Balance: Fluorescent Daylight (really!)

If you’re not sure what settings to use, or are overwhelmed by the sheer number of permutations, you do have another option available to you: Shoot in RAW Quality (Chapter 15) so you can make all of these choices later, by the comfort of your computer. Isn’t it great to have choices?

6.23.5 B&W MODE

Once upon a time (back in the days of film) I was shooting a wedding, and the couple requested that I shoot black-and-white in my famous wedding photojournalism style.



Figure 6-42: B&W can save a shot that has poor lighting. Also, most non-photographers tend to regard Black-and-white shots as being more “artistic.” (These are the same people who think that a big and heavy camera must take better pictures.)

“Sure!” I said, “But it would probably be much easier and cheaper to shoot everything in color, and then just convert selected pictures to B&W in the computer.”

“Absolutely not!” the bride insisted. “Black-and-white must be black-and-white from start to finish!” (And trust me, as a reformed wedding photographer, you do *not* want to argue with the bride!)

The engineer in me, who has learned that the results are more important than the process, acquiesced to this very common mode of thinking in the art world, where process is just as important (or perhaps more so) than the results. (This is why darkroom-processed fiber-based prints are allowed in art galleries, but inkjet prints containing the same quality image sometimes are not. Go figure!)

Rightly or wrongly, this is the perception and paradigm that we all must live with. And while Sony graced your camera with a B&W and Sepia modes to save you the trouble of creating a black-and-white image on your computer, I’ll bet they could also be used for wedding couples with degrees

in art. (B&W and Sepia modes are two of the Creative Styles described a couple of sections ago.)

B&W mode has other practical applications, too. Besides taking pictures that others perceive as being more artistic, it can also save you from RBL (Really Bad Light) in some circumstances. For example, **Figure 6-42** is a shot of a Chinese boy on his father's shoulders. The child is backlit, with little direct light hitting the boy's face. This light is just awful, but when shot in B&W mode the poor lighting hardly gets noticed.

Want the best of both worlds? Earlier in the book I mentioned that if you shoot in B/W or Sepia mode, then the color is gone forever and it can't be recovered. UNLESS, that is, you choose **MENU → Camera icon → Quality → RAW & JPG**, in which case the camera records one RAW image including color information and one B&W image for each picture you take. It's kind

TIP: *B&W mode isn't just a simple desaturation. Below is an image I took in B&W mode, along with the Lightroom adjustments I had to make to make the RAW file (taken at the same time) look the same as what came out of the camera: a little extra contrast on the curve and a slightly nonstandard conversion of the colors to grayscale.*



of like a safety net! RAW and JPEG modes are covered in Chapter 15.

6.24 PICTURE EFFECT

Menu Position MENU →  4 → Picture Effect

What it Does Allows you to add “special effects” to your images

Recommended Setting Hey, it’s up to you!

Constraints Not available when shooting RAW or RAW & JPG

I can tell you I never thought highly of these consumer-oriented Instagram-like effects, but I’ve met my share of users who just love them – either because they were fun (some people do photography for fun, you know!) or it saved them a lot of time in front of the computer. So don’t turn your nose up at these just yet (at least not until you finish reading this section, anyway).

Picture effects give you the ability to capture only selective colors; to make striking high-contrast B&W images; to make the image look old/faded; or even make your picture look like it was taken with a 1960’s era plastic toy camera. These effects apply when you’re shooting movies, too, but not RAW files.

To help provide a meaningful technical explanation for what these settings *really* do, I’ve photographed one colorful test subject using a variety of settings. Afterwards I’ll show you other subject matter more suited to each effect, and then I’ll compare some of these effects to the camera’s other effects – the Creative Styles (described in the previous section).

For fun, reader Kathi Horste put together this little video showing off the various effects (plus how the effects looks in Movie mode – quite cool!): <http://smilebox.co/1cScIug>. (Thanks, Kathi!)



Reference Photo - Program Mode using Standard Creative Style.



Toy Camera – Designed to emulate the toy plastic cameras of the 1960s. Introduces some vignetteing in the corners, bumps up the colors a little and provides one of 5 mild color casts.



Pop Color – Saturated colors – similar to the Vivid Creative Style.



Posterization – Color. (Very high contrast!)



Posterization – B&W.



Retro Photo – A combination of low color saturation and a yellowish/brownish (sepia) color cast.

6.24.1 TOY CAMERA

So, where would you use these effects? Check out these examples. It's all a bit of fun really, as a part of playing round and being creative. Try shooting green trees with the green color cast, and a sunset with magenta or warm, to see what happens.



Figure 6-43: Toy Camera emulates a plastic Diana camera from the 1960's – heavy vignetting, low contrast.

6.24.2 POSTERIZATION AND POP COLOR

Posterization is like the ultimate in high-contrast imagery. Sony has added to this feature the ability to choose between Color (only strong, saturated colors) and B&W.



Figure 6-44: Posterization. For that "Darth Vader" effect.



Figure 6-45: Pop Color can be surprising when you use it with a colorful subject. Sometimes it produces an effect that looks more like you remembered something than the camera would otherwise capture for you.

6.24.3 RETRO PHOTO



Figure 6-46: Have a hankerin' for the good old days? Try Retro mode. In some images like these, you'll get good results. In others, it will look more like a washed-out camera image.

6.24.4 *SOFT HIGH-KEY*

Figure 6-47: Soft High-Key. This is another effect that runs the risk of “losing-it” on the wrong subject matter.

6.24.5 *PARTIAL COLOR*

I find Partial Color and High Contrast Monochrome to be the most useful of these effects so far.



Soft High Key – Sorry to be brutal, but that's just another word for "washed out" or "overexposed."



Partial Color (Red) - As you can see, everything that's red is colored; everything not red is rendered in B&W.



Partial Color (Green) - Look closely and you'll see some yellow on the edges as well. It's not a perfect filter.



Partial Color (Blue).



Partial Color (Yellow).



High Contrast Monochrome.



Figure 6-48: I find Partial Color to be one of the most interesting of the Picture Effects. It desaturates the other colors to monochrome, keeping only the color you select.

6.24.6 HIGH-CONTRAST MONOCHROME

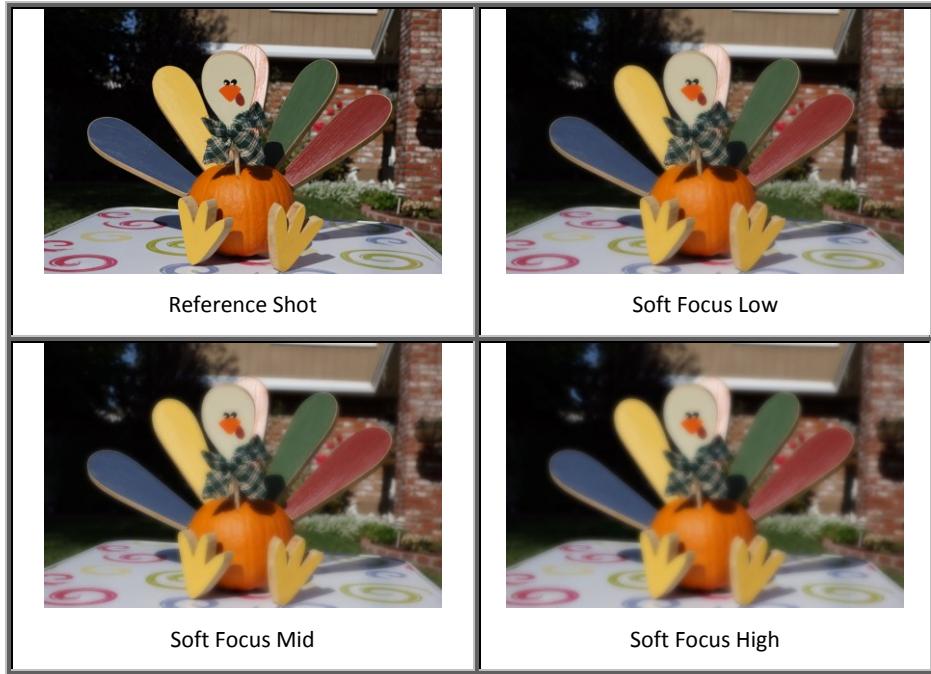


Figure 6-49: High Contrast Monochrome simply adds extra contrast to B&W pictures.

Finally, the last batch of Picture Effects. I'll deal with each of these individually.

6.24.7 SOFT FOCUS

Soft focus does what you think it does – it defocuses the image in a slightly different way than you could achieve by simply not focusing accurately with your lens. It can be useful for dreamy portraits of aging movie stars.



This effect is often used in the advertising world to make something seem more mysterious, moody, romantic and desirable. **Figure 6-50** shows this effect at work. (Of course if you're like me you've invested in a Zeiss lens or two and can't stand the thought of getting fuzzy photos on purpose.)

6.24.8 *HDR PAINTING*

HDR Painting emulates the kind of grungy Topaz-filter look that seems to be all the rage nowadays. HDR Painting takes three pictures (just as the dynamic-range-expanding HDR function does) and then it does something to it, making it look a lot grungier.

Try shooting a portrait with HDR Painting set to High and see how many of your Facebook friends like it. ☺



Figure 6-50: Soft Focus can create a mood effect – misty and surreal.

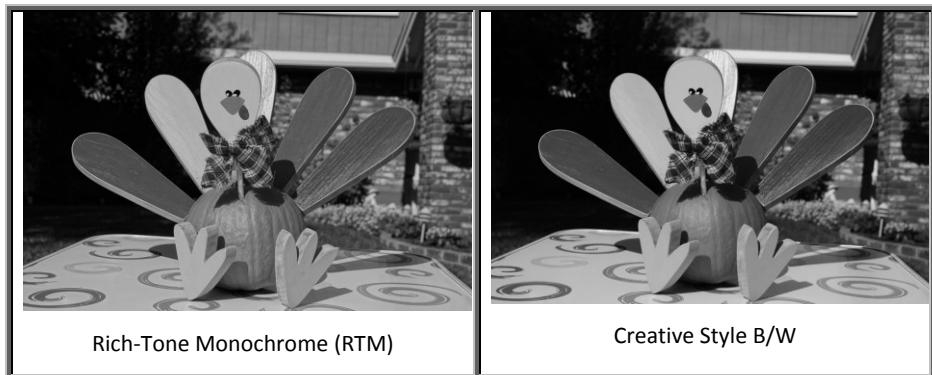


Figure 6-51: HDR Painting. Notice the boosted color and contrast – perhaps too extreme in these examples. Try shooting rusting cars with this effect.

6.24.9 RICH-TONE MONOCHROME

The High-Dynamic Range (HDR) function won't be covered until Chapter 14, but simply put, the function just brackets three pictures and merges them together in-camera, yielding a lower-contrast image whose highlights and shadows aren't as likely to blow out. The Rich-Tone Monochrome feature is essentially an HDR image shot in black and white. When used, the camera switches to B&W mode, shoots three images in a row, aligns them internally (in case you had a shaky hand) and writes a single JPEG file to your memory card.

The example below compares Rich-Tone Monochrome with the camera's other B&W mode. Since this test subject had a pretty narrow tonal range the only real difference you'll see here is the slightly lower contrast of the Picture Effects version (left).



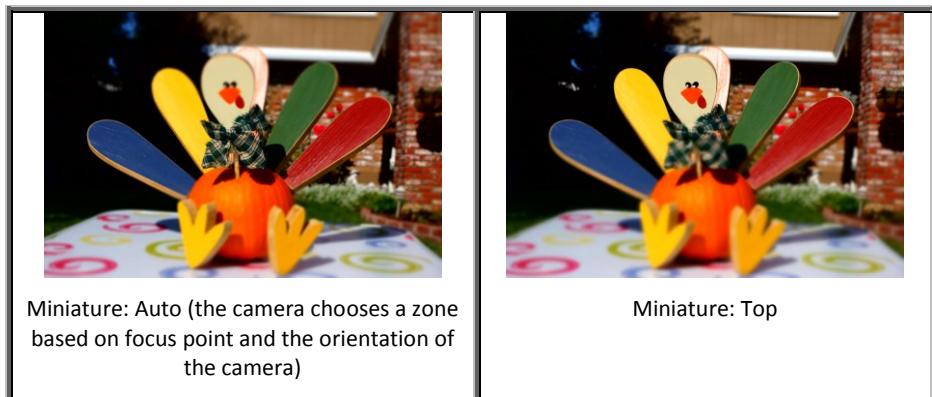
As it turns out, this provides a fairly pleasing effect and is a good way to get a quick black-and-white image of good quality, or to pre-visualize a B&W that you intend to shoot in color, then work with on your PC later.



Figure 6-52: Left: RTM performed well in rendering the dark, shadowy face of this church in Busselton, Western Australia. Right: Rich Tone Mono or HDR B&W can give some pleasing results.

6.24.10 MINIATURE MODE

This feature is kind of misleadingly named. It is claimed to give the image a feel of what the old Japanese Monster movies used to look like – the giant monsters were actually miniatures filmed in a certain way that exaggerated the shallow depth-of-field, trying to make it look like it would normally look had the monster actually been monster-sized.





Miniature: Middle (Horizontal)



Miniature: Bottom



Miniature: Right



Miniature: Middle (Vertical)



Miniature: Left

(This space intentionally left blank)



Reference Shot



Miniature: Bottom

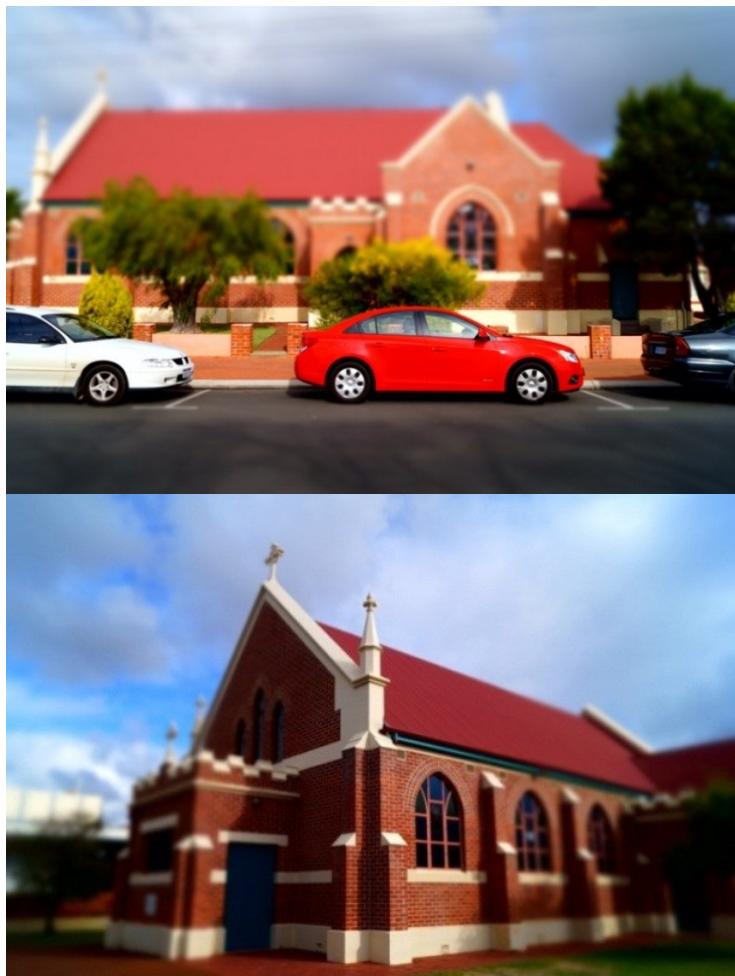


Figure 6-53: Good examples of the Miniature effect: applied horizontally through the line of cars (top), and vertically to the nearest corner of the church (bottom).

This feature selectively applies the soft-focus function demonstrated earlier to all but one-third of the image, and also exaggerates color intensity to an unreal degree. To help you compose properly, the camera shows you which one-third of the image will remain sharp when you're shooting in this mode. (**Figure 6-53.**)

Now, you might think that this is a pointless feature, but don't dismiss it out of hand. In fact, there is an entire series of lenses (called Lensbaby www.lensbaby.com) designed to help you do something just like this (though much more and with much better control over what is in focus).

TIP 1: *Most Picture Effects work in Movie mode, with the exception of Soft Focus, HDR Painting, Rich-tone Mono, and Miniature.*

TIP 2: *Interestingly, the Miniature Mode doesn't seem to use the Lens Compensation features (Section 7.24). All other Picture Effects do.*

6.24.11 WATERCOLOR AND ILLUSTRATION MODES

I have to say that of all the Picture Effects available, these are becoming two of my favorites. Their effects are hard to see when you're just reviewing them on the back of your camera (without zooming in), but when you get back to your computer and view them full-screen, *Whoa! That's pretty awesome!* (Examples can be seen in **Figure 6-54** and **Figure 6-55**.) The two effects are similar, so I'll cover them both here. (You can think of Watercolor as Illustration Mode set to "really, really low" – just the heavy



Figure 6-54: The Original, Illustration mode (set to High), and Watercolor mode.

black lines are missing.)

In Illustration mode you can choose a Low, Mid, or High setting. This mode works well but it disables any sort of continuous drive mode (which makes sense – the effect is computationally expensive). Watercolor mode

works in the same way, the only difference is that you can't specify a Low, Mid, or High setting.

TIP 1: *Unlike most other Picture Effects, neither Watercolor nor Illustration can be applied to Movie mode. (Actually, that's true of every Picture Effect after High Contrast Monochrome.)*

TIP 2: *Want to apply this effect to some old picture (printed or on your computer screen)? Just take a picture of the picture or your computer screen. The end results are such that you can't tell if the original was low-res or not. (Hey, that's how I created some of the examples shown here!)*

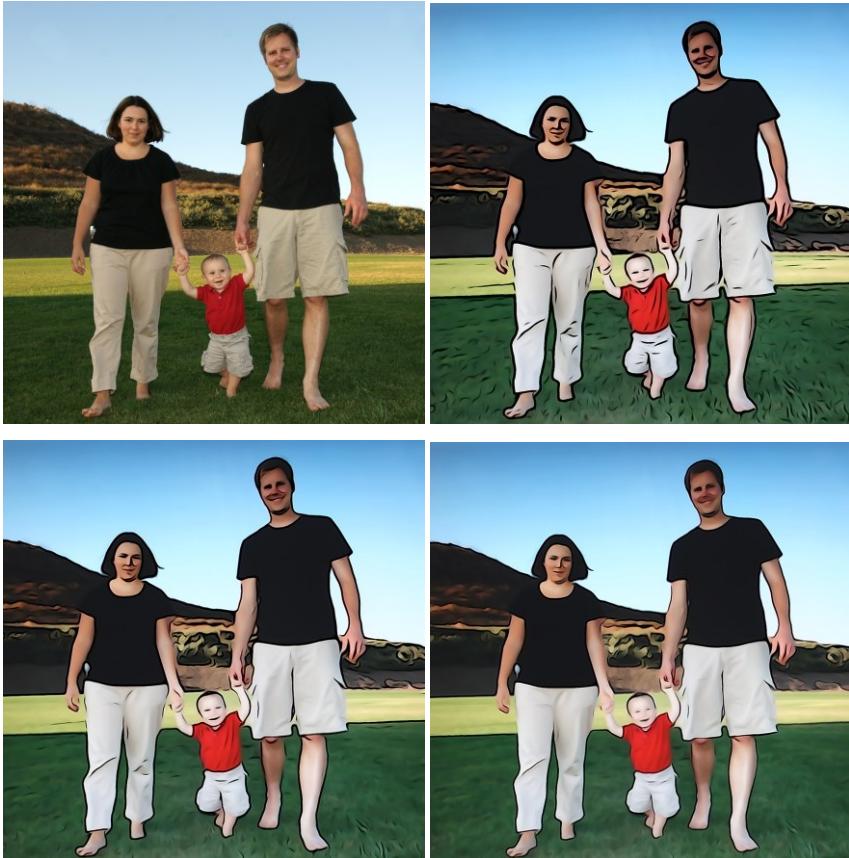
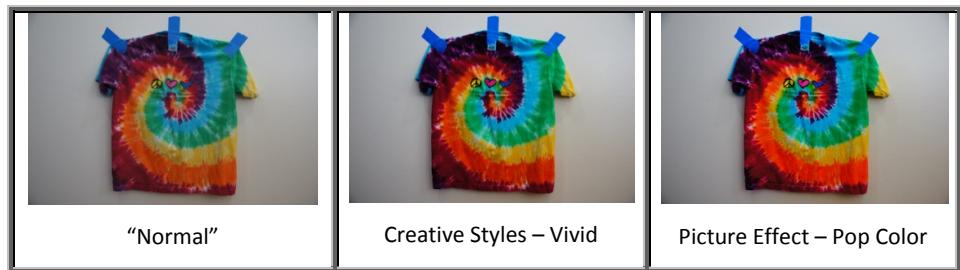


Figure 6-55: Illustration mode looks more impressive when you look at a large version of the image. Here is the original, then Illustration mode set to Hi, Mid, and Low.

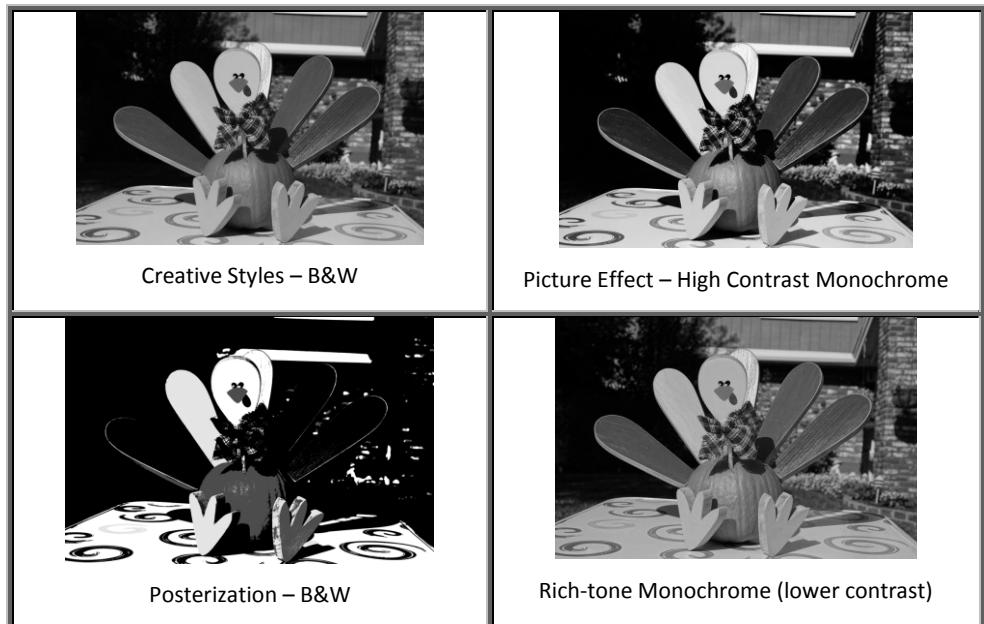
6.24.12 HOW PICTURE EFFECTS DIFFER FROM CREATIVE STYLES

Astute readers who are already familiar with the camera's Creative Styles function (Section 6.23) may notice that your camera *already* has a Vivid mode and a B&W mode. How do these new modes compare?

Good question! Here's a 3-way comparison of a "normal" shot, the Vivid Creative Styles mode, and the Pop Color Picture Effect:



Also, here's a comparison of the camera's native B&W mode with the three Picture Effect modes for black and white:



6.25 ZOOM

Menu Position MENU →  5 → Zoom

What it Does Enables zoom image magnification with abilities controlled by image size and the setting of MENU →  3 → Zoom Settings

Recommended Setting N/A

Constraints None except...

This feature allows you to zoom in up to 8x more than your lens is optically capable. Just how much you can zoom depends on the settings of Image Size (Section 6.1) and Zoom Settings (Section 7.12).

I go into much more detail about the different permutations in the Zoom Settings section description, but let me quickly summarize the three different ways that the camera performs a digital zoom (each method represents one of the three boxes in the zoom scale in **Figure 6-56**):



Figure 6-56: The Zoom magnification scale is divided into as many as three quadrants corresponding to the three different digital zoom methods described in the text.

1. **Optical zoom only:** If your MENU →  1 → Image Size is set to Medium or Small, the camera zooms in by throwing pixels away from the perimeter of the frame. There's no deterioration of quality since you've already asked the camera to produce a smaller image. You can zoom up to 2x using this method. Optical zoom is not enabled if Image Size is set to Large.
2. **On: ClearImage Zoom:** The camera zooms in by throwing pixels away from the perimeter of the frame, but then it upsamples it to a full-

size (Image Quality = Large) image using something a little better than Photoshop's bicubic resampling upsizing algorithm. You can zoom in up to 4x using this method.

3. **On: Digital Zoom:** The camera zooms in by throwing pixels away from the perimeter of the frame, then upsizing it using an unimpressive algorithm. You can zoom in up to 8x using this method.

As you use this function to zoom in with the Right arrow key, you'll see the total amount of magnification the camera is allowing you (which, again, is determined by the **Zoom Setting** and the **Image Size** setting).

Below is a table that summarizes the different zooms available with different settings:

Image Size	Optical zoom only	ClearImage Zoom	Digital Zoom	Movie Mode
L	--	2x	4x	4x
M	1.5x	2.9x	6.1x	4x
S	2x	3.9x	8x	4x

TIP: While I never use the Zoom function myself (I prefer to do any cropping or upsampling in post-processing), you may find this feature particularly useful when shooting movies, especially from the back of an auditorium with a lens of insufficient reach. The video function has to throw away pixels anyway to get the image down to the size of an HD frame, so this only changes which pixels are thrown away. The most digital zoom you can get with movies is 4x.

6.26 FOCUS MAGNIFIER

Menu Position MENU →  5 → Focus Magnifier

What it Does Magnifies a small area of the image to allow you to focus critically

Recommended Setting N/A

Constraints Works in Manual (MF) focus mode only

When you're in Manual focus mode you can focus critically by invoking this feature and then using the cursor to highlight the area you'd like to focus on. This, combined with the Peaking functions first described in Chapter 3, make this camera a joy for manual focusing. In the old days you needed expensive equipment to get this kind of focusing aid, like the camera shown in **Figure 6-57**.

Those of you who sometimes like to use manual focus will want to assign this to a button. I've assigned it to the C1 button, as follows:

MENU →  6 → Custom Key Settings → Custom Button 1 → Focus Magnifier

To use it, do the following:

1. While composing your image, invoke the Focus Magnifier by pressing the button to which you assigned this feature.
2. A small orange rectangle appears in the middle of the screen. Here the camera is asking you "What part of your composition do you want me



Figure 6-57: In the old days, if you wanted magnified focusing for critical work, you had to buy a high-end camera with interchangeable finders. This Minolta XK Motor has a large magnifying glass looking down on the focusing screen instead of the traditional viewfinder and pentaprism. (I used the focus magnifier feature to ensure proper focusing before I took this picture!)

to magnify?" Use the arrow buttons to move the rectangle around to the subject of interest (in the case of **Figure 6-57** it was the words "XK Motor" on the camera body) and press the Center button to confirm the location. (You can also move the rectangle using the Control Dial and Control Wheel, and use C2 to return the rectangle to the center area.)

3. The camera magnifies just that portion of the image so you can see when your subject is in critical focus when you adjust focus with the lens manual focusing ring.
4. Want even greater magnification? Hit the Focus Magnification button again (C1 in this case), and the magnification goes from 5.9x to 11.7x.
5. You can exit Focus Magnifier mode at any time by pressing the shutter release button halfway. It may exit automatically depending on your setting for **MENU → ⚙ 1 → Focus Magnif. Time → [2 Sec, 5 Sec, or No Limit]**.

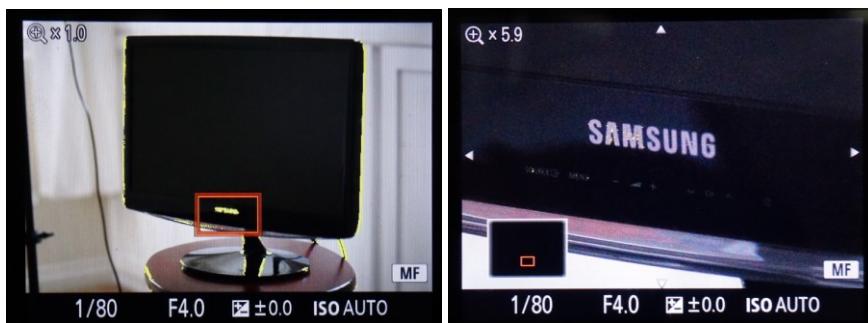


Figure 6-58: With the Focus Magnifier, you indicate you want to zoom in, and that area of the composition is magnified to help you focus critically .

TIP #1: If you have enabled Peaking Level you might need to set it to High because this feature doesn't always show contrast well when using high magnification.

TIP #2: For the first time, the Focus Magnifier function DOES work in Movie mode!

6.27 LONG EXPOSURE NOISE REDUCTION

Menu Position MENU →  5 → Long Exposure NR

What it Does Tells the camera to do a “Dark Frame Subtraction” on exposures lasting longer than 1 second

Recommended Setting On (unless you just can’t wait to shoot the next frame)

Constraints Won’t work with Continuous Advance or any Bracketing Mode

This setting applies to Long Exposures, defined as those lasting longer than one second (when your camera is on a tripod and SteadyShot is ideally turned Off). In such situations, digital image sensors tend to produce a lot of digital noise even though your ISO may be set to its lowest value. All digital cameras from all manufacturers address the problem in pretty much the same way: they employ, in-camera, a technique called “Dark Frame Subtraction.”

When Long Exposure NR is set to On (which is recommended), the camera will take TWO pictures every time a shutter speed of one second or longer is used. The first picture is of your subject – as you would expect. The second picture is taken with the shutter closed, blocking all light to the sensor, resulting in a black picture which contains only the natural noise from the sensor at the same temperature, ISO setting, and duration as the first picture. With this second “dark frame” picture, the camera has a clear idea of the kind of random noise that is permeating the first picture. And then it can remove this characteristic noise from the image you just took (to a certain degree). This technique is very worthwhile, BUT you are forced to wait twice as long until you can take your next picture. This means if you

had set the camera on a tripod at night and took an exposure of a meadow on a moonlit night, the camera would be unresponsive for twice as long as your set exposure as it captures the sensor's noise for subtraction.

People shooting fireworks hate this feature, since to them this feature makes their camera “lock up” and they can’t do anything until it’s finished – meanwhile, the best fireworks bursts are happening! (*That* will increase your stress!) If this describes you, just turn this feature off. Advanced users will take just one dark frame manually, and then do some post-processing on their computer later on to achieve the same noise-reduction effect.

TIP: Try Multi-frame Noise Reduction (Section 3.7.2) for even lower amounts of noise! (Up to 30-second exposures only.) This reduces noise much more effectively than Long Exposure Noise Reduction!



6.28 HIGH ISO NOISE REDUCTION

Menu Position MENU →  5 → High ISO NR

What it Does Allows you to specify the amount of in-camera noise reduction when shooting JPEG file's at ISO 1600 or higher

Recommended Setting Normal

Constraints Not compatible with RAW. See tip box for more – too many constraints to list here

Digital noise is a fact of life, and the higher the pixel density, the more you will get. That's just a laws of physics for this kind of sensor technology. Most cameras try to minimize noise algorithmically by smoothing over the noise artifacts, reducing noise at the expense of detail. That's the tradeoff. Unfortunately, this High ISO NR feature is not the best way to minimize noise.

With this setting the camera is offering to reduce the noise of JPEG files (only) at ISO settings of 1600 and above. You can see the effects of the High ISO Noise Reduction settings on an ISO 25600 test image in **Figure 6-59**. These settings can actually be quite effective when you're making 4x6 prints from JPEG files, as they do tend to make the picture look noticeably cleaner at that size. Anything larger than that, or if you're the kind of person who likes to pixel peep, then none of these settings will particularly please you.

Those who really want the best quality images at high ISO should shoot RAW (where no noise reduction is applied) and post-process using noise-reduction software such as Noise Ninja or NeatImage (those are stand-alone software applications) or use the native NR features in workflow software such as Adobe Camera Raw, Lightroom, or Aperture. **Figure 6-60** shows the same test image after processing in Lightroom using the following Noise Reduction settings:

Luminance: 62

Detail: 24

Contrast: 0

Color: 23

Detail: 10

I discuss my techniques for reducing noise in high-ISO RAW files in Chapter 15.



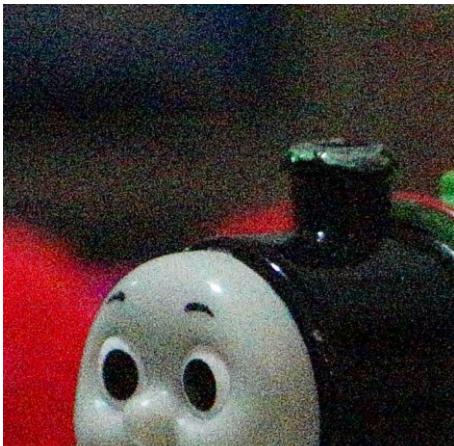
Original Image



Close-up – High ISO NR = Normal

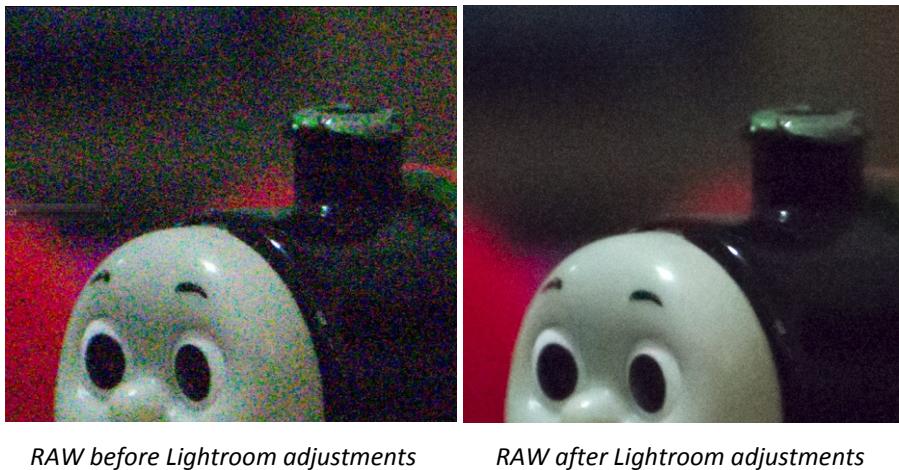


High ISO NR = Low



High ISO NR = Off

Figure 6-59: The effects of High ISO Noise Reduction on an ISO 25,600 image. Notice that the higher the noise reduction level, the more "splotchy" the image appears to be.



RAW before Lightroom adjustments

RAW after Lightroom adjustments

Figure 6-60: The same picture shot in RAW and post-processed in Lightroom. This is the path to the best quality high-ISO images.

TIP: High-ISO noise reduction is **NOT** performed, even when it is set to something other than Off, in all these cases: when the Mode dial is set to Sweep Panorama, when you are using a Continuous shooting drive mode (including Continuous bracketing), when you use Sports Action or Hand-held Twilight in Scene Selection modes, or when ISO is set to Multi Frame NR. (Got all that?)

6.29 LOCK-ON AF

Menu Position MENU →  5 → Lock-on AF

What it Does Tells the camera “See that object? Track it as it moves across the frame!” (or tells the camera to stop doing that)

Recommended Setting On (Start with Shutter) if shooting stills, On for Movie mode

Constraints On (Start with Shutter) only works in AF-C mode

This feature is great for being able to track slow-moving objects, and I find it especially useful when shooting movies. Just take care that your object is distinctly colored relative to its surroundings, because this feature actually tracks color rather than any particular shape or feature.

Here's how to use it when shooting movies:

1. Make sure it's on using **Menu →  5 → Lock-on AF → On**
2. Press the Center button; the top screen in **Figure 6-61** appears.
3. Place your subject in the very center of the square and press the Center button again. This registers your subject with the tracking function.
4. The camera enters Wide focus mode and you can see a double square superimposed on top of your tracked subject.
5. As the subject moves around, the camera analyzes the live view feed and tries to find the registered pattern. When it finds it, it focuses on that subject.
6. To cancel, press the Center button again. The camera reverts to whatever Autofocus Area was set beforehand.

If you're shooting stills, Sony has provided the “Start with Shutter” variant, which is seamless and doesn't re-assign the Center button (which I like to keep free for Spot AF). Here's how to use it:

1. Make sure AF-C mode is enabled
2. Turn on **Menu →  5 → Lock-on AF → On (Start with Shutter)**

3. Press the shutter release button halfway. The camera will find a subject and highlight it with the double square. It will then try to track this square around the scene for as long as you hold your finger down on the shutter release button.
4. Is the camera guessing wrong? If you've assigned the Center button to Standard as I have (and you've set focus area to Wide), press the center of the Multi-Controller and the camera instantly switches to the Center focus area and AF-S mode. (This is sort of like an "emergency override.")

Things to note:

- Like autofocus, Lock-on AF works best with high-contrast subjects. It works even better if the subject has a color distinct from its background.
- If the subject goes out of the frame, the camera can find it when it re-enters the frame.
- If the camera times out, tracking is lost.

Overall, I'd say it's best not to expect too much from this feature if you're shooting sports. It's at its best following people around when shooting videos.



Figure 6-61: You can tell your camera "Here, track this!" via the center button of the multi-selector and it will track the object across the screen.

6.30 SMILE/FACE DETECTION

Menu Position MENU →  5 → Smile/Face Detect.

What it Does Enables/disables the camera's ability to detect faces when autofocusing; also lets you enable/disable the Smile Shutter feature and register/prioritize up to eight faces

Recommended Setting Face Detection On

Constraints Not compatible with Manual Focus mode, ClearImage Zoom or Digital Zoom modes

One of the historical pitfalls of all autofocus cameras is that they couldn't always know where the subject was in the composition. With Face Detection mode enabled, the camera no longer needs to guess – it automatically knows that if it recognizes a face (or several faces), THAT is what it should focus on. If you're taking pictures of people (especially toddlers), there is no better tool for getting great pictures than Face Detection mode.

Face Detection is enabled by default, but you can change its settings using **Fn MENU →  5 → Smile/Face Detection → [Choose from Off, On (Regist. Faces), On, or Smile Shutter On]**.

When you use Face Detection and the camera is autofocusing, you may see squares of various sizes and colors superimposed on your subject. What does it all mean? Here's a quick translation table:

What You See	What It Means
A normal focusing point [small green bracket]	No face was detected, and so the camera selected a subject to focus on using other criteria.
Grey Square/White Square	A face was detected – the face will become the subject for focus when you press the shutter release button halfway.

Multiple White and Grey Squares	The camera has detected more than one face (outlined in more than one square). The camera has to decide which of those faces to focus on, and it indicates its decision using a white square.
Green Square	The White square turns green when you press the shutter release button halfway and focus is confirmed. That shows what the camera is focusing on.
Magenta Square	A face that has been pre-registered with the camera has been recognized (see next section). A magenta square will turn white to let you know the camera intends to make it the focus point, and green when you press the shutter release button halfway.

6.30.1 OFF

Autofocus works faster if it isn't trying to find faces, so you may want to turn Face Detection Off if you don't want to focus on a face. Also, Face Detection can be an energy hog.

6.30.2 ON (REGISTERED FACES)

Let's say you have two children and one is your favorite. (Okay, scratch that – let's say your child is at school and you're taking shots of him among his classmates, and you really want the camera to pick him out of the crowd.) You can register faces and assign each a priority setting so that autofocus prefers it above other registered faces.

In order to register a face you have to use the Custom menu: go to **MENU → ⚙ 5 → Face Registration → New Registration** and follow the directions. Once registered, the camera will show a recognized face inside a magenta rectangle before you press the shutter release button halfway.



Figure 6-62: The camera will give priority to faces that you've registered, and let you know it's recognized a registered face by showing a magenta square.

You can also choose Face Detection in the Custom menu to order the priority of faces you've registered and to delete one or more registered faces.

Does Face Registration work? If the entire face fills a good portion of the viewfinder, and the lighting is good, and the face is not partially obstructed (like with sunglasses, hats, etc.), this feature actually does quite well.

TIP 1: *I've found that the easiest way to register faces on this camera is to point the camera to photographs of the people you want to register. It works like a charm!*

TIP 2: *The face registration information is not erased from the camera when you use MENU → 6 → Setting Reset → Initialize. You have to use MENU → 5 → Face Registration → Delete All in order to have the camera forget all its faces it has registered.*

6.30.3 *ON*

This turns Face Registration On. The camera uses registered faces if you have recorded any, without using priority settings. If you haven't registered faces, the camera tries to find anything that looks like a face and focuses on that.

6.30.4 *SMILE SHUTTER*

Here's another variation on the same theme: the camera can detect that a face is in the picture, and can also tell if that face is smiling. You can tell the camera "Don't wait for me to press the shutter – take the picture as soon as you detect a smile!" With autofocus enabled, if this option is selected, the camera constantly analyzes the scene and it will not rest until it finds a smiling face and takes the picture. You can even adjust its sensitivity by using **MENU → 5 → Smile/Face Detection → Smile Shutter** and then using the left and right arrows to choose Normal Smile, Big Smile, or Slight Smile. This feature can really come in handy when you're taking self-portraits.

It's actually a fun feature to play with. When you enable Smile Shutter, you see a vertical scale on the left, indicating the strength of the smiles it

detects. And you don't have to press the shutter release button halfway. Just point the camera in the general direction of a face. When the camera sees a face, the vertical scale on the left springs to life, and the camera starts to focus on any faces it finds. When the "smile strength" is higher than the currently-set threshold, (that white triangle to the right of the vertical scale), the camera takes the picture. It will continue doing so until you disable the feature by turning the camera Off or by using **Fn → Smile/Face Detection → [something other than Smile Shutter]**. Try enabling this feature and shooting prints of some family photos you have hanging on the wall. It will give you a very good feel for what works and what doesn't with this feature.

Smile Detection is hard to do algorithmically (although not as hard as recognizing a registered face), and so in order for it to work properly you have to help the camera out a little. The face has to appear rather large in the picture (it won't work with a face that's a mile away, for example). The face can't be obscured – that is, no sunglasses, no hats, or anything else that would give the image recognition algorithm a hard time. Even if the camera detects that there is more than one face in the picture, it doesn't wait for both faces to smile – one face will trigger it. (That's why I said this feature



Figure 6-63: The smile shutter is an interesting feature but is easily fooled. (It triggered all of these pictures!)

was great for self-portraits but not necessarily for group pictures.)

Some additional details about this feature you ought to know about:

- Smile Shutter is a real energy hog – the camera is constantly in a high state of alert, analyzing the live view stream and staying on regardless of the Power Save setting.
- Activating Smile shutter automatically activates Wide area AF, and AF-S focus mode.
- Smile Shutter does not work if you're in Manual Focus mode.

TIP: I haven't tried this myself, but reader Tim Boyle suggests using Smile Detection at a party – just put your camera on a tripod, use a wide-angle lens, ensure that the battery is fully charged, and let the camera shoot whatever smiling faces it sees!

6.31 SOFT SKIN EFFECT

Menu Position MENU →  6 → Soft Skin Effect

What it Does Hides wrinkles and blemishes under certain circumstances

Recommended Setting It depends on the age of your subject ☺

Constraints Not compatible with RAW, Movie mode, or Panorama mode; usable with AF-S focus mode only

This feature is designed to give your subject smoother skin when in fact they have wrinkles or blemishes. It's hard to see its effects unless you happen to have a blemish-ridden subject, but it does a pretty good job of getting rid of zits without requiring Photoshop.

When enabling the function, you can use the Left and Right cursor keys to choose between Lo, Mid, and Hi intensity.

I had a hard time finding a subject for which this feature made a difference. According to Sony's press release, the effect "removes or reduces blemishes and smooths skin texture. It also maintains sharpness in higher contrast areas, like eyes and mouth." **Figure 6-64** shows an example (you may have to zoom in a little to see the differences, but they are there!)



Figure 6-64: The effects of the soft-skin feature can't really be seen unless you have access to a blemish-ridden teenager. It does do a good job of smoothing the skin for the rest of us, too.

6.32 AUTO OBJECT FRAMING

Menu Position MENU → 6 → Auto Obj. Framing

What it Does Gives the camera permission to analyze the picture you just shot and save an alternate version – often one where the image is cropped so that the subject (usually a face) is placed according to the rule of thirds.

Recommended Setting On if you want to have a laugh. (Then I strongly recommend you turn it Off and keep it there. ☺)

Constraints Not compatible with RAW, Continuous Shooting, MFNR, HDR, Movie and Panorama modes.

This function might be helpful to you if you're the kind of person who likes everything done for them. (Litmus test: If you have a butler, then this feature might be for you.)

What does it do? Quite simply, when you take a photo and the camera identifies a subject (either a face or an object being tracked by Lock-on AF mode), it saves two images to the memory card. The first is the shot that you took, the second is what the camera suggests as an “improvement” in

composition. (What it's really doing is identifying the subject and cropping the image according to (what looks suspiciously like) the rule of thirds (Section A.11). Along the way, it crops off the pixels it doesn't want, up-sizing the cropped image back up full size before it saves.

As a new twist, when **MENU → ⚙ 1 → Auto Review** is not set to Off, the camera will show you a white crop square on the playback image, showing you how the second JPEG file written to the memory card is being framed.

In experimenting with this, I was often surprised by the framing the camera chose, cropping in close on faces or changing the format between landscape and portrait.

You have probably guessed by now that I don't care much for this feature. I'm not much for throwing pixels away in the camera when I can crop it later using my computer. I stopped keeping it on all the time because when it kicks in the camera will say "Processing..." when it's active, preventing you from taking the next shot, which can be frustrating if you're not expecting it.



Figure 6-65: Auto Object Framing. If it recognizes a face, the camera crops the so the face appears according to the rule of thirds.

6.33 SCENE SELECTION

Menu Position MENU →  6 → Scene Selection

What it Does Allows you to specify one of the camera's Scene modes

Recommended Setting N/A

Constraints Available only when the Mode dial is set to SCN

I talked about the different scene modes in Chapter 3, in Section 3.8.

6.34 MOVIE

Menu Position MENU →  6 → Movie

What it Does Allows you to specify Shutter Priority, Aperture Priority, Manual Exposure, as well as Program mode for movies

Recommended Setting It depends

Constraints Only available when the Mode dial is set to  (Movie)

Do you hate the fact that pressing the red button in all other modes doesn't give you any control over f/stop or shutter speed while making movies? Then this is definitely for you.

All you have to do is move the Mode dial to Movie and the camera will allow you to have full manual control over (almost) everything. You can choose whether you want Program, Aperture Priority, Shutter Priority, or Manual Exposure video mode by moving the Mode dial to the Movie setting, choosing Movie from the Recording menu, and selecting one of four choices. These modes are the equivalent to their still-shooting counterpart modes; for example, you can specify f/stop (A), shutter speed (S), or both (M) as well as Program mode (P). You can also choose the Movie mode by accessing

Shoot Mode if it appears in your Fn menu. In addition, with Mode Dial Guide set to On, your are presented with these choices whenever you move the Mode dial to Movie.



Figure 6-66: The Movie exposure mode lets you take control of the aperture, shutter, or both.

When in Movie mode:

- If you're going to be focusing manually, the use of Peaking Level during movie making can be tremendously helpful! Set **MENU → ⚙ 2 → Peaking Level** and **Peaking Color**, as described in Section 7.7.
- When the Exposure Mode dial is set to Movie mode, the shutter release button is completely inert and you CANNOT take a still picture at all. Pressing the shutter release button halfway WILL lock focus, however.
- In Movie Shutter Priority mode you can select a shutter speed as slow as $\frac{1}{4}$ of a second, and as fast as your camera can go (1/4000 second). $\frac{1}{4}$ second makes for pretty blurry movies when things move; but if you're shooting in extremely low light it may be the only option you have.
- In Movie Aperture Priority mode, you can set any f/stop you want. In this mode, the slowest shutter speed the camera will select is 1/60 second, and there's no upper bound set by Movie mode.
- In any of the Movie modes, the most you can adjust the exposure compensation is +/- 2 stops.
- You have lots of initial control over many variables: when you start recording, the camera will use the currently set white balance, creative styles, exposure lock, exposure compensation, and metering mode. However, while you're shooting, you can't change any of them.

6.35 STEADYSHOT

Menu Position MENU →  6 → SteadyShot

What it Does Turns in-lens image stabilization On or Off

Recommended Setting On, unless your camera's on a tripod

Constraints Not all lenses are supported (even some lenses that have OSS built-in!)

SteadyShot is an ingenious invention that is designed to give you a slight edge when it comes to eliminating the blur sometimes caused by shaky hands. Basically, when a long telephoto lens is used (like about 200mm or greater), it's more than just the image that gets magnified – the shakiness of the hands is amplified as well. Sony's camera engineers have incorporated sensors into the camera that can not only detect when the camera is shaking, but can also measure how much and in which direction. Optical elements within the lens actually “shake” in equal but opposite directions to the detected movement, effectively canceling out the shake. This is a phenomenal engineering achievement originally developed by Canon when the



Figure 6-67: Low light, 230mm, 1/160 second, f/5.6, handheld with SteadyShot On. (Trust me, it's sharp!) I never could have taken such a sharp shot in such low light if it were not for SteadyShot.

EOS platform was introduced.

It should be noted that the SteadyShot feature, as brilliant as it is, is not a panacea. It will not nullify all camera shake in all situations, nor does it mean you can throw away your tripod. Before SteadyShot was invented, there was a rule of thumb in photography regarding how to get sharp-looking pictures: If you're using a shutter speed above 1/focal-length of the lens, your picture will probably not be affected by hand shake. For example, if you're shooting with a 200mm telephoto lens, your shutter speed should be 1/200 second or faster to ensure a sharp image. (If there's not enough light for that, you should raise the ISO or use a tripod to ensure sharpness.) On the other hand, if you're shooting with a 28mm wide angle lens, you can get sharp-looking handheld shots if your shutter speed is around 1/30 second.

With SteadyShot engaged, you have the ability to shoot handheld at shutter speeds up to 3 stops slower (Sony's marketing material says up to 4 stops slower) than according to the established rule of thumb. In the example above, where you should shoot only at 1/200 second or faster, with SteadyShot you can safely shoot at 1/30 second or faster. When the available light is low, this can increase your chances of getting a sharp shot in such borderline situations, like the real-world example in **Figure 6-67**.

This feature is grayed out if the attached lens is not an E-mount lens with optical stabilization built-in.

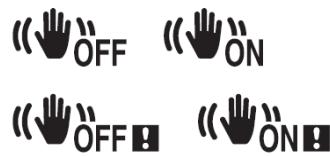


Figure 6-68: Four SteadyShot warning signs? Yes, although I can't get the bottom two to appear under any circumstances. (The warning sign is visible only in certain Display modes.)

TIP: Setting your shutter speed to "B" automatically disables SteadyShot. Conversely, switching to Anti-motion blur or Handheld Twilight mode automatically enables SteadyShot.

TIP: The owner's manual says that you should turn SteadyShot off when the camera is mounted on a tripod. This is because control systems are inherently imperfect, and if there is no movement to counteract, then the actuators will likely react to some phantom noise coming from the pitch and yaw sensors, and otherwise move the optical elements at times when it shouldn't. This rule only applies to rock-solid, really good tripods, though. If you happen to own a cheapie tripod and use it with the center column all the way up and it's a windy day, your image might just benefit a little by having it on. To be safe, try it both ways.



Figure 6-69: A portrait Gary took was published in the Wall Street Journal. So, he took a picture of it (to send it to his Mom – she'd be so proud!) handheld because he was lazy. The top right image is a closeup of the red rectangle with SteadyShot Off, the bottom right is with SteadyShot On. You don't have to have a long lens in order to benefit from this very useful feature.

6.36 COLOR SPACE

Menu Position MENU →  6 → Color Space

What it Does Allows you to choose between the sRGB and AdobeRGB color spaces

Recommended Setting sRGB, unless you're an expert

Constraints None

Digital cameras can only store numbers, not colors. And so it is very important that everyone agrees on a way to represent colors so that what looks like red in the real world also looks like the same shade of red on your monitor, and on your printer as well.

And so the concept of color space (or “gamut”) was invented to help everyone agree on a way to represent such colors using numbers. Both color space options in your camera (sRGB and AdobeRGB) will represent each pixel color using 3 8-bit numbers – one each for Red, Green, and Blue – and will use a lookup table to translate that number triplet into a particular, previously-defined wavelength of color. You can see a good example of a color space for a computer screen in **Figure 6-70**.

