

Contents

Introduction xvii

PART I • MASTERING BLENDER 3D 1

Chapter 1 • Controlling Your Environment 3

Getting Your Way with Blender	3
User Preferences	3
Other Options	15
Improving Your Workflow	16
View Hot Keys and Properties	16
Grouping and Selection	18
Object Manipulation	22
Keeping Up with the Blender Interface	24
The Coming Changes	25
The 2.5 Event Recode	25
The Evolution of the Interface	26
The Bottom Line	29

Chapter 2 • Sculpting and Retopo Workflow 31

Sculpting with Blender	31
Multiresolution Modeling	31
Sculpting a Baby's Head	36
Using the Retopo Tool	59
Normal Map Baking	67
The Bottom Line	73

Chapter 3 • Creating Realistic Images with UV Textures and Node-Based Materials 75

Creating UV Textures with Blender and GIMP	75
Textures and Texture Mapping	75
UV Mapping	77
Texturing a Locomotive Smokestack	78
Smoothing the Seams with Texture Baking	92
Achieving Realism with Material Nodes	101
The Bottom Line	109

Chapter 4 • Video Compositing with Nodes 111

Pulling a Green Screen Matte with Nodes	111
Working with Green Screen Video	111
Working with Composite Nodes	112

Garbage Matting	119
Animating the Garbage Matte	126
Using Render Layers and Nodes	131
Garbage Matting the Figure	135
Working with Node Groups	138
Using Alpha Overlays and Premultiplication	140
Spill Correction and Cleaning Up	143
Tweaking Color Channels	143
Finishing Off the Matte	145
Muting Nodes	148
Learning More about Compositing	148
The Bottom Line	148
Chapter 5 • Working with the Video Sequence Editor	151
Working with the Video Sequence Editor	151
Importing Video and Image Sequences	153
Setting Frame Rates	156
Working with Sequence Strips	158
Editing Sound	161
Using Markers	164
Accessing Other VSE Display Modes	164
Adding Transitions and Compositing in the VSE	166
Alpha Overlays	167
Fades and Transitions	168
Fading to Black	171
Transform	172
Other Effects	174
Working with Plug-ins	174
Meta-Strips	175
Working with Blender Scenes in the VSE	175
Adding Captions to a Video	175
Composited Scenes	181
Rendering and Output	181
The Bottom Line	182
PART II • MASTERING BLENDER PYTHON	185
Chapter 6 • Python for the Impatient	187
Introducing Python	187
What Is Python?	187
Why Python?	189
Further Resources	190
Understanding the Python Development Environment	192
Getting Python	193
Using the Command-Line Shell	193

Using the IDLE Editor	194
Running Scripts	195
Using the Blender-Python Environment	195
Understanding Python Syntax	197
Data Types and Structures	197
Control Flow	202
Functions	203
Classes and OOP	205
The <i>dir()</i> Command	206
Modules	206
The Bottom Line	206
Chapter 7 • Python Scripting for Blender	209
Editing and Running Scripts in Blender	209
The Blender Text Editor	209
Script Format and Templates	211
The Scripts Window	212
Introducing the Blender-Python API	212
Creating an Interactive Script	214
Working with Meshes, Objects, and Ipos	215
Building the Interface	224
Putting It All Together	232
The Bottom Line	233
Chapter 8 • The Many-Headed Snake: Other Uses of Python in Blender	235
Extend Blender Functionality with Python	235
Working with PyDrivers	236
Using PyNodes	239
Working with PyConstraints	244
Using Script Links and Space Handlers	251
On-the-Fly Script Execution with Script Links	251
Viewport Interactivity with Space Handlers	255
The Bottom Line	262
PART III • MASTERING THE BLENDER GAME ENGINE	265
Chapter 9 • Creating Assets for the Blender Game Engine	267
Creating Content for the Game Engine	267
Modeling a Simple Low-Poly Character	268
Texture Painting	275
Rigging and Animating the Character	280
Setting Up the World	288
Baking Procedural Textures for a Simple Skybox	288
Creating a Simple Maze	296

Getting More Familiar with the BGE Environment	300
Placing Your Objects in the Game World	301
Setting Material Options	302
Using Lighting in the Game Engine	304
Vertex Painting for Light Effects	305
The Bottom Line	305
Chapter 10 • Making Things Happen in the Game Engine	307
Working with Logic Blocks	307
Understanding Logic Block Basics	308
Setting Up the Camera	317
Using Properties, Messages, and States	317
Setting Up Bad Guys	318
Collecting Treasure and Racking Up Points	323
Creating Special Effects with Textures	327
Creating Dynamic Text	327
Creating Animated Textures	331
The Bottom Line	338
Chapter 11 • Python Power in the Blender Game Engine	341
From Logic Blocks to Python	341
Controlling a Character with Python	342
Python Power for the BGE	346
Creating a Teleportation Machine with Python	346
Creating a Login Screen	350
Working with Viewports	358
Accessing Sound with Python	361
Further Resources	364
The Bottom Line	365
Appendix A • Solutions	367
Chapter 1: Controlling Your Environment	367
Chapter 2: Sculpting and Retopo Workflow	368
Chapter 3: Creating Realistic Images with UV Textures and Node-Based Materials	369
Chapter 4: Video Compositing with Nodes	370
Chapter 5: Working with the Video Sequence Editor	370
Chapter 6: Python for the Impatient	371
Chapter 7: Python Scripting for Blender	373
Chapter 8: The Many-Headed Snake: Other Uses of Python in Blender	373
Chapter 9: Creating Assets for the Blender Game Engine	375
Chapter 10: Making Things Happen in the Game Engine	375
Chapter 11: Python Power in the Blender Game Engine	376

Appendix B • Blender-Python API Module and Class Hierarchies	379
Module Hierarchy	379
Class Hierarchy	381
Appendix C • The Evolution of Blender’s User Interface	385
The Evolution of Blender’s Interface	385
Analysis	386
The Good	387
The Bad	390
Design Goals	393
Properties	394
Tools	400
Context Sensitivity	402
Multiple Objects	403
Feedback	404
Drag-and-Drop	405
Graphic Design	405
Wrap-up	407
Appendix D • About the Companion CD	409
What You’ll Find on the CD	409
Chapter Files	409
Blender 2.48 Software	409
GIMP Software	409
System Requirements	410
Using the CD	410
Troubleshooting	411
Customer Care	411
<i>Index</i>	413