



Experimental use of Digital Technologies in the Field of Ceramics

Flemming Tvede Hansen, PhD

The Royal Danish Academy of Fine Arts –School of Design

CV:

Occupation

- 2015- Associate Professor, The Royal Danish Academy of Fine Arts, School of Design.
- 2011-14 Research Assistant Professor, The Royal Danish Academy of Fine Arts, School of Design.
- 2010-11 Teacher, The Royal Danish Academy, School of Design..
- 2006-10 Ph.D Scholar, The Danish Design School.
- 2005-06 Teacher, The Danish Design School.
- 1995-05 self-employed craftsman, designer and artist

Education

- 2006-10 Ph.D Scholar, The Royal Danish Academy of Fine Arts, School of Design.
- 1999-00 MMI-multimedia design, The Royal Danish Academy of Fine Arts, School of Architecture.
- 1997 Shigaraki Ceramic Cultural Park, Japan. Dept. of Ceramics.
- 1994 Glasgow School of Art, Scotland. Dept. of Ceramics.
- 1990-95 The Danish Design School. Dept. of Ceramics.

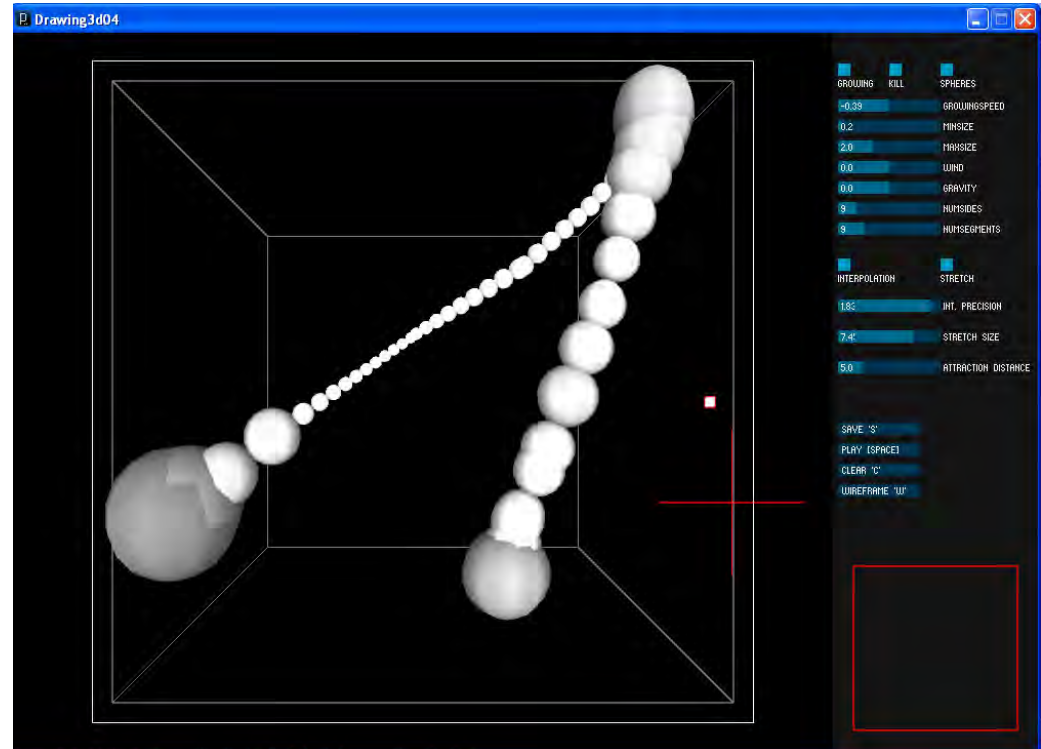




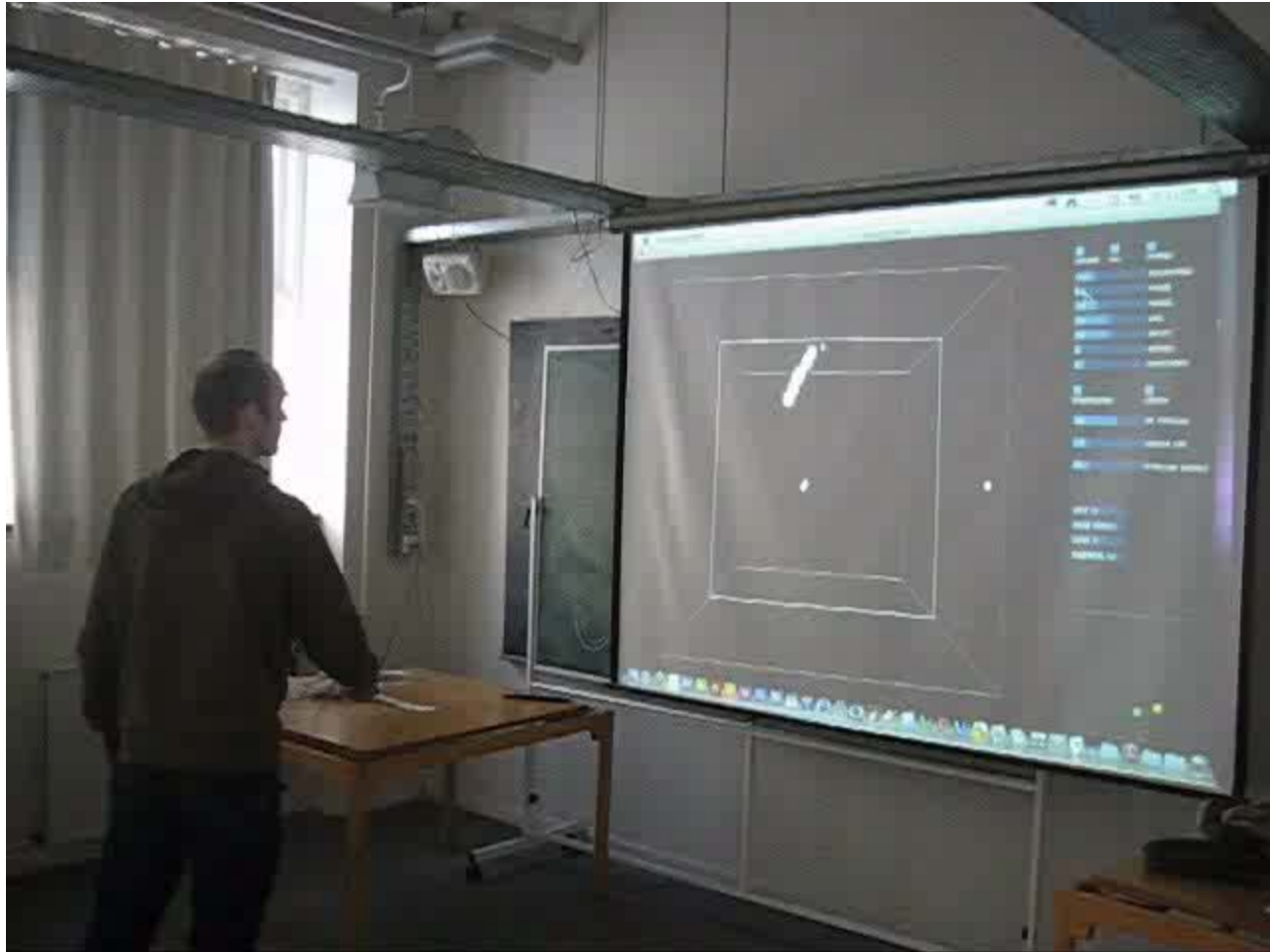


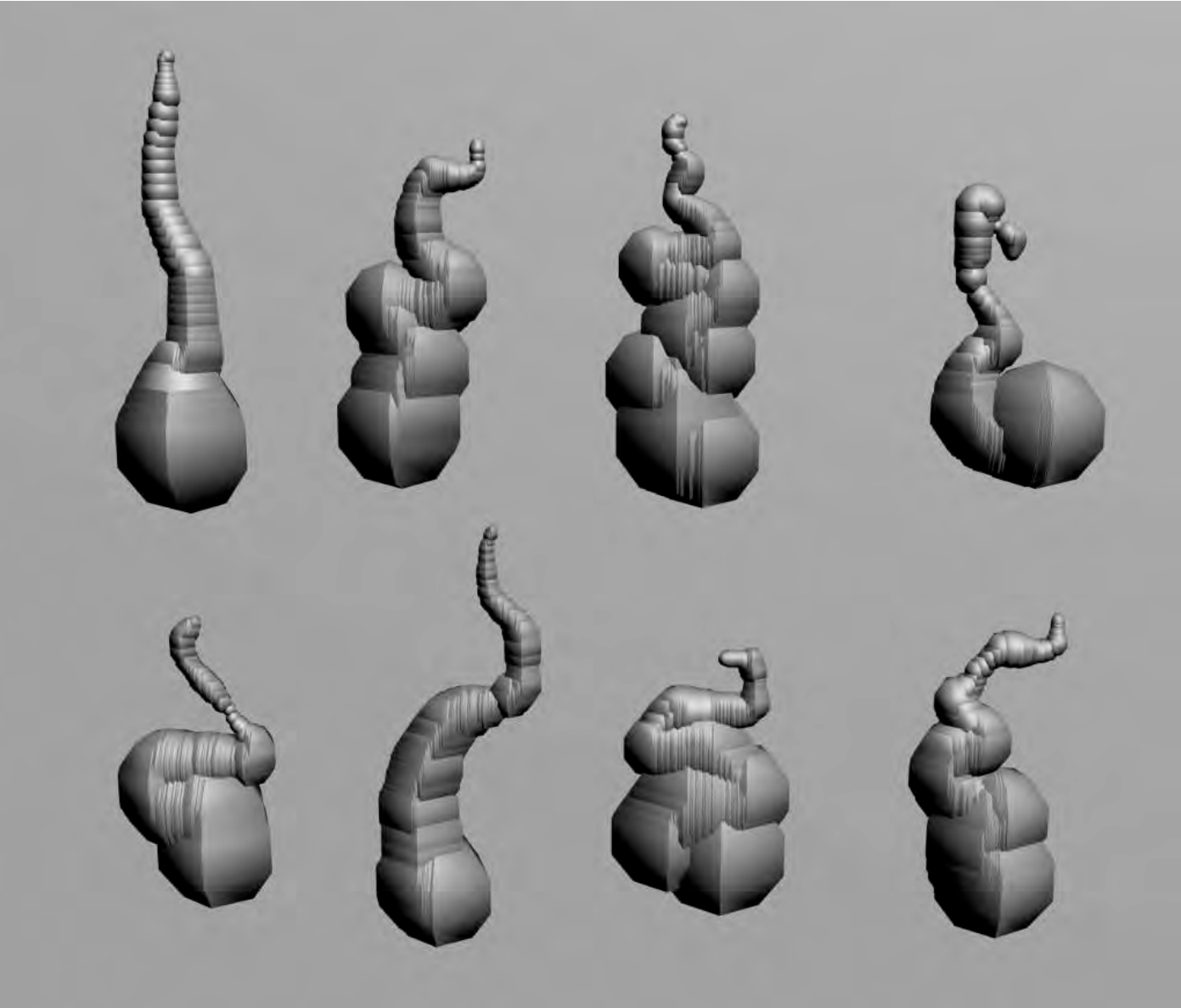


Dynamic Interactive Design Tool

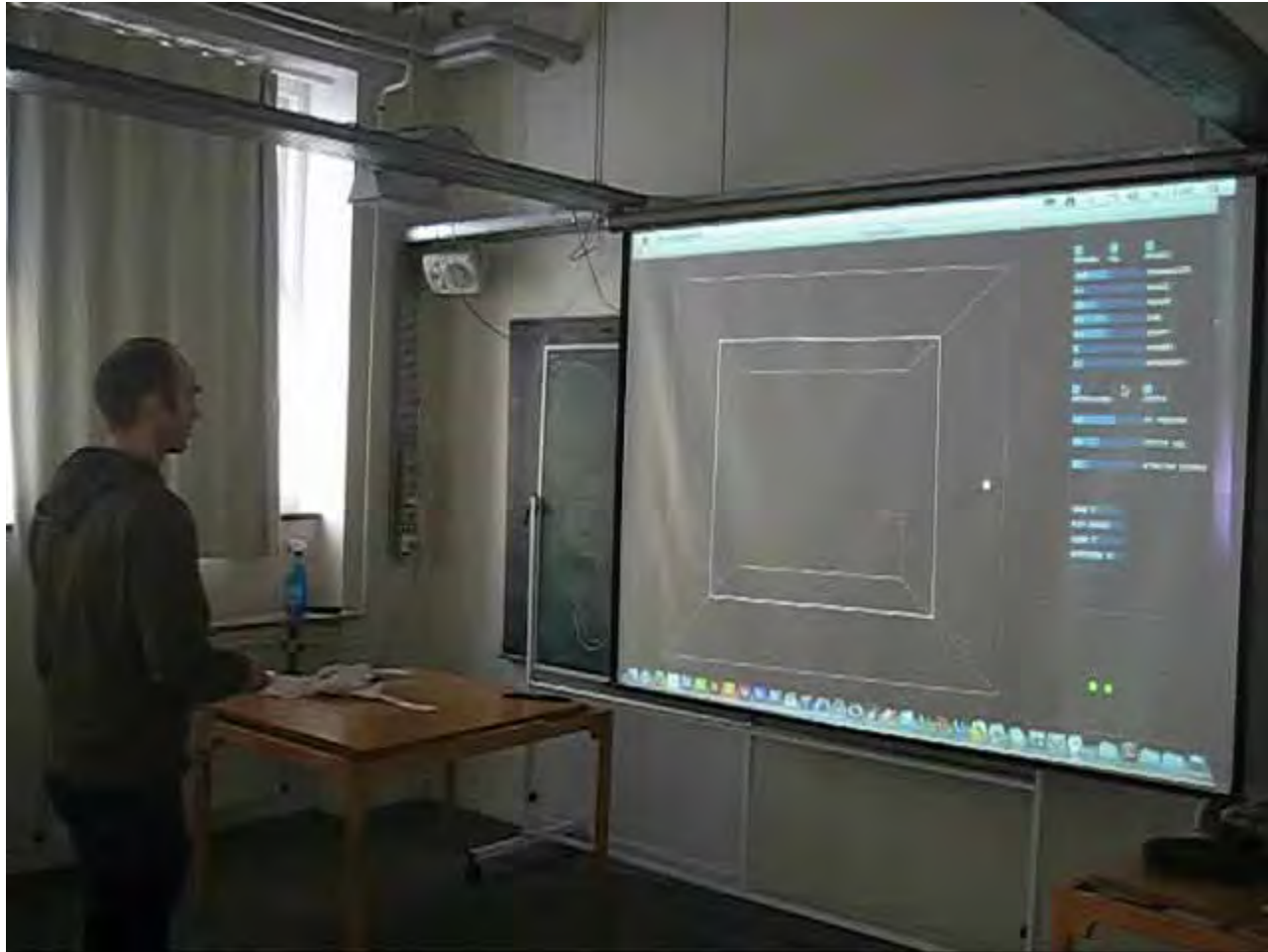


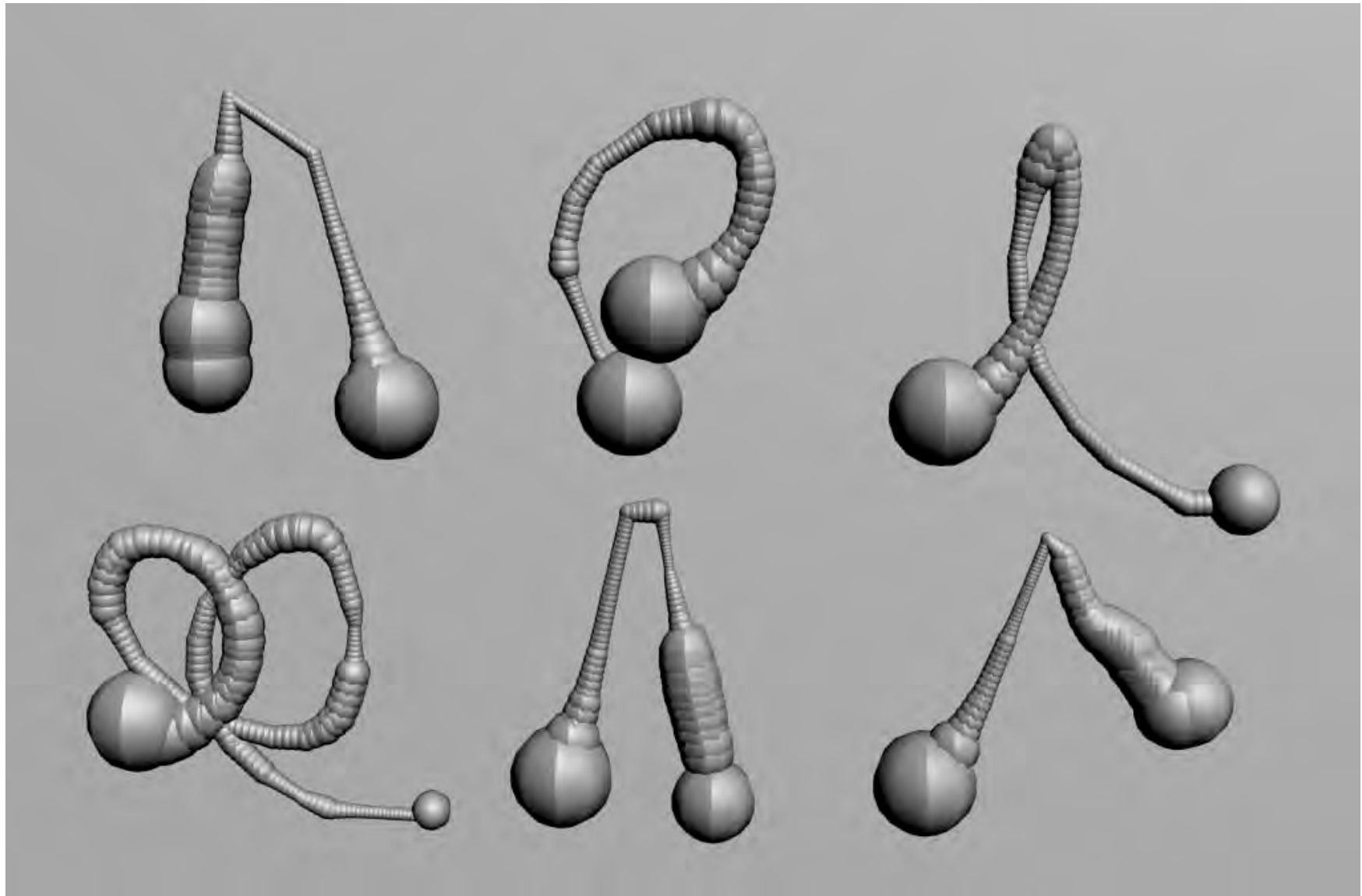
A cooperation with Marcin Ignac <http://www.vorg.pl/>



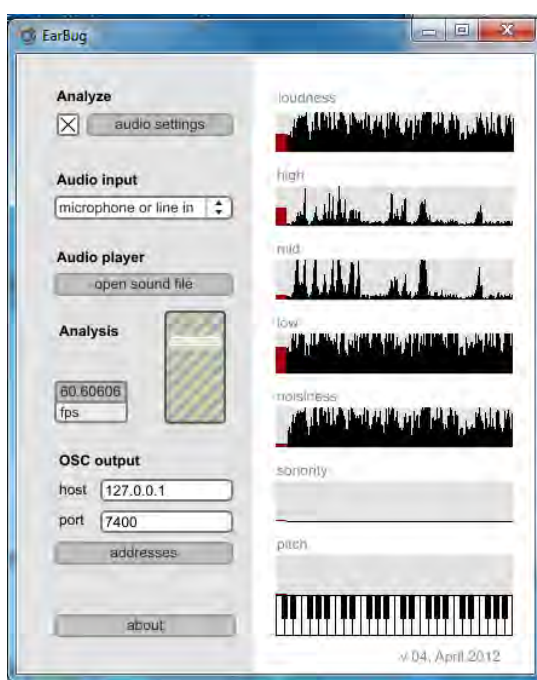
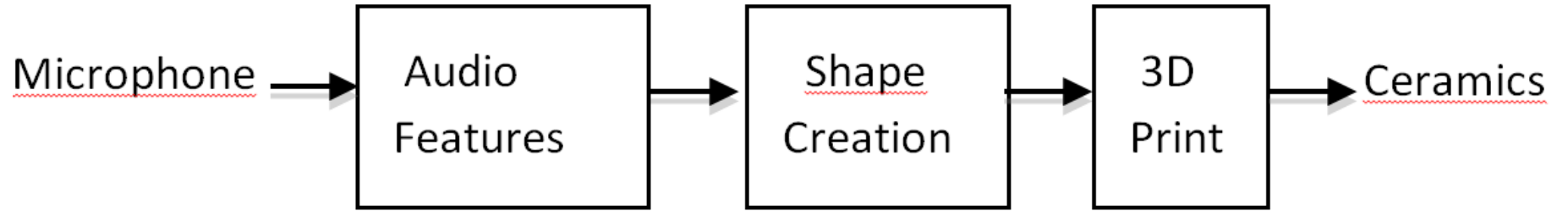