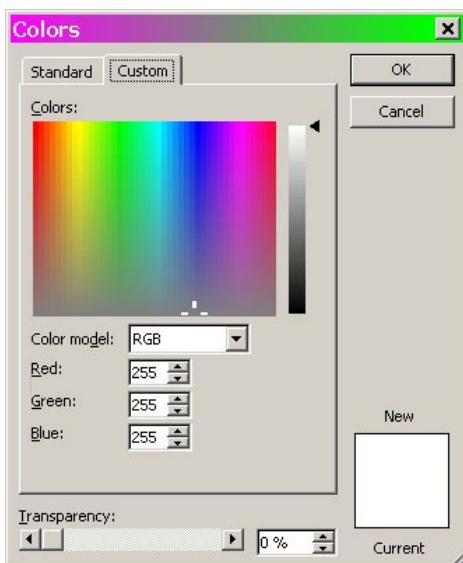


Figure 6-70: An example of a color space: All the possible colors that can be represented by a program or printer.

There are many different color space definitions in use, but by far the two most popular are sRGB and AdobeRGB. The worldwide de facto standard is sRGB, being used by all point-and-shoots, computer monitors, and photo labs on the planet. A different standard, called AdobeRGB, provides a different assortment of colors designed specifically to emulate what a CMYK printer can produce (like your inkjet printer, or a conventional magazine or book printing press).

AdobeRGB is essential if you're a real stickler for color accuracy AND you know the final product will be printed by a commercial graphics house (or a high-end inkjet that knows how to handle AdobeRGB). Shooting in AdobeRGB and setting up your workflow to handle it is the only way to accurately preview how the colors will appear on the final printout, and that's why most professionals use it.

There are a few downsides, though. Not all monitors (and not all inkjet printers) know how to work with AdobeRGB color spaces. If you choose to shoot in AdobeRGB format, you will still have to convert back to sRGB in your photo editor if you want to share the file electronically with non-professionals (email or web), or send it to most 1-hour photo printers. (And if you forget to convert it back, the image will tend to look faded and low-contrast.)

Not sure what to do? You can always shoot in RAW and then choose your color space on your computer when you open/convert the RAW file. One advantage to doing that is that RAW files represent colors using 12 bits per color instead of 8, so if you open the RAW file in Photoshop you can pull it in using 16-bit AdobeRGB, and have a larger palette of colors to play with.

[Note: I use an even bigger color space on my computer, ProPhoto RGB, but I keep the Color Space setting on my camera set to sRGB. –Ross]

One thing to keep in mind is that shooting in AdobeRGB doesn't mean your final output will necessarily look "better" or that you'll see more colors. It means only that the preview you see on your monitor will more accurately reflect what the printed output will look like (if everything has been calibrated).

(Shameless plug: Color space is a very big topic – probably much too big for this book. If you found this summary confusing, I explain the complex ideas of color space, ICC profiles, and color matching output at length in

my e-booklet “Advanced Topics 2,” available at www.FriedmanArchives.com/ebooks.)

TIP: If you choose to shoot in AdobeRGB mode, you’ll notice that the file names begin with “_DSC,” whereas with sRGB the file names begin with “DSCO.” This is a visual cue to the folks in charge of post-processing images (in the unlikely event that that person is not you) that they still need to be tweaked into a more universally accepted color space so that they can be easily shared with others.

6.37 AUTO SLOW SHUTTER (MOVIES)

Menu Position MENU →  7 →  Auto Slow Shutter

What it Does Enables/disables a slow video shutter speed in low light, in limited circumstances

Recommended Setting On

Constraints None

This function appears to do two different things:

1. When in Movie mode with ISO AUTO, AND you’re in Aperture Priority mode, AND the light level is low, this feature gives the camera permission to use a shutter speed slower than 1/60 second (it will go down to 1/30 second instead).
2. The camera’s manual says it produces movies of less noise when ISO is set to ISO AUTO and the light is low. (Translation: Using 1-stop-slower shutter speed means the camera didn’t have to bump up the ISO 1 stop, so noise is lower.)

I can’t vouch for the usefulness of this feature; it seems to be designed for those shooting in low light who want the camera to do the best it can under this narrow set of circumstances.

6.38 AUDIO RECORDING

Menu Position MENU →  7 → Audio Recording

What it Does Enables/disables a sound track when you're shooting video

Recommended Setting On

Constraints None

The function is straightforward enough. And I have no special insights into situations where it might be desirable to turn the audio off. All major software packages provide the ability to turn off audio during the editing process, so it's better to have it on.

6.39 WIND NOISE REDUCTION

Menu Position MENU →  7 → Wind Noise Reduct.

What it Does Attempts to eliminate the problem of wind noise from the built-in or external microphone by filtering out the low frequencies in which wind noise tends to occur

Recommended Setting Off, unless I'm outdoors on a windy day

Constraints None

Professional audio guys always use expensive microphones with wind screens attached (usually a wire mesh or a cloth cover over the actual sound sensor) which not only filters out wind noise, but also covers for ill-trained actors who always “pop” their P's when speaking.

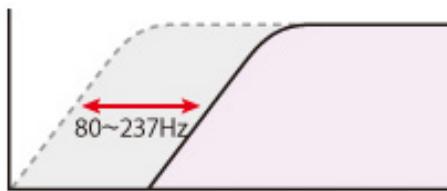


Figure 6-71: This is the audio range in which wind noise typically appears. Cut that out and you'll cut out the wind noise, too.

And just as there are two ways to get rid of red-eye (the right way (by increasing the distance between the lens and flash), and the other way (by fooling the eye into thinking it's bright outside)), there are also two ways to cut out wind noise: the expensive way as outlined above, and the software way by filtering out some of the low frequencies in which the wind noise tends to occur (**Figure 6-71**). (Of course, this means you're reducing the low frequencies in the rest of your audio track too. You might not notice it unless you're recording music.)



When Wind Noise Reduction is enabled, you'll see this icon on one or more of the display screens (depending on which screen you have enabled). (In case you were wondering, it's supposed to be a wind sock, like the kind used at airports.)

6.40 SHOOTING TIP LIST

Menu Position MENU → 7 → Shooting Tip List

What it Does Provides an elementary guide to photography techniques

Recommended Setting Off

Constraints None

Choosing this menu item displays an elementary guide to photography techniques. It's a help guide only, and has no effect on camera operation. The general topics include:

- Basic techniques for shooting
- Portraits
- Landscapes
- Night Scenes
- Shooting close-up with Macro
- Shooting a subject in motion

Selecting one of these topics produces a set of subtopics.

If you've been photographing for a while and don't need tutorials, you can ignore this menu item. Maybe it's good for running down your battery on a plane trip...

6.41 MEMORY RECALL

Menu Position MENU →  7 → Memory

What it Does Displays the same screen that appears when you set the Control Dial to MR

Recommended Setting N/A

Constraints None

This menu item is redundant – it doesn't do anything beyond what happens when you set the Control Dial to MR, and the dial must be set to that position to enable this menu item. You can choose Memory 1, 2, or 3. Before recalling a memory setting, you must create and store it using Memory (next menu item).

However if you are already using a memory bank, using this menu item allows you to switch to another memory bank without deselecting and then reselecting MR using the Mode dial.

TIP: If you have Shoot Mode in your Fn menu, access that for another way to change between memory banks.

6.42 MEMORY

Menu Position MENU →  7 → Memory

What it Does Allows you to store up to three sets of camera settings for instant recall in the field

Recommended Setting N/A – it really comes down to what you shoot and what features you change frequently

Constraints Not all camera settings are recorded

A feature that can save a lot of time is the ability to memorize a group of settings so that they can be recalled all at once. The A6000 can memorize everything in the  menu, everything normally assigned using the Fn menu, plus the shooting mode, f/stop, and shutter speed. (There is a notable exception – read on.)

[Note: the rest of this section is by Gary Ross has configured his Memory settings differently.]

For an example of why this can be a good thing, let me review the camera settings I normally need to use when taking time exposures like the kind in **Figure 6-72**:



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Figure 6-72 Total Recall. By committing these settings to a memory location, setting up shots like this can take as little as two seconds.

SteadyShot Off	Aperture priority mode	Set f/stop to f/8
Overexpose 2 stops (this works best in low light)	ISO set to 100	White Balance set to “Fluorescent: Day White”
Self-timer (2s)	RAW & JPG	Manual Focus

With the memory feature, all I have to do was configure these camera settings *once* and then tell the camera to memorize them for instant recall later. This feature saves even more time after the photos have been taken, since I don't have to undo all of these parameters one at a time to return the camera to "normal" (and risk forgetting one, potentially affecting a future shot).

So let's say I want to have the camera memorize the above settings. I just set the desired modes and switches and then use **MENU → [Camera icon] 7 → Memory → [Enter]**, which brings up the Select Register screen shown in **Figure 6-73**. The display shows all of the parameters that are being stored (notice the scroll bar on the right – there are more parameters listed than can fit on one screen! Scroll down to see them all), and the very top has numbers 1, 2, and 3, asking you, "In which location would you like me to save your settings?" You can select a number by scrolling right or left with the Multi-Selector and then press the Center button to complete the save.

To recall the settings at a future time, just turn the Mode dial on top of the camera to MR, then choose memory bank 1, 2, or 3. You're ready to go!

I configured Memory Register 2 for all the settings I use in the studio:

- Manual exposure mode: 1/160 second at f/8
- ISO 100
- Wireless Flash mode
- Flash white balance
- Spot AF
- Manual Focus
- Quality: RAW & JPG

TIP #1: Unfortunately, the Memory banks don't record settings other than those in the Camera menu. For example, the Live View Display Setting is not recorded (much needed when shooting with studio strobes, Section 7.9).



Figure 6-73 The Select Register screen. Here you can choose which of 3 memory registers to store the settings in for later instant recall.



CHAPTER 7

THE CUSTOM (GEAR ICON) MENU

7.1 ZEBRA

Menu Position MENU →  1 → Zebra

What it Does Enables and controls the “Zebra Stripe” pattern used in checking exposure for both still images and video

Recommended Setting You can set Zebra to indicate either highlights that may become overexposed or Caucasian skin that is well-exposed

Constraints The Zebra pattern does not appear on external HDMI output

I gave a quick overview about Zebra stripes in Chapter 1. Basically, it's a feature imported from the professional videography world that allows camera operators to quickly adjust the exposure so their talking head subject would be well exposed. Now this feature can be used to adjust exposure for stills as well. If you're shooting with manual exposure and legacy glass, you may very well like this feature better

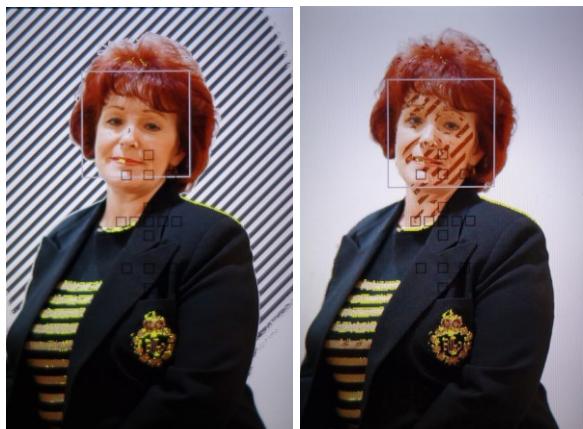


Figure 7-1: Zebra stripe example. It can either show you what's going to blow out (in video – stills have a greater dynamic range) or it can be set to show when a Caucasian face is properly exposed (right).

than using a live histogram (depending on if your subjects are Caucasian faces or not).

Let's start with this: The Zebra stripes will only show themselves when a part of your scene is equal in brightness to the threshold you've set. If it's darker or brighter, it won't show. Have a look at the right picture in **Figure 7-1**. Here the Zebra setting was set to 75, and notice that although the background is brighter than the face, only the face is highlighted.

The numbers represent IRE (Institute of Radio Engineers) values of 0 (blackest) to 100 (whitest). Note that this does NOT correlate to the blackest and whitest in terms of still images! Stills can capture a slightly wider range. That's why when you see zebra stripes when the setting is set to 100 in stills you might still be able to recover some highlight detail if you work hard.

In traditional use, the ISO and shutter speed are fixed, and the videographer adjusts the f/stop until the zebra stripes tell him the exposure is right. If he is worried about blown-out highlights, he adjusts the f/stop until the zebra stripes just go away.

I have found two settings to be the most useful when shooting stills: 75% (for showing when a Caucasian face is well exposed) and 100+ (for showing when a part of your image will be blown out, as evidenced by the blinking portions when played back in histogram view). The correlation is very close but not exact.

TIP: *Shooting with green screens? Evaluating your illumination with Zebra stripes will let you know instantly if your screen is not evenly lit.*

7.2 MF ASSIST

Menu Position Menu →  1 → MF Assist

What it Does Automatically magnifies the live view image for critical focusing when you turn the lens focus ring in Manual or DMF focus mode

Recommended Setting On

Constraints Works only with native E-mount lenses (use Focus Magnifier for legacy glass); doesn't work in Movie mode

This is another focusing aid (Peaking Level/Peaking Color being the first). Actually, this one is better for critical work such as product or macro shots. (Fortunately, you can use Peaking in conjunction with this feature; more about that in a minute.)

When this function is set to On (the factory default), AND your focus mode is set to Manual or DMF (Section 6.11), AND you're using a native E-mount lens, the image will be magnified automatically when you turn the focusing ring. (With DMF, you must press and hold the shutter halfway and focus lock first.) How long does it stay magnified? You can specify that in the next menu item, MF Assist Time (see the next section).

To use MF Assist:

1. Set your focus mode to Manual Focus.
2. While composing your image, turn the focusing ring just a little bit.
3. The camera instantly magnifies the Live View image in the center of the viewfinder. A small orange rectangle appears in the lower-left of the image, showing you where you're currently looking in the context of the entire frame.
4. You can use the arrow keys or Control Dial and Control Wheel to move the rectangle around to the subject of interest. You can return to the center point by pressing the C2 button (Trashcan). (Hand-held? Just move the camera.)

5. Focus critically.
6. Want even more magnification? Hit the center button, and the magnification toggles between 5.9x and 11.7x magnification.
7. You can exit MF Assist mode by pressing the shutter release button halfway, or just wait for the timeout specified in MF Assist time. This will return you to viewing the whole image without magnification.

Don't have an E-mount lens attached? With an A-mount lens (or any lens on an adapter), you can still magnify the image by assigning Focus Magnifier to a button and pressing it.



Figure 7-2: The MF Assist/Focus Magnifier does what the name suggests – magnifies your Live View images so you can focus critically. If you look closely, you'll see the yellow fringe from the Peaking Level at work.

TIP: Don't forget that Peaking Level works in MF Assist mode too, although it's very weak. You might need to change its strength to High to see any effect.

7.3 FOCUS MAGNIFICATION TIME

Menu Position Menu →  1 → Focus Magnif. Time

What it Does Lets you specify how long the image remains magnified when you invoke MF Assist or Focus Magnifier

Recommended Setting Personal preference

Constraints None

There's not much to say about this. This is the adjunct function to MF Assist (previous section), and Focus Magnifier, which magnify the image to enable easy critical focusing. You can specify 2s, 5s, or No Limit. The time limits should be self-explanatory, but No Limit isn't quite as simple. With MF Assist, you have to press the shutter release button halfway in order to cancel the magnification. With MF Assist in DMF focus mode, No Limit only applies as long as the shutter button is held half way down – as soon as you release it, magnification is canceled. (As mentioned in Section 6.26, Focus Magnifier doesn't work in DMF focus mode, unlike MF Assist, which does.)

7.4 GRID LINE

Menu Position MENU →  1 → Grid Line

What it Does Superimposes (or removes) a compositional aid onto both the LCD and EVF displays

Recommended Setting It's an intensely personal preference. I have mine set to Rule of thirds Grid

Constraints None

Once upon a time, you had to change focusing screens in order to see special compositional guides in your viewfinder. Now, thanks to the

miracle that is Live View, all you have to do is push a button and you can choose from one of 3 different grid line patterns! (Or turn it off, of course.) The three grid patterns available can be seen in **Figure 7-3**.

In this book's introduction I specifically stated that this book is not aimed at beginners, and that I would intentionally skip some of the staples of my beginner's books that talked about the basics, including light and composition, f/stops and shutter speeds. Well, these compositional grids kind of fall into that "beginning" category – I'll simply say that if you know what the rule of thirds is and you'd like to see a rule of thirds grid magically appear in your display as a compositional aid, just set **MENU →  1 → Grid Line → Rule of 3rds**

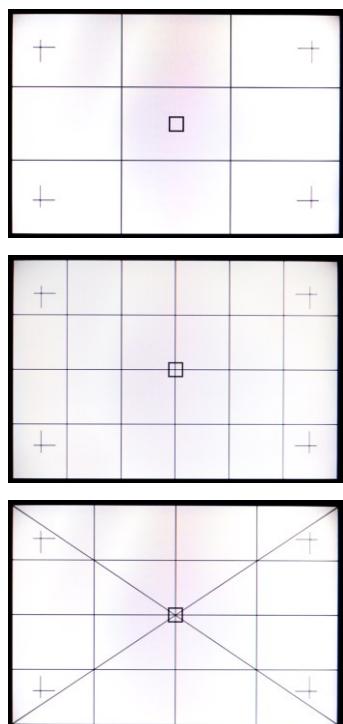


Figure 7-3: You can have three different kinds of compositional aids superimposed on your display).

Grid.

There are two other choices as well: A 6x10 grid that is roughly double the rule of 3rds grid, and the 6x10 grid with two diagonals. The 6x10 grid is designed for people doing work with a copy stand to make sure the camera is absolutely parallel to the work being copied and that there are no converging or diverging lines. The added diagonal line is for those who want to add some energy to their shot and place the subject lines according to it (although I personally can't see needing a compositional aid for that!)

I grew up using ground glass viewfinder screens, so I don't really need any compositional guides, but I use the Rule of Thirds as my standard grid.

TIP: If you're wondering where that ubiquitous rule of thirds was derived from (hint: it's related to the Golden Ratio), here's a website which explains it all very well: <http://tinyurl.com/899jssb>.

7.5 AUTO REVIEW

Menu Position MENU →  1 → Auto Review

What it Does After you take a picture, this setting tells the camera how long to show the image you just took

Recommended Setting Personal preference; I prefer Off

Constraints None

The greatest feature of digital cameras is the ability to instantly examine the image you just took. And one of the greatest features of a camera with an EVF is the ability to instantly examine the image you just took *without having to remove your eye from the viewfinder each time* (known as “chimping”).

The A6000 will automatically play back the last image taken if you want it to, for 2, 5, or 10 seconds (or not at all). This can be a really useful feature – for example, if you’re taking pictures of people, you can know instantly if someone had their eyes closed or if an expression was “off.”

Despite this immediate benefit, if you’re shooting young people I actually recommend keeping Auto Review Off since if you’re looking at an image you may also miss a priceless expression. Also, as a longtime user of optical viewfinders, it just freaks me out to see a still image in the EVF – unless I specifically ask for it by pressing the playback button!

Shooting a still life? Time exposures? Anything other than people? Then this feature is very useful. Set it to 10 seconds and it will always show you the last picture you took. You can cancel the Auto Review at any time just by pressing the shutter release button, at which time the camera goes back to Live View mode instantly, ready for you to take the next picture.

TIP: It takes about 1/3 second for the camera to apply all of the JPEG corrections to your image, including contrast, DRO, and distortion correction. So if you look at your auto review image very carefully, you will be able to see the “before corrections” image, and then one-third of a second later the final image with corrections applied. It’s a nice way to see just how much post-processing work the camera is saving you.

7.6 DISPLAY BUTTON

Menu Position MENU →  1 → DISP Button

What it Does Lets you specify which of 4 (or 5) information screens the DISP button will cycle through. You can enable different views for the rear LCD (Monitor) and the EVF (Finder).

Recommended Setting Personal preference.

Constraints None.

You can have a lot or a little data co-existing with your viewfinder image. You can also have the EVF show one set of information and the rear LCD show another.

Perhaps the best way to explain how these work is to walk you through it. Have a look at **Figure 7-4**, which shows you the menu screens you'll be seeing as you configure the displays. Now invoke **MENU →  1 → DISP Button → Monitor** and the screen in the lower-left of **Figure 7-4** appears.

This screen lets you specify which of five prefabricated information screens the DISP button will cycle through. Try using the arrow keys to “browse” the six different options available, and notice that with each option the camera shows you a small thumbnail preview of what the screen will look like. You can use the center button to check or uncheck each option. Then click the ENTER button to save your settings.

Now go back to shooting mode and look at the rear LCD screen. (That's the one you just configured.) Press the DISP button repeatedly and watch the information display change. The camera is showing you, in order, each of the screens you selected.



"Monitor" Configures the Rear LCD

"Finder" Configures the EVF

Figure 7-4: The DISP Button menu item (upper left) and the screens that you use for configuration. After configuration, pressing the DISP button cycles through the checked screens.

Seriously, that's it. You can do the same thing for the EVF by using **MENU → 1 → DISP Button → Finder**; the only difference between the two screens is that the For Viewfinder option isn't available in the screen for the EVF.

The Display All Info and No Disp. Info screens are pretty obvious. I'll explain some of the less-obvious screens in a little more detail below.

7.6.1 GRAPHIC DISPLAY

This one's pretty basic. A strip of useful information on the top and the bottom, plus a complex graphic that you can't get rid of in the bottom of your composition (**Figure 7-5**).

That graphic is meant for beginners who may not understand the basics of shutter speed and f/stop, and provides at-a-glance knowledge of what characteristics (i.e., blurry vs. sharp, all in focus or not) your photo will exhibit.

The triangle at the top represents the full range of the camera's shutter speeds – 30 seconds on the left (showing a motionless person), and 1/8000th of a second on the right (showing a running person). The vertical line along that triangle shows where along this continuum your current shutter speed resides, letting you see visually whether this is an action-stopping speed (right end) or one where a tripod is definitely needed (left end).

Similarly, the bottom triangle shows you the f/stop range of the currently attached lens, with the vertical line showing you where the current setting resides along the scale of “everything’s in focus” (right; showing the person and the background in sharp focus) to “just the subject is in focus” (left; with the icon of the sharp person and fuzzy mountain background). Notice that the attached lens in this example can’t open up more than f/3.5, and so everything to the left of that is grayed out, confounding your ability to get just an eyelash in focus.

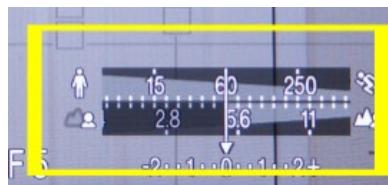


Figure 7-5: The two scales in the Display screen show you graphically where you are along the continuum of “fast vs. slow” and “everything in focus vs. little in focus”

7.6.2 HISTOGRAM

I find it very, very handy to have a live histogram in my viewfinder. It can show you right away light areas are likely to overexpose or if there's no detail in your shadows. **Figure 7-6** shows you what it looks like.

If you don't know what a histogram is, that's OK – I've included an explanation of it (with lots of examples), in Section A.7.



Figure 7-6: You can see before you shoot whether there will be detail in your highlights or shadows with the live Histogram.

TIP: The histogram display is NOT available in Movie mode (not even in manual exposure Movie mode, where it would have been very useful). However, the Zebra function is, and that can show you WHERE in the picture things may be overexposed – much handier.

7.6.3 FOR VIEWFINDER (REAR LCD ONLY)



Figure 7-7: Almost everything you'd ever want to know about your camera's settings can be found on this screen! (Rear LCD only).

Earlier I pointed out that the only difference between the two bottom screens in **Figure 7-4** was that for Display (Monitor) there was an option called “For Viewfinder.” This is an information screen that is available only on the rear LCD screen (shown in **Figure 7-7**).

This screen is kind of a throwback to the old days (before Live View) when you'd compose your image using the

Optical Viewfinder and the large LCD screen on the back would show your camera's configuration status when it wasn't playing back images. Well, your camera can work the same way. It's good to have choices.

7.7 PEAKING LEVEL AND PEAKING COLOR

Menu Position MENU → 2 → Peaking Level

MENU → 2 → Peaking Color

What it Does Provides a great visual Manual Focusing aid – things that are sharp will be highlighted in the color of your choice

Recommended Settings Peaking Level: Mid/Peaking Color: Yellow

Constraints Doesn't show on external HDMI output

Cameras have been getting more difficult to focus manually ever since manufacturers stopped using ground glass focusing screens in the late 1970s. Now with this new “Peaking Level,” it’s actually *easier* to attain critical focus manually than it was in the old days.



Figure 7-8: The wonderfully useful Peaking Level function puts a splotch of color over things that are sharp when you're focusing manually. Here you can see the slight differences between the function's three settings: Low (left), Mid (middle), and High (right).

What does it do? It highlights (using a color splotch) all the areas of the picture that are in focus RIGHT NOW. If you see a splotch on your subject in your chosen color, you know that part of your composition is sharp. How does the camera know when something is in focus? The same way contrast-detect AF algorithms know – whenever there's great contrast among adjacent pixels. This means that if the contrast is mild the peaking function may not show you any colors – even if it's in proper focus (this is especially true when Focus Magnifier or MF Assist is active. But don't let that scare you off – try this feature, it's quite useful.)

Figure 7-8 shows an example of this feature in use. In this instance the peaking color is set to RED and you can see the minor differences between when the function is set to Low, Mid, or High.

TIP #1: Peaking level = High is almost essential when you zoom in using Focus Magnifier (Section 6.26). For some reason the Peaking Level highlights barely show in this mode unless the contrast is exceptionally high (even in-focus items won't show it).

TIP #2: For reasons I'll never understand, the Peaking Level function doesn't work if your camera is attached to an external screen via the HDMI cable.

TIP #3: Some think that Peaking Level is easiest to use when your image is in black and white. If you set Creative Styles to B/W and shoot RAW & JPG, you can focus/compose in B&W and have your color image too!

(Scholarly note: What, haven't you ever seen a shoe phone before? ☺)



There are two menu settings required to invoke this feature: The first is **MENU → ⚙ 2 → Peaking Level → [Choose from High, Mid, or Low]**. (Off is the factory default.) Basically this setting dictates how thick the splotch of color is. I personally prefer Mid level, but if you’re using legacy glass and use the Focus Magnifier a lot, then try setting this to High.

The second menu setting is **MENU → ⚙ 2 → Peaking Color → [Choose from Red, Yellow, or White]**. I personally keep this set to yellow most of the time since that color is the easiest to see in most shooting situations. I’ll switch it to something else if there’s a conflict.

The Peaking feature is extremely handy when shooting movies in Manual Focusing mode. It is also very useful when combined with the DMF function as described earlier in Chapter 3, Section 3.3.3.

7.8 EXPOSURE SETTING GUIDE

Menu Position MENU →  2 → Exposure Set. Guide

What it Does Provides a nice “moving ribbon” visual when you’re changing exposure settings (but it blocks view of the Histogram!)

Recommended Setting Off

Constraints None



Figure 7-9: The Exposure Setting guide provides a nice UI but hides the histogram and so it’s not useful to me.

This was a nice idea. Whenever you change either the f/stop or shutter speed in most Display modes, you’ll get this nice little animation showing you how the f/stop and shutter speed are both changing but in opposite directions, as shown in **Figure 7-9**. Cute, but there are MANY occasions when I’m changing these settings and I look at the live histogram in the lower-right-hand corner at the same time.

I keep Exposure Setting Guide set to Off because the ribbon blocks the live histogram when you’re adjusting settings.

7.9 LIVE VIEW DISPLAY

Menu Position MENU →  2 → Live View Display

What it Does Enables/Disables the ability to preview how your image will look before you take the picture

Recommended Setting Setting Effect ON (unless I'm in the studio using radio triggers)

Constraints Doesn't work in Movie mode

This feature addresses a long-time complaint from studio photographers when the Sony A55 came out many years ago. When you're shooting in the studio using traditional professional strobes (as opposed to the Wireless flashes discussed in Chapter 13), it's common to put the camera into manual mode and use a fast shutter speed (like 1/160th of a second) and a small f/stop (like f/11). Then you would trigger your flashes using a radio trigger mounted on the hot shoe (usually with some sort of adapter).

Here's the problem: With this setup, the A55 had no idea that the camera was going to trigger flashes. (After all, the pop-up flash wasn't up, and it didn't sense an accessory flash sitting on the hot shoe.) And so the camera assumed the photographer was going to shoot with ambient light and therefore used Live View to show the photographer exactly how the picture would come out beforehand. Normally having such a preview is a good thing when you're shooting out in the field; however in the studio, using those settings, an ambient exposure would come out BLACK and so that's what the camera would show the photographer in the

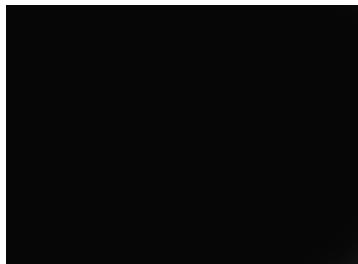


Figure 7-10: This is what studio photographers saw in their viewfinder when shooting with traditional strobes using the A55. (Hard to frame your shot this way!) The Live View Display feature was designed to address this problem.

LCD and the EVF. Everything was black. The photographer couldn't compose his shot at all, and there was no easy way to override it.

When I'm not in the studio, I like Setting Effect ON because I like to see what my image will look like before I shoot.

TIP #1: *This setting is not selectable in Movie mode.*

TIP #2: *If you use Sony's Wireless flash as described in Chapter 13, then this problem won't affect you.*

TIP #3: *Note that with lens adapters Setting Effect ON does not show the effect of stopped-down aperture.*

7.10 DISPLAY CONTINUOUS AF AREA

Menu Position MENU →  2 → Disp. cont. AF area

What it Does Sets whether to continuously update display of which areas are in focus

Recommended Setting On

Constraints Works only when Focus Area is set to either Wide or Zone AND Focus Mode is set to Continuous AF (AF-C)

This setting is useful when you want to be sure that you are tracking a moving subject accurately. When Focus Area is set to Center or Flexible Spot, the areas that are in focus turn green regardless of this setting.

7.11 PRE-AUTOFOCUS

Menu Position MENU →  3 → Pre-AF

What it Does Makes the camera start focusing even before you press the shutter release button halfway

Recommended Setting Off unless you're shooting sports (and have extra batteries)

Constraints Not compatible with the LA-EA4 adapter

This is one of those features that is designed to shave a fraction of a second off focusing time. When this feature is set to On, the camera is ALWAYS trying to autofocus (even if your eye is not near the EVF) before you press the shutter release button halfway. While it can be useful when shooting sports, it can also be a greater battery drain, so use this feature with caution.

7.12 ZOOM SETTING

Menu Position MENU →  3 → Zoom Setting

What It Does Sets various features for the  5 → Zoom feature

Recommended Setting Digital Zoom (I never use this feature for stills, but it can be very handy for movies)

Constraints Not compatible with RAW

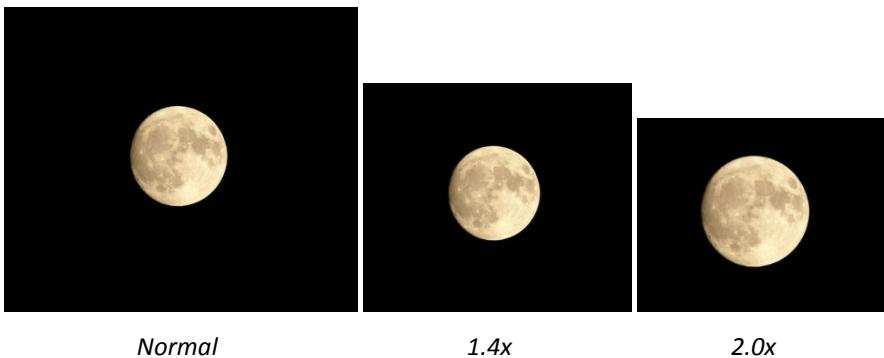


Figure 7-11: The “Digital Zoom” function just throws away pixels in an attempt to simulate “zooming in” more than your lens provides. The image it captures is smaller, because it only captures what’s in the middle of the sensor. Then it upsizes the image, lowering the quality of the image a little.

Before I even start this section, let me tell you that Sony has improved this feature since they introduced it in the RX-100. Their Digital Zoom actually does a slightly better job than shooting the same picture in RAW, cropping, and then upsizing in Photoshop.

This feature lets you decide how aggressive a digital zoom you want the camera to provide when invoking the **MENU → 5 → Zoom** feature. As mentioned on the Zoom feature description in Section 6.25, the amount of digital zoom the camera will provide depends upon two of these camera variables.

1. **Optical zoom only** (or “Natural zoom” – my terminology): if your **MENU → 1 → Image Size** is set to Medium or Small, the camera zooms in by throwing pixels away from the perimeter of the frame. There’s no deterioration of quality since you’ve already asked the camera to produce a smaller image. You can zoom up to 2x with this setting.
2. **ClearImage Zoom:** the camera zooms in by throwing pixels away from the perimeter of the frame, but then it upsamples it to a full-size (Image Quality = Large) image using something a little better than

Photoshop's bicubic resampling upsizing algorithm. You can zoom in up to 4x with this setting.

3. **Digital Zoom:** the camera zooms in by throwing pixels away from the perimeter of the frame, giving you a smaller picture. You can zoom in up to 8x with this setting.

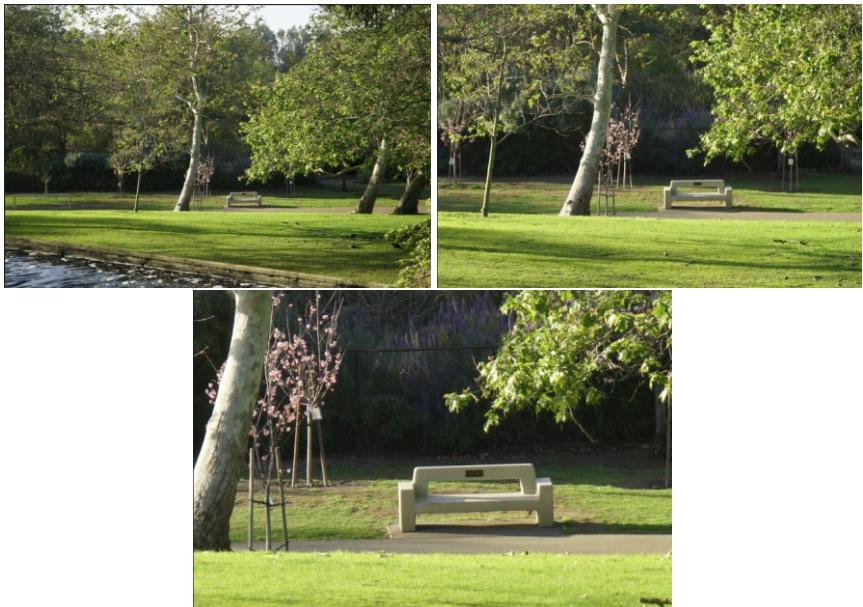
I'll be talking more about the last two (which are the Digital Zoom variables you can enable via the [Zoom Setting](#)) in this section. ClearImage Zoom and Digital Zoom are so similar that I'm going to talk about them both before I explain their slight differences.

What do they do? They throw away pixels. Have a look at the images in [Figure 7-11](#) to see a graphic example. Had this been done by a real zoom lens, the images would all have been the same size, and the moon would have been progressively larger in each. Instead, the moon is the same size and the border around the subjects just gets progressively smaller, with the outer black area being chopped off.

That's bad enough, but then the camera *upsizes the image back up to 24 megapixels*, making a lower-resolution image now appear even lower quality. (Yes, it does this with the Digital Zoom function also. Previous Sony cameras would just leave the smaller cropped image on the memory card when Digital Zoom was enabled.)

As a photographer who prefers to do his cropping on his computer (which can be "undone" if I don't like it), this feature is not at all appealing. And as someone who never upsizes his pictures unless it's absolutely warranted (and that rarely happens), these cameras have so many megapixels to start with that if you left the feature OFF and cropped the image without resizing when you got home, you'll still end up with enough megapixels left over to make a decent sized print.

On the plus side, these features DO give you a handy zoom when shooting movies, where there is no image deterioration (you have to throw away pixels when shooting video anyway since HD video is so much lower resolution than even the Image Quality = Small setting. The only difference is with the digital zoom you're throwing away pixels from the perimeter rather than between pixels.)



Optical Zoom – ClearImage Zoom (2x) – Digital Zoom (4x)

Figure 7-12: ClearImage Zoom can double the reach of your zoom lens without much degradation to the image quality. It works better than I expected. (Digital Zoom, on the other hand, can quadruple the reach of your zoom lens, and it works worse than I expected. ☺ But it's still handy if you're just going for snapshots.)

7.12.1 DIFFERENCES BETWEEN CLEARIMAGE AND DIGITAL ZOOM

So far both functions seem to do the same thing – throw away pixels around the periphery so the subject looks more zoomed in, and then upsizes what's left to go back to 24 megapixels. What's the difference? Well, ClearImage Zoom only lets you zoom in so far whereas Digital Zoom lets you go further. Internally there are two different upsampling algorithms at work (one of which Sony feels is better than the other, otherwise they wouldn't be calling them by two different names) but in this camera it's impossible to compare the two.



Figure 7-13: The “Natural Zoom” feature (my terminology) can provide a digital zoom feature without any image degradation when you change your Image Size **MENU → 1 → Image Size** from Large (left) to Medium (center) or Small (right). When you change your image size you’re throwing away pixels anyway; in this instance you’re just changing the ones that get thrown away.

TIP: When you’re playing images back, and you look at the stats (f/stop, shutter speed, ISO, etc.) or EXIF information, the camera shows you the optical zoom value only.

At this point it makes sense to do a test: How does ClearImage Zoom’s upsampling feature compare to taking the same image with ClearImage Zoom OFF, then cropping and upsizing in Photoshop? I performed the test on the sample in **Figure 7-12** and the result can be seen in **Figure 7-14**. Sony’s marketing department wasn’t overselling; it’s very hard to tell the difference.



Close-up of original image, cropped and upsized in Photoshop



Close-up of 8x with Digital Zoom

Figure 7-14: This is an extreme test but definitely shows that the digital zoom beats cropping and upsizing in Photoshop. This is a better implementation than what graced the RX-100.

Where would such a feature be useful? Here are some ideas:

1. If you're in the back of an auditorium and you really want a closer shot of the star.
2. If you're shooting birds from too far away, and your lens just won't cut it.
3. If you're shooting movies and only want to take one lens with you. ☺ (There's no image degradation when using digital zoom with movies.)

My recommendation: If you're a purist, turn Digital Zoom off by setting **MENU → 3 → Zoom Setting → Optical zoom only**. If you're a tourist, keep it on for the sheer convenience it offers.

Other things of note for these features are:

- The Focus Area switches to Center

- The Metering Mode is set to Multi
- Face detection doesn't work in the Digital Zoom stage
- Neither feature can be used in RAW or RAW & JPG mode

TIP: Setting the **Zoom Setting** to **Optical zoom only** disables the Zoom feature from the  5 menu.

7.13 EYE-START AUTOFOCUS (A-MOUNT LENSES ONLY)

Menu Position MENU →  3 → Eye-Start AF

What it Does When using an A-mount lens and adapter (only), tells the camera to immediately start autofocusing when you bring the camera up to your eye – even before you press the shutter release button halfway

Recommended Setting Off, unless you're shooting sports and you are careful

Constraints Works only with an A-mount adapter having a built-in phase detect array (LA-EA2, LA-EA4)

The history behind this feature is a long one and this book is already too big, so I'm going to give you the Campbell's Condensed version:

- Once upon a time there was a feature that started AF early – as soon as you grabbed the camera AND also brought the EVF to your eye.
- The nickel metal in the camera grip that was used to sense when the hand was gripping the camera was outlawed by the European Union, and Sony decided to drop the grip sensor altogether.
- In the current implementation, the AF will start based on just one criterion: the camera senses something close to the eyepiece. It uses an IR emitter and detector pair placed above the EVF.
- Having only one “start AF” criterion is a bad design. If you hang the camera around your neck and the back of the camera rests against your chest, the camera will think your eye is next to the viewfinder and

automatically start to autofocus. If this happens a lot, you'll drain your batteries in a hurry.

- This problem gets even worse since this camera has an EVF that is more battery-hungry than the rear LCD screen when it's on, and the camera uses the same IR detector to turn on the EVF if it senses something proximate!
- As mentioned earlier, this ONLY applies when using an A-mount lens attached to the camera via either the LA-EA2 (designed for APS-C bodies) or the LA-EA4 (designed for full-frame) adapters.

Notice that this feature does *not* wake the camera up from a power-save state (thank goodness). It simply starts the AF circuitry then the camera is already on so that you might have an extra split-second to capture that decisive moment before it goes away. If you're a sports photographer, you might like this feature.

Regardless of whether you're shooting sports or not, in order to maximize battery life when this feature is on, here's what you should do:

1. Set the power save mode to something short, like 10 seconds.
2. Use just the EVF for all of your viewing needs.
3. Be extremely aware of what's next to the camera's IR sensors when you're not looking through the EVF. Keep the area clear until power save mode kicks in, then you're safe to handle the camera freely.

I don't bother with any of that since the time to wake up the camera from Power Save mode is about the same as turning it on, and you're not wasting 10 seconds of battery power waiting for Power Save mode to kick in.

7.14 **FINDER/MONITOR**

Menu Position MENU →  3 → **FINDER/MONITOR**

What it Does Specifies how the camera switches between the EVF and the LCD

Recommended Setting Auto

Constraints None

This setting determines whether the IR sensor near the EVF should be used to automatically switch between the LCD and EVF.

- When set to Auto, the rear LCD is always in use unless something comes close to the IR sensor below the viewfinder, in which case the EVF is used and the Monitor LCD is turned off.
- When set to Viewfinder, the Viewfinder display turns on only if the IR sensor near the viewfinder senses something proximate, and the Monitor LCD is never used.
- When set to Monitor, the Monitor LCD is always used – the Viewfinder is not used.

I set the camera to Viewfinder whenever I'm doing some time exposures or using time lapse and I don't want to waste valuable battery power illuminating the rear LCD during the exposure. In this configuration battery power is only used for the display when I use the EVF.

TIP: *In certain situations the LCD may go dark for no apparent reason, as if your camera has gone into power-saving mode. This is likely because something is in close proximity to the IR sensor below the viewfinder and you have FINDER/MONITOR set to Auto. This happens frequently if you are holding the camera at your waist or chest and trying to compose using the LCD, or if the camera strap is dangling near the viewfinder. DON'T PANIC! Just move the strap out of the way or change the camera position.*

7.15 RELEASE WITHOUT LENS

Menu Position MENU →  3 → Release w/o Lens

What it Does Allows you to take a picture even though the camera doesn't think there's a lens attached

Recommended Setting Enable

Constraints None

If you attach anything other than a native E-mount lens to the camera (such as legacy glass, a telescope, Lensbaby, or just drill a hole into your body cap to make a pinhole camera), because these items have no electrical contacts and don't communicate with the camera body using the proprietary Sony protocol between lens and camera, your camera will think that there's no lens attached and will not allow you to take the shot. Setting this feature to Enable saves you from Big Brother and lets you take a picture any damn time you choose. (It's also useful if you like taking off the lens and seeing how the shutter works.)

Keep in mind that most special purpose lenses have no adjustable f/stop, and so exposure modes P and A will provide identical automatic metering behavior. S mode and M mode, on the other hand, will not automatically meter for the scene at all – the camera will blindly shoot with whatever shutter speed you specify (and whatever fixed f/stop the lens has). Check your image after you shoot to make sure it's right.

7.16 AF WITH SHUTTER

Menu Position MENU →  3 → AF w/ shutter

What it Does Decouples the shutter release button from Autofocus functions when set to Off

Recommended Setting On

Constraints None

Nearly every point-and-shoot and DSLR on the planet uses the shutter release button for both autofocus and for taking the picture. But I have been in situations where having one button perform two functions makes operation less ideal than it could be. For example, when shooting a wedding and taking group shots (or when you're shooting portraits in the studio), the distance between the subject and the camera doesn't change, yet each time you want to take a shot you have to focus lock on the subject's eyes, recompose, and shoot. Really, for these situations all you really need to do is focus once and then lock it in until your camera-to-subject distance changes.

The A6000 actually gives you a few different ways of doing this:

- 1) After focus has been achieved, you can switch the camera to Manual Focus (either by **Fn → Focus Mode → MF**). This works irrespective of the status of the AF w/ Shutter setting.
- 2) After focus has been achieved, you can switch the camera to Manual Focus by using a Custom button you've assigned on the camera. This, too, works irrespective of the AF w/ Shutter setting.
- 3) You can perform a useful twist on option 2) above by setting the focus mode to Manual (MF) and setting the AEL as follows: (**MENU →  6 → Custom key Settings → AEL Button → AF/MF Control hold**). This is often referred to as "Back Button Focus." In this configuration, the camera is always in manual focus mode. Whenever you need to focus, just press the AEL button, which puts the camera into AF mode momentarily until you release it. Then shoot away until you need to autofocus again. (A very handy configuration I use all the time in the

- studio!) Like the first two options, this works regardless of what AF w/ shutter is set to.
- 4) With the AF w/ Shutter option set to Off, you can split the responsibility of focusing and shooting to two separate buttons. Make sure to set **MENU → ⚙ 6 → Custom key Settings → Center Button → AF On**, then use the center of the Control button to autofocus using the Center focus area, and take the picture using the shutter release. After you achieve focus, you don't have to keep holding the Center button – the focus will stay put until you press it again. For many years (like when I shot with film using the Maxxum 9) this was my preferred way of working.

So that's what the AF w/ shutter setting is for. AF with Shutter simply allows you to decouple autofocusing and taking the picture (two things that normally are assigned to the same button). Personally, whenever I'm in the studio, I use technique #3 above to decouple AF from the shutter release, and therefore never have to bother with setting AF w/ Shutter to Off.

7.17 AEL W/ SHUTTER

Menu Position **MENU → ⚙ 4 → AEL With Shutter**

What it Does Sets whether to fix the exposure when you press the shutter button halfway

Recommended Setting Auto

Constraints None

This function is very similar to the AF w/ Shutter function (described in the previous section). Usually with point-and-shoot cameras, every time you press the shutter release button halfway, you not only lock the focusing but you also lock the exposure. This setting handles the “lock the exposure” part.

Here are the three choices and what they do:

1. Auto – exposure is locked only when you’re in AF-S mode and focus has been confirmed (also when you’re in AF-A mode and the subject isn’t moving)
2. On – exposure is locked when you press and hold the shutter release button halfway
3. Off – never locks exposure with the shutter release button

Note that the camera keeps adjusting the exposure when you use Continuous Shooting drive mode.

Option 1 above is ideal for this reason: it locks exposure only in AF-S or AF-A mode. If you were shooting something that moves, like a racecar or a bicycle, you would use some other focus mode (probably AF-C), and in that circumstance you DON’T want to lock the exposure – a moving subject will probably be moving into different light and you’ll want the camera to adjust for it.

If you choose option 3, you may need to use Automatic Exposure Lock to lock the exposure.

7.18 E-FRONT CURTAIN SHUTTER

Menu Position MENU →  4 → e-Front Curtain Shut.

What it Does Obviates the need for the shutter to close first before initiating the exposure

Recommended Setting On, unless you’re experiencing overexposures with older A-mount lenses

Constraints None

Here’s what happens each time you take a picture:

0. The shutter is already open to enable live view.
1. The shutter release button is pressed.
2. The shutter closes (and the sensor is reset).

3. The shutter opens (starting the exposure).
4. The shutter closes (terminating the exposure).
5. The shutter opens again (enabling Live View again).

That's a lot of shuttering! You can actually hear what all this sounds like by setting this e-Front Curtain Shutter variable to "Off" and taking a single picture. It sounds like you're taking two consecutive shots. This is extra wear and tear on the shutter, too.

While there are still some technical hurdles to tackle before we can get to the day when the shutter is eliminated altogether, Sony has made some progress toward that goal by borrowing a technique pioneered by Canon in the previous decade: eliminating the need to block out all light to the sensor at the beginning of the exposure (to "reset" the sensor). This technique is called "e-Front Curtain Shutter."

With this new feature enabled (which is the factory default), the shutter sequence is shortened to this:

0. The shutter is already open to enable live view.
1. The shutter release button is pressed.
2. The sensor is reset electronically. The exposure begins immediately.
3. The shutter closes (terminating the exposure).
4. The shutter opens again (enabling Live View again).

That's right – ONE cycle of shutter-close-then-open. That is much more efficient, and I keep e-Front Curtain Shutter set to On all the time.

The user manual does offer some obscure warnings about this feature, though, which I really should explain. When using some older A-mount lenses (and some modern third-party lenses), especially if they have large maximum apertures (the aperture blades have a greater distance to travel) the lens might not be able to close its aperture blades quickly enough to coincide with the beginning of the exposure. (In the old days the mirror had to flip up and the shutter open and the f/stop blades had more time to close all the way). If this happens to you, you'll occasionally see overexposed images, especially at fast shutter speeds and on bright days. Turning the E-Front Shutter Curtain setting to Off is the sure cure.

7.19 SINGLE IMAGE AUTO EXTRACTION

Menu Position MENU →  4 → S. Auto Image Extract.

What it Does Works in conjunction with iAuto+ (Superior Auto) mode. Tells the camera to keep only “the good one” if the camera decided to shoot multiple images

Recommended Setting Auto.

Constraints iAuto+ mode only. This setting has no effect if iAuto+ chooses Auto HDR, Anti-Motion Blur, or Handheld Twilight multi-shot modes.

When you shoot in iAuto+ mode, and the camera decides to shoot continuously, you can tell the camera whether to save all of the shots it takes (Off) or save only what it believes is the best or sharpest one (Auto). The Auto setting is useful for saving time and not filling up your memory card.

This setting has no effect if iAuto+ chooses Auto HDR, Anti-Motion Blur, or Handheld Twilight multi-shot modes; the camera does what it wants to do.

7.20 EXPOSURE COMPENSATION SETTING

Menu Position MENU →  4 → Exp.comp.set

What it Does Specifies whether the Exposure Compensation function affects Ambient exposure only or Ambient AND Flash exposure

Recommended Setting Ambient Only

Constraints None

The A6000 offers two different types of exposure compensation: the first one is Ambient, which adjusts how much ambient light hits the sensor.

The second, flash exposure compensation (Section 6.9), adjusts how much light is generated from the flash. These are two completely different kinds of adjustment, and that's why the A6000 allows you to control each independently.

What if you want to adjust both at once? Set **Exp.comp.set** to **Ambient&flash**. Now, exposure compensation adjusts the ambient light and amount of flash together.

There has never been a time in my professional career when I wanted to adjust both at once. In fact, usually I set the flash to -1 or -2.7 so it looks more natural when I'm using the flash as a fill. That's why I recommend setting this parameter to Ambient Only.

7.21 BRACKET ORDER

Menu Position MENU →  4 → Bracket Order

What it Does Specifies in which order the camera adjusts exposure when bracketing

Recommended Setting 0 → - → +

Constraints None

When you use exposure bracketing (as explained in Section 6.7.5), the camera takes three or five pictures, each at a slightly different exposure to “cover the bases.” (This was especially necessary back in the days of slide film.) Bracket Order lets you tell the camera the order for the varied exposures. The menu you two choices:

Choice #1: Normal Exposure → Underexposed → Overexposed (0 → --→ +)

Choice #2: Underexposed → Normal Exposure → Overexposed (– → 0 → +)

I recommend the setting which takes the “normal exposure” first, because when you’re shooting things that move, the first image is often the “decisive moment” and is more important than the backup “just in case” exposures.

When you set Drive Mode to take five bracketed exposures, exposures 4 and 5 record the more extreme changes, for instance using Choice #1 with 0.5EV :

Normal Exposure → -0.5EV → +0.5EV → -1.0EV → +1.0EV

7.22 FACE REGISTRATION

Menu Position MENU →  5 → Face Registration

What it Does Lets you register up to eight different faces used to prioritize focusing on a preferred person in a group shot

Recommended Setting N/A

You already know that your camera (with Face Recognition set to On, Wide AF mode, and Multi metering mode) is able to recognize faces and therefore will use those as the subject on which to focus and expose. (In fact, this is one of my favorite features of this camera, especially when shooting the kids.) Sony has now pushed this concept even further by allowing you to register up to eight different faces with the camera. When faced with a group of many faces from which to choose, the camera will consult with these previously-stored faces and look for a match – if a match is found, the camera will give focus priority to the registered faces. What if the camera detects more than one registered face? You can also tell the camera a priority order for the registered faces.

In theory, Face Registration would be ideal when shooting sports (like soccer games where the person of interest may be together with a whole lot of other people), but unfortunately when shooting from the sidelines the faces won't usually appear large enough for Face Recognition to work. While it works in group shots very well, in most cases all people are roughly the same distance away from the camera anyway so it's not of much benefit there!



Figure 7-15: You can take a picture of a picture (or of a real person ) in order to have the camera prioritize your favorite face.

Here's how to use it:

- First, invoke **MENU → ⚙ 5 → Face Registration → New Registration.**
-). You can even take a picture of a picture – you don't need the person to actually be present. Click Enter or press the Center button each time you're prompted.
- Now make sure **MENU → 📸 5 → Smile/Face Detect.** is set to **On**.

That's it! From now on, when you start composing your shot, any recognized face will have a magenta square around it (well, unless it becomes the subject in which case it will quickly switch to white, and then green upon focus lock).

