

Workshop: Life Drawing and 3D Figure Modeling with MAYA

Gregory P. Garvey
Department of Computer Science and Interactive Digital Design
Quinnipiac University

Abstract

This workshop, first given at SIGGRAPH 2001 [Garvey 2002] is now offered in two-parts. Part I introduces the process of transferring life drawings into 3D models using MAYA followed by a life drawing session. In Part II, workshop attendees working in the CAL import digitized life drawings into MAYA for setup as image planes to guide the modeling process. The goal of the workshop is to explore and develop skills of observational figure drawing and integrate them with the process of 3D modeling.

1 From Inspiration to Practice

This workshop was inspired in part by the drawing exercises found in the book *The Natural Way to Draw*, by Kimon Nicolaides. Through a series of exercises that focus on contour, gesture, weight, modeling, memory, analysis of contrasting curved and straight lines, Nicolaides strove for a deeper understanding and empathy with the subject in learning how to represent it: "You should draw, not what the thing looks like, not even what it is, but what it is doing." [Nicolaides 1941]. *The Natural Way to Draw* is really a guide to learning how to observe the world of existence with all of one's faculties, senses, intelligence and creativity. It is essential training for anyone involved in arts of visualization.

In Part II, attendees use the simple technique of lofting to model the human figure. With this approach an arm, leg or even torso can be easily modeled by creating a series of "ribs" made of geometric primitives such as circles (Figure 1). Attendees are provided with sample tutorial drawings representing front and side views of a leg and an arm. In MAYA a digitized figure

drawing is imported and setup as an image plane. The 2D image plane serves as a reference to adjust the size of each circle from both the front and side orthogonal views. A lofted surface will follow the form created by the frame of circles. This part of the workshop was inspired by a short exercise for modeling an arm by lofting a series of circles introduced in *Mastering MAYA 2* [Harovas et al. 2000].

2 Life Drawing Session

Part I of the workshop focuses on the preparation and execution of life drawings. The drawing of limbs is emphasized because of the complexity of drawing and modeling the geometries of the hands, feet, or head. Two orthogonal views, capturing the contours of a pose should be prepared in order to create a proportionally correct model of a subject. Graph paper can be used to facilitate alignment and size. Major topological features of the anatomy clearly visible in the front and side views can also aid alignment. Drawings can be realistic, stylized or even abstract using different media such as charcoal, pen and ink, conte crayon or pencil.

With certain poses some orthogonal views do not align (Figure 2). Multiple non-orthogonal views can also be prepared and suggest many possibilities for further experiments in purposeful misalignment, distortion or even abstraction. Combining these different perspectives in a cubist-like fashion creates surface geometries very difficult to anticipate or visualize

through any other means. Experimentation with multiple views lends itself to an iterative, trial-and-error modeling process similar to activity of drawing.

Combining these modeling experiments with new advances in non-photo realistic rendering techniques points to unexplored creative possibilities inherent in the medium of 3D computer graphics.

References

- GARVEY,G.2002. Life Drawing and 3D Figure Modeling with MAYA. *Leonardo* 35, 3. Excerpts reprinted courtesy of the MIT Press.
- HAROVAS, P., KUNDERT-GIBBS, J. AND LEE, P. 2000. *Mastering MAYA Complete 2*. SYBEX, Alameda, CA.
- NICOLAIDES, K. 1941. *The Natural Way to Draw*. Houghton Mifflin Company, Boston.p.15.

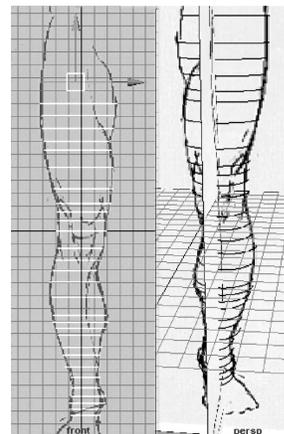


Figure 1 Circle are moved, scaled and aligned in the front and side views; completed circles are seen in the perspective view.

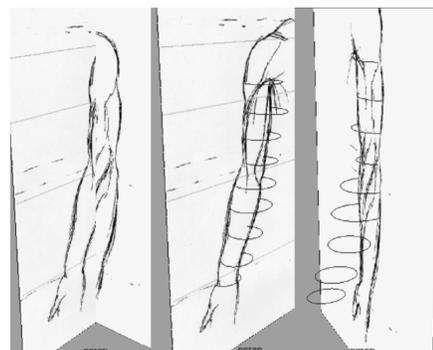


Figure 2 The front-and side-view orthogonal drawings of the arm in supination do not align.