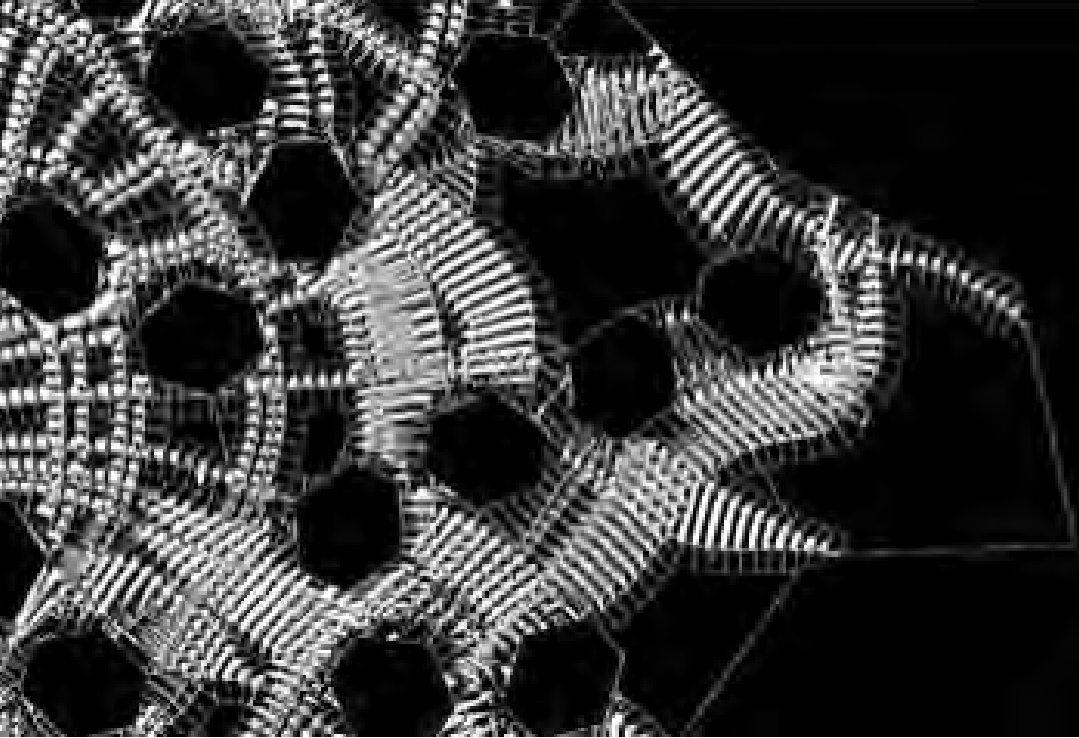






SuperFormLab

Voice Sculpture Experiments
MAY 2012



WHAT DOES IT MEAN TO MAKE AN EXPERIMENT

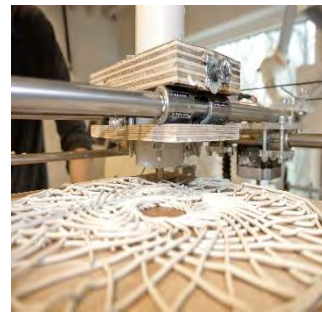
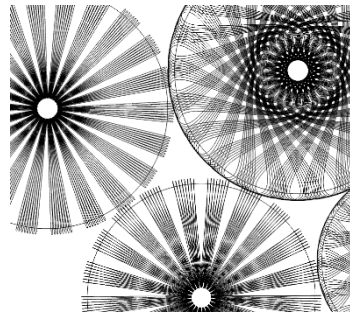
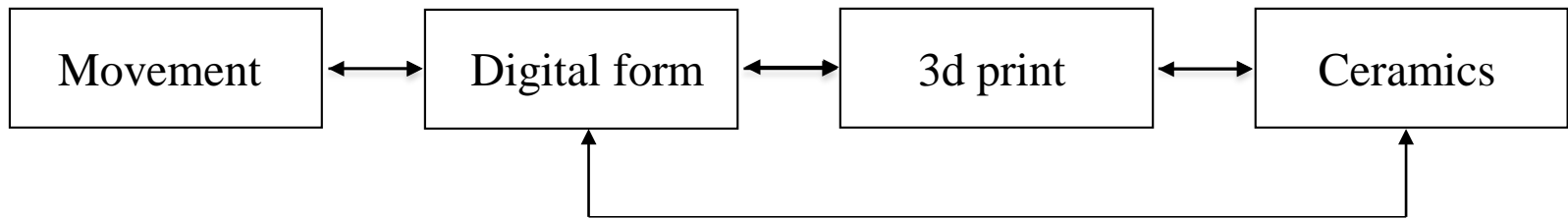
The overall project investigates the position, role and significance of the experiment with a strong focus on computation, material and form within practice-based research

Flemming Tvede Hansen, Ceramicist and Associate Professor, The Royal Danish Academy of Fine Arts – The School of Design.

Martin Tamke, Architect and Associate Professor at CITA,

Henrik Leander Evers, Research Assistant at CITA;

The Royal Danish Academy of Fine Arts – The School of Architecture



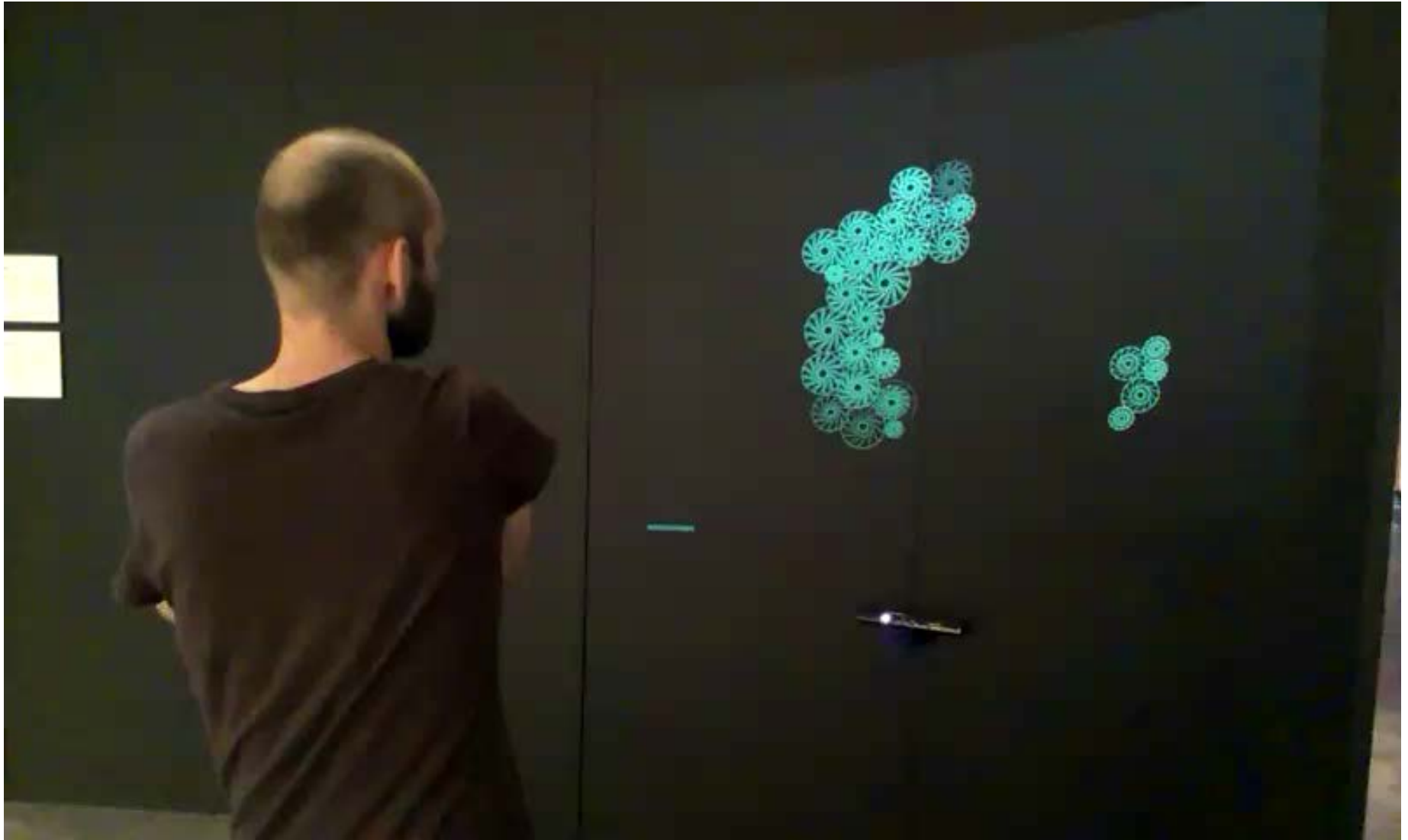
We investigate:

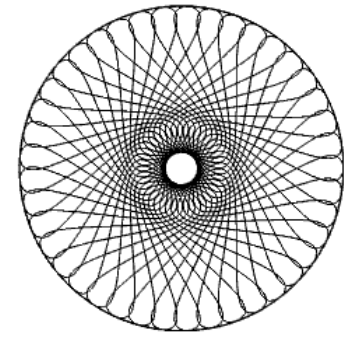
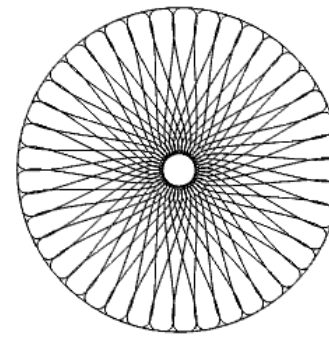
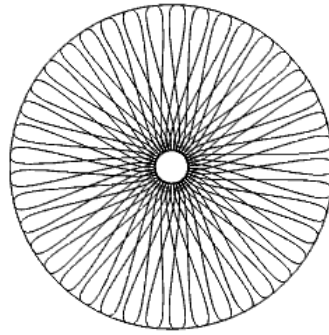
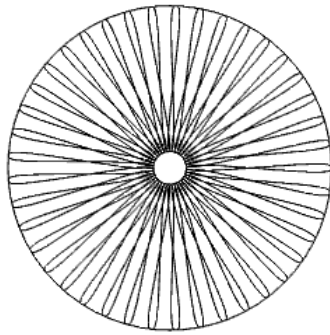
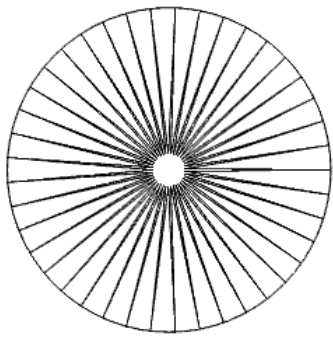
- a **responding** material that guides the ceramic artists to provide **embodiment and feed-back**
- digital technology in an **extended way, as being the result of firstly the matter**; here clay, - and secondly the process; here interventions by the designer, 3d printing, firing and glazing.











File Edit View Curve Surface Solid Mesh Dimension Transform Tools Analyze Render Panels Help

Location of point object
Point object to reference (Type=Point)
Command:

Standard CPlanes Set View Display Select Viewport Layout Visibility Transform Curve Tools Surface Tools Solid Tools Mesh To

Grasshopper - 20131011_SingelComponent_Clean_F*

File Edit View Display Solution Help 20131011_SingelComponent_Clean_F*

Prm Math Set Vec Crv Srf Msh Int Trns Robotics Wb Kangaroo FireFly ND Q S

80%

Visualize: 1 / All

2d

Radius: 46

Offset: 0.60

Number: 18

3d

Height: 1.50

Number in Height: 7

Degree: 20

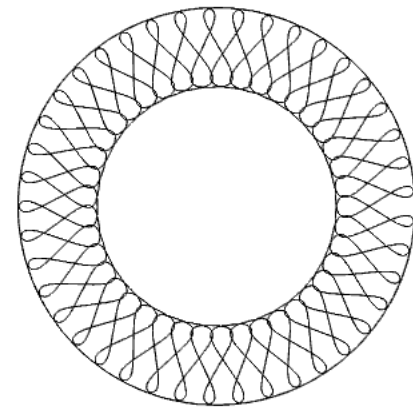
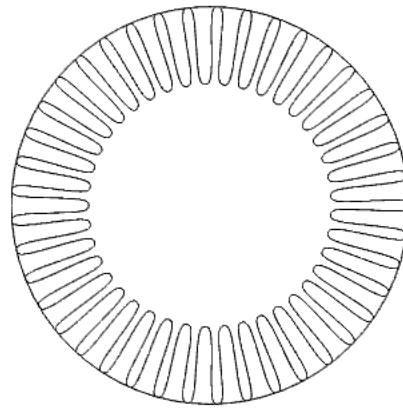
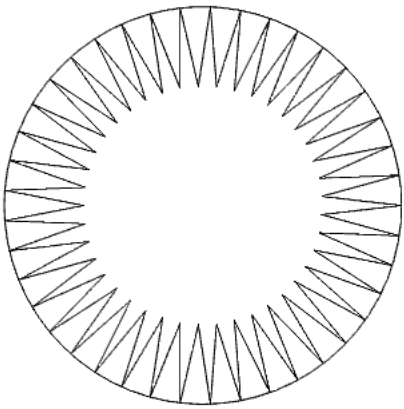
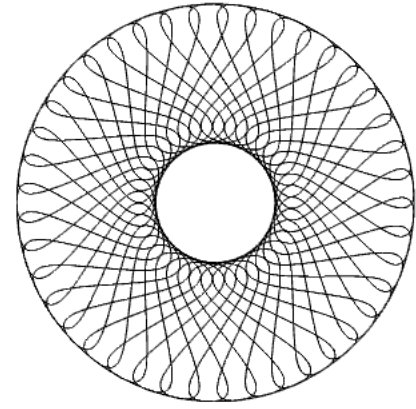
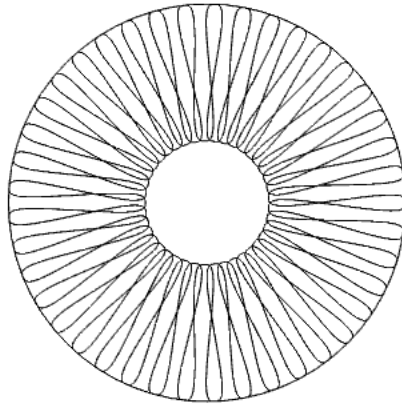
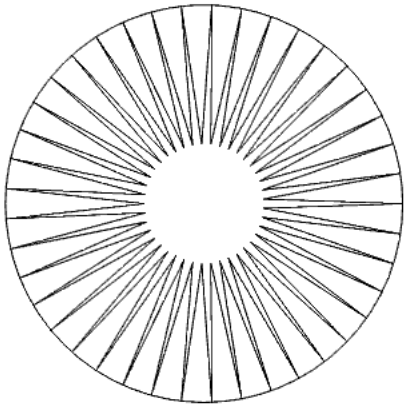
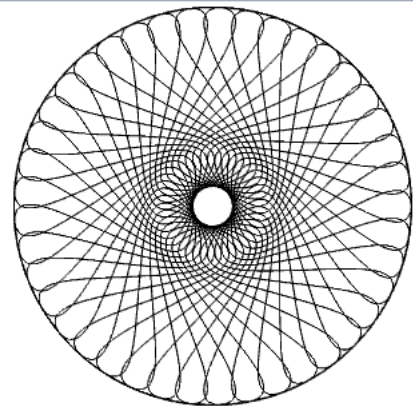
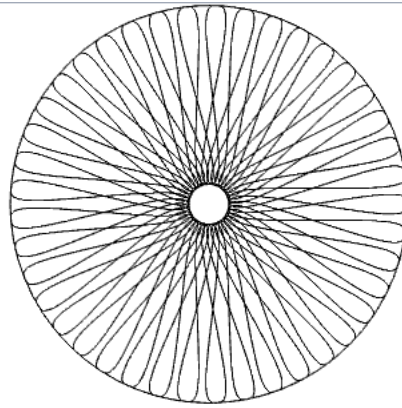
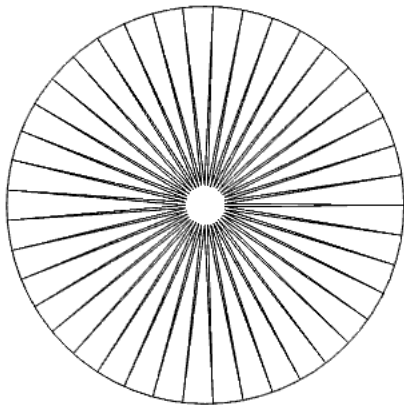
Gate: 0