You can register up to eight different faces. If no registered faces are recognized, the camera will revert to focusing on any old face it sees. This feature won't work on pets, and for maximum effectiveness you should use good light when taking your classic head shot. (In other words, the more detail the camera has, the better job it will do recognizing the person in the future.)

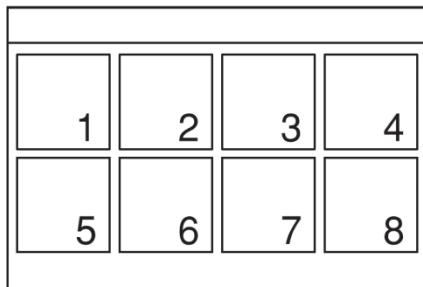


Figure 7-16: You can re-shuffle the registered faces to tell the camera which face has priority.

Want to take it a step further? In case the camera recognizes more than one registered face in the frame, you can program the camera to favor one face over another. Use the **MENU → ⚙ 5 → Face Registration → Order Exchanging** function to tell the camera which face to favor (Figure 7-16). Just call it up, select a face, and then choose the priority level you want. You can also delete a registered face or delete all registered faces.

7.23 AF MICRO ADJUSTMENT (A-MOUNT LENSES ONLY)

Menu Position MENU →  5 → AF Micro Adj.

What it Does Invokes a feature that can correct for focusing problems when using A-mount lenses

Recommended Setting On

Constraints Used only for A-mount lens with an LA-EA2 or LA-EA4 adapter

One of the things that has been plaguing Autofocus Cameras (from all manufacturers) for over a decade has been a phenomenon commonly called “Backfocus” – it refers to a scenario where a lens-body combination will autofocus inaccurately – typically a centimeter or two behind (or in front of) where the camera should be focused. If you’re doing critical work on your camera a Backfocus (BF) or Frontfocus (FF) issue can really ruin a shot for you.

What causes this is a little difficult to explain – it’s not just the body and it’s not just the lens, but the two of them together might be just enough out of tolerance to produce a consistent focusing error when used together. If you wanted to fix this in the olden days you’d have to send both the camera and lens back to the manufacturer so they could be calibrated together. While that may have worked, it was time consuming and expensive and often the problem would be fixed with the lens you sent in but then it would start to happen on other, previously accurately-focusing lenses.

This problem is eliminated completely with E-mount lenses on mirrorless cameras, where the sensor actually *is* the focusing sensor. It’s a closed loop system, with no possibility of bad manufacturing tolerances giving way to inaccurate AF. However, when attaching an A-mount lens with either the LA-EA2 (APS-C) or LA-EA4 (full-frame) adapter, the old-fashioned phase-detect array is built in to the adapter, and therefore the possibility of this kind of focusing error returns. Hence this feature, which allows you to calibrate your lenses and dial in a correction. Whenever you put that lens back on, the camera recalls the AF correction amount you dialed in for that

lens. The camera can remember correction values for up to 30 different lenses that have unique identifiers (see the end of this section for more about those identifiers).

7.23.1 HOW TO TEST FOR FOCUS ISSUES

There are right ways and wrong ways to test for Backfocus issues.

Personally, I like to use a product called LensAlign. See

<http://michaeltapesdesign.com/lensalign.html>. If you want to save some money and take a do-it-yourself approach instead, read the rest of this section. – Ross

☺.



Figure 7-17: The wrong way to test for frontfocus/backfocus issues is looking at a continuous scale on a ruler or tape measure at a 45-degree angle to the camera.

The wrong way can be seen in **Figure 7-17**, where you just have a ruler with a continuous scale at a 45 degree angle from the camera. There are several reasons why this test is not ideal: the center focusing sensor is actually larger in size than the small square you see in the viewfinder, so you never know which part of the rectangle it will focus on if there's more than one choice. In some cases the pattern can easily confuse the autofocus algorithms (especially when you're testing in poor light conditions, such as under compact fluorescent light).

A better test was published back in 2003, when the backfocus issues with the Canon 10D were dominating Internet discussion boards. Bob Atkins from Photo.net published a well-thought-out plan for testing and even provided a proper testing chart that you could print out and use for yourself (**Figure 7-18**). This is a better chart because there is only one vertical line for your center sensor to focus on; and you can read the degree of BF/FF in centimeters in the edge of the image. (The scale was designed so the distances between the numbers would actually be one centimeter apart when viewed at 45 degrees. Very clever!)

You can read the entire Photo.net article here: <http://photo.net/learn/focustest/> and you can download your own chart for your own testing from here: <http://tinyurl.com/bpv2a5>.

The best procedure I know of to calibrate your camera/lens combination using the AF Micro Adjust feature and this chart is outlined below:

1. Tape the test chart to a wall, and position a camera on a tripod at 45 degrees to it as shown in the bottom half of **Figure 7-18**. Your goal is to place the camera so that the test chart fills the frame (as much as possible), and the small line in the center is placed *directly* behind the center focusing point within the viewfinder.
2. Place the camera into “A”erture exposure mode and open the f/stop all the way (smallest number).
3. Ensure that only the center focusing point is selected (via **Fn → Focus Area → Center**).
4. Put your camera into 2s self timer mode (**Fn → Drive Mode → Self Timer (2s)**).
5. Autofocus on the center line, and then take a picture.
6. After the camera takes the picture, examine closely the scale on the picture’s edges. A properly working camera-lens combination will look like that in **Figure 7-19a**; a problem combination looks like that in **Figure 7-19b**.
7. If you have a problem lens, you can “dial in” a correction via the camera’s AF Micro Adjust feature:

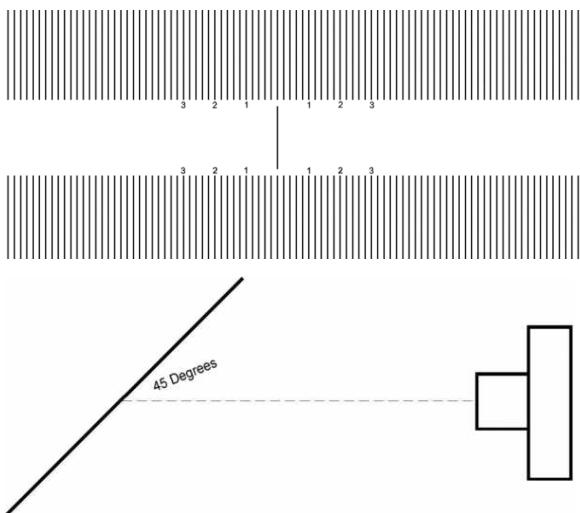


Figure 7-18: A test chart designed not to confuse the camera (above, downloadable from Photo.net). A recommended testing scenario appears on the lower illustration.

- a. Setting the adjustment for the lens to +20 will have the camera focusing 1 cm further away than it should (this is how I shot **Figure 7-19b**)
- b. Setting the adjustment for the lens to -20 will have the camera focusing 1 cm closer than it should.

Repeat steps 5–7 until the center line looks sharp. Then change to your next lens and repeat the procedure starting from Step 5.

As you can see, AF Micro Adjust gives you a very fine way of tuning the focusing system. If you are testing a zoom lens, it's most meaningful to test the lens all the way zoomed in.

Once you have dialed in the correct amount (and verified that it works properly), you need not do anything else. The camera remembers this correction and invokes it again automatically every time you reattach this lens (as long as you have **Menu → 5 → AF Micro Adj. → AF Adjustment Set. → On**). The camera can keep track of corrections for up to 30 *different* lenses.

Q: What if I have two Minolta 50mm f/1.4 lenses – will the camera distinguish between the two?

A: No, it won't. Each lens has a manufacturer's model number which is

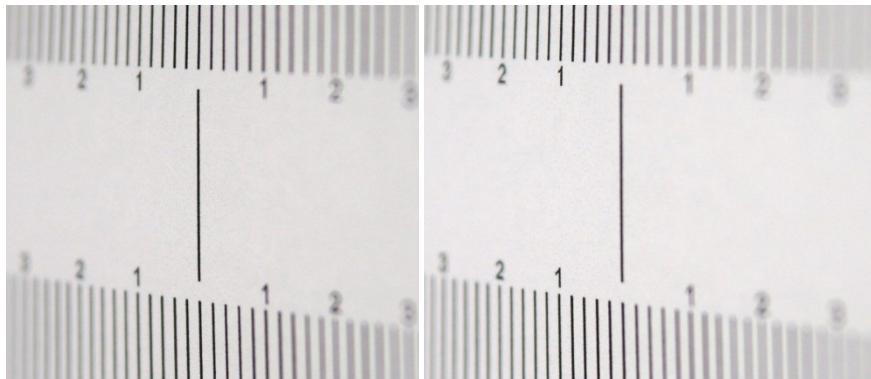


Figure 7-19: Healthy test results (left), and a problem (right). The problem is that the center of gravity of in-focus measurement marks is to the left of the large vertical line.

communicated to the camera body each time it is attached. The camera has no way to distinguish between two models with the same model number.

Q: What if I have a Sony 85mm f/1.4 and a Minolta 85mm f/1.4?

A: The camera cannot differentiate between two lenses of the same specifications; even if they were manufactured under different regimes. It will see both lenses as being the same one.

Q: Will the AF Micro-Adjust feature affect the way I focus manually with the camera?

A: No, it won't, as the physical light path from the lens to the sensor doesn't change. All this does is put in a slight adjustment for when the camera autofocuses with your chosen lenses.

TIP: If you are curious, you can see the published Lens ID table used for AF Micro-adjust for yourself: <http://bit.ly/1q57RRp>. Rightly or wrongly, Sony doesn't take decimals into account. For example, lens ID# 24 is the Minolta 24-105....but lens ID# 24.5 is the Sigma 18-200. If you use both of those lenses, you'll have a conflict.

7.24 LENS COMPENSATION

Menu Position MENU →  5 → Lens Comp. (3 variables)

What it Does Allows your camera to digitally correct three common types of lens deficiencies (most corrections apply to JPEG files only)

Recommended Setting Auto for all three variables

Constraints Works only for lenses the camera knows about

There are two ways to get exceptional image quality: 1) use the highest-quality, most-expensive lenses available, or 2) use slightly cheaper lenses and use firmware or software to compensate for their known deficiencies.

In the past this was the work of high-end photo workflow software, but now it's baked into your camera and lens, which makes things considerably easier for you. The camera and lens together can make computerized corrections for three of the most common types of lens deficiencies: Vignetting (shading in the corners), chromatic aberration, and distortion.

As of this writing the camera knows about all native E-mount E and FE lenses, and Sony will add data for future lenses in future firmware updates. The effects are applied to JPEG files only (with the sole exception of the Shading variable, which when set to Auto is applied to RAW files too!).

Normally I'd recommend keeping all three of these variables set to Auto all the time. Because they are computationally expensive, the only time you might benefit when turning them to Off would be if you need to shoot a lot of high-speed (11 pictures per second) images and don't want to wait as long for the buffer to empty. (So you might want to set all three to Off, turn off high-ISO noise reduction, and set JPEG quality to "Standard" to really maximize that buffer.)

7.24.1 SHADING

The first lens deficiency is the easiest to see: a darkening in the corners, and almost all lenses have it to some degree. (Worse, sometimes you'll have more of it as you zoom in or out, making it difficult to correct for as a batch program on your computer). The rest of the world calls this Vignetting; however Sony didn't want to scare you off so they called it Shading instead. You can see an extreme example of Vignetting in **Figure 7-20**. If you want to get rid of it automatically, set this function to Auto.

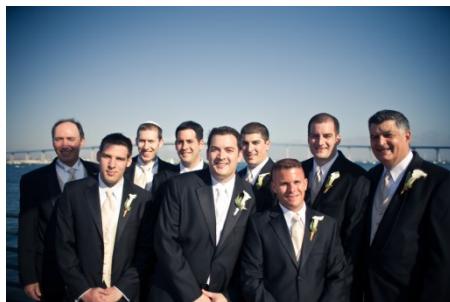


Figure 7-20: An extreme case of Vignetting (Shading) in the corners. (And no, I didn't take this picture...)

TIP: Shading is the ONLY special effect within the A6000 that always applies to RAW files as well as JPEG files in the Auto setting. (If you're a purist like me, you'd say "It shouldn't be applied to RAW at all!") For some lenses (such as the FE 24-70), the camera also applies the Chromatic Aberration correction to the RAW file.

7.24.2 CHROMATIC ABERRATION

As you know, optics are designed to bend light. And as you may also know, optics may also bend light as a prism does – that is, a lens may bend different wavelengths by different amounts (**Figure 7-21**). To combat this, many expensive telephoto lenses employ something called “apoachromatic” glass, which is designed to bend visible wavelengths by the same amount, resulting in very sharp pictures at long focal lengths. The good news is that if the camera manufacturer understands the lens characteristics extremely well, it can also compensate for chromatic aberration in the camera.

Sony's Chro. Aber. Comp. function is designed to correct this characteristic. And I can think of no good reason to ever turn this feature off.

7.24.3 DISTORTION

The third lens correction is formally referred to as either “Pincushion Distortion” or “Barrel Distortion” (but Sony likes to just call it “Distortion”). Essentially it means that a lens will start to curve straight

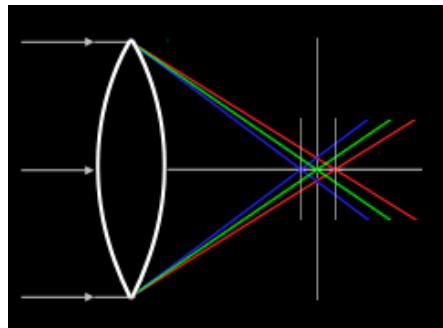


Figure 7-21: Chromatic Aberration is what happens when the optics don't bend all wavelengths of light by the same degree. Usually this effects telephoto lenses above 200 mm.

lines at different focal lengths. (See an example in **Figure 7-22**.) If you understand the characteristics of a specific lens (at each focal length) you can correct for it in-camera, which is what the lens compensation Distortion Comp. mode does when it's set to Auto. Like the other lens correction functions, I can think of no good reason to turn this setting Off.

7.25 FUNCTION MENU SETTINGS



Figure 7-22: Barrel distortion (left) is often worst at wide angles. This, too, can be corrected automatically using the Lens Correction: Distortion function (right). Notice also that the slight vignetting in the corners can be corrected, too!)

Menu Position MENU → 6 → Function Menu Set.

What it Does Allows you to populate the 12 quickly accessible slots of the Fn menu screen in the Viewfinder to your personal taste

Recommended Setting Personal preference

Constraints None

Reassigning these 12 positions is pretty straightforward – just select **Menu → 6 → Function Menu Set.**, choose the position you want to reassign, and then choose from the menu of allowable functions.

The set of choices you have available to you for each slot is remarkably similar to the set of choices you have for the Custom Key settings, and so

to save space, a complete list of all items along with their descriptions and where to turn to learn more appears in the next section. (Note that some of the items in the list may be out of order – they’re presented differently depending on whether you’re assigning a Fn space or assigning a button.)

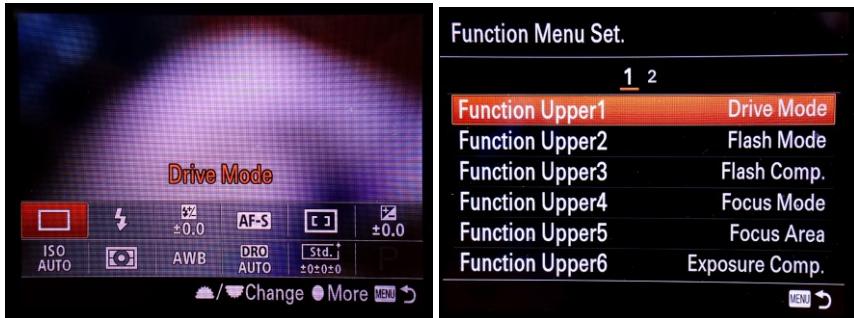


Figure 7-23: You can set the options presented to you in the Fn menu (left) by using the Function Menu Set. screen (right).

TIP #1: If you keep the MENU → 6 → Function Menu Set. → 2 → [Everything] set to “Not Set,” then the Fn menu will only show you 6 squares instead of 12.

Function Lower1	Not set
Function Lower2	Not set
Function Lower3	Not set
Function Lower4	Not set
Function Lower5	Not set
Function Lower6	Not set

TIP #2: To adjust settings not configured in the Fn menu, use the Fn button with the Quick Navi screen displayed (**Figure 3-1**). Just press the Fn button, navigate to the variable you'd like to adjust in the Quick Navi screen, hit the Center button and adjust it. Then confirm the change by pressing the Center button again.

7.26 CUSTOM KEY SETTINGS

Menu Position MENU →  6 → Custom Key Settings

What it Does Allows you to assign custom functions to seven camera buttons

Recommended Setting Personal preference

Constraints Not all functions can be assigned to a given button

The A6000 allows you to assign new functions to the following buttons, overriding the factory defaults (but not their labeling!):

- AEL Button
- Custom Button 1
- Custom Button 2
- Center Button
- Left Button
- Right Button
- Down Button

Reassigning buttons is pretty straightforward – just use **Menu →  6 → Custom Key Settings**, choose the button you want to assign, and then choose from the menu of allowable functions.

There are some assignable functions that don't appear in any other menu and require some explanation. I'll go over all of the available functions here, and I will explain the ones that aren't covered in the book anywhere else.

The following table shows the choices you can assign to Custom Keys:

Standard (Center Button Only)	When you press the Center button, Standard tells the camera to focus on something in the center (regardless of your currently set focus area) and then locks autofocus (but not exposure) until the button is released. <i>It locks focus even if you have the Focus Mode set to AF-C (Continuous AF mode).</i>
Drive Mode	Brings up the Drive Mode menu screen (set to the Left button by default).
Flash Mode	A quick way to access the Flash Mode menu (Section 6.8).
Flash Comp.	A quick way to access Flash Comp. menu (Section 6.9).
Focus Mode	A quick way to access the Focus Mode menu (Section 6.11).
Focus Area	A quick way to access the Focus Area menu (Section 6.12).
Exposure Comp.	Make the image darker or lighter (Section 6.17).
ISO	A quick way to access the ISO menu (Section 6.19).
Metering Mode	A quick way to access the Metering Mode menu (Section 6.20).
White Balance	A quick way to access the White Balance menu (Section 6.21).
DRO/Auto HDR	A quick way to access the DRO/Auto HDR menu (Section 6.22).
Creative Style	A quick way to access the Creative Styles menu (Section 6.23).
Shoot Mode (Fn Menu only)	Displays the current position of the PASM dial and can't be changed. In Movie mode you can choose between Movie PASM modes, and in MR mode you can choose 1, 2, or 3.
Picture Effect	A quick way to access the Picture Effects menu (Section 6.24).
Smile/Face Detect.	A quick way to access the Smile/Face Dect menu (Section 6.30).
Soft Skin Effect	Turn the soft-skin effect on or off (or adjust its intensity). (Section 6.31).
Auto Obj. Framing	A quick way to access the Auto Obj. Framing menu (Section 6.32).

SteadyShot	Enables/Disables SteadyShot for supported lenses (Section 6.35).
Image Size	A quick way to access the Image Size menu (Section 6.1).
Aspect Ratio	A quick way to access the Aspect Ratio menu (Section 6.2).
Quality	A quick way to access the Quality menu (Section 6.3).
In-Camera Guide	Not sure what a particular menu or function does? Press the assigned button and a one-line memory jog appears on your screen. Not available in Fn Menu.
Memory	Lets you store much of your current configuration in one of three memory locations (Section 6.42). Not available in Fn Menu.
AEL hold	Locks the current exposure for as long as you hold your finger on the assigned button. (Duplicates what the AEL button does out-of-the-box.) Not available in Fn Menu.
AEL toggle	Locks the current exposure until you press the assigned button again. Not available in Fn Menu.
<input type="checkbox"/> AEL hold	Switches to Spot Metering mode and locks the current exposure as long as you hold your finger on the assigned button. Not available in Fn Menu. (Section 6.20.2.)
<input checked="" type="checkbox"/> AEL toggle	Switches to Spot Metering mode and locks the current exposure until you press the assigned button again. Not available in Fn Menu. (Section 6.20.2.)
AF/MF Control Hold	Changes the Autofocus/Manual Focus status for as long as you hold the assigned button down (duplicates the AF/MF button's default behavior) Not available in Fn Menu.
AF/MF Control Toggle	Changes the Autofocus/Manual Focus status until you press it again. Not available in Fn Menu.
Lock-On AF	Initiates tracking of a slow-moving object (Section 6.29).
Eye AF	Not available in a menu. Tries to focus on the subject's eye if it detects a face. You must hold the assigned button while you press the shutter.

AF On	Not available in a menu. This initiates AF just like pressing the shutter release button halfway. It's useful if you have disabled AF with Shutter (Section 7.16). Not available in Fn Menu.
Aperture Preview	Not available in any menu. Performs the classic depth-of-field preview (which shouldn't be necessary since E-mount lenses ALWAYS are in stopped down mode if Live View Mode is set to Setting Effect ON). However, it does stop down the lens on an A-mount lens when attached using an adapter, and also shows you DOF preview when you have Setting Effect OFF.
Shot Result Preview	Not available in any menu. Lets you preview things like lens correction, DRO effects, and even blurry moving objects with slow shutter speeds before you shoot (for use when Live View Mode is set to Setting Effect OFF). (DRO seems to be previewed all of the time with this camera, if enabled). Some effects cannot be previewed. Doesn't stop down the lens aperture when you use a lens adapter.
Zoom	Brings up a screen that lets you change the camera's digital zoom magnification. Not available in Fn Menu. (Section 6.25.)
Focus Magnifier	Magnifies the Live View image so you can manual focus with greater precision (Section 6.26). Not available in Fn Menu.
Zebra	Brings up the Zebra settings menu (Section 7.1).
Grid Line	Lets you choose one of three grids (compositional aids) or turn grid display off. (Section 7.4)
Peaking Level	Lets you set the Peaking Level to high, medium, or low (Section 7.7).
Peaking Color	Lets you set the Peaking Color to yellow, red, or white (Section 7.7).
Send to Smartphone	Shortcut to Send to Smartphone (Section 8.1.) There's no need to assign this anyway – when you're playing back an image you can just hit the Fn button and you'll get the Send to Smartphone menu. Voila! Not available in Fn Menu.
Download Appli.	Shortcut to launch any application that's already been downloaded to your camera. Not available in Fn Menu.
Application List	Shortcut to show the Application List (Section 9.1.) Not

	available in Fn Menu.
Monitor Brightness	Shortcut to adjust Monitor Brightness (Section 11.1.) Not available in Fn Menu.
Not Set	The assigned button does nothing.

7.27 DIAL/WHEEL SETUP

Menu Position MENU →  6 → Dial/Wheel Setup

What it Does Lets you exchange functions of the Control Dial and Control Wheel

Recommended Setting Personal preference

Constraints None

This setting matters only when you're in Manual Exposure mode (where you need to be able to set both variables); when you're in Aperture priority or Shutter priority mode, you'll notice that both controllers do exactly the same thing, so this parameter has no effect in those modes, unless you've enabled the "Dial/Wheel Ev Compensation" feature described in the next section.

SS, F/no.	The Control Wheel changes the shutter speed, the Control Dial changes the F/stop.
F/no., SS	The Control Wheel changes the F/stop, the Control Dial changes the shutter speed.

7.28	DIAL/WHEEL COMPENSATION	EXPOSURE COMPENSATION	VALUE
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Menu Position MENU →  6 → Dial/Wheel Ev Comp

What it Does Lets you assign Exposure Compensation to either the Control Dial or Control Wheel

Recommended Setting Off

Constraints None

I normally use this function on all of my Sony SLT cameras – reassign the front Control Dial to “exposure compensation” because it’s useful and it’s handy. However, the A6000 has a more limited number of dials. I prefer to access exposure compensation using the Down cursor button on the Control Wheel, the default setting, or using the Fn Menu if I have reassigned the Down cursor button.

The Control Dial and Control Wheel are usually used for setting exposure values such as shutter speed or aperture. How can you change those parameters when the front dial has been reassigned? When you reassign either one of these controllers, the other one works like this:

Program Mode		Program Shift occurs (as described in Section 3.12).
Aperture Priority Mode		Changes f/stop.
Shutter Priority mode		Changes shutter speed.
Manual		Dial/Wheel Ev Comp is disabled, therefore the Control Dial controls aperture and the Control Wheel controls shutter speed (unless they were reversed using Control Dial Setup – see the previous section).

(Note for sticklers: Okay, you're right when you point out that you do lose some Program Shift flexibility when you reassign a wheel. When you reassign the Control Wheel, you only have P(a) mode accessible, meaning you can't always select any shutter speed you want. When you reassign the Control Dial, you only have P(s) mode available, so you can't always select any f/stop. Life is full of tradeoffs, and since I use program shift only once in a blue moon, I don't mind this program shift limitation.)

7.29 MOVIE BUTTON

Menu Position MENU → ⚙ 6 → Movie Button

What it Does Specifies whether pressing the red Movie Button should always invoke movies, or only if the Mode dial is set to Movie

Recommended Setting Always, unless you find that you tend to accidentally activate Movie mode (unfortunately, I do, so I use the Movie Mode Only setting)

Constraints None

When the Sony A77 and NEX-7 cameras came out there were many, many users who complained of accidental activation of movie mode. For each successive camera Sony redesigned the button placement, and also added this menu function, which you can use to disable the Movie button completely unless the Mode dial is set to "Movie."

7.30 DIAL/WHEEL LOCK

Menu Position MENU →  6 → Dial/Wheel Lock

What it Does Enables/Disables the ability to lock some of the controls when you hold down the Fn button for 2 seconds

Recommended Setting Unlock

Constraints None

Are settings changing on you accidentally? This feature was designed to address that. When enabled, pressing and holding the Fn button for 2 seconds locks (or, if currently locked, unlocks) the Control Dial and the Control Wheel.

I don't use leather camera cases for my cameras for the same reason I wouldn't use this: it would slow me down. If I'm worried about accidentally changing some settings, I just turn the camera off.



CHAPTER 8 THE WI-FI MENU

8.1 SEND TO SMARTPHONE

Menu Position MENU →  1 → Send to Smartphone

What it Does Lets you send one or more images to your Wi-Fi enabled smartphone or tablet (mobile device)

Recommended Setting n/a

With this function and your Wi-Fi equipped mobile device (smartphone or tablet), you can do the following:

- Choose which images to transfer either on the camera or on the remote device
- Choose what resolution to receive using the PlayMemories Mobile app running on the mobile device (if you're just posting to a social networking site, then a 24 MP image is way too big, plus it will eat up your data plan)
- If your mobile device has Near-Field Communication (NFC, more commonly known as "bump") you can transfer an image incredibly simply just by playing back the image you want to send on your camera, and then bumping the mobile device to the designated area on the camera. The image is automatically sent to your mobile device and you can share it with the Internet from there. (If your device doesn't have NFC you can still do all the same things, but you have to initialize both devices manually.)

Much of the detail about how to send images to your mobile device (whether equipped with NFC or not) was covered earlier in Section 5.4.1.

TIP: When you're playing back images, the Send to Smartphone function is automatically assigned to the Fn button. A handy shortcut!

8.2 SEND TO COMPUTER

Menu Position MENU →  1 → Send to Computer

What it Does Initiates a Wi-Fi transfer of all images on your memory card (or just a folder) to your personal computer running PlayMemories Home.

Recommended Setting N/A

This feature was covered in pretty good detail in Chapter 5, beginning in Section 5.2. I'll save you some reading, though – it's SLOW!!! (Or, more accurately, your images files are LARGE and therefore they all take a long time to move via Wi-Fi – especially if you shoot RAW.) It's probably quicker to plug the camera into your computer's USB port and transfer files that way using PlayMemories Home or another program.

8.3 VIEW ON TV

Menu Position MENU →  1 → View on TV

What it Does Lets you play back your pictures over any Wi-Fi enabled HDTV

Recommended Setting N/A

Having a Wi-Fi enabled camera enables a lot of interesting features for the very patient. Here's another example: you can play back your camera's images (pictures only, not video) on an HDTV that has built-in Wi-Fi capabilities.

Is this better than hooking it up to a TV using an HDMI cable to view your images? Well, it depends on the kind of person you are. If you're very much into convenience, and don't mind waiting 3-4 seconds to see the next image, then this is definitely for you. If you're impatient, however, this feature isn't as fast as just hooking up a cable.

The following instructions are broken down into two sections – for the first time only, and for all subsequent times. After you've performed Steps 0–2 once, you can start viewing on TV at Step 3.

For the first time only:

- 0) Before you do anything, you must make sure that the HDTV and the camera are both logged in to the same Wi-Fi Access point. You can do this using **MENU →  2 → Access Point Set.** (described further in Section 5.2).
- 1) Go to **MENU →  1 → View on TV**. The first time you invoke this function, the camera starts searching for compatible devices on your Wi-Fi network, gives you a menu of found devices, and asks you to choose one. Once you do that it will start “negotiating” a connection with the TV (which may take several seconds).
- 2) If negotiation was unsuccessful, make sure the camera's MAC address is on your HDTV's “approved” list. (A MAC address is like a unique fingerprint, different from an IP address, which all Internet-connected devices have embedded. You can see the address for your camera by going to **MENU →  2 → Disp MAC address**.) I can't tell you how to configure your TV to make sure your camera is approved because every TV has a different user interface.

Now, continue with the following steps; after the first time, you can begin at Step 3 below.

At all subsequent times:

- 3) Go to **MENU →  1 → View on TV**.
- 4) Watch as the images take over your TV!
- 5) Use the Left and Right cursor buttons on the back of the camera to switch images (and be patient).
- 6) You can also invoke a slide show by pressing the Center button in this mode.
- 7) Press the Down button to change playback devices and modify slideshow options.

Note: If you invoke this feature without having a Wi-Fi enabled HDTV nearby, and then exit out of the feature, you may encounter a black screen with just a +/- indicator on the bottom. If this happens to you (and it's only

happened to me once), the sure-fire way to regain control is to remove and replace the camera battery.

8.4 ONE-TOUCH (NFC)

Menu Position MENU →  1 → One-touch(NFC)

What it Does Defines which of the camera's downloadable applications will be invoked when you bump the mobile device to your camera

Recommended Setting N/A

Constraints Requires an NFC-enabled Android smartphone

I use the Smart Remote Embedded setting, but you can choose any app in the **MENU →  1 → Application List**, whether it was downloaded to your camera or preloaded at the factory.

8.5 AIRPLANE MODE

Menu Position MENU →  1 → Airplane Mode

What it Does Disables any radio-frequency activity – Wi-Fi, NFC, and Eye-Fi

Recommended Setting N/A

Once upon a time, during the early 1990s, there was some anecdotal evidence from some airline flight attendants where a passenger's laptop with an external mouse-like device was interfering with the plane's newfangled GPS receivers. Since the Federal Aviation Administration (the US government agency in charge of all flight safety rules and procedures) had neither the funds nor the motivation to properly study the matter, it just did the easiest thing – it issued a blanket rule saying “electronic devices

cannot emit any radio frequency signals during flight.” The FAA bureaucrats were happy and most passengers routinely ignored the rule.

Anyway, for those of you who want to adhere to the rule (and save some battery power on your camera), turning Airplane Mode On will disable the camera’s Wi-Fi and NFC (“bump”) functions. If you have an Eye-Fi card installed (it uploads images to your computer more reliably and invisibly than the camera’s built-in functions), it will turn that off as well.

8.6 WPS PUSH

Menu Position MENU →  1 → WPS Push

What it Does Very quickly establishes a connection with a Wi-Fi Access Point that has a WPS Button

Recommended Setting N/A

As explained in Chapter 5 (in Section 5.2), if your Wi-Fi router (Sony likes to call it an Access Point) has a WPS button, you can quickly get the two talking to each other by pressing the WPS button and then invoking this feature from the camera’s Wi-Fi menu.

If your router doesn’t have a WPS button, then you’ll set things up manually using the Access Point Settings menu item (next section).

8.7 ACCESS POINT SETTING

Menu Position MENU →  2 → Access Point Set.

What it Does Allows you to connect to a Wi-Fi Access Point the old fashioned way – by selecting an SSID and using a password

Recommended Setting N/A

This is the method of pairing with a Wi-Fi router when the router doesn't have a WPS button. Its use was detailed in Chapter 5, Section 5.2.

8.8 EDIT DEVICE NAME

Menu Position MENU →  2 → Edit Device Name

What it Does Allows you to change the SSID of the camera, which your Wi-Fi equipped mobile device uses to communicate with it

Recommended Setting The default setting is pretty good

When transferring images to your mobile device the camera acts as a Wi-Fi hotspot, and your mobile device looks for the camera's SSID and then connects with it before transferring images (JPEG files only) or movies (MP4 files only). Use the Edit Device Name command if you want to change the camera's SSID. The factory default is ILCE-6000, which I think is pretty descriptive. Some of you may want to change it to "ILCE-6K," or have some fun with your war-driving friends and change it to "NSA-sweep627." ☺ The camera broadcasts this SSID only when you initiate a transfer, using either **MENU →  1 → Application List → Smart Remote Embedded** or the **MENU →  1 → Send to Smartphone** command. (With **MENU →  1 → Send to Computer** the camera is looking for your router's SSID, so Edit Device Name doesn't affect this operation.)

Mind you, changing this value after you've already paired the camera and the phone means you have to pair the two all over again (see Chapter 5).

8.9 DISPLAY MAC ADDRESS

Menu Position MENU →  2 → Disp MAC Address

What it Does Displays the camera's Media Access Control (MAC) address

Recommended Setting N/A

You will probably never need this function. To explain why it's needed I'd have to talk about TCP/IP protocol, and the Ethernet protocol over which TCP/IP is built. Probably more detail than you need.

So here's the short version: Every Internet-enabled device has a globally unique physical address burned right into it at the factory. This MAC address is different from the IP address you may be familiar with. MAC addresses look like this: F0:27:65:00:7D:BD.

Why would you ever need to know the MAC address? It's needed in situations where you want to use the camera's Wi-Fi features in a private network (typically a well-run office network) that is locked down by the company's IT staff. Only devices that the company knows about will be allowed to access the network. And yes, there are network management tools that let you register every MAC address of every Ethernet card in every computer that's in the company's asset management system.

If you find yourself trying to use your camera's **MENU →  1 → Send to Computer** command in such an environment, what you need to do is call your friendly neighborhood IT support person, explain to them what you're trying to do (probably several times), get approval in triplicate from six layers of management above you, and when everything is done and approved you tell your IT person "Here is my MAC address. Please allow it onto the network."

TIP: You'll only have to register your MAC address when using the **Send to**

Computer function. The Send to Smartphone function does not require any cooperation from your IT department.

8.10 SSID/PASSWORD RESET

Menu Position MENU →  2 → SSID/PW Reset

What it Does Erases the camera's memory of your smartphone connection info

Recommended Setting N/A

This is a handy feature to use before you sell your camera, since just using **MENU** →  6 → **Setting Reset** → **Initialize** (a system reset) does NOT erase the SSID names and passwords that have been used in the past.

This resets the information needed to communicate with a mobile device. (Use the Reset Network Settings feature (next section) to erase info about your computer's Wi-Fi access point.)

Sony's manual hints that it is necessary to use this function to "forget" the previous smart phone it was connected to before you connect it to another. However, in my testing using this feature is entirely optional, and you can connect to a different mobile device without invoking this feature at all.

8.11 RESET ALL NETWORK SETTINGS

Menu Position MENU →  2 → Reset Network Set.

What it Does Erases the camera's memory of the Wi-Fi router for your computer network

Recommended Setting N/A

This is a handy feature to use before you sell your camera, since just doing a **MENU → 6 → Setting Reset → Initialize** (a system reset) does NOT erase the SSID names and passwords that have been used in the past.

This resets just the information needed to connect to your home network's Wi-Fi access point. For information on how to forget your smartphone connection info, see the previous section.



CHAPTER 9 THE APPLICATION MENU

I dare not call these Apps; that is a bastardization of the word “Applications” that Apple introduced with the iPhone because they didn’t think the word “programs” was apropos. Anyway, unlike with your smartphone, you can download only Sony-developed Apps from the Sony store. However, Sony has begun releasing Application Programming Interfaces (APIs) for external developers, so we hope to see third-party apps in the future.

9.1 APPLICATION LIST

Menu Position MENU →  1 → Application List

What it Does Displays an icon listing of your apps

Recommended Setting N/A

From the factory, this Directory of Applications is pre-loaded with three icons (**Figure 9-1**). You can download additional applications or update existing applications using the general Application Downloading instructions in Chapter 5, Section 5.6.



Figure 9-1: From the factory, the Application List is pre-populated with three icons. You can download more.

9.2 INTRODUCTION

Menu Position MENU →  1 → Introduction

What it Does Nothing really useful

Recommended Setting N/A

You can safely ignore this! This menu item brings up two choices:

1. “Service Introduction,” which tells you to go to www.sony.net/pmc to download apps.
2. Service Availability,” which tries to download (using your pre-established Wi-Fi connection to your home router) a list of countries you can use this feature in.

You don’t need either of these features to do useful things with the camera.



CHAPTER 10 THE PLAYBACK MENU

10.1 DELETE

Menu Position MENU → ▶ 1 → Delete

What it Does Allows you to delete a single image or multiple images

Recommended Setting N/A

The most straightforward way to delete a single image while you're playing it back is to simply hit the C2 (Trashcan) button to the right of the playback button (**Figure 10-1** top) and then choose Delete to confirm.

A slightly more involved method of deletion allows you to delete multiple images at a time. While in Playback mode, use **MENU → ▶ 1 → Delete → Multiple Img.** Then use the Left and Right arrows to scroll through the images, and press the Center button for each image you want to delete. (Press the Center button again to unmark it.) Images marked for deletion have a small Check in the box on the very left of the image. Continue to scroll through and select other images for deletion. When you've finished marking images for deletion, hit the MENU button again, and then confirm the deletion by clicking OK. All of your selected images will then evaporate. There are three more variations on a theme here:



Figure 10-1 The Delete image button (Trash Can) is good for deleting one image; whereas the Delete function from the playback menu lets you delete many images at once.

1. Want to just wipe out all still images in a folder? First, play back your images and scroll until you come to a folder whose images you want to delete. Then use **MENU → □ 1 → Delete → All in This Folder** and it will ask to confirm the deletion of all images and movies in the folder.
2. Want to just wipe out all still images taken a given date? First, play back your images and scroll until you come to an image with the date of all the images you want to delete. Then use **MENU → □ 1 → Delete → All with this date** and it will ask to confirm the deletion of all images and movies taken on that date.
3. Want to wipe out everything on the card (including all movies and stills)? Use **MENU → 🗑 5 → Format** (described in Section 11.21).

Although deleting individual pictures in the field can be handy, I have found that it is better to wait to delete images on your computer if you can afford to do so. Deleting on the computer means you're not unnecessarily



Figure 10-2: The camera (left) can capture much more detail and brightness range than the rear LCD (right) will show you. Don't delete images in-camera just because they don't appear to be exposed correctly!

wasting your camera's batteries, plus you really do get to see your images better so you can make a more informed choice. (The camera's LCD and EVF, as good as they are, have a lower dynamic range than your computer screen's; meaning some images may look poor in the camera but great on the screen (**Figure 10-2**). In addition, if you change your mind about a deletion on your computer, you can rescue it by pulling it out of the Trash.

10.2 VIEW MODE

Menu Position MENU → ▶ 1 → View Mode

What it Does Allows you to specify what kinds of files to play back – stills, two different formats of movies, or all files sorted by date

Recommended Setting Date View

With this feature Sony has fixed a long-standing complaint from consumers since the A77: previous cameras would ONLY let you view stills, or MP4 movies, or AVCHD movies when playing back. You couldn't just view things in reverse chronological order like every normal person wanted to do.

And so finally Sony has added the Date View option which lets you do just that – view all the files in reverse chronological order.

Under what circumstances would it be better to switch to the other modes (stills/mp4/AVCHD)? I can't think of a scenario.

10.3 IMAGE INDEX

Menu Position MENU → ▶ 1 → Image Index

What it Does Lets you choose between 12 and 30 images for index view

Recommended Setting 12 (unjustifiable personal preference)

When playing back images, you can press the Down button and you'll see several thumbnails. This function determines whether the camera displays a maximum of 12 or 30 thumbnail images on each screen.

If you scroll off to the left of the index matrix, you'll highlight an orange calendar icon which, when you press the Up and Down cursor buttons, will let you switch to shots or movies taken on a different date.

I talked about this along with other Playback options back in Chapter 3, Section 3.16.

10.4 DISPLAY ROTATION

Menu Position MENU → ▶ 1 → Display Rotation

What it Does Determines how vertical images are displayed when played back

Recommended Setting Off

When the camera plays back an image shot in landscape (horizontal) format, the entire image fills the LCD. But what should the camera do when you've shot a portrait (vertical) composition? Should the camera shrink the vertical image so it fits the height of the horizontal display (which is the factory default)? Or should it display it as large as possible and let YOU turn the camera to see it properly (my preference)?

This setting gives you three different choices:

1. Manual – All images display with the orientation as shot – images shot in vertical orientation occupy a smaller portion of the screen, but appear vertical without turning the camera. Turning the camera has no effect on the image, its position is fixed. (You can still rotate images manually.)
2. Off – All images display as horizontal, filling the display. Turn the camera to see a portrait image with the correct orientation.

In my mind this feature is a little broken, since in order to rotate the image manually in options 1 or 2 above, you have to dig into a menu: MENU → ▶ 1 → Rotate (and no, you can't assign it to a button).

10.5 SLIDE SHOW

Menu Position MENU → ▶ 1 → Slide show

What it Does Displays your images for a few seconds each, either on the display or on a TV

Recommended Setting N/A

Constraints View Mode must be set to Date View or Folder View (still) mode; you cannot view movies

This function was described earlier in Chapter 3, Section 3.16.5. To stop a slide show, press the MENU button.

IMPORTANT TIP: *View Mode (Section 10.2) must be set to either Date View or Folder View (Still) in order for this menu item to be active.*

There are other ways of viewing both stills AND movies on certain HDTVs. These methods are described below.

10.5.1 PHOTOTV HD AND BRAVIA SYNC

“This camera is compatible with the PhotoTV HD standard” says Sony’s manual. What’s that??

It’s marketing speak. One of the things that automatically happens when you hook up anything to an HDTV is that a conversation between the TV and the peripheral takes place, and the TV configures itself to show the content optimally. This happened long before someone in marketing decided to give it a name. Here’s an article that explains how “PhotoTV HD” worked for this Australian journalist: <http://tinyurl.com/726lfq3>

Another supported standard is called “Bravia Sync,” another attempt to give a trade name to a feature that adheres to an international standard (in this case the HDMI Consumer Electronics Control (CEC) protocol¹. This standard was designed to solve the problem of having too many remote controls to deal with when many devices are hooked together via HDMI. (“Wouldn’t it be swell if there were just one remote control that could talk to all devices hooked up to our flat panel display?”) And so the CEC standard was born, which is not proprietary and, in a great display of FUD (Fear, Uncertainty, and Doubt), Sony says that other brands adhere to this protocol “to an unknown degree.”

Anyway, because your camera is Bravia Sync/CEC compatible, you can operate your camera by the TV remote control when it’s connected via HDMI. What buttons do you press, and what functions can you operate? I took my camera to my local Sony store to find out.

Once you *manually* put the camera into Playback mode, very few of the TV’s remote control buttons will have an effect on your camera. The TV remote’s LEFT and RIGHT buttons are used to scroll through the images; if you come across a panorama the remote’s Center button (equivalent to the Center button on the camera) will scroll the panorama. Want to see your movies now? You must go to the back of the camera and choose either **MENU → □ 1 → View Mode → [Folder View (MP4) or AVCHD View]**. Then, in addition to scrolling you can also use the PLAY, PAUSE and STOP buttons on the remote.

¹ Sony’s not the only company to rename a standard. Other trade names for CEC are Anynet+ (Samsung); Aquos Link (Sharp); HDMI-CEC (Hitachi); E-link (AOC); Kuro Link (Pioneer); CE-Link and Regza Link (Toshiba); RIHD (Remote Interactive over HDMI) (Onkyo); RuncoLink (Runco International); SimpLink (LG); HDAVI Control, EZ-Sync, VIERA Link (Panasonic); EasyLink (Philips); and NetCommand for HDMI (Mitsubishi).

TIP: If you find that the third-party device didn't exactly adhere to the Bravia Sync standard properly, you can disable this feature and restore predictable behavior to your system. **MENU** →  3 → **CTRL for HDMI** → **OFF** (Section 11.14).

10.6 ROTATE

Menu Position **MENU** →  1 → **Rotate**

What it Does Provides a cumbersome way to rotate still images during playback

Recommended Setting N/A

Constraints Display Rotation must be set to Manual for this to work

Here's how it works. When playing back your image, if you want it rotated, you have to dig into this menu item to get to the "Rotate screen." Once there, each time you press the Center button the image rotates counterclockwise 90 degrees. Press it 4 times and you're back to where you started. Press the MENU button to go back to play mode.

The camera remembers this new orientation, but that memory may not follow the image to your computer. (Not all image viewing programs pay attention to the orientation flag inside the JPEG file.)

Unfortunately, this function is not assignable to a button in playback mode as it has been for most previous Sony cameras.

10.7 ENLARGE IMAGE

Menu Position MENU → ▶ 2 → Enlarge Image

What it Does Lets you zoom in to examine images closely during playback mode

Recommended Setting N/A

Constraints Works on still images only

This feature is permanently assigned to the AEL button while in playback mode, so I'm not sure why it's in a menu as well. I spoke about how to use it in Chapter 3, in Section 3.16.2.

10.8 4K STILL IMAGE PLAYBACK

Menu Position MENU → ▶ 2 → 4K Still Image PB

What it Does Lets you zoom in to examine images closely during playback mode

Recommended Setting n/a

Constraints Only selectable when the camera is attached to a 4K TV

This feature is for the times when you've hooked up your camera to a 4K HDTV and want to play images back. When invoked, the camera plays back still images at a 4K resolution (instead of 1080p resolution for normal HDTVs.)

Unfortunately (well, perhaps not), I don't have access to a 4K TV and so I can't dive into the nuances of this feature.

10.9 PROTECT

Menu Position MENU → ▶ 2 → Protect

What it Does Protects images against accidental erasures while in the camera

Recommended Setting n/a

An image can be “protected” as an extra measure against accidental deletion in the camera. The way you mark pictures for protection is similar to the way you mark pictures for deletion:

- 1) Go to **MENU → ▶ 2 → Protect** and choose from **Multiple Img., All with this date**, or **Cancel All with this date** (the Cancel items indicate “Unprotect all images in this folder or on this date”).
- 2) If you chose **Multiple Img.**, proceed and mark images for locking the same way you mark images for deletion (see Section 10.1). A check will appear in the box on the left of the image.
- 3) Press the **MENU** button again, then confirm to finish.

“All with this date” and “Cancel all with this date” can be a bit confusing. Which date? The answer is you go into playback mode first, scroll to any image or video taken on the intended date, and while still in playback mode invoke this feature. The date of the currently selected image or movie will be protected.

TIP: *Images are protected only while in the camera; once they have been copied to your computer they have no special protection against accidental deletion.*

10.10 SPECIFY PRINTING

Menu Position MENU → ▶ 2 → Specify Printing

What it Does Provides the means to print images directly to an attached DPOF-compliant inkjet printer, or tell a 1-hour photo lab which images you want to print

Recommended Setting n/a

Constraints Doesn't work with RAW

The Digital Print Order Format (DPOF) standard was originally designed to make it easy (Ha!) for consumers to order prints directly from their camera without ever having to touch a computer first. In principle, you review your images using the camera's LCD, mark the ones you want printed, and then plug the memory card into your inkjet printer or give it to your 1-hour photo lab and they'll print what you ordered.

Use **MENU → ▶ 2 → Specify Printing → Multiple Images**. Select the pictures you want to print using the same method as deleting multiple images (covered earlier in this chapter in Section 10.1). Press the MENU button again to finish and confirm by clicking OK.

The camera will create a special file on the memory card called a DPOF file that tells most modern 1-hour photo equipment which pictures you want. Note that you can specify only JPEG files for printing – RAW files are not selectable for technical reasons.

TIP: Unlike Sony's earlier cameras, you cannot specify print quantities when selecting pictures for printing. Hopefully, all you'll want is one. Also, index prints are no longer an option.

10.10.1 PRINTING THE DATE ON THE IMAGE

While the A6000 will never superimpose a date on top of your image, you can tell whatever DPOF-compliant device you're using to include the date

on the prints. Each device will print one in a different place, using a different font size and style, so those things need to be configured on the printer (if they can be configured at all).

To use, while in the **Specify Printing** menu, navigate to **Print Setting**, then hit the up-arrow key to highlight “Date Imprint” and press the center button. Select On, then hit the Enter icon, and you’re back in Playback mode.

10.10.2 CANCELING DPOF FILES

Once your pictures have been printed, and even if they have been erased, there may still be a DPOF file remaining on the memory card. To erase it, invoke **MENU → □ 2 → Specify Printing → Cancel All**, and confirm.



CHAPTER 11 THE SETUP (SUITCASE ICON) MENU

11.1 MONITOR BRIGHTNESS

Menu Position MENU →  1 → Monitor Brightness

What it Does Lets you set the brightness of the LCD Monitor

Recommended Setting Manual +1

Unlike many previous Sony models the A6000 camera has no ambient light sensor near the LCD, so this menu function only lets you choose from two settings: Manual (where you can set a brightness level from -2 to +2) and Sunny Weather, which makes it so bright that you can't properly evaluate image quality or subtle tones. (Sometimes you just want to compose your picture and worry about the quality when you get home!)

My personal preference is to set this to Manual +1. If you're just paranoid about battery consumption you can set it to -2 permanently.

11.2 VIEWFINDER BRIGHTNESS

Menu Position MENU →  1 → Viewfinder Bright.

What it Does Lets you specify the brightness of the EVF Viewfinder

Recommended Setting Manual +1

I talked about this in Chapter 2. I just find the viewfinder to be too dark out of the box, and setting this to +1 makes me a happy user. Your mileage may vary. You need to be holding your eye up to the EVF in order to make this setting.

TIP: *The Auto setting adjusts the brightness according to the ambient light level. But as mentioned in the previous section, this camera has no ambient light sensor. So how does it work? The camera reads the ambient light through the lens! Try it – set the brightness to Auto and try pointing the lens to a bright and then dark area while looking through the EVF. (However, if you have set MENU →  2 → Live View Display → Setting Effect ON, the Auto brightness setting seems to not make any difference.)*

11.3 FINDER COLOR TEMPERATURE

Menu Position MENU →  1 → Finder Color Temp.

What it Does Lets you make the viewfinder image appear yellower or bluer

Recommended Setting I set mine to -2, but your mileage may vary

Sony has provided a way to assign a slight color shift to the EVF to make it a little yellower (-2) or a little bluer (+2) using this feature. The amount of change is roughly the same as what the camera offers with “White Balance Bracket: Lo” – described in Section 6.7.8.

I use the -2 setting to warm up the Viewfinder image – this makes it appear closer to what my unaided eye sees. Depending on your preference, you may want to use a different setting (the lens you have mounted can also have an effect).

It’s possible that the color balance of the LCD won’t match that of the EVF exactly. The two look very close to me on my camera.

11.4 VOLUME SETTINGS

Menu Position MENU →  1 → Volume Settings

What it Does Determines the audio volume of movies when played back in-camera

Recommended Setting N/A

This menu item controls how loud your movies are played back through the tiny built-in speaker. It has no effect on other camera functions such as the focus confirmation chirp or self-timer beep.

TIP 1: When in Playback mode you can access this feature quickly by pressing the Down cursor button when a video is playing.

TIP 2: This option will be grayed out unless there is at least one file (video or still) on the memory card.

11.5 AUDIO SIGNALS

Menu Position MENU →  1 → Audio signals

What it Does Enables/Disables audio signals (beeps) during camera operation

Recommended Setting Off (personal preference)

Having audio feedback such as a quick AF confirmation “chirp” can help you work faster, letting you concentrate on other things instead of focus confirmation lights. But since Live View cameras throw green squares all over the place you don’t need the confirmation chirp anymore, which is why I keep this set to Off.

The camera’s speaker is also used to provide a series of “beeps” during self-timer use.

Note that this setting does NOT apply to video playback – if you want to control the sound for video (including turning it off) you must go to **MENU →  1 → Volume Settings**.

11.6 TILE MENU

Menu Position **MENU →  2 → Tile Menu**

What it Does Allows you to see what the original NEX camera menus looked like, and provides a means of turning them off forever ☺

Recommended Setting Off (personal preference)

When the first E-mount cameras were introduced they were aimed at a demographic that had previously used smartphones as their primary camera, so Sony decided to make the user interface similar to that of a smartphone assuming that users would feel more comfortable with it. However, many people hated it!

You can see an example of this user interface in

Figure 11-1. It presents you with a high-level screen that lets you select which menu screen you want to use. It may or may not require any fewer button presses depending on how far away the menu item you seek is from where you were, but if you want to quickly access the last menu you used, this feature adds another layer.



