# Exhibition of materials thinking and research:
# **Digital 3D Modelling & Additive Prototypes of Surface Materials.**

Exhibited at 'Living in a Material world',
European Researcher's Night held at the University of Huddersfield September 23rd 2011.

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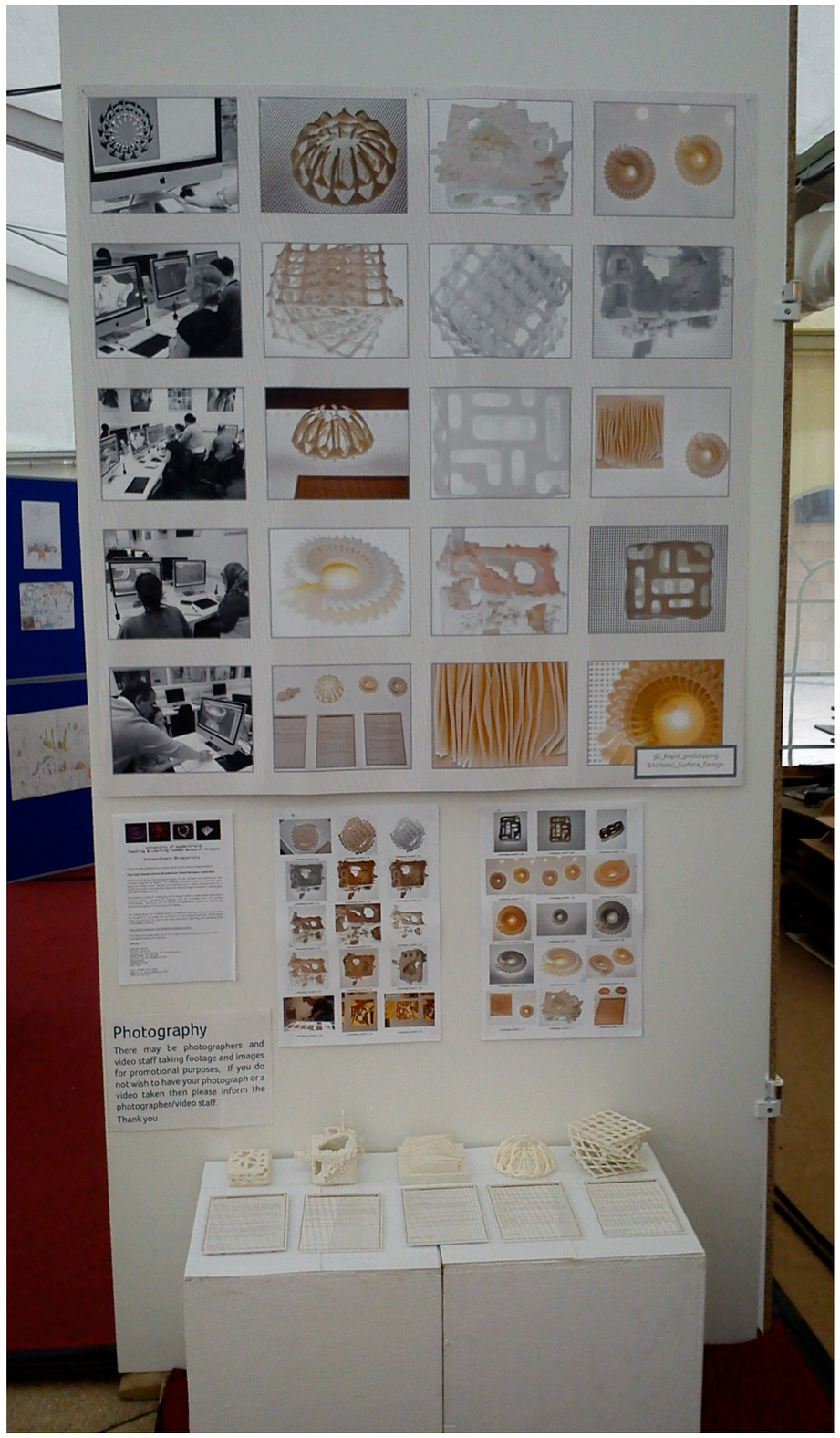