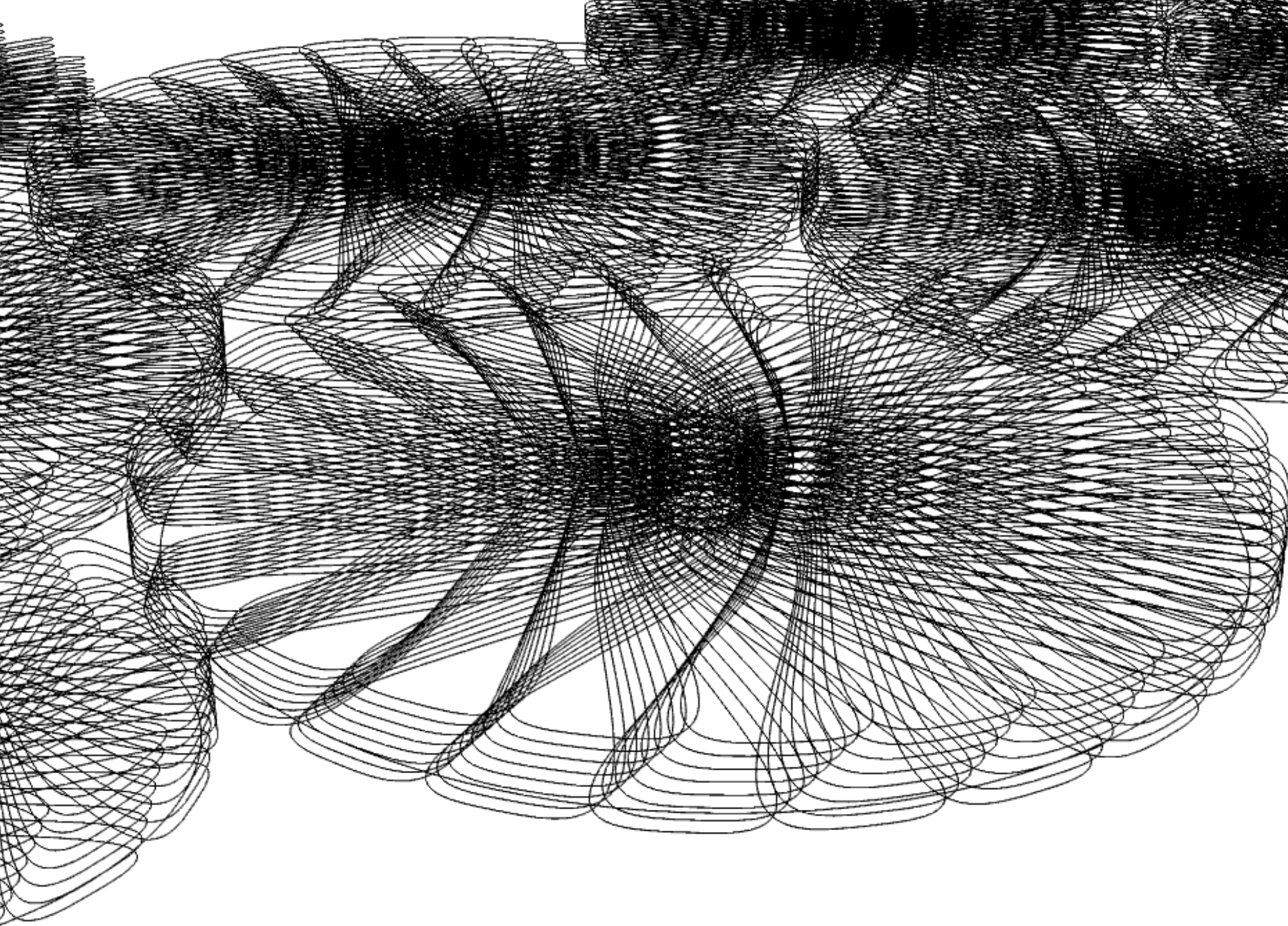
Blend: 0.15

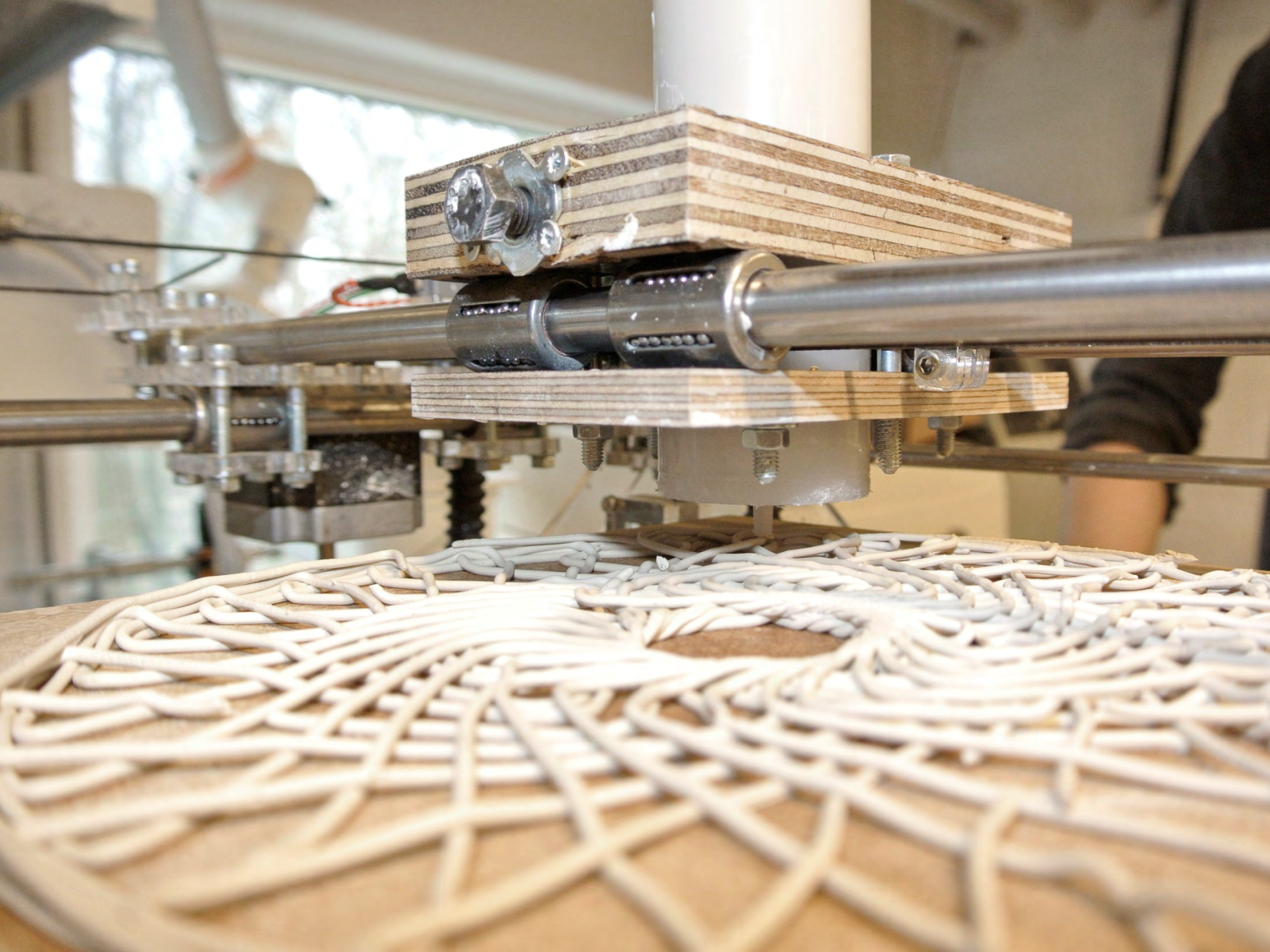
standard 0.5

Autosave complete (0 seconds ago) 0.9.0070

The image shows a screenshot of the Grasshopper software interface. On the left, the 'Top' view shows a circular mesh structure with 18 radial lines and 7 vertical lines. The right-hand pane shows a detailed view of the component's parameters and logic. The parameters include 'Radius' (46), 'Offset' (0.60), 'Number' (18), 'Height' (1.50), 'Number in Height' (7), 'Degree' (20), 'Gate' (0), and 'Blend' (0.15). The logic includes a 'Visualize' component, a 'P' component, and a 'standard' component. A yellow box contains the text 'Data ber detrekklik og tryk OK'.