Figure 11-1: The Tile menu. You can see two different screens when you hit the **MENU** button, depending upon the setting of the Tile menu function.

Perhaps I shouldn't be so negative about this alternative user interface. But the fact is, with the NEX-7 you couldn't turn this new user interface off, and I have left that camera at home on numerous occasions because it always took me too long to search for features to enable or disable. The A6000 allows you to turn these Tile menus On or Off.

11.7 MODE DIAL GUIDE

Menu Position MENU →  2 → Mode Dial Guide

What it Does Enables/Disables some eye candy when you're switching modes using the Mode dial

Recommended Setting Off

This camera has an awful lot of beginner-level help screens. ☺ This setting applies only to the Mode dial – every time you move it to a new function, a quick picture with a 1-sentence explanation appears, letting you know what this mode does. (**Figure 11-2**). I keep it Off because I already know what the modes do.

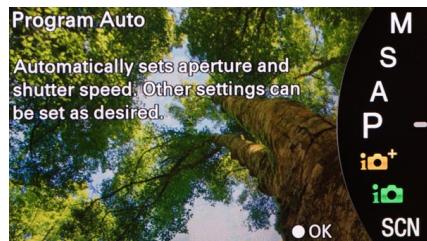


Figure 11-2: The Mode Dial Guide enables/disables these colorful screens which let you know just what this mode is supposed to do.

11.8 DELETE CONFIRMATION

Menu Position MENU →  2 → Delete confirm.

What it Does It can save you one step when deleting an image from the memory card

Recommended Setting “Delete” first

When you go to delete a picture from the camera by pressing the Trashcan button (or by using MENU →  1 → Delete), a confirmation screen appears with the choices Delete and Cancel. The factory default is for Cancel to be highlighted, which means if you really want to delete something you have to use the Up button to select Delete and then press the Center button to actually make the deletion.

Changing this parameter from “Cancel” first to “Delete” first saves you one step (having to highlight the Delete button before pressing the center to confirm). It’s a minor thing unless you delete a lot of images.

At least the camera doesn’t come back after you choose Delete and ask “Are you sure?” I really hate that...I’m *really* sure.



Figure 11-3: The Delete Confirmation Screen normally has one of these options highlighted. “Delete Confirmation” tells the camera which to highlight by default.

11.9 POWER SAVE START TIME

Menu Position MENU →  2 → Pwr Save Start Time

What it Does Controls how long before the camera goes to standby mode

Recommended Setting Mine is set to 2 minutes because I can be paranoid about battery life out in the field

The A6000 automatically puts itself into “low power” mode if none of its buttons have been pressed for a certain duration (and if the sensor by the EVF doesn’t think your eye is looking through it). After that time, the power consumption is so negligible that it’s almost as good as turning the camera off. The Power Saving Start Time can be set to anywhere between 10 seconds and 30 minutes.

Notice that there is no “Leave the camera on forever” setting – not even if the camera is plugged into the wall using the optional AC adapter. Should the camera time out, all you have to do is press the shutter release button halfway to have everything pop back to life exactly as you left it. Hold the button until the camera starts to wake up. (You can also use the Playback button or MENU button.)

TIP 1: When the camera is connected to a TV, the timeout value is automatically changed to 30 minutes. (And when you disconnect it from a TV, it reverts back to your selected preference.)

TIP 2: Unlike some previous Sony cameras, using the optional AC adapter does not override the Power Saving Start Time setting.

TIP 3: If you have an Eye-Fi card inserted, the Power Saving Start Time will be ignored until all of the pictures have finished downloading.

11.10 CLEANING MODE

Menu Position MENU →  3 → Cleaning Mode

What it Does Vigorously shakes the sensor in order to loosen (and hopefully shake off) any dust particles that might have migrated behind the fixed mirror

Recommended Setting n/a

This feature is supposed to shake the sensor at ultrasonic speeds in order to shake off dust. I say “supposed to” because I have a hard time verifying that it’s doing anything at all – I can’t hear any vibration, and with the lens off I can’t perceive any movement.

Anyway, unlike with any non-mirrorless camera, the sensor in this camera is very easy to clean. Just take off the lens and give it a blast of air. I use a Giotto’s Rocket Blaster (<http://www.giottosusa.com/rocket-blasters>). If you have anything too stubborn for the blower to handle, I recommend a product called LensPen™.

Cleaning the sensor is actually no different from cleaning the front surface of a lens. In fact, you can pretty much use the same cleaning materials on both. The front of the sensor has a coated layer of glass in front of it so you don’t have to be too afraid of this essential maintenance task.

11.11 DEMO MODE

Menu Position MENU →  3 → Demo Mode

What it Does It's supposed to make the camera more appealing when it's sitting on a retail shelf

Recommended Setting Off (you can't change it anyway)

Demo mode was designed to make the camera more appealing to consumers as it sits unloved on a retail shelf. After a minute of inactivity, if the camera hasn't been set to power off it will automatically start to play back whatever movies are in there, sequentially. Presumably the retailer would have been product-savvy enough to put a demo movie on the memory card and would have protected it from accidental deletion. Anyway, I'm not a retailer, so Demo mode is Off. (Well, truth be told, I can't seem to get it to not be grayed out.)

11.12 REMOTE CONTROL

Menu Position MENU →  3 → Remote Ctrl

What it Does Enables the camera's infrared receiver so you can use the IR Remote. This setting is not required for wired remote controllers such as Sony's RM-VPR1.

Recommended Setting N/A

The A6000 has an infrared receiver built-into the camera's grip, but to conserve power this receiver is set to Off by default. To turn it On you have to enable this option.

If you're looking for a remote control, you can use either the wired variety (like Sony's RM-VPR1, **Figure 11-4a**) or the wireless infrared kind. Sony sells such a remote – the RMT-DSLR2 – however I strongly recommend a third-party unit called the Snapshot Tech AUS model RC-05 which is more



Figure 11-4: This feature enables the IR receiver built into the camera's grip. There are many remotes available: The wired RM-VPR1 (top right), and infrared units (bottom row).

marked “2 sec” (which will fire the shutter after a 2-second delay – this is handy when you want to be in the group shot but don’t want the shot to show you pointing the remote at the camera ☺). The red button on the RMT-DSLR2 allows you to start/stop the video, a feature that previous video-shooting SLT owners have been asking for.

The rest of the buttons are useful for when your camera is attached to an HDTV and you’re playing back your images through an HDMI cable (Section 3.16.6).

TIP: At long last, Sony has removed this feature from the Drive menu and given it its own menu function. This means that you can combine the remote control with 10-second self-timer, or any of the other features of the Drive menu. Huzzah!

There’s also an insanely cheap one-button remote, which isn’t all that limiting now that you can couple the IR remote with the self-timer function

reasonably priced, does the same thing, AND the buttons won’t get accidentally activated while in your camera bag (thus draining the battery unnecessarily). There is also a one-button IRMT-DSLR1. Such remotes can improve the sharpness of time exposures when you use shaky tripods on windy nights.

Once enabled, only two buttons on the Sony IR remote control will function: The one labeled “Shutter” (which works like a remote shutter release), and the one

in the Drive menu. It's called the IRMT-DSLR1 and it's available for about USD \$3 from <http://amzn.to/1mr0WdC>.

The infrared remote commander has a limited range – maybe 20 feet or so indoors, and as little as 5 feet outdoors on a bright day. If it doesn't work for you, at least you have the 10 second self-timer to fall back on.

TIP 1: When you use the infrared remote commander (either the "shutter" or the "2 sec" button), the camera will autofocus first before it takes the picture. If it can't find focus, it won't take a picture.

TIP 2: When your camera is in Remote Commander mode, the camera remains in a high state of alert – it never goes to "sleep," and the rear display stays on full-blast. This will drain your battery in a hurry, so be sure to take your camera OUT of Remote Commander mode as soon as you are finished!

11.13 HDMI RESOLUTION

Menu Position MENU →  3 → HDMI Resolution

What it Does Forces the camera's HDMI output to use either progressive or interlaced video scan

Recommended Setting Auto

This feature really shouldn't be necessary. One of the great things about the HDMI specification is that the first thing two devices will do when you hook them together is inquire about their resolutions and other capabilities. So when you hook up your camera to a 1080p video display the camera will know it and adjust its output accordingly – all automatically.

So why did Sony include this little function? I don't know, but I can guess: not all video sources and video displays implement the specification properly, and there probably have been cases where automatic parameter setting didn't occur correctly. Anyway, there's a very good chance you'll never even need this function, but at least now you know what it does.

11.14 CTRL FOR HDMI

Menu Position MENU →  3 → CTRL FOR HDMI

What it Does Allows you to disable your TV remote's ability to control your camera

Recommended Setting On

Back in Section 10.5.1 I talked about Bravia Sync, a standardized protocol designed to let the remote control of a big-screen TV to control peripherals that are connected to it via HDMI. And I also mentioned that it's not a protocol proprietary to Sony; other third- party big screen manufacturers try to comply with it too.

Well, not all third- party manufacturers implement specifications correctly (*cough* Sigma *cough*) and so there might be circumstances where you hook up your camera to an HDTV to view your pictures, try to use the TV's remote control to control the camera, and things just go wrong. When that happens Sony recommends that you set this parameter to Off to disable the Bravia Sync feature.

(I talk more about playing pictures back on your HDTV in Section 3.16.5).

11.15 HDMI INFORMATION DISPLAY

Menu Position MENU →  3 → HDMI Info. Display

What it Does When you're shooting movies and you have an external monitor attached via the HDMI cable, do you want a "sanitized" version of the Live View image to appear on the monitor?

Recommended Setting Mine is set to Off, but your needs may vary

Normally, whenever you connect the camera to an external monitor, all the information that would normally appears on the EVF or LCD is instantly

rerouted to the external monitor, leaving the camera's EVF and LCD blank. This is the behavior you get with HDMI Info. Display is set to On.

When HDMI Info. Display is set to Off, it keeps your EVF or LCD display information intact when you're shooting movies (not stills!) and the HDMI port is occupied. If you have a monitor hooked up to that port, then only the live video feed will be seen on the monitor and none of the operator's annunciators (such as battery life, exposure settings, audio levels, or whatever you have the Display button configured to show). If an external video recorder is attached, uncompressed video is sent out via the HDMI port when this setting is Off.

11.16 USB CONNECTION

Menu Position MENU →  4 → USB Connection

What it Does Specifies how the camera appears to your computer when attached using a USB cable

Recommended Setting Mass Storage

When your camera is connected to another device using a USB cable (**Figure 11-5**) it can actually “behave” like a different device. Below are the four choices the camera gives you for this parameter:

Setting	What it Means
Auto	Chooses between the next two options below automatically so you won't have to. On my Windows 7 machine it chooses "MTP."
Mass Storage	The camera behaves as a giant “memory card to USB” adapter. Useful for when you're connecting the camera to a computer, and you want to be able to drag and drop files from the camera's memory card to your hard drive.

MTP	"Media Transfer Protocol" should be selected when you're plugging your camera into a PICTBridge-compatible printer. With this setting you can use the camera's DPOF settings (Section 10.10) to specify which images to print. This is also compatible with Microsoft's new Device Staging feature. Read on for more details.
PC Remote	Use this option when you want to control your camera with your computer (no live view, though, so don't get excited). See Section 3.20.

The Mass Storage option is pretty straightforward. It's the way you would expect your camera to behave if you connected it to your computer using the USB cable. If you're using Sony's PlayMemories Home software to automatically import your images when you plug your camera in, then you must use this setting (and the software will change it for you when you ask it to import).

But what's MTP? The simple answer is it was designed for beginners to allow whatever you plugged your camera into to provide intelligent options based on the fact that it knows you've plugged a camera in. For example, if you used the **MENU →**

2 → Specify Printing feature (Section 10.10), when you plugged your camera directly into your printer the printer would see that it was a camera that had certain pictures slated for printing. Microsoft also has developed new features in Windows 7 that provide context-sensitive options for you depending on what has been plugged in (many provided by the device manufacturers themselves). You can read more about this feature at <http://tinyurl.com/y82pz9x>.

Just for fun I tried hooking up the camera to my Windows 7 machine. The first difference I noticed is that while I could still view and drag/drop my



Figure 11-5: The A6000's USB connector is the upper of these two connectors.

pictures to my hard drive, I couldn't delete my images from the memory card². It also took twice as long to import my images and it would import only the .mts AVCHD movie files (not the .modd files, which are described in Chapter 12 – Movie Mode). This limitation may or may not be a big deal for you, but I always prefer the more straightforward options, which is why I recommend this feature be set to "Mass Storage."

The last option supports a tethered shooting option called PC Remote which provides only the ability to change some basic camera settings and shoot the picture, and automatically download the image to a predefined directory. (It's much faster than Wi-Fi transfer, for what that's worth.)

11.17 USB LUN SETTING

Menu Position MENU →  4 → USB LUN Setting

What it Does Allows a second read-only drive to appear when the camera is attached to a computer

Recommended Setting Multi (at least initially)

LUN stands for Logical Unit Number, and if a camera has more than one USB LUN, then it can appear as more than one device when hooked up to a computer. In this case, with this function set to On and MENU →  4 → **USB Connection** set to **Mass Storage**, your computer sees *two* drives when the camera is turned on: the memory card, and a separate drive called PMHOME which contains the Windows installation software for

² (Well, there was an obscure way to delete them but it's not ideal. First I'd have to allow Windows to import all the files off the memory card, and beforehand specify "Delete after import," which is not the best time to delete images. The best time to delete images from the card is after you've made a backup of everything you've shot that day.)

PlayMemories Home. (That's right – all that trouble just to distribute a software program.) If you don't need to install this software (or you've already done so from Sony's website) there's no reason to keep this function on and you can safely change it to **Single**.

The PMHOME directory is read-only; you can't erase it from the camera, nor can you store information in it. Sony recommends setting this feature to **Single** when connecting to something other than a computer, or when **MENU → 4 → USB Connection** is set to **MTP** and doesn't work.

Macintosh Users: Sony recommends setting this function to **Single** all the time.

11.18 LANGUAGE

Lets you choose one of six languages to use for the user interface.

11.19 DATE/TIME SETUP

When you turn on your camera for the first time you see this screen, but then you may never need to bother with it again.

11.20 AREA SETTING

This sets your time zone. Note that if you're traveling, you can change only the Area Setting and the date and time are automatically adjusted.

11.21 FORMAT

Menu Position MENU →  5 → Format

What it Does Formats the memory card, erasing all content and mapping out corrupted blocks

Recommended Setting: n/a

Many people wonder what's the purpose of formatting – after all, isn't it the same thing as deleting all the content off your memory card? The answer is that formatting and deleting work completely different internally, and do different things. Think of a memory card as a library, but instead of storing books it stores image files. Libraries have a collection of books on shelves, and a card catalog telling you where each book is located.

Using this analogy, when you erase a book (image file) from the library, all you do is remove the relevant card from the card catalog. It doesn't actually remove the book from the shelf; just the index card which points to the book's location. The book doesn't actually get removed from the shelves until a new book comes in to replace it. (Similarly, an old image doesn't actually get erased until a new image overwrites the old one). At that time, the new book is added to the card catalog.

Hard as it is to believe, all digital storage media is imperfect, just like some libraries have broken shelves and leaky ceilings where books cannot be stored. And so the process of formatting was designed to identify these bad shelves (known in computer terms as "bad blocks"). Using the Library analogy, formatting a library involves removing all the books, taking note of where the broken shelves are and where the roof leaks, painting the good shelves, re-numbering all the shelves, and putting bricks in the card catalog so you can never accommodate a card which points to those bad spots. You're then open for business.

Clearly, erasing and formatting are now two different things – erasing actually leaves the image on your memory card. And they will stay there too, until you start taking more pictures, at which time your old images will be irrecoverably overwritten. Formatting a card erases all the information,

blocks out bad sectors, and sets things up again so new images can be accommodated without the bad parts causing corruption.

Now that you sort of get the idea behind formatting, let me add a little more important detail. There are actually two kinds of formatting that are possible; the first one being a thorough format and is the kind of formatting I described above: A complete teardown and rebuild of the library shelves, tossing all books in the process. There is another kind of formatting, known as a “Quick Format” which is very, very similar to the process of deleting all the images on the card. (In fact, as far as this discussion goes, they’re as good as identical.) This kind of formatting takes significantly less time, and in fact this is the kind of formatting your camera does. Got it so far?

So, to reiterate: When you delete an image from your memory card, the image doesn’t actually get deleted (for that would take too much time); rather, a pointer to it just gets deleted from the memory card’s card catalog. (This is usually true when you delete files from computer hard drives too.) When you format a memory card using the camera, the same thing is true: *The card catalog is erased, but the previous image data still remains!*

You may recall reading in the camera manual that you should always format the memory card in the camera, and not the computer. Given that in-camera formatting is really an erasing of the card catalog and not a thorough formatting at all, what on earth was Sony thinking when they wrote that? For the answer, let’s think back to the ancient Apple vs. IBM wars of the early 1980s. Even before the Macintosh was introduced, Apple always had their own proprietary format for floppy disks. So even if the

TIP: *There do exist “undelete” programs that scour through your memory and try to recover the actual data that’s still there (if it hasn’t been overwritten or thoroughly formatted); there also exists image recovery software that can try to recover as much of that image as it can in the case of a corrupted memory card (this is not a rare event – sometimes it pays to shoot RAW & JPG so at least if one image gets corrupted you’ll probably still be able to read the other.) I know that Lexar brand memory cards come with an example of the latter software on the CF card for free – so it’s worth getting at least one of their cards. Other freebies that have a good reputation are:*

Recuva from Pirisoft <http://tinyurl.com/c3eosk>

Transcend memory test utilities: <http://tinyurl.com/7bzulv2>

floppy disk was physically the same, if it was written to on an Apple, it could not be read by an IBM PC. This was still true when the Mac was invented, although Apple did go out of their way to make sure that their machines could read IBM floppies if they were inserted. (A technically difficult task, since the two machines would require different mechanical spin rates at different times.)

Today, there are still many different competing proprietary formats used by Apple, Linux, and Microsoft, and when you format a memory card in those machines, who knows what format it will use? A Windows PC might use NTFS, FAT32, or FAT16 formats; whereas a Macintosh might use HFS+. But when your camera formats a card, it will use the Microsoft FAT32 format, which seems to be the lowest-common denominator as far as formats go – everyone can read it. (Unless, of course, you've inserted an SDXC card, which can hold so much data that FAT32's card catalog isn't big enough to address all of it. And so this specific type of memory card requires the exFAT file system, which your computer needs to know how to read if you're going to be extracting files off of it.)

So that's where the advice came from: It was easier to say "Just format it in the camera" instead of giving a bewildering technical explanation and saying what I'm going to say next: Should extreme corruption occur on your memory card, your best course of action to make the card usable again is to format it *on your computer* and specify FAT32 and disable the "Quick format" option. Why? Because a thorough format will identify and map out the bad memory locations on your card, whereas a quick format might keep the bad memory blocks active, leaving them free to once again ruin one or more of your shots.

11.22 FILE NUMBER

Menu Position MENU →  5 → File Number

What it Does Specifies whether the camera resets the file numbering scheme when you change memory cards

Recommended Setting Series

Every time your camera takes a picture, it writes a file to the memory card named “DSC0nnnn.jpg” (and/or .arw). This, and the practice of putting these images into a directory named DCIM/1xxMSDCF, is in accordance with the DCF industry standard created by JEITA (the Japan Electronics and Information Technology Industries Association; www.jeita.or.jp) to encourage interoperability between imaging devices. The last four xxxx's in the filename are actually a 4-digit number, and they increase in sequence for each picture you take. But you almost certainly knew that already.

When you swap out a memory card, the camera can continue to number the files in the same sequence (“Series”), or reset the counter and start numbering the files starting with DSC00000.jpg (“Reset”). Notice that these commands only apply when you insert a fresh memory card – you can't, for example, reset the filename counter to zero while a card is still in the camera.

I personally prefer Series, since after I take pictures I tend to move pictures from one directory to another all the time, and with Series each image has a slightly more unique identifier.

[Because I use multiple cameras and I don't want to create duplicate filenames, I use Photoshop to batch rename files from different cameras using a prefix when I upload them to my computer. For example, a file shot with the A7R would be named BDSC0nnnn.jpg, and a file from the A6000 would be named CDSC0nnnn.jpg. (When the camera runs out of filenames and starts numbering from 0000 again, I start using a new prefix. – Ross]

11.23 SELECT RECORDING FOLDER

Menu Position MENU →  5 → Select REC Folder

What it Does If there is more than one directory properly labeled to hold still images on the memory card, this function lets you choose which one the camera will use to store images

Recommended Setting N/A

The description above pretty much says it all. Usually if you have a fresh card inserted into the camera, only one such directory will exist for storing still images, 100MSDCF. (The previous section talks about where that name came from.) If you want to create a new directory, see the next section.

Note: Unless **MENU →  5 → Folder Name** is set to **Standard Form**, you can't use this option.

11.24 NEW FOLDER

Menu Position MENU →  5 → New Folder

What it Does Creates a new folder for recording future still images

Recommended Setting n/a

This feature creates a new folder for still images. Try it now and chances are it will create a new folder called “101MSDCF.” (The file name follows the industry-standard file naming convention.) If for some reason I wanted to put future images into the previous directory (100MSDCF), I'd use the **MENU →  5 → Select REC Folder** function described in the previous section.

11.25 FOLDER NAME

Menu Position MENU →  5 → Folder Name

What it Does Lets you choose between a cryptic-looking folder name, and one containing the date the images were shot (but in a format that is not computer-sortable)

Recommended Setting Standard Form

Every time you use a fresh, blank memory card in your camera, it automatically creates directories on the card and stores subsequent images into one of them. These directories and locations may seem strange and arbitrary to you, but this is an “industry standard” practice originally designed to make it easy to stick your memory card into a 1-hour photo kiosk. The kiosk will know where to go and what to do (and still allow you to keep additional files on your memory card without confusing the equipment).

11.25.1 IF STANDARD FORM IS USED

The directories it creates are:

“DCIM\1xxMSDCF” (this is the directory into which your images are placed)

“AVF_INFO\” – This contains some .bnp and .inp files which are said to be proprietary Sony format and contain information about the video file but not the video itself. The Sony manual reads, “When you delete the files, you cannot record/play back the images correctly. The files are defaulted as hidden files and not usually displayed.”

“MP_ROOT\xxxANV01” – This is where all the MP4 files (and their associated thumbnails) go.

“PRIVATE/AVCHD/BDMV/STREAM” – All the AVCHD movies go here.

“Sony\” – Nothing important in here.

“MISC\” (appears when DPOF files are specified. It is used to hold files relative to DPOF print ordering functions (and other consumer cameras use it for other purposes as well).

If the camera is writing images to the default 100MSDCF directory, and the JPEG filenames run out of numbers (DSC03999.jpg), the camera automatically creates a brand new directory called 101MSDCF to store the next image (DSC00001.jpg) into. It does this to avoid the possibility of writing two images with the same file name in the same directory (making the assumption that the old directory is full, containing images from DSC00000 through DSC09999).

So this function allows you to specify which such directory your images will be written to. But beware that this camera only recognizes directories *with industry standard filenames and locations*. For example, if you put the memory card into your computer, which contains a manually-created directory called “DCIM\My_Files,” when you put the memory card back into the camera and tried to select “My_files” as the new default directory, you’ll see that “My files” doesn’t even show up in the list of available directories to select. The camera only recognizes directory names of the format xxxMSDCF (with xxx equaling 100 or more). “077MSDCF” won’t be recognized, but “201MSDCF” will be.

TIP: According to the manual, up to 4,000 images can be stored in a folder. When the folder capacity is exceeded, a new folder is created automatically.

11.25.2 IF DATE FORM IS USED

The directories it creates are:

“DCIM\20290111” – a directory whose name represents (somewhat cryptically) the date on which the image is shot.

MISC\ (Appears when DPOF files are specified). It is used to hold files relative to DPOF print ordering functions (and other consumer cameras use it for other purposes as well).

Now look at the top example again: “DCIM\20290111. That’s a strange format for a date, no? Here’s how the date format breaks down:

First 3 digits: The folder number. This number is automatically incremented when your filename counter rolls over. There is no way I know of to reset this number or control what it is.

Next digit: the last digit of the year

Next two digits: the current month

Next two digits: the current day of the month

The directory name “10131208” breaks down as “Folder 101, taken in 2013, on December 8.”

Notice that this date format applies only to the directories that hold still images. The video directories listed earlier are not affected.

If you ever had a dream of just uploading all of these folders into a “My pictures” directory and have them automatically sorted by date, then dream on. This date format is just awful for that purpose, as it was apparently not designed for computer sorting to produce a chronological order.

TIP: If you do want your directories to sort chronologically once they’re on your computer, you have to rename them manually once they get there. Here’s the format that Gary uses:

2013-01-02 Carol’s Birthday Party

When you sort your directory list alphabetically, your directories will all be in chronological order – regardless of the description (“Carol’s Birthday Party”) you append to the directory name. In this way you can sort them by date, and also find pictures by keywords (at least at the directory level) using Windows search. Also note that Gary’s using 4 digits to represent the year – he doesn’t want to create another Y2K problem on his own computer.

11.26 RECOVER IMAGE DATABASE

Menu Position MENU →  5 → Recover Image DB

What it Does Tries to recover the internal image database required for stills and AVCHD movies (use if the database becomes corrupted)

Recommended Setting N/A

There's a database on your memory card that's used as part of the process PlayMemories Home (Sony's software which came with your camera) uses to transfer the files to your computer. And just as your still images can be destroyed due to memory card corruption issues, so can movies.

“A database for recording AVCHD Movies?” Let’s just say that the standards and methods behind recording AVCHD video are more complex than a reasonable person might expect. This function is actually poorly named since its primary function is to check the database for errors and then rebuild or recreate it if possible.

Just pray that you’ll never need it ☺.

11.27 DISPLAY MEDIA INFORMATION

Menu Position MENU →  6 → Display Media Info.

What it Does Shows you how much free memory is left on your card

Recommended Setting N/A

This is a friendly screen that shows you approximately how many still images and time for movies remain on your memory card, calculated using the current settings for still image Quality and Size (**MENU → 1 → Quality** and **MENU → 1 → Image Size**) and Movie File Format and Record Setting (**MENU → 1 → File Format** and **MENU → 2 → Record Setting**).

The number of still images remaining is the same number that is shown to you in the standard data display, and as such suffers from the same inaccuracies (you can't know ahead of time how much space a JPEG file will occupy since it depends on the content of the image and the noise level).



Figure 11-6: You can see how many stills and how many more movie minutes you can store using the current settings.

11.28 VERSION

Menu Position **MENU → 6 → Version**

What it Does Tells you the version of your camera and lens firmware

Recommended Setting Not a setting

Not sure what firmware version your camera has? Then, this feature is for you! You can get firmware updates (if available) from the Sony e-support website at <http://esupport.sony.com/US/p/select-system.pl>. Choose ILCE-6000, Drivers Software, and select your computer operating system. Then, follow the instructions on the web page.

As of this writing, only lens firmware updates are available (there is no update available for the camera firmware Version 1.00).

TIP: If you upgrade your firmware all of your camera's settings stay the same, including any AF Micro-Adjust settings (Section 7.23) and Wi-Fi settings.

11.29 SETTING RESET

Menu Position MENU →  6 → Setting Reset

What it Does Resets some or all of the camera's settings

Recommended Setting If you're going to use it, just use Initialize

When things go wrong; when you don't know what variable you changed and you just want to reset everything back to factory defaults, this feature can be a lifesaver. This feature gives you two choices:

1. The first option, **Camera Settings Reset**, resets all settings in the Camera () menu.
2. The second option, **Initialize**, resets the entire camera to factory conditions. The camera reboots and asks you to enter the date and time, just as if the camera were new.

My guess is that if you're in need of some sort of a reset, you're also very likely to not know what variable needs to be reset, so Initialize is the setting I'd recommend.

I like to maintain a text file on my computer with all my settings (including Memory bank settings) so I can restore them if I ever need to. It would be nice if I could just load them all somehow, rather than having to enter each setting manually!

TIP: Good news: Wi-Fi settings and AF Micro-adjust settings are NOT reset when this feature is invoked. (However, your downloaded applications are erased. Don't worry; you won't have to pay to install them again.)



CHAPTER 12

MOVIE MODE AND ITS MENU

12.1 INTRODUCTION

Video can be a big topic, and there's a very good chance that you may not care about all the technical details that I'll go into in this chapter. That's OK! For you, I've created this high-level introduction.

The Simple Way

- When you want to take a movie, just press the red Movie Button on the right side of the camera. (**Figure 12-1**). (This assumes that **MENU → 6 → MOVIE Button** is set to **Always**.) To stop taking a movie, push that red button again.

More Control

- You can lock your exposure either before or during movie mode by hitting the AEL button if it is assigned to AEL Toggle.
- If you want more control over your moviemaking experience, you can choose Program Auto, Aperture Priority, Shutter Priority, or Manual Exposure by first moving the Mode dial to Movie mode and then setting **MENU → 6 → Movie → [choose between P, A, S, or M]** (**Figure 12-2**). You can also choose the Movie mode by accessing Shoot Mode if it appears in your Fn menu. In addition, with Mode Dial Guide set to On, your are presented with these choices whenever you move the Mode dial to Movie.



Figure 12-1: There are two ways you can invoke movies – the easy way (just press the red button at any time) and the full-control way – turn the Mode dial to Movie, then use the Movie menu item in **6** to take movies using **P, A, S, or M** modes.

- In addition to using Peaking Level and Peaking Color, you can use the Focus Magnifier feature to tweak your manual focusing *while you're shooting*. You just have to assign it to a button first. (Nice touch.)
- You can view your video on an external monitor by hooking one up using an HDMI cable and setting **MENU →**  **3 →**
HDMI Info.
Display → Off).



Figure 12-2: Movie mode lets you take control of the aperture, shutter, or both – as long as you agree to forgo autofocusing.

Uploading Files to Your Computer

When I want to upload your camera's image files to a computer, I have found it most convenient to use Sony's Import Media Files function in the PlayMemories Home software that came with your camera. Picture and movie files are spread among different directories of the memory card, and PlayMemories Home can find them all and put them into one directory. (Macintosh users – PlayMemories Home now runs on the Mac, and iMovie handles the movie import process correctly as well.)

That's the short story, and the end of this high-level introduction.

12.2 MORE DETAIL

Your camera's movie clip length can be as long as 29 minutes 50 seconds – a limitation imposed by European Union import restrictions, not by any technical limitation. (Although the manual says that when you choose large bit-rate video modes such as anything about 24 MBPS, the max. recording length is 20 min. I tried it and it's not true – the camera goes to 29:50, writes a 5.8 GB files, and then stops recording.)

Your camera's maximum movie recording space depends on the movie format used and the capacity of your memory card. Using a 64GB card, these are the maximum total length (hours and minutes) for each format (These numbers are the total times of all movie files on the memory card):

- 60i/50i 24(M) – 6 h
- 60i/50i 17M(FH) – 8 h 15 m
- 60p/50p 28M(PS) – 5 h 5 m
- 24p/25p 24M(FX) – 6 h
- 24p/25p 17M(FH) – 8 h
- 1440x1080 12M – 11 h
- VGA 3M – 40 h

Another thing to be aware of while shooting movies is that Face Detection doesn't work, so when you're in Wide Area AF mode, the camera will be as dumb as a point-and-shoot when determining what to focus on (i.e., much less accurate than when you're shooting stills.) My recommended solution: Lock-On AF works very well in this mode. Set **Menu →  5 → Lock-on AF → On**. Then, either before or while you're filming, center your subject, press the center button twice, and the camera will follow your subject around the frame as long as it's moving slowly and is easy to differentiate from the background. For more information, see Section 6.29.

Another option is to use Zone Focus Area (**Fn → Focus Area → Zone**). Then, you can change your focusing zone while you're shooting. To change the focusing zone, press the center button and use the cursor buttons to move the extremely wide focus area around. Theoretically you're supposed to press the center button again when you're finished; however there's absolutely nothing wrong with leaving it in this mode and just manually moving the cursor to select a new focus point when your subject moves. That approach is much more effective than letting the camera decide; but you have to be careful that your button presses don't jar the camera noticeably.

12.3 EXTERNAL MICROPHONE

The A6000 doesn't feature a microphone input jack. As an upgrade from the built-in microphone, Sony currently offers three microphones that work with the camera's multi-interface shoe:

- The ECM-XYST1M, a stereo microphone (\$159.99 USD)
- The ECM-GZ1M, a monaural microphone (\$99.99 USD)
- The CM-W1M Wireless Microphone, a Bluetooth Wireless Microphone System with Wireless Range up to 100m (\$228.99 USD), also a monaural microphone.

12.4 EXTERNAL DISPLAY

Sony has also introduced an optional external display called the CLM-V55 (**Figure 12-3**), which is being marketed to DSLR movie makers using any camera brand. It measures 5 inches diagonally and plugs into the camera's HDMI output port.

Why do you need it? Well, just as photographers have always liked big, bright viewfinders and big rear displays to see how their images look, so do videographers.



Figure 12-3: Look badass with the external HDMI monitor and the external shotgun microphone!

On the other hand, this monitor displays only 800 x 480 pixels, so it actually shows you less information than the camera's rear LCD. However, it can show those fewer pixels on a larger screen.

12.5 MONITORING VIDEO AND AUDIO

As you know, the A6000 lets you view live video from an external monitor and the LCD/EVF simultaneously while you're filming.

As mentioned in the Introduction to this, you can monitor your video by plugging in an HDMI monitor (and setting **MENU → 3 → HDMI Info. Display → Off**). You can see an example of this setup in action in **Figure**

12-4. (Okay, it's a picture taken using the A99, but the functionality is identical! ☺) You can also use this configuration to hook up an external HD video recorder and record uncompressed video directly from the camera.



Figure 12-4: When shooting video you can use the camera's LCD AND an external monitor (via HDMI) at the same time. You can also have two separate views (one with function status icons, one without) on the different screens. (But, there are caveats to these features!)



However, be careful not to judge your color balance or exposure by paying attention to the HDMI output! It turns out that the color space associated with HDMI is called Rec. 709 and represents only 35.9% of the color gamut your sensor is capable of capturing. Another way to think about it is, your camera can represent each color in the range of 0–255; however the HDTV standard uses a narrower range, from 16–235. (This is because Sony is adhering to a CIE 1931 color industry standard for television colors – don't blame Sony.) The result is that the monitor looks brighter and more "contrasty" than what your camera LCD monitor shows, and what it will look like when viewing it later on a computer monitor. (See **Figure 12-5**.)

Figure 12-5: Be careful about trusting the HDMI monitor when it comes to judging your lighting and exposure! Just as viewing your pictures on an HDTV make them look bright and contrasty, so too will your videos on an HDTV. The left image is how a video looked on an HDTV while we were filming it; the right one (a different take, obviously) is how it looked on my computer monitor during editing.

TIP: The different color palettes used by your camera and by external monitors can be a problem when you're editing, since the picture can look GREAT on your computer screen but completely different when viewing it on an HDTV. (Again, **Figure 12-5**). What to do? I've found a trick that works well. First, tweak your color and levels on your computer using the video editor software of your choice. Then, just before you render your video, you should invoke a function that all video editors have which performs a "COMPUTER RGB TO STUDIO RGB" conversion. It makes the output match what you saw in editing, and no longer will you cringe when you see your work played back on consumer equipment.

TIP: One problem I discovered while using an external monitor in a studio (with **MENU → 3 → HDMI Info. Display** set to **Off**) is that the live video feed also carries the audio, so you might get audio feedback during filming if you're using sensitive microphones and your monitor is nearby. To solve this problem we had to constantly turn down the sound on the monitor whenever we were filming, and then turn it up again when reviewing the footage. I don't know what Sony could have done about this, since the HDMI output can also be routed to a DV recorder which needs the sound as well.

12.6 MANUAL CONTROL IN MOVIE MODE

When the Mode dial is set to Movie mode:

- If you're going to be focusing manually, the use of Peaking Level during movie making can be tremendously helpful. (**MENU → 2 → Peaking Level** and **Peaking Color**, described in Section 7.7.) The

Focus Magnifier function can work while you're recording also (just assign it to a button beforehand).

- When your Mode dial is set to Movie mode, the shutter release button is completely inert and you CANNOT take a still picture at all. (In fact, there is *no way* to take a still image while you're making a movie.) The only thing the shutter release button can do in this mode is invoke an AF-S like focus-lock.
- In Movie Shutter Priority mode or Manual Exposure mode you can select a shutter speed as slow as $\frac{1}{4}$ of a second, and as fast as your camera can go ($1/4000^{\text{th}}$ of a second), regardless of the setting of **MENU → 7 → Auto Slow Shut**. $\frac{1}{4}$ of a second makes for pretty blurry movies when things move; but if you're shooting in extremely low light it may be the only option you have.
- In Movie Aperture Priority mode, the slowest shutter speed the camera will select is $1/30$ second. (This is regardless of the setting of **MENU → 7 → Auto Slow Shut**.)
- In any of the movie modes, the most you can adjust the exposure compensation is $+/- 2$ stops.
- You have lots of control over lots of variables: When you start recording the camera uses the currently set white balance, creative styles, exposure lock, exposure compensation, AF area (if you're autofocus), and metering mode. However, while you're shooting the only things you can change are focusing mode, focusing area, and exposure compensation.
- When the AF area is set to flexible spot or zone, you can adjust the AF point/zone during movie mode without having to push another button first. (An improvement over still image mode!)
- The Histogram is still available in Movie mode; however, Zebra stripes are also available, and you may find that more useful.
- You cannot set the Custom White Balance in Movie mode. (You have to set it in P/A/S/M mode first, store it in a memory location, and then recall the stored setting when in Movie mode.)

TIP 1: *The general rule of thumb for smooth-looking video is “half the frame rate,” which means if you’re shooting at 60 frames per second, then your ideal shutter speed will be $1/120$ second.*

TIP 2: *You may be wondering, “If the camera is shooting at 60 frames per*

second, how on earth is it possible to shoot at a slower shutter speed?” (Good question!) The answer is, when you shoot at a slower shutter speed, the camera duplicates frames when it creates the movie. So for example, if you were shooting at 1/60th of a second, one “exposure” will equal one frame of the movie as you play it back. If, on the other hand, you were to set the shutter speed to ¼ of a second (the slowest shutter speed the camera will allow in movie mode), the camera will take the ¼ second exposure and save it as 8 consecutive identical frames in the movie file. So your blurry shot will actually take ¼ of a second to view.

12.7 IMPORTING FILES TO YOUR COMPUTER

I've never been a fan of fancy programs that import your images for you as soon as you insert a memory card into your computer. I'd much rather drag the images to wherever I want, thank you very much! However, in the case of movies, importing software applications such as PlayMemories Home (PMH) or iMovie really are helpful. As pointed out earlier in the book, the camera stuffs stills and videos into different directories. For example, here is where the camera stashes the raw information for movie files on the memory card:

- MP4 Videos: MP_ROOT\100ANVXX*.mp4 and *.thm
- AVCHD Videos: AVCHD\BDMV\STREAM*.mts
- Images: DCIM\100MSDCF*.jpg and *.arw

Why put everything into so many disparate and unintuitive directory names? Sony is adhering to industry standards designed so that if you insert your memory card into a kiosk or inkjet printer or other device, the device will know where to look for things, regardless of what kind of a camera was used.

12.7.1 .MODD FILES

When PMH or iMovie imports AVCHD movies to your computer's hard drive, in addition to pulling over the .mts files on the card, PMH also imports .m2ts.modd files. Similarly, MP4 video files appear in their destination directory as .mp4 and .mp4.modd files.

The .MODD file appears to contain information regarding dates and timelines related to your recording. According to Sony, “Attempts to delete these files in order to improve video archiving have resulted in loss of timeline data and some claim to have experienced a loss of audio data.” However, I’ve deleted these files for years and have never suffered any ill effects.

Sony’s manual strongly warns against hooking up your camera to your computer and manually transferring the movie files over to your hard disk: *“Do not delete or copy AVCHD View movies on the memory card from the computer. Sony is not held liable for consequences resulting from such operations via the computer.”* That’s a pretty serious warning. It probably has something to do with that mysterious AVCHD database on the memory card, and the fact that movies are stored as .mts files on the memory card and then appear as .m2ts files with completely different (and undecipherable) names when they get to your computer.

Important TIP for Macintosh users: When importing AVCHD movies as “iMovie” or “Final Cut Pro,” make sure you’re using Mac OS version 10.6.7 or higher. Older versions will not be able to read the AVCHD video files produced by the A6000.

You’re also limited in movie format choices. According to Sony’s instruction manual, the Macintosh can’t import movies set to 1080/60p(50p) format.

TIP: Once you upload .m2ts files to your computer, you can’t move them back to the camera to play them back on a big screen. Doing so makes the camera go crazy, trying to rebuild the AVCHD database (several times) and ultimately failing (MP4 files just fail, showing up as “?”).

12.8 MOVIE FILE FORMATS

Okay, time for Alphabet Soup. The A6000 can shoot HD video, but what exactly does “1080/50p AVCHD” mean, and can it be used in all countries? How can you make an informed choice between 60i 17M(FH), 60P 28M(PS), or 24P 24M(FX) Record settings? Why are there different standards, and more important, why should you care to know them? To explain all this, let’s take a deep breath and explain a little history.

The earliest form of video was television, and the standards for television were actually based on the electrical current that was available in each country. You probably know that old-fashioned televisions didn’t use the concept of pixels like today’s computer monitors do. Instead, those TVs divided the image into a series of horizontal lines, and swept each line onto the screen from the back of the TV tube.

For North America and other regions that used 60 Hz power, it was technically easiest to design a video standard that was in sync with the power mains: 60 updates per second. And to save on bandwidth, the engineers decided to split the image up into odd and even lines, so first the odd lines would be swept onto the screen, next the even lines. It took both an odd and an even update to get one full frame. To the eye it looked like one continuous image. This is called “interlaced,” and the resulting NTSC video standard, which was updated 60 times a second, resulted in 30 full frames per second.

Europe and other regions had 50 Hz power lines, and so their PAL video standard had – you guessed it – 50 updates per second. This



Figure 12-6: Cameras marked with a “50i” on the bottom can shoot in PAL; whereas those marked “60i” can shoot NTSC.

approach made it *very* easy for the receiver to synchronize with the signal being broadcast. And because it, too, was interlaced, the PAL system was able to deliver 25 full frames per second. (There’s more to the history and the differences than that...but this is where the nomenclature comes from.)

The two video standards also had a different number of lines (nowadays we call that ‘resolution’ ☺): NTSC’s picture was comprised of 486 actual

lines, whereas PAL had 576. If we were to label these characteristics in modern nomenclature, we'd call NTSC "486/60i" (486 lines, 60 updates per second, interlaced) and PAL would be 576/50i (576 lines, 50 updates per second, interlaced). Note, however, that 60 and 50 updates per second, interlaced, result in only 30 and 25 full frames per second, respectively.

So that was the old video. Let's see how modern technology has changed things.

The A6000 can shoot at a resolution of 1080/50p (PAL) or 1080/60p (NTSC). Yes, that's 1080 lines of resolution – much higher than the old days. And depending on the country for which your camera was intended, you can shoot using the NTSC standard only or the PAL standard only.

Which camera do you have? Look at the label on the bottom (**Figure 12-6**) – if it has a "50i" you've got the European version; if "60i" then the North American standard.

IMPORTANT TIP: *All of this 50i and 60p stuff refers to ANALOG TV standards – if you're playing back on an HDTV or a computer, these differences shouldn't matter, as all (well, most) modern equipment can deal with the various frame rates automatically.*

12.8.1 MORE ABOUT THE FORMATS

AVCHD was jointly developed by Sony and Panasonic in 2006 for professional use. (Better than the competing HDV and XDCAM EX standards of the time.) Very simply, it is another form of video compression. It is supposed to be more efficient (meaning creating smaller files) than the ubiquitous MP4 video format; but a quick informal test of two 15-second video clips of the same subject yielded the 31 MB for the AVCHD file, and 23 MB for the MP4. The AVCHD format is also said to be more compute-intensive to process and edit (and so it may not be the ideal format if you have an older computer). Not all video editors can handle the relatively new M2TS format; whereas MP4 is almost as universally recognized as JPEG images. Finally, most people can't look at a video and tell if it was shot in 1920 x 1080 AVCHD or 1440 x 1080 MP4, so it's next to impossible to make a bad choice – only a choice that's right for you.

To help sort things out, here's a simple overview of the two video formats:

AVCHD	1440 x 1080 MP4
1920 x 1080 resolution	1440 x 1080 resolution – about 480 fewer columns (yielding a picture that looks slightly narrower)
Dolby Digital Audio (AC-3), 48 KHz bandwidth sampled at 256kb/second	AAC-LC audio, 48 KHz bandwidth sampled at 128kb/second
Only high-end video editors can handle it. Discs burned with the AVCHD format can be read only by players which are compatible with "High Profile AVCHD."	Almost universally recognized; is playable and editable on variety of operating systems, and also widely used on iPhone, iPad, iPod, PSP and other portable devices. Can be uploaded to all social networking sites like Facebook.
Compute Intensive. Most modern computers utilizing the graphics accelerator card have no difficulty, although netbooks running Intel Atom processors can't do it.	Can be used on older hardware
Works with Sony's PlayMemories Home software to burn DVDs playable in consumer electronics equipment.	Can't burn a DVD playable in a DVD player using Sony's PlayMemories Home software.
Maximum clip length is 29 minutes 50 seconds. The 1080 HD video stream demands the use of Class 10 SDHC cards or better.	Maximum clip length is 29 minutes 50 seconds.
My friends at Paramount Studios couldn't open the file.	My friends at Paramount Studios could open the file. ☺

The good news is that there is no bad choice, only the choice that is right for you. Conventional wisdom says that AVCHD is the best choice if your output is going directly to an HD television or on a Blu-Ray disc, but

TIP 1: *60i 24M (FX) becomes true 30p once you import it into your editing program. It uses about twice as much data per frame as 60p 28mbps, resulting in fewer compression artifacts. If you want the slow motion option at all times, use 60p instead.*

TIP 2: *24/25 fps is also handy for those wanting to more seamlessly mix video with scanned film.*

MPEG-4 is probably a better choice for your computer, particularly if it's more than a year or two old.

12.8.2 CHOOSING A VIDEO FORMAT

So far, so good. The camera offers two different video options (and a few variations on those options):

1. Two different .MP4 Modes if **MENU → 1 → File Format** → is set to **MP4**:
 - a. 1440 x 1080 (**MENU → 2 → Record Setting → 1440 x 1080 12M**)
 - b. VGA (**MENU → 1 → Record Setting → VGA 3M**)
VGA mode is ideal if you only want to upload your video to social networking sites like Facebook and never want to view them on an HDTV set ever. The files are very small.
2. 1920 x 1080 AVCHD mode, selectable by **MENU → 1 → File Format → AVCHD**.
 - a. 60i/50i 24M (FX) (Blu-Ray, not DVD)
 - b. 60i/50i 17M (FH)
 - c. 60p/50p 28M (PS) (Neither Blu-Ray nor DVD)
 - d. 24p/25p 24M (FX) (Blu-Ray, not DVD)
 - e. 24p/25p 17M (FH)

That's a lot of options for the AVCHD format! In plain English, some of these AVCHD settings are of such high resolution that they can't be burned directly to a Blu-Ray or a DVD disk without some re-encoding. The camera will try to warn you about format limitations when you try to select one or the other, but the fact is that most other good video editing packages will do whatever conversions are necessary to save it in any format you choose. (The PMH software is NOT included in this category, nor is Apple's iMovie, from what I'm told.)

Just for fun I thought I'd shoot a bunch of video clips of different formats – 1 each MP4, AVCHD 60i 24m (FX), 17m (FH), and 24p 24m (FX), then 60p 28m (PS). Then I did the same thing with another camera that used PAL (50i) instead of NTSC (60i). Could I just import everything to a modern video editor and edit seamlessly?

First I tried Sony's PMH software, which told me I could only work with 50i or 60i AVCHD video files, not both. (You probably won't have that problem.) Once I chose a format it accepted all of the permutations that your camera can generate except for MP4 files. But it couldn't edit together files of different frame rates. Nuts to that!

Then I tried a pro-level video editor (I happen to have a copy of Sony Vegas Pro, which I actually like a lot (probably because it was designed by video guys and not by programmers). It pulled in everything – MP4 and AVCHD at all frame rates, and it could handle them all seamlessly.

So the moral to the story is, it doesn't matter what format you choose, as long as you choose consistently. If you're not a video pro I stand by my recommendation of only shooting MP4 because it's a more universally recognized standard right now, and is a little easier to work with.

12.8.3 WHY DOES MY CAMERA WARN ME WHEN I CHANGE FORMATS?

The formal specification for video on AVCHD DVDs is 18 megabits per second. Your first AVCHD Record setting option, 60i/50i 24M (FX), records video at 24 megabits per second – faster than the DVD standard, which is why the camera warns you that this is too fast for an AVCHD DVD. Observers of the warning message for 60p/50p 28M (neither Blu-ray nor DVD) might conclude that the Blu-ray data rate was less than 28 Mbits/second; however it's actually closer to 48 MB/s for audio and video, so I'm not sure what the issue is. But again, PMH or your editing package will be able to perform whatever conversions are necessary to burn your movies to the format of your choice. With this in mind, if I were to choose AVCHD movies, I'd use the 60p/50p 28M (PS) option.

Which option should you use? Usually, my advice would always be "shoot in the highest quality possible and then downsample or convert later on if you need to." But with this choice that's not easily achieved – none of the tools that Sony provides can convert between AVCHD and MP4 files. There are third-party software packages available (such as Wondershare.net: <http://tinyurl.com/cqwx225> – and decline the free toolbar), but that shouldn't be necessary just to manage your own video clips. So here's what I recommend: try shooting both formats, view them

on both your computer and an HDTV, and see if you can tell the difference. If you can't, my advice would be to use MP4 – it's easier to live with.

12.8.4 "CAN'T RECORD THIS KIND OF MOVIE"

If you ever see this error message when you switch from recording MP4 to AVCHD recording, it's because the camera was not able to find an AVCHD database on the memory card. The easiest way to fix the problem is to format your memory card in the camera and not on your computer.



CHAPTER 13

WIRELESS FLASH AND ADVANCED FLASH TOPICS

13.1 INTRODUCTION

“Wireless Flash” refers to the ability to move Sony’s accessory flashes away from the camera, position them anywhere else in the room, and still have them fire and auto-expose as if one of them were still sitting on the camera’s flash-mount shoe. In the old days, it was very difficult to accomplish this, but the wireless technology makes off-camera flash as easy as autofocus makes it easy to focus.

Just to demonstrate the dramatic changes that can occur from even subtle changes in lighting, **Figure 13-2** shows a standard family portrait pose using the flash on-camera (left) and off-camera (using a softbox diffuser, right). Wireless = drama!

The history of wireless flash starts with Minolta, who invented it back in the 1990s, and it has since been copied (and improved upon) by competitors. Four years ago Sony caught up with the competitors’ features by introducing a “new” wireless flash protocol which was so cumbersome to implement that I never bothered with it. (Besides, the “old” protocol was easy to use, plus ALL of Sony’s flashes – new and old – can work with it.)

Then Sony decided to re-design the Flash user interface when they



Figure 13-1: Wireless flash makes complex shots like this exceptionally easy!

came out with the HVL-F60AM, and now the new flash protocol is so easy to use that I'm not going to try to steer you away from it in this book. With it you can have control of three separate flash groups (one of which being the master flash atop the camera) and you can control ratios all from the comfort of the back of your camera.

It's true that a lot of people are scared off by wireless flash at first (especially when trying to decipher the new flash protocol); but let me reassure you that it's now easier to use than ever, and the results are *totally* worth it!

Following are some more examples of wireless flash in use.



On-Camera flash

Off-camera flash

Figure 13-2: Move the flash off-camera for greater impact.



The \$5 Studio: one flash and two pieces of white cloth. Read more about how I did it in my blog post: <http://bit.ly/1dtQQ94>



Go from boring to dramatic just by controlling your light! More info on how this shot was done at <http://bit.ly/1lwRntx>

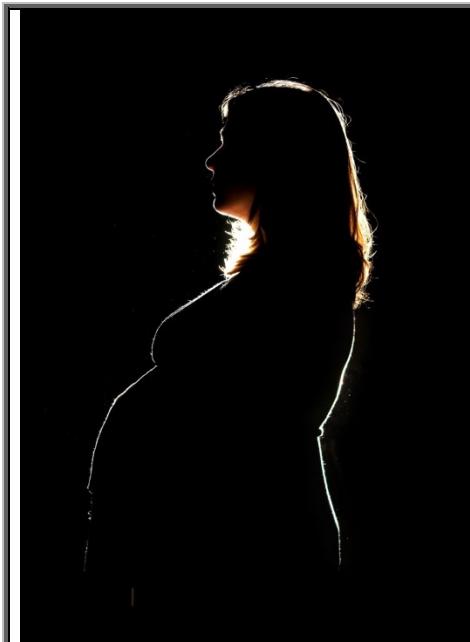




See later on in this chapter for how to use wireless flash to create an easy and inexpensive studio for portraits of family members.



