

FOCAL PRESS VISUAL EFFECTS & ANIMATION



A Guide to **Computer Animation**  
for tv, games, multimedia and web

Marcia Kuperberg



## contents

Acknowledgements .....	ix
Introduction .....	xi
List of contributors .....	xii

### **Chapter 1**

by Marcia Kuperberg

<b>Exploring the background, tools and techniques of computer animation .....</b>	<b>1</b>
---	----------

Introduction .....	2
Perception .....	3
The mechanism to make moving pictures .....	4
Birth of the movie industry .....	7
Traditional animation production techniques .....	8
2D computer animation .....	10
3D computer animation .....	11
Digital convergence .....	12
Animation: the art of making things move .....	15
Conclusion .....	26

### **Chapter 2**

by Rob Manton

<b>Understanding the technical constraints of creating for different digital media .....</b>	<b>27</b>
--	-----------

Introduction .....	28
Some technical issues .....	30
Display devices .....	30
Bitmap images and vectors .....	31

---

Image size and resolution .....	36
Frame rate .....	37
Data rates and bandwidth .....	37
Compression .....	39
Types of software used in animation .....	41
Hand-drawn animation .....	43
Spline-based keyframe animation .....	43
2D morphing .....	44
Using ready-made animations .....	44
Output options .....	44
3D modeling and animation .....	45
Modeling techniques .....	47
Animating 3D worlds .....	50
Linked hierarchies .....	50
3D morphing .....	52
Procedural animation .....	52
Output options .....	52
Video editing and compositing tools .....	53
Delivering animation .....	53
Conclusion .....	56

## **Chapter 3**

by Marcia Kuperberg

Techniques and stages of creating 3D computer animation .....	57
Introduction .....	58
Following the brief .....	60
Scheduling your work to deliver on time .....	60
Doing your research .....	60

<b>Checking the proposed action from your storyboard before creating the model .....</b>	<b>61</b>
<b>Thinking about the most efficient way to make your models .....</b>	<b>62</b>
<b>Constructing the basic room .....</b>	<b>63</b>
<b>Paying attention to materials .....</b>	<b>73</b>
<b>Paying attention to lighting your scene .....</b>	<b>77</b>
<b>Fine-tuning the effects of lights used in your scene .....</b>	<b>84</b>
<b>Lighting setups .....</b>	<b>85</b>
<b>Using your camera effectively .....</b>	<b>86</b>
<b>Camera lenses .....</b>	<b>87</b>
<b>Using a number of cameras .....</b>	<b>87</b>
<b>Basic camera moves .....</b>	<b>87</b>
<b>Using your camera to explore the room .....</b>	<b>88</b>
<b>Creating camera moves .....</b>	<b>90</b>

---

## **Chapter 4**

**by Alan Peacock**

<b>Animation for multimedia and new media .....</b>	<b>91</b>
<b>Introduction .....</b>	<b>92</b>
<b>Motivation and responsiveness: animated objects in multimedia .....</b>	<b>93</b>
<b>Changing moves: animation and interaction .....</b>	<b>95</b>
<b>Animation: an everyday experience .....</b>	<b>96</b>
<b>Early games and hypertext .....</b>	<b>96</b>
<b>Animation in iTV (interactive TeleVision) .....</b>	<b>100</b>
<b>Approaches and working methods .....</b>	<b>100</b>
<b>Rollovers, buttons and other responsive objects .....</b>	<b>108</b>

GIF animation .....	112
Movable objects .....	115
Animated worlds .....	116
Conclusion .....	120

## **Chapter 5**

by Martin Bowman

<b>Creating artwork for computer games: from concept to end product .....</b>	121
Introduction .....	122
How is a game made? .....	123
Animation in the computer games industry .....	128
Animation to game .....	135
What art positions are there in the games industry? .....	141
What skills do employers look for? .....	149
Conclusion .....	154

## **Chapter 6**

by Marcia Kuperberg

<b>tv case studies: looking behind the scenes at the creation of network idents and commercials .....</b>	155
Introduction .....	156
TechTV .....	158
Moviepix .....	162
The Movie Network .....	166
Super Écran .....	166
Behind the scenes of Cingular Wireless .....	170
The making of Chrysler's 'Golden Gate' .....	179

---

**Chapter 7****by Marcia Kuperberg**

<b>The art and craft of telling a story: narrative and characterization .....</b>	<b>191</b>
Introduction .....	192
The importance of understanding filmic techniques when creating screen narrative .....	193
Audience perception .....	196
Narrative theory in practice .....	197
Using camera angles and framing to tell a story .....	203
The soundtrack .....	207
The storyboard .....	208
Characterization .....	210
Stylization and realism .....	212
CGI combined with live action .....	213
Character creations .....	214
Making your characters talk .....	217
Observation and inspiration .....	220
Conclusion .....	220

**Chapter 8****compiled by Marcia Kuperberg**

<b>Project briefs, self-tests, tutorials and resources .....</b>	<b>221</b>
Introduction .....	222
Self-test based on Chapter 1 .....	222
Self-test based on Chapter 2 .....	223
3D modeling project based on Chapter 3: creating a room .....	224

Self-test based on Chapter 4 .....	225
Web tutorial rollover project based on Chapter 4 .....	226
Self-test based on Chapter 5 .....	231
Exercises and 3D modeling project tutorials based on Chapter 5 .....	232
Exercises and projects based on Chapter 7 .....	234
Exercises in characterization based on Chapters 1, 5 and 7 .....	235
Useful online resources .....	237
Magazines .....	242
Books .....	243
Index .....	245