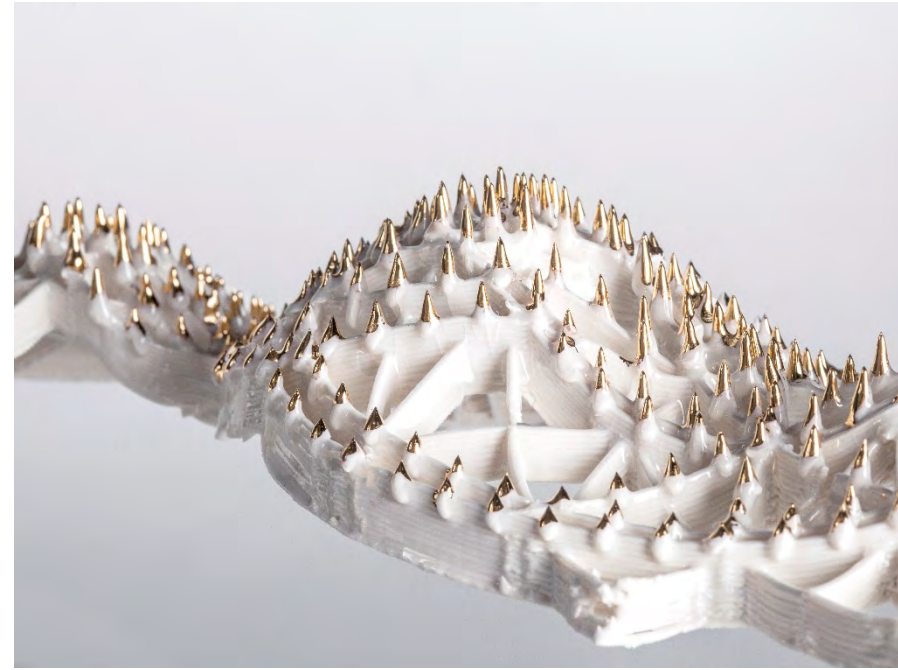




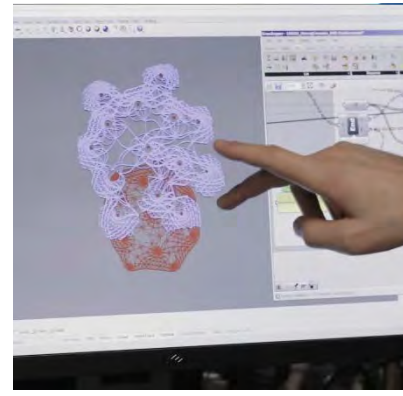
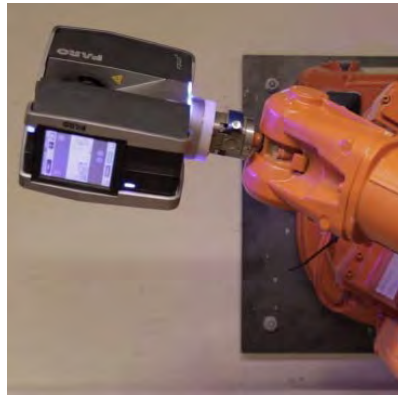
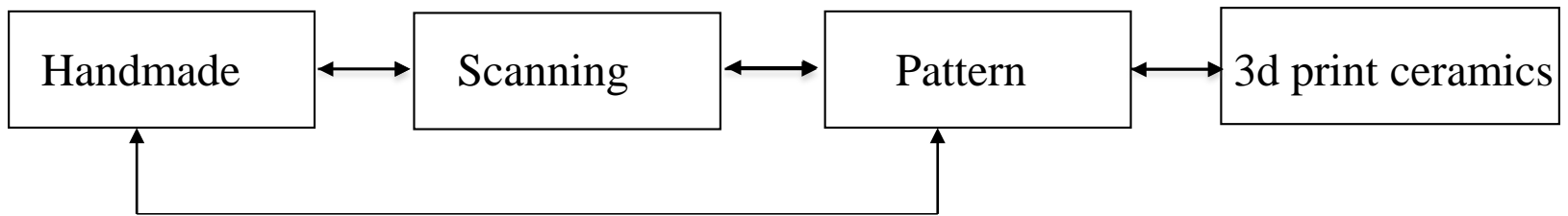


'Filigree Robotics'

at Gallery Leth&Gori



-by ceramist Flemming Tvede Hansen [KADK Superformlab] in collaboration with architectural researchers from CITA [Martin Tamke, Henrik Leander Evers, Esben Clausen Clausen Nørgaard]

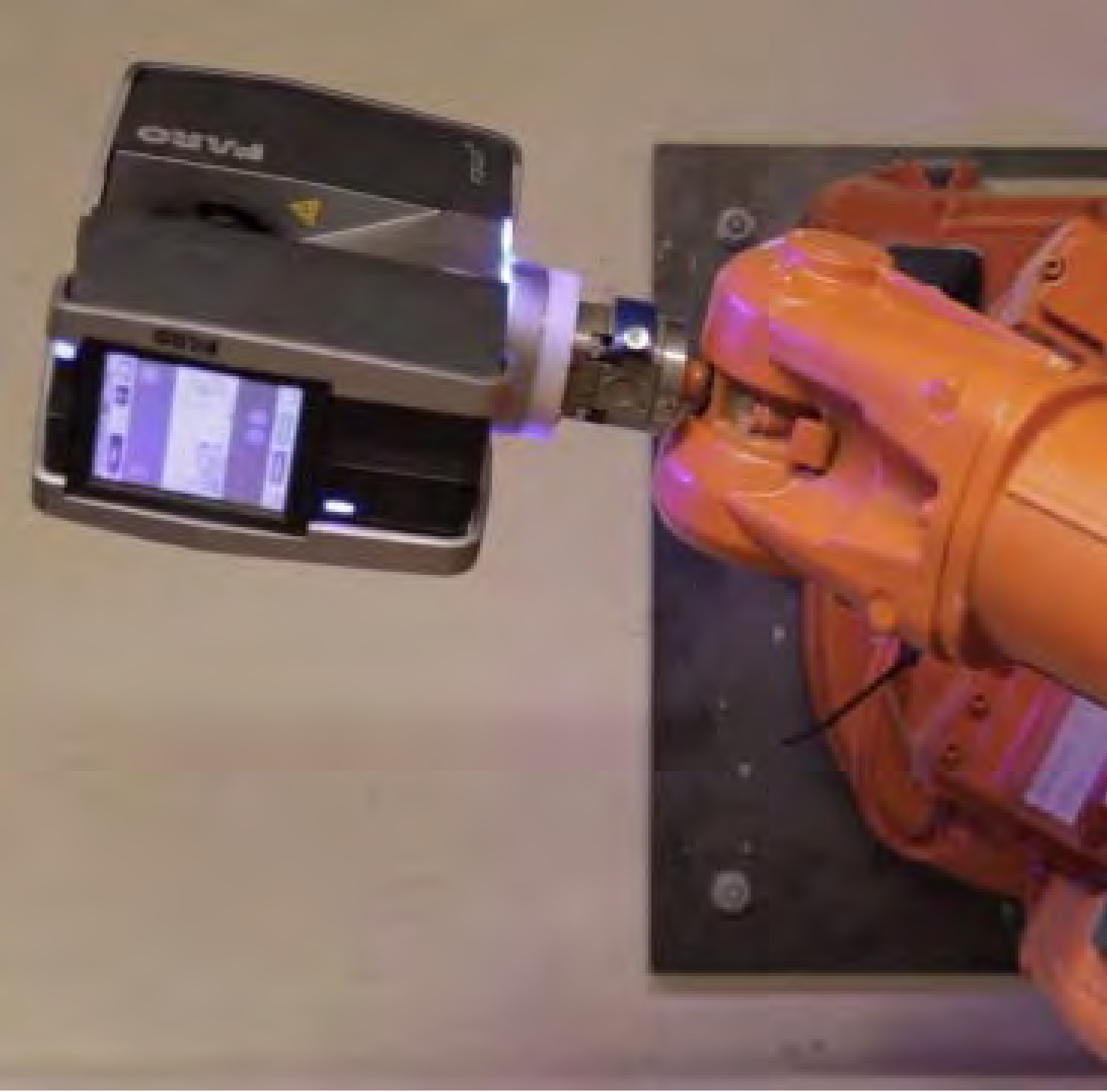


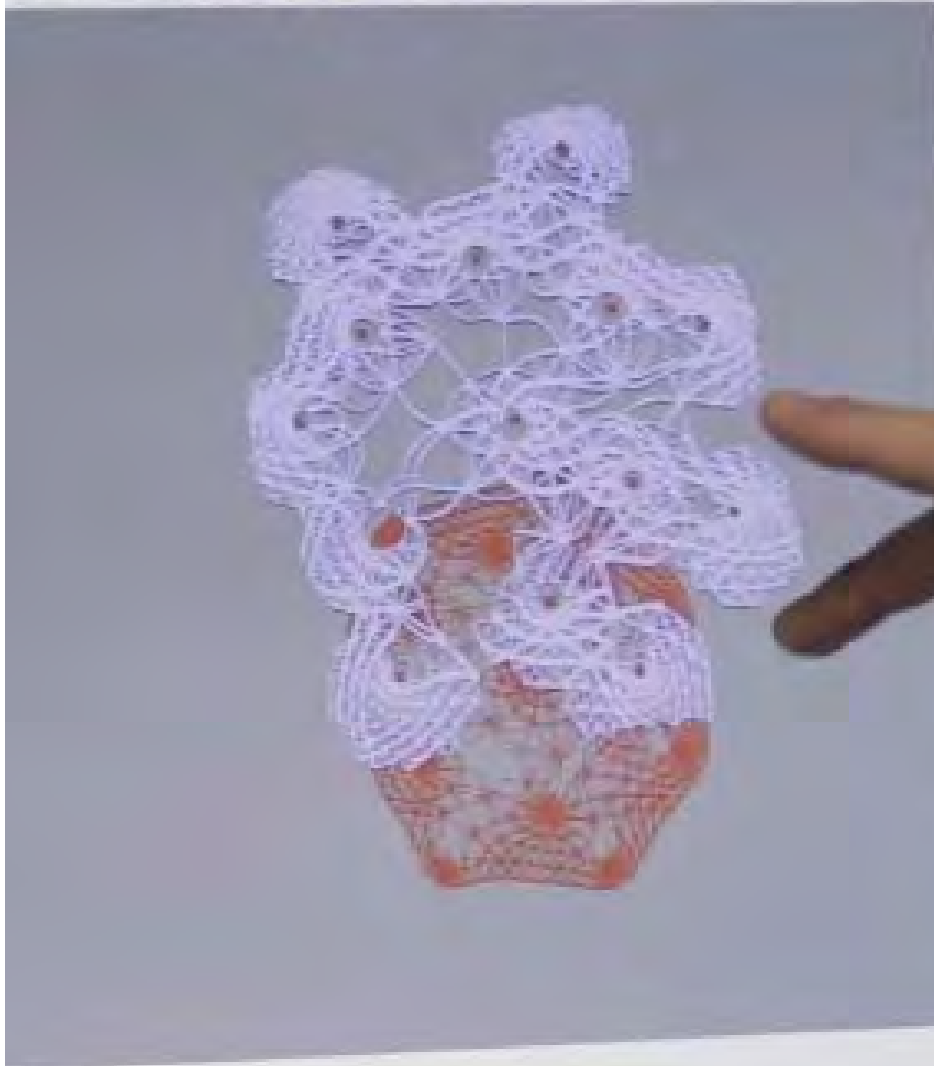
We investigate:

- a **handmade shape** as input for a responding pattern based on an algorithm that guides the ceramic artists to provide **feed-back**
- digital technology in an **extended way, as being the result of firstly the handmade input**; here the shape in clay, - and secondly the process; here interventions by the designer, 3d printing, firing and glazing.