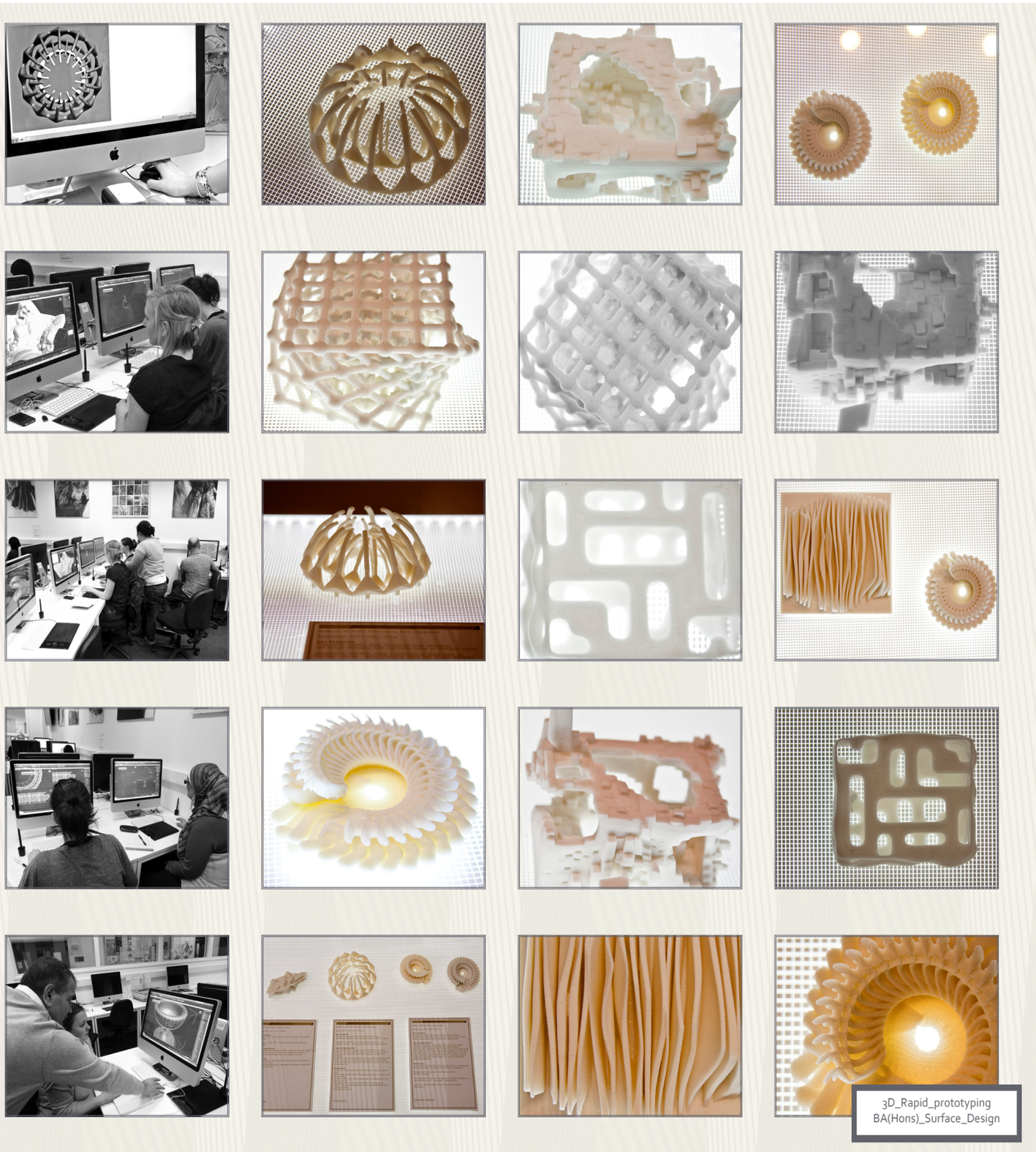
[University of Huddersfield Teaching and Learning funded project]




Material: 3D Rapid Prototyping, ABS

Dimensions: 120 x 120 x 25mm

**Key Features:**
Designed using 3Ds Max using the extrude tool and shell modifier to create angular and structural shapes.