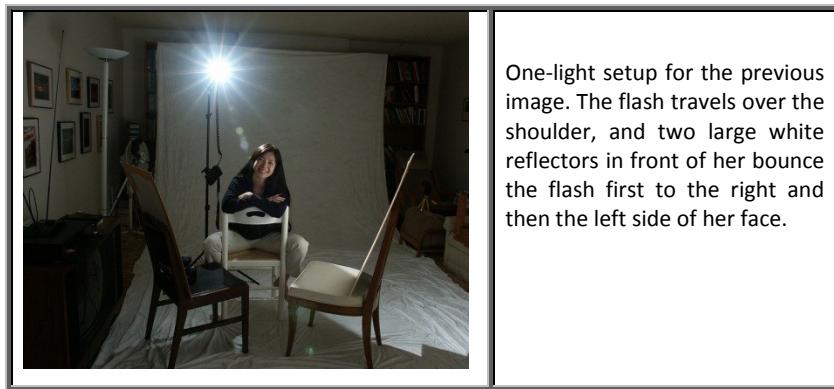
Okay, now I'm just showing off.
☺



Read more about how I created this pregnancy shot at <http://tinyurl.com/72okfae>



This shot was taken with ONE flash over shoulder with two front reflectors (see explanation below) – Wow!!



The shot above is a truly remarkable image using only ONE FLASH, and again shows off the versatility of this flash system in automatic mode. The flash was placed BEHIND the model and over her shoulder so that the bottom of the flash “beam” just touched her hair, and the majority of the beam hit the reflector placed out-of-frame, on the right. The right reflector was angled to reflect some of the light onto the model’s face, and some of it to the reflector placed out-of-frame to the left. This secondary-bounce light then illuminated the left side of the model’s face.

13.2 FLASH MODELS

Okay, before we get into the basics, there are three Sony flash models that will fit onto your A6000’s hot shoe. All of them are shown in **Figure 13-3** and some of the important differences are spelled out. And because Sony’s flash model nomenclature can be a mouthful, let me provide a quick translation table between the Sony and Minolta names, and how I’ll refer to each of them in this chapter:

Sony Name	Friedman Name ☺	Notes
HVL-F60M	“F60”	<p>Works great on top of the camera.</p> <p>Can trigger other wireless flashes using the “New” flash protocol.</p> <p>Can control ratios or groups using the new protocol.</p>

		Can act as an off-camera wireless flash via either the new or old protocols. In "Slave" mode, understands ratio mode, and can be controlled in groups.
HVL-F43M	"F43"	The "60"'s little brother. It functions identically to the 60 flash other than the price and output power, both of which are lower. (And the user interface is different too.)
HVL-F20M	"F20"	Small and light, makes for a convenient way to trigger wireless flash (or a nice substitute for a popup flash). It cannot be used as a slave.



HVL-F60M HVL-F43M HVL-F20M

Figure 13-3: The Sony Accessory flashes that will work with your camera. Note that there are similar-sounding models (HVL-F43AM, HVL-F20AM) that will not fit your A6000's hot shoe without an adapter.

TIP 1: There are many (but not all) older Sony and Minolta flashes that possess the old Minolta hot shoe, and require the Sony ADP-MAA adapter to work on your camera. I'm not going to talk about them in this book, but I will list them by name: HVL-F36AM, HVL-F56AM, HVL-F58AM, 5600HS(D), and 3600HS(D). Without needing the adapter, these flashes work great as wireless receivers using the "old" wireless protocol and since they've been obsoleted they can be bought pretty cheaply in the used market.

TIP 2: Those of you owning third-party "dumb" radio flash triggers and slaves for conventional ISO flash feet may find that the position of the firing pin on

the new Sony flashes don't line up with firing contact on most of the third-party radio triggers out there. Here's a youtube video showing the kind of modifications one Sony shooter had to make to overcome this design deficiency: http://youtu.be/pG_jywhbMeg.

Overheating Flash? I received some emails from a user who did event photography using the F60 flash, complaining that it would overheat easily – “20 flashes over a 3 minute period.” Was this a problem?

20 flashes over a 3 minute period is roughly 1 flash every 10 seconds. I tried it on Manual output level = ½ (which I thought was reasonable to simulate a wedding or event if you’re a reasonable distance away from your subjects) and no overheating problems after 5 minutes. Then I switched to full power and sure enough in one test it overheated at 2:45, and the other time it overheated at about 4:00. Firing the older F58 flash at full power every 10 seconds didn’t overheat for me until 11:45 – almost 3x longer under the same extreme conditions.

Why would this be? Does one put out more light than the other using the same circuitry? No, the output at full power is the same for both flashes. Does one recycle faster than the other, providing faster operation that users might appreciate? No, the recycle rate was about the same. Conclusion: I have no idea. Maybe they went with a cheaper capacitor inside.

Having done event photography in the past, I’m not sure how typical my informal test is. How likely is it that a flash will be fired at full power every single time when in TTL mode? On the other hand, as a working pro I find it’s always good to know the limitations of your equipment ahead of time so you can make sure you’re working within its limits. I have heard that the newer F43 flash doesn’t suffer from this problem.



13.3 BOUNCE FLASH

Before we start talking about wireless flash, let's talk about ways to make regular flash a bit more palatable. I mentioned earlier that the absolutely worst kind of light is when the flash on top of your camera is the sole source of light in a darkened room, as in **Figure 13-4a**. (Ironically, this is



Figure 13-4: Examples of Straight on-camera flash (left - Yuk!) vs. ceiling bounce (center). The right picture uses an easy-to-make light modifier that takes some of the light destined for the ceiling and converts it into a soft, pleasing subject light. What a difference!

how most people use their accessory flash, which is really a travesty.) Historically, the most common way around this was to point the accessory

flash Up and have it bounce off a low, white ceiling, turning the ceiling into a large diffuser (**Figure 13-4b**), which was certainly an improvement.

TIP: Yes, the F60 flash comes with a big pop-on diffuser. It's nice, but I've found the piece of paper to be better – it provides a larger surface area (softer light) and doesn't waste the light by sending it backwards behind the photographer.

Even better lighting results than bounce flash can be had using a simple piece of paper to act like a “light modifier” – pointing the flash up (like you’re going to bounce it off the ceiling) and then attaching a large sheet of paper as illustrated in **Figure 13-4c**. (Other examples of results using this technique are shown in **Figure 13-5**). This very effective (and inexpensive!) tool takes some of the light going straight up and reflects it forward, sending soft, diffused light toward the subject. The rest of the light bounces off a low, white ceiling, providing natural-looking illumination for the rest of the room. The result is the best of both worlds and very natural looking lighting!

Since light is such an important ingredient to good photography, light modifiers are almost always a necessary part of a great flash picture. I always use the piece of paper, even when shooting outdoors with no ceiling to bounce off of because the quality of the fill light is that much nicer.



Figure 13-5 Additional examples of the kind of natural light you get using the piece of paper shown in **Figure 13-4**. Tremendous improvement in flash for such an inexpensive modification!

13.3.1 DIFFUSING YOUR LIGHT

The cheapest and most effective method for improving flash effects is to use a reflecting umbrella. Bouncing off the ceiling and a piece of paper is nice if you're a photojournalist out in the field, but to get an even higher quality of diffused light on your subject, professionals for decades have



On-Camera flash

Off-camera flash

with umbrella diffuser

Off-camera flash

Figure 13-6: The same flash used three different ways drives the point home: light modifiers really make a difference!!

turned to either umbrellas or softboxes. Both are designed to soften the light and give you a high degree of control of direction for the most pleasing shadows and greatest subject depth (to give a 2-D image a 3-D look). **Figure 13-6** shows an example.

What's the difference between an umbrella and a softbox? In terms of the quality of light on your subject, very little. If you're shooting in a studio where the background is far away, then the softer quality of the softbox becomes negligible and the umbrella becomes your best bargain (plus it's easier to set up). Can't decide? There's a third option called a "Shoot-through umbrella" (**Figure 13-7**) that offers the best of both worlds. It's essentially an umbrella with a translucent fabric rather than a light-blocking one, which acts as the diffuser.

The general argument in favor of softboxes is that they produce square "catchlights" as reflections in the subject's eyes, which some professionals say are preferable to the round reflection produced by umbrellas. Others say softboxes can accept accessories to "shape" the light more easily than can

an umbrella. Umbrellas are appealing because they're faster to set up and considerably cheaper. If you're just starting out; go with the umbrella – the ratio of improvement per dollar spent is considerably higher.



Figure 13-7: A simple umbrella and wireless flash configuration. About USD \$20 plus a tripod. This represents the single best investment you can make to improve your photographs.

TIP: The 60 flash has a feature where you can control the flash exposure compensation from the back of the flash as well as through the camera's **MENU → 2 → Flash Comp.** menu. If you should adjust both, the total of the two settings are implemented, although the back of the flash and the camera's menu only show you their respective individual values.



Figure 13-8: One umbrella and a black sheet for a background is all you need for professional-looking portraits.

13.4 HIGH SPEED SYNC (HSS) FLASH

The same circuitry that allows an accessory flash to communicate in Morse Code also allows the flash to “spread out” the total light output by providing one long low-intensity burst of light rather than just one large short one. (See **Figure 13-10** below.) This means you can shoot with flash at a much higher shutter speed than normal. With this capability you can shoot outdoors, wide open, and still have your slave flash expose everything automatically (see **Figure 13-9** for an example of this). Equally amazing, Sony has combined the ability to do HSS with wireless flashes.

TIP: High Speed Sync (HSS) flash doesn't work with the pop-up flash, or with the HVL-20M flash. To use this feature you'll need the HVL-43M or HVL-60M flash. The following older flash models may also provide HSS using the ADP-MAA multi-interface shoe adapter: the Sony HVL-58AM and HVL-56AM, and the Minolta 5600HS(D) and Minolta 5400HS.

HOW IT WORKS

Rather than waiting for the shutter to open all the way before triggering the flash, the flash is told to output one long continuous flash with the correct intensity for the subject (as determined by the pre-flash). This long flash pulse illuminates the subject while the shutter's "traveling slit" exposes a different part of the sensor.

It's kind of like standing outside of a baseball park and looking at the game through a tiny little slit in the fence. You can't see the whole scene at once, but you can move your head left and right and "see" the entire scene a small slit at a time. That's how HSS works – as the shutter's "slit" travels across the face of the sensor, the sensor is provided another thin strip of the scene. The HSS flash pulse is long enough to ensure that there's the same amount of light on the subject when the slit is at the top of the frame and at the bottom.

Those of you who are technically inclined might be scratching your head, saying "Hey, I thought that Sony went with that electronic first shutter curtain thingy. Since the sensor is always fully open until the exposure ends, why is this 'traveling slit' stuff still relevant?" Good question. The answer is "the pixels are turned on one row at a time, starting at the top, at the same speed as a physical shutter would have done," thus enabling them to get the exact same kinds of high shutter speeds as with a conventional shutter.

There are some limitations to using HSS:



Figure 13-9: The High Speed Sync (HSS) feature lets you shoot wide open on a sunny day (1/2,000th in this case), providing for the out-of-focus background and still getting the benefits of wireless flash. Here, the wireless flash with a small softbox was set to the left of the subject, who was standing in open shade.

- Your flash doesn't have the reach that a non-HSS flash burst has. This is because you're trading off one intense short burst for one less-intense long burst. Therefore, your subject can't be nearly as far away as it could with non-HSS operation. You can actually see the distance scale on the back of your flash change as you change the shutter speed – the faster you go, the less reach your flash will have. So if your picture looks too dark via HSS, reduce the distance between the camera and the subject or raise the ISO

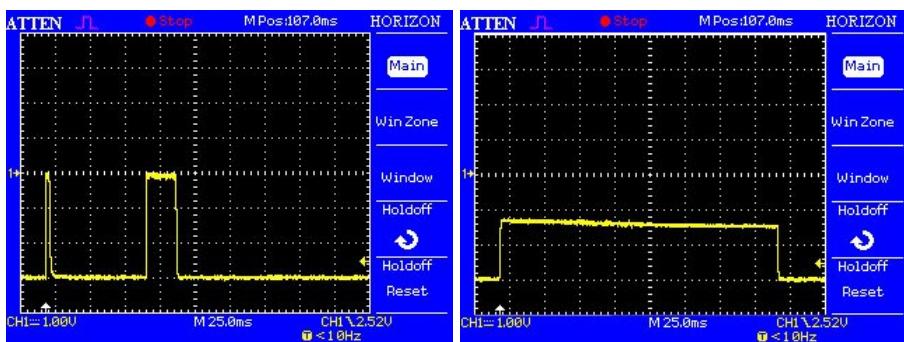


Figure 13-10: HSS Flash: A normal flash burst (the wider pulse in the left image) and the equivalent HSS output (right). The long pulse evenly illuminates the “traveling slit” used in High-speed Sync. Downside: you can only shoot close subjects.

setting.

- You can't use HSS when rear sync flash mode is selected (**MENU → 2 → Flash Mode → Rear Sync**). Why? The two ideas are incompatible. Rear Sync applies when the shutter is completely open for a long period of time – that never happens when HSS is used.

HSS is a feature of the flash, and is On by default, so it's a setting you never need to worry about.

13.5 WIRELESS FLASH

TIP: If you're not ready to start investigating wireless flash, or you're just not interested in it, you can safely skip the rest of this chapter for now. It will be waiting for you right here, if and when you're ready for it. You'll need to own at least two compatible flashes just to get started using wireless flash with the A6000.

Back in 1991, Minolta engineers had developed the ability to have the camera and the remote flashes communicate with each other using tiny bursts of low-intensity light – kind of like a “Morse code” using long- and short-light pulses. (See **Figure 13-12**.) These pulses are too faint to significantly affect the final exposure, but are strong enough to communicate with any other flashes in the vicinity – even when they are reflected off the walls, ceiling, or the subject. This scheme allowed even the tiny pop-up flash of Minolta’s and Sony’s prior cameras to control several off-camera flashes at once without the need for cables. (This was a BIG DEAL if you’ve ever had to struggle with the cable method on a regular basis.) By sending long and short pulse widths of light at small intensities, the camera’s flash could tell the other flash units how much light to output and when to start doing it.



Figure 13-11: Moving the light around (via wireless flash) can help you add drama to even the most boring subject. In this case I wrapped some paper around the flash; yielding a “tube” of light that was then placed below left. I’m telling you, wireless flash is worth the effort!

So, here's how the flash metering system works, from the moment you press the shutter release to the moment the camera finishes taking the picture:

- 1) The on-camera flash fires a "Morse code" that tells all flashes in the room to generate a short, fixed "pre-flash" of known brightness.
- 2) The pre-flash burst is reflected off of the subject and back to the camera. The camera's sensor measures the intensity of the reflected pre-flash and compares it against any ambient light present.
- 3) The exact amount of flash brightness needed is calculated by the camera. The camera communicates the calculated brightness value to the off-camera flash via another Morse Code message.
- 4) The exposure begins.
- 5) The on-camera flash sends a Morse code command to all of the off-camera flashes telling them to "FIRE!" and output the previously-set flash burst.
- 6) All of the off-camera flashes fire with the proper intensity in a single burst.
- 7) The camera's sensor may continue to collect light a little longer if you told the camera to use a longer exposure. Then the shutter closes and the exposure is finished.

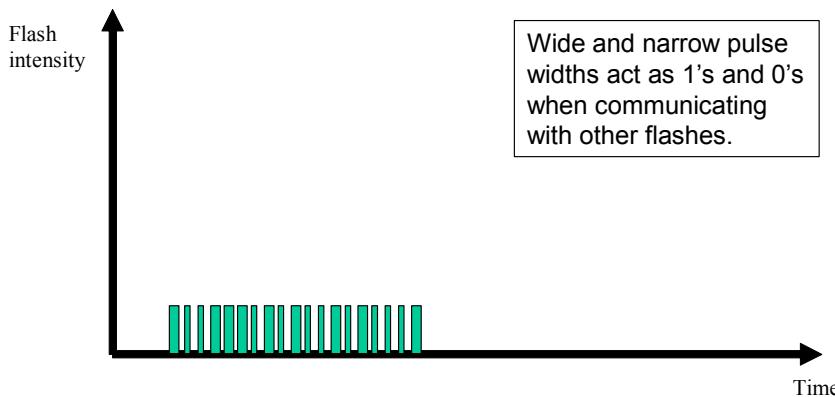


Figure 13-12: The flashes can communicate with each other using a "Morse Code" of wide and narrow pulses. In the blink of an eye this protocol can individually address groups of flashes and tailor the output of each group.

A real “conversation” between the camera and the remote flash has been recorded and appears in **Figure 13-14**. In this graph, time (in milliseconds) is represented by the horizontal axis, and each flash’s output is represented in yellow (the on-camera flash) and blue (the off-camera flash).



Figure 13-13: The sensor at the front of your slave flash (yellow square) must be able to “see” the control signals from the master. Line of sight is best; but it can also “see” control signals that bounce off of walls or the subject.

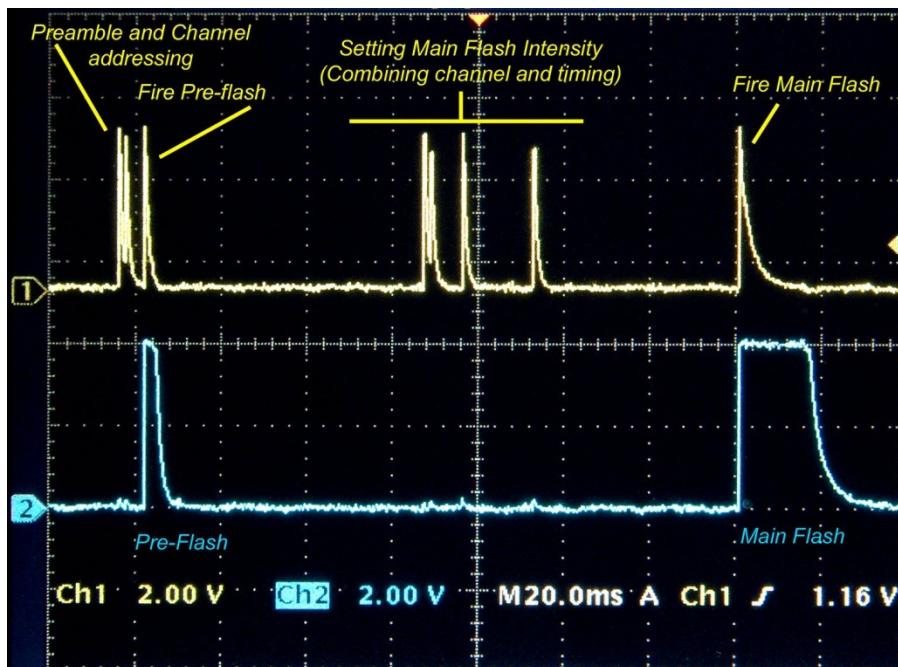


Figure 13-14: This is what a conversation between the Master (top yellow) and the Slave (bottom, blue) looks like on an oscilloscope. The Master communicates to the Slave using combinations of wide and narrow flash pulses, and the Slave responds by firing a pre-flash and the actual flash of the proper intensity on command. The firing intensity is communicated to the off-camera flash in the middle section by a combination of pulses and time delay. This is the old wireless protocol in action – the new protocol is more complex than this and it takes a tad longer to execute.

13.6 AS SIMPLE AS IT GETS

Okay, enough arm waving. How do you actually get the camera and flash to work in wireless mode? Basically, it requires two flashes: One on top of the camera (I recommend the F20M flash for this purpose) and any other flash, which acts as the off-camera “Slave” (either an F60 or F43). Slaves can be placed almost anywhere in the room as long as they can “see” the control signals coming from the Master, either via direct line-of-sight or

after being bounced off a wall or ceiling (it's pretty resilient). Just follow these steps:

1. First, we must put the Slave flash into Wireless mode. The easiest way to do this is to mount it on top of the camera, turn it and the camera on, and then put the camera into Wireless mode via **MENU → 2 → Flash Mode → Wireless (Figure 13-15)**.
2. Press the shutter release button halfway. This makes the camera communicate all the necessary settings to the flash.
3. Remove the flash from the top of the camera. The large red LED on the front of the flash will start blinking, telling you that 1) the camera was successfully set to wireless mode, and 2) that the flash is fully charged and ready to fire.
4. Mount another flash atop the camera to act as the Master. (Again, I recommend the “F20M” for this purpose.)
5. You can now place the slave flash (or flashes) almost anywhere in the room (as long as it can “see” the control signals from the master) and aim it at your subject, bounce it off the wall, aim it at the background, or [insert your own ideas here]. If the strength of the reflected pre-flash signals are adequately strong (as described in the previous section), the system will do its best to make sure the exposure comes out correctly.
6. To make sure that the master and the slave flash can talk to each other, you can do a quick flash

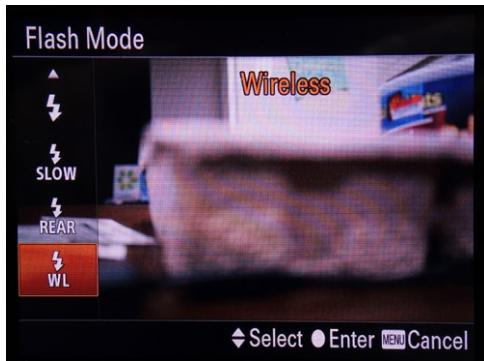


Figure 13-15: Putting the camera into wireless flash mode



Figure 13-16: Look Ma! No wires!

communications test. Press the camera's AEL button once (it must be assigned to AEL Hold or Toggle). The master flash will emit a quick pulse, and then half a second later the slave flash (if it can see the control pulses coming from the master flash) will respond with a short pulse of its own.

7. Shoot away!

With this setup, you can have one or many slave flashes in the room – and when you take the picture they will all fire with the same intensity.

TIP: When testing the Master → Slave communication via step 6 above, you might have to press the AEL button a second time if you have **MENU** → **6** → **Custom Key Settings** → **AEL Button** set to **AEL toggle**. Otherwise it will lock the f/stop and shutter speed based on where your camera was pointing when you pressed AEL the first time.

That's it! Put your flashes all over the room, and experiment with placement of the light. Create emotion by simulating a sunrise. Highlight only someone's hair and have the rest of them be a silhouette. Light them from beneath to give that classic Hollywood "Bad Guy" lighting. In short, add drama to your pictures just by moving the light around!

Simplest: One Master and One Slave



Figure 13-17: The simplest wireless flash setup, where all the illumination comes from the slave flash.

TIP 1: The F60 flash will beep twice after it's fired wirelessly – the first beep (short beep) means "the exposure was OK;" the second beep (longer) means the flash is fully charged and is ready to shoot again. (This can be disabled via the flash's menu, but in the studio shooting kids I find this audio feedback useful.)

TIP 2: The F20 flash, while very convenient as a wireless flash trigger, has very poor battery life. Batteries in the unit will also tend to self-discharge even when sitting unused on a shelf. If you're going to be using this for an important shoot, take a ton of extra AAA batteries with you!

13.7 THE NEW WIRELESS PROTOCOL

As mentioned at the beginning of this chapter, you can use Sony's "New" wireless flash protocol by putting the F60 or F43 flash atop the camera (as lopsided as that is). (The F20 flash only will trigger using the old wireless protocol, so that's no good for this section.) The new flash protocol provides the following new features:

1. Ratio mode. Ratio mode means you can have two off-camera flashes on either side of your subject, at any distance, and the camera will automatically light your subject with, say, one flash being twice as strong as the other for 2:1 lighting ratio. (Or three times as strong as the other for 3:1 lighting ratio.) Lighting ratios worked brilliantly on film based cameras, but it had to be disabled for technical reasons when the world switched to digital. Now it's back, and it's explained in greater detail in the next section.
2. You can have as many Slaves lighting your scene as you want, and you can even assign a group of Slaves to be "Group 1" (what Sony calls "RMT"), "Group 2" (what Sony calls "RMT2"), or "Group C" (which isn't really a Group at all – it's the fill light that comes from your on-camera Master flash). Each time you take a picture, all three groups are fired and autoexposure occurs automatically. So far so good.

But what if you did some test shots, and decided that you wanted the background a little darker? Well, if you had assigned all the flashes

illuminating the background to “Group 2,” then all you’d have to do is tell your Master flash to say “All the Group 2 flashes must reduce their output by one stop” and then shoot again. Or you can have Group 1 overexpose by half a stop, without affecting the other groups of flashes. This can be a tremendous time-saver when you’re in the studio and you’re experimenting with your lighting setup. If not for groups, if you wanted to modify the output of certain flashes, you’d have to walk over to each flash, dial in a manual exposure compensation amount, walk back and take another test shot. Nuts to that! All Sony flashes are set to Group 1 (which Sony calls “RMT”) by default, and when you alter many of the settings on the Master (such as Flash Exposure Compensation, Flash Exposure Bracketing), they are automatically invoked on the Slaves.

It’s true that there are a lot of variables to get your arms around before all of the features of new wireless flash can be understood, and it all seems rather intimidating at first. (Worry not; I’ll get you through it.)

In this book I’m only going to explain how to do the new flash protocol (with ratio and groups) using the new F60 flash as the controller only because its user interface is superior to that of the 43.

TIP: You can put alkaline, Ni-Cd, or Lithium-Ion batteries into your accessory flashes, but beware of pure lithium AA (sometimes called “NiZn”) batteries in your flash. Your flash will recycle almost instantaneously (which can be nice), although you’ll get fewer total flashes per charge. And the low internal resistance may cause the flash to overheat if you shoot too rapidly for too long. They also have a very short life – I had three sets that lost the ability to hold a charge after sitting on the shelf for a few months. Otherwise, they can provide a nice edge when shooting children, when fast recycle times are essential!

Simplest: F60 + One Slave



Figure 13-18: The simplest wireless flash setup, where all the illumination comes from the slave flash. .

Figure 13-18 presents a diagram showing the simplest way to get yourself going with wireless flash with the “60” atop the camera. Notice that with this configuration, illumination for the subject comes only from the slave flash. (The Master only sends out Morse-code-like commands using weak flash pulses which shouldn’t affect the exposure significantly.)

To achieve the basic wireless setup as illustrated in **Figure 13-18**, just follow these steps:

1. Attach what is going to be the Slave flash to the camera’s flash shoe, and make sure both the flash and the camera are on.
2. **MENU → 2 → Flash Mode → Wireless**
3. Press the camera’s shutter release halfway. The camera communicates with the flash and sets the appropriate parameters.

4. Remove the flash from the camera. It is now in “Slave” mode. The large red LED on the front of the slave flash will start to blink once a second, indicating it is ready to fire when instructed by the Master.
5. Now let’s set up the Master flash controller. Place a 60 on top of the camera, and turn it on.
6. Even though the A6000 has been put into Wireless Flash mode, with the 60 you must manually put it into Wireless Controller mode. To do this, press **MODE → WL CTRL** on the back of the flash.
7. You can now place the slave flash almost anywhere in the room (as long as it can see the control signals from the master), aim it at your subject, bounce it off the wall, aim it at the background, or [insert your own ideas here]. If the strength of the reflected pre-flash signals are adequately strong (as described in the next section), the system will do its best to make sure the exposure comes out correctly.
8. Shoot away!
9. Sometimes it’s helpful to test the communication between the camera and the remote flash before you start shooting away. To test the system, perform steps 1 through 7 and press the camera’s AEL button. A tiny test flash should emanate from the master flash, and $\frac{1}{2}$ a second later a “response” flash should emanate from the off-camera flash, indicating that the two can indeed communicate with each other. *If you don’t see the response flash, it means the off-camera flash cannot see the light coming from the on-camera flash, and you may have to re-position the off-camera flash.* In practice, you’ll be surprised at how well the flashes communicate indoors even if there is no line-of-sight.



Figure 13-19: You can change from the new wireless flash protocol (CTRL+) to the old one (“CTRL”) by going MENU → Tab 1 → WL CTRL → CTRL on the back of the 60 flash. This will allow you to control older Sony flashes (and certain Minolta flashes as well).

10. Once you're finished with your photo session, you may want to put the 60 back into "normal mode." To do this, just do **MODE → TTL**.

TIP: Triggering an older flash such as the Minolta 3600, 5600 or Sony F36, F56? Then you need to set the Master flash to **MENU → Tab 1 → WL CTRL → CTRL** (not **CTRL+**) in order to specify the old protocol. (See **Figure 13-19.**)

13.7.1 HOW TO USE RATIO FLASH

Professional portrait photographers and cinematographers have learned that the most flattering and dramatic lighting for people is "ratio lighting," where you have two lights illuminating your subject from the left and the



Figure 13-20: Examples of ratio flash.

right sides, but one light is twice as strong as the other. **Figure 13-20** shows some examples of this, which is formally called "2:1 ratio lighting."

To do ratio flash, you can configure one slave to Group 1 ("RMT") on one side of your subject, and one slave to Group 2 ("RMT2") on the other. (I'll

go over how to do this in a minute.) Then you tell the Master flash (60) on the camera to invoke RATIO mode, so you can specify the ratio of light from Group 1 : Group 2. (The Master can then also be configured to contribute some fill light to the image if desired.)

Simplest: Ratio



Figure 13-21: Ratio flash setup if you have a 36 or 56 slave. The Master flash provides both the control signals AND the fill light to achieve the desired ratio.



Figure 13-22: Here are Ratio samples using one slave flash (to the left) and the 60 as a master flash. The left number of the ratio represents the relative output from the master; the right number from the slave.

More Complex: 3-way Ratio

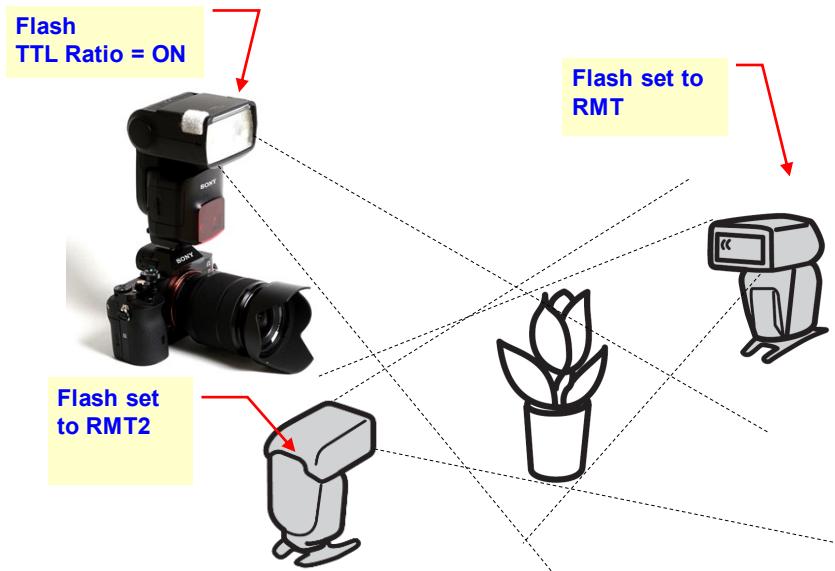


Figure 13-23: A more advanced 2- or 3-way Ratio flash setup is possible if you have 42, 43, 58, and/or 60 flashes as slaves.

13.7.2 ADVANCED 2-WAY OR 3-WAY RATIO FLASH

This is the advanced 3-way Ratio flash that Sony's marketing materials were talking about (see **Figure 13-23**). In this mode, light for the subject can come from the flash atop the camera (CTRL), the flash on the left (RMT), and the flash on the right (RMT2).

To configure your flashes for this setup, do the following:

1. Attach what is going to be the first Slave flash to the camera, and make sure both the flash and camera are on.
2. On the camera, **MENU** → **2** → **Flash Mode** → **Wireless**.
3. Press the camera's shutter release halfway. The camera communicates with the flash and sets the appropriate parameters.

4. Remove the flash from the camera. It is now in “Slave” mode. The large red LED on the front of the slave flash will start to blink once a second, indicating it is ready to fire when instructed by the Master.
5. Mount the second slave flash to the top of the camera and press the camera’s shutter release button halfway. The slave is now configured for wireless mode, but now we have to configure it to be part of the “RMT2” group.
 - a. To do this on a 60, press **MODE → WL RMT** (center button), then press Fn (on the flash), highlight TTL Remote, then choose **TTL REMOTE 2**.
 - b. To do this on a 43, press the “Fn” button on the back of the flash once – you should see the word “CTRL” or “RMT” blinking. Press the right arrow (on the back of the flash) twice until you see “RMT2” blink. Then press “Fn” again and you’re done. Remove the 2nd slave from the camera, and verify that the front red light is blinking (meaning it’s in wireless mode and awaiting further commands).
6. Now let’s set up the Master flash controller. Place a 60 on top of the camera, turn it on, and press the shutter release button halfway.
7. **MODE → WL CTRL**, then **MENU (on the flash) → WL CTRL → CTRL+** (press MENU again to exit), then Fn (on the flash), highlight TTL Ratio On.
8. Press the “Fn” button again, highlight either the CTRL, RMT, or RMT2 label, and hit the center button. You’ll see the screen in **Figure 13-24**. Here we have three numbers representing the relative intensities of the on-board flash (“CTRL”), the slave on the left (“RMT”), and the slave on the right (“RMT2”). In the figure, the on-board flash is configured to put out one-quarter as much light as the Remote (“RMT”), which in turn is putting out twice as much light as the other slave (“RMT2”). Use the Up



Figure 13-24: Setting 3-way Ratio mode on the back of the 60.

and Down arrows to adjust each ratio numbers, from “–“ (no light) to 16. Then press the right arrow until the number under “RMT” is flashing; you can adjust this number up and down the same way. Do the same to adjust “RMT2.”(You can keep this screen showing for the rest of your shooting session; there’s no need to press the Fn button again to exit this mode.) Know that no matter which ratio combination you choose, the camera makes its exposure decisions by measuring the light from the strongest flash. A ratio of 2:4:8 will look the same as a ratio of 1:2:4.

9. You can now place the slave flashes almost anywhere in the room (as long as it can see the control signals from the master), aim it at your subject, bounce it off the wall, aim it at the background, or [insert your own ideas here]. If the strength of the reflected pre-flash signals are

More Complex: 3-way Ratio w Groups

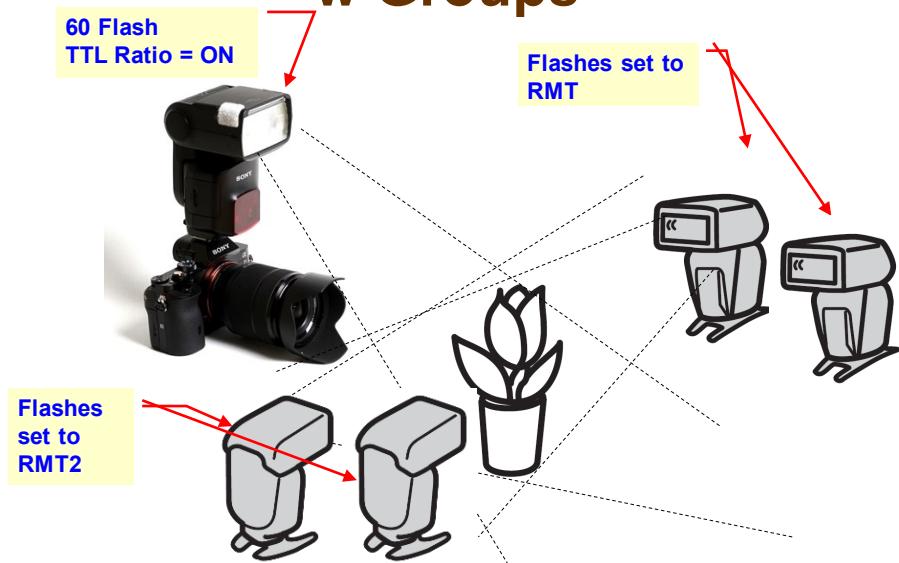


Figure 13-25: Flashes literally become groups when you have more than one configured the same way.

- adequately strong (as described in the next section), the system will do its best to make sure the exposure comes out correctly.
10. Shoot away!
 11. Sometimes it's helpful to test the communication between the camera and the remote flashes before you start shooting away. To test the system, perform steps 1 through 9 above and press the camera's AEL button. A tiny test flash should emanate from the master flash, and $\frac{1}{2}$ a second later a "response" flash should emanate from the off-camera flashes, indicating that the slaves can indeed communicate with each other. If you don't see the response flash, it means the slave cannot see the light coming from the on-camera flash, and you may have to re-position the flash or its sensor. In practice, you'll be surprised at how well the flashes communicate even if there is no line-of-sight.
 12. Once you're finished with your photo session, you may want to put the 60 back into "normal mode." To do this, just do **MODE → TTL**

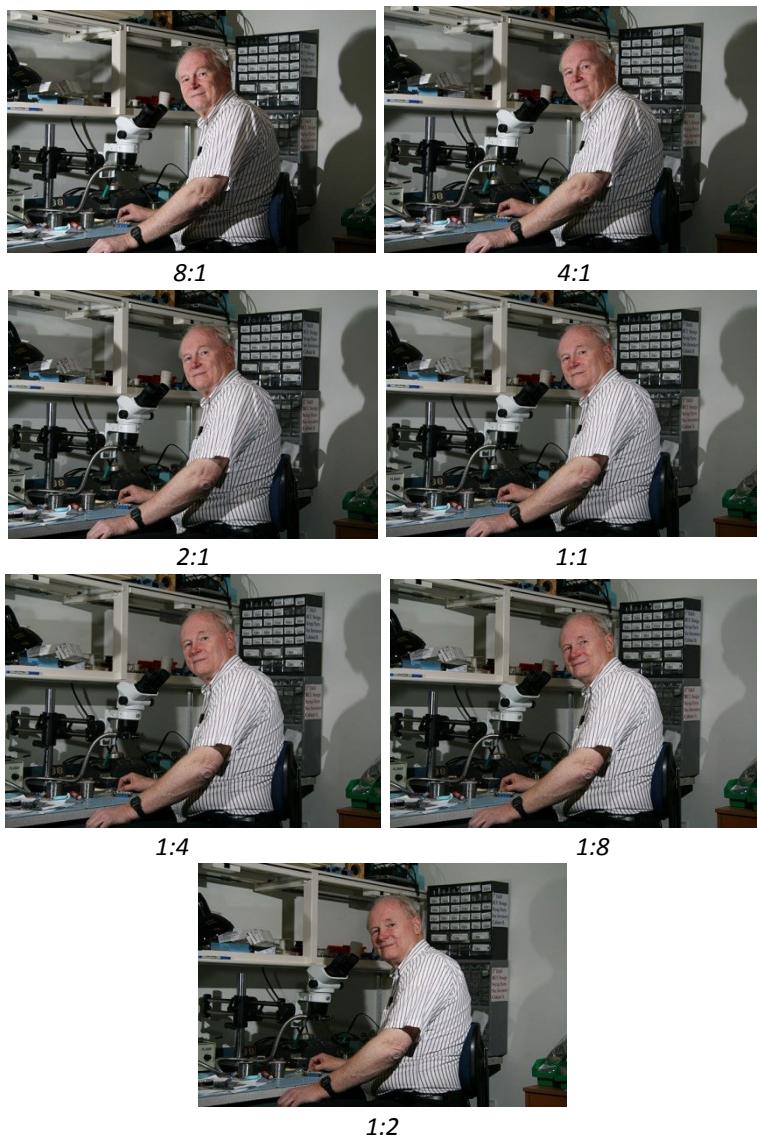


Figure 13-26: Using two Slaves, you can easily control the ratio of the two from the back of the 60. Dial-in your dramatic light!

13.8 GROUPS AND CHANNELS

Most people, when learning about wireless flash for the first time, get the concepts of Groups and Channels confused. Groups were just explained – the ability to adjust one or more flashes as a “group,” independent of the light output from other groups of flashes, all from the comfort of behind the camera.

But what’s a Channel? Well, let’s say that you’re shooting with wireless flash in a room, and suddenly another Sony photographer comes in and sets up his own wireless flashes to shoot something else in another corner. And every time he snapped a picture, YOUR wireless flashes went off!! An undesirable situation? You bet!

For this reason the wireless flash system was given “Channels” to ensure that two Sony photographers can work in the same room without their equipment interfering with one another. Each flash can be programmed to work on either Channel 1 or 2, and it is essential that both the Master and the Slave be set to the same channel. From the factory all flashes (Master and Slave) are set to Channel 1 by default, and it is very likely that you will never need to change it in your lifetime.

On the 60 flash, the Channel is set straightforwardly via **MENU → Tab 1 → WL CH → [Choose from Channel 1-4]**. On the 43 flash, the channel can be set by changing Custom Function 2. (You can access the Custom Function menus by holding the “Fn” button for more than three seconds.) Do this for each flash in your wireless setup.

13.9 WILL THE CONTROL BURSTS AFFECT EXPOSURE?

No. The pre-flash bursts all occur before the exposure begins, so none of that activity ends up in the shot. But, as mentioned in the “How it Works” section earlier, if you’re shooting with off-camera wireless flashes, the Morse Code “FIRE!” command does indeed occur during the exposure and might be noticeable in the shot. Generally all Morse Code commands are of such low intensity that they will not be detectable in the final image.

However, there are conditions under which the “FIRE!” Morse code command becomes visible and can affect the appearance of the subject. For

example, if you're shooting a close subject with the lens wide open (as I did in the examples in **Figure 13-28**), the intended dramatic lighting effect is washed out. This won't happen very often but if it does there are two things you can do about it.

The first is to simply put a piece of cardboard between the master flash and the subject, so that there's no direct illumination by the flash on the subject. (Make sure that there's still a bounce path that the light can take to get to the off-camera flash!) The second option is to place an Infrared filter on the front of the master flash – this way the slave flash will still be able to see the control signals, but the same light will NOT appear in the image because the camera's sensor has an Infrared filter built right in! Snippets of overexposed and developed film (yes, FILM! Remember that?) can act as an ideal IR filter for the master flash. (**Figure 13-27**.) I actually took my 20 flash apart and taped the exposed and developed film over the 20's useless flash diffuser, and I explained how I did it in this article I wrote for Photoworld magazine: <http://tinyurl.com/d9tgvfm>.

There is also a third method: use HSS flash, which I talk about in Section 13.4.



Figure 13-27: A strip of overexposed and developed film makes for an ideal IR filter for your flash. The control signals still get through, but your shot is not affected by the "Fire!" command. I took my F20 flash apart and glued a strip onto that useless flash diffuser, so now I can roll the IR filter out of the way when I want to use the 20 as a pop-up flash.



Figure 13-28: Usually the “FIRE!” Morse Code command from the Master flash has no significant effect on exposure, but you can create conditions where it makes a big difference (usually in shooting close subjects with large lens openings.) For these shots a wireless flash was placed below on the right, and the left image shows what a dramatic shot can look like when the “FIRE!” command affects the shot. Putting an IR filter in front of the Master flash, or simply blocking direct illumination with your hand or a piece of cardboard, produced the intended dramatically-lit scene on the right.

13.10 MANUAL FLASH MODE

The 43 and 60 flashes have the capability to provide a fixed amount of light output when triggered by a camera in wireless controller mode. With the advent of automatic wireless flash exposure, why would you ever need manual control like this?

An example that provides the answer can be seen in **Figure 13-29**. In this scenario you cannot rely on the camera’s auto flash exposure mode because of the predominantly black background – the camera’s exposure computer would look at all that light coming back in from the background and say “Whoa! That’s WAY too much light! I’ll increase to the total amount of light I command to make sure pictures looks about 18% gray!!” (This is the same problem with normal exposure modes of any camera.)

What to do? Studio photographers solved the problem ages ago by using powerful strobe lights (so they can shoot at small f/stops) that always flash with a known, fixed amount of light. The photographer would use a handheld flash meter to measure the light falling on the subject and calculate the proper f/stop to use.

Well, using an accessory flash that has manual flash output mode, a Sony wireless photographer on a budget can do the same thing, and it's a whole lot less work to set up. A handheld flash meter isn't even needed anymore – just do test shots and look at the histogram to see if your blacks are as black as you'd like.

13.10.1 TO PUT THE 60 INTO MANUAL SLAVE MODE

1. **MODE → WL REMOTE**
2. **Fn → [Highlight TTL label] → Center button → Manual Remote → Center button.**
3. Then adjust the power of the flash output using **Fn → [Highlight the LEVEL label and hit the center button] → [Rotate the wheel to change the value, from 1/1 (full power) to 1/128th power, in one-third stop increments].**

Voila!

13.10.2 TO PUT THE 43 INTO MANUAL SLAVE MODE

1. Change the flash's Custom Function 4 to read "PASM" to allow manual output using all of the camera's exposure modes (not just "M" as is the factory default). (Technically this isn't needed to use the flash as a slave, but it's a good setting to keep nevertheless.)



Figure 13-29 Just like manual exposure mode is necessary for non-average subjects, manual mode for your flash is necessary for black (or white) backgrounds. I got this result with just one flash and one diffuser.

2. Make sure the flash's Custom Function 1 is set to "On." This enables the High Speed Sync function. (You can keep this set to "On" forever.)
3. With the flash atop the camera, set the camera to Wireless mode (**MENU →  2 → Flash Mode → Wireless**). Press the shutter release button halfway.
4. Press the "Fn" button on the back of the flash. The "CTRL" icon starts to blink. Press the right arrow on the back of the flash until you see the "RMT" (Remote) icon flash. This puts the flash into slave mode. Press the "Fn" button again.
5. Press the TTL/M button on the back of the flash once. You will see the "MANUAL" icon appear along the bottom edge of the flash's display.
6. Use the left and right arrows on the back of the flash to control the fixed amount of light that the flash sends. "1/1" means full output; "1/2" means half of full output... all the way down to 1/32nd of full output. (How much is appropriate? Some test shots will reveal this quickly. Check the histogram (Section A.7) for exposure accuracy).

13.11 A PORTABLE STUDIO SETUP

Figure 13-30 shows how my portable wireless studio is set up. It uses just one wireless flash and one diffusing umbrella. A parts list appears below:

- A portable Tripod
- Black cloth as a backdrop (in my case a black bedsheet, bought on sale for USD \$10)
- An Umbrella reflector which collapses down to 15" (I chose a reflector umbrella rather than a shoot-through to make sure that 100% of the light from the flash ends up on the subject. Handheld flashes are inherently weak and so I prefer to utilize all of their output.) You can buy one here: <http://tinyurl.com/4ved82g>
- Umbrella Swivel hardware (<http://tinyurl.com/6g72vs>)
- Minolta 5600 Flash (although you could use ANY wireless flash) but at least the head on this one can turn around 180 degrees – useful for soft boxes.
- Minolta Off-camera shoe OS-1100 just to physically mount the flash because it has the old hot shoe (<http://tinyurl.com/4shjyw>)

Usually I place the umbrella about 45 degrees off to one side (**Figure 13-29**), but you can also place it 90 degrees (depending on your subject) for even greater impact. **Figure 13-30** shows an example of this.



Figure 13-30: My ultra-simple, 1-flash portable studio produces outstanding results and it travels well!

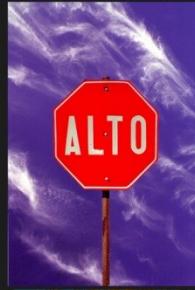
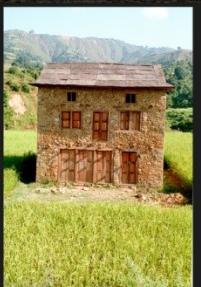
13.12 TO PROBE FURTHER

If you'd like more inspiration on what wireless flash can do to give you awe-inspiring images, I highly recommend you spend some serious time at the website www.strobist.com. From their website: "Think of Strobist as a lighting idea bank, run by and for the most enthusiastic DSLR photographers. Our goal is to exchange ideas with other shooters and post many different lighting techniques – using real-world assignments as examples."

I also have written an e-book that shows you more of what's possible with wireless flash and inspires you to go out and play with it more in a decidedly *non-technical* way! You can read more about it in Section 16.4.



Figure 13-31: Even boring subjects can look dramatic using wireless flash. ☺



CHAPTER 14 DRO AND HDR

Sony offers two different features that attempt to address the problem of “My picture doesn’t look the same as what my eye saw!” The first is called Dynamic Range Optimization (DRO), which operates in an intelligent way to brighten the shadows) and the second is the High Dynamic Range technique (HDR), which takes three images with different exposures and merges them together in-camera. Both features have their tradeoffs: DRO works great for moving subjects, whereas HDR images don’t have as much noise in the shadows. The whole shebang (or Magilla, or enchilada) is explained in this chapter.

TIP: *DRO is used for JPEG files ONLY. If you are shooting using RAW or RAW & JPG as your Quality setting, don’t expect DRO to affect your RAW files. Nonetheless, it’s valuable to compare your RAW file to the DRO-processed JPEG file to help you discover things you might like to enhance if you decide to post-process the RAW file.*

14.1 DYNAMIC RANGE OPTIMIZATION

I hardly ever shoot with this feature off. It can help you make the best of less-than-ideal light, and it can save you countless hours trying to do the same thing in post-processing on your computer. The A6000 gives you DRO AUTO plus five manual settings, ranging from the most conservative to the most aggressive. Sony’s Image Data Converter SR software also allows you to perform a similar adjustment using your computer after-the-fact, but as the examples in this chapter will show, the results of the in-camera DRO processing are usually more effective.

Before I get into the technical stuff about how it works and where it fails, let me share with you some DRO success examples. **Figure 14-1** and **Figure 14-2** are images where DRO has made the image better right out of the box in difficult light – no additional effort on my part was required.



DRO Off



DRO Level 1



DRO Level 3



DRO Level 5

Figure 14-1: This is a good example of a scene that can benefit from DRO. I used DRO Bracketing “Hi” to produce DRO Levels 1, 3, and 5 to “bring out the shadows” in this outdoor scene. For this shot I think I like Level “1” or “3” the best – 5 looks a little too artificial for my tastes.

Sony doesn’t provide much technical information about this feature, and so through much experimentation I have learned to “see” in which situations the feature would provide the most benefits, and (perhaps just as important) know under which situations the feature will produce just awful-looking results. In this chapter I will share my knowledge and experimentation with you, so you too can get the most out of this useful feature.

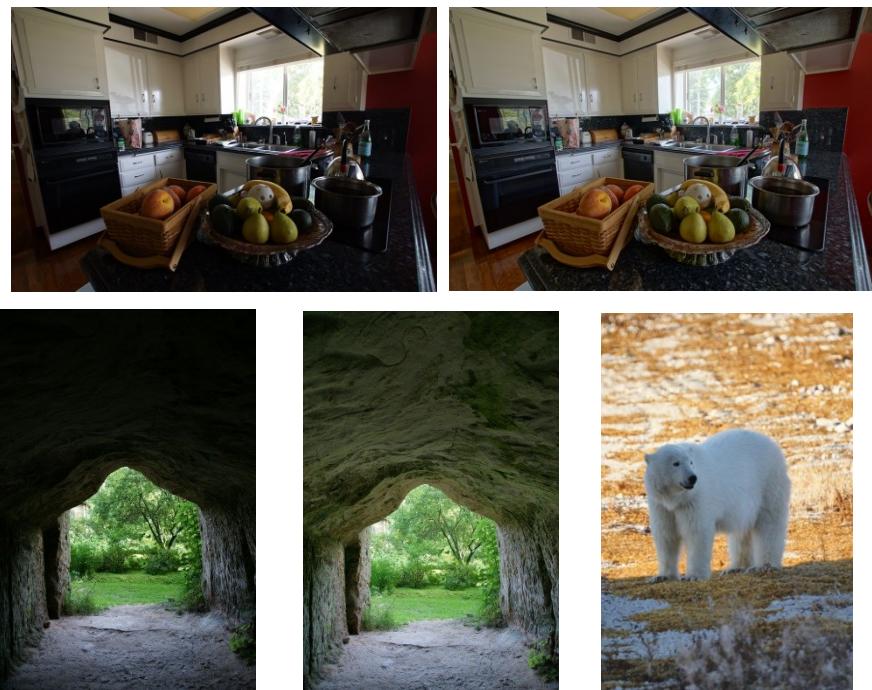


Figure 14-2: DRO can act as a subtle “fill flash” when the lighting is less than ideal. Bottom row: Another example of making pictures look like you remember them (left and middle), and improving a subject in shade (right)

14.1.1 HOW DRO WORKS

First, let me get some misconceptions out of the way: DRO only works with information that the sensor has already captured. It does not give the sensor a wider dynamic range than it already has. DRO simply takes the information that’s already there and makes the darker areas a little lighter in a fast and intelligent way.

So how does it work? Recall that using the Tone Curve tool in programs like Photoshop, Lightroom, or Sony’s Image Data Converter software you could affect the brightness of certain parts of the image, while not affecting



Figure 14-3: The tone curve has the ability to change only the blacks and leave everything else alone. This is the principle behind the most basic DRO setting, except it happens in-camera and is designed to *LIGHTEN* the blacks, not darken them.

the other parts (as shown in **Figure 14-3**). While most people use the tone curve to increase contrast (making the blacks blacker), the tone curve can also be used in reverse – to make the blacks less black. And while the image in **Figure 14-3** certainly doesn't benefit from making the blacks lighter, images in future examples certainly will.

