International Summer Workshop

Modelmaking in the Digital Age – Advanced Edition

Beyond automation

Atelier La Juntana

Architecture Official College of Cantabria

Polytechnic University of Madrid

Model Making in the Digital Age – Advanced Edition
Atelier La Juntana Summer Workshop

Dear friends,

From its founding in 2010, our summer school has always been a celebration of the architecture and processes of making in the age of automated production. Our aim has been to create a unique opportunity that brings together digital fabrication, craftsmanship and architecture, providing an exceptional cross-disciplinary innovative pedagogy experience.

Overtaking our initial expectations, the ALJ Summer Workshop has become one of Europe's most renowned summer schools, with over 100 participants attending the course every year and a social media audience engaging with the event of over 150,000 people.

This year we are pleased to launch our Advanced Edition, where we want to combine all the passion and knowledge that we have gathered during the past 5 years, providing an outstanding opportunity to continue developing a unique set of skills while creating a fantastic working atmosphere. The Advanced Edition workshop will look into developing the methods learnt in the previous program to a cutting-edge level, while adding new techniques and materials, including mastering the use of fibres in casting materials, resin encapsulation, ceramic slip casting, lost wax melting, plywood bending, brass etching, woodcutting and use of food grade silicone, amongst others.

We are beyond thankful for the overwhelming human experience that you create - and maintain - every summer and would like to open this advanced edition exclusively to former participants of the Model Making in the Digital Age Atelier La Juntana Workshop.

We look forward to see you again this summer.

With our best regards,

Atelier La Juntana team
Armor - Nertos – Daniel















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Fig. 1: SANAA, Naoshima island terminal building, Japan


Fig. 2: John Wardle Architects - Melbourne Summer Pavilion

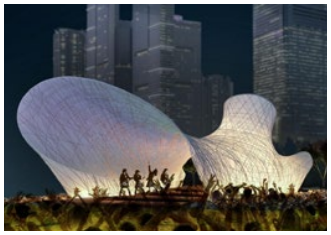
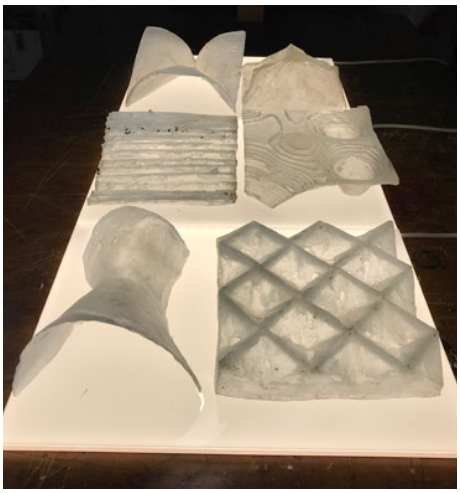


Fig. 3: LEAD Architects - WKCD Pavilion - West Kowloon Cultural District, Hong Kong


Fig. 4: Lilas Installation - Zaha Hadid Architects, London



Exercise Information

Individual / Group work:
Individual
Mini Brief:
Designing a Pavilion
Workshop involved:
Wood / Clay / Silicone / Plaster / Resin
Duration:
6+6 hours
Connection with the next exercise:
Yes -Resin Casting
Scale:
1:100

Mini Brief

Participants will individually design and build a temporary Summer Pavilion at a scale of 1:100. The goal of the exercise is to explore complex geometries applied to architecture and how are they designed and manufactured using different casting materials combined with fiberglass such as Glass Reinforced Polyester (GRP), Glass Reinforced Gypsum (GRG) and Glass Reinforced Concrete (GRC). We will begin by designing the master using a working table of approx. 20x20x5cm, then applying a thin layer of silicone over the master - using an advanced brushing technique - and making a number of copies using fibers combined with resin, plaster, jesmonite and concrete combined with tints and fillers .
The result will be a thin yet resistant resin skin to which we can apply colour and texture.

Process, Materials and Tools

The base material to design the master are wood or clay, and the equipment includes woodworking tools such as laser cutter, wood carving duplicator, carpentry table saw, circular sander, chisels, drills and sand paper.

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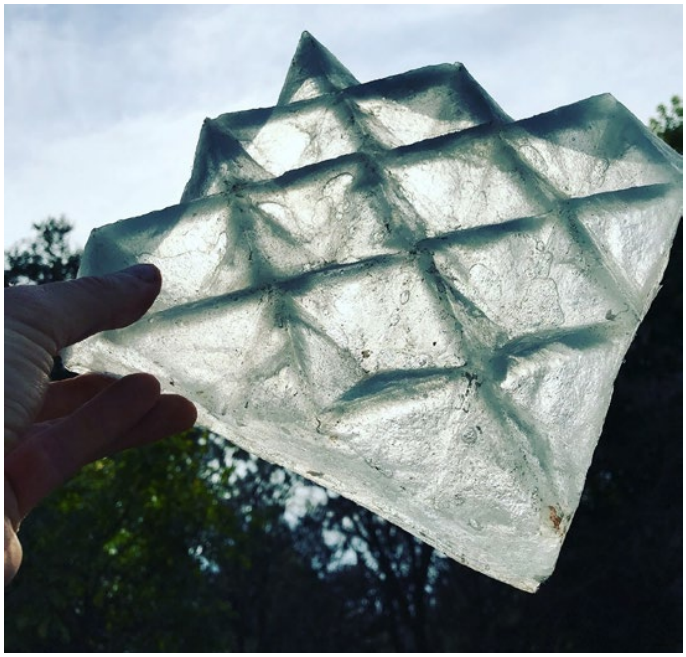