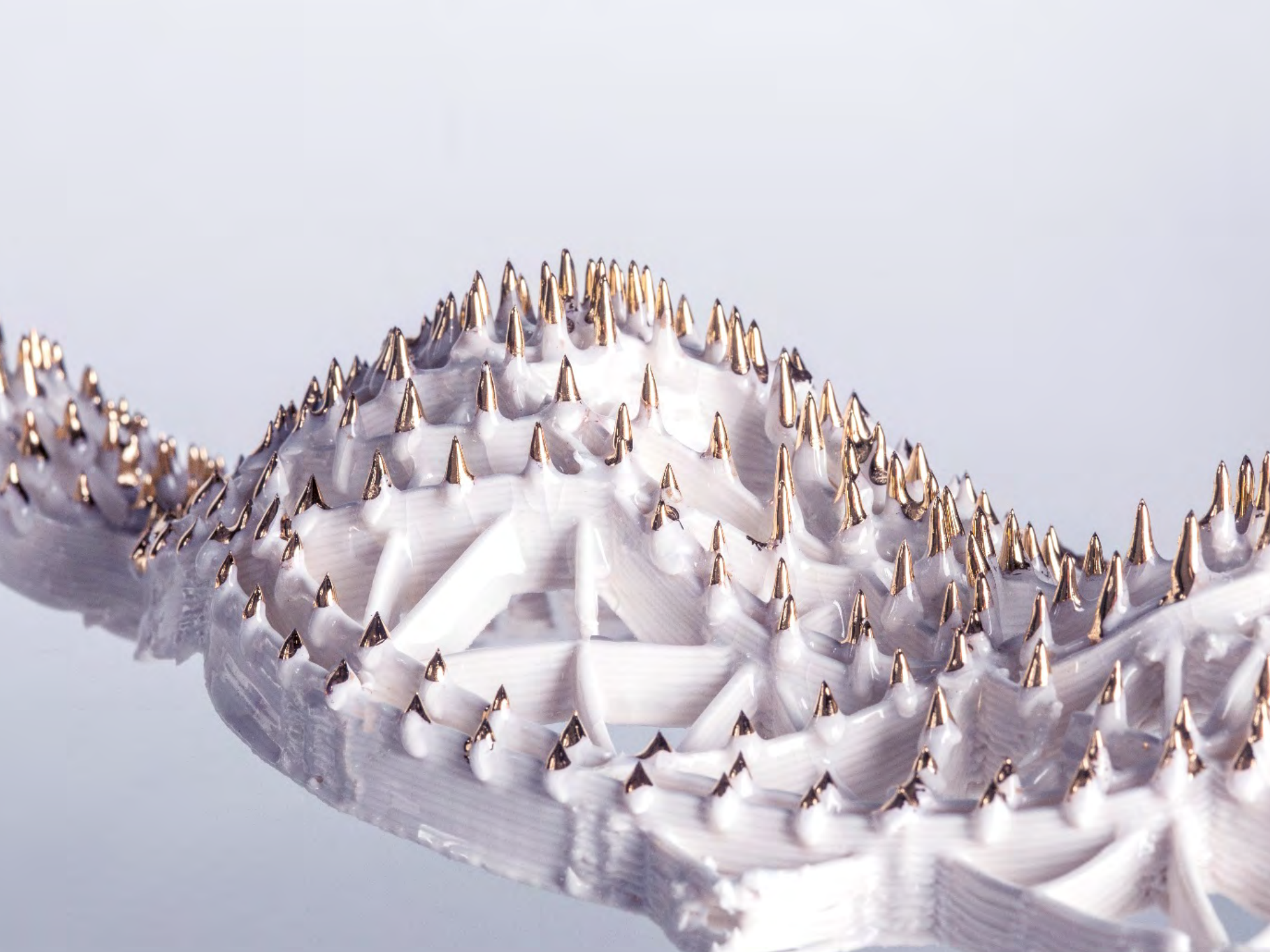


A software interface, likely a GIS or mapping application. It features a central map area showing a network of lines (roads or paths) and a specific location labeled "Erie". Above the map is a toolbar with various icons for navigation and editing. Below the map is a legend or information panel with several colored boxes (yellow, green, blue). The interface is typical of a professional mapping or data analysis software.