Typical Applications:
This design is seen as a prototype for making into Sructural and Architectural surface coverings, to be the main features of buildings on a much larger scale. The design itself may be repeated and vary in scale. The prototype would be made out of hard plastic/ Arcylic with lighting features in certain areas in order to play with light, shape and form.

**References:**
Lefteri, C (2006) Materials for Inspirational Design. Rotovision.

http://extraordinary-3d-materials.blogspot.com

Glimcher, M & Tyson, K, Keith Tyson: Fractal Dice, 1st Edition, Pace Wildenstein, 2008

Sinead McGreevy

Material: 3D Rapid Prototyping, ABS

Dimensions: 120 x 120 x 35mm

**Key Features:**
Inspiration taken from David Nash
Tools used in 3DS MAX - array, soft selection, proboolean More

**Typical Application:**
Interiors, typically a wall-covering, tiles, partition wall. By combining Shape Memory Alloys into this concept piece, it allows the plastic to bend and mould to the temperature of a room. To ensure the waves are flexible, additional plasticised should be added to the powder mix, this will enable movement.

**References:**
University of Huddersfield (2011) Extra Ordinary 3d Materials [online]

http://extraordinary-3d-materials.blogspot.com/ [Accessed: 10th February 2011]

Cass Sculpture Foundation, (2011) David Nash [online] http://www.sculpture.org.uk/artists/DavidNash/ [Accessed: 21st January 2011]

Lefteri, C (2006) Materials for Inspirational Design. Rotovision.

Michelle Tickle

Material: 3D Rapid Prototyping, ABS

Dimensions: 120 x 120 x 40mm

**Key Features:**
Constructed Lighting & Light bulbs inspired by Plumen
Designed using 3D Studio Max Software, using Turbo smooth, Array, experimenting with layering and angular tools

**Typical Application:**
Concept for Lighting, to be used within an interior space. Inspiration taken from shadows and hidden qualities. Exploring new innovative ways of lighting. Could be used as an actual light bulb, changing the standard design of a light bulb and developing it in to a constructive design feature. Could easily be hung or placed upon a wall as a lighting sculpture, design of light and intricate detail will create interesting shadowing elements.

**References:**
University of Huddersfield (2011) Extra Ordinary 3d Materials [online] Available at: http://extraordinary-3d-materials.

blogspot.com/ [Accessed: 11th February 2011)
Plumen (no date)

The Designer Energy Saving Light Bulb [online] Available at: http://plumen.com/ (Accessed 7 January 2011

Lefteri, C (2006) Materials for Inspirational Design. Rotovision.

Shereen Ahmed

Material: 3D Rapid Prototyping, ABS

Dimensions: 120 x 120 x 25mm

**Key Features:**
Inspiration from the designer Hussein Chalayan and Origami strucutres

Tools used in 3DS MAX – Shapes-Pyramid, Array, spacing , bend, twist

**Typical Application:**
Fashion- extreme body piece, either used as a shoulder piece or an oversized broach. Inspired by origami and radical 3D designers such as Gareth Pugh and Hussein Chalayan.

