



## **A Different Approach to Stop-Motion: Digitally Animated, Low Poly, 3D Paper Models, With Animated Textures**

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### **Abstract:**

Stop-motion animation (SMA) is commonly associated with miniaturizations positioned frame-by-frame to create motion. I propose a new process, synthesizing digital 2D animation, digital 3D animation, and paper Modeling with components of traditional SMA. This technique allows artists to design their animations digitally, yet actualize them physically. A case study was done on an animated pumpkin character.

Using this technique, artwork is drawn and colored digitally in Illustrator. All moving parts of the face are assigned to individual layers, then imported into After Effects, where individual layers are then key-framed to create a cyclical animation of the facial expressions. This series of images is used as an animated texture on a 3D polygon. The animation adds emotion while timing of the cycle allows facial animation to be used as overlapping action on the 3D Polygon.

One key to my experimental process is to achieve optimal form without creating a complex polygon model. Low polygon spherical models are created in Maya and additional extrusions are added for character enhancement. A simple rig is inserted inside the polygon for bend and squash control. Each frame of the animated polygon is then exported from Maya and imported into Pepakura Designer 4 (used to unfold the polygon into a flattened 2D shape).

For my case study, I chose to create a 17-frame looped animation using this rig.

The digital format transitions to physical as pieces of the polygon are laid flat with cut lines, score lines and tabs for gluing added. Each flattened polygon is printed on 160lb card stock using a Mimaki UV Jfx200 flatbed printer. An Epilog Fusion 75-watt laser cutter is used to cut the 2D shapes, which were then folded to create a



physical form. The final steps include traditional SMA techniques, creating a final project that was imagined in the digital realm but actualized in the physical realm.

This technique case study has set the stage for a project larger in scale, with more complex polygon arrangements. Plans are in the works for a full-scale humanoid walk cycle.

### **Biography:**

TYLER AYRES is Associate Professor in Animation, School of Media Arts and Studies at Ohio University. He is an award winning animator and continues to work professionally. He has known for being a finalist in the Nicktoons Animation Festival in 2008, as well as screening in many international children's film festivals.

### **Publication of speakers:**

1. Tyler Ayres et al; Solar Sails Towards An Early Profitable PowerSat,
2. Tyler Ayres et al; Red and Blue, Advance Computer Center for the Arts and Design (ACCAD), 2009
3. Tyler Ayres et al; Outta This World: Merging Classic Animation Styles with Modern Technologies and Designs, 2017
4. Tyler Ayres et al; Special Topics in Media Arts and Studies: Appalachia in the Media
5. Tyler Ayres et al; Foundations of Digital Design for Games and Animation