University of HUDDERSFIELD

University of Huddersfield Repository

Armstrong, Barry, Unver, Ertu and Taylor, Andrew

Sketching in digital clay: Digital sculpture for costume design visualization

Original Citation

Armstrong, Barry, Unver, Ertu and Taylor, Andrew (2012) Sketching in digital clay: Digital sculpture for costume design visualization. In: DRN Drawing Research Network conference 2012, 10-11 September 2012, School of the Arts/Loughborough Design School, Loughborough University. (Unpublished)

This version is available at http://eprints.hud.ac.uk/id/eprint/16129/

The University Repository is a digital collection of the research output of the University, available on Open Access. Copyright and Moral Rights for the items on this site are retained by the individual author and/or other copyright owners. Users may access full items free of charge; copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational or not-for-profit purposes without prior permission or charge, provided:

- The authors, title and full bibliographic details is credited in any copy;
- A hyperlink and/or URL is included for the original metadata page; and
- The content is not changed in any way.

For more information, including our policy and submission procedure, please contact the Repository Team at: E.mailbox@hud.ac.uk.

http://eprints.hud.ac.uk/

Sketching in digital clay

Digital sculpture for costume design visualisation

Barry (Baz) Armstrong
Dr. Ertu Unver
Andrew Taylor

DRN Drawing Knowledge Network Conference Presentation, 10.09.12, *Loughborough University, UK*
http://www.lboro.ac.uk/departments/sota/tracey/DRN_conference_homepage.html

‘Sketching in digital clay: Digital sculpture for costume design visualization’

Background

‘Costume Illustration in the Digital Age: Creating a Costume Technical Sheet’

(Bradley, 2009) explores the benefits of using 2D digital character templates and drawing software to improve the visual quality and accurate communication of costume designs. My practice-based research expands upon Bradley’s work through the creation of 3D digital costume templates for use within 3D digital sculpture software.

Method:

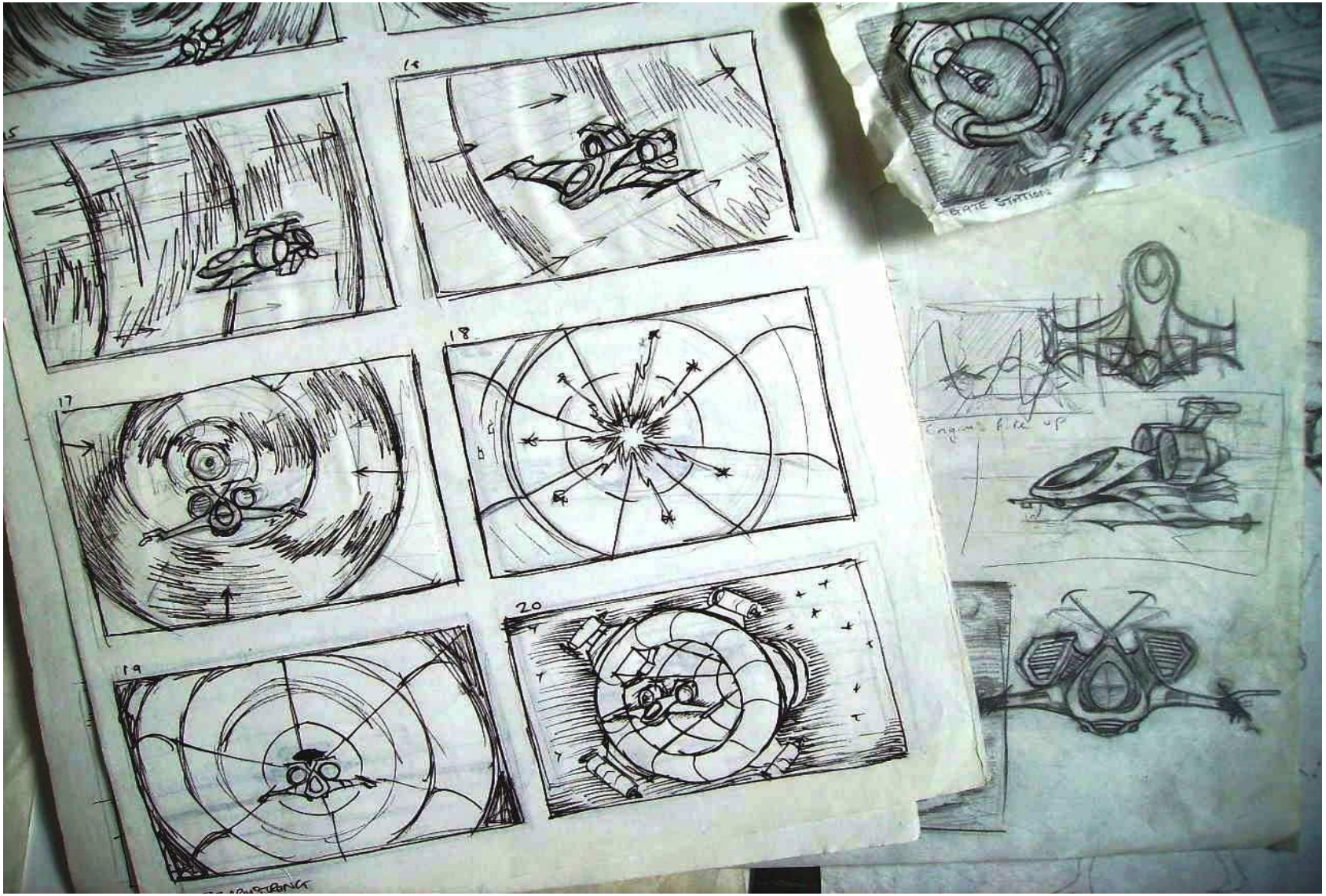
Problems are identified within existing costume visualisation methods. Solutions are investigated through the design and testing of digital sculpting tools and working methods. Digital mannequins and costume templates are created for the designer to sketch upon. Costume templates are designed to enable colour and pattern to flow over their surface contours. Resulting costume visuals are assessed for improvements in quality and utility.

Results:

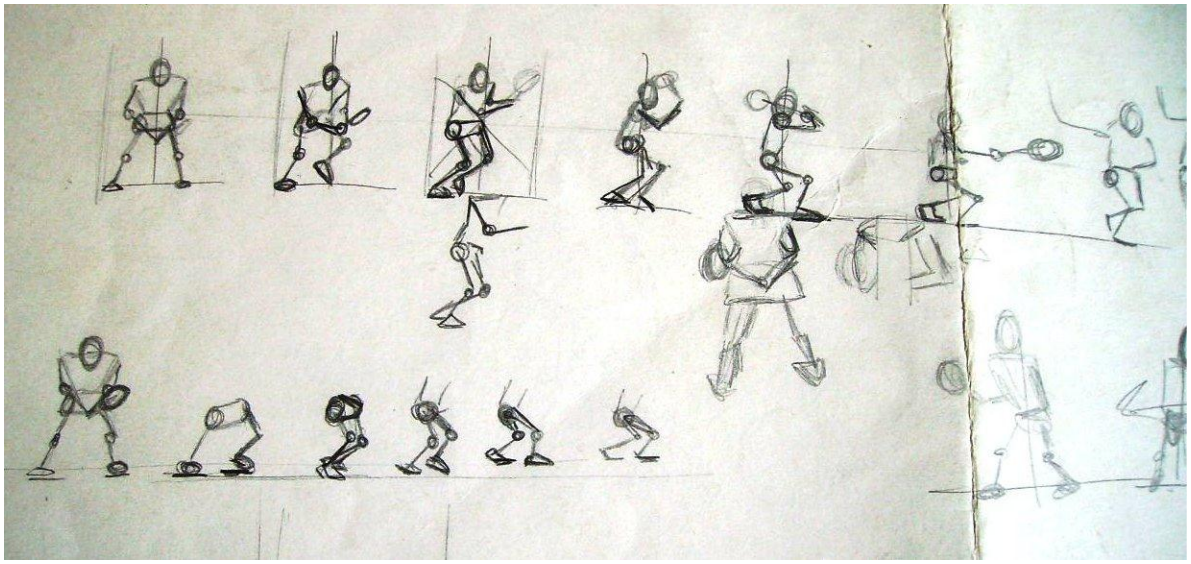
Digital 3D costume sketches/sculpts can be created within minutes. Interactive manipulation of the digital costume sketch promotes rapid, playful, iterative costume design explorations. The use of a pressure sensitive pen tablet creates the feeling of sketching on the surface of the costume sculpt. The designer virtually strokes the surface of the mannequin/costume template to create the desired costume shape. Designs can be viewed and manipulated from any angle, improving design communication. Digital 3D costume sketches can significantly enhance the look and feel of a designer’s illustration work when combined with anatomically accurate digital mannequins and traditional artist media simulation. The costume shape can be coloured and textile designs effectively flow over the 3D costume surface. Costume designers gain transferable skills valued within the film and video game production industries, as costume sketches/sculptures can be refined and modified to create ‘production ready’ digital actors, or video game avatars.

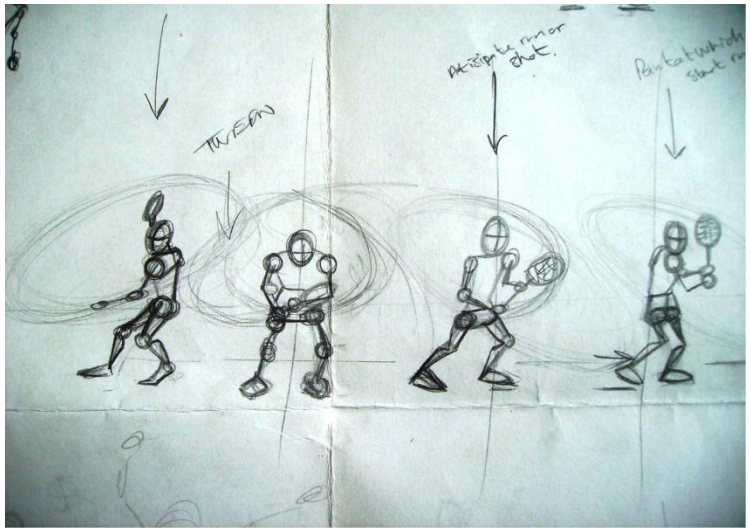
Artist/Researchers: Barry Armstrong, Dr. Ertu Unver, Andrew Taylor, University of Huddersfield

Submission type: Report on cross-disciplinary practice based research project

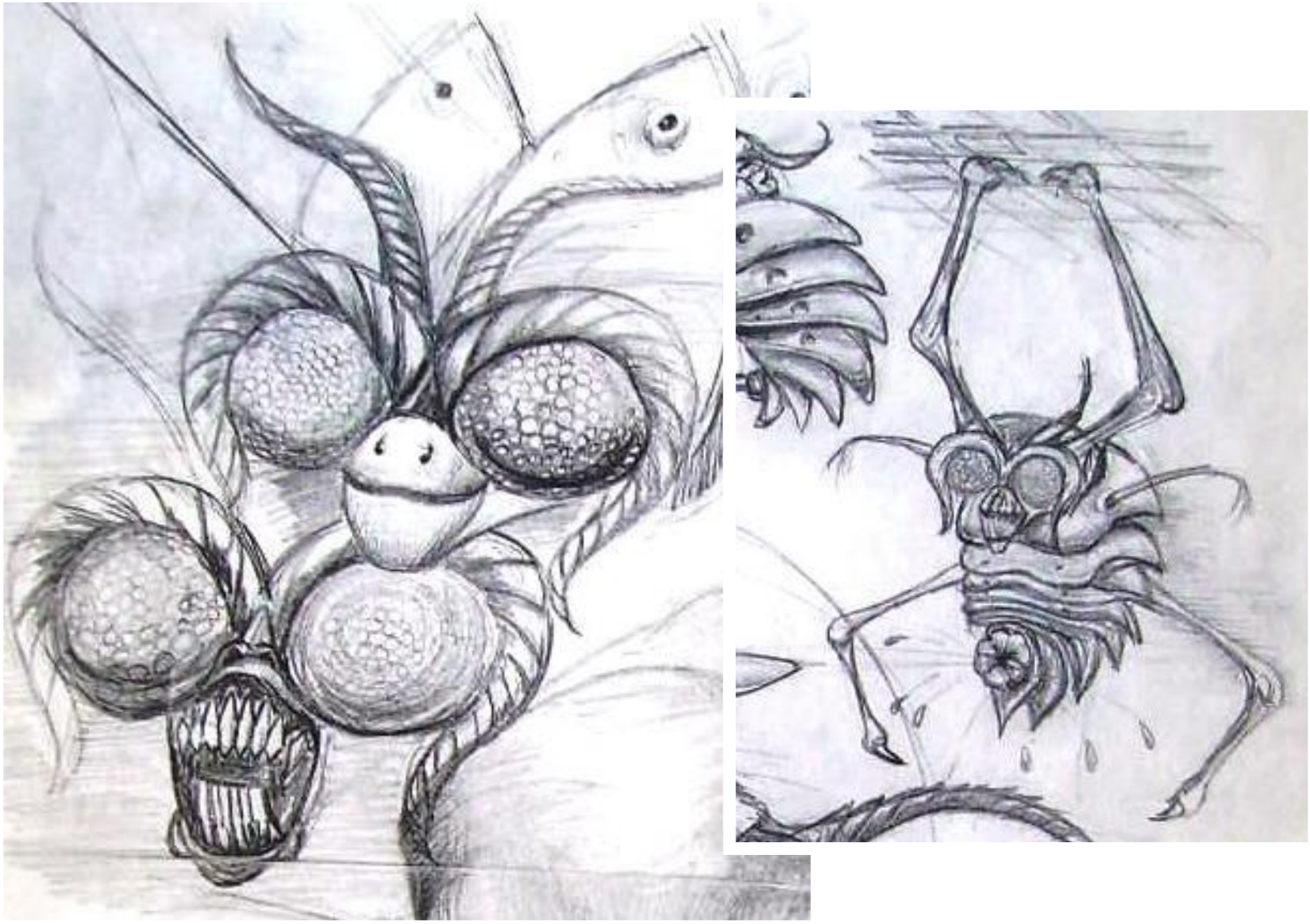


Games Art: Sketchbook work central to my professional practice.