**References:**
Origami in fashion- http://xorsyst.com/japan/origami-fashion [accessed 11/2/2011]
http://www.origamisources.com/origami_sightings_fashion.htm [accessed 11/2/2011]

Isobel Smith

Material: 3D Rapid Prototyping, FDR Compound

Dimensions: 122 x 122 x 47mm

**Key Features:**
Inspired by organic bone structures from dinosaurs and human skeletons with particular focus on thoracic cages

Designed in 3Ds Max using a selection of tools such as Extrude – Mirror – Align (Spacing Tool) and Target Welding

**Typical Applications:**
Interlocking kinetic design concept intended for building exteriors to apply aesthetic value as well as shade and with the use solar powered technology, energy to support the building.
However due to the possibility of using versatile materials and scale, this design concept could be applied to many market areas including room partitions and design solutions for foyers and receptions.

**References:**
Lefteri, C (2006) Materials for Inspirational Design. Rotovision.
Rapid Today (2008) Rapid Prototyping Struggles to Find Niche in Art, Design
[online] <URL> http://www.rapidtoday.com/design.html [1st Feburary 2011]
Blaine Brownell (2010) Laser-Sintered Textiles [online] <URL> http://transmaterial.net/index.php/2010/06/04/laser-sintered-textiles/
[24th January 2011]

Vicky Kelly

Material: Z-Corp 3D printer, ABS compound

Dimensions: 70 x 90x 30 mm

**Key Features:**
This model is a learning prototype created by the researcher. The 3D model is one of a range of concept research models. This model was selected and 3D printed to demonstrate basic polygon modeling and as a physical record of specific 3D tools, techniques and production sequences that can be applied when learning the basics in 3D modeling animation software.

The learners' reflective journal is narrated on a blog using screen grabs, photos and video and is merged together and supported by the ideas and concept development work of a volunteer learning research group of BA(Hons) Surface Design final year students.

http://extraordinary-3d-materials.blogspot.com/

**This research project was funded by the University of Huddersfield Teaching & Learning fund.**

**References:**
Kus, A., Unver, E. and Taylor, A. (2009) 'A comparative study of 3D scanning in engineering, product and transport design and fashion design education' Computer Applications in Engineering Education , 17 (3), pp. 263-271. ISSN 1061-3773

Unver, E. and Taylor, A. (2009) 'Educational Online 3D Workshop Simulations '. In: SimTecT 2009 Conference Proceedings. : Simulation Industry Association of Australia. . ISBN 0977525767

Andrew Taylor
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www.huddersfield3D.co.uk

Dimensions: 100 x 100 x 60 mm

Material: Z-Corp 3D printer, ABS compound

**Key Features:**
Phase 1: 3D prototype model for a modular lighting system.

Each modular 3D component has a unique shape and internal structure. Each part can be re-combined or disconnected from the other parts and used as a softer dimmer standalone light source. All 3 objects can be combined to increase illumination and aesthetic effect in any space.

**References:**
Unver, E., Atkinson, P. and Marshall, J. (2008) 'Automake Physics: Random Craft Production' Computer-Aided Design and Applications , 5 (1-4), pp. 58-65. ISSN 1686-4360

Atkinson, P., Unver, E., Marshall, J. and Dean, L. (2008) 'Post Industrial Manufacturing Systems: the undisciplined nature of generative design'. In: Proceedings of the Design Research Society Conference 2008. : Sheffield Hallam University. pp. 194/1-194/17. ISBN 9781843872931

Unver, E., Marshall, J., Dean, L. and Atkinson, P. (2008) Automake/Future-factories . : Hub: National Centre for Craft & Design . ISBN 9780954801571

Marshall, J., Dean, L., Unver, E. and Atkinson, P. (2008) 'Automaking for the people' Crafts , pp. 42-51. ISSN 0306-610X
Atkinson, Paul and Dean, Lionel Theodore (2003) Future factories : design work by Lionel Theodore Dean. In: Touring exhibition, 17 Oct -21 Nov 2003; 1 Dec 2003-16 Jan 2004; 23 Jan-13 Feb 2004, Barnsley; Halifax; Huddersfield.

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