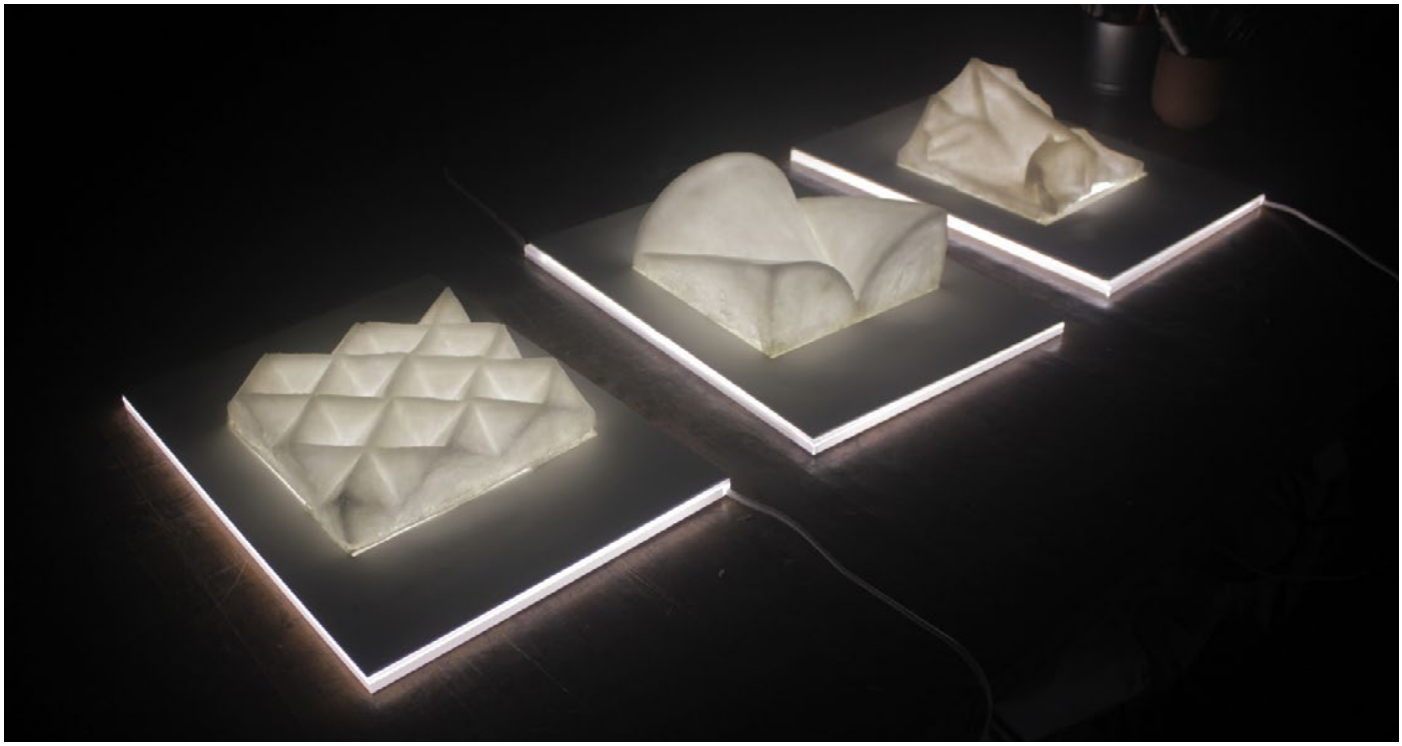

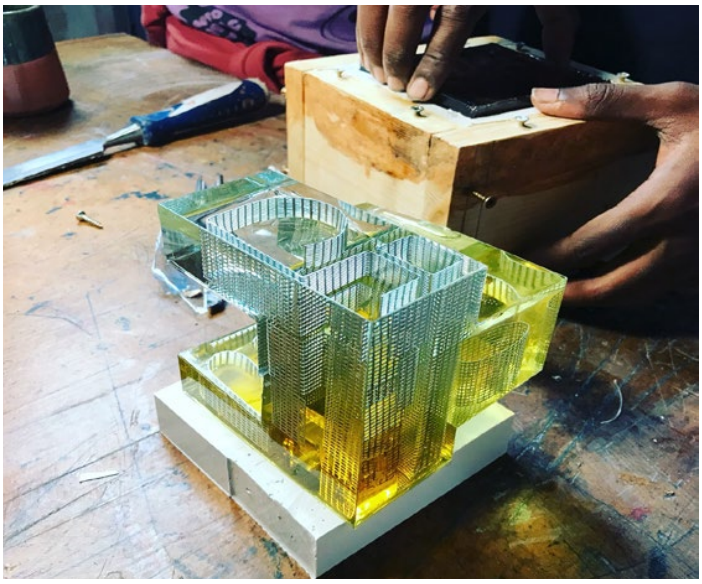

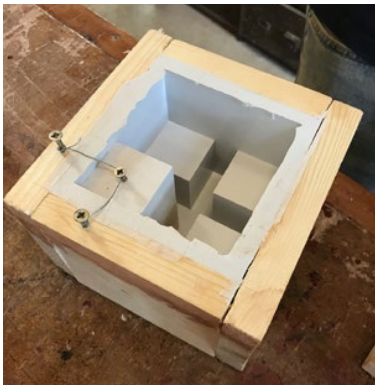

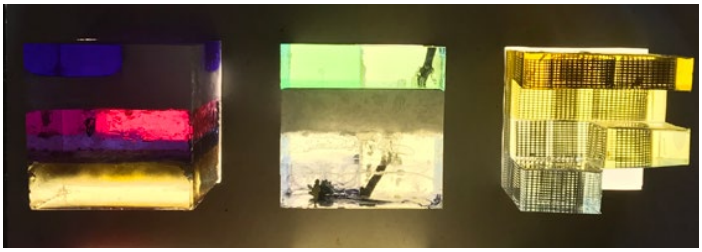

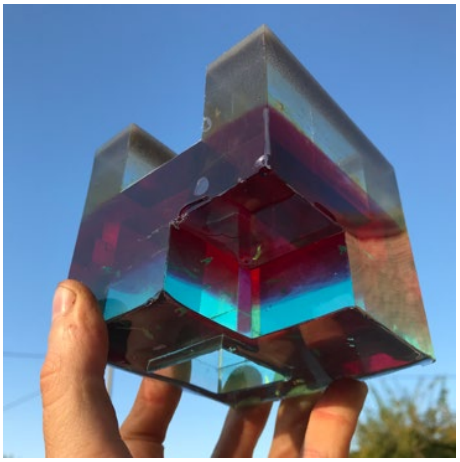

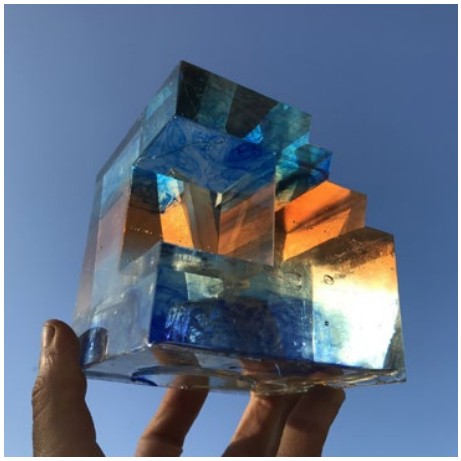

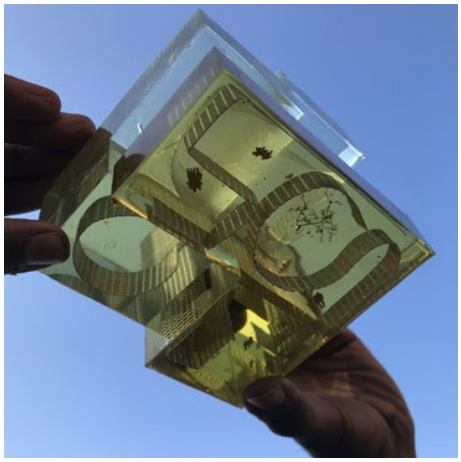

Exercise Information

Individual / Group work:
Individual
Mini Brief:
Programmatic Models
Workshop involved:
Silicone / Plaster / Resin / Concrete
Duration:
1+1+1 hours
Connection with the next exercise:
Yes - Resin Casting
Scale:
1:200

Mini Brief

The starting point of this exercise is a void cube of approx. 8x8x8cm to which participants will add or subtract geometry creating a universe that plays with void and space. Once the geometry is defined using already prepared silicone moulds and countermoulds a number of resin layers would be poured in several times, allowing us to encapsulate animation and programmatic elements and to combine several materials and / or tones of resin.
The final result would be a collection of architectural sculptures that can be arranged creating a larger spatial composition.

Process, Materials and Tools

Once the silicone moulds are set in place, different types of materials can be used for the pouring, including polyester resin, epoxy resin, jesmonite, plaster and concrete. As the normal appearance is transparent, resins can be coloured using tints and fillers, allowing different degrees of opacity, tone and textures.