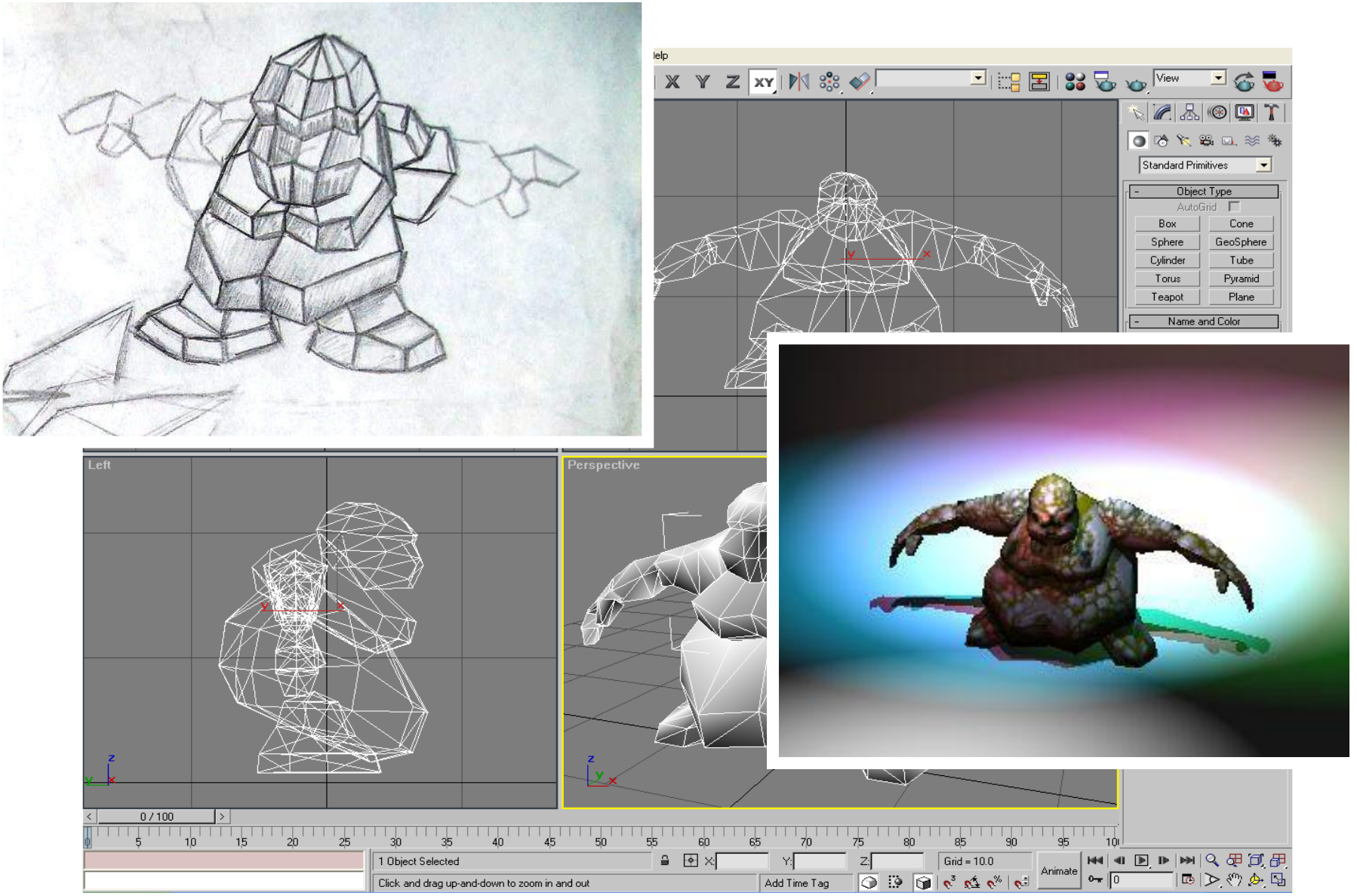


Sketchbook for motion analysis and animation reference



Sketchbook for character design

Sketchbook work promotes rapid design exploration/iteration

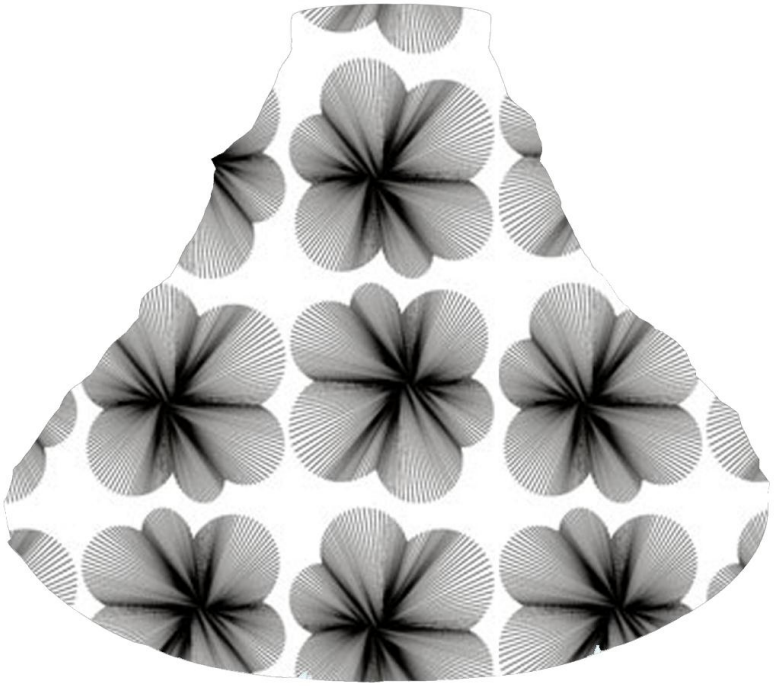


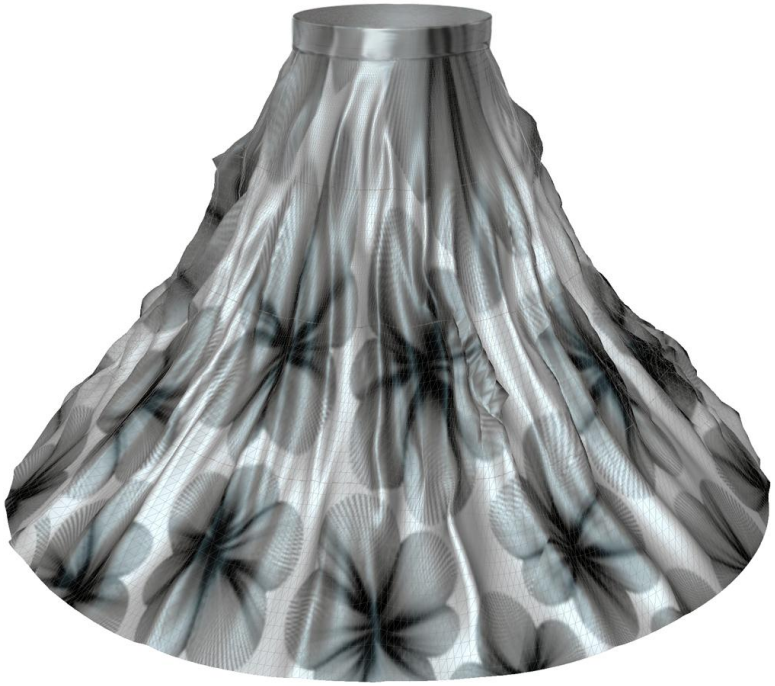
Sketchbook work for 3D modelling pre-production

Teaching and learning

- A significant proportion of Games Art and Costume Design students struggle with:
- Observational drawing skills
- Figure drawing
- Costume students have difficulty producing “professional looking” costume illustrations
- Students have difficulty depicting textile pattern on the surface of their costume illustrations.

2D image compositing
v
Pattern on 3D digital surface





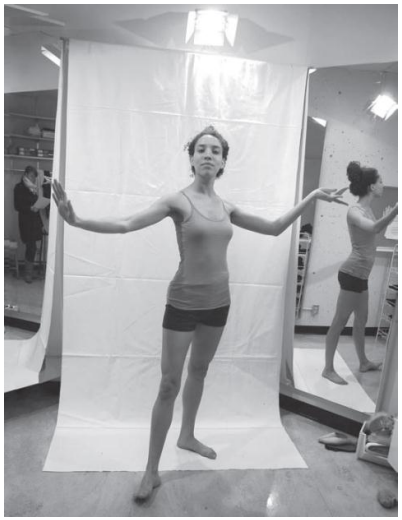
Literature Review on Digital Costume Design

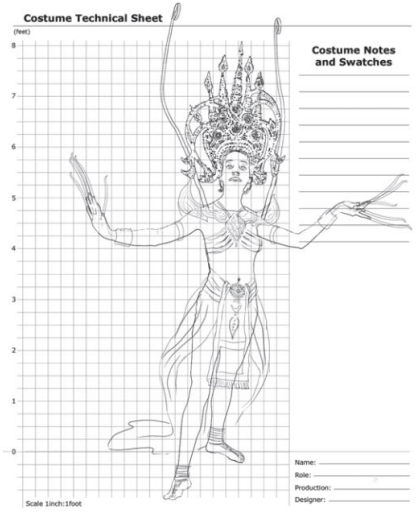
- The use of digital sculpture in theatrical costume design is an emerging subject with very little academic research published.
- Related work:

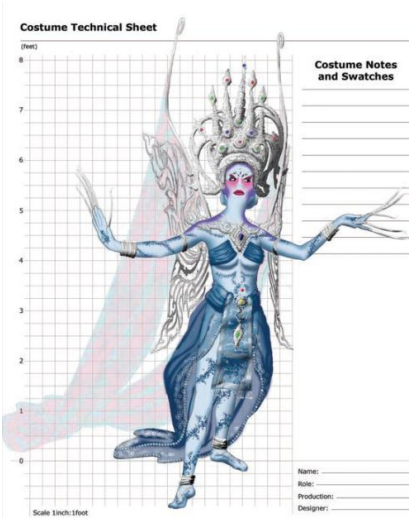
  2D digital visualisation tools (Photoshop) have been used in costume design (Kirk, 2004), (Keeley, 2009), (Bradley, 2009)
- Catherine Bradley's research explores the benefits of using 2D digital character templates and drawing software to improve the visual quality and accurate communication of costume designs.

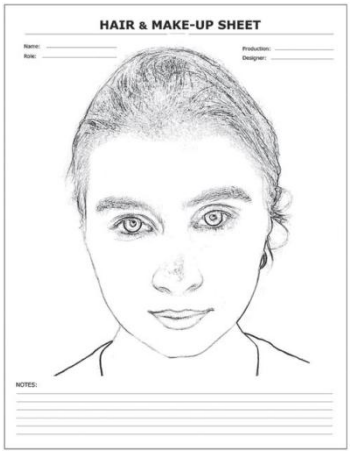
Costume Illustration in the Digital Age: Creating a Costume Technical Sheet’

Journal of Theatre Design & Technology









Digital sculpture

- Digital sculpture tools are commonly used in the film and video games industries.

