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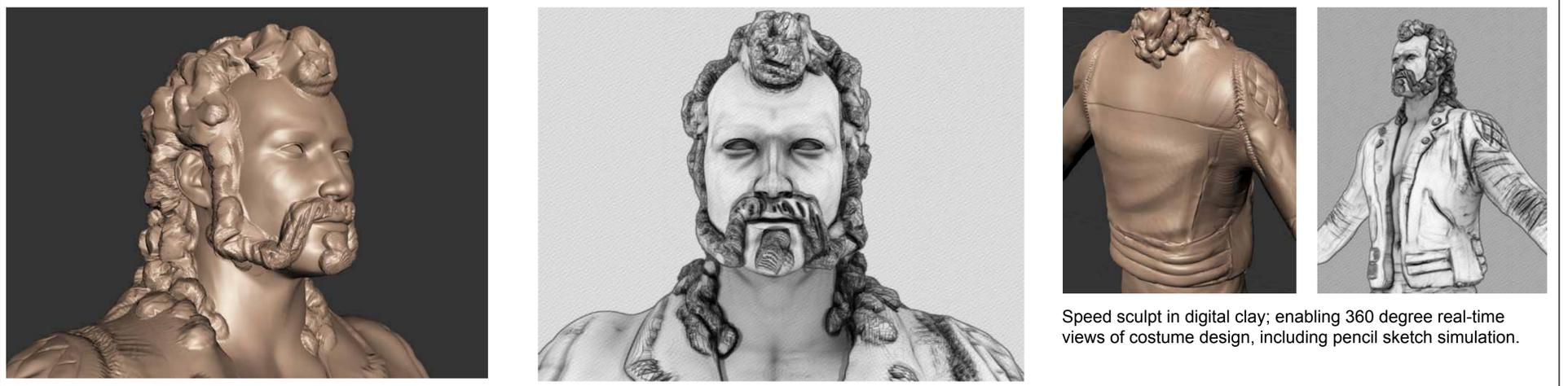
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Sketching in Digital Clay:

Digital sculpture for costume design visualisation

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Speed sculpt in digital clay; enabling 360 degree real-time views of costume design, including pencil sketch simulation.

Introduction

This poster presents the initial findings of an ongoing research project, that will introduce 3D digital sculpture tools to costume design students, then analyse the impact that 3D tools have on their theatrical costume design outcomes. Although digital sculpture tools are commonly used in the film and video games industries and 2D digital visualisation tools have been used in costume design for many years, (Kirk, 2004), (Keeley, 2009) the use of digital sculpture in costume design education is an emerging subject, with little academic research surrounding this specific area.

Method

The clay sketching/sculpting process

After appropriate base models are loaded into the sculpture software, clay sketching can begin. The use of a pressure sensitive pen tablet creates the feeling of sketching/sculpting on the surface of the digital mannequin. As the designer *virtually strokes* the surface of the digital clay mannequin, the surface of the mannequin is deformed. A range of digital sculpture functions are available that simulate: pushing, pulling, carving, scraping, pinching and many other styles of real-world surface manipulation.

Initial results

Rapid, iterative design exploration

Utilising an appropriate 3D base mannequin, three dimensional costume sketches can be created within minutes. Interactive manipulation of the 3D surface promotes rapid, playful design explorations, providing a methodological bridge between the sketchbook and moulage processes. The initial research has indicated that students who feel more comfortable with *making*, rather than *sketching*, and vice versa, appreciate the outcomes they can achieve with this hybrid working methodology.

Complimenting traditional sketchbook techniques

When combined with the digital simulation of traditional artists media such as pencil on paper, digital sculpture tools have the potential to significantly enhance the look and feel of a designer's illustration work, this is particularly important to students and designers who do not possess strong traditional drafting skills.

Improved communication of costume design

The use of anatomically accurate templates/mannequins improves the effective communication of the initial design to clients and costumiers. (Bradley, 2009) Digital mannequins can be posed to aid in the depiction of character expression and can be viewed from any angle.

Transferable skills

The clay sketch can be refined and modified to create 'production ready', animated digital actors, or video game avatars. Costume design students who become competent in the use of digital sculpture tools, will have gained valuable transferable skills that can be used within film and video game production industries.

Future research

A teaching and learning case study will be carried out in the Autumn of 2011 within the school of Art Design & Architecture's *Costume Design with Textiles* course. The study aims to measure the impact that digital sculpture could have on the costume visualisation and design process.

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Moulage photo used with the kind permission of Nicola Marie Fletcher.

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Hypothesis

Sketching in digital clay can promote rapid, exploratory manipulation of 3D digital costumes. This digital manipulation process has parallels with moulage; the real-life process of draping, folding and pinning fabric on a costumiers mannequin.



Digital mannequins and base models

Base models/mannequins are used to support the sketched detail. Clothing items such as hats, shirts, trousers and shoes, can be sketched directly onto the surface of the digital mannequin because of their close proximity to the mannequin surface.

Research questions:

Can effective digital sculpture resources be developed to support a costume design student's intuitive, iterative and playful use of digital sculpture in the production of their costume designs?

What impact could the use of digital sculpture software have on the quality and utility of theatrical costume design illustration?



Creating custom garment templates/base models

The three images here show progressive sculpting of the initial garment base model. Currently, a series of additional base models are being created, to provide students with a starting point for a range of costume silhouettes.

3D modelling software is used to create and import additional base meshes, facilitating the design and visualization of dresses, skirts and other voluminous garments, that deviate significantly from the standard mannequin surface. All additional garment base models are being created with surface attributes that accommodate the student's application of surface colour and repeat surface pattern designs.