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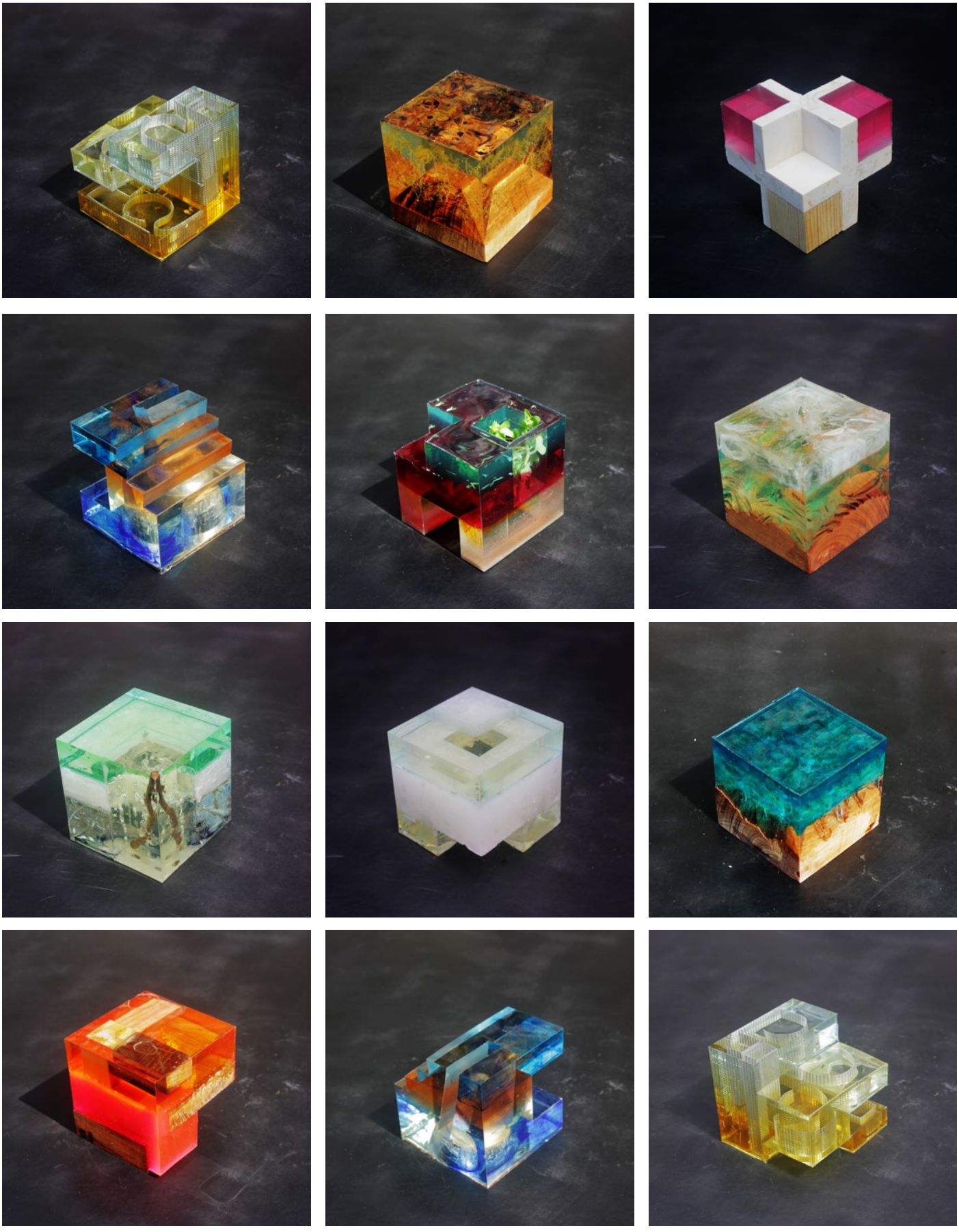