- Hybrid modelling system that creates digital 3D models using a drawing metaphor
- Enables the artist to draw sculptural form on the surface of a digital 3D base object
- Enables the artist to apply colour, texture and pattern to the surface of the sculpture

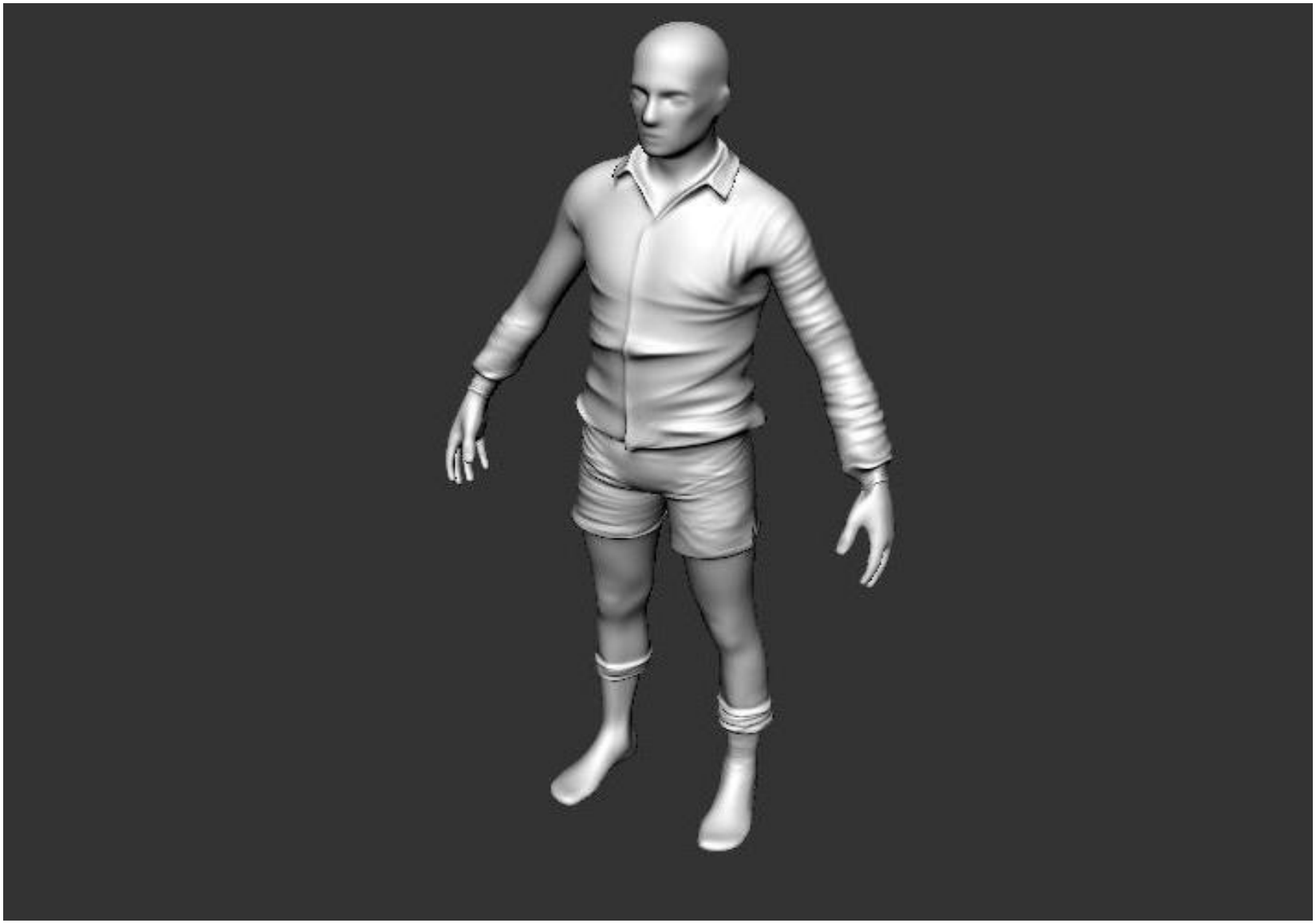
Research questions:

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

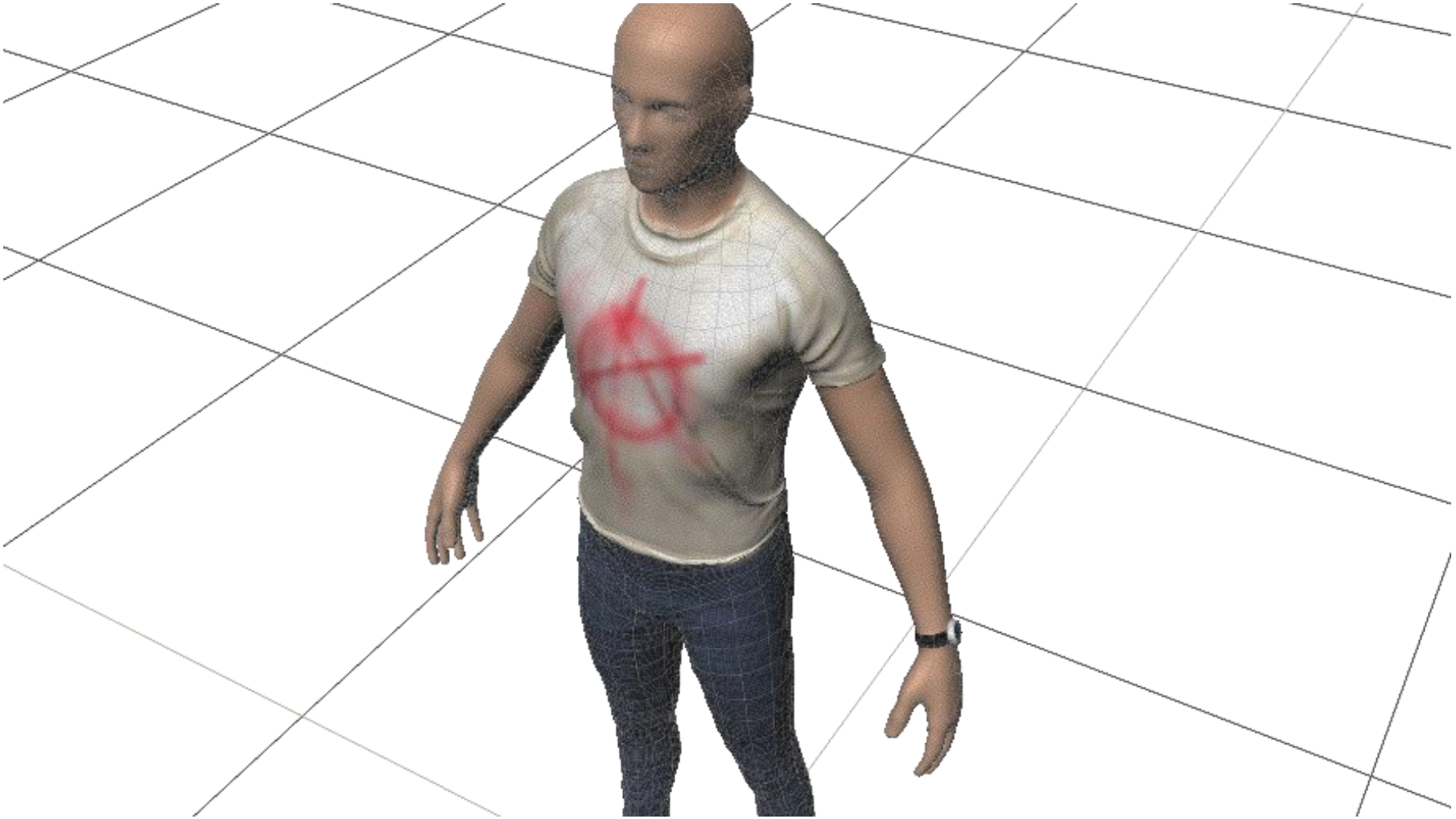
- *What impact could the use of digital sculpture software have on the quality and utility of theatrical costume design visualisation?*

Sculpting fabric

Initial feasibility experiments
using Autodesk ‘Mudbox’