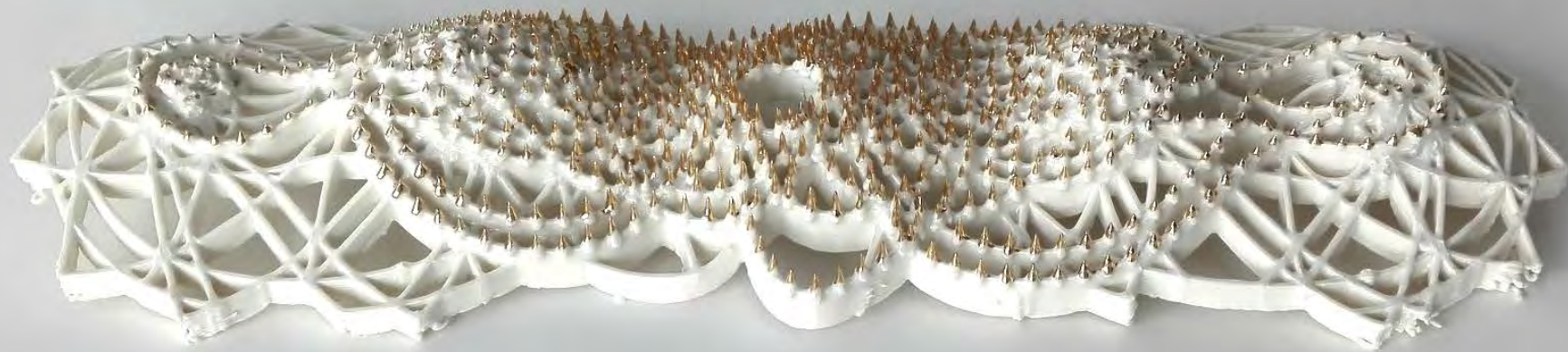


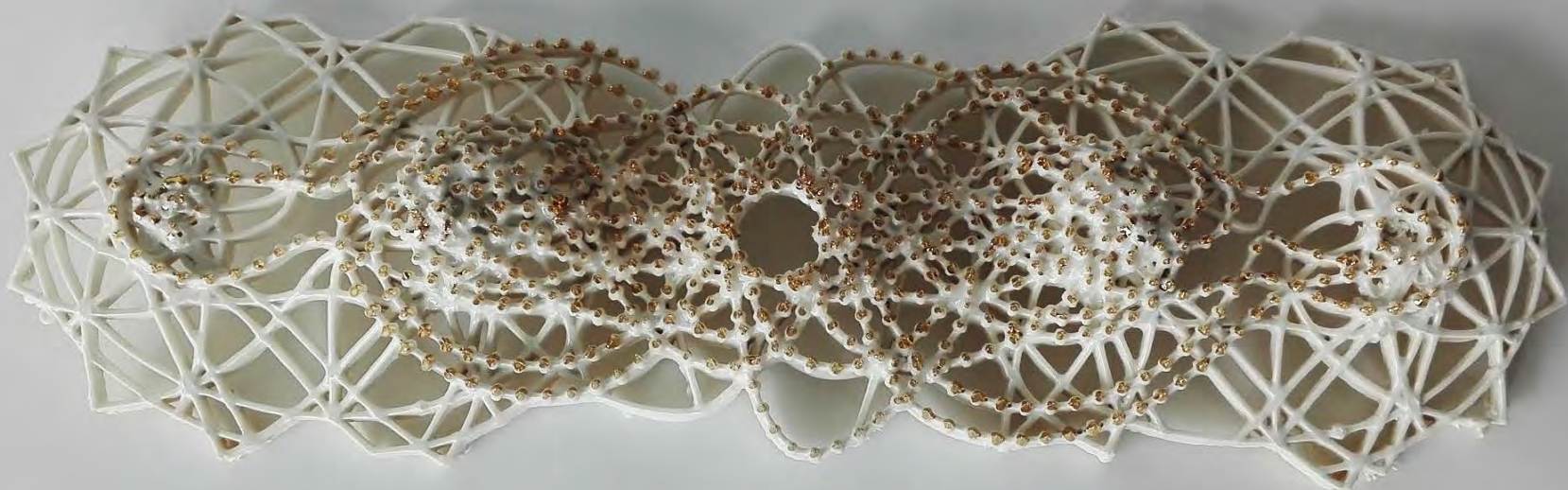


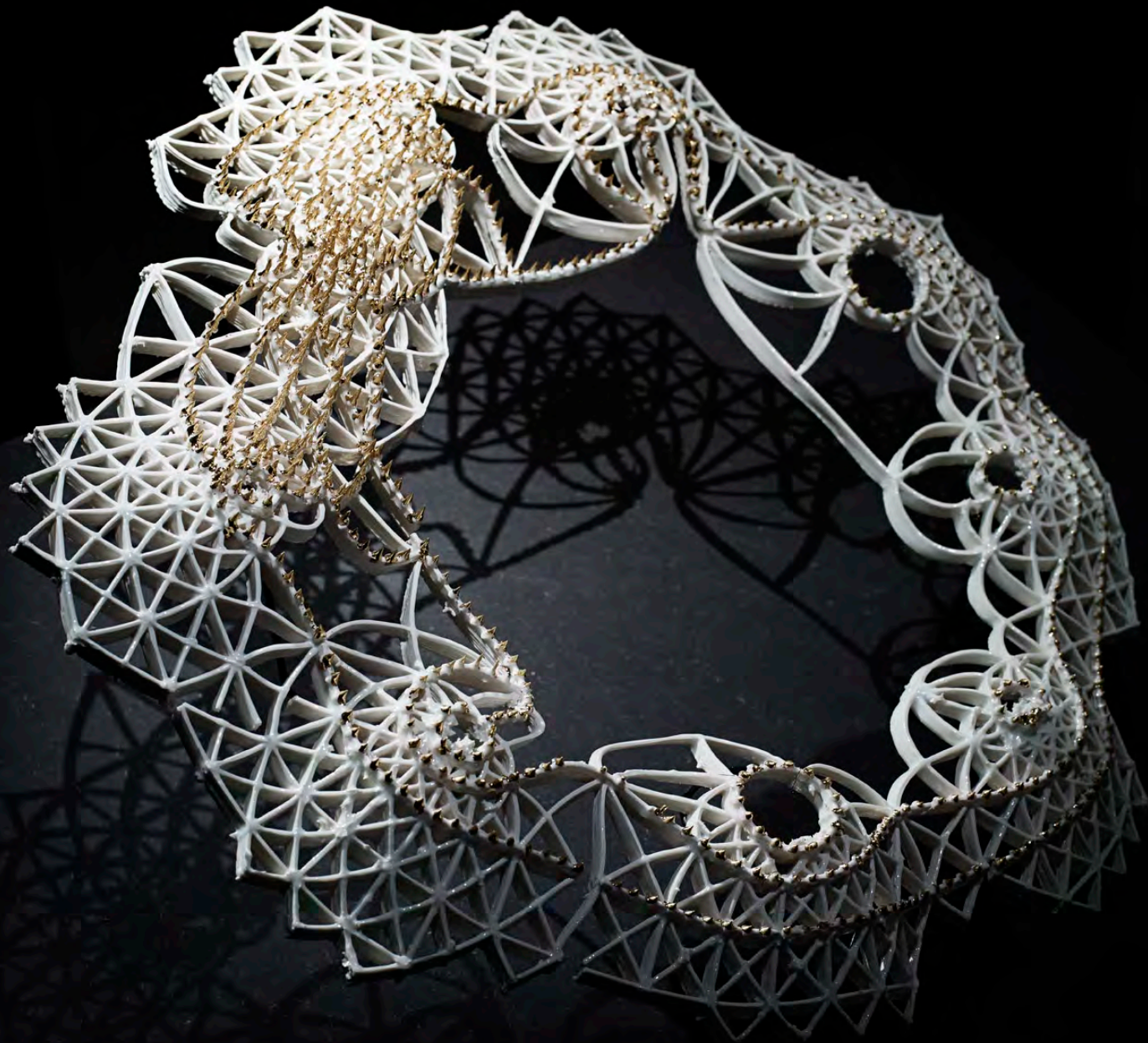




















Ceramics and its Dimensions: Shaping the Future

WORKSHOP – TOURING EXHIBITION – PUBLICATION

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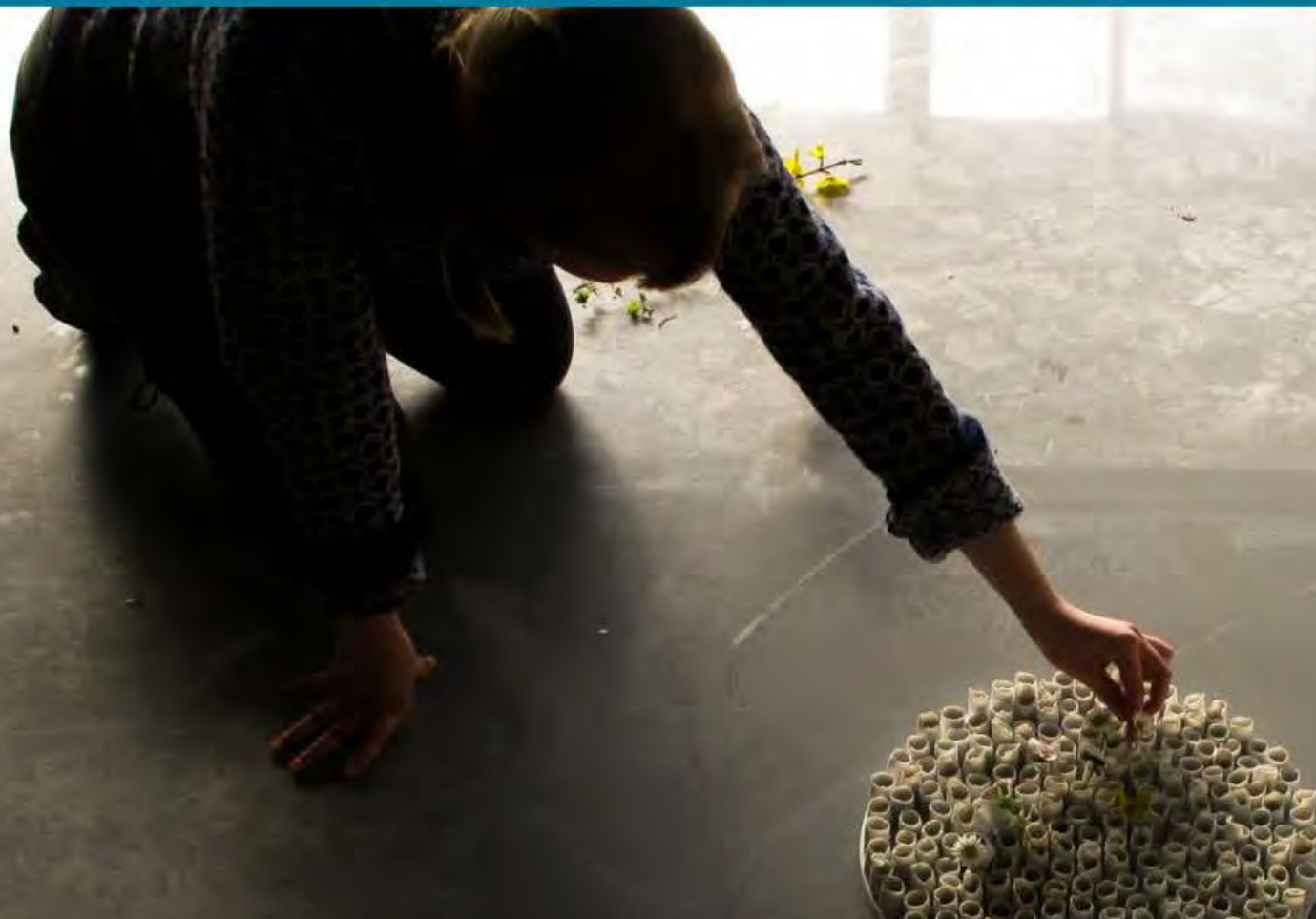
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Ceramics and its Dimensions: Shaping the Future

WORKSHOP - TOURING EXHIBITION - PUBLICATION

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A grayscale photograph of a person from behind, leaning over a large, shallow bowl filled with numerous small, white, cylindrical ceramic pieces. The person's hands are visible, interacting with the pieces. The background is a bright, slightly blurred indoor space with windows.

As a part of the bigger project, *Ceramics and its Dimensions*, the module *Shaping the Future* is concentrating on exploring the future dimensions of ceramics in Europe. With the future in mind, the module conducted a student workshop with 4 partner Universities: Aalto University, Helsinki, Berlin Kunsthochschule Weißensee, Ulster University, Belfast campus and The Royal Danish Academy of fine Art, Copenhagen









be related to small classic series of hand painted mass-produced ware or hand modelled flower decoration on dinner service.

This idea was first introduced in the workshop as a decorative effect by printing directly on the lid of a sugar bowl (Figure 4) and then by replacing a handle on a cup with a 3D printed handle (Figure 5). Here, simple geometries were artistically unfolded on and in interplay with the mass-produced ware. Through simple and playful interventions, such as different heights of the print-head, different positions of the object or printer settings, the 3D printed parts can easily vary and thus add a hands-on and one-off touch to mass produced objects.

These demonstrations were first opened up for periods of brainstorming through practical experimentations in groups of students mixed from the four universities. Secondly, the demonstrations and suggestions functioned as inspiration for the students for further work and the final call for the travelling exhibition.

For some of the students, 3D printing as a technique gave a new space to develop their personal ways in the field of ceram-



ics. This approach to 3D printing was seen as more adaptable than first expected. In the view of those students with no experience in 3D printing, how fast one could adopt the technique.

3D printing as a tool in the future

Ceramics has a long history of producing valuable and functional objects with its traditional material and a practice, ceramics is easily understood in traditional ways of making. Ceramics also has a long history. As a material, ceramics are so versatile that they have been developed for multiple different purposes. In the past, ceramics have played a role, for example, as a material for furniture and tiles in buildings. The less common use is how widely it has also been used with modern fields, such as in nuclear science, space exploration and biomedical solutions. Having an understanding of ceramics' wide range and potentials, in this study we examined the studio practitioner's perspective.

left: Fig. 2
top: Fig. 3