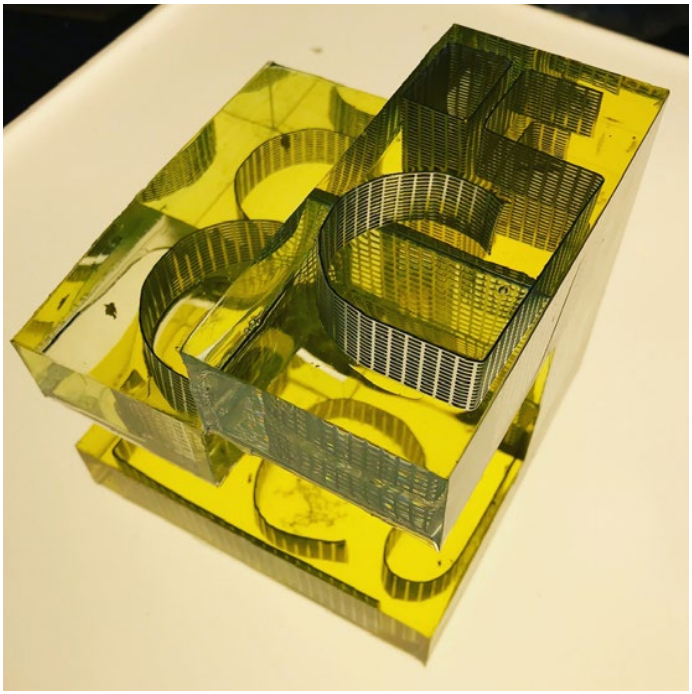

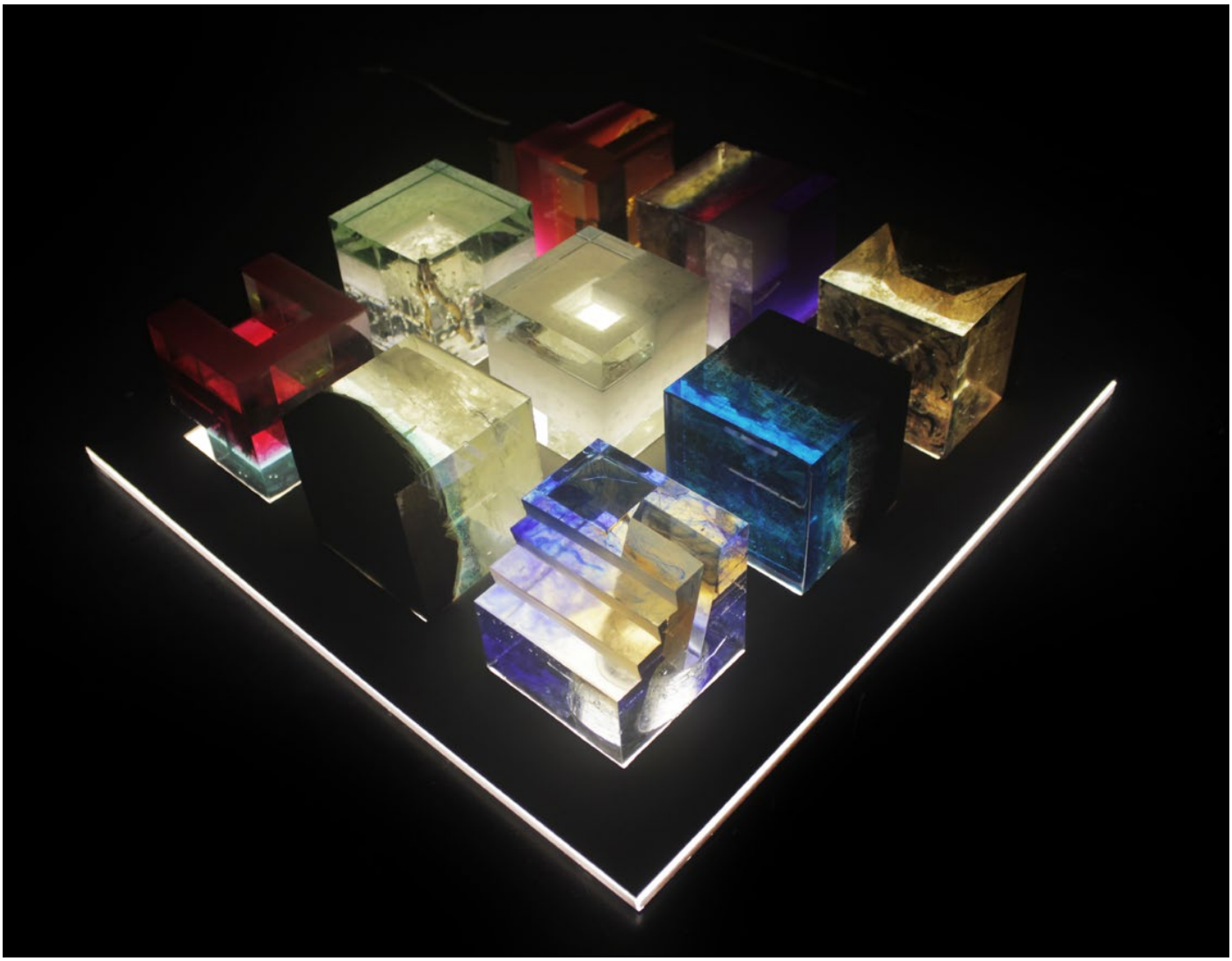

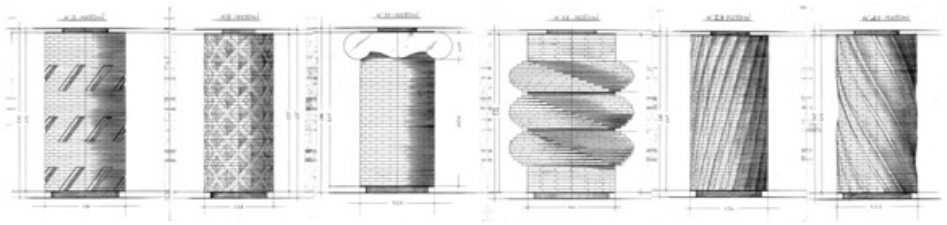

Fig. 5: Alhondiga Columns, Philippe Starck, Bilbao

Exercise Information

Individual / Group work:
Individual
Mini Brief:
Column Re-invented
Workshop involved:
Ceramics / Plaster / Clay / Glazing
Duration:
6+2 hours
Connection with the next exercise:
Yes - Ceramic Glazing
Scale:
1:10

Mini Brief

Participants will be asked to rethink the concept and geometry of the architectural column, using as a reference the collection of columns-sculptures used by Philippe Starck for the Alhondiga renovation in Bilbao.
The intricate design of the column would be manufactured thanks to a combination of several plaster moulds with advanced slip casting, which will then be fired and glazed in different tones.
The geometry will be achieved combining the traditional ceramic craft with digital fabrication techniques.

Process, Materials and Tools

The main focus of the exercise is to research the possibilities of ceramic slip casting to create complex geometries and to get an understanding of the process casting with several plaster moulds.

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Fig. 6: Cristina Iglesias Sculpture Series

Exercise Information

Individual / Group work:
Individual
Mini Brief:
Void Intersection
Workshop involved:
Metal Casting / Lost Wax
Duration:
8 hours
Connection with the next exercise:
No
Scale:
1:1

Mini Brief

This exercise aims to explore the possibilities of bronze lost wax casting as a tool to design and shape spatial ideas. Each participant will design a spatial composition by intersecting geometries. The master elements will be designed and modified using bee wax, which can be cut, carved, composed and melted to achieve the desired result. Once the master is finalised we will connect the geometry with a number of sprues and build a plaster carcass around before pouring the bronze.

Process, Materials and Tools

Lost wax casting is a unique process that allows us to manufacture almost any spatial configuration in metal. The master wax is worked and then covered with plaster of Paris.
Once the plaster is set the wax is melted to provide for a cavity through which the bronze will melt taking the shape of the original master. Once the metal is poured it can be finalized and coated with several patinas.

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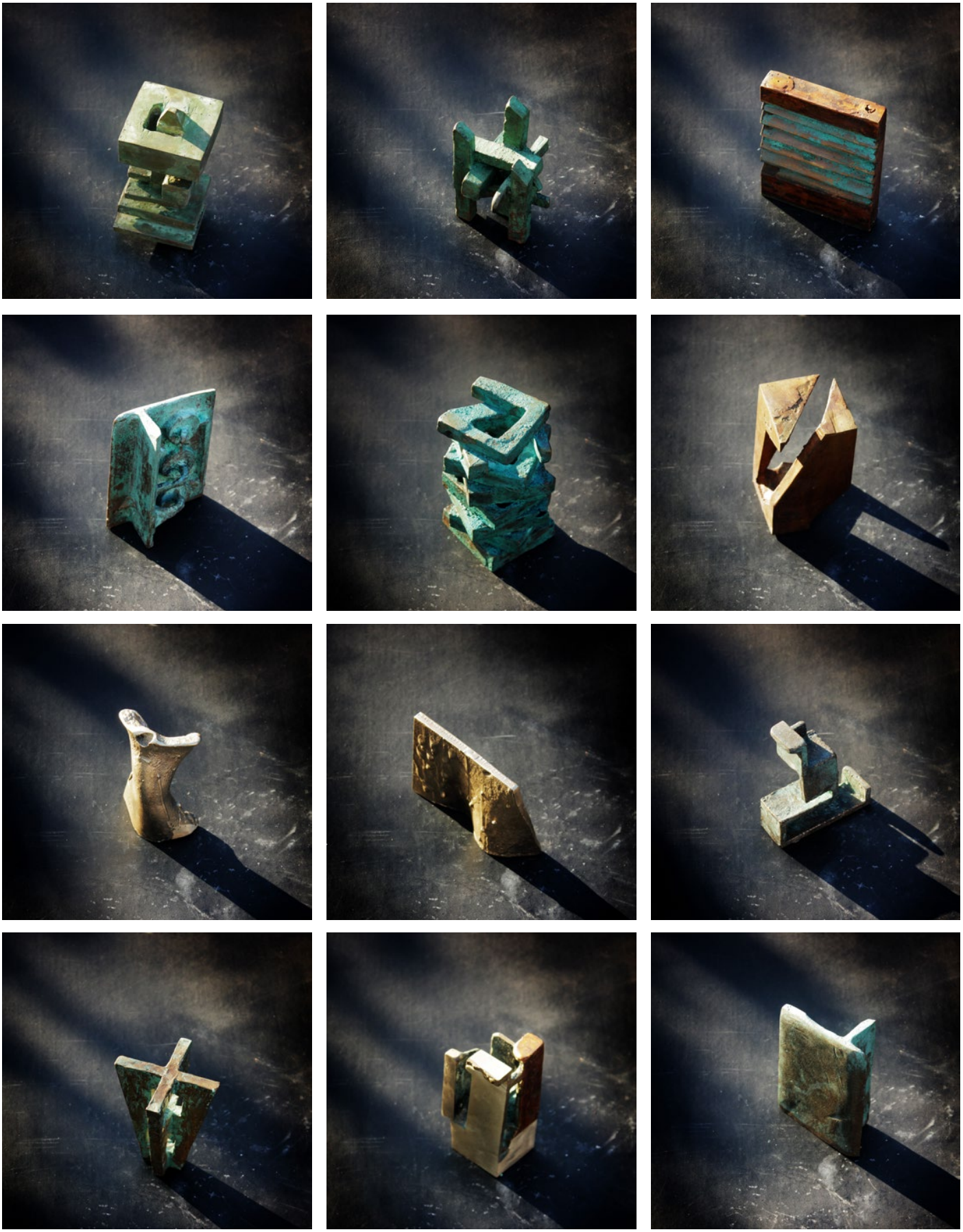