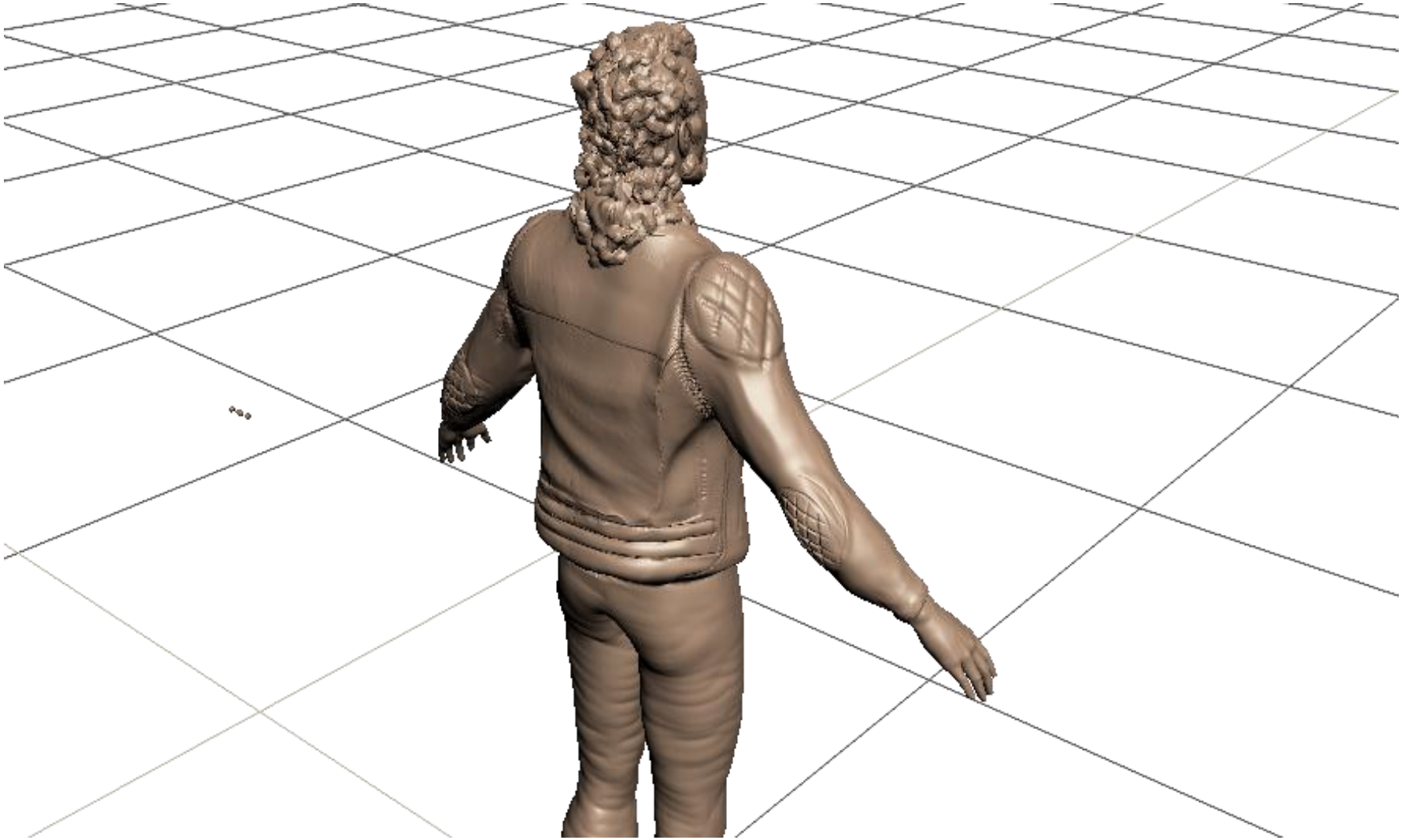
Initial feasibility experiments



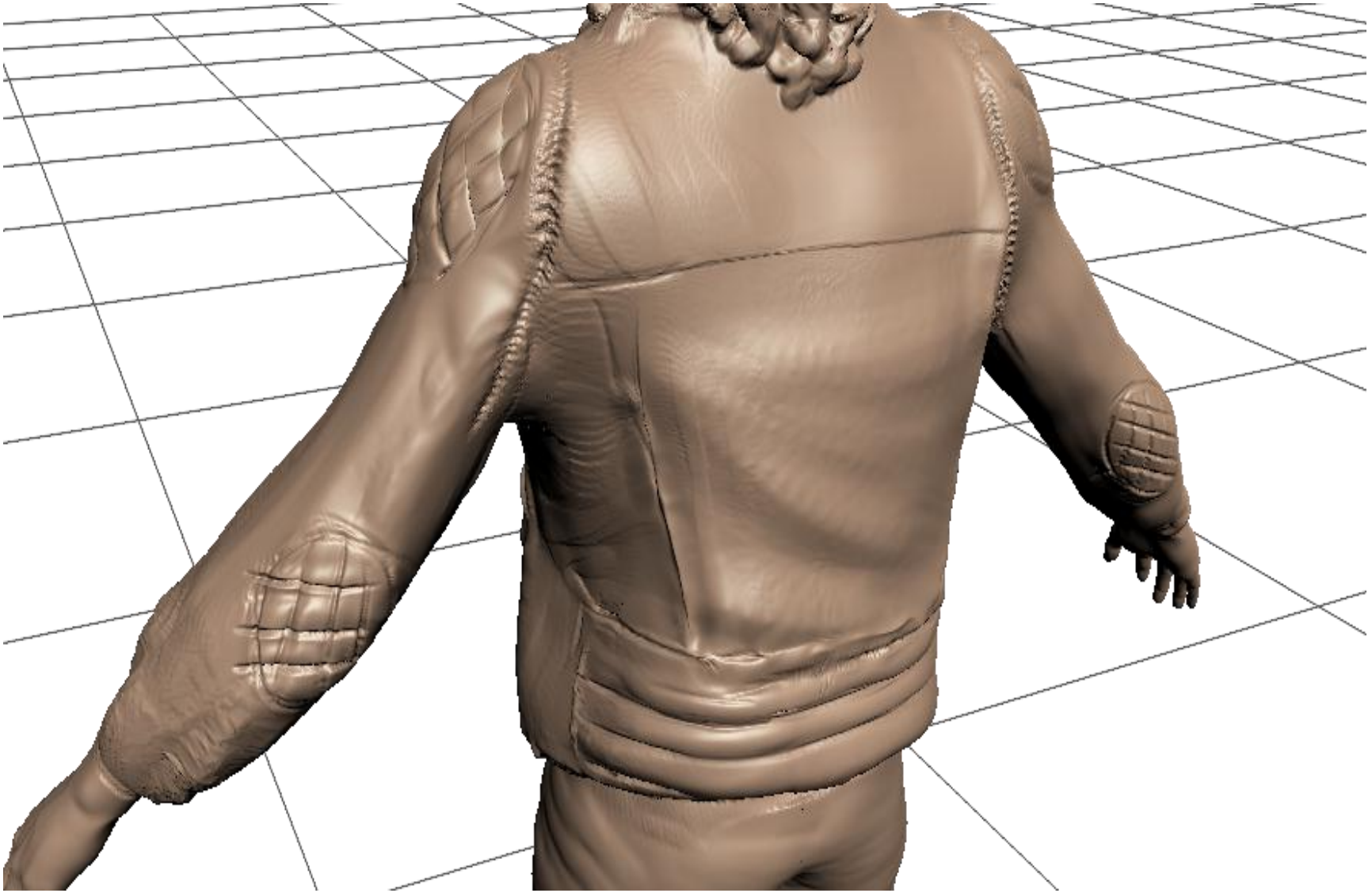
Adding surface colour to the sculpt

2D sketch v 3D sculpt experiment

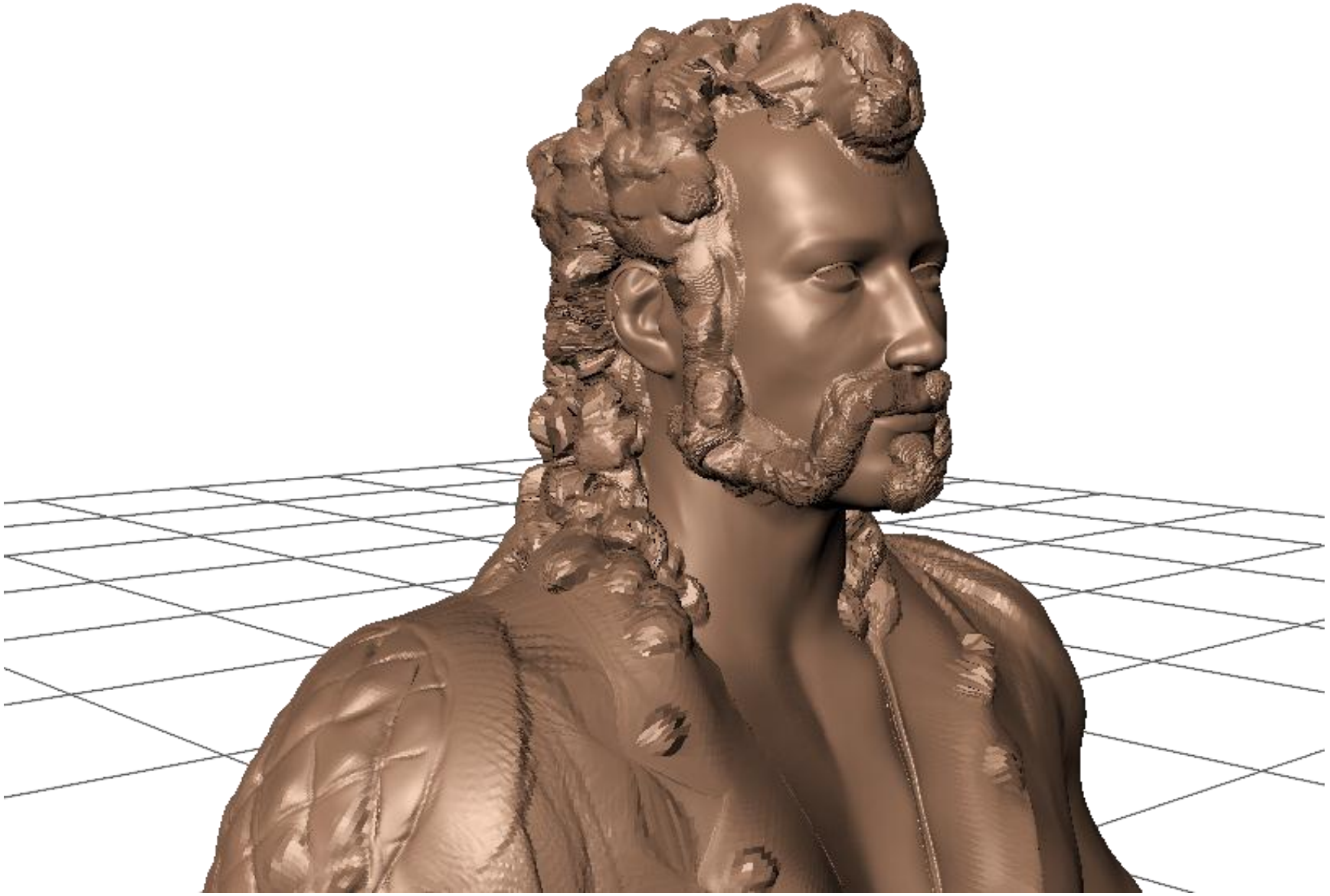
Can a digital sculpture be produced as quickly as a 2D sketch?