That is exactly what DRO does: in certain circumstances, the algorithms in the camera's image processing chip will examine the brightness range of the image and, if it feels the image will benefit, will evaluate and map out every light and dark area of the image, and apply a local gamma curve to each individual area. There is no single equivalent step to duplicate what DRO does in Photoshop. Many people have spent hours trying to make their RAW file look as good as the camera's JPEG file using DRO.

DRO will only kick in when the camera decides the images can benefit from it. This is in direct contrast with the manual DRO settings, where the camera will dutifully analyze the image pixel-by-pixel and lighten certain shadows and contrast areas it finds by a pre-determined amount, regardless of whether it feels the image will benefit. You can manually set the DRO manual settings from “1” (doesn't brighten the shadows much) to “5”

(where the shadows are lightened so much that the scene might look unnatural).



Figure 14-4: DRO Bracketing (*hi*) can make it very easy to “shoot first, decide which one to use later.”

Does DRO affect RAW files? No. Also, you should be aware that Sony has a DRO-like feature to their Image Data Converter SR software so you can play with this setting in the comfort of your office instead of in the field. The results it produces aren’t quite as good as the in-camera algorithms, and it takes considerably longer to do, but at least you have the option.

Like the SteadyShot feature, Dynamic Range Optimization is not a panacea, and not all images will benefit from its application. The following should be kept in mind when considering using any of the DRO settings:

- DRO Auto won’t have a visible effect on most images. It only kicks in under certain circumstances, where there are strong black and strong whites and a lot of detail (i.e., not blown out) in each.
- DRO doesn’t actually increase the dynamic range of the sensor; rather it manipulates the information that has been captured and tries to make it look more like how the human eye saw it.
- Noise is almost always more visible in the shadows; and when you amplify the shadows (as the DRO does) the noise will become much more apparent as well (**Figure 14-5**). This is an unavoidable consequence of the technique; to minimize this noise it is recommended to shoot at the lowest ISO settings you can (or try HDR if your subject is not moving – covered in the 2nd half of this chapter).

TIP: DRO actually works in movie mode, both in DRO Auto and using any of the five manual settings. That’s easier than providing a physical fill light. ☺



Figure 14-5: DRO can also bring out some undesirable qualities. Noise, which is always strongest in the shadows, gets amplified with any level of DRO (above, right). On the other hand, this feature gives you a fighting chance of getting usable images in the worst kind of light.

TIP: Your camera's Live View Display with Setting Effect On is a great way to play with different DRO as well as HDR settings to help determine the optimum setting very quickly. However, please heed the warning mentioned elsewhere, that a DRO setting might look great in the field but might also look over-processed and artificial when you get back to your computer. That's where DRO and HDR bracketing can be very useful.

14.1.2 MORE DRO EXAMPLES

Figure 14-6 shows a scene where the entire range of DRO options (including “OFF”) are used so you can get a feel for the effect of each setting. I strongly encourage you to do similar test shots of your own – DRO takes awhile to acquire a “feel” of when to use it best (and when not to use it), and this kind of experimentation is the only way to acquire it.

14.1.3 FREQUENTLY ASKED QUESTIONS ABOUT DRO

Q: Gee, there are so many different choices regarding settings, and they all produce such different results! How in the world will I know which one to use for any given scene?

A: It is difficult to say; every situation is different and in my experience, no single setting is optimal for all images. While trying different values using Intelligent Preview can work, it can be time consuming, and we all know that images on the camera’s display or EVF can look very different when viewed on the computer screen or when printed.

What I find myself doing is keeping the camera set to DRO Auto almost all the time, and then when I encounter a scene with tricky or splotchy lighting I’ll save time by using the camera’s DRO Bracketing feature. When activated via **Fn → DRIVE →** **Hi3** or **Lo3**, the camera takes ONE picture, processes it at three different DRO level settings, and then saves the resulting THREE image files onto the memory card. To hedge my bets even more, I will often shoot DRO Bracketing with RAW & JPG, so in case I decide later that the image looked better without DRO (it happens), I can always have an unmodified version to tweak later. Of course this slows down the camera and consumes memory cards quickly in the field, but for some shots it’s just better to have options.

Q: What’s the difference between DRO Bracketing Hi3 and DRO Bracketing Lo3?

A: With Lo3, the Camera will apply Level 1, 2, and 3 to the image and store them as 3 separate images. With Hi3, the camera will apply Advanced Level 1, 3, and 5 to the image – a wider range.

Q: Under what circumstances have you found DRO most useful?

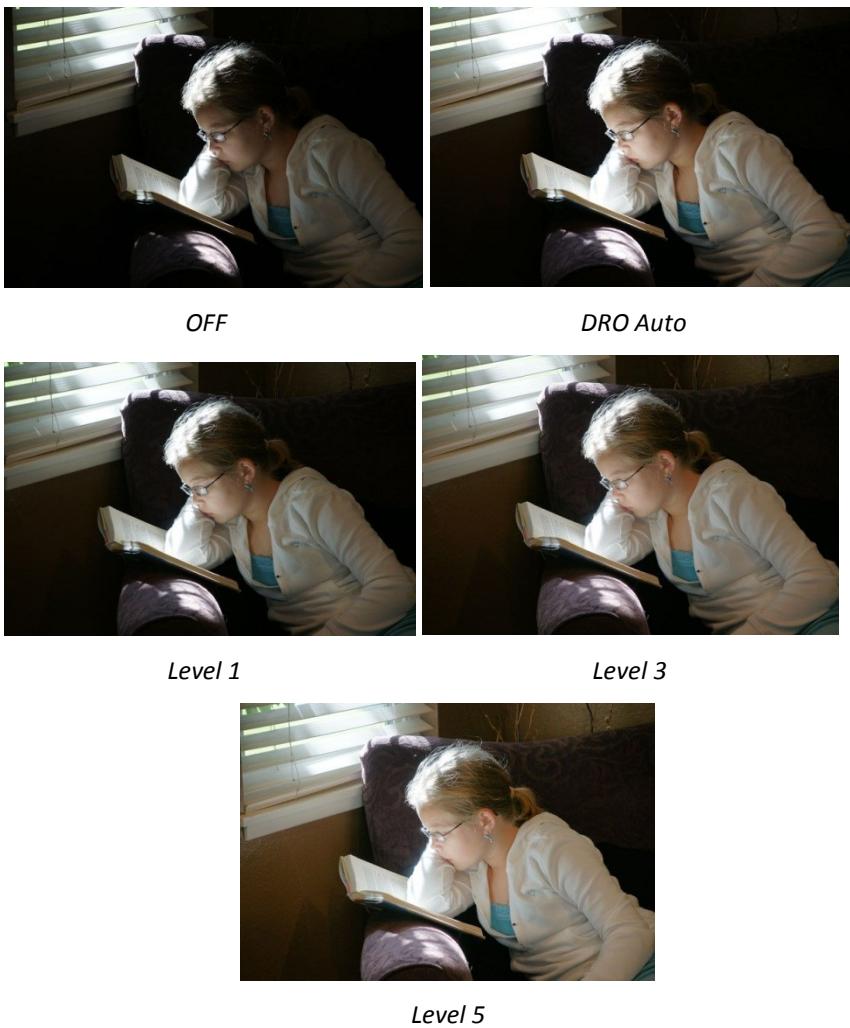


Figure 14-6: DRO has many different settings. The automatic version (Auto) makes very, very conservative adjustments to ensure that the feature never calls attention to itself. The manual settings (Levels 1 through 5) allow you to use the feature more forcefully, making the image look more like the way you remember seeing it.



Figure 14-7: More examples of where DRO has made a positive difference.

A: When shooting in low light without a flash, DRO level 2 or 3 makes the images look much more natural. Even high-ISO shots look better, although if you're not a fan of high-ISO noise, you won't like this effect at all – the noise in the shadows is amplified right along with the detail.

Q: Does DRO processing affect RAW files?

A: RAW files are NOT affected if you're shooting with DRO. (Well, that's the official answer, anyway, but this 2007 article from David Kilpatrick explains that the camera will underexpose the RAW file a little bit to make sure the highlights don't blow out: <http://tinyurl.com/6mm47bw>. The underexposure may be difficult to see because raw processors like Sony's Image Data Converter will make it a bit lighter when showing the image to you.)

Q: You mentioned DRO bracketing and shooting RAW & JPG. Any there any disadvantages to setting the camera to a DRO setting and then shooting RAW only (thereby perhaps saving some space on my memory card)?

A: Well, yes, there are *huge* disadvantages in my mind. When the camera plays back the RAW file you just took, it won't show you the RAW file as you might expect – instead it will show you a DRO-processed thumbnail. (The histogram will reflect this processed thumbnail as well, and not the RAW image). But when you get back to your computer, you'll see that the RAW file looks *completely* different from what you saw on the back of the camera, and it might take you a considerable amount of post-processing to get the RAW image to look as good as the thumbnail which was produced in-camera. (As will be seen shortly, the Sony-supplied software to give you DRO-like features on your computer won't give you the same results as the DRO algorithms in your camera.)



DRO Auto



Level 5

Figure 14-8 In the outdoors, when shadows can be annoying, DRO does to the picture what our brain does with the signal from the eyes – it makes shadows not call attention to themselves. (And apparently it straightens buildings, too! ☺Not really.)

Q: Do you have a favorite DRO Level setting?

A: DRO Levels 3 and 4 seem to produce the most pleasing images for me most of the time. Your mileage may vary.

Q: Okay, I'm confused. Are you telling me that DRO Auto and the DRO manual level functions do a superior job compared to a post-processed RAW file using time-honored conventional tools like Photoshop or Lightroom?

A: Well, in theory, you should be able to produce identical results, but the reality is that it can take an experienced computer operator tens of minutes (often longer) to do what your camera can do in barely half a second. That is because the traditional Curves tool operates on the whole image, whereas the Sony software breaks down the image to the pixel level and applies



Figure 14-9: Two situations of extreme brightness ranges which were able to trigger the DRO Auto algorithms into lightening the shadows. Not all scenes will trigger it. Both modes were designed to be a "set it and forget it" feature, where the camera will invoke it when needed. I tend to keep the camera on DRO Auto as my default setting.

individual corrections locally instead of globally. Maybe one day Sony will supply us with IDC software that implements the same algorithms as what is built into the camera, but in the meantime, in-camera DRO tends to produce the better results.

14.1.4 WHEN DOES DRO KICK IN?

If you look closely at the first two images of **Figure 14-6**, you'll see hardly any change between DRO Off and DRO Auto. Why is this? Well, as mentioned at the beginning of this chapter, DRO only kicks in when the camera thinks it is warranted. And, as I discovered when I was writing the book on the A100 many years ago, it can be very difficult to know ahead of time which scenes will trigger these settings and which ones won't. It took me two days' worth of intense shooting just to come up with a few good examples of what it can do when it's working (see **Figure 14-9**).

That's why I was quite thankful when Sony included the manual DRO Level settings starting with the A700. With these settings, YOU can decide when it gets used, and not wonder if the camera is invoking it.



DRO Level 5 Full Picture....

...and close-up.

Figure 14-10: Too much DRO can cause colors to saturate and increase the noise substantially.

14.1.5 WHEN DRO IS BAD

Too much DRO can blow out colors and increase the shadow noise to unacceptable levels. Check out the extreme examples in **Figure 14-10** and **Figure 14-11**.



Figure 14-11: Another example of where DRO looks bad. The funny thing is, it's very difficult to know without trying whether any level of DRO will help or hurt a shot. A good rule of thumb, though, might be "If the lighting is insanely difficult to begin with, DRO will likely not be much of a help."

14.1.6 COMBINING DRO WITH SUNSET CREATIVE STYLE

Recall that the "Sunset" Creative Style (described under "Creative Styles" in Section 6.23) adds reds and yellows to the image to enhance the sunset somewhat. A very cool effect comes when you combine DRO Level 3 with the Sunset Creative Style as shown in **Figure 14-12**. Try it!



Figure 14-12: I combined Sunset Mode (which adds reds and yellows to the image) with DRO Level 3 so the subjects wouldn't look so silhouetted. The left image is how the image looked out of the camera, with no additional post-processing. The center and right images show another example, shot in "Standard" and "Sunset" image styles.

14.1.7 DRO ON YOUR COMPUTER

As mentioned previously, Sony has provided us with a “DRO-like” algorithm that can be invoked from Image Data Converter SR.

That’s the good news. The bad news is that the software algorithms in Image Data Converter don’t produce the same results at all. See **Figure 14-13**, and again I refer you to David Kilpatrick’s excellent article at <http://photoclubalpha.com/2007/11/01/advanced-dro-the-a700s-magic-bullet/> for even more examples.

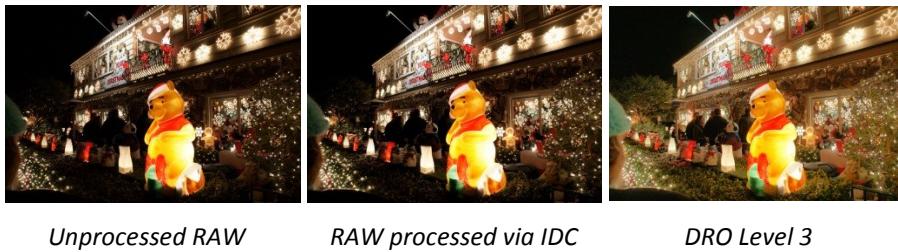


Figure 14-13: In-camera DRO (right) cannot be duplicated by processing the RAW file with Image Data Converter's DRO feature.

14.2 HIGH DYNAMIC RANGE (HDR)



Figure 14-14: One of the best uses for the HDR setting, by far, is shooting city nightscapes. This shot in Singapore was taken using HDR Level 6.

Dynamic Range Optimization is a nice feature because it can make the most of one exposure; the drawback of it (as I'll show shortly) is that it increases noise in the shadows – something that many people just don't like.

So that's one way to (virtually) increase dynamic range. The A6000 provides a second, perhaps more time-honored way to solve the same problem: the High Dynamic Range function.



Figure 14-15: High Dynamic Range imaging done the old way. The idea behind HDR is to take several different exposures, capturing all of the brights and暗s that the scene has to offer (typically more dynamic range than a camera sensor can capture in a single shot), and then merging the images in your computer to make the image look a little more like the way you saw it. This is a relatively simple example -- the first three images were taken on a tripod, and bracketed 2 stops apart. The fourth one shows the output from Photoshop's "Merge to HDR..." function.

First, some background. In the olden days (like five years ago), whenever people wanted to get around the 8-stop range of digital sensors (shown in **Figure 14-18**), they would put their camera on a tripod, take several pictures, each 2 or 3 stops apart, and then merge them in their computer using programs like Photomatix or Photoshop. An example of this using the old technique is shown in **Figure 14-15**.

But what if I told you it were now possible to take HDR images without a tripod, without Photoshop, and without any technical knowledge at all? The camera you now own can do this for you. To invoke it, put your camera to P, A, S, or M mode and then press **Fn → DRO/AUTO HDR → HDR AUTO**. Then point and shoot at a difficult scene. The camera will do the following:

- It will analyze the scene and decide how much bracketing is required.
- The camera will take three shots in rapid succession (it might sound like four), anywhere between one and six stops apart (as determined in the previous step).

- The camera will align and merge the three images automatically, and write a single JPEG image to the memory card. (Yes, JPEG. This feature is unavailable if RAW or RAW & JPG is selected.)
- It will also take one of the three exposures (probably the middle one, but I'm honestly not sure) and write that to the card too. This way you can have "Without HDR" and "With HDR" so you can see just how much good your camera is doing for you.

Probably the most impressive part of that process is the fact that if you had shaky hands and moved the camera between the first and second exposure (you don't have to use a tripod anymore, remember?), the camera will figure out the best way to merge all three images together so that the major features will overlap, resulting in no double-vision. Impressive!

In addition to having the camera choose how much bracketing to do for you, the camera also lets you specify a bracketing range for your HDR images in case you're not happy with what the camera chooses. Just go to **Fn → DRO/AUTO HDR → HDR AUTO** and then use the Left or Right cursor buttons to choose specific bracketing strengths: anywhere from 1.0 EV to 6.0 EV.

TIP: Unlike DRO mode, HDR mode cannot be used in RAW mode, and in fact the camera will make you exit RAW mode first before allowing you to enable HDR shooting. Now you know.

Don't expect this feature to produce some of the over-cooked über-HDR examples (like those shown in the next TIP box). The purpose of this feature is really to help make the scene look a little more like your eye saw it – but in a natural way. Note also that High Dynamic Range is practically the equivalent of "low contrast," so don't be surprised if your HDR images look a little flat right out of the camera. (There's a REASON the film and digital sensors were designed with a narrow dynamic range to begin with – it's because anything wider looked too low-contrast, resulting in images that people said looked flat and lifeless.)

TIP: When you think of HDR images, you might think of über-processed unreal-looking images such as this one by Domingo Leiva (image used with permission):



Images like these may be called HDR (and in fact they are), but what you see is a result of a secondary process called Tone Mapping which the Sony camera does not do. (More of Domingo's work can be found on his website: <http://dleiva.com>)

Okay, time for some examples. **Figure 14-14** and **Figure 14-16** are real-world examples where the HDR function performed admirably.

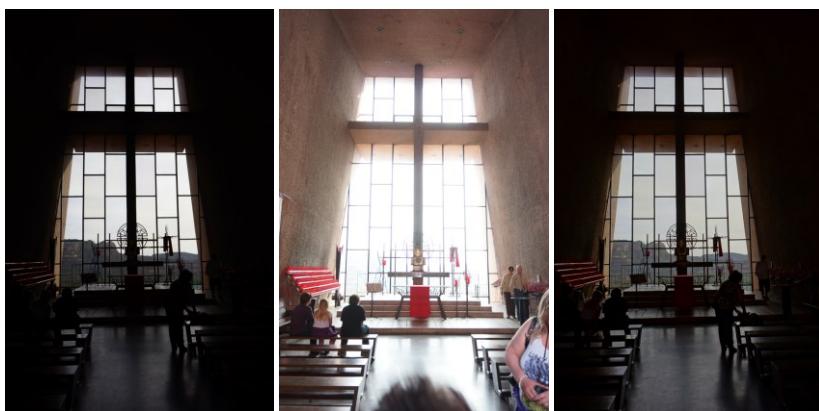
These are all examples where things worked out well. In the course of preparing for this book I tried to take many, many other illustrative examples where HDR didn't seem to have the effect I was seeking. (See



Figure 14-16: HDR Level 3 helps to de-silhouette the foreground. (And, yes, "silhouette" is now a verb. ☺)

Figure 14-17 for an example.) This may very well happen to you, too when you start playing with this feature. **Figure 14-18** provides a visual explanation of what's going on. Both the DRO and the HDR functions work well, but only when the dynamic range of the subject is within a well-specified range.

HDR, like many of the other intelligent shot-merging functions of your camera, only works in JPEG mode, and cannot be selected when you're shooting in RAW mode (discussed in Chapter 15).



Expose for the Window

Expose for the inside

HDR set to "6"

Figure 14-17: Sometimes the scene you're trying to capture exceeds the dynamic range of what HDR can do. The moral to the story is "HDR will do its best job in only certain situations where the total dynamic range is about 18 stops."

WONDERFUL TIP: A great fringe benefit of the HDR function is that noise in the image is reduced. This is because the random noise in high ISO images is averaged together in the camera when the three images are merged – the same reason Multi-Frame Noise Reduction (MFNR) works. Fortuitous synergy!

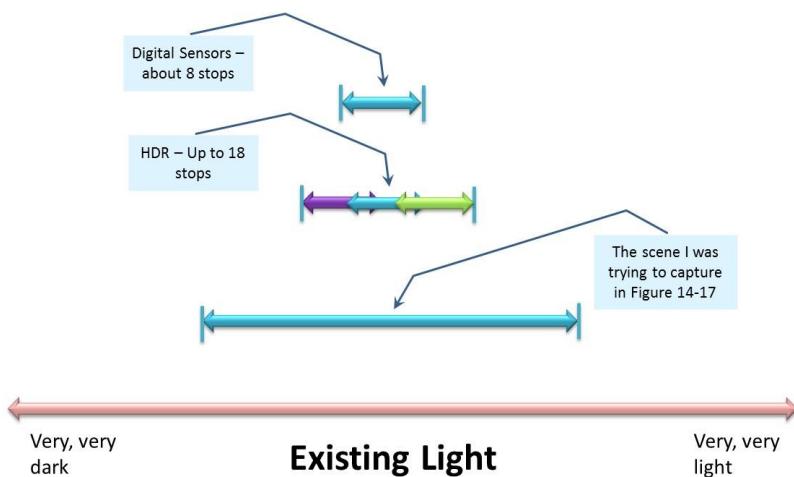


Figure 14-18: The HDR technique can capture much more brightness range as compared to taking just one shot. But take care that the brightness range of the scene you're shooting falls within this expanded sensitivity! If not, an HDR shot will still not capture everything you see.

TIP: I've found that it's best to lock the exposure lock on your highlights before shooting HDR images – otherwise your highlights have a greater chance of blowing out.



14.3 DRO VS. HDR

DRO and HDR try to do the same thing under similarly bad light but go about it in very different ways. How do they compare? Here are two examples of a very difficult-to-shoot scene.

Figure 14-20 shows a scene that looked great to my eyes, but rendered poorly in the camera. **Figure 14-21** shows a scene with poor light taken three different ways; and **Figure 14-22** shows some close-ups of the yellow rectangles.

The upshot? If your subject is not moving, HDR produces superior results (mostly in the area of low noise). If you don't have such a luxury (for example, if you're a photojournalist shooting a non-stationary subject at high ISO in impossibly low light), then DRO is really your best option, and you can shoot in B&W mode (see Section 6.23.5) to make the scene look visually more palatable.



Figure 14-19: HDR photography can help balance indoor and outdoor light, as in these interior design shots. (Photos courtesy Jukka Toyli.)

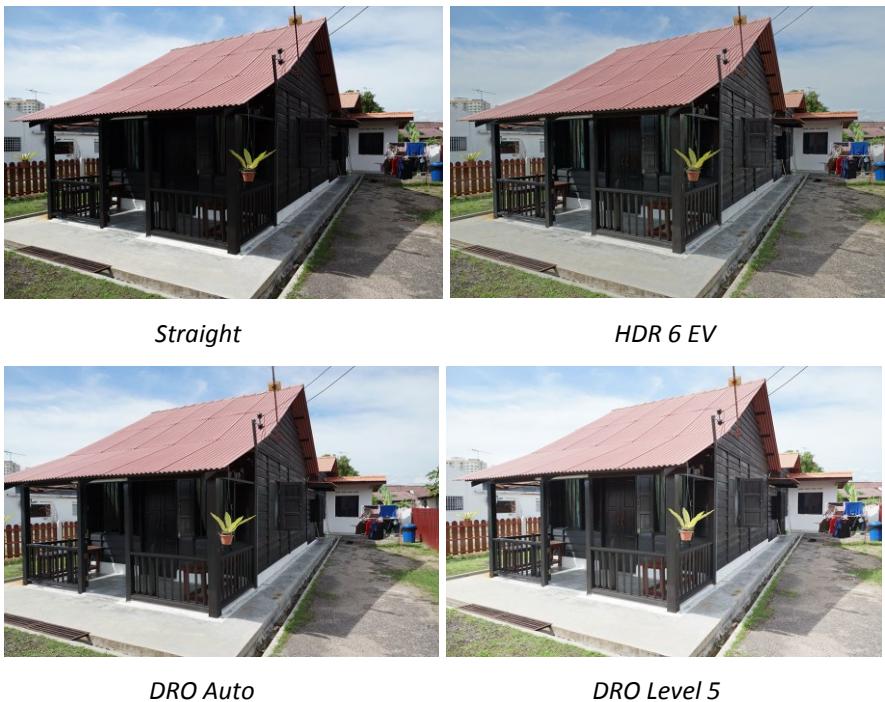


Figure 14-20: A difficult-to-expose-for subject whose dynamic range still falls within what HDR and DRO can work with. In this example I think the DRO Auto produced the best result, but a different subject might benefit from a different setting. There is no best setting for all subjects.



Figure 14-21: The same poorly-lit scene taken three different ways. The next figure shows you close-ups of the yellow rectangles.

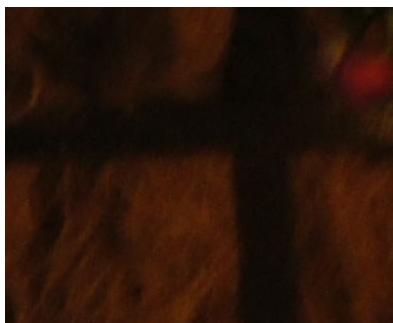
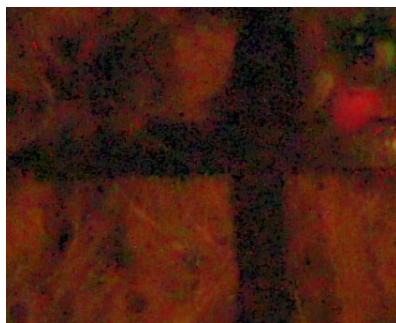
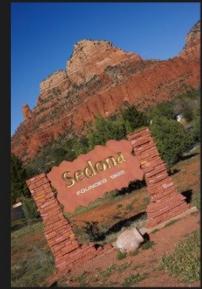
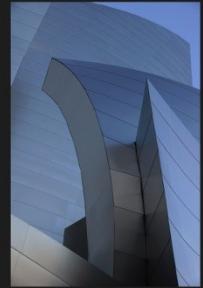
**HDR 3****DRO Level 5**

Figure 14-22: Close-ups from the previous figure. If things are moving, it will show up as a double-image in HDR. Not so with DRO! The lower figure shows the other tradeoff: DRO tends to add noise (especially in the dark parts of the image), whereas HDR tends to smooth it out.



CHAPTER 15 DIGITAL IMAGING TOPICS

15.1 INTRODUCTION

If you're an experienced photographer, you probably know all you need to know about RAW. If so, this chapter isn't for you. Instead I'll point you to a blog post I wrote about the unexpected benefits of JPEG files at <http://bit.ly/1dvjQgA> and later at <http://bit.ly/1g0MzVd> because today's cameras produce JPEG files that are superior to those produced a decade ago.

The rest of you may be a bit unsure about the tradeoffs between RAW and JPEG, and the quality differences between Standard and Fine JPEG files. How can you know what to choose? Are there preferable ways to process RAW files? Should you feel ashamed if you only shoot JPEG files? (You shouldn't.)

In this chapter I will talk about the benefits of shooting RAW and I will share with you my own personal workflow. I'll also go into some of the tradeoffs between shooting RAW or JPEG.

DISCLAIMER #1: The workflow I use suits me well but it's not necessarily the best for everybody. Different tools have different strengths.

DISCLAIMER #2: Some of the techniques outlined in this chapter require what's called "Pixel Peeping" in order to see the small differences they make. This is something that computers have made very, very easy to do even though such close examination is not at all a viable way to evaluate image quality in the real world. The proper way to evaluate image quality is to print it at the size it's going to be used and view it at the distance at which it's going to be seen. But for purposes of illustration I must violate my own rule here and show close-ups of certain images. Let it be known that I generally don't recommend such close examination (see **Figure 15-1**).

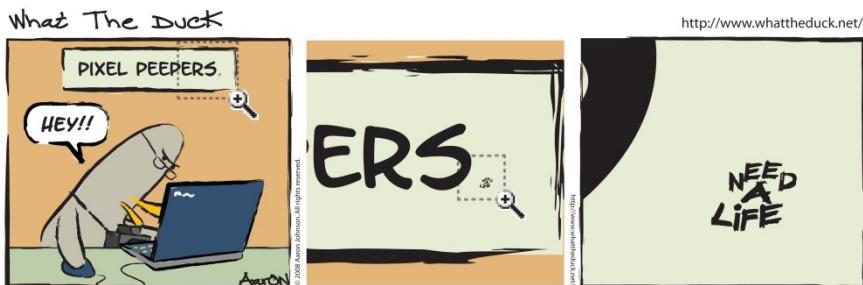


Figure 15-1: “Pixel peeping” is generally not a useful way to evaluate the quality of an image. Images that may look poor when examined too closely may actually look just great when printed. Don’t get hung up on this technique to evaluate image quality! (What the Duck Comic used with permission.)

15.2 AN INTRODUCTION TO RAW

Back in my early days, photographers would shoot either slide film or negative film. Real photographers who sold images for publication shot slides, since that was the preferred format in the publishing world – they were incredibly sharp (especially Kodachrome 25 or 64), and there were fewer problems with accurate color reproduction, since what you saw on the slide was considered the “correct” exposure and color. Negatives, on the other hand, could be tweaked in terms of exposure and color balance until the cows came home, but the folks in the print house rarely got it right – at least not to the photographer’s satisfaction.

Professional photographers had a right to be somewhat arrogant, since in order to have the perfectly exposed slide (and therefore a perfectly sellable shot) you really, really had to have the right light and the right exposure for that light. You had to have the right filter on your lens if you were shooting daylight balanced film under tungsten light. You had to get everything right in the camera – there was no safety net of post-processing. One might have assumed that the pros would have vastly preferred negatives, since that would give them more control over the final print later on in the darkroom.

But the demands of the industry forced a great deal of people to work within the exacting tolerances of transparencies.

In a very crude way, you can think of shooting RAW as being the same as shooting with negatives. Having a negative is not the final product – you have to print it in a darkroom (or a 1-hour photo lab) first before you get your final image. And if the idiot working the 1-hour photo machine made gross errors in printing, you could simply throw those bad prints away, go back to the original negative, and make a better print using different exposure and color balance settings (or a better lab).

Many, many people think of shooting JPEG files as the equivalent of keeping the (possibly bad) 1-hour photo prints and throwing away the original negative, leaving no hope of correcting for in-camera processing errors. Therefore, they say, you should **ALWAYS** shoot RAW, or RAW & JPG if you want the convenience of both prints and negatives.

But there are also plenty of working photographers who shoot under deadlines (without the luxury of time for post-processing) and/or grew up shooting slides. These pros feel (justifiably so) that if you know what you're doing and take the same care to keep your light right and exposure and color balance set properly for the situation as you did for slides, your final print from in-camera JPEG files will look just as good as shooting with RAW and post-processing, only it will take significantly less time. (Have a look at the photos on the back cover of this book, for example – **ALL OF THEM** are JPEG files straight out of the camera.) Speaking such viewpoints on Internet discussion forums usually invokes disdain from vocal “experts,” but it is a perfectly valid viewpoint and one which I respect – for only the photographers who really know what they’re doing can get away with it. For everyone else, shooting RAW is the best safety net and helps ensure you can end up with the highest quality image your camera is capable of producing.

RAW vs. JPEG has become a religious issue in some circles, with some saying “RAW is technically better in every aspect, and so you should never shoot anything else. If you do, then you’re obviously an idiot.” Others say “In theory that’s true, but in the real world if you get your lighting and exposure right the in-camera JPEG files are so good that the image won’t be significantly improved by shooting RAW.” Yet a third, vocal minority shouts “You’re both right, and if you do your post-processing using

Adobe's Lightroom, it handles RAW conversion invisibly so there's no additional effort to process either format!"

But I'm getting ahead of myself. My real goal with this section is to remove the mystery surrounding RAW shooting. (RAW shooting, like histograms, seems complex until someone explains both to you properly, then they become so intuitively obvious that you wonder what the big deal was.) So let's take a nice deep breath and get a little technical for a minute, while I explain exactly what goes on inside your camera in order to convert directed photons into a file on your memory card. First, let's see how your camera turns what's essentially a black-and-white sensor into a color image.

15.3 THE BAYER FILTER AND DEMOSAICING



Figure 15-2: Seriously, this is one pixel. Get 24 million of these together and you can make your own A6000.

See that handheld light meter in **Figure 15-2**? That's the equivalent of one pixel. All it can do is measure light intensity, not color. The intensity is converted into a number between 0 and 4096 (or between 0 and 16,384 if you're shooting 14-bit RAW files). Then the on-board computer suggests an f/stop and shutter speed combination that would work for that given light intensity at a given ISO.

Let's say you had a lot of spare time and purchased 24 million of these handheld light meters, and you took them apart and wired them together, taking the numeric output for each one and feeding them to your computer. What you'd have is a giant 24 megapixel sensor, which, when combined with a large lens and an image processing program, will give you a very nice, high-resolution, B&W photo.

B&W Photo? Yes, that's right. Pixels on this kind of a sensor can't measure color. When arrayed together, they can only form the equivalent of one large B&W image.

So how can you turn B&W images into color ones? There are basically two popular ways to do it in the consumer electronics world:

- 1) The Hollywood Way: Most color motion pictures made from the 1930's to the early 1950's were done by an expensive process called 3-stripe Technicolor. Basically, each movie camera housed not one but THREE rolls of B&W film. Light from the lens would be split three ways using a beam splitter. Light from one beam went through a red filter and exposed one of the B&W film strips, thereby capturing all of the reds that were in that scene. The second beam went through a green filter before exposing the second B&W film strip, thereby recording only the greens. The third filmstrip recorded the blue components of that scene. (If you think such cameras must have been cumbersome (which they were), imagine what the editing process must have been like!) The three reels had to be recombined to make a color reel that went to movie houses, whose color would certainly fade before the month was over. The Wizard of Oz, Singing in the Rain, and every Danny Kaye movie were made using this process. One of the benefits of the 3-stripe Technicolor process was that the B&W originals tended to last much longer in vaults, and each "print" (the copies sent out to the movie theaters) ended up looking like they were made yesterday. Most modern video camcorders use this same technique – they use three-way beam splitters and three B&W CCDs to capture each color component separately and then combine them electronically in order to get the color image. (The early Minolta RD-175 and RD-3000 DSLRs used this technique as well, but it resulted in very bulky cameras.)

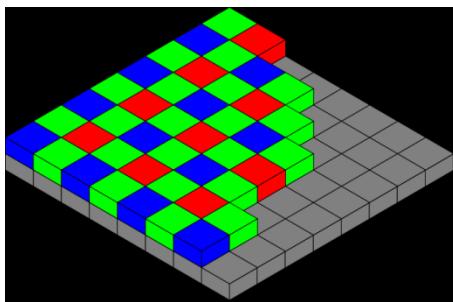


Figure 15-3: The Bayer Mosaic covers each pixel (which can only sense brightness, not color) with a red, green, or blue filter. For each pixel, the camera's computer must guess what the other colors must have been. For example, for a pixel with a green filter, what should the red and blue values be? An algorithm more complex than you'd expect must infer it from the values of neighboring pixels.

2) Because the Hollywood Way tends to be bulky and expensive, a very clever way of inferring color of a scene using only ONE sensor was developed at Kodak in the early 1970's by Dr. Bryce E. Bayer. Dr. Bayer (not the aspirin guy) proposed using only one sensor but placing different color filters over each individual pixel (a manufacturing challenge, to be sure). Then it would be up to the camera's computer to infer a red, green, and blue value for EACH PIXEL even though only one of those three values was actually being measured.

For example, for a pixel with a green filter over it, you can know the value only of the green intensity. How much red and blue should be assigned to that pixel? The camera's computer has to guess. To estimate the amount of red that should be assigned to that pixel, it might look at the values of other red pixels in close proximity to the green one in question, and try to interpolate. Same with the blue component. In all, your camera's computer must perform this guesswork for *every single pixel* in the sensor as it produces a JPEG image in the camera. This process of estimating what the other color components must be for each pixel is called "demosaicing."

Now here's where things get fun. Demosaicing is an inexact science.

Many, many people have tried to make a demosaicing algorithm that adds the color back "properly." Spline Interpolation, Lanczos Resampling, Variable Number of Gradients, and Adaptive homogeneity-directed interpolation are just four examples of the very complex methods different software applications use. And each algorithm will work well for certain kinds of pictures, but not as well for other kinds. And every method produces an image that has a different look. Want proof?



Figure 15-4: A shot taken with the worst light I could find, handheld at ISO 10,000. Image was shot RAW & JPG; this was the JPEG out of the camera.

Have a look at **Figure 15-4**, which was a handheld shot at ISO 10,000 with Noise Reduction set to “Normal.” (This was from an older Sony camera just to show how bad the “watercolor” effect is. The A6000 quality is substantially better than this, even at high ISOs.) This was shot via RAW & JPG, and the JPEG is pictured, straight out of the camera. The image probably looks just fine at first glance, but as you zoom in you’ll start to see some of the “watercolor effects” – artifacts of the camera trying hard to clean up the noise at such a high ISO (**Figure 15-5a**). Many people who grew up shooting grainy, high-speed film would be perfectly ecstatic with this result (this is way better than what film at the same ISO could do) and not see the noise as being a distraction. (You may not be one of them. ☺) Later on in this chapter I’m going to show you how I get a great high ISO image (like the kind in **Figure 15-5b**) by shooting RAW and post-processing.

So far we’ve only seen the in-camera JPEG files from this image. Does the



JPG with NR set to “Normal” RAW cleaned up in Lightroom

Figure 15-5: Zooming in you can see some of the noise and the “watercolor effect” of in-camera noise reduction on JPEG files (left). Can we do better by processing the RAW file? The right image says “Yes” and I’ll show you the tools I use later on in this chapter.

RAW image (also produced by the camera) look any better after demosaicing? Have a look at **Figure 15-6**, which shows you the same

image as converted by three different RAW processing programs. (No noise reduction was performed on any of these sample images.)

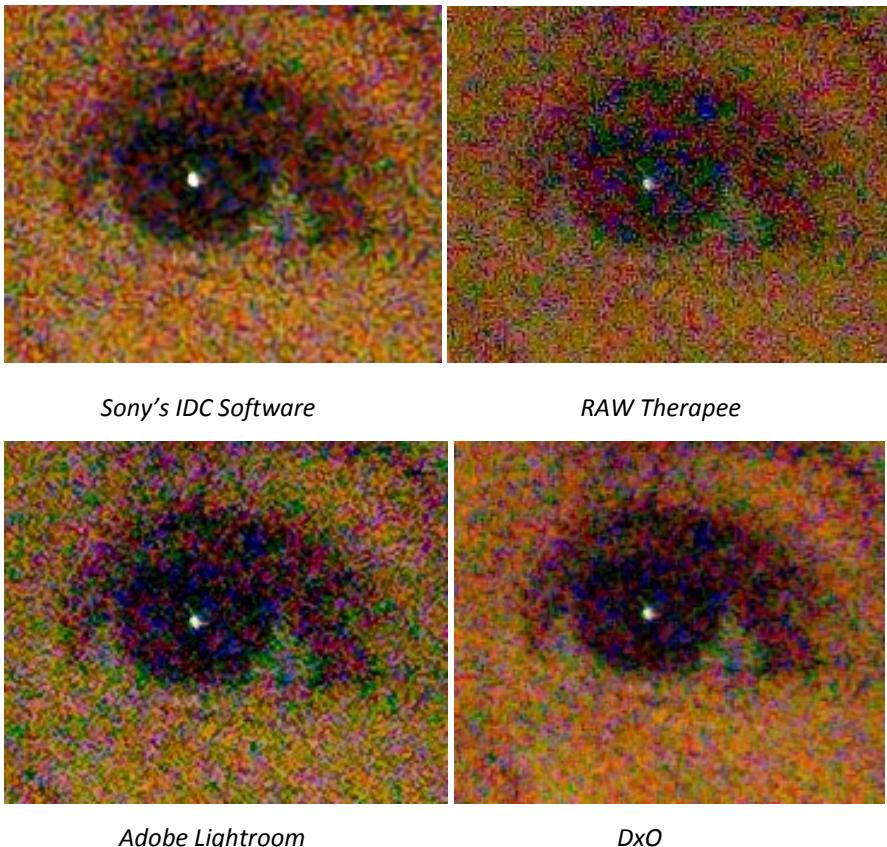


Figure 15-6: How the RAW file looks when decoded using different RAW processors (with no noise reduction applied). As you can see, there is more than one way to estimate what the color of a pixel should be without knowing for certain what it was. You can also see that noise and detail are tradeoffs. I go for detail since I can always remove the noise later using different tools. (These tools are getting very similar – you should have seen the differences between these tools in the A900 book!)

So you can clearly see that the process of demosaicing can be done in many different ways, to many different effects. Your camera will do it one way, Adobe Camera Raw will do it another, Bibble or CaptureOne will do it a

third and a fourth way. In 2008 David Kilpatrick (publisher of CameraCraft magazine and runner of the PhotoClubAlpha.com website) published a comparison of SEVEN different RAW processors, trying hard to tweak the controls of each to get the best possible quality. You can see his results and read his recommendations at <http://bit.ly/1muLRaU>. He has since done a similar comparison and concluded that Lightroom version 3.3 and later (as well as Adobe Camera Raw CS5 and later) have completely re-done their demosaicing algorithms for Sony sensors, and, finally, they were the best. David even recommended that all camera review sites (*cough* dpreview *cough*) re-do their RAW comparison sections for all older Sony cameras since Adobe Camera Raw (the “level playing field” used to compare RAW results from different cameras) finally makes Sony RAW files look good.

There's no industry standard, and all ways have their tradeoffs. Since the revelation that Adobe software is now considered the best at handling Sony RAW files, I am now using Lightroom for all of my RAW processing needs. (That software handles RAW and JPEG files identically – no additional steps are needed. It's invisible, and therefore shooting RAW is no longer the pain in the butt that it used to be. But there's still some benefit to shooting RAW & JPG and I talk about this and how to use it to reduce noise in Section 15.8.)

15.4 HOW YOUR CAMERA CREATES A JPEG FILE

So the previous section described how almost every consumer camera adds color to what is essentially a collection of B&W pixels. But this is just *the first step* of the many steps your camera takes to turn an image into a JPEG file. Want to see the other steps? Have a look at **Figure 15-7**.

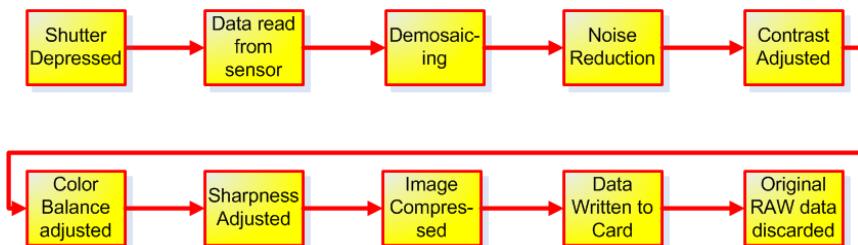


Figure 15-7: All of the things your camera does when generating an in-camera JPEG file.

As you can see, once the data is read off the sensor, the demosaicing process commences, and then the camera will start to do what a one-hour photo lab would do (using settings from the Creative Styles (Section 6.23) as a guide). It then compresses the image and writes it to the memory card in JPEG format.

Let me provide a little more detail about the above. The process of creating JPEG files is synonymous with the process of throwing away information. 12 or 14 bits of data for each red, green, or blue channel gets squeezed into 8 bits of data per channel (giving up some tonality and fine shades of color). A little bit of dynamic range gets lost too. Lots of visual information that the human brain cannot perceive gets thrown away as well, which is what's responsible for JPEG's famously small size. If there is a lot of high-frequency detail in the image, then that gets replaced by what's called a JPEG compression artifact (which I describe in a couple of sections). Then the compressed JPEG file is written to the memory card, *and the raw information from which the JPEG file was produced is discarded* (unless you were wise enough to shoot in RAW & JPG mode). Once this information is gone, there's no going back. If you didn't like what the camera did to the image, you can't go back again and reprocess it using different settings.

So, what happens when you shoot RAW? When you shoot RAW, the camera just sucks the data off the sensor and writes it directly to the memory card (executing just the green squares in **Figure 15-8**), leaving you to do all that other image processing later on your computer. (Well, that's what happened in the old days. Recently, some of the way the light intensities are represented are manipulated a bit before being written to the memory card. (See TIP in Section 15.7). But as far as you're concerned, it's still an unprocessed image with no color, sharpening, contrast, or saturation applied.)

The whole idea of just capturing the raw, unprocessed data (which is where the term RAW file came from) stems from the fact that there might be other commercial software out there that can process the image better than the camera's firmware can, or do it differently than the camera normally would, or not compress the image *at all* like the camera normally would when creating a JPEG file. We've already seen differences in what third-party software can do with the demosaicing process, and similar differences exist with different noise reduction packages too. Shooting RAW is just like shooting negatives and laboriously printing every picture in your home darkroom.

The raw data file also has some notes in it – it knows, for example, what your white balance was set to, and what the contrast, saturation, sharpness, and noise reduction settings were. Those settings aren't actually applied to

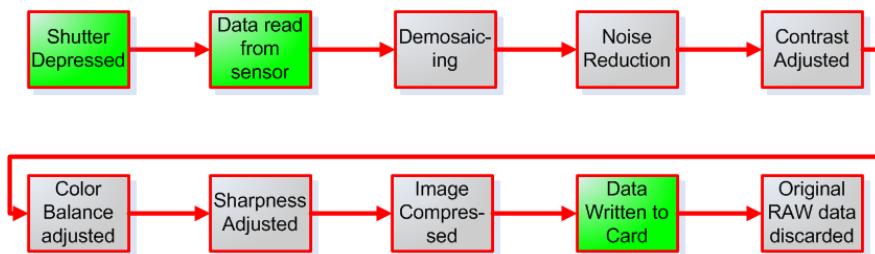


Figure 15-8: The green boxes represent what happens when shooting RAW: the camera saves only the raw, unprocessed data so it can be processed (and re-processed, if desired) on your own terms, on your own time. The steps in the gray boxes are skipped by the camera.

the RAW data, mind you -- those notes are there for the benefit of the desktop-computer-based raw conversion software, so when the file is opened and demosaiced, it can apply these settings *in a reversible way* to your image and you can start tweaking it from there. This way, there's no danger of accidentally setting the wrong white balance, or having too much in-camera sharpening – none of that is actually done until it gets to your computer, and even then, at that time it's all still optional.

Should you shoot RAW or JPEG? Don't answer that question until you read the section about JPEG compression artifacts (Section 15.6). That might change your mind in a hurry.

Compressed RAW? Once upon a time Sony introduced a compressed RAW format on the A900 called cRAW. cRAW took up so much less space than regular RAW, and they were so indistinguishable from the original RAW format that starting with the A65 and A77 they decided to ditch the original RAW file altogether, replace it with cRAW but just call it RAW. And that's why your RAW files are smaller than a 24 or 36 MP RAW file ought to be.

The lossy nature of the RAW compression is very mild. It's so mild, in fact that you can only see a difference if you conduct an experiment specifically designed to reveal it. Such a test was done by dpreview.com user 'Agorabasta' in this discussion thread, <http://tinyurl.com/l7jq48>, (halfway down that web page). For all real-world practical purposes, though, this compressed RAW is as good as the uncompressed version. Of course, there are still people who refuse to believe that (they may not believe in evolution, either)!

15.5 RAW, TIFF, AND JPEG FILES COMPARED

Have you ever used a program like WinZip or StuffIt? These two programs were designed to email many computer files to another person. First they collect the many files into one big file, and then they “compress” that one big file so it takes up less space and also makes it faster to email. The kind of compression used in this kind of application is called “lossless,” since when it is received at the other end and decompressed, the resulting collection of files must be absolutely, bit-for-bit identical to the original files before compression.

With that in mind, here are the characteristics of 3 common image formats you should know about:

RAW: It turns out that the RAW files from your A6000 are compressed (almost completely losslessly – see TIP box above) so that more files can fit onto your memory card.