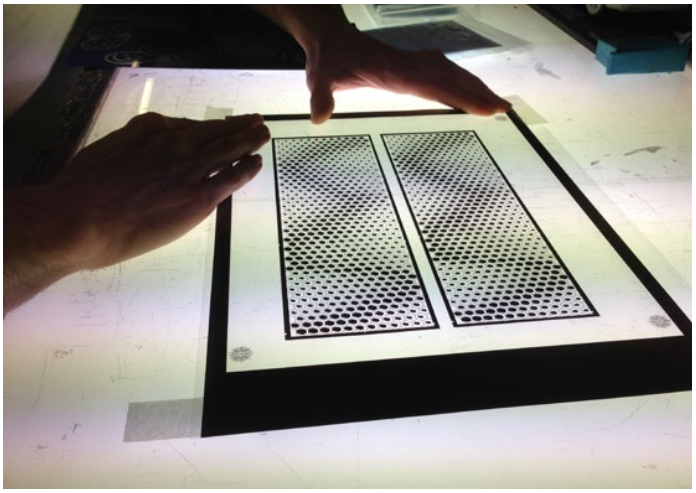

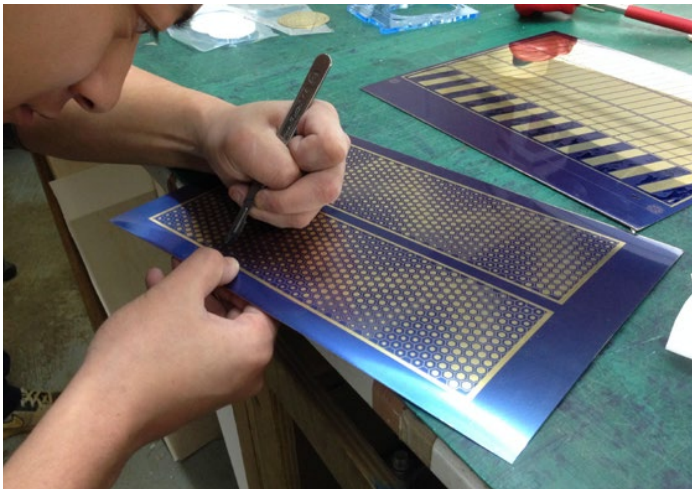

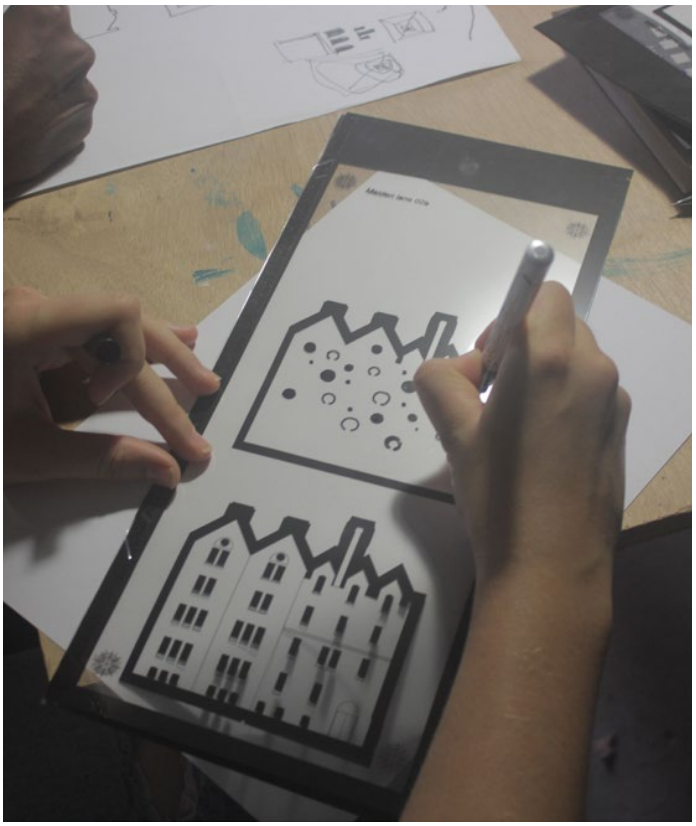

Exercise Information

Individual / Group work:
Individual
Mini Brief:
Facade Pattern
Workshop involved:
Brass Etching / Cyanotype
Duration:
4 hours
Connection with the next exercise:
No
Scale:
1:1

Mini Brief

Participants will learn how to transfer a design into a 1mm thin sheet of brass using a double sided cyanotype technique and a double sided etching, creating a perforation on the metal. This technique allows a high level of detail and resolution during the etching process.

Process, Materials and Tools

The process of photo etching involves transferring the design into the sheet of brass and then developing the pattern into the surface. Once the design is fixed the brass is etched in acid until it perforates from both directions.

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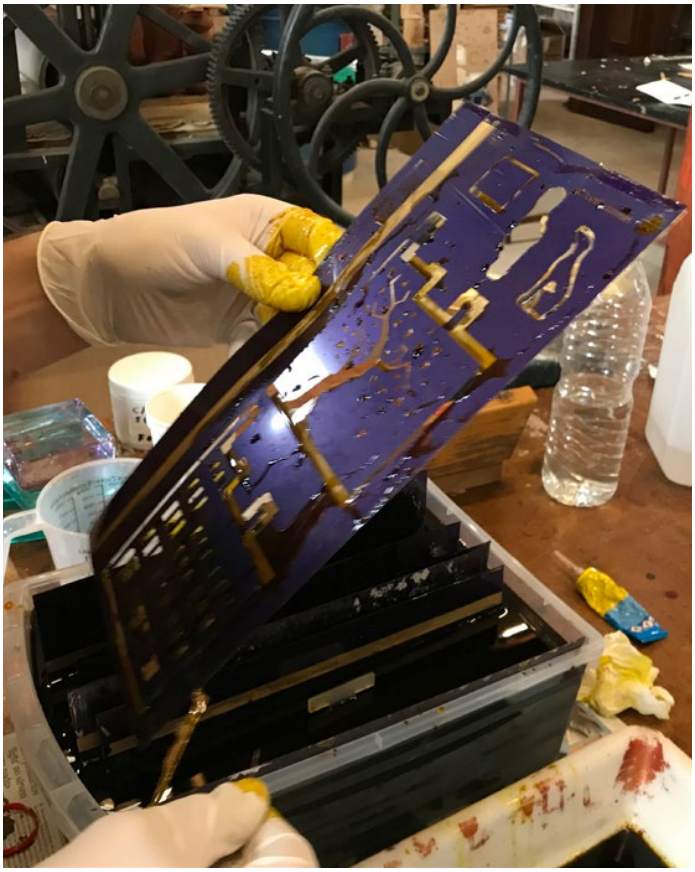