Quick digital sculpture/sketch

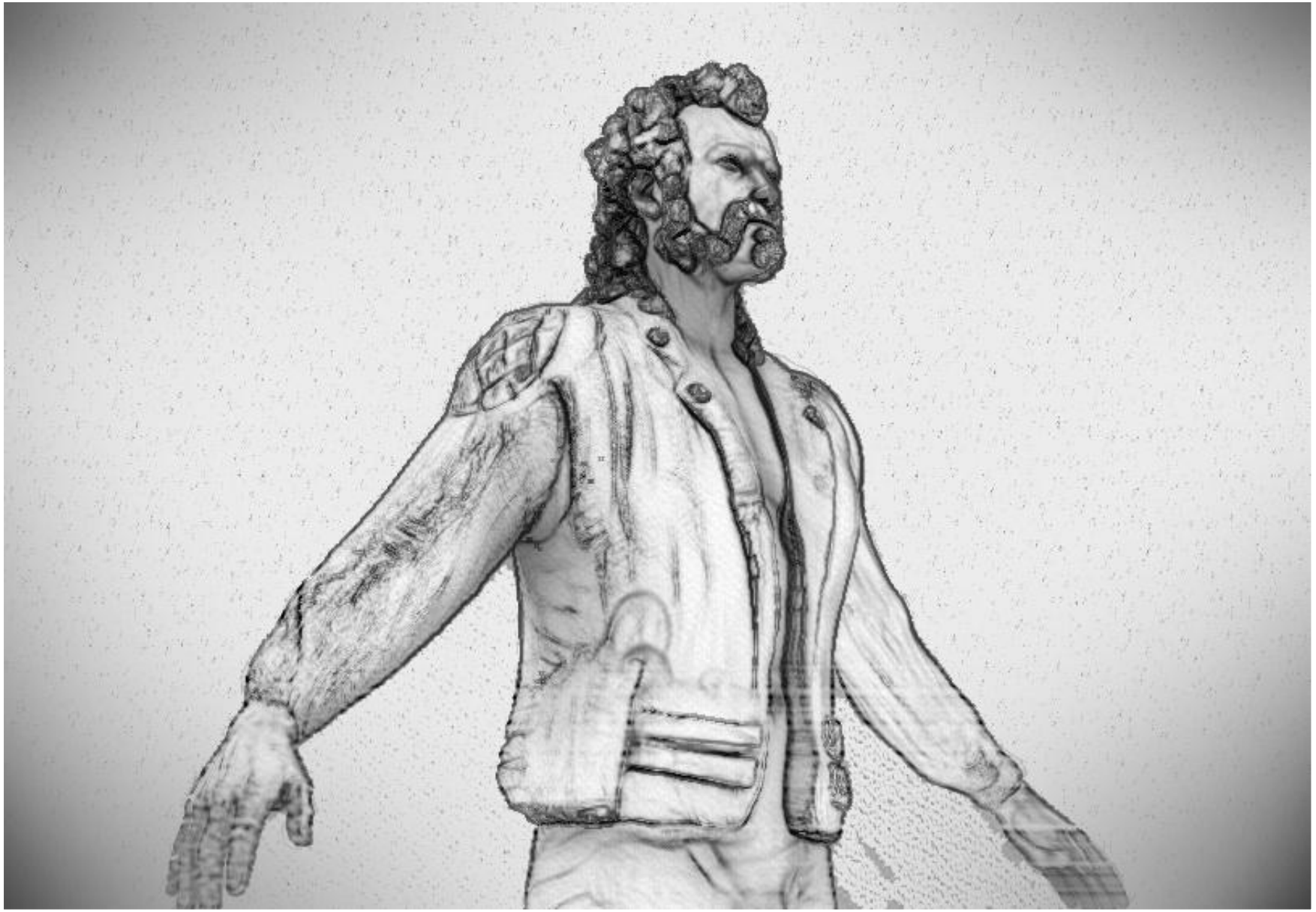


Quick digital sculpture/sketch

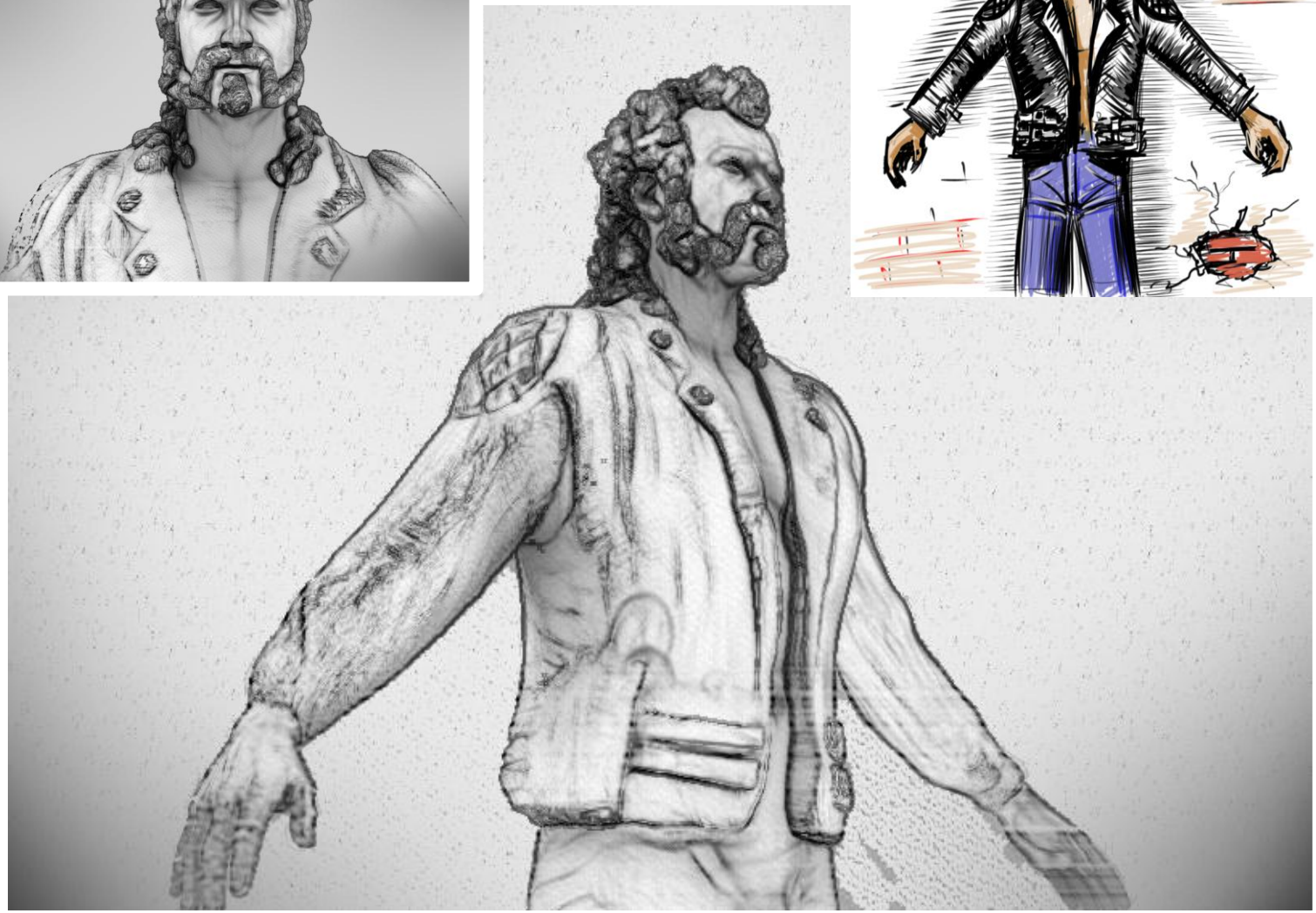


Quick digital sculpture/sketch

‘Mudbox’ art media simulation created from quick digital sculpt



‘Mudbox’ art media simulation created from quick digital sculpt



3D Sculpt v 2D sketch

Voluminous costumes

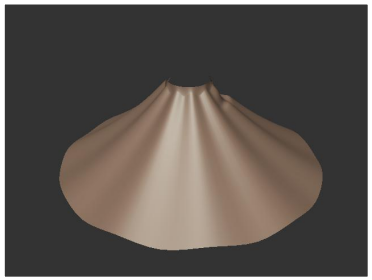
Deformation limit experiment

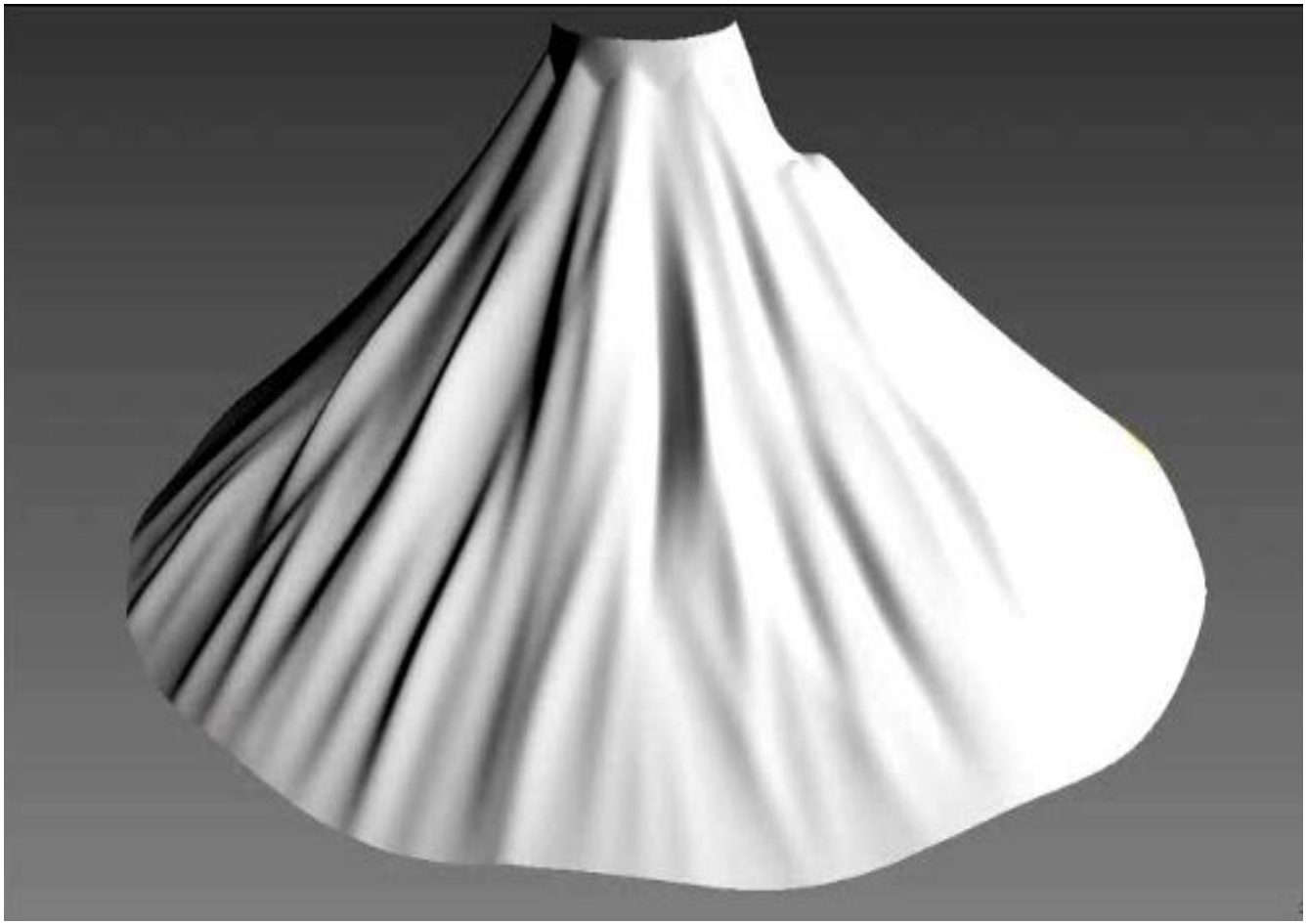
How far can the mesh surface be deformed before having to build separate objects?

Sculpting voluminous costume elements

"..some students like to draw, some like to make" Sophia Malik, MA Costume Design course leader