TIFF: The A6000 does not record TIFF image files, but you'll need to know about them when working with other imaging professionals. This was one of the earliest standard file formats for storing images, and offers the highest image quality format because there is no lossy compression. Although TIFF image files produce images of the highest quality, their files sizes can be quite large (30 Megabytes or more – usually much larger than the equivalent RAW files!).

```
white  
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```

Figure 15-9: An oversimplified computer representation of a Japanese Flag

JPEG: This is the most popular image format in the world. At the time that the image file formats were being established, the Joint Photographic Experts Group (JPEG for short) got together to establish an alternative file format that would be substantially more compact than TIFF files. Comprised of experts in imaging, perception, cognitive science, computer science, and mathematics, the JPEG group devised a method of compressing an image by throwing away information that the human eye

and brain cannot perceive, thus reducing the file size tremendously without significantly altering how the image appears.

As a simple example of how files get compressed let's start with an image of a Japanese Flag, which is a large red dot in a plain white rectangle. When stored as a RAW file, the information is arranged something like what's in **Figure 15-9** (pretend the red parts constitute a circle). With a 24 Megapixel camera, this information plus the header info (plus some thumbnails which usually get embedded into an image file) usually adds up to quite a large size: (4000 pixels) x (6000 pixels) x (8 bits per pixel) = 195 Megabits = more than 24 Megabytes!

When stored as a compressed file, however, the Japanese Flag image might be represented something like this: "Okay, the first row has 417 pixels that are all white. The second row has 312 pixels that are white, followed by 87 that are red, followed by 312 that are white," and so on for each row. (In reality, the compression is much more complex than this, involving trigonometry functions and wavelets and other compression algorithms. But the general idea is that very clever methods are used to throw out information the eye cannot perceive at a distance, and then represent what's left in clever ways that take up less space.)

Because a more detailed image would require more words than "This much white/this much red" to describe it, images containing a lot of detail will be slightly larger than images that are simple (like the flag example above). This is why no product brochure or manual can ever tell you with certainty how many images will fit onto a memory card – when shooting in JPEG mode, it all depends on the content of the image. The most significant advantage of shooting with JPEG mode is the sheer number of images you can fit onto a card – up to five times more than if you were to shoot with RAW.

The downside is that JPEG files are compressed using a "lossy" compression algorithm – unlike with the WinZip or StuffIt examples described earlier, when the image is uncompressed the resulting file is NOT exactly the same as before it was compressed. For a Microsoft Word or Excel document this would be quite unacceptable, but for images that will only be looked at visually (and not computed upon), this is considered not only acceptable, but preferable. ("Look how much disk space we're saving!!!")

TIP: RAW files can capture a little more dynamic range than a JPEG file, but normally you can't get a preview of what this extended dynamic range looks like in Live View. Here's a clever thread from dpreview which suggests changing the contrast settings (and others) that normally don't get recorded: <http://tinyurl.com/85ruwom>

15.6 JPEG COMPRESSION ARTIFACTS

One thing about the JPEG compression standard that *wasn't* specified was how much to compress the image – this is usually up to the user. The JPEG standard (represented as a .jpg file extension in most computers) allows you to specify a “quality” level of one to ten, ten being the best quality. The tradeoff is file size, for as the compression gets higher, the file size gets smaller and the image quality gets lower.

For an example of the quality tradeoffs the JPEG format offers, have a look at **Figure 15-11**. These examples were made using a software application that allowed me to specify the JPEG compression levels from 1 (best) to 100 (worst). These represent extreme limits, and are being used here just to give you an understanding of the correlation between file size and image quality. In real life, you would probably never want to store the image using the worst quality settings (unless you were writing a book that wanted to show JPEG compression artifacts ☺).



Figure 15-10: The source image for the JPEG compression comparisons in **Figure 15-11**.

TIP: Today's out-of-camera JPEG files look outstanding compared to those of 10 years ago, making it safe for photographers who have good light and whose exposure is right for that light to shoot JPEG files exclusively. For more insights, see my blog post entitled, "Where the anti-JPG bias came from" here: <http://bit.ly/1dvjQgA> and especially its follow-up posting here: <http://bit.ly/1q0MzVd>.



Compression = 1 (3.2 Mb, Highest quality)



Compression = 51 (218 kB, Still pretty good)



Compression = 80 (178 kb, Can start to see some compression artifacts in the sky)



Compression = 100 (158 kb, Yuk!!!)

Figure 15-11: Extreme examples of JPEG compression artifacts. (Don't try this at home, kids!)

IMPORTANT TIP: These compression artifacts can get worse the more you work with them. Every time you open-modify-save-close a file, the file is recompressed, adding more compression artifacts to whatever was already

there. To avoid this (and in keeping with the mantra of NEVER OVERWRITE YOUR ORIGINALS), always go back to a copy of your original before making any modifications, and make sure that you make all of your modifications in one session before resaving as a JPEG file. Even better, save the JPEG as a TIFF file, and work exclusively with that copy!

The A6000 allows you to save your images as JPEG files with two quality formats: “Standard” (not to be confused with the “Standard” Creative Style discussed in Section 6.23) and “Fine.” You can switch between two modes by invoking **MENU → 1 → Quality → [Choose between Standard and Fine]**. Most people would have to examine an enlargement with a microscope in order to see the differences in quality between these two settings. Just as not everyone can hear differences between WAV and MP3 digital audio file formats, not everyone can perceive the difference in image quality between RAW and JPEG, or between different qualities of JPEG. Try shooting in all modes, printing the results at 8.5x11 or A4, and see if you can tell the difference. So, a summary...

RAW (*.arw)	A “dump” of all the bits from the sensor. Large file size. Requires post-processing on a computer. Designed for professionals who demand the highest image quality. Modern RAW files are compressed using a nearly-lossless compression scheme.
TIFF (*.tif)	(Not created by the camera, but exportable from RAW via Image Data Converter and third- party programs such as Photoshop.) Same information as RAW, plus the color, contrast, and other factors are applied. About 3 times larger file size than RAW, but unlike RAW it can be read by most other applications. TIFF and RAW produce the highest quality images because there’s no JPEG-like loss due to compression.
JPEG (Standard, Fine) (*.jpg)	Very high image quality with substantially reduced file sizes (see comparison table below) due to innovative compression techniques.

A comparison of the different file sizes and quality levels can be seen below (and these are identical to the table appearing earlier in the book in Section 6.3).

Image Format	File Size
Standard (.jpg)	5.7 MB
Fine (.jpg)	9.4 MB
RAW (.arw)	25.1 MB
RAW + JPEG produces 2 files	25.1 MB (.arw) + 9.4 MB (.jpg)

It is interesting to note that, even for the “standard” (lowest quality) JPEG setting, the compression is very conservative, and the image quality is still quite high.

TIP: *The size of JPEG files varies greatly. For example, my “Fine” quality JPEG files vary from 2MB to 10 MB in size, depending on the amount of high contrast detail in the subject. So if you try this experiment yourself, don’t be surprised if your numbers are off by a factor of two or more. This is why the “Images Remaining” counter shows you conservative numbers – often you can fit more images on a card than what the camera shows you when an empty card is inserted. The camera never knows how large your JPEG files are going to be.*

15.7 ARE THERE ANY OTHER BENEFITS TO SHOOTING JPEG FILES?

Well, we already know that they take up less space and they (potentially) require less work for post-processing. And you already know (having read the blog post I pointed to earlier at <http://bit.ly/1dvjQgA>) that if my light is good and my exposure is right for that light then I sometimes will shoot only Fine JPEG files since the benefits of RAW in that scenario are not compelling. Are there any other benefits to shooting JPEG files?

Yes, I can think of two more:

- The Lens Compensation corrections (**MENU → ⚙ 5 → Lens Comp.**) are applied to JPEG files but not to RAW files. (Well, shading and chromatic aberration correction are applied to RAW files, but other corrections aren't.) The only way to get the corrections back is to either open the RAW file using Sony's IDC software (which takes note of the Lens Compensation feature you had set and applies it to the RAW file *if it was enabled in the camera when you shot it* and if the lens is in its database), or use high-end workflow software such as DxO, Lightroom, ACR or Bibble, which apply their own database of lens corrections to images being imported. You can also correct one image at a time by hand using other software programs.
- DRO shadow lightening (**Fn → DRO/Auto HDR**) is also not applied to RAW files, although again you have the option of using Sony's IDC software to give you a very close approximation to the in-camera algorithms. Global editing parameters in other packages such as "fill light" do *not* do the same thing as DRO. Many people in the past had complained that it takes too much time to try to re-create what DRO does using Photoshop.

Is now a good time to mention the joys of "RAW & JPG"? (Shoot now, decide later. All the options are kept open for you.)

TIP: Once upon a time there was an esoteric noise reduction technique called "Expose to the right" (ETTR). The idea behind it was to overexpose the image when you're shooting RAW (taking care that you didn't blow out your highlights) and then bring the brightness down later in your computer. It really

worked! (And I gave an example of this in my Advanced Topics 1 e-booklet).

Apparently someone at Sony decided to optimize the way brightness levels were distributed in the latest RAW file definition, meaning there's now better quality when shooting in good light but the ETTR technique is no longer as effective. An article on SonyAlphaRumors.com (which summarizes an even more technical DPReview thread) is here: <http://tinyurl.com/5s335pq>.

15.8 REDUCING NOISE IN RAW FILES USING CAMERA RAW OR LIGHTROOM

Adobe Photoshop CS6/CC and Adobe Lightroom 5 use the same improved demosaicing and noise-reduction algorithms that can process Sony RAW files properly, and fortunately they both also have the same simplified controls. The following example uses Adobe Photoshop, but the Adobe Lightroom interface for processing RAW files is very similar.

Without going into great detail about the operation of these two behemoth software programs, here's a quick rundown on how to use Photoshop's Camera Raw controls to reduce the noise in high-ISO RAW files.

1. Open the .ARW (RAW) file and the Adobe Camera Raw window opens with the white balance settings (temperature and tint) preset to the values that the camera used when the image was shot (labeled As Shot). Remember, things like white balance aren't actually applied to RAW files; however the camera's settings are noted in the RAW file and Adobe's software reads these values and then pre-adjusts the controls accordingly. This saves you a little bit of time.)

The other adjustment sliders are set at their default values. The default values generally look pretty good, but almost every RAW file can be improved by working with the many sliders available in the different Camera Raw adjustment tabs. That's definitely material for another book, or even a bunch of them. I recommend Jeff Schewe's book *The Digital Negative: Raw Image Processing in Lightroom, Camera Raw, and Photoshop*. It's a truly comprehensive guide.

2. Click the Detail tab (red circle in **Figure 15-12**) to bring up the Sharpen and Noise Reduction controls. (Lightroom users have this available to them in the right side of the Develop work area.)
3. Zoom in to 50% or 100% and look at a patch of noise (which will be easier to spot in the shadows). There are two major variables to control: Luminance noise and Color noise (often called “Chroma” noise). Chroma noise is easy to spot – it is the random distribution of color pixels that don’t belong in the image. That’s why I recommend quashing it first.
4. Move the Color slider to the right until you see the splotchy color patterns fade away. (Don’t move it too far – too much noise reduction

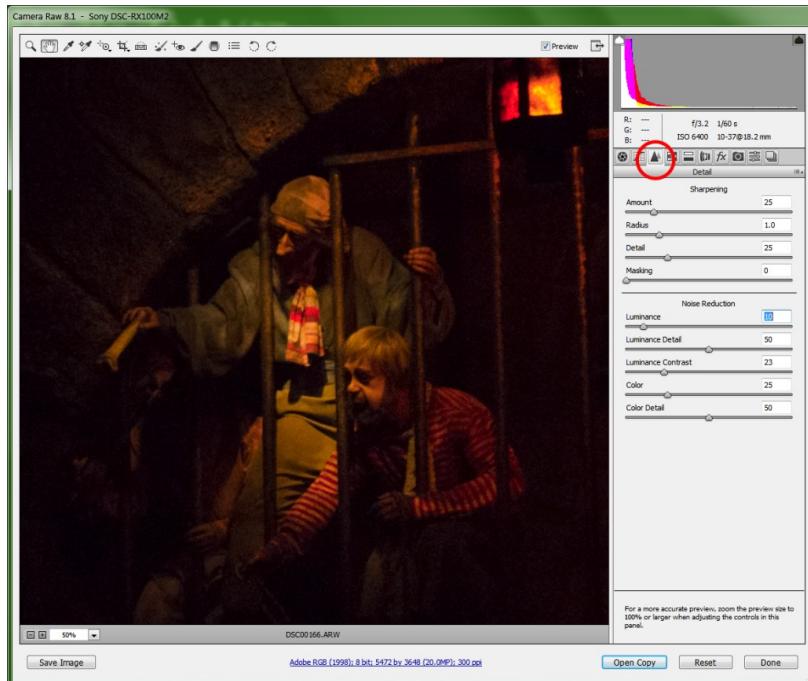


Figure 15-12: Both Lightroom 5 and Adobe Camera Raw (which comes with Photoshop CS6, and is pictured above) use the same sliders when it comes to reducing noise. The sliders you see on the right are typical of the values I use when reducing noise in most high-ISO RAW files.

of either type can cause an undesired blurriness.)

5. The Color Detail slider is a tool that can help restore some of the important edge color which the Color slider might have gotten rid of. You may not see any meaningful effect of this slider on your picture – and that's OK. This slider has less impact on image quality than any other slider.
6. The Luminance slider is . Notice that moving it too far to the right blurs all that noise right out of existence – along with all that detail you paid so dearly to capture. Clearly you want to apply no more noise reduction than necessary.
7. In an effort to restore some of that detail that got blurred away in the previous step, the Luminance Detail and Luminance Contrast sliders are there. Both of these are actually employing a kind of sharpening to bring back some of the detail that was lost (yes, I know, that seems like a very backwards way to attack the problem; however when applied sparingly the combination of blurred luminance noise and sharpened edges really does degrade the noise while appearing to preserve detail).
8. The value of the sliders you should use may vary considerably from picture to picture – there is no one-setting-fits-all for your images. Experiment and see what looks best to you – there is no other way to find the right settings.
9. Camera Raw only: Click the Open Image button at the bottom of the window to open the image in Photoshop, ready for further tweaking, or click Done or Save Image... to move on without opening the image in Photoshop. As long as you don't click Cancel, Camera Raw remembers the settings you've made, and will use those next time you open the file.

There's more to it than that, but just the steps I outlined above are enough to produce dramatically better high-ISO results than your in-camera JPEGs. If you'd like to delve more into understanding what all these variables do, Peachpit.com has posted a very nice video which provides a slightly more detailed overview: <http://tinyurl.com/3gmsz8b>. (This video is for Photoshop CS5, which has a nearly identical user interface.)

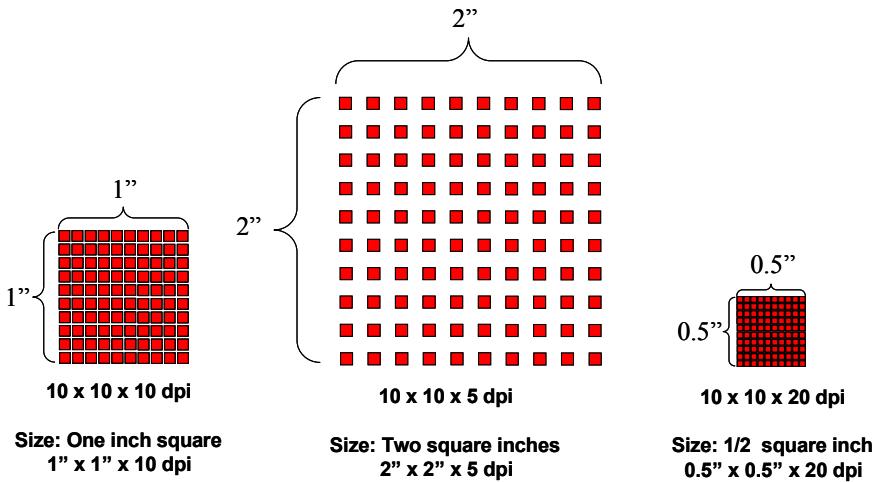


Figure 15-13: Same number of pixels, but each will print at a different size given different resolutions.

15.9 IMAGE SIZE AND RESOLUTION

There are three variables that determine how large an image will appear when printed or when viewed on the web: the number of pixels (height), the number of pixels (width), and the number of pixels per inch (ppi) –typically referred to as “dots per inch” (dpi) by most people. **Figure 15-13** shows three IDENTICAL sets of pixels that can magically “change” dimensions when printed on printers at different resolutions.

The gist of this is *the same set of pixels can print in different sizes just by redefining the dpi setting of the printer.*

This is an important concept to grasp if you will be printing the images yourself on your inkjet printer, because sizing them properly (using tools such as PlayMemories Home, Photoshop or Photoshop Elements) to match the output resolution of the final imaging device (be it printer or web page) is critical to retaining the image quality.

So, how is this all relevant? An RX-100 has a 20 megapixel sensor which produces images that are about 76" x 50" at 72 dpi out of the camera.

Taking the exact same set of pixels and changing to print resolution (300 dpi), the dimensions change to 18.2" x 12.1" x 300 dpi.

If you wanted to make the image twice as large, you could decrease the dpi to 150 dpi and end up with an image 36.4" x 24.3" in size. Such large images are often viewed at a distance, and therefore, few notice the lower resolution needed to achieve such a large size.

15.10 “HOT PIXELS”

Sometimes a small dot on every picture isn’t caused by a speck of dust; rather sometimes a single pixel can “go south” and remain a fixed color forever. Although it is not mentioned anywhere in the documentation, and although I haven’t actually had the opportunity to test this myself, it is now well-established that every Sony camera has a method for finding and “eliminating” stuck sensor pixels.

At the beginning of a month when the camera is turned on, it will test itself for a stuck pixel, and if it finds one it “maps it out” in its memory, replacing its value with the average of all the surrounding pixel’s values when it processes the image and writes it to the memory card. So if you suspect your camera has such a “hot pixel,” set the camera’s date to the beginning of next month, turn the camera off and then on, and the problem should go away. (You can then move the date back to today once it’s done.)

15.11 MEMORY CARDS

Your camera can take four different kinds of memory cards: SD (Secure Digital), SDHC (Secure Digital, High Capacity), SDXC (Secure Digital, Xtended Capacity (engineers were never known for good spelling!)), and Sony's proprietary Memory Stick Pro Duo format. Amazingly, Sony has designed one memory card slot that can accommodate both form factors.

Will one make your camera perform better than another? If you're not using the camera's 11-pictures-per-second fast shooting mode, then most SD cards of Class 10 or faster should be sufficient.

If you're shooting at the highest frame rate a lot (especially if you're doing it using RAW), it's a different story. I strongly recommend using only the new breed of UHS-I SDHC memory cards (with a maximum transfer speed of 45 MB/s or more) or the Memory Stick PRO-HG Duo™ HX (the latest ones go up to 50MB/s). Sony also says that if you're shooting video, the Memory Stick Pro Duo Mark 2 cards are up to the task.

If I were to recommend a brand, based solely on my personal experience I would highly recommend Lexar and Sandisk – both have had a strong, reliable (albeit not blemish-free) track record with me.

15.11.1 SOME BACKGROUND ON MEMORYSTICK PRO DUO

Sony invented the Memory Stick back in 1998 as a proprietary format to use in all of their digital cameras. One of their hallmarks was just how small they were – in the beginning you could store up to 128 MB (!) on a tiny card smaller than a stick of chewing gum. (As of this writing 32 GB Memory stick cards are available. But at the 2009 Consumer Electronics show, Sony announced an upcoming new Memory Stick format (actually it was a specification) with a maximum capacity of 2 TB!!!! No word on



Figure 15-14: Your Alpha can accept either SD, SDHC, SDXC (left), or Sony's Memory Stick Pro Duo cards (right).

price or even if these new devices will work in existing equipment, but I can't wait to lose my last 5 years' worth of work in the wash.)

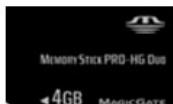
But, my friends, you cannot just walk into a store and ask to buy a "memory stick," for there are many flavors and only a few will work with your camera. Below is a brief run-down on the available choices. Only the items in black, bold text are compatible with your camera; items in red text will not work.

TIP 1: When you buy memory cards, make sure you purchase them from a retailer that will accept returns, no-questions-asked. As an example of why I say this, here's how Lexar handles their in-warranty returns for cards that fail bit-error tests: 1) You must wait two days to get an RMA number by email, 2) You must return the card at your own expense (including insurance), 3) You must wait 2-3 weeks for them to test it and send out a replacement (!). Being able to return a bad card immediately is a Good Thing. Note also that the Sandisk tend to be the most often counterfeited brand, so test it thoroughly (see next section) before going out to shoot!

TIP 2: SDXC cards use an EX-FAT format which many computers don't know how to read. How can you tell? Tether your camera to your computer and turn it on. If your computer prompts you to format the card, say no and disconnect the camera. You'll have to use only SC or SCHED cards from now on.

TIP 3: Large capacity cards make the camera take longer to turn on initially (it has to estimate the number of images remaining on the card the first time you turn it on).

Name	Comments
Memory Stick	 <p>This is the original format, which could hold up to 128 MB.</p>
Memory Stick Select	This is identical to the original Memory Stick, except it had a switch on the back to allow partitioning. Up to four 128 MB memory banks could be selected. Rare.
Memory Stick Pro	A newer version of the standard; allows for capacities of up to 32 GB and a much higher transfer speed than the original.
Memory Stick with MagicGate™	MagicGate is a Digital Rights Management technology which essentially encrypts your data before storing it. It was designed to allow audio files to be downloaded and played on "authorized" players but not copied or shared. All "Pro" memory sticks are MagicGate compatible.
Memory Stick Duo	Half the size of the standard Memory Stick, but can only accommodate low capacities. Not compatible with your camera.
Memory Stick Pro Duo	 <p>Smaller cameras necessitated an even smaller form factor, and so the "Duo" format was born. Half the size of the original Memory Stick, they are available in most of the permutations listed above ("normal," "Pro," with and without "MagicGate™"). You will probably need an adaptor to use the Memory Stick Pro Duo in devices that are designed to accept the original memory stick (such as inkjet printers, USB adapters, and 1-hour photo kiosks). You can use these cards in your camera.</p>
Memory Stick Pro Duo PSP	 <p>This is identical to the Memory Stick Pro Duo mentioned above, only it is packaged for customers of Sony's Play Station Portable game console.</p>

	Interestingly, as of this writing, memory sticks with the PSP packaging were commanding a slightly higher price.
Memory Stick Pro-HG Duo Memory Stick Pro-HG Duo HX	 The new high-speed version of the Memory Stick Pro Duo. Using this card in your camera allows you to shoot at maximum speed in JPEG mode and can shoot movies without buffer overruns. The newest "B" series HX cards have a data transfer rate of 50 MB/sec.
"Mark 2" certification	The Mark 2 designation indicates the Memory Stick is suitable for use with AVCHD (HD video) recording products or other faster Memory Stick enabled devices by providing appropriate minimum write performance. In my experience, the memory sticks in the row above work just as well for AVCHD movies and are cheaper.
Memory Stick Micro Memory Stick HG Micro	 Jointly developed by Sandisk and Sony, the Memory Stick Micro is one quarter the size of the Memory Stick Pro. Make sure you check your pockets carefully before doing the laundry!! According to Sony these cards CAN be used with an adapter.
Memory Stick Extended High Capacity (XC)	Announced Jan. 8, 2009, this new standard can handle up to 2 TB of data with 60 megabytes per second data transfer speed! No word as of this writing on whether it will work on your camera (or any other existing Sony product.)

[Think that's confusing? Check out Sony's web page designed to make compatibility issues clear at <http://tinyurl.com/ycr2qhb> (which is aimed at Cybershot owners; but you can reference the part that says "Cyber-shot® W Series Cameras.")]

15.11.2 SOME BACKGROUND ON SD MEMORY CARDS

It seems only fair to give this subject equal time. But compared to the Memory Stick permutations, the SD family seems pretty tame:

Name	Comments
SD	"Secure Digital;" available in sizes up to 2Gb.
SDHC	<p>"Secure Digital High Capacity" - same as SD but offering much larger sizes. The more widely used industry standard and Sony themselves recently brought out a range of SDHC cards up to 32Gb which are compatible with your camera.</p> <p>http://www.simplydv.co.uk/2010/01/new-sd-memory-cards-sony-2010</p> <p>These have a "Class" which indicates how fast they are from Class 2 to Class 10 (and some go vastly quicker than Class 10 too) Some cards may still list speed in terms of 13x, 26x, 40x, 66x, etc. which are the equivalent of Class 2, 4, 6, 10 or in Megabytes/Sec where Class 10 is 10Mb/sec.</p>
SDXC	"Secure Digital Extended Capacity;" A new standard supporting sizes up to 2Tb, and is compatible with your current camera. Uses a new extended file system called ex-FAT, which not all computers know how to read. Make sure your computer can handle it before you start investing in these cards.
Micro SD / Micro SDHC	It's much smaller than SDHC, and requires an SD adapter to be used in your camera.
MiniSD Mini	It's even smaller than Micro SD, and requires an SD adapter to be used in your camera.

15.11.3 MEMORY CARD CORRUPTION ISSUES

Alas, with new technology often comes even newer, unanticipated drawbacks. Although all memory cards have been designed for reasonably rough usage (and some expensive models have been introduced that are advertised as being designed for *extremely* rough usage), there may be times when the unthinkable occurs: several random bit errors occur within the card, resulting in “corruption” – the inability for the computer to reconstruct the image due to missing or damaged information.

There are several software tools on the market designed specifically to try to recover from these kinds of errors. Two tools I can highly recommend

are Photo RescueTM at <http://www.datarescue.com/photorescue>. The other is Image RescueTM, which comes bundled for free with some Lexar memory cards (a bold move if you stop and think about it...). Both are worth every penny for recovering from corrupted media (assuming recovery is possible... some corruption is unrecoverable.) You can try Photo Rescue free of charge to see if it will do any good before you plunk down any money.

[Note: I get no compensation for endorsing these companies. But I've used both successfully to retrieve images off a corrupted memory card more than once.]

Since the last two memory cards I've purchased had such corruption issues, I've now learned a few things about minimizing the surprise factor involved:

1. When you first get your card, format the card ON YOUR COMPUTER (not in the camera). Format it for FAT32, and make sure you have the "Quick Format" option disabled. (If you have an SDXC card, format it in your camera as "ex-FAT.") One of the purposes of formatting is to find the bad memory blocks and "map them out" so your camera doesn't try to use it.
2. Test every new memory card you buy for bit errors. (Buy a Lexar card if for no other reason you can use their free Image Rescue 3 software to test that and any future card from any manufacturer). The testing should occur after the formatting stage. Return the card immediately if your results consistently show bit errors.



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CHAPTER 16 ADDITIONAL RESOURCES

THOUGHT THIS BOOK PROVIDED A GREAT AMOUNT OF INFORMATION? WAIT, THERE'S MORE!

In this book I have tried to provide a careful balance of information, knowledge, inspiration, and history. But your journey has only just begun. There is so much to learn about photography that one book cannot possibly convey it all. Plus, there are many Internet-based resources that you might find helpful in your continuing discovery of this wonderful medium.

To that end I have created a hodgepodge of information, in case these might be of interest to you. (There are also other things that have little to do with teaching the photographic arts, but what the heck! I'll share these with you as well! ☺)

16.1 INTERNET FORUMS AND DISCUSSION BOARDS

There are many resources on the Internet for asking questions, learning from others, and even posting pictures you're proud of, to get feedback. (Chances are you heard about this book from one of them!)

- Digital Photography Review (www.DPReview.com) – Contains the latest news, extremely detailed camera reviews and comparisons, and discussion forums on every imaginable subject, although the most active forums have to do with specific camera brands. Check out the “Sony DSLR Talk” discussion forum.
- Dyxum (www.Dyxum.com) – This is a popular site dedicated solely to Minolta (and now Sony) cameras. Its name is a mixture of two of Minolta's brand names: “Dynax” and “Maxxum.” A very friendly and dedicated group of people hang out here!
- Photo Club Alpha (<http://www.photoclubalpha.com>) - A great website run by Icon Publications with a host of resources, present and past.

David doesn't post as much content as he used to but you'll still get some great technical and industry insights not available anywhere else.

- www.SonyAlphaLab.com – Product reviews, tutorials, comprehensive lens and equipment guides, and even an occasional camera strip-down (like the kind shown in Chapter 1, which came from this website). Jay Hermann is a pretty enthusiastic Sony Alpha shooter and he loves sharing what he knows.
- Steve's Dicams (www.steves-dicams.com) – Very similar to www.DPReview.com, but seems designed to attract a slightly different crowd. Try both and see which one you feel most comfortable with.
- Luminous Landscape (<http://luminous-landscape.com>) – Home of the Luminous Landscape Video journal. A huge resource of breathtaking images and video tutorials (which can be purchased) for the serious photographer. Lots of free articles and tutorials as well as a discussion forum.
- Photo.net (www.Photo.net) – the granddaddy of all web-based photo discussion boards. Photo.net tends to emphasize images over camera brands, and is designed, more than any other site (except maybe flickr.com; see below) to host and share images and techniques with others.
- Flickr (www.Flickr.com) – Probably one of the leading photo sharing sites. They now offer 1 terabyte (!) of free storage before charging you. Think of it as an off-site backup that will take you six months to restore from using DSL.
- Sony Camera Club on Flickr (www.flickr.com/groups/sonycameraclub) This is the only online discussion forum that is sponsored by Sony and actually has (very thin) ties to the Sony designers in Japan. ‘Nuff said.
- Instagram (www.Instagram.com) – the best place to start following National Geographic photographers. (Start with Yamashitaphoto for some great shots.) Technically you can only post pictures from your mobile phone but you can follow photos from your favorite people in a web browser.
- The Friedman Archives (www.FriedmanArchives.com) – A great stock image website, with a great blog, too (www.FriedmanArchives.com/blog). (☺) Also check out my section

of books which contains free articles
(www.FriedmanArchives.com/ebooks)

16.2 LENS RENTAL

Need to rent a high-end FE lens, and only need it for a day or so? Here are some companies that can help you out:

- Borrow Lenses (<http://www.borrowlenses.com/category/Sony>)
- Lens Rentals (lensrentals.com) Nice selection of FE-mount bodies, lenses, and flashes.

16.3 CAMERA AND LENS REVIEW SITES

If it's detailed reviews you want of camera bodies or lenses, here is a non-exhaustive list of places to go (some of which appeared in the previous section as well). Do know that all sites, being run by humans, will have a bias or two or may not be as scientifically rigorous as others. (I'm of the opinion that if you have to resort to complex test shots and graphs and "pixel peeping" to compare lenses, then we've achieved the utopian goal of "They're all excellent – stop obsessing over optics and go out and practice your craft!") Therefore I don't usually consult such sites when making a lens selection – instead I go by the rule of thumb "If the lens is more expensive, it must be better!" and so far this heuristic hasn't failed me much. ☺

www.Phottodo.com – Evaluates lenses from many manufacturers, including third- party lenses. Note that this site offers their own reasonably scientific MTF tests, but also user-supplied evaluations which should not be taken too seriously. There's a tutorial on the site on how to read the MTF test chart results – essential reading if you want to get the most from this site.

www.DxOMark.com – a free service from the software company that brings you the DxO software used to correct image quality flaws in popular high-end lenses. They have developed a test which rates color depth, dynamic range, and high-ISO noise levels from RAW files across several manufacturers.

www.Dpreview.com/lensreviews - DPReview, renown for its insanely thorough camera body reviews, is now starting to do lens reviews. As of this writing the reviewed list is pretty small but with their newly expanded staff they should be building up a rotund list before long.

www.imaging-resource.com – Like DPReview, imaging-resource is a well-respected source of detailed and reasonably scientific camera evaluations. They also have a subsite of random lens evaluations called <http://www.slrGear.com/reviews>. (Not too many reviews posted there...)

www.Lens-Reviews.com – 100% user-generated reviews, meaning there is no objectivity nor consistency in evaluation criteria. Steer clear of this site.

www.SonyAlphaRumors.com – Want to get the latest scoop on future products, bugs, and news on Sony's platforms? Then this website/blog is for you! It's run by Andrea, a photojournalist who shoots with Sony (obviously) and has been providing rumors – all of which are qualified by the credibility of the sources – since 2009. I subscribe to this news feed personally.

www.photozone.de/sony-alpha-aps-c-lens-tests - This site has reasonably useful tests. As of this writing none of them were evaluated on a full-frame camera, so corner sharpness evaluations don't appear.

www.PopPhoto.com/cameralenses/ - Despite its well-rooted place in photographic periodical history, and the fact that it was the home of legendary photo magazine editor Herbert Keppler for many years, one of my gripes about Popular Photography magazine is that they never, ever had anything negative to say about a reviewed product. The fact that they were advertiser supported I think had a lot to do with that, and so although their tests appear to be objective with a dash of scientific rigor, don't place too much weight on these results.

16.4 25 WAYS TO “WOW!” E-BOOKLET

Now that you've become familiar with all of your camera's bells and whistles, I invite you to expand your mind - the right side of your mind, to be specific - and unleash some of its creative forces. Creativity, above all else, is really what makes great photography.

To that end, I have assembled an e-booklet called "25 Ways to 'Wow!', " a collection of 25 ideas and additional compositional rules designed to get your creative juices flowing and to help you take the kinds of pictures that make people say "Wow!" (the goal of every photographer!). It is available for only USD \$5.95 as an instantly-downloadable .pdf file.

I think there has never been such a large collection of creativity-stimulating ideas available for such a small amount.

WHAT YOU'LL LEARN IN THIS E-BOOKLET

- What many National Geographic photographers do that you swear is unethical
- The "inner game" mindsets used by all the photographic masters
- The simple things that differentiate "art" from mere snapshots
- At least a dozen additional compositional rules (over and above what appears in the appendix)
- Ways to salvage low light conditions and turn them into memorable shots
- Three simple steps to making every shot outstanding

And much more! You can purchase and download your own copy right now by visiting www.FriedmanArchives.com/ebooks.

FREQUENTLY ASKED QUESTIONS ABOUT THE "25 WAYS TO 'WOW!'" E-BOOKLET

Q: "Gary, I really liked your book. I own many other books on photography, all of which also claim to offer compositional rules and ideas for creativity. Am I likely to find anything new with your offering?"

A: It's hard to say, but I will tell you that I did not make most of these up. They are established rules and formulas that have been used by great photographers for over a century. What makes my offering unique is 1) it's all been assembled into one handy and easy-to-digest volume, and 2) the price for the collection sets a new record for informational value. If you are a beginner, then this is the most approachable and affordable place to start getting your creative juices flowing.

Q: "I see you're not offering any preview pages or a table of contents like you did with your books. Can I see what I'm going to be getting before I buy?"

A: Hey, I don't want to give away the store! One page can be seen on the shopping cart page (using the link above). I am hoping that my previous works have resonated with you, and I sincerely believe that for USD \$5.95 you are likely to find at least one new idea or knowledge fragment that will make the purchase worth your while. You can't lose!

Q: "Okay, you have a great track record and it sounds worthwhile. What was that link again?"

A: Go to <http://FriedmanArchives.com/ebooks> and then click on "25 Ways to Wow!"

16.5 ADVANCED TOPICS 2

This e-booklet (instantly downloadable and priced right!) delves into more technical issues that just couldn't be squeezed into this book. If you enjoyed learning about photography with this book and are hungry to learn more, these e-booklets are just the ticket!

Advanced Topics 2 covers:

- All about filters - what's useful, what's obsolete
- Color Space, Bit Depth, and ICC Profiles Explained
- Bird and Wildlife Photography
- Macro Photography
- Long-term Archiving of Gigabytes of Information
- Low-light Sports Photography
- The Basics of High Dynamic Range (HDR) Imaging (the old fashioned way to do it. It was uphill both ways!).

You can learn more (and purchase it! ☺) at www.FriedmanArchives.com/ebooks.

(Note: Advanced Topics 1 is being retired, since the majority of topics discussed within it are now obsolete. Maybe one day I'll have time to update it.)

16.6 AN INTRODUCTION TO SONY'S WIRELESS FLASH (VIDEO)

Want to see a live demonstration of Wireless Flash in action? Wanna see me go from “Yuk!” to “OMG!” in about ten minutes (including all the trials of getting the light to look “just right”?) Wanna see how to get professional looking portraits using just a wireless flash and a \$5 piece of cloth?

Then you’re invited to download a live presentation I made in Malaysia which gives an introduction to Flash, wireless flash, and shows what you can do with 1, 2, and 3 wireless flashes. AND there’s also the live demonstration I spoke about in the previous paragraph (no pressure there – getting a great shot in front of a live audience!)



The 50-minute video is available either as a downloadable MP4 file (USD \$9.95) or as a physical DVD that’s mailed to your door (\$15.95 plus shipping). You can see more info and a preview of the talk at http://friedmanarchives.com/wireless_flash.

16.7 WAYS TO “WOW!” WITH WIRELESS FLASH

As you know by now I’m a big fan of wireless flash, as improving your light is the single biggest thing you can do to improve the impact of your images. (Yes, more than getting that Zeiss lens you’ve been coveting!)



However, as you read from the chapter on Wireless Flash, it can get kind of technical and off-putting. And so, to help bring the joys of Wireless Flash to more people, I've taken a different approach to teaching this important topic – one that emphasizes learning by doing rather than a scholarly approach. The result is “Ways to ‘Wow!’ with wireless flash, which is an instantly-downloadable e-booklet which will help ease you into the wonders of wireless flash using a new and non-threatening way to learn: <http://friedmanarchives.com/WWWF> A mere USD \$9.95!

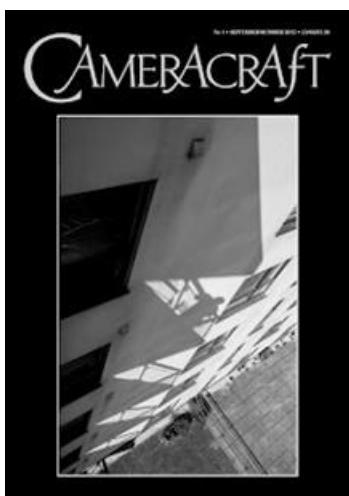


16.8 BOOKS ON OTHER CAMERAS

I've written a ton of book on other high-end cameras (mostly Sony, however I'm branching out and we're doing books on Fujifilm and Olympus now too!) You can see the entire list at www.FriedmanArchives.com/ebooks.



16.9 CAMERACRAFT MAGAZINE



For as long as I can remember, the vast majority of the “Popular” photography magazines served as a vehicle for their advertisers. And as I got older things seemed to get worse, as content took a back seat to both the latest gear AND the will of the graphic layout artist.

As an example, have a look at some of the sample pages of a photo magazine I actually used to write for. Its layout is gorgeous. It has the backing of the camera company whose products they herald. But its content leads the crusade of misinformation the photo industry loves to

impose on the masses: If only you had the latest gear, or if only you understood this obscure feature of the intimidating camera you can't ever hope to understand, only THEN can you get the great shots you see in their pages. (In one issue they had a FOUR PAGE spread on how to use the shutter release button!) They would showcase a guest photographer and only talk about what gear he used, not the light or how he approached

the shot in his mind (sending the message that if you bought gear like his, your shots would be as good).



You could argue that the successful magazines have evolved to this point because they're actually giving their readers the content they want. That may be true, but I really couldn't stand being a part of it. I felt they were sending the wrong message (and in fact this is

part of what drove me to start the Friedman Archives seminars (next section ☺) – to combat this culture of mis-information), but at the time the US Dollar was very weak compared to the British Pound, and, well, if someone offered YOU USD \$750 to compromise your principles, wouldn't you at least think about it? :-)

Fast-forward to today. When legendary publisher David Kilpatrick visited me in June 2012, not only did he pose for the cover of a book, but he also wanted to talk to me about his latest project: A new quarterly photo magazine which returns to the forgotten roots of great photography and spends more time talking about light, composition, mindset, backstory, and the things that give photographs an emotional edge. It would be printed on high-quality stock rather than over-bleached, uncoated newsprint with pulp and fillers. It would be brand agnostic, and inspire its readers creatively by showcasing works and thought processes of other photographers. And while it will contain some ads, the intention is to publish for like-minded readers and not to chase the mass circulation demanded by today's advertisers. Best of all (at least in my mind), he offered me the position of Associate Editor, which I enthusiastically accepted.

As part of my duties I'll be curating content, editing submissions, and will have a regular column discussing the "mind game" behind important shots. The first issue was released in September, 2012 to high acclaim and great reviews.

I invite you to come be inspired once again about the power and mindset of photography and become a subscriber. A subscription link appears

below -- Share this with every artistic person you know! (Better yet, subscribe today!) I promise you will find it worth your while.

<http://friedmanarchives.com/cameracraft>

16.10 THE FRIEDMAN ARCHIVES SEMINARS

Okay, so now you know what every button and feature on your camera does. (Or at least you now have a reference that you can go back to repeatedly to remind you. ☺) But are you able to get the kind of "Wow!" pictures that were shown before each chapter?

There's a lot of knowledge about how to get great shots that have been mostly forgotten since the demise of the Kodachrome shooters. (They knew how to get perfect shots without needing Photoshop!) What was their secret, and can you use it to up your photographic game?

The Friedman Archives High-Impact Photography Seminars have been instilling this knowledge to photographers of every level around the globe. They were designed from the ground up to be *different* from any photography seminar that has come before it, and have inspired a legion of beginners and 30-year-shooting-veterans alike to be more creative about their photography. You will learn not only what's most important to "Wow!" type shots, but also to gain a very intuitive understanding of the technical side of things. All in a fun, friendly, supportive, and nurturing environment.

Here are some of the things you'll be able to do after enrolling in this 2-day seminar:

Day 1 ("The Creativity Day," or "The camera can do quite a bit by itself. Teach me about creativity and light and things that only the human can do!")

- Bring home travel shots that will make your friends jealous
- Take family shots that are so engaging that *other people* will want to hang on their refrigerators!
- Learn about the kinds of everyday situations that even the most expensive camera can't address (but you'll be able to!).

- Learn the 8 compositional formulae used by *every* National Geographic photographer.
- See light the way a cinematographer does, and learn how to make the most of available light
- Get your feet wet with Wireless Flash and see how to go from boring to “Wow!” just by taking control of your light.
- Learn the single most important technique that all pros use to get shots with high impact.
- Get the creative side of your brain a workout with in-class exercises for creativity and composition.
- See first-hand the little-known truth about megapixels, pixel peeping, and giant enlargements
- Learn how quality of light can affect the emotion in your photographs
- And more!

Day 2 ("The Technical Stuff")

A lot of beginners get overwhelmed by the technical aspects when they first learn the craft, and Day 2 was designed to blast through that. Interestingly, many 30-year veterans of photography have exclaimed how much they learned and how their creativity was re-energized after attending! Here's what you'll learn:

- The benefits and drawbacks of RAW mode (and the unexpected benefits of JPEG!)
- How your exposure meter thinks.
- The three types of metering, and when to use them.
- The four variables of exposure
- Color balance and Human Perception
- How to avoid horrific JPEG compression artifacts
- Print vs. screen resolution
- The most-useful Post-processing functions

There are also ample discovery exercises to allow you to become familiar with your camera's operation and experiment with particular features.

The Friedman Archives High-Impact Photography Seminars are a wonderful way to help you get the most out of your camera investment, and

to invigorate your creative spirit all at the same time. More information (including cities and schedules) can be found at www.FriedmanArchives.com/seminars. Come visit the site and register your interest in having a seminar in your city!

If you're a member of a photo club you can get me there even faster. I've given these seminars all over the world, wherever the demand was.

16.10.1 *WHAT OTHERS ARE SAYING*

"It's the best money you'll ever spend for a photo class. Gary obviously loves what he does and can also make a complex topic easy to understand, which is a great combination. It made me a better photographer!" - George Saadeh

"In a world of dry, artsy information, you bring a vibrant, humorous and fun approach to the subject. Best of all, I feel a renewed enthusiasm for photography. You are an excellent teacher." – Lee Friedman (no relation)

"Well worth it!! Learned sooooooo much from Gary in San Mateo! My wife went for the 2-day, and raved about it so much after Day 1, I signed up for Day 2! Ya, that good - thanks for all the after-seminar advice, and 'being there' for technical questions, a year later! Fun and informative." – Daniel Devane

"Best seminar I have ever taken. – THANK YOU!!!" – Joseph R. Conklin

16.11 FACEBOOK, INSTAGRAM, AND THE FRIEDMAN ARCHIVES BLOG

I write a blog which expounds not just on cameras, but on the more general themes of photography as it relates to experiencing life. Many who follow it say it's quite worthwhile. Unlike many bloggers who feel compelled to find something (anything!) to say several times a week, I tend to only post to it once every six weeks or so, and even then only if I feel I have something worthwhile to say. (This way I don't add to the noise in your life.) If you've purchased the downloadable PDF version of this book, then you're automatically on the list to be notified of new blog posts (to which you can easily unsubscribe). If you bought the printed version of this book and registered your copy with me (as you were encouraged to do, for you

get free PDF updates like everyone else if you do), then you're on this list too.

You can read back issues of the blog by visiting www.FriedmanArchives.com/blog.

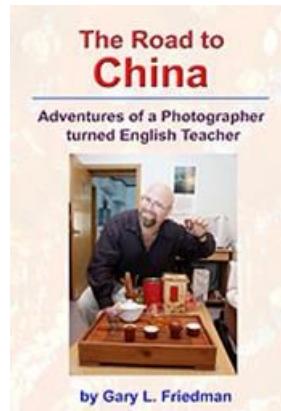
For those of you on Facebook, you can follow me there too at www.Facebook.com/FriedmanArchives and LIKEing it (or maybe you'll see a SUBSCRIBE button – they keep changing the user interface.) I tend to post smaller things there a little more frequently. I just started with Instagram too, but I post pretty infrequently when I'm writing books.

If you like my work and feel the blog is worthwhile, I'd be indebted to you if you could help spread the word of the blog, my books, and my photography online. I survive solely by the word-of-mouth from extremely happy customers.

16.12 THE ROAD TO CHINA

In August, 2003 I made arrangements to teach English in China, but when I got there, there was no job. So begins a very interesting six-month stay in Beijing, and I kept a travelogue of my adventures there. Within these pages you'll hear stories of college life, the move to a market economy, corruption, burnout, mobsters,

government as benevolent parent, the surprising gravitation to all things Western, and the tribulations of a foreigner trying to start a new business. (Oh, yes, and the experiences of a newbie teaching English in a foreign land!) You are also introduced to some of my students, who, in their own words, talk about their lives, aspirations, and frustrations.





This highly-acclaimed work is finally available in a hand-holdable, solar-powered edition published by Lulu.com. Available in both Color and B&W. You can learn more by visiting www.FriedmanArchives.com/ebooks.

Here's what others have been saying about The Road to China:

"Wow! I really love the way you write. A real page-scroller. Your story is remarkable and memorable. It will have a place of its own in the hearts and minds of those it touches." - DR Rawson

"You're truly one of the most amazing people I know; I'm not sure I would have gotten on the plane after the e-mails you received. I look forward to more, more, more!" - Dr. Brian Grossman



"The thing that strikes me is that you are an American in China, and seem to be having the time of your life. How you can appreciate your apartment that much is amazing. But I guess that's Gary Friedman. Always able to see the value where others cannot. I think 99 percent of Americans would feel absolutely displaced, and panicked to be in your position right now. You