As stated, 3D printing can be explored and modified in many different ways. Here we have been paying special attention to materiality and the potential of the material to unfold at the very moment of the 3D printing. We have named this latter approach *material driven 3D printing in clay*. We have shown how simple shapes can be unfolded in numerous ways by different printer settings and by simple and playful interventions, thus letting the ceramic material 'have a say', adding a hands-on and one-off touch. We have argued how the ceramic craftsman can utilise a high level of tacit knowledge and haptic skills within this approach and express himself through and with the material. We argue this approach to be similar to the concept of crafting through an immediate interface to matter, an idea already discussed by Dormer³⁰, and seeing crafting and execution as a unity that is intuitive and humanistic, as already proposed by Bernard Leach³¹. In this sense, we consider *material driven 3D printing in clay* to be utilising 3D printing as a ceramic craft tool in its own right.

Furthermore, we have suggested how in the future 3D print-

ing based on the concept of *material driven* can be utilised as a tool for the craftsman for creating mass-produced ware with a one-off touch. This is demonstrated by printing directly on freshly slipped surfaces, showing opportunities both for decorative personalisations and for replacing parts on mass-produced objects, such as spouts and lid handles, with printed built-up parts. 3D printing can, in that sense, have a different philosophy in design, production, and consumption, challenging the idea of the mass-produced ware in favour of a one-off touch as special orders or via the internet.

In the future, the process of 3D printing could be made as easy as pushing a button³³. For artists and designers, the future of 3D printing is bright. Through developing the technique, artists and designers develop materials and the field they are working in. Acknowledging the material limits in the design process can give more freedom and new possibilities for working with the materials. New approaches to making



2016

- 10th November – 7th December 2016 [White Hall, Copper Smithy \(Fiskars, Finland\)](#)

2017

- 21st January – 1st May 2017 (Tue – Sun 10 am – 5 pm) [Porzellanikon – Staatliches Museum für Porzellan \(Selb, Germany\)](#)
- 24th June – 22nd July 2017 [Millennium Court Arts Centre](#) (Portadown, Northern Ireland)
- 23rd September – 5th November 2017 [British Ceramics Biennial](#) (Stoke-on-Trent, United Kingdom)

2018

- 20th January – 18th April 2018 [Bröhan-Museum, Landesmuseum für Jugendstil, Art Deco und Funktionalismus](#) (Berlin, Germany)
- 15th May – 31st July 2018 [National Museum of Slovenia – Presernova](#) (Ljubljana, Slovenia)
- 2018 [Museum of Decorative Arts in Prague](#) (Prague, Czech Republic)



SYNERGY



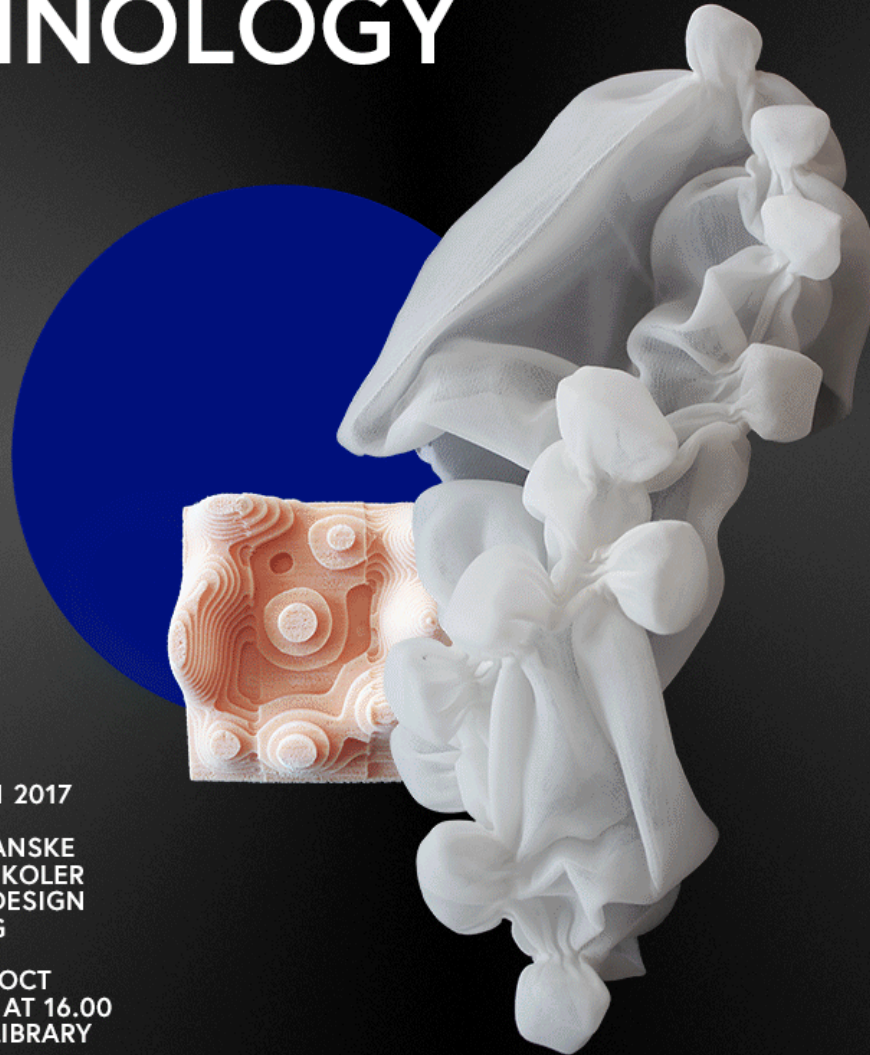
3D-PRINTED MATERIAL EXPERIMENTS



DIGITAL COILING : MATERIAL AND MACHINE



EXPERIMENT MATERIAL TECHNOLOGY



5 OCT - 24 OCT 2017

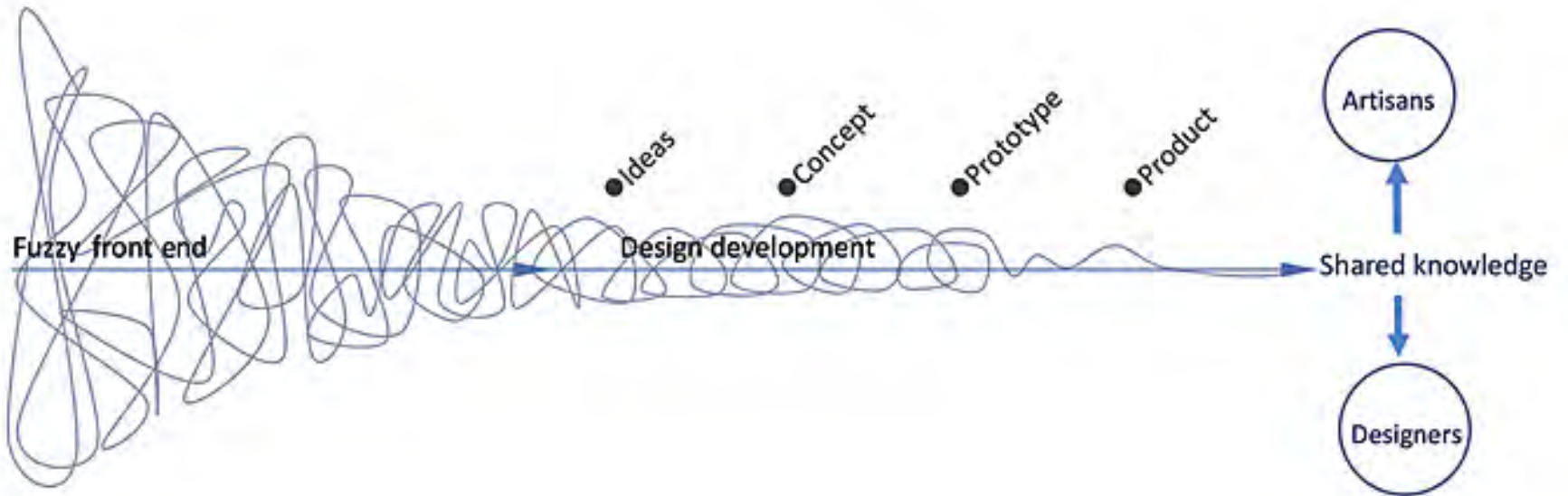
SEMESTER 1 BLOK 1 2017

DET KONGELIGE DANSKE
KUNSTAKADEMIS SKOLER
FOR ARKITEKTUR, DESIGN
OG KONSERVERING

EXHIBITION: 5 - 24 OCT
RECEPTION: 5 OCT AT 16.00
LOCATION: KADK LIBRARY

KADK LIBRARY HOURS:
MON - THURS 9.30 - 20.00
FRIDAY 9.30 - 16.00





Sanders and Stappers (20

Groups and group leaders

- (GK)CRAFT – GLASS AND CERAMICS (CSC) Christina Schou Christensen
chch@kadm.dk
- (BT)BEKLÆDNINGSDSIGN OG TEKSTIL (ADA) Anne Damgaard
ada@kadm.dk
- (SI)SPIL OG INTERAKTIONSDSIGN (CAF)Caroline Fangel
carolinefangel@gmail.com
- (VK)VISUEL KOMMUNIKATION (EFOX)Elizabeth Ashley Fox-Jensen
efox@kadm.dk
- (MRM)MØBEL, RUM OG MATERIALER (FTH) Flemming Tvede Hansen
fth@kadm.dk