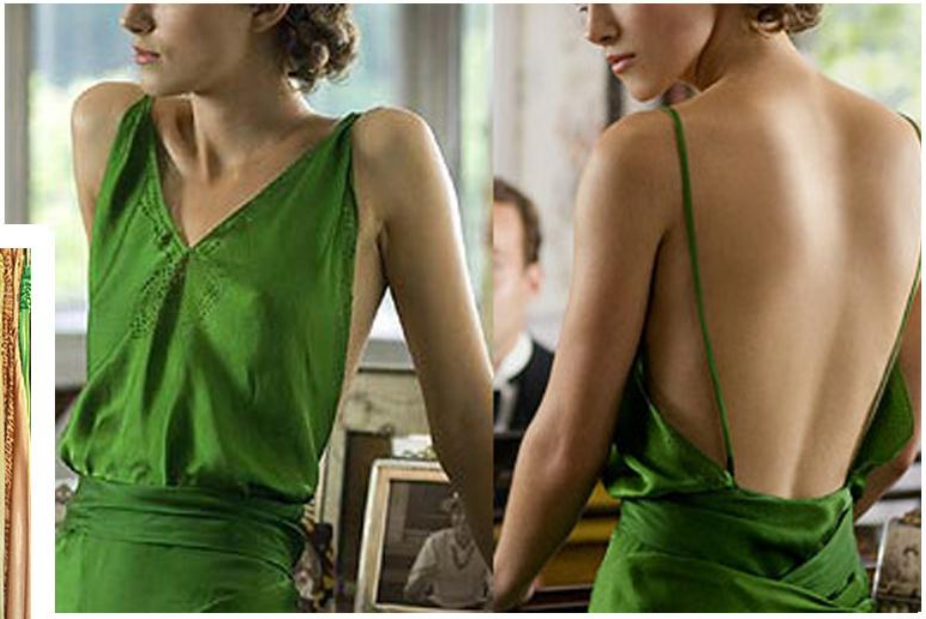
Painting colour onto the sculpture

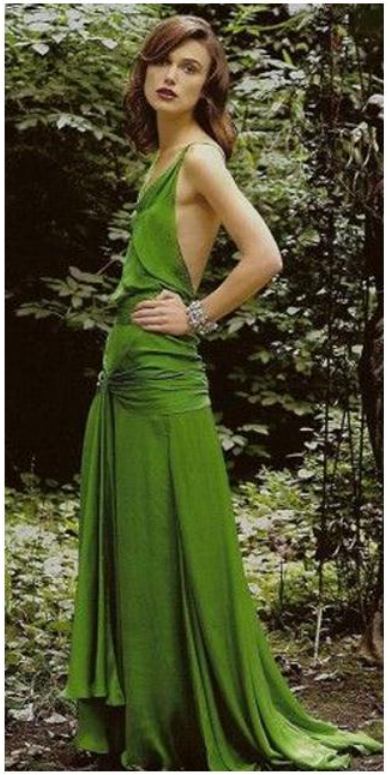


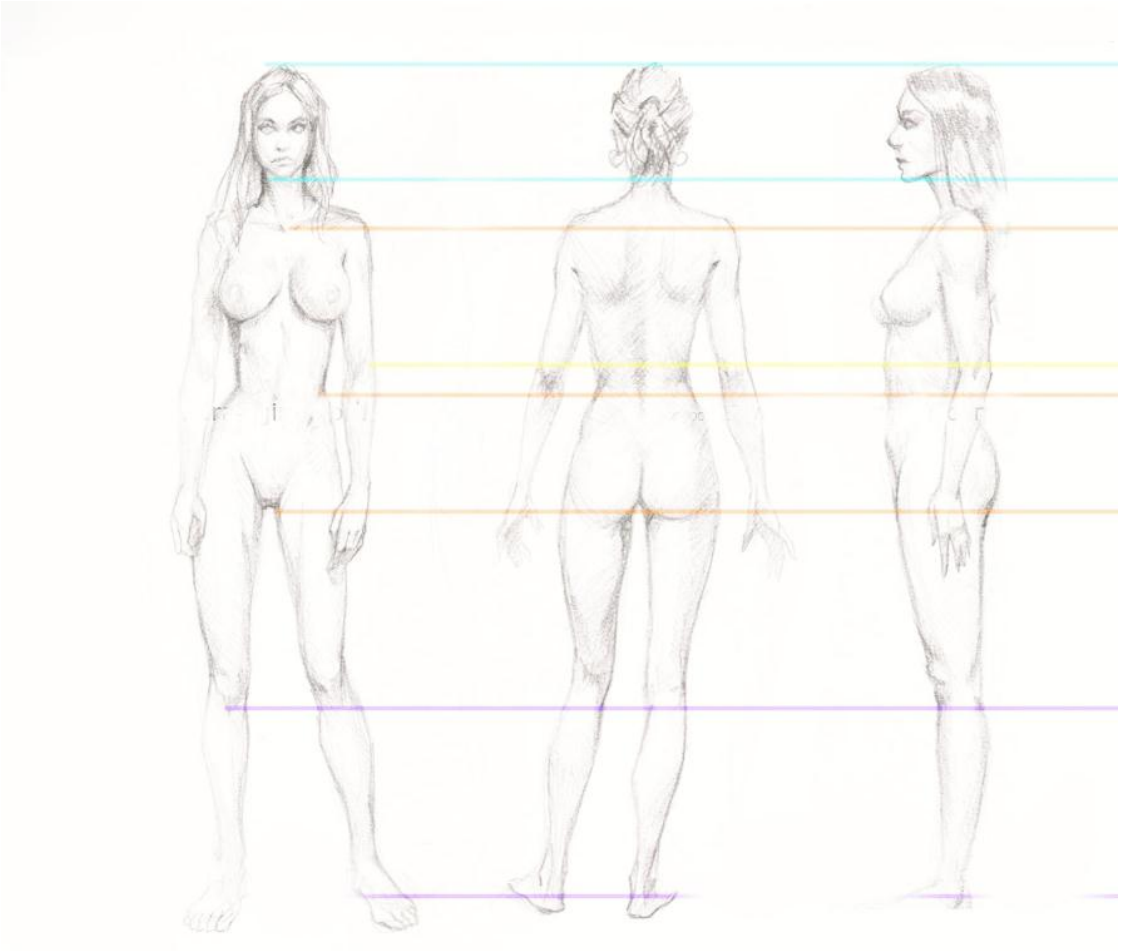


Quickly applying textile design to skirt model

Costume sculpture workshop







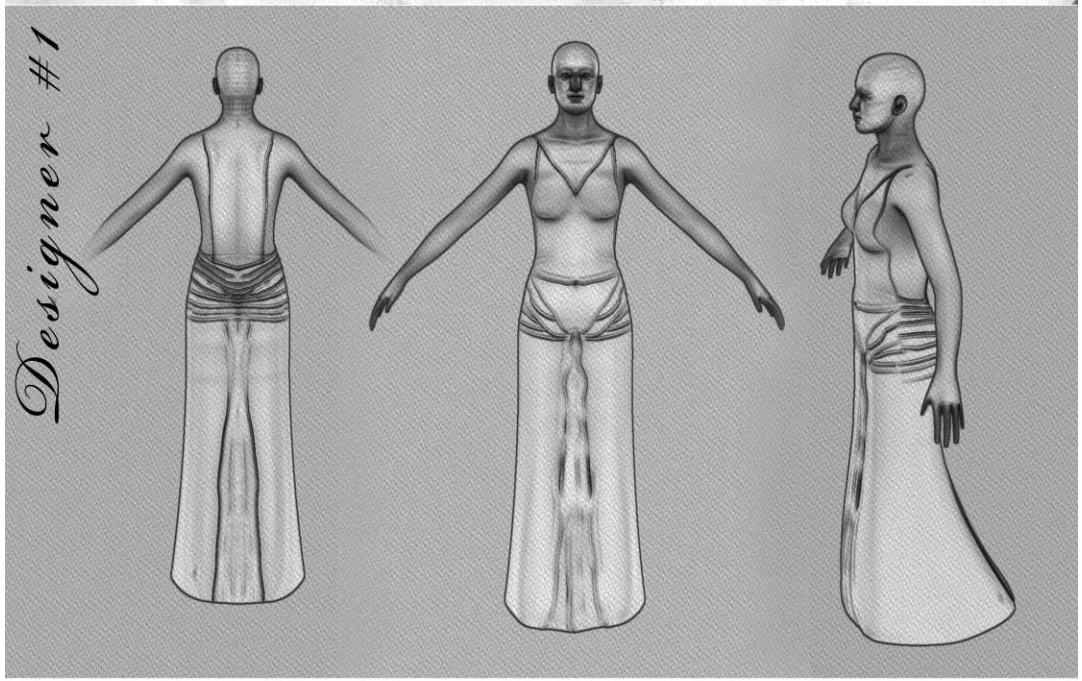
Template for pencil sketch

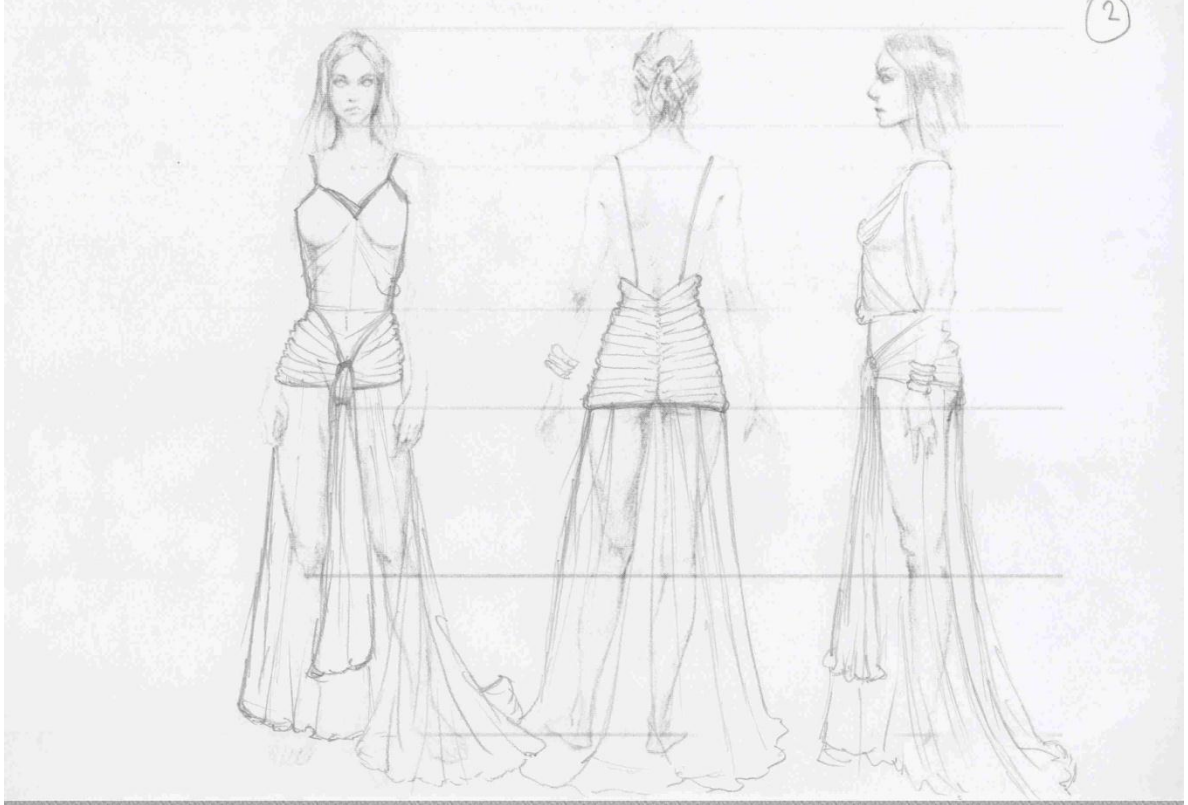
Dress with colour painted onto surface including specular sheen

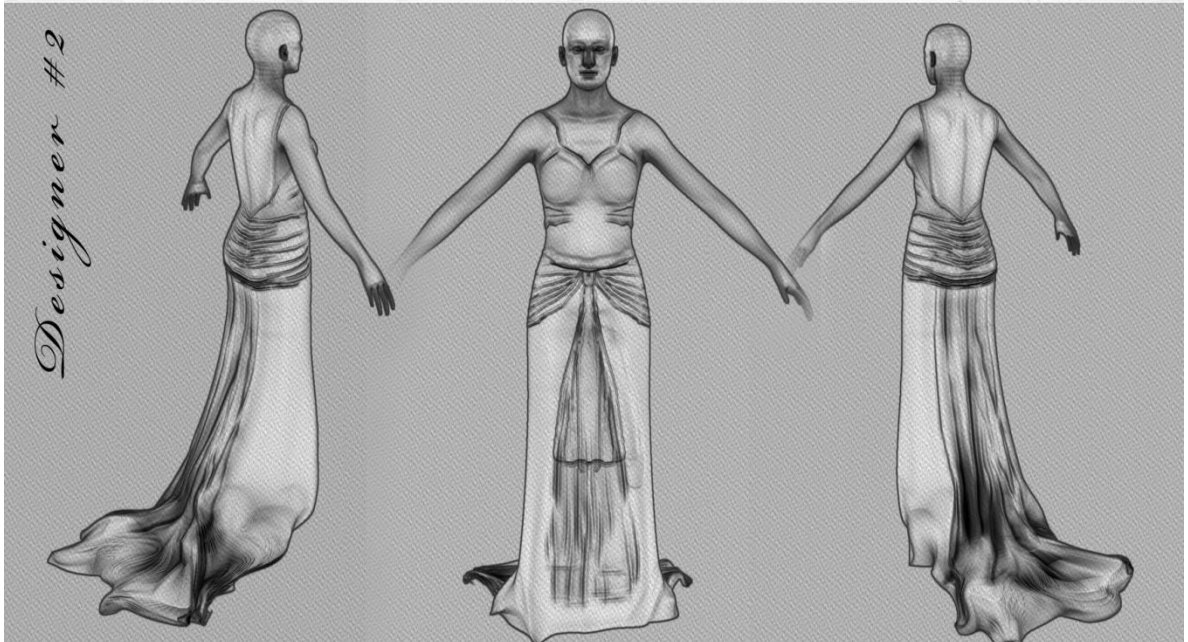
Sculpture workshop student sketch and sculpture work examples

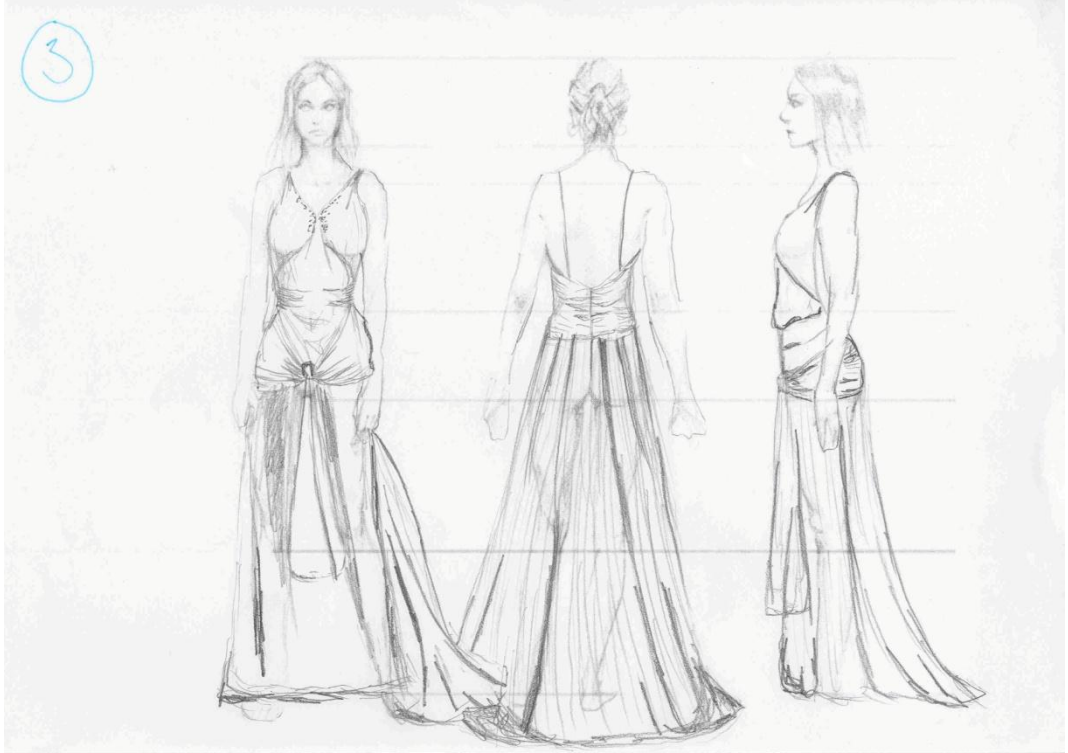
- Students were asked to draw a 2D pencil sketch of the Keira Knightly atonement dress
- Then after half an hour of sculpting tuition student attempted to sculpt the dress with my guidance from the front of the class.

