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3D digital technologies: Sculpting, modelling & construction of patterns for costume & clothing

Andrew Taylor, Dr. Ertu Unver, Barry Armstrong, Geoff Ward, Alison Agnew, Daniel Hughes-McGrail, Argyroulla Argyrou.

University of Huddersfield, UK
Assyst Bulmer & Optitex.

CREATIVE CUT: THE FIRST INTERNATIONAL SYMPOSIUM FOR CREATIVE PATTERN CUTTING
University of Huddersfield, UK
6 -7th February 2013
Overview of transdisciplinary project:

University TALI funded project – Phase 2.

- The research questions for the project:
  - What educational value can 3D digital technologies add to established 2D CAD programs and traditional methods in Textiles, Surface, Costume, and Fashion Design education?
  - What innovative Learning and Teaching approaches and experiences are needed to encourage and support effective, engaging and transformative appropriate uses of 3D digital technologies in Textiles and Fashion?

- Project Outcomes:
  - Explored, Evaluated and Integrated a diverse range of 3D technologies and techniques for textiles, surface, craft, costume & fashion design.
  - Researcher & industry practitioner learning experiences
  - Student authored Blog recording reflective learning and methodologies using 3D technologies.
  - Conference Presentations & Journal publication.
  - Project team includes:
    - Academics in Textiles & Fashion design, 3D Digital design academics, postgraduate research students and industry partners.
3D Digital Design Research:
3D character, digital sculpture, modelling and costume design

MA Postgraduate Dan Hughes McGrail portrayal of Sir Patrick Stewart as Elizabethan Francis Bacon.
3D modelling & Pattern design development with virtual model in 3DS Max, Mudbox & parametric model in Optitex

Pattern design development, toile making and fitting with support from sample technician & student fit model.
BAZ ARMSTRONG: MA by Research student - University of Huddersfield & Lecturer in BA (Hons) Digital Games Art Production
Games Art: Games character designs and digital models
Peer observation opportunity: Identified similarities between the design and production workflow of Costume designers and video game artists.
Digital 3D sculpture for costume design visualisation

Digital sculpture tools are commonly used in the film, video games and product manufacturing industries.
Autodesk Mudbox: Sculpture tools and methods explored during research drawing & modelling experiments
Voluminous costumes in fabric with print embellishments
Sculpting a voluminous costume elements in Mudbox:

FLikr sculpting video: http://www.flickr.com/photos/bazarmstrong/
2D ‘traditional’ image texture v Painting Pattern on 3D digital surface
Painting onto the digital sculpture/illustration
Jacqueline Durran’s ‘Atonement’ Dress used as a control design.
Research drawing templates for students in costume sculpture workshop
Costume Design student’s hand-drawn illustrations in sketchbook

Costume Design Student’s Digital 3D illustrations In Autodesk Mudbox
Phase 1: Exploratory research presentation at the Postgraduate research symposium—School of Art, Design & Architecture

Can video game production tools be used to create makeable patterns for clothing?
Exploratory research found overlapping methods and practice between games production and costume design sculpting cloth and working on the stand.

Liz Garland
Costume Technician & Designer
ASSYST BULLMER & OPTITEX - GEOFF WARD: 3D pattern design and garment construction
1. 3D digital illustration imported into Optitex
2. Drafting bodice pattern in Optitex
3D sketch imported from Mudbox to Optitex

Patterns & Dress constructed in Optitex
Surface design final year student 3D visual merchandising tegular product designed in Mudbox digital clay modelling software converted into a 2D/3D digital print repeat on silk twill using AVA print design software.

Print repeat - Imported into Optitex pattern design software for accurate print placement on patterns & visualisation on 3D model.
2D & 3D Pattern design
2D and 3D Print placement and adjustment: size and rotation
Pattern design 2D patterns & 3D virtual sample.
2D and 3D Print placement and adjustment
Virtual toile 1:
3D virtual sample designed from costume illustration in MudboX
Toile 2: Virtual patterns and 3D sample adjusted and re-designed in Optitex. Patterns plotted from Optitex - Patterns cut and re-designed during physical sampling & toile processes on a live fit model creating an exact fitted asymmetrical skirt and top for the live model.
• **Conclusions:**

• Through University TALI funding this research has explored and identified trans-disciplinary approaches and methods for digital concept, pattern modelling, pattern extraction from sculpted 3D models using integrated 3D technologies in Costume & Fashion Design.

• A Practice based research approach has guided the researchers to evaluate the effectiveness of 3D digital sculpting software: ZBrush, Mudbox, polygon modelling software 3D Studio Max, Maya and 3D/2D pattern design software such as Optitex.

• Digitally sculpting tools for 3D concept creation were evaluated with a group of BA Costume design students, digital moulage, developing colour palletes, and texturing the surface of a digital human character or model

• Integrated creative (Industry and Education) collaborative thinking and practice has contributed to developing learning and teaching innovations and industry technology relationships.

• Further work proposed will analyse these experiences to develop themes to propose effective integration into the Fashion & Textiles (also inc. costume, surface, craft) BA & MA programmes.
thankyou for everything:

Sewing & Making:
Maureen Jackson: Fashion Technician

Model:
Agne Andriulionyte: BA(Hons) Fashion Design with Marketing

Photography:
Shazia Ahmed: MA Fashion Design