intentionally dove head first into the situation and it is a complete success. This is stuff books are often made of. This is an American/Chinese version of 'Dances with Wolves'." - Mike Cole

"The last photo is a scream. AHHHHHHHHH!" - Sheila Clapkin

16.13 THE MAUI XAPHOON

I think there's no better way to make friends in a strange land than with digital photography. I have also found another way – not better, but certainly equal in many respects. It is a musical instrument called a Xaphoon

(www.Xaphoon.com).

It looks like a recorder (about 12 inches in length) but sounds like a cross between a saxophone and clarinet

-- much deeper and richer than its size would suggest.

It's great because it doesn't weigh me down, it's always with me, and no matter where I go in the world, I can sit down on a street corner (usually next to a good acoustic space) and just play. What happens next is almost always magical, for you can elicit smiles and eye contact from complete strangers as they walk by.

This has little to do with photography, by the way, other than to reinforce the philosophy that the whole purpose of travel is to interact with the locals and perhaps spread a little joy throughout the world. I think that's what I love most about photography – it gives me an excuse to go places, do things, and meet people that I wouldn't ordinarily get a chance to meet. The Xaphoon fits in with that philosophy nicely, and for that reason there is always one in my camera bag. If you're an independent thinker and musically inclined, (or if you know someone that is), this is a must-have instrument!

(Full disclosure: I love the instrument so much that I became a Xaphoon distributor, and I created and run the Xaphoon.com website. I figured that while I'm on this shameless self-promotion spree, why not share my

The Maui Xaphoon
Which one is right for you?



enthusiasm for this amazing instrument as well? ☺) You can read more about the Xaphoon at www.Xaphoon.com.

16.14 EPILOGUE

Congratulations! You have successfully plowed through one very large and very detailed book! I hope you enjoyed reading this book as much as I did writing it.

Books like this are a monumental effort. As mentioned at the time you bought this book, I'm an independent author and I have no advertising budget per se – instead, I rely solely on the enthusiastic recommendations people make to their friends and online. If you liked this book, if you feel it stands apart from all the other commercial-grade, corporate-backed, dryly written photography books out there, then you can thank me by speaking up and letting the world know about it! ☺ Here are some things you can do:

1. Feel free to visit any of the online forums mentioned in this chapter and tell people what you thought about it. Mention your skill level, mention what you liked (and even what you didn't like, if you must), and the link www.FriedmanArchives.com.
2. Feel even freer to send me a testimonial via email at Gary@FriedmanArchives.com. Parts of it may end up on the above website.
3. Facebook and Twitter are great places to spread the word too!

Many thanks, and may your pursuit of great images give you an excuse to go out and see the world in new ways!

APPENDIX A A CONDENSED GUIDE TO THE BASICS

A QUICK REMINDER OF THE TECHNICAL FUNDAMENTALS

This Appendix is designed to refresh your memory about the basics. (It will probably not be effective if you never learned these in the first place. It's here to jog your memory.) But as I said in the book's introduction, it's unlikely that a person with no knowledge of the basics would spring for this camera. (On the other hand, I do explain the histograms pretty thoroughly...)

A.1 SHUTTER SPEEDS

The shutter speed can make a moving subject appear frozen and sharp, or can make it appear to be moving and blurry. Your camera can let in as little as 1/8000th of a second of light (freezing a moving subject, as in the left photo above), or as much as 30 seconds (or longer!) in manual mode, which



A fast shutter speed freezes action. Conversely, a slow shutter speed can make things blurry.

is guaranteed to blur anything unless the camera is mounted on a tripod and your subject is just as steady.

If you know what shutter speed you want to use to achieve a certain effect, put the camera into either S(shutter priority) exposure mode and use the front Control Dial to set the shutter speed.



A slow shutter speed means that anything that moves relative to the camera will come out blurry. So, to get a blurred background, a slow shutter speed was used (about 1/8th of a second) and the camera was moving in sync with the passengers. This technique is called “panning.”

A.2

F/STOP



*Sometimes you want **EVERYTHING** to be in focus. A small f/stop (like f/22) is the answer. (Left)*

Sometimes you want a fuzzy background so it will not draw attention away from your subject (like this photo of actor Joe Mantegna, right). A large f/stop (like f/2.8) is the answer.

“F/stop” (also known as “aperture”) is photo jargon meaning “the lens opening.” The f/stop controls how much light enters through the lens, and in doing so also determines how much of the picture is sharp in front of the focus point and behind the focus point. The f/stop blades are embedded within each lens, and so each lens has its own range of openings. A wide-open aperture (small numbers, like f/2.8) means very little is in focus beyond what you’ve focused on; whereas a small aperture (large f/stop numbers, such as f/32) means that things in front of what you focused on and behind what you’ve focused on will be sharper.

If you know that you need to use a particular f/stop to achieve a particular effect, put the camera into A(perture priority) exposure mode. If you’re not sure, just change the setting and watch the changing effect in Live View.

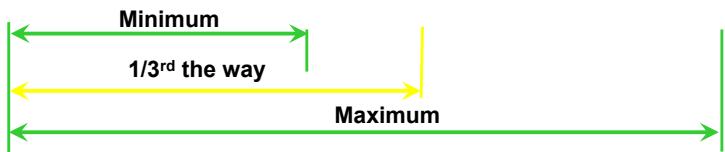
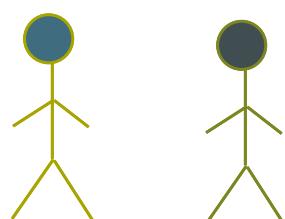
To Get Everything in Focus...



Closest Subject



Furthest Subject



When using small f/stops, typically it's best to focus one-third of the way (rather than halfway) between your closest and furthest subject in order to squeeze the most out of that aperture's depth-of-field.

A.3 ISO

ISO is: how sensitive the sensor is to light. The higher the number, the more sensitive it is. (This corresponds almost exactly to the ISO ratings of film.) The tradeoff is the higher the ISO, the more random “noise” appears in the picture. The A6000 has ISO settings going from 50 all the way up to a whopping 25,600. PLUS in MFNR mode you can get an even higher (equivalent) value of 51,200!

Shutter speeds, f/stops, and ISO are all tied together; if you increase one you must decrease one (or both) of the others to get the right exposure. The fourth variable doesn't employ such tradeoffs:

A.4 FOCAL LENGTH

Focal length is how much the lens is zoomed in or out. The reason this factors in to exposure calculation is twofold:

- 1) When you zoom in, both the image and your hand shakiness are amplified. And so when you're in Program mode (or iAuto mode), the camera will tend to choose faster shutter speeds when you're zoomed in all the way to try to counteract the shakiness.
- 2) Many zooms change their f/stop as they zoom in, necessitating a longer shutter speed. (Kind of counteracts number 1), above.)

A.5 TRADEOFFS

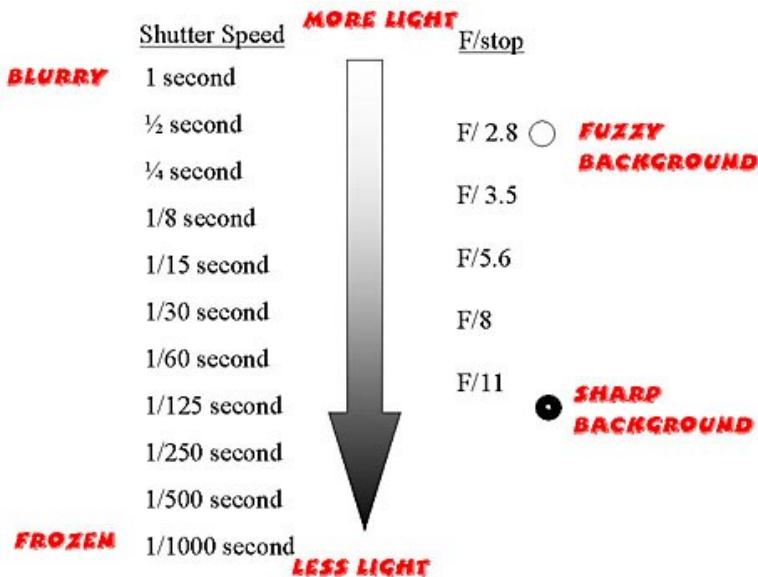
When you increase the shutter speed:

- –You freeze motion
- –You let in less light (the picture looks darker)

When you make the f/stop smaller (i.e., increase the number):

- –You increase what's in focus
- –You let in less light (the picture looks darker)

The relationship between these variables can be seen graphically below:



Shutter Speed and f/Stop tradeoff – When you change one, you must also adjust the other to keep the exposure the same. (This assumes constant ISO.)

A.6 PROGRAM SHIFT

When evaluating the appropriate combination of f/stop and shutter speed to use for a given amount of light, you will find that more than one combination of these variables will produce a correct exposure. For example, any of these combinations below will provide the *same amount of light* for the sensor:

Shutter speed	f/stop
1/1000 (fast)	f/2.8 (wide open)
1/500	f/4

1/250	f/5.6
1/125	f/8
1/60	f/11
1/30 (slow)	f/16 (small)

Which combination to choose depends upon the kind of picture you're taking – for example, if this were a sporting event, you would tend to use 1/1000th at f/2.8 (because the faster shutter speed stops the action), whereas if you were doing a cityscape you would tend toward smaller f/stops and use 1/30th at f/16, because the smaller aperture produces the greatest depth of field. But when you're in "P" Program mode, the camera will choose the combination somewhere in the middle, like 1/250th at f/5.6 (the yellow row in the table above).

Yet another way to tell the camera to "use the faster shutter speed combination" or "use the smaller f/stop" is the Program Shift. It's not a mode; it's what your front Control Dial is automatically preprogrammed to do when you're in still image recording mode. Here's how to use it:

1. Focus-lock on a scene (by pressing the shutter release button down halfway, then release).
2. Rotate the front wheel. (This will tell the camera to choose another equivalent f/stop and shutter speed combination that will let in the same amount of light.)

Program Shift is a very handy function which lets you change to a different f/stop/shutter speed combination from what the camera recommended *very quickly, without having to press a lot of buttons or turn a lot of dials*. One dial rotation is all it takes, and it works in P (Program Auto), S (Shutter Priority), and A (Aperture Priority) modes, and only when the flash use is *not* specified. It will work in Manual Exposure mode too once the exposure has been locked via the AEL Toggle button.

A.7 THE HISTOGRAM DISPLAY

A.7.1 BRIGHTNESS RANGE, SENSORS, AND THE HUMAN EYE

Have you ever seen something which looked *really cool*, only to take a picture of it and have it come out looking darker (*much* darker) and ‘muddier’ than the way you remembered it? Why wouldn’t the picture look *exactly* the way you remembered seeing it?

It turns out that the answer to this question is far from easy. But the short answer is: *cameras (film or digital) see light differently from the way the human eye and brain do.*

To understand this difference, have a look at the picture in **Figure 1**. When I took this picture, the scene didn’t look like this to the naked eye. I could see the skateboarders quite plainly, right down to the color of their clothes and the stickers on their skateboards. But *film and digital cameras cannot see the same range of light as the human eye can*. In the vast majority of cases you can either capture the sky, or the foreground, but not both, as illustrated in **Figure 2**.

So for the skateboarding silhouette above, I chose to expose for the sky, intentionally leaving the subject to be rendered as a black outline.

Figure 3 gives a good comparison of the range of sensitivity of the human eye, color negative film, and digital cameras. In the figure, a “stop” means “a factor of two” in light intensity. So when it says a digital sensor can



Figure 1: Limited Brightness Range can lead to artistic images. You can create silhouettes on purpose by exposing for the sky (via AEL and Spot metering) and then recompose, focus, and shoot

sense a range of brightness of 8 stops, it means that the brightest part of the picture is no more than $2^8 = 256$ times brighter than the darkest part of the picture. Put another way, if you were using the Partial metering feature of the camera and you were to measure the brightest and darkest parts of your scene, and the brightest part reads 1/1,000th of a second, then the darkest part must read no less than ¼ of a second (8 stops away) for everything to be visible.



Figure 2: A real-world example. Unlike the human eye, with digital cameras you can either capture the sky (left) or the subject (right), but not both. (Even the camera's HDR function wouldn't have made a difference with this wide a dynamic range.)

Different Devices can “see” different ranges of light

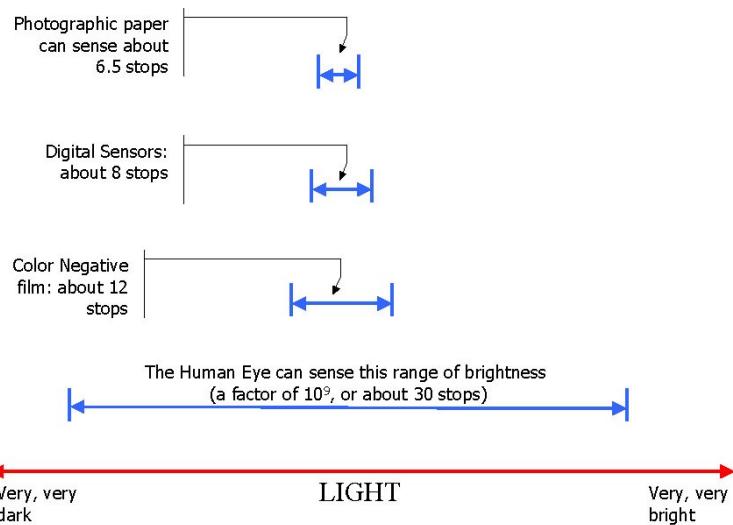


Figure 3: The light-capturing ability of several different sensors.

This is a *really, really* important concept to understand. Your eye can see a greater brightness range than can film or digital. Film or digital can see a greater brightness range than the camera’s LCD. This means *when you look at a scene using the LCD, you’re not seeing all the detail that the digital sensor can capture!* In reality, you’re seeing about 90% of the light range, and for the vast majority of shots, this is great and useful and wonderful.

Once you understand the important concept of reduced brightness sensitivity range, it becomes easy to understand why Fill Flash is sometimes used to make the subject look good on film (or digital) even though they look perfectly good to the unaided eye. It also explains why the motion picture industry uses gigantic studio lights in their productions, only to have the scene look perfectly normal when you see it in the theatre. *It is because for an image to look normal, the brightest part of your scene must be no more than 8 stops brighter than the darkest part of your scene.* If it is more than 8 stops – that is, if the brightest part of your picture is more than 8 stops brighter than the darkest part of your picture, the camera will not be able to capture it all, and some information will be lost – perhaps areas in

the darkest part will become deep black, or the lightest part will “blow out” and be so white that you can’t make out any detail.

In the previous silhouetted skateboarder image, the range of light in the scene was indeed greater than 8 stops, and the information in the darker parts (where the skateboarders were) was lost, resulting in the darker parts looking black. (So, sometimes the limited range of a sensor can be used for artistic purposes. But far more often it results in frustration because the camera was not able to capture what you saw.)

In the days of film, such loss of information usually came as a surprise to the photographer after the developed film came back. But, at least with digital cameras *you can get a good idea of whether or not the camera captured the brightest and darkest parts of your scene.*

A.7.2 USING THE HISTOGRAM FOR A FIN(D)ER DEGREE OF CONTROL

So, all of the above was a prelude to the Histogram function. The histogram display simply shows you where the brightness in your image “falls” within the 8-stop range. It is useful when you are shooting subjects that are predominantly white (like a bride in a wedding dress) or black (like portraits of black cats on black backgrounds), and you need to know if the sensor is capturing the detail that the LCD cannot show you. The histogram shows you the range of brightness values in your image, rearranged in order, with the most frequently-occurring brightnesses being taller.

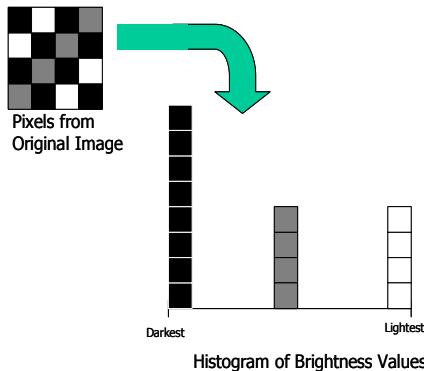


Figure 4: A simplified view of how histograms work.

Figure 4 shows an illustration of how histograms relate to the scene being captured. Let’s say that the collection of black, white, and gray boxes in the upper-left-hand corner represent the pixels of your (*very* low-resolution) digital camera. The histogram simply re-arranges the pixels in order of

ascending brightness; the brightest to the right and the darkest to the left. Pixels with the same brightness value get “stacked” on top of each other. The resulting graph shows the brightness distribution of the image; where the brightest parts and darkest parts fall within the camera’s sensitivity range.

Okay, so how do you use this information? Remember that the right edge of the histogram represents *the brightest value the sensor can capture*, and the left edge represents *the darkest value the sensor can capture*. It is important that the tallest parts of the graph (representing the dominant shades in your image) are not clumped up at the left-edge or right-edge; for if they are, it means that the brightness level of these pictures is exceeding the sensor’s brightness range. It’s also important to remember that *there is no such thing as a standard-looking histogram* for all pictures – you use the histogram to make sure that the brightnesses in the image fall where you want them to fall for the kind of image YOU intend to create.

You can view an image’s histogram while it is still in the camera. While in Playback mode, hit the DISP. Button multiple times until you get the histogram playback screens (**Figure 5**). (Your camera must be configured to display the histogram first: **MENU → 2 → DISP Button (Monitor)** for the large LCD or **MENU → 2 → DISP Button (Finder)** for the EVF. Make sure “Histogram” is checked and then hit MENU button to exit.



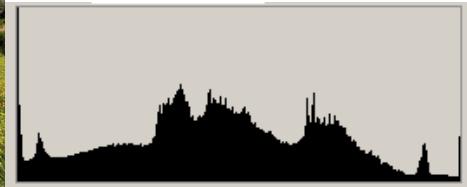
Figure 5: One of the selectable playback displays shows a histogram of your image.

TIP: There is a quick and easy way to tell if your image contains any blown-out highlights or too-dark shadows. When you playback the image in histogram mode, the parts of the exposure that are “off the scale” will blink. A VERY useful feature!!

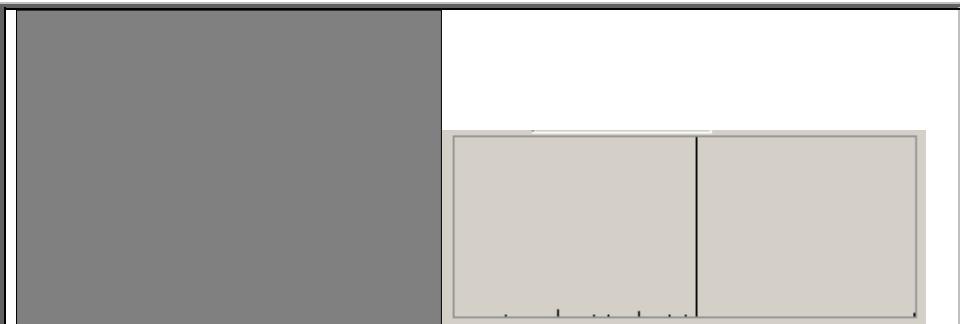
Let’s start with some simple examples:



Here's a picture of a Cuban boy against a dark-ish background. Since there is more dark than bright in the picture, this is reflected in the histogram, which shows more dark pixels than light ones. Notice that the blacks are not SO black that they bump up against the left edge – this is perfect for this shot. Black, but not TOO black.

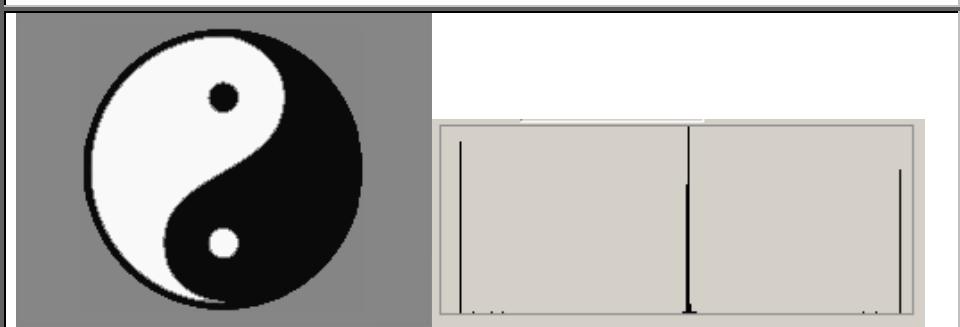


Here's a truly average scene, with brightnesses spread out pretty evenly across the horizontal axis. The black spike you see near the left-hand edge represents the black in the roadsign. As you can see, the tall spike means there are more black pixels than of any other single color. (There are many different shades of blue, which is why there's no large spike in the center.) Here it is OK if the blacks are outside the range, for we don't need to see detail in the black part of the sign.

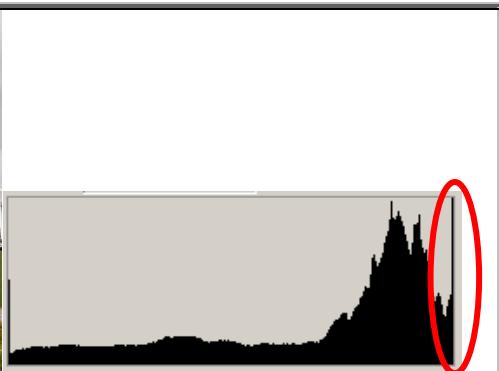


Here's a picture of a gray piece of paper.

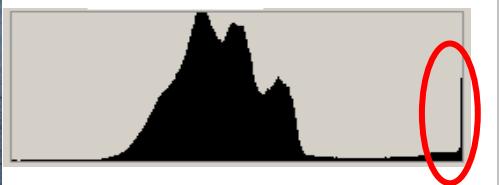
Here the histogram looks exactly as you expect it would – all gray pixels stacked up high, with no lighter or darker pixels anywhere (i.e., nothing significant to the left or the right of the spike).



Here is an image comprised entirely of black, white, and gray. Here, we expect to see 3 spikes: Black on the left, white on the right, and gray in the middle. (And we do!)



Oh no! I just took this picture, and the camera's LCD screen makes the white building look washed out and overexposed! Is it?? Let me check the histogram.... WHEW! According to the graph on the right, the vast majority of the white in the image is within range. Only a tiny white spike on the rightmost edge – represented by the whitest part of the clouds above – is “blown out,” which for this picture is acceptable. (How do I know it’s the clouds and not the building? Because in Histogram Playback view, the “blown out” part of the clouds blinks.)



Another real-world situation. I had just taken the picture of this bird, and I couldn't tell by looking at the LCD screen whether the whites were blown out or not. A quick histogram check indicated that they were indeed blown out! (See circled area – plus, the blown-out parts of the image were blinking in Histogram view.)



I immediately set the camera to underexpose by $\frac{1}{2}$ stop and shot again. All of the histogram shifted to the left (thus the entire picture got darker), and now the blown-out portion is safely captured within the camera's available dynamic range. Hooray!

Luckily the bird was still there when I took the 2nd shot. It's situations like these for which Auto Exposure Bracketing was invented – take several at different exposures NOW; I'll edit at the computer later.

It's hard to see the difference in these tiny thumbnails, but if I were to make an enlargement of this picture, the lack of detail in the bird's feathers would definitely have been noticeable!



Remember, there is no such thing as an average-looking or "correct" histogram shape – each will be different and depends entirely on the kind of image you were looking to create.

For this picture, it was perfectly OK to have some blacks be so dark that there's no detail, as long as the highlights on the face were captured properly. As you can see in the histogram, the face details were captured just fine and there's no "blow out" of the highlights.

A.8 THE “SECRETS” TO LIGHT AND COMPOSITION

So you now know the basics of how to use your camera. But having a sophisticated, capable camera is only part of the formula for better pictures. Behold! The remaining secrets to great photography are herein revealed!!

Let’s start with the pie chart in Figure 6 below, which shows the relative importance of all the different variables that comprise a really good photograph.

Notice that the two biggest variables, *by far*, are ‘composition’ and ‘quality of light’. Not how many megapixels your camera has, or how expensive your lens. As I will explain below, ***armed with these techniques, your pictures taken with your camera can make people say, “Wow!”!***

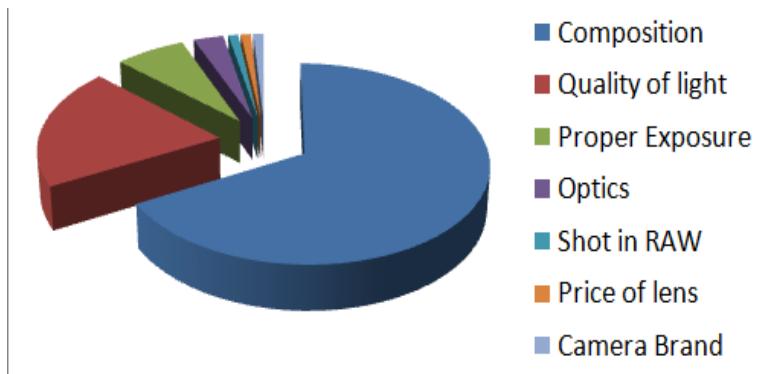


Figure 6: The elements of a good photograph. (Notice that “How expensive your camera is” is not a variable.) Point-and-shoots can take great pictures too using the techniques outlined in this appendix.

A.10 WRITING WITH LIGHT

Light is everything in photography. It can make the difference between a mere snapshot and a beautiful shot which conveys emotion. To see this, let's look at the example from **Figure 7**.

Both pictures were taken within minutes of each other. The first picture was taken with the camera's pop-up flash. The second picture captured other available light which added a certain warmth and drama to the picture.



Figure 7: It's all about light. The right kind of light can transform an average picture into something remarkable.

Many other examples will be shown throughout the rest of this appendix, but the upshot is *be aware of the quality of the light!* Most of us are oblivious to whether light is harsh (like on a bright sunny day) or soft (like on a bright cloudy day), because our brains adapt to bad light in all sorts of amazing ways. But as described in the beginning of this appendix, the camera can see less than you can, and so providing the right kind of light for the camera can greatly increase the quality of the shot and, in some cases, help give your images an emotional feel.

The first general rule is, "Soft light from a nearby open window is often best for portraits." It creates a diffuse light which is quite pleasing to the eye. Figure 8 provides examples.



Figure 8: Be on the lookout for diffuse window light. These are examples of the right light creating an ideal picture.



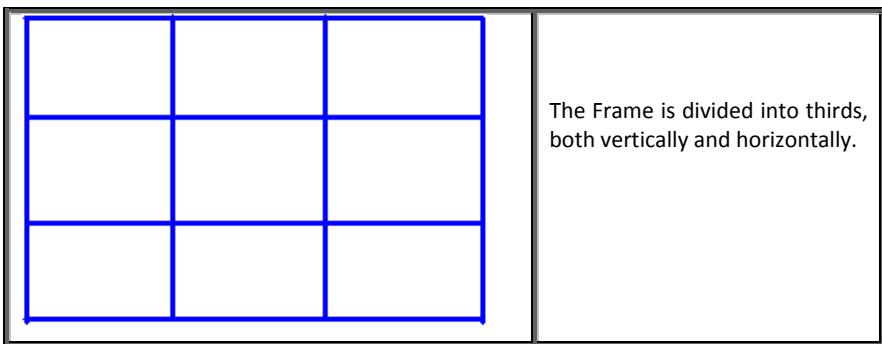
Figure 9: Fill Flash can help! Harsh light like that on the left image can often be made less harsh by using the fill flash (right).

Don't be caught making these kinds of mistakes! If you think you're in a harsh light situation, the best thing you can do is use fill-flash if your subject is within flash range, as in **Figure 9**.

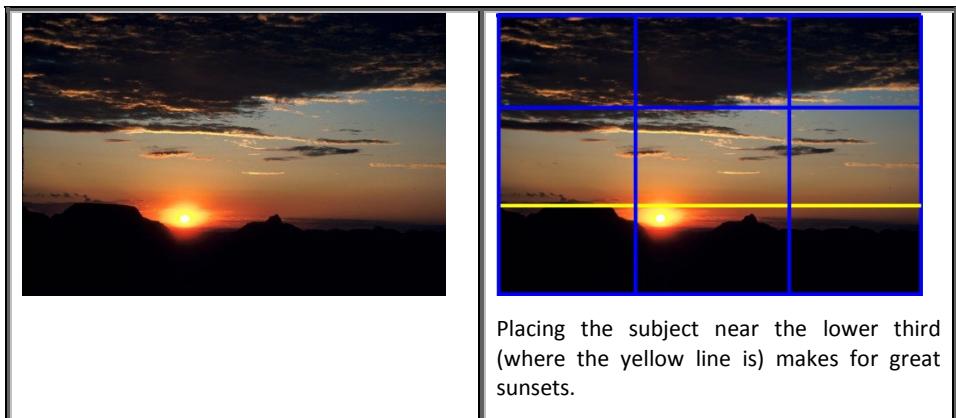
A.11 COMPOSITION – THE RULE OF THIRDS

It's true that image composition -- how the photographer frames the shot -- which differentiates the "snapshots" from photographic masterpieces. The compositional rule that you are about to learn is used by all artists, even those who do painting and drawing.

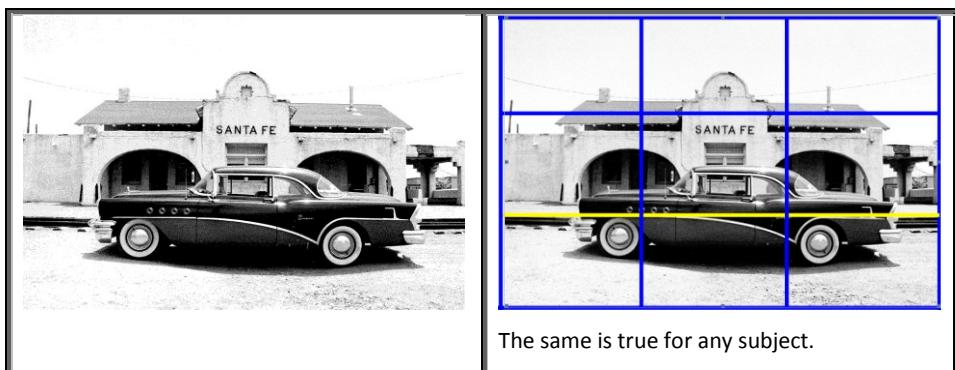
Imagine that your viewfinder is divided into thirds (vertically and horizontally), as in the illustration below. The "Rule of Thirds" simply says that if you place your subject close to any of these imaginary lines instead of in the direct center, it will result in a substantially more pleasing picture. (Results are even better if the subject is placed at any intersection of these lines!) Some examples are below.



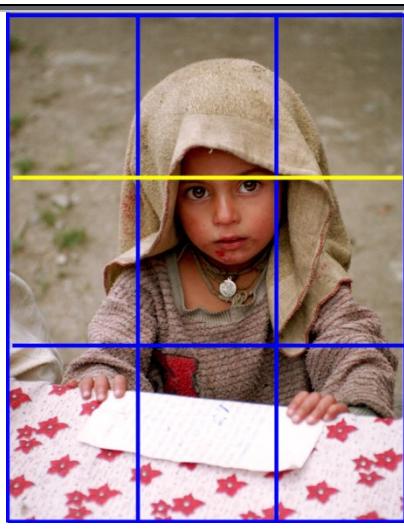
The Frame is divided into thirds, both vertically and horizontally.



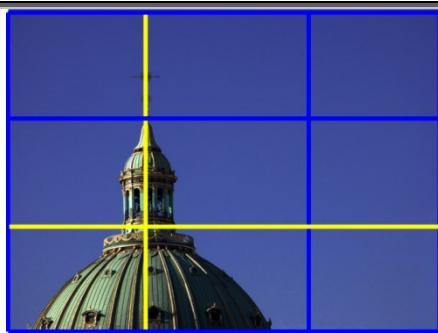
Placing the subject near the lower third (where the yellow line is) makes for great sunsets.



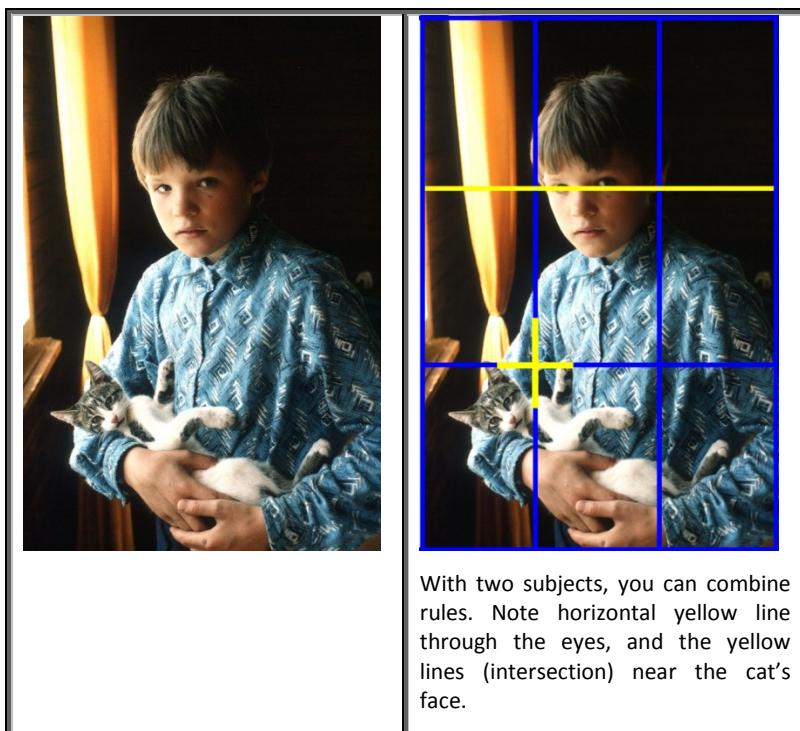
The same is true for any subject.



In a portrait, the face should always be somewhere in the upper third (again notice the yellow line).



Placing the subject near any intersection makes for more pleasing composition.



With two subjects, you can combine rules. Note horizontal yellow line through the eyes, and the yellow lines (intersection) near the cat's face.

So, the secret to great pictures isn't only having a great digital camera with all the available features, it's also knowing how to compose your image.

To be sure, there are other rules of composition, but the "Rule of Thirds" is the most important and can make the biggest difference in your pictures.

Some other rules you may want to experiment with:

OUT OF PLACE SHOT – an out-of-place shot often involves a repeating pattern with a disrupting subject placed according to the Rule of Thirds. (**Figure 10**)

TEXTURE – a picture composed of pure texture requires no conventional subject. (**Figure 11**)



Figure 10: A subject which breaks the monotony.



Figure 11: Pure texture can be a subject.



Figure 12: Classical Portrait. Put the eyes along the upper-third.

CLASSICAL PORTRAIT – classic head shots adhere to the rule of thirds – the eyes generally are placed right on the upper-third line. (**Figure 12.**)

ENVIRONMENTAL PORTRAIT – an environmental portrait tries to capture the essence of a person’s character in their own environment. (**Figure 13.**) For shots like this the camera should be zoomed out all the way, with your subject placed via the Rule of Thirds and as much about the subject’s surroundings (“his or her life”) filling up the rest of the shot. Photojournalists use this technique a lot.

“HEY, LOOK AT ME!” – This technique is the antithesis of the Rule of Thirds. These are “in-your-face” shots that absolutely force you to look at the subject and ponder it a little. The subject should be front-and-center, parallel to the sensor, with no distracting backgrounds. Examples in **Figure 14.**

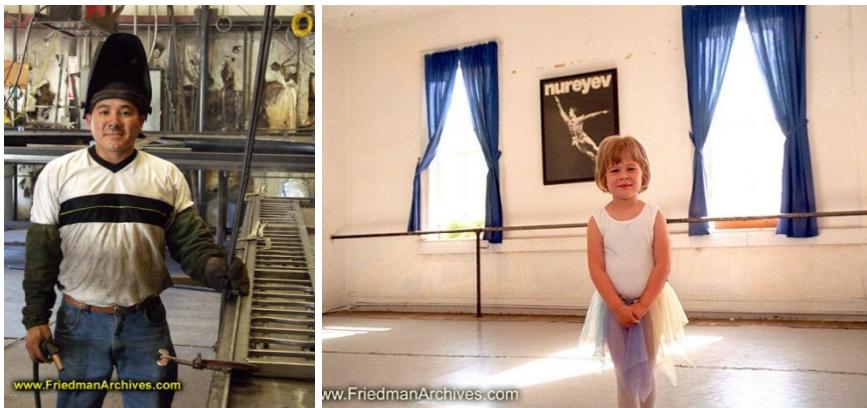


Figure 13: Environmental Portraits shy away from the standard head-and-shoulders formula; instead they show the person in their element, documenting not only their character, but the space in which their gift thrives.



Figure 14: “Hey, Look at Me!” shots are very *in-your-face*, and force viewers to ponder your subject. They are the opposite of the rule of thirds – your subject is “front and center.” (And what is it about outhouses that draws people’s interest? ☺)

APPENDIX B A “COOKBOOK” FOR SPECIAL SITUATIONS

CAMERA SETTINGS YOU CAN USE WHEN AUTOMATIC EXPOSURE WON’T GET IT RIGHT

B.1 INTRODUCTION

This Appendix provides a “Cookbook” approach to taking pictures in special situations where your camera’s automatic exposure meter is sure to be fooled:

- Fireworks
- Artistic Waterfalls
- Stage Performances/Rock Concerts
- Nighttime Time Exposures
- Shooting in Snow
- Outdoor Group Portraits
- Street Photography
- Sunsets and Silhouettes
- The Moon
- Nighttime Sports
- Christmas Lights
- Product Shots
- Interiors that Sell
- Lightning
- Candlelight Shots

B.2 FIREWORKS

- Set the camera on a tripod.
- Turn SteadyShot Off.
- Set focusing to Manual and set the lens to focus at infinity.
- Set the ISO to 100.
- Set white balance to Daylight.
- Set the aperture to f/5.6 (just to start out).
- Turn Long Exposure NR Off so you can take the next picture right away.
 - Set the shutter speed to 15 seconds. You can set it for longer to capture additional fireworks bursts, but setting it for too long will cause the sky to turn gray and everything else will be overexposed).
- Sometimes it is helpful to include something on the ground in the composition to get a sense of place.

Check your initial pictures. If they appear overexposed, set the aperture to a higher number (like f/8 or f/11). If they appear underexposed, set it to a lower number (like f/3.5).



B.3 ARTISTIC WATERFALLS

We've all seen them – Waterfalls which have a kind of fluid quality to them. How is this done? Well, we all know that using a fast shutter speed will freeze things, and we also know that using a slow shutter speed will make *everything that is*



moving appear blurry. In the picture only the water is moving (while the rocks and vegetation stay still), and using as slow a shutter speed as possible will give it the effect of smooth movement.

- Use a tripod. Turn SteadyShot off only if your tripod is rock-solid.
- Set ISO to 50 (a low sensitivity extends exposure).
- Set Exposure mode to "A" and choose the smallest f/stop (the highest number) that your lens supports.

If you have a circular polarizer or a neutral density (gray) filter, put that in front of the lens. This will slow down the shutter speed even further.



B.4 STAGE PERFORMANCES/ROCK CONCERTS

- Use P mode and a telephoto lens (such as 200 mm).
- White balance set to Tungsten.
- Focus-lock and then put the camera into Manual Focus mode.
- Enable Spot Metering Mod.
- When a white spotlight is on the performer, aim the camera so the illuminated performer falls within the center of the viewfinder, and press the AE Lock button. This locks the exposure.
- Note the locked exposure setting, and dial them into Manual exposure mode. (This is necessary since the AEL reading is forgotten once the camera times out.)

You can shoot the entire concert with this locked exposure setting.

(See also my blog post on using Live View as an alternative to using spot metering in complex lighting situations: <http://bit.ly/1dttMXY> .)



B.5 NIGHTTIME TIME EXPOSURES

- Put the camera on a tripod and Turn SteadyShot OFF
- ISO to 100
- Manual exposure mode, set the shutter speed to 30 seconds or less.
- Focus-lock on your subject and switch to manual focus mode.
- If you're shooting streets lit with mercury vapor lamps, set the white balance to "Fluorescent." If your scene is lit with normal light bulbs, set the white balance to "Tungsten." If you're not sure, use Auto White Balance or shoot RAW and find the right color balance later on your computer.
- Set the f/stop to something medium, like f/5.6.
- Use the 2-second self-timer
- For even lower noise, try enabling Multi-Frame Noise Reduction (in the ISO menu) at ISO 100.

Start with a 30-second exposure, look at the results, and tweak your exposure from there.



B.6 SHOOTING IN SNOW

Snow can be tricky because the white background can throw off the metering. There are two different methods you can use that work well:

1. Set Exposure Compensation about +1 or +1.5 stops.
2. Use an accessory flash to illuminate your subject (if you are close enough, that is.) As with all flash exposures with this camera, you should set Flash Exposure Compensation to at least -1.



B.7 OUTDOOR GROUP PORTRAITS

While it may be counter-intuitive, outdoor group portraits should actually be done in open shade (NOT direct sunlight) using an accessory flash to “fill in” the faces. The following assumes that YOU want to be in the shot as well:

- Put the camera on a tripod.
- Set the camera to 10-second Self-Timer
- Set the FLASH exposure compensation to -2.7 so it hardly looks as if you used flash (remember, your camera likes to overexpose your flash subjects by one stop!)
- Shoot away.

The results will look quite professional, and not as if it was shot with a flash.



B.8 STREET PHOTOGRAPHY

Street photography is often done as a candid shot, sometimes “shot from the hip” as you are walking by. Classic street photography from the old days was often done with rangefinder cameras which had no automatic focus or exposure. Here is how to shoot in this classic style:

- If it is not a bright day, set your ISO to 800. Otherwise, 100 or 200 will do.
- Use the widest-angle lens you can.
- Use Manual Focus mode and manually set the focus to infinity. (This will get most things into focus.)
- Use Manual Exposure mode, and meter for the sidewalk (which is usually pretty close to 18% gray. If it’s a light-colored concrete, then overexpose the reading by 2/3 stop.)
- For fun, use the B&W creative style (and shoot RAW & JPG so you can have the option of going back to a color version).
- Shoot away!

Notice that if you’re shooting on a well-lit street at night, the same procedure (metering off the sidewalk) will work equally well, although you may have to boost the ISO to 6400 or greater.)



B.9 SUNSETS AND SILHOUETTES

- ✓ Focus-lock on your subject, then set Manual Focus mode
- ✓ Using Spot Metering mode, aim the center of the viewfinder to a bright area of the sky that DOESN'T contain the sun.
- ✓ Use AEL to lock the exposure.
- ✓ You may want to use the "Sunset" creative style for warmer hues.

Be sure to remember to use the rule of thirds when it comes to placing the subject (sun, horizon, or silhouette)!



B.10 THE MOON

Here you can only expect success if you have a long telephoto lens and a rock-solid tripod. I used a 500mm lens for this shot.

- Use a steady tripod and turn SteadyShot OFF.
- Use A exposure mode and set your f/stop to somewhere in the middle (like f/5.6)
- 2s self-timer
- Use the Spot metering and meter on the moon's surface. Use Exposure Compensation to add $\frac{1}{2}$ to 1 stop additional exposure so the moon comes out moon color instead of gray.



B.11 NIGHTTIME SPORTS

For shooting sports like football or basketball games that are illuminated by bright stadium lights, don't use auto exposure mode since the black sky or the bright stadium lights can often throw the exposure meter off. Instead, do the following:

- Use ISO 6400 (or even higher if it's really dark, although higher settings will result in even noisier pictures).
- Use Aperture Priority Exposure mode, and open up the lens all the way. (This ensures the fastest shutter speed.) Then meter off a patch of illuminated dirt or grass. Ideally this should give you a shutter speed of 1/125th of a second (or thereabouts; in the example shown it was more like 1/30th of a second).
- Shoot RAW so you can clean up the noise a little bit and figure out your white balance later. (Mercury Vapor lamps can be difficult to balance for correctly!)
- If all the action will be roughly the same distance away, focus-lock on where the action will be and put the camera into Manual Focus mode.

Anticipate the action and Shoot! Shoot! Shoot!



B.12 CHRISTMAS LIGHTS

(or any other type of nighttime lights)

You don't use a flash when taking pictures of Christmas lights, since the lights themselves create their own light. Instead, use this simple procedure:

- Set White Balance to Tungsten.
- If you're using a tripod, turn SteadyShot OFF and set the ISO to 100. If handheld, turn SteadyShot ON and set the ISO to 200 or 400 (depending upon how bright the lights are). Use Spot Metering and aim the camera so the metering area is filled with lights; then use AE Lock to lock the exposure.
- Recompose your image and shoot away!



B.13 PRODUCT SHOTS

Here's another instance where setting your camera to Automatic will probably not yield the professional-looking results you seek. The image below was designed for selling these items on e-bay. (I have learned that the higher quality your shot, the higher the bids you get on your old equipment! ☺)

- ✓ Wireless Flash and an umbrella reflector
- ✓ Camera set to Aperture Priority mode. f/11 was used to keep most items in focus.
- ✓ The camera used a Macro (close-focusing) lens and was mounted on a tripod.
- ✓ The accessory flash was set to MANUAL output – in this case $\frac{1}{4}$ -- because the dark background and bright reflective surface of the camera would surely throw off the automatic exposure. I tried different values until this rich, classic underexposed feel was achieved.
- ✓ Compose with some color in the background to catch the eye.

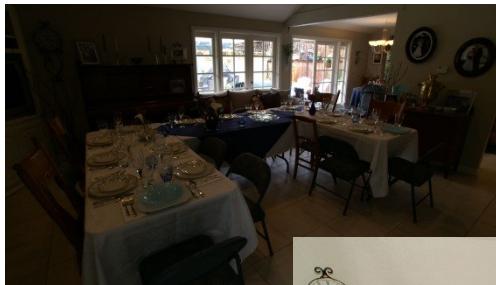


B.14 INTERIORS THAT SELL

This technique is straightforward, but requires multiple off-camera wireless flashes and white ceilings.

- Put the camera on a tripod, and set all accessory flashes to wireless mode.
- Place multiple slaves throughout the room, pointing to the ceiling. (Use the little duck feet that came with the flash to help set them upright, and for best results have the slave's sensor pointing toward the camera.)
- Use Manual Exposure mode: set the shutter speed to 1/160th of a second and set the f/stop to whatever will make the scene outside the window expose correctly. (See top picture.)
- Fire away! (See bottom picture.)

You might have to experiment with several different flash placements before you get results that you're happy with.



B.15 LIGHTNING

Lightning shots are a combination of luck and skill: Skill for getting the backdrop to show up properly; luck because you never know when a giant bolt is going to strike. For these shots I wanted to keep the shutter open for as long as possible to maximize the chances of capturing a lightning strike. So, I set the following parameters:

- ✓ Manual exposure mode, ISO 50
- ✓ The smallest f/number that your lens will support (like f/16)
- ✓ Shutter speed was set so that this scene would be a little dark; in this case 2.5 seconds but it will vary for you depending on the ambient light of the scene.
- ✓ Manual focus set to infinity.
- ✓ I used Continuous Shooting mode.
- ✓ Use a Remote Commander (the wired kind, not the infrared) and set it to “Lock,” this means the camera will continue to shoot as fast as it can until the card is full.

You might have to take hundreds of shots like this until you get one good lucky shot. But, unlike the days of film, the unwanted frames don’t cost you anything!



B.16 CANDLELIGHT SHOTS

I often use an underexposed fill-in flash to give some additional life to my candlelight shots; but this is completely optional. Camera should be on a tripod and your subject should hold perfectly still.

- Set Exposure mode to Manual; 1.5 seconds at f/3.5 (or as wide open as your lens can get).
- ISO to 400
- Flash Exposure Compensation to -2.7 (flash is optional; for fun try it both ways)
- Fire away! (No pun intended.)



APPENDIX C TIP CARDS

A SPECIAL BONUS FEATURE FOR YOUR CAMERA BAG. JUST DOWNLOAD, PRINT, CUT, AND LAMINATE!

Early on in this book I spoke about the camera's built-in help screens, and how it really was more useful as a memory jog for people who once knew what it had to say, rather than as a teaching aid.

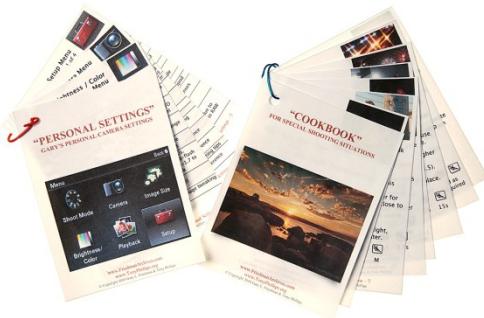
Well, I believe in memory jogs. And I also know that

readers of my previous books had printed out many parts of the book (especially the "My Personal Camera Settings" and "A Cookbook for Special Shooting Situations") so they can be a handy reference in their camera bags.

Well, here's a gift for you. Australian Photographer Tony Phillips (www.TonyPhillips.org) has created a set of cards which summarize the most popular parts of my book that people used to print. (Think it's an easy task to get complex ideas across using the least number of words? Well, it's not!) And so, below is a link to a .zip file you can download which contains .pdfs formatted for both A4 and US Letter-sized paper. All you have to do is print them out, cut them up, laminate them, and keep the deck in your camera bag as a happy reminder of the fun you've had reading this book and learning about your camera. Think of it as a gift from Tony and me.

The cards may appear out of order when you look at the .pdf files, but they'll be correct once you print them double-sided and cut them up. (You'll see!)

You can download the .zip file from here: <http://bit.ly/VunwaV>. Enjoy!



INDEX

- .modd and .moff files, 412
- .mp4 video format, 417
- 16-9 aspect ratio, 171
- 3-2 aspect ratio, 171
- 3-stripe Technicolor, 491
- 4K Still Image Playback, 372
- 802.11n, 151
- A(utomatic) focusing mode, 195
- access point settings, 356
- accidental deletion
 - avoiding, 118, 373
- Adaptive homogeneity-directed interpolation, 492
- Adaptive noise reduction, 30
- Adobe Lightroom, 490
- AdobeRGB, 285
- advanced topics guides, 184, 524
- AEL button, 445
- AEL Toggle, 220
- AEL w/ shutter, 324
- AF
 - micro-adjust, 332
- AF Area, 71
- AF illuminator, 72, 201
- AF trick for portraits, 74
- AF w/ Shutter, 73
- airplane mode, 148, 355
- A-mount lenses, 133
- Anti-Motion Blur (AMB), 93
- aperture, 539
- applications list, 361
- aspect ratio, 171
- audio monitoring, 408
- audio recording function, 288, 289
- audio signals, 379
- auto
 - white balance, 221
- auto ISO
 - in manual exposure mode, 38
- Auto ISO, 82
- auto object framing, 278
- auto review, 302
- auto slow shutter, 287
- AUTO+
 - Image Extract, 99
- autofocus
 - area, 199
 - logic, 71
 - with shutter, 323
- autofocus area, 198
- automatic image rotation in playback, 368
- AVCHD, 414
- B&W mode, 243
- backfocus, 332
 - testing procedure, 334
- Backlight Portrait, 99
- Bayer filter, 490
- beam splitter, 491
- black screen, 311
- black-and-white mode, 243
- blog, 531

- bounce flash, 429
- bracketing, 184
 - DRO, **186**
 - for HDR, 184
 - order, 329
- Bravia Sync, 369, 388
- Brightness range, 544
- bump, 143
- cable release, 181
- Cameracraft magazine, 527
- cameras settings
 - my personal, 43
- Candelight Shots, 578
- Canon, 27
 - Canon EF lenses, 136
 - Canon FD lenses, 137
- can't record this kind of movie, 419
- CDAF (Contrast Detect Autofocus), 24
- center-weighted metering, 217
- channel (wireless flash), 454
- Christmas Lights, 574
- Chromatic Aberration, 338
- Classical Portrait, 561
- cleaning mode, 384
- ClearImage zoom, 262, 315
- Cloudy white balance, 222
- color
 - modes, 231
 - space, 285
 - temperature setting, 226
- color settings
 - combining, 240
- color temperature
 - viewfinder, 378
- combining creative style settings, 240
- compact fluorescent white balance, 223
- composition, 553, 556
- compression artifacts, 503
- Contax lenses, 140
- continuous advance, 180
- continuous focusing, 76, 195
- Contrast Detect Autofocus, 24
- contrast setting, 237
- control dial setup, 345
- cRAW, 499
- creative style settings
 - combining, 240
- creative styles, 231, 496
- CTRL for HDMI, 388
- custom key settings, 341
- Custom White Balance, 227
- date / time, 392
- date form, 399
- David Kilpatrick, 495
- Daylight Sync, 99
- Daylight white balance, 222
- delete confirmation, 117, 382
- delete marked frames, 117
- deleting images, 116, 117, 365
- demo mode, 385
- demosaicing, 490
- depth-of-field preview, 101
- diagonal line through viewfinder, 300
- dial / wheel lock, 348
- Diffraction Reduction, 30
- digital zoom, 263, 315

- Direct Manual Focus (DMF), 196
- display
 - button (monitor & finder), 303, 312
 - tradeoffs, 78
- display brightness range, 118
- Display MAC address, 357
- display media information
 - card space, 402
- display rotation, 368
- distortion setting, 339
- DMF, 196
- DMF + Peaking Level, 74
- DPOF, 374, 399
 - canceling, 375
- drive mode, 180
- DRO, 230
 - bracketing, **186**
 - combined with sunset mode, 476
- DRO vs. HDR, 483
- dynamic range, 496
 - of the LCD display, 118
- Dynamic Range Optimization, 229
- edit device name, 356
- e-front curtain shutter, 325
- electronic first-curtain shutter, 25
- Electronic Viewfinder (EVF), 26
- encryption, 148
- enlarge image, 372
- Environmental Portrait, 561
- EVF
 - brightness, 378
- EVF (Electronic Viewfinder), 26
- exFAT, 395
- exposure
 - compensation, 217
 - step, 204
- exposure compensation
 - exposure step, 204
 - flash, 328
 - set, 328
- exposure setting guide, 310
- external display, 408
- Eye-AF, 33
- Eye-Fi card, 148
- eye-start AF, 319
- f/stop, 539
- face detection, 75, 273, 407
- face registration, 274, 330
 - order exchanging, 331
- facebook, 531
- FE lenses, 28
- features reset in iAUTO mode, 96
- file format (movies), 179
- file names
 - for AdobeRGB files, 287
- file number, 396
- file size, 500
- Fill Flash, 187, 546
- Fireworks, 564
- flash
 - 3-way ratio, 449
 - different modes, 186
 - exposure compensation, 328
 - faster recycling, 443
 - how to use wireless, 439
 - model names, 426

new wireless protocol, 442
slow-sync, 189
umbrellas and softboxes, 431, 459
white balance, 224
Flash Compensation, 193
flash hot shoe, 41
Flexible Spot AF Area, 199
fluorescent lighting, 220, 222
white balance, 223
focal length, 541
focus magnifier, 264, 297
focus in the dark, 72
focus magnification time, 299
focus magnifier, 28
focus mode, 195
focus-assist lamp, 72
focusing essentials, 70
Focus-lock, 543
folder name, 398
for viewfinder option, 306
format, 393
formatting memory cards, 516
front curtain shutter, 325
frontfocus, 332
testing procedure, 334
Function Menu Set, 339
gamut, 285
ghost effect, 93
graphic display, 305
grid line, 300
handheld twilight, 107
Handheld Twilight compared, 109
HDMI, 33, 37, 120, 388
connector, 123
output, 409
output resolution, 387
HDR, 230, 477
shooting, 184
vs. DRO, 483
HDR painting, 253
HDTV, 121, 369
image viewing, 119
help guide, 305, 381
high dynamic range (HDR), 184, 477
High ISO, 25
high ISO noise reduction, 268
high-contrast monochrome, 251
high-speed sync (HSS), 433
histogram, 306, 547
display, 544
Hot Pixels, 510
hot shoe, 41
human eye, 544
hybrid AF, 24
Hyperopia, 122
iAUTO mode, 95
iAuto+, 97
Image Extract, 327
illustration mode, 258
image composition, 556
database, 401
extract, 99, 327
rescue software, 516
resolution, 509
size, 169

- Image Data Converter software, 171
image index, 367
iMovie, 412
incandescent lighting, 220
initialize, 403
interference, 150
Internet Discussion Boards, 519
introduction, 362
ISO, 81, 205, 540
 AUTO boundaries, 213
 high-ISO noise reduction, 268
 noise, 540
 noise comparison shots, 213
 noise levels, 206
ISO AUTO, 82
Japanese Flag, 500
JEITA association, 396
Joint Photographic Experts Group, 499
jpg, 503
 compression artifacts, 501
 creation process, 495
 file format, 499
 file size comparison, 172
Konica Minolta, 169
LA-EAx adapters, 133
Lanczos Resampling, 492
Landscape Mode, 88
language, 392
Leica M lenses, 135
Leica R lenses, 136
Lens compensation, 35
lens compensation features, 336
license for AVCHD, 288, 289
light leaks, 133
light modifiers, 430
lightning, 577
Lightroom, 490
live view display, 311
locking an image, 118, 373
lock-on AF, 271
Lock-On AF, 40
long exposure noise reduction, 266
long pole, 159
Low-light modes compared, 109
LUN setting, 392
M42 screw mount, 135
MAC address, 357
Macro mode, 87
magazine
 shameless plug, 527
magenta casts
 with wide-angle lenses, 131
Magnifying the image, 116
manual
 flash mode, 456
marked images, 118, 365, 373
mass storage, 389
Maui Xaphoon, 534
medium format, 21
memory
 stick, 512
memory card
 corruption, 515
memory cards, 511
memory positions, 291
metering, 214

- Center-weighted, 217
- multi-segment, 217
- spot, 219
- MF Assist, 297
- MFNR (Multi-Frame Noise Reduction), 83
- miniature mode, 255
- Minolta A-mount lenses, 133
- Minolta MD/MC lenses, 138
- modd and moff files, 412
- mode dial guide, 381
- monitor brightness, 377
- Moon pictures, 572
- Morse code
 - flash communication, 436
- movie
 - menu function, 280
 - movie button, 347
 - movie mode, 405
 - .modd and .moff files, 412
 - file formats, 416
 - manual controls, 281
 - movie shutter speed, 412
 - mp4 video format, 417
- MTP, 389
- multi-frame noise reduction, 107
- Multi-Frame Noise Reduction, 83
 - compared, 109
- Multi-Interface Shoe, 41
- multi-segment “matrix” metering, 96
- multi-segment metering
 - disadvantages, 217
- Myopia, 122
- Near Field Communication.
 - See NFC
- negative film
 - brightness range comparison, 544
- new folder, 397
- NEX, 27
- NEX menu, 380
- NFC, 143
 - configuring on smartphone, 153
- NFC Antenna, 145
- night portrait mode, 92
- nighttime
 - lights, 574
 - sports, 573
 - time exposures, 567
- Nikon lenses, 137
- NiZn batteries, 443
- noise
 - reduction, 266
- noise reduction, 268
- Northrop Corp., 40
- number of images on a display, 117
- object tracking, 40, 271
- Olympus OM lenses, 139
- orange light, 72
- P mode, 101
- panorama mode, 102
- partial color, 249
- partial metering, 545
- peaking color, 307
- peaking level, 36, 281, 307
- Peaking Level + DMF, 74
- Pentax K lenses, 139
- Pentax screw mount, 135
- Photo Creativity mode, 100

- Photo Rescue, 516
PhotoClubAlpha.com, 495
PhotoTV HD, 369
Picture Only, 114
pixel
 dimensions, 170
 peeping, 487
playback
 button, 113
 display, 368
PlayMemories, 163
PlayMemories Camera Apps, 163
PlayMemories Home (PMH), 406
PlayMemories Home software, 124
PlayMemories Mobile, 151, 156
Pocket Sax, 534
pole, 159
pop color, 247
portable wireless studio, 458
portrait AF setup trick, 74
Portrait mode, 84
Portraits
 classical, 561
 environmental, 561
posterization, 247
power save (and start time), 383
praying, 401
Pre-AF, 313
pre-flash TTL, 454
Pre-set White Balance, 221
Priority Connection, 146
product shots, 575
Program mode, 101, 543
program shift, 103, 104, 542
protect, 373
quality menu setting, 172
quality of light, 553
Quick Navi, 69
ratio flash, 447, 449
RAW, 172, 242, 487, 503
 incompatibilities, 65
Rear Sync Flash, 190
REC.-709, 409
record setting, 180
recover image database, 401
red-eye reduction, 194
registered faces, 274
release without lens, 322
remote camera control software, 161
remote commander, 121
remote control
 with your smartphone, 156
remote ctrl, 385
remote release, 181
resolution, 509
retro, 248
rich-tone monochrome, 254
RM-S1AM Remote cord, 181
RMT2 flash setting, 451
Rock Concerts, 566
rotate, 371
rule of thirds, 300
Rule of Thirds, 556
saturation, 238
scene selection mode
 landscape mode, 88
 macro mode, 87
 night portrait mode, 92
portrait mode, 84

- sunset mode, 89
- scene selection modes, 83
- SD memory cards (and their ilk), 514
- SDXC memory cards, 395
- select REC folder, 397
- self-timers, 181
- Send to Computer, 352
- send to smartphone, 351
- sensitivity, 544
- sepia mode, 243
- setting reset, 403
- Shade white balance, 222
- shading, 337
- shameless self-promotion, 35, 522, 524, 534
- sharpness
 - in-camera setting, 239
- shutter
 - front curtain, 325
 - speed, 283, 537
- shutter button decoupling, 73
- Silhouettes, 571
- Single-Shot
 - advance, 180
 - AF, 76
- Single-Shot AF, 195
- slide show, 121
- slow sync, 92, 189
- smartphone
 - transferring an image, 152
- smile detection, 273
- smile shutter, 275
- snow, 568
- soft focus, 252
- soft high-key, 249
- soft skin effect, 277
- softboxes, 431
- Sony A-mount lenses, 133
- sorting
 - chronologically, 400
- specify printing, 374
- specular highlights, 25
- Spline Interpolation, 492
- sports action mode, 86
- Spot AF area, 198
- spot AF via center button, 77
- spot metering, 219
- sRGB, 285
- Stage Performances, 566
- standard form, 398
- SteadyShot, 283
- street photography, 570
- strobist website, 460
- studio strobes, 311, 546
- Sunset mode, 89
- Sunsets, 571
- sweep panorama, 102
- Television screen viewing, 120
- tethered shooting options, 160
- text overlay, 114
- texture, 559
- TIFF file format, 503
- tile menu, 380
- time exposures, 242
- toy camera, 247
- Tradeoffs
 - between f/stop and shutter speed, 541
- Trash Can button, 117
- tripod
 - night view, 99
- umbrellas, 431, 459

- universal screw mount, 135
- USB
 - LUN setting, 392
 - USB connection, 123, 389
 - vacuum film system (Contax), 141
 - version, 402
 - video, 405
 - cable, 119
 - connector, 123
 - formats, 417
 - monitoring, 408
 - quick setup, 105
 - standards, 414
 - view mode, 367
 - view on TV, 352
 - viewfinder
 - color temperature, 378
 - viewfinder brightness, 378
 - viewing images
 - on an HDTV, 120
 - vignetting, 131
- Voigtländer lenses, 135
- volume settings, 379
- watercolor mode, 258
- Waterfalls, 565
- Ways to 'Wow!' with Wireless Flash, 526
- WEP encryption, 148
- What the Duck comic, 488
- wheel lock, 348
- white balance, 220
 - bracketing, 185
 - color temperature setting, 226
 - compact fluorescent, 223
 - tweaking, 225
- Wi-Fi
 - bit rate, 151
 - download, 145
 - transferring an image to your smartphone, 152
 - transferring movies and RAW, 152
- wind noise reduction, 288
- wireless flash, 37, 192, 421
 - channel, 454
 - how-to video, 525
 - ratio, 447
- WPS Push, 147, 355
- Xaphoon, 534
- XK Motor
 - gratuitous shot, 264, 297
 - zebra stripes, 32, 295
- Zeiss ZM lenses, 135
- zone AF area, 407
- zoom, 262
- zoom in, 116
- zoom setting, 314



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