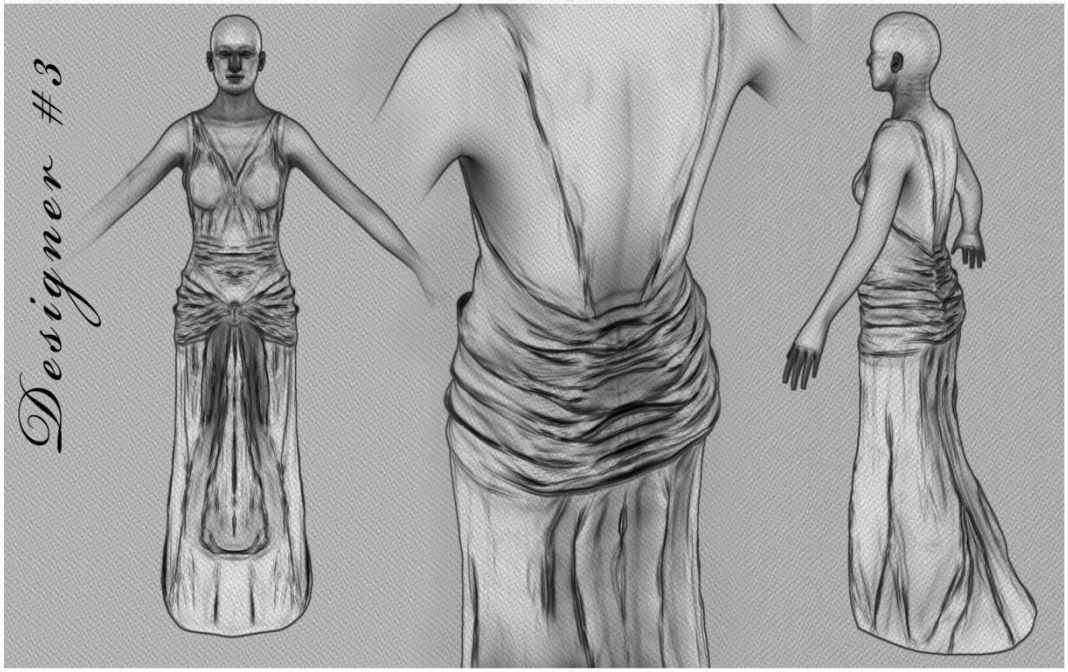
1

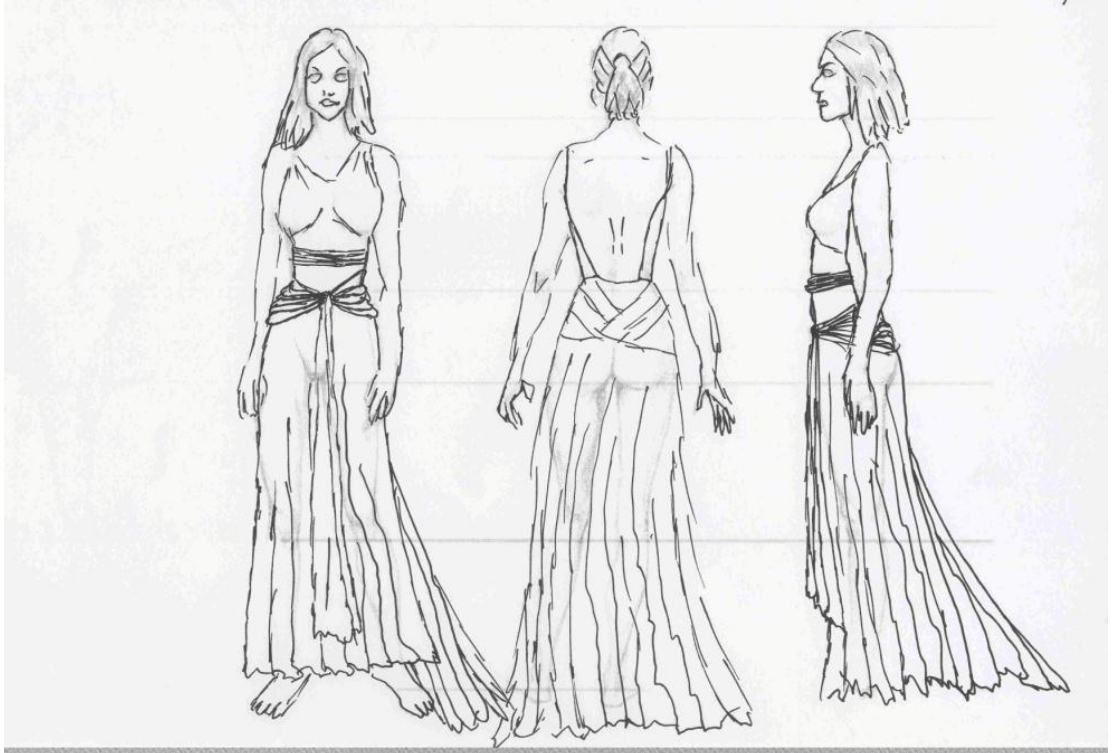

Designer #1

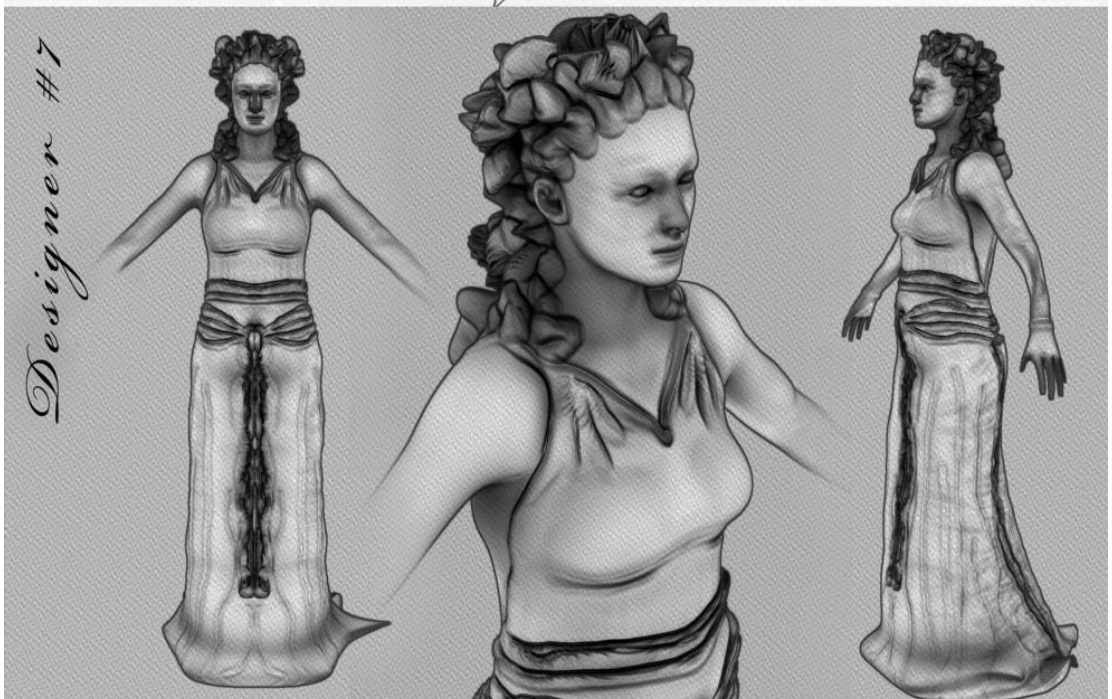

2


Designer #2


3


Designer #3

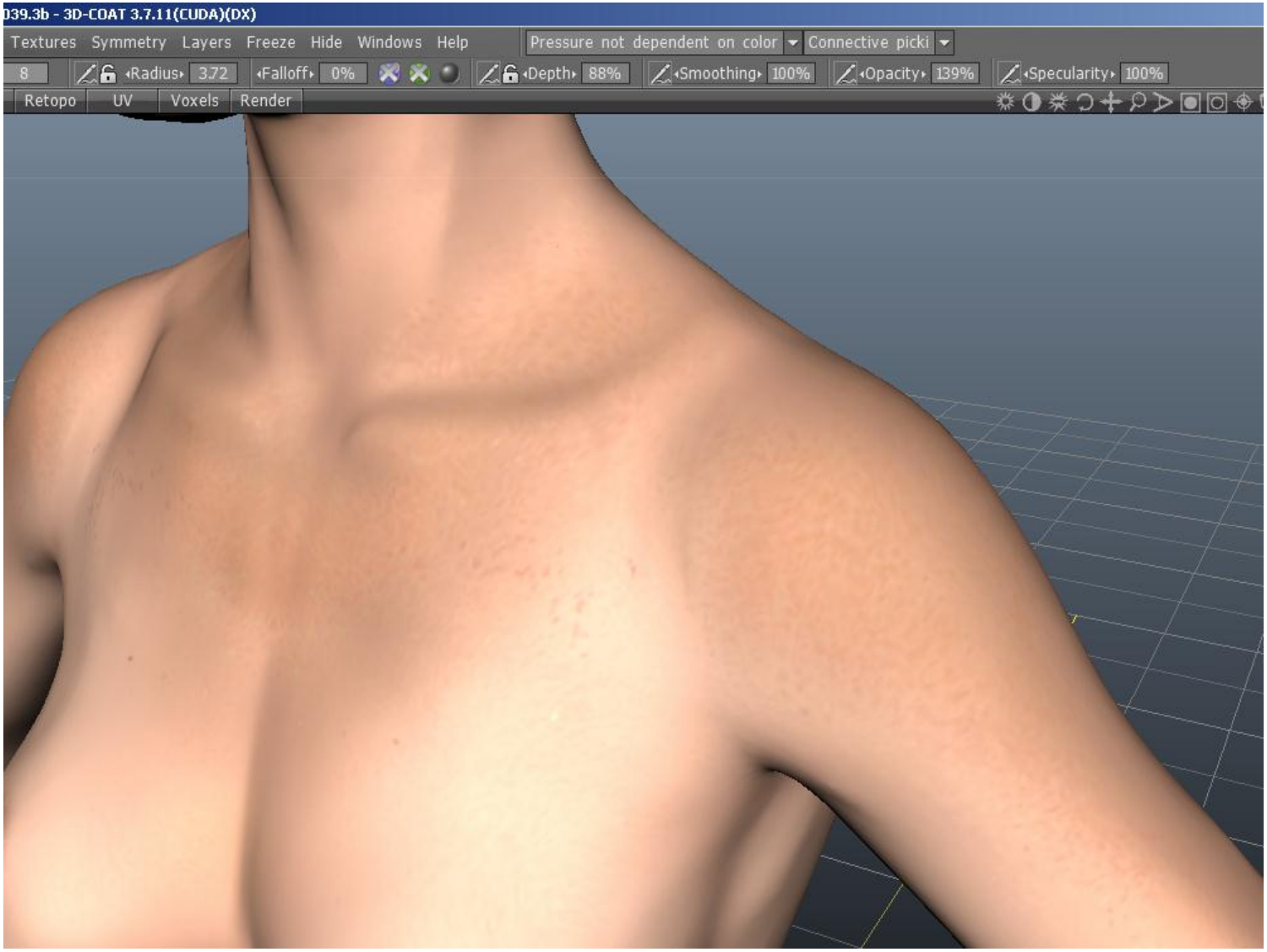



Designer #7

Initial results

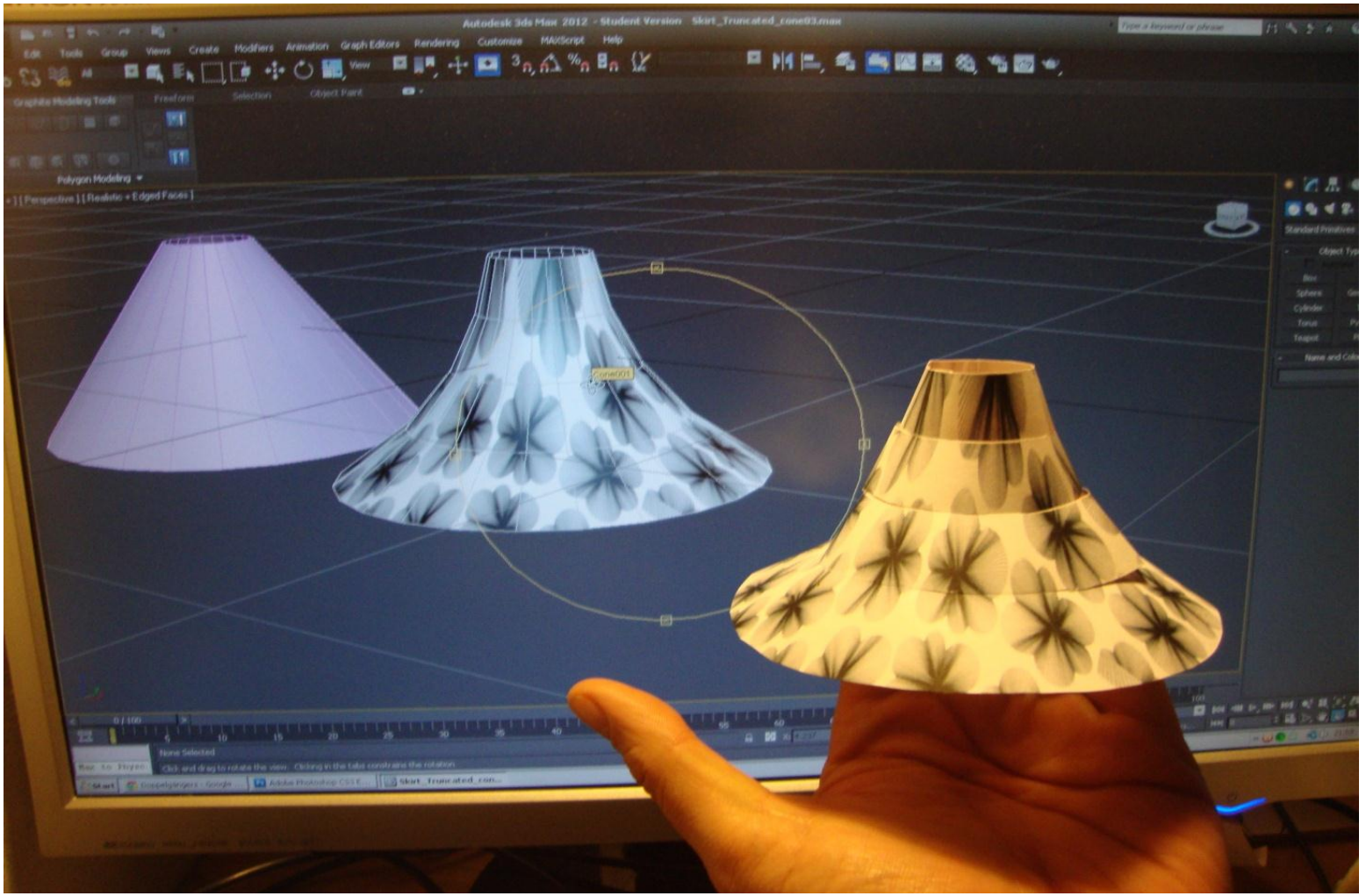
- Designs can be viewed and manipulated from any angle, improving design communication.
- Interactive manipulation of the digital mannequin's surface promotes rapid, playful, iterative design explorations accelerating the initial design process.
- The costume shape can be coloured and textile designs effectively flow over the 3D costume surface.
- Costume sculpture can significantly enhance the look and feel of a designer's illustration work.
- Costume designers gain transferable skills valued within the film and video game production industries, as costume sculptures can be refined and modified to create 'production ready' digital actors, or video game avatars.

Ongoing research



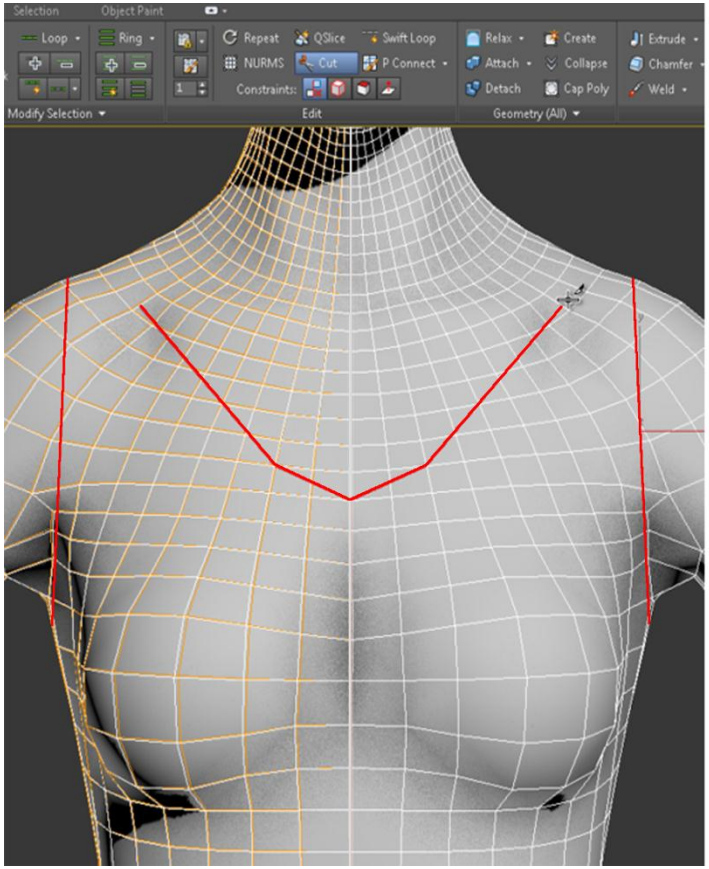
Creating realistic skin tones for the base mannequin

