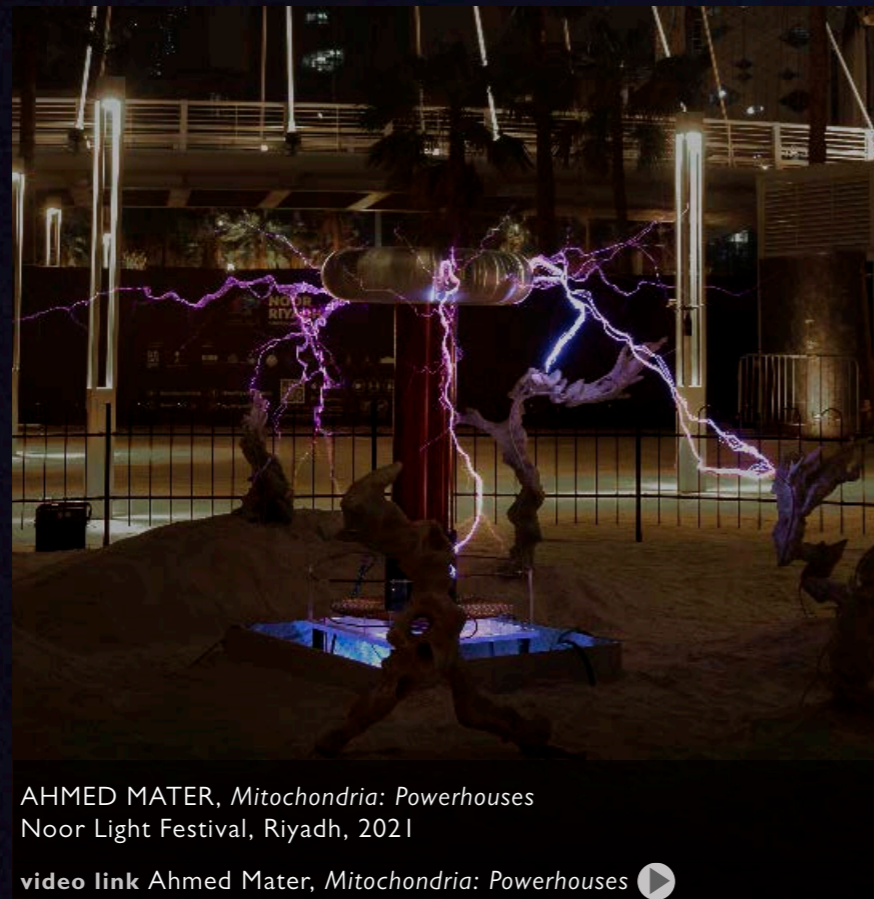


"Factum preserves evidence..."

*Katrina Kufer on Factum Arte
Harper's Bazaar Arabia, 2019*

A DIGITAL MEDIATION STUDIO

An overview of the workshops of
FACTUM ARTE and **FACTUM FOUNDATION**



AHMED MATER, *Mitochondria: Powerhouses*
Noor Light Festival, Riyadh, 2021

[video link](#) Ahmed Mater, *Mitochondria: Powerhouses* ▶

FACTUM arte



FACTVM FOVDNATION

AHMED MATER, *Mitochondria: Powerhouses*
Galleria Continua, San Gimignano, 2017



SHEZAD DAWOOD, *Where do we go now?*, 2017

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Re-creating al-Idrisi's lost world map, 2019
Engraved in silver using CNC-milling

FACTUM ARTE & FACTUM FOUNDATION

FACTUM ARTE was founded in 2001 in Madrid and has a reputation for its innovative approach to fabrication merging digital technology and craft skills.

Factum Arte consists of a team of artists, technicians and conservators dedicated to digital mediation. The main focus is on the production of works for contemporary artists and to the application of new technologies to the creation of objectively accurate facsimiles that are part of a coherent approach to understand and read the importance of material evidence. The emphasis is on cross-disciplinary communication, innovation and sharing information and ideas. Factum's goal is to demonstrate what can happen when technology is developed and applied by creative thinkers and where the line between the digital and the physical no longer exists.

Led since 2001 by Adam Lowe, who funded Factum Arte with Manuel Franquelo and Nando Guereta, the workshop was conceived as an interdisciplinary studio where diverse skill sets collide on a daily basis. Artists such as Marina Abramović, Anish Kapoor, Maya Lin, El Anatsui, Ahmed Mater, Paula Crown, Wang Yuyang, Marc Quinn, Gillian Wearing, Cornelia Parker, Grayson Perry, Akram Zataari, Joana Hadjithomas, Khalil Joriege, Rachid Koraichi, Mariko Mori, Abdalnasser Gharem, Manal AlDowayan, Hrair Sarkissian, Shezad Dawood, Sarah Sze, Subodh Gupta, Michael Hansmeyer, Jenny Holzer and many others have enjoyed and taken advantage of Factum Arte's craftsmanship and bespoke technology to create new works of art. There are operational spaces in Madrid, London and Venice.

The **FACTUM FOUNDATION** was founded as a non-profit organisation in 2009 by Adam Lowe with the aim of using Factum Arte's innovative processes and technologies for preservation, education and the development of thought-provoking exhibitions. Factum Foundation's approach is effective and its facsimiles of Veronese's *Wedding at Cana* and the tombs of Thutmose III, Tutankhamun and Seti I have been widely acclaimed for their forensic accuracy. The Foundation regularly carries out projects and supports the documentation of artworks in institutions such as the British Museum, the Louvre Museum, the Metropolitan Museum of Art, the Museo del Prado, The V&A and the Pinacoteca di Brera. It is running and developing projects in conjunction with the Peri Foundation, Community Jameel, Juma Al Majid centre for Conservation and Heritage, Iconem, and the Fondazione Giorgio Cini. It currently has projects in Egypt, Saudi Arabia, Portugal, Italy, Daghestan, Somaliland, Nigeria, United Arab Emirates, Finland, England, France and Spain, and many other parts of the world.

ARCHiVe was formed in 2017 in Venice and rapidly established itself as an innovative hub for the Analysis and Recording of Cultural Heritage. In a new collaboration with the Bodleian Library in Oxford (ARCHiOx) the model is being applied to the role of high-resolution 3D recording in library management.

New collaborations are starting in 2022 with the Bodleian Library and with Aalto's Silo in Oulu.



OUR VISION, A NEW TYPE OF CREATIVE SPACE

The emergence of computers and the opportunities offered by diverse types of digital mediation in C21st required a radical rethinking of the layout of a creative workshop and the way that contemporary artists work. Factum Arte is a direct response to this need. Its workshops have developed to create an experimental and open environment to meet the needs of artists from around the world.

Factum Arte has been run since it started by Adam Lowe, a painter trained at Oxford University's Ruskin School of Drawing and at the Royal College of Art in London. Many elements of these two very different institutions have shaped the radical studio that has emerged in Madrid. The Ruskin's emphasis on traditional techniques and the interdisciplinary intellectual community of Oxford prompted an interest in creative processes that intersect science, art and technology. The Bauhaus environment of the Royal College of Art in 1980s mixing painters, sculptors, printmakers, ceramicists, metalworkers, jewellers, silver and goldsmiths, automotive designers, photographers, textile designers, woodworkers, filmmakers demonstrated the importance of communication across disciplines.

The studios that have grown in San Blas, Madrid over the past 21 years are a direct reaction against a heavily compartmentalised model. Digital mediation has changed how