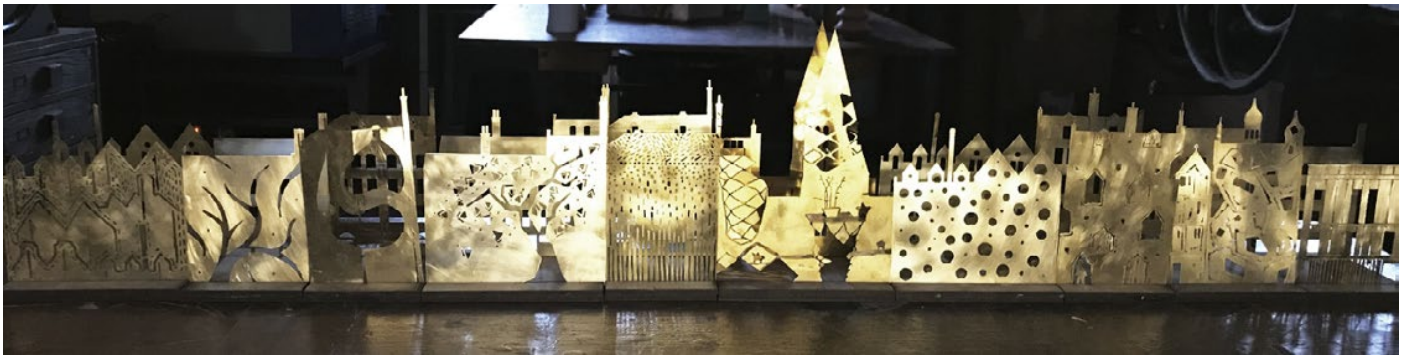

Exercise Information

Individual / Group work:
Individual
Mini Brief:
Facade Pattern
Workshop involved:
Wood / Ink / Press Printing
Duration:
6 hours
Connection with the next exercise:
Yes - Press Printing
Scale:
1:1

Mini Brief

This exercise explores the relief printing technique of woodcut. Participants will carve a design by hand into a block of wood using gouges, leaving the printing parts level with the surface while removing the non-printing parts. The areas cut away will carry no ink, while characters or images at surface level will carry the ink to produce the print.

The block is cut along the wood grain (unlike wood engraving, where the block is cut in the end-grain). The surface is covered with ink by rolling over the surface with an ink-covered roller (brayer), leaving ink upon the flat surface but not in the non-printing areas.

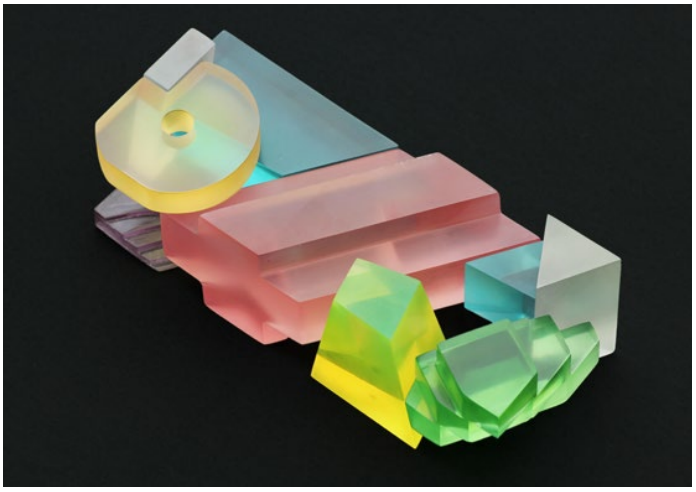

Fig. 7: Model for the project KU.BE, commissioned by MVRDV, The Netherlands, 2013.

Fig. 8: Model for Arvo competition, commissioned by Alejandro Zaera-Polo AZPML, United Kingdom, 2014.

Fig. 10: Architectural model adapted for the visually impaired, Santander Council, Spain, 2014.

Fig. 9: Model for Taby competition, in collaboration with Bjarke Ingles Group, BIG, Denmark, 2011.

Atelier La Juntana Practice

Atelier La Juntana is a group of architects and artists developing architectural models in an international framework. Through a wide collaborative experience with various architectural practices and public institutions, their work is grounded on accurate and rigorous, yet always creative, production. Using a balanced mix of art and technical skills, their work combines the precision of architectural design with remarkable (innovative or handcrafted) materials and techniques. Therefore, the result is not a mere reproduction of the designed project, but rather a unique interpretation, enhancing the ideas and qualities behind the architectural creation. Traditional processes used in fine arts, such as acid etching, casting resin copies, silicone moulds and embossed paper, are combined with cutting-edge manufacturing and prototyping techniques. Likewise, 3D printing and the laser cutting process reach a high aesthetic and visual interest, while keeping accuracy and precision, both on an urban scale and on a 1:1 scale of detail. Over the last 10 years, the group's work has been exhibited worldwide on numerous occasions, such as at the Architecture Official College of Madrid 2008, the 12th International Architecture Biennale in Venice 2010, the Cité de l´ Architecture et du Patrimoine de Paris 2012, and the Architecture Official College of Cantabria 2014.

Clients and Collaborators

MVRDV Architects, The Netherlands.
ADEPT Architects, Denmark.
Bjarke Ingels Group, BIG Architects, Denmark.
Santander City Council, Spain.
Delegación Territorial de la ONCE Cantabria, Spain.
Alejandro Zaera-Polo, AZPML Architects, United Kingdom.
Cité de l `Architecture et du Patrimoine, Paris, France.
Paul St George, Devices of Wonder, Londres, United Kingdom.
Architecture Official College of Madrid.
Architecture Official College of Cantabria
Escuela Técnica Superior de Arquitectura de Madrid, ETSAM, Spain.
12th International Architecture Biennale, Venice, Italy.

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Fig. 11: Coral Frontiers by Rosa Rogina, intervention on the Diego Garcia Island, 2015.

