Introducing Character Animation with Blender

Tony Mullen

Introduction

• About me
• About the book
• Some general thoughts on Blender related publishing
• Preview of ICAWB
• The Gallery

About me

• College lecturer in computer science, Tsuda College, Tokyo
  – Courses have included courses on Blender, Python
• Former professional cartoonist, illustrator, graphic designer
• Independent filmmaker, animator (stop motion and CG)
• Writer (magazine articles and tutorials, academic papers, screenplays, fiction)

About the book

• Introducing Character Animation with Blender
• Published by Sybex/Wiley
• A broad view of character creation and animation
  – Modeling, texturing, rigging, skinning
  – Animation
  – Study of Blender in actual animation productions
• Approx 450 pages, b/w with color gallery

About the book

• Blender foundation endorsed
• Foreword by Ton Roosendaal
• Technical editing by Roland Hess and Bassam Kurdali

Why a book?

• I wanted one
• There wasn’t one already
• Summer of Documentation hadn’t been announced, but even if it had, it still wasn’t a book… yet
• Great excuse to spend loads of time doing Blender stuff.
Who’s the book for?

• People who know Blender, but not animation
• People who know animation, but not Blender
• Highly motivated newbies to both
• Should complement the Summer of Documentation material—some overlap but a lot of different coverage

How does a book benefit the Blender community?

• There may be direct financial benefits for the BF acting as a vendor or having some other relationship (this varies depending on the case)
• High-profile publications raise awareness of Blender in the industry and among the public
  – Professional marketing and promotional support
  – Respected publishers lend credibility
• More skilled users means more high-quality Blender work
• Increases Blender’s potential to be the basis of profitable work

Other books (yours?)

• A lot of potential in Blender-related publishing. Other CG packages have many books each. There’s plenty of material.
• Learning styles vary, but there are still a lot of people who want a proper book.
• Especially important to focus on areas which require deeper attention than can be given in most online tutorials,
• Few people read a whole book online.

What other books?

• A few titles from my fantasy Blender bookshelf:
  – Rendering and Ray Tracing with Blender, YafRay, and Indigo
  – Advanced Compositing and Video Effects with Blender
  – Mastering Blender Python Scripting and Source Development
  – Creating Games and Interactive Content with Blender

Keeping Up with Blender

• Speed of Blender development a challenge for all forms of documentation
• Trade-offs may be necessary, but the speed of development is overall a good thing
• On the other hand, the fundamentals don’t change that fast
• Online docs vs offline docs, pros and cons
• A book can foster anticipation even by what it doesn’t cover

Introducing Character Animation with Blender
Goals and Approach

• To cover all of what I considered the necessary topics for character animation.
• To take a practical, hands-on tutorial-based approach, but at a more leisurely pace and more in-depth than online tuts.
• To include as many suggestions, shortcuts, “secrets” and cool tricks as I could stuff in along the way.
• To explain why certain choices were made and what some other alternates are.

Interface and Objects

• Overview of the Blender interface, windows, hotkeys, 3D navigation, etc.
• Introduction to objects and datablocks; the difference between a mesh object and the mesh datablock itself, etc.

Working with Meshes

• Overview of meshes and modifiers
• Step-by-step extrusion modeling of a female face.
• Box modeling the Captain Blender character
• Common problems with mesh modeling
Modeling Captain Blender

Common modeling problems

Materials and Textures

- Captain Blender’s suit materials and textures
- UV mapping/texturing CB’s head
- Bump mapping
- Particle hair, eyelashes
- Weight painting for hair control
- Making eyeballs with procedural textures

Rigging

- Simple introduction to rigging and FK/IK posing
- Rigging Captain Blender with a complete armature (based on the Ludwig rig by Jason Pierce with some modification. Thanks also to Bassam Kurdali’s Mancandy rig)
- Skinning and weight painting
- Action constraints, stretch bones, etc.
Shape Keys and Facial Rigging

• Simple introduction to bone-driven shape keys on a cube
• Facial rigging with bone-driven shapes
• Using vertex groups to create asymmetry
• Armature rigging for eyes and tongue (IK constraints, eyelid control, stretch bones)
• Improved joint deformations with driven shape keys

Animation Basics: Keyframes and Ipos

• Simple introduction to keyframes and Ipos: a bouncing ball

Armature Animation

• Posing and keying poses
• IK vs FK posing: arcs and curves
• A simple jump action
  – Line of action, exaggeration, squash and stretch, etc.
• A walk cycle
• A run cycle
• Pose-to-pose and straight-ahead
  – Using a combination approach to make the character walk forward
• Another example of pose-to-pose gesturing matched with sound

Lip Sync and Facial Animation

• Creating facial expressions with facial armature posing
• Lip syncing to a sound file
Lip Sync and Facial Animation

Nonlinear Animation
- Introduction to the NLA Editor, strips, etc
- Relationship between NLA Editor and Action Editor
- A simple example of combining several cyclical animations to sync together: Camera rotation around a walk cycle
- Using the stride bone to prevent foot slippage when following a path
- Walking and talking: combining actions in the NLA editor

Other Issues in Animation
- Other useful or interesting tools:
  - Lattices
  - Softbody simulation
  - Metaballs
- Interacting with props

Other Issues: Lattices

Other Issues: Soft Body Simulation

Other Issues: Metaballs
Other Issues: Interacting with props

Lighting and rendering
- Basic concepts in lighting for character animation
- How to render
- How to use the Sequence Editor
- Composite nodes basics? Not yet. Space permitting…

Rendering, Compositing, and the Sequence Editor

Using Python Scripts
BlenderPeople

• MySQL based crowd simulation by Roland Hess

Blender in Production

Thanks to the Orange Team for creating the world’s first open movie! The movie and production files are included on the DVD accompanying the book.

Thanks to the producers of Plumiferos, and very special thanks to Claudio Andauf for all his help!

Inside Elephants Dream

Introducing Feifi

Conclusion

• I hope to see
  – more people become encouraged to write about Blender (or produce other educational materials)
  – that ICAWB helps people learn more about character creation and animation
  – Blender’s profile continue to rise in the CG world

Thank You

And special thanks to Mauro Bonecchi, Tomohiro Akutsu, Roland Hess, the Orange Team and the Plumiferos team, whose artwork I used in this presentation.