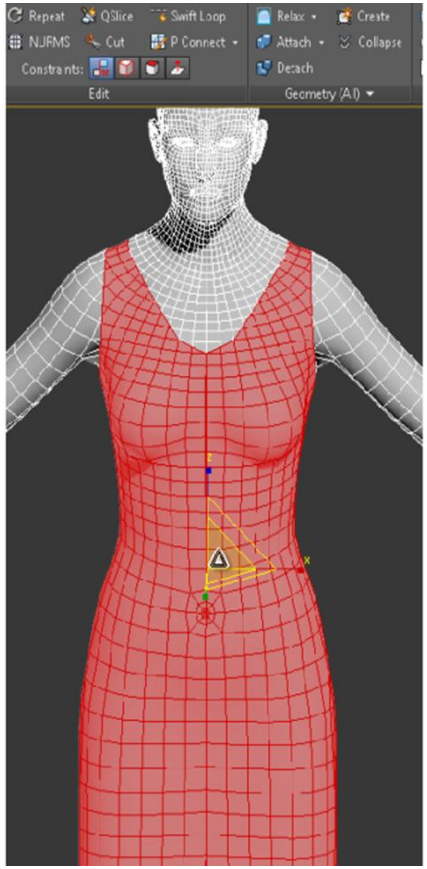
Makeable patterns from 3D models

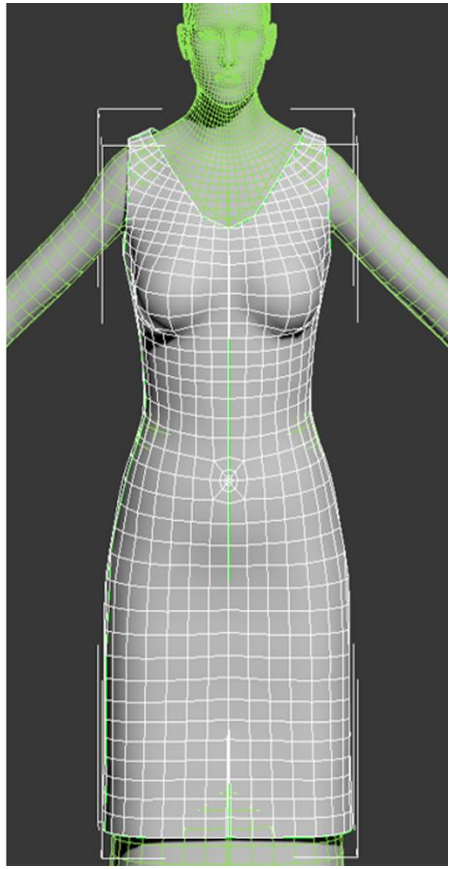


UV unwrapping

Makeable garments from a Base mannequin

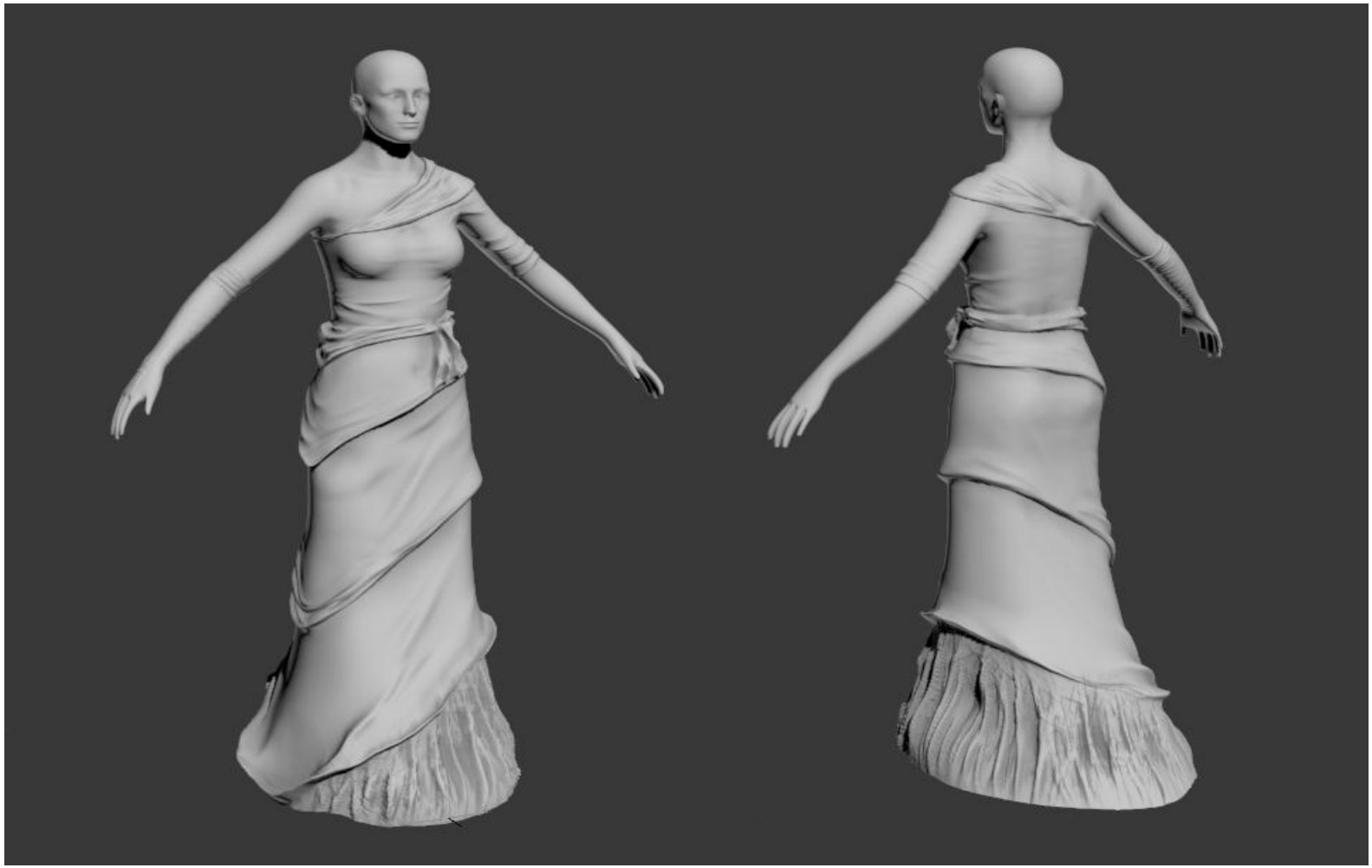






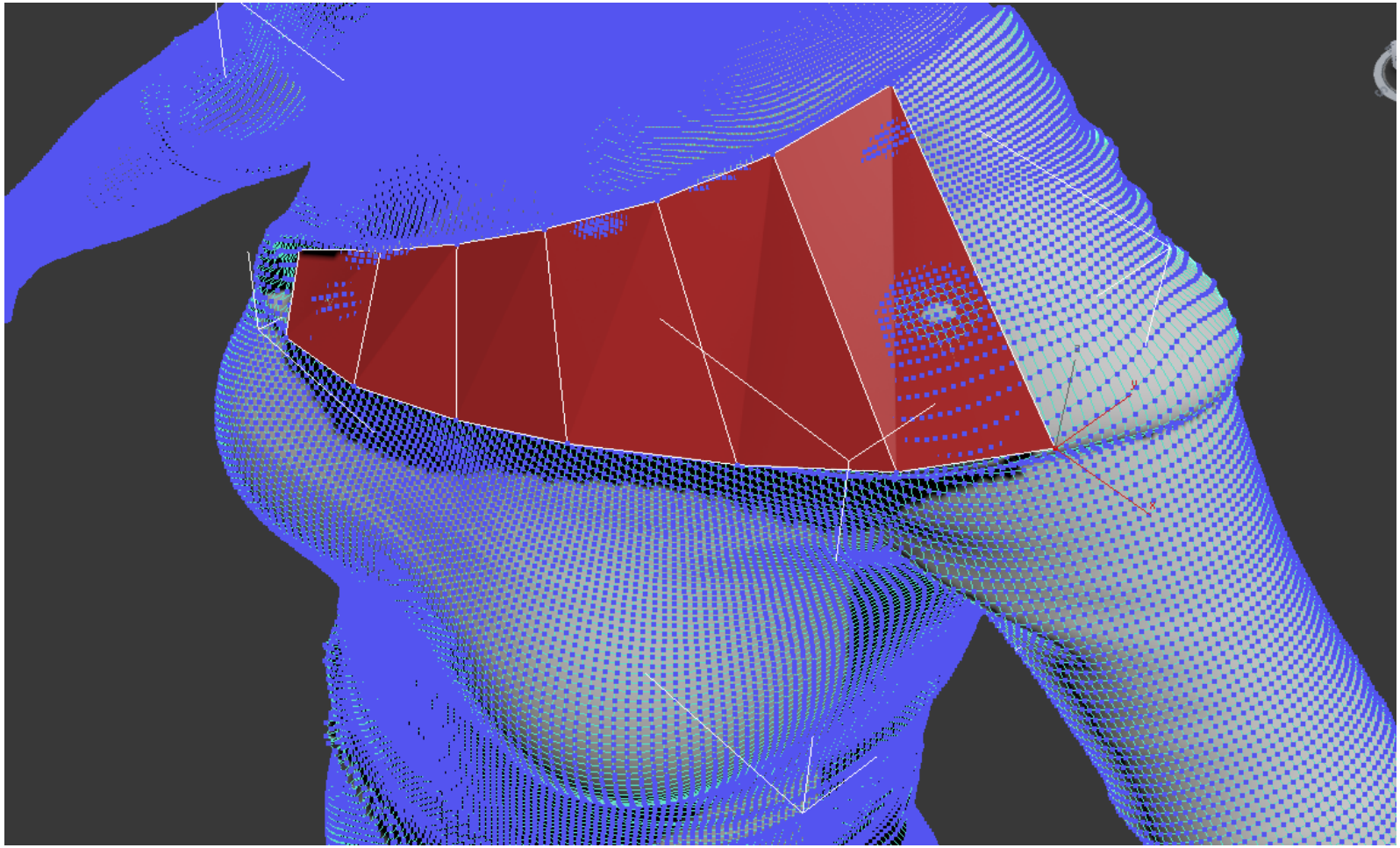
Drawing garment boundaries with Polygon editing tools

Makeable garments from 3D Sculpture



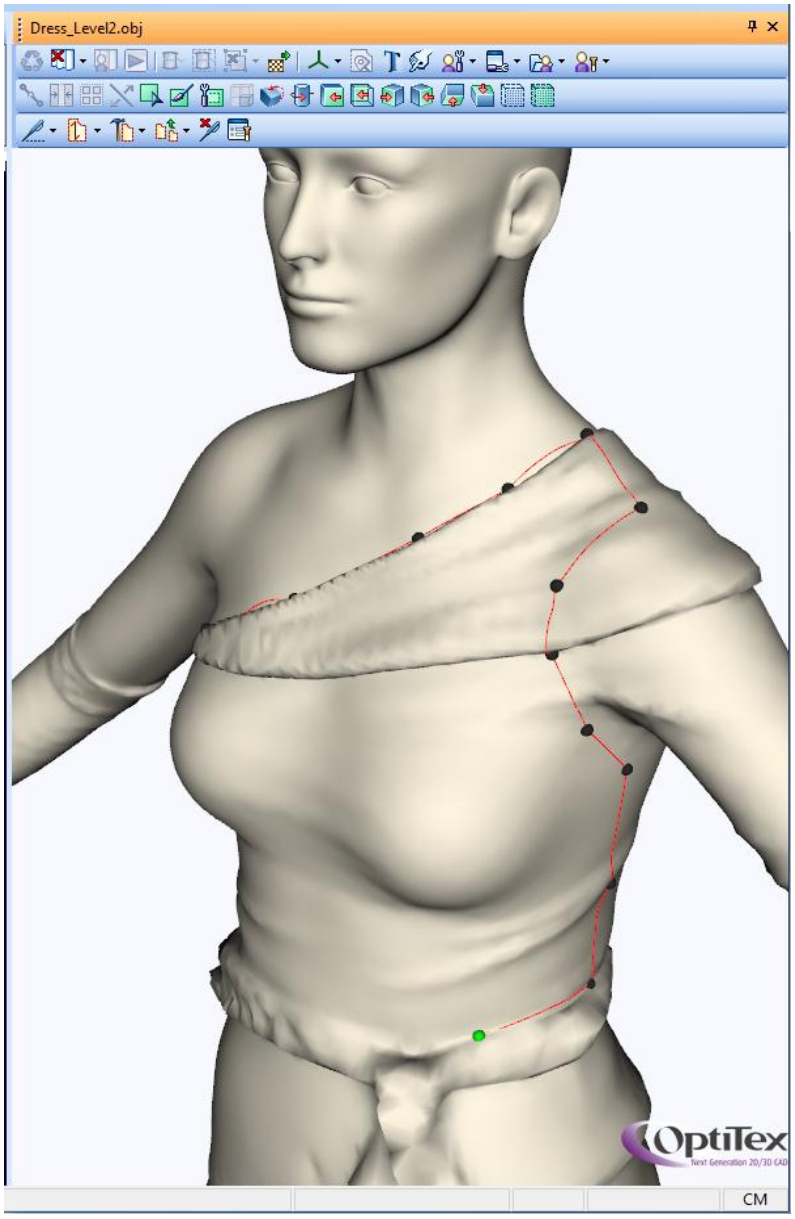
Test sculpture for pattern making experiment

Makeable garments from 3D models



Drawing a new surface over the Sculpture (Re-topologising)

- Creative Cut: First international symposium for creative pattern cutting
- University of Huddersfield Digital 3D design research group will be demonstrating patterns derived from digital sculpture
- In association with Assyst Bullmer and Optitex Ltd (Commercial pattern cutting solutions)



Drawing pattern outlines in commercial pattern cutting software

Questions?

For more info:
Google “Digital costume sculpture”

Email Baz Armstrong:
b.s.armstrong@hud.ac.uk