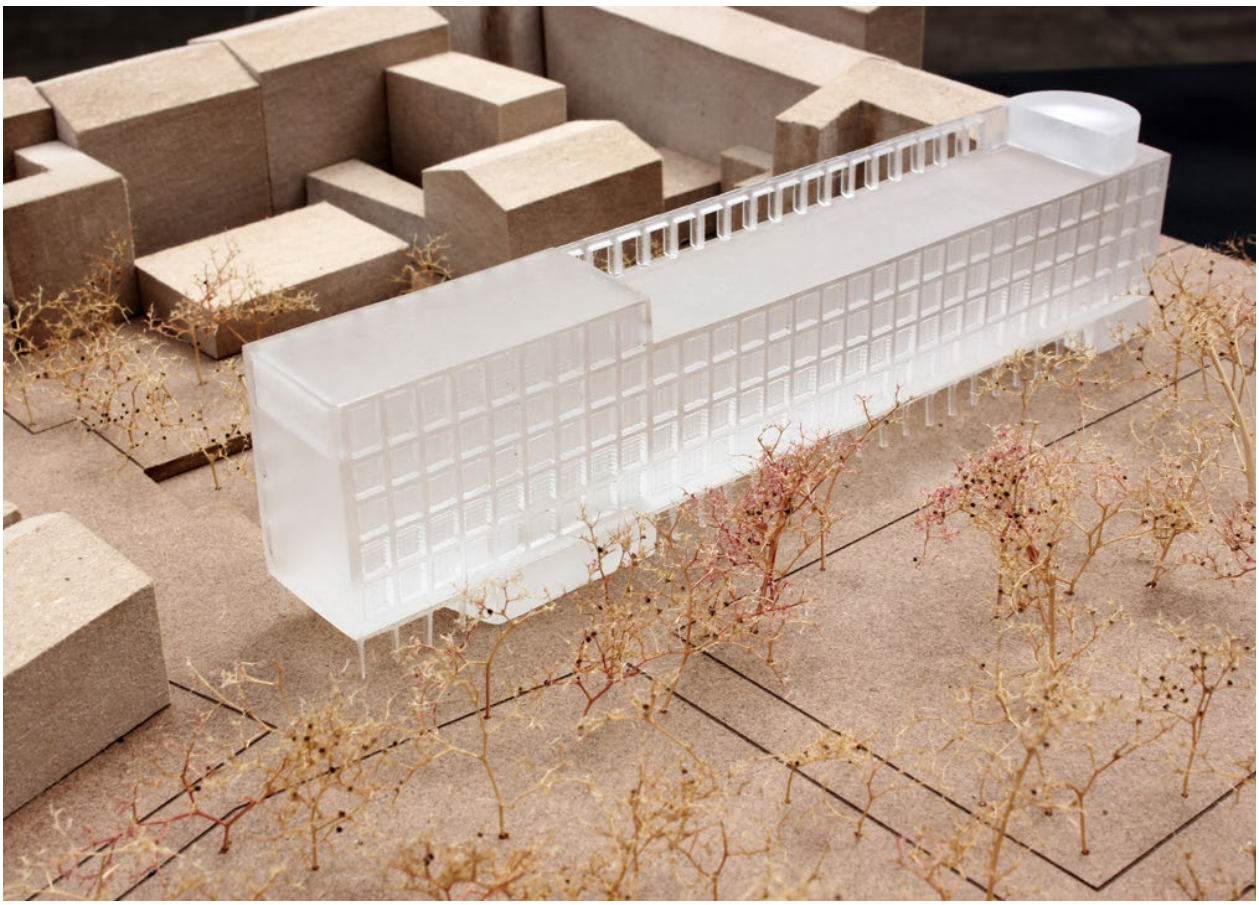

Fig. 12: Model for an University Campus Centre, San Sebastián, Spain 2014.

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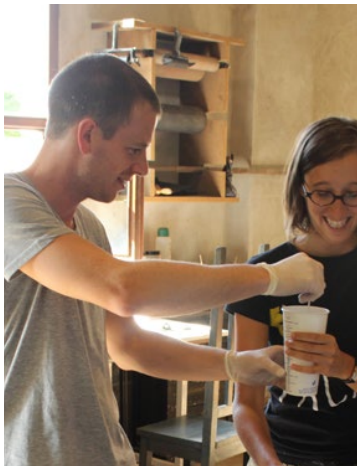
Throughout the course, participants are supported by three tutors, two architects and one artist. The tutors will lead an induction to the workshop equipment, techniques and materials available and assist each student in the production of the models. They will also aid with documentation (photography and animation) to provide a complete record of the course. In parallel, informal one-to-one tutorials for individual projects and the further exchange of ideas will take place.

Daniel Gutiérrez Adán (Santander, 1955)
Daniel is an interdisciplinary artist whose work encompasses a broad conceptual and formal span, with his artistic origins grounded in the fields of ceramics and sculpture. For over 30 years of his artistic career, he has researched and innovated tirelessly in the territory of contemporary sculpture. His solid technical background is coupled with unrelenting curiosity and a steady and always-necessary inquisitive drive. Besides his work as an artist, equally noteworthy is his intensive educational work, which he has developed in parallel with his art practice since his first steps as a professional. This activity has given him a chance to engage in constant dialogue with younger generations of artists. His work is part of an extensive number of museums and collections, such as Moderner Kunst Stiftung Ludwig Vienna, Fine Arts Museum Bilbao, Fundación Marcelion Botín Santander, Art Context Mountrouge Paris, New Europa Supranational Art Milan, ARCO `01 Open Spaces Madrid, Basel Art Fair Switzerland, Jacques Hachuel Collection Madrid and Runnymede Sculpture Form, Los Angeles.



Armor Gutierrez Rivas (Oviedo, 1984)
Armor graduated as an architect from the Polytechnic University of Madrid School of Architecture in 2009. He spent part of his studies abroad at École Nationale Supérieure d'Architecture de Paris La Villette.
As a member of the Architecture Official College of Cantabria since 2010, he has been actively participating in several architectural workshops with architects such as Elia Zenghelis, Carme Pinos and Mathias Klotz, alongside artistic collaborations with Andrés Jaque, Uriel Fogue and Chema Madoz.
Armor received a Leonardo grant and joined Bjarke Ingels Group in Copenhagen, working for two years on several projects as a Design Architect and actively collaborating in the Expo 2010 Shanghai in China. In 2012, he started a collaboration with MVRDV in Rotterdam, working as a Project Architect and BIM Coordinator; he later developed a number of architectural models for MVRDV. His work has been awarded several prizes worldwide, such as at the Gaudi Competition for Sustainable Architecture in 2010, Fundamentos de Arquitectura in 2008, Catedra Blanca ETSAM in 2004 and the International Art Contest Pancho Cossio in 2002, among others.

Nertos Gutierrez Rivas (Santander, 1989)
Nertos graduated as an Architect from the Polytechnic University of Madrid School of Architecture in 2015. He spent part of his studies abroad at Technical University Vienna, where he specialised in graphic design and video production. He continues his education, collaborating on several workshops with Campo Baeza, Tuñón y Mansilla and Chema Madoz. Over the last three years, he has participated at IFAC (International Festival of Art and Construction) as a Photography and Video Tutor.
In 2013, Nertos worked in partnership with Renzo Piano and Fundacion Botin on the exhibition Creating Future at the Botin Center, where he explained the future development of Santander city to blind people through tactile models.
His work has been awarded several prizes worldwide, such as at the Isover Competition 2013, the Gaudi Competition for Sustainable Architecture in 2010, and the International Art Contest Pancho Cossio in 2006, among others.

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About the workshop
Facilities and equipment

Fig. 13: Workshop, interior view.

Fig. 14: Workshop and apartment, view from the garden.

The Workshop is separated into three different areas: the working space, where all the handling equipment is located; the research area, with access to computers, Wi-Fi and the library; and the resting area, with sleeping and cooking facilities. In addition, certain activities take place in the garden surrounding the Workshop.

Throughout the course, the equipment and materials are always available to participants. Use of machinery is subject to previous induction, and health and safety measures are fundamental to the use of the Workshop.