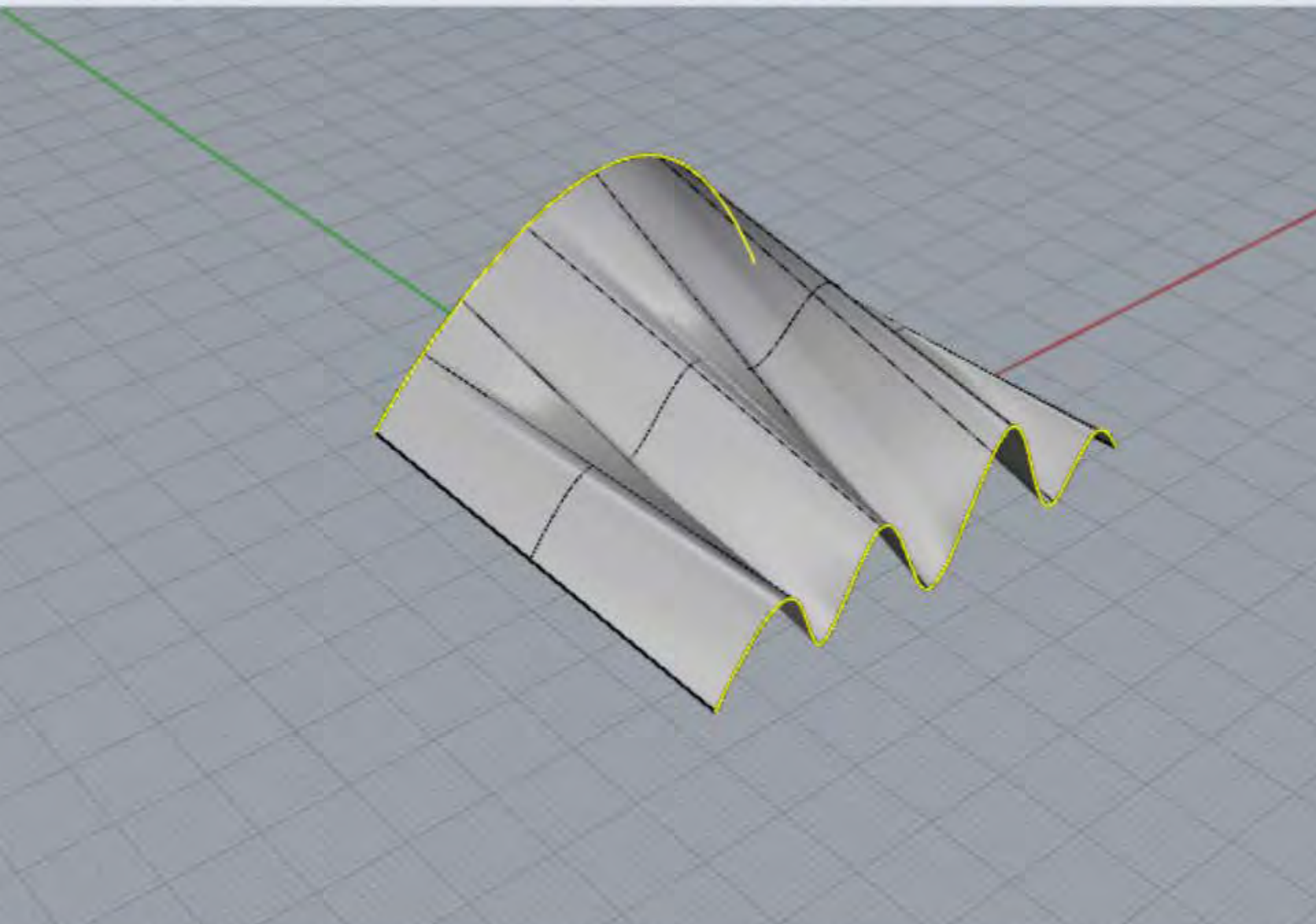




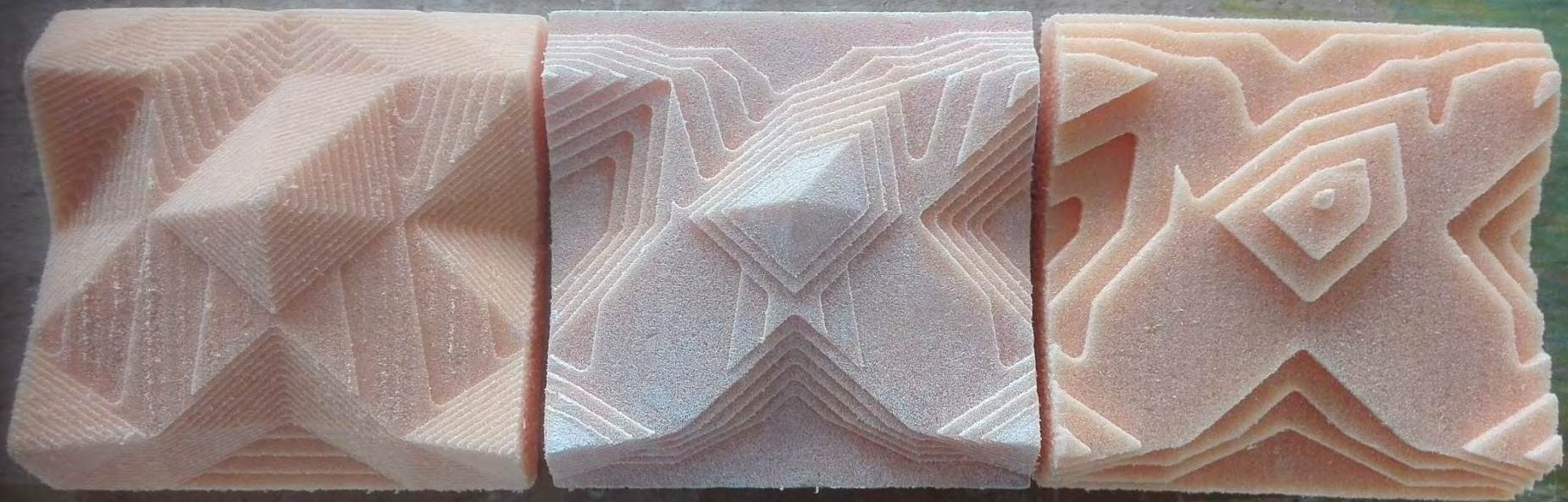










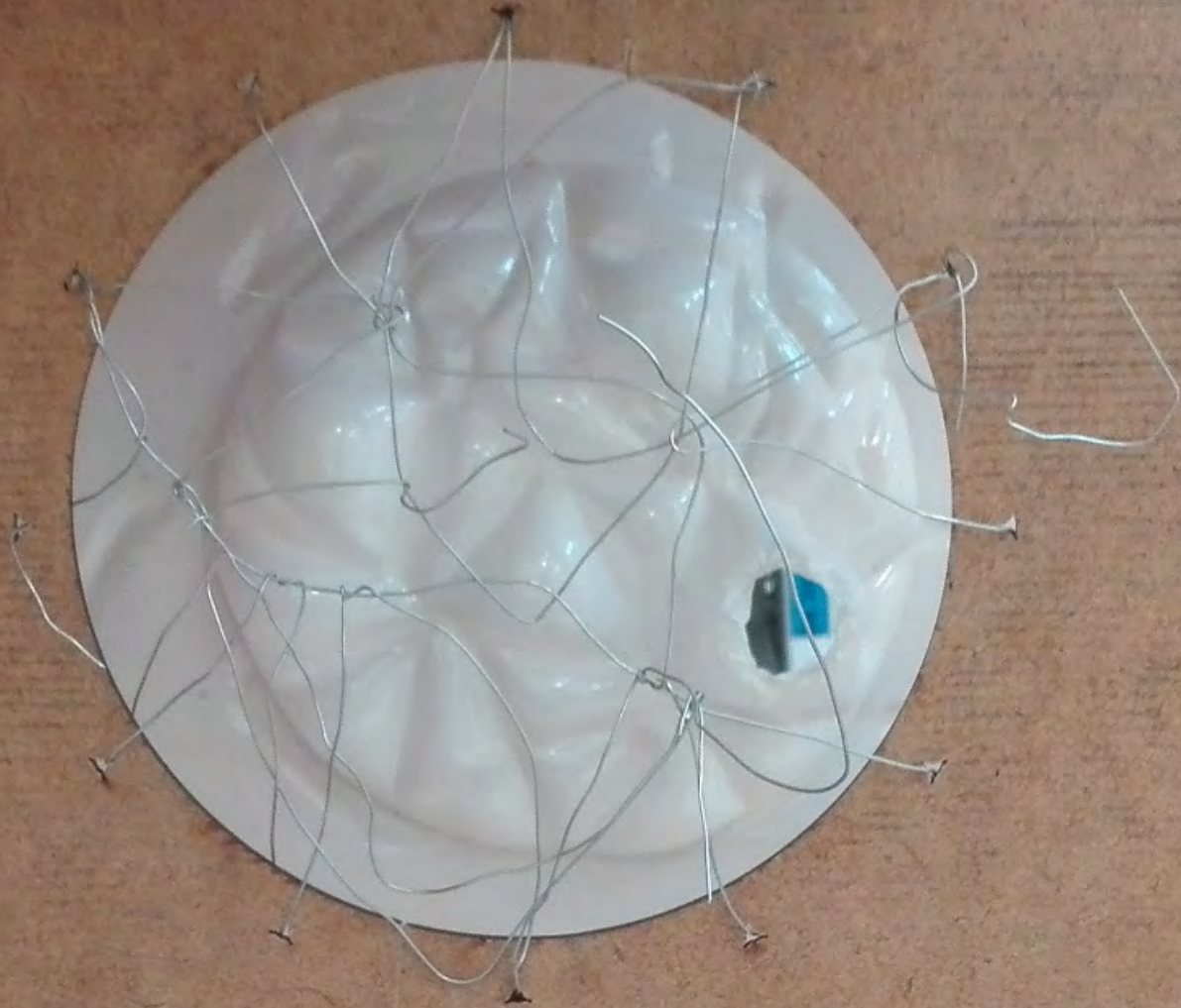














ELITE OCCASION S
VANDE
50
BRIEF
THE SMART SKILLS STRATEGY
BREAKTHROUGH

MOTIVATION
MILLER KENNEDY
REASONING
HANDBOOK OF REASON RESEARCH
METHUEN IN ED & ALLEN
1100
1100
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END