Adapting Curriculum to Explore new 3D Modeling Technologies and Work-flows

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1. Introduction

This talk discusses adaptations by educators, students necessary to adjust to a fundamental shift in the creation of 3D modeling. We follow three main steps 1) identification-assessment, 2) justification-adoption, 3) integration-dissemination.

2. Exposition

Over the past year we have focused on identification, assessment and justification. Two core technologies: computer vision based 3D mesh generation and retopologizing software have rapidly matured. The ability to build 3D models has moved from costly, time intensive, and proprietary to inexpensive, nearly instantaneous and widely accessible. At SIGGRAPH 2011 Weta Digital discussed PhotoSpace, their digital prop creation technology also based on 2D image to 3D mesh generation and Microsoft demonstrated Kinect Fusion demonstrating real-time 3D environment digitization. At RIT we have been testing Autodesk 123D Catch for rapid mesh creation. We have also tested 3D-Coat for rapid retopologizing. This combination results in dramatic increases in both speed and quality for 3D model creation. It frees students from many of the constraints of software training allowing them to focus on their aesthetic education.

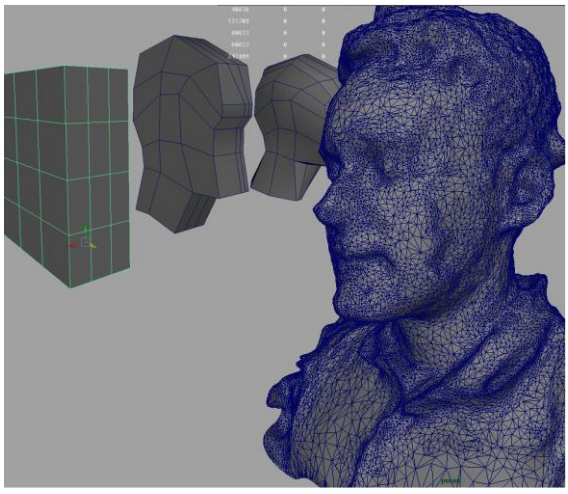

Figure 1. *From additive to retopogize workflows.*

2.1 Elaboration

Adoption justification still faced several hurdles. Fortunately software costs were zero. However, introduction of new teaching methods means that old lectures must be condensed, addressed in a different class or eliminated from the curriculum entirely. We have begun to integrate this technology into our classes. We were able to partly able to accomplish this by increasing collaboration among different departments. Students in the areas of sculpture, industrial design, furniture design, interior design etc. now have a quick pathway to digital representation of their designs.

3. Results

This has already led to some successful collaboration among students. Technically adept students get to work, learn and communicate their knowledge of modeling optimization, edge flow, UV Layout, and deformation, and in turn work with those focused on aesthetic development. They have succeeded in this challenging communication process for accurate anatomical or sculptural representations that might push the envelope of 3D design. In addition this cross discipline design collaborative work enhances student education, work-ethic, student portfolio and prospects for employment. The students who will speak demonstrate several different profiles of technical and artistic. They will present how they integrated this technology and how it affected their process.

4. Conclusions

Finally we will discuss evaluation of our integration process as connected to dissemination of our student work. We will present this analysis in the context of what was being done before, what new expressive abilities the students have gained as a result of these changes, what concepts may have been eliminated. While we foresee continued change and adjustment, the methods for adopting and integrating new 3D modeling workflows and technologies into curriculum look to be a successful, however, there will be continued monitoring and adjusting.

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