The Workshop facilities include:

-Carpentry and wood workshop
-Ceramic, clay and plaster workshop
-Slip casting workshop
-Metal melting and casting workshop
-Mould-making and resin-casting workshop
-Photography and cyanotype workshop
-Engraving and press printing workshop
-Glass workshop
-Vacuum-forming workshop
-Laser cutting studio
-3d printing studio

Fig. 15: Axonometric view of the facilities.

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Fig. 16: Wood carving duplicator.


Fig. 17: Carpentry table saw.

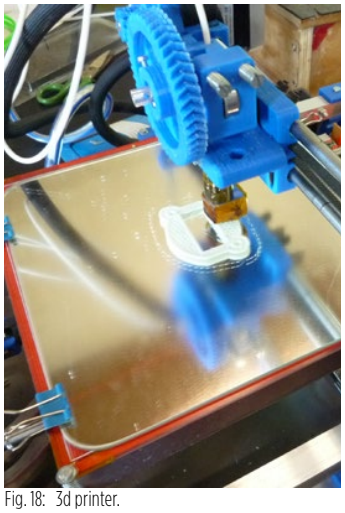
Fig. 18: 3d printer.


Fig. 19: Ceramic oven.


Fig. 20: Aluminum melting oven


Fig. 21: Printing press.

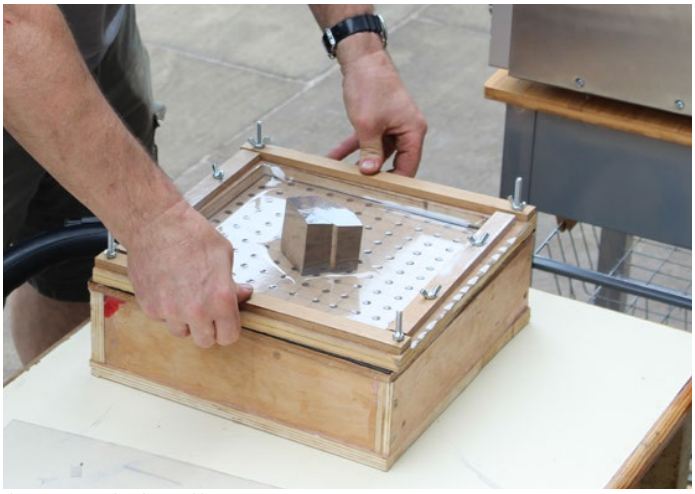
Fig. 22: Vacuum forming machine.

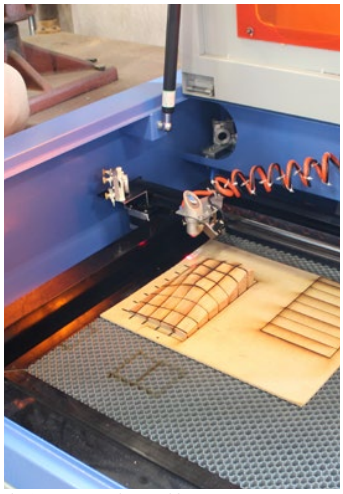
Fig. 23: Laser cutting machine.


Fig. 24: Cianotype UV Light box.

Fig. 25: Aerial image of the workshop´s surroundings, including Quebrada Coast area, Dunas de Liencres Natural Park and Picota Hill.

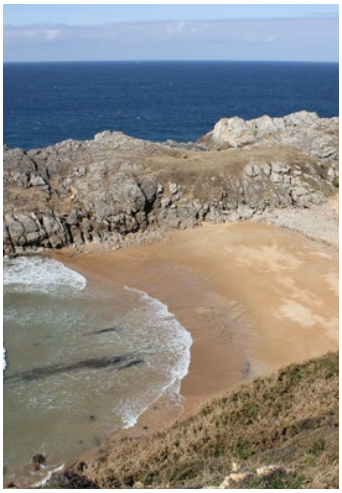

Fig. 26: Somocuevas beach.

Fig. 27: Dunas de Liencres Forest.

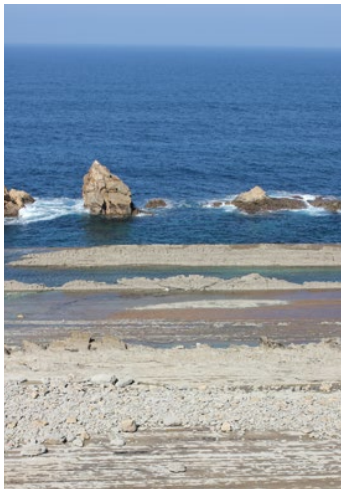

Fig. 28: Quebrada Coast protected area.

Fig. 29: River Pas estuary.

Dunas de Liencres Natural Park, Quebrada Coast and Picota Hill.

The Workshop takes advantage of its unique location at the centre of Dunas de Liencres Natural Park, the largest protected natural area on the north coast of Spain. A mix of green and blue landscapes, it has five different beaches located within 10 minutes' walking distance of the Workshop: Somocuevas, Valdearenas, Canallave, La Arnía and El Madero. The River Pas estuary, the Liencres Pine Tree forest, the Quebrada Coast area and the Picota Hill area are also located within the Natural Park, all within walking distance. In the evenings, different activities and trips provide the opportunity to discover this special location.

In parallel, part of the Workshop exercises take part in the surrounding areas, using materials collected from the forest and beaches and through direct interaction with the landscape.

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Fig. 30: Practising Yoga in the garden.


Fig. 31: Workshop induction.


Fig. 32: Explanation of previous work by Atelier La Juntana.


Fig. 33: Barbacue following aluminium casting workshop.


Fig. 34: Guided tour of Santander city organised by Domingo de La Lastra, from the Architectural College.


Fig. 35: Trip to Somocuevas beach with tutors and participants, MMDA-14.


Fig. 36: Open doors day, MMDA-14.

"The relaxed and family atmosphere which makes the entire experience easy to enjoy"

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Holly Morrison - VCU Center for Teaching Excellence - Small Grant Program
www.hollymorrison.com

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Fig. 37: Kengo Kuma, Sensing Space Exhibition, Royal Academy of Arts, London 2014.
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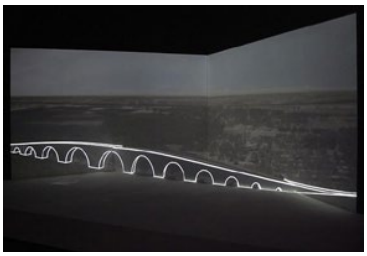

Fig. 39: BIG, Bjarke Ingles Group, Loop City Model, Venice Biennale, 2010.
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Fig. 40: Max Lamb Petwer Desk, Pewter, Caerhays beach, Cornwall, United Kingdon 2011.
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Fig. 41: Marcel Wanders, Knotted Chair, Droog´s Dry Tech Project, 1996.
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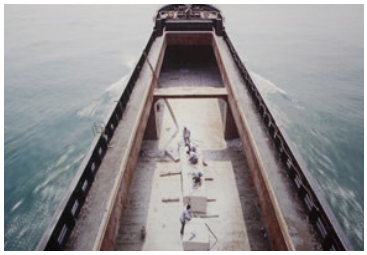

Fig. 42: "The Column", video installation, Adrian Paci's Architecture Biennale in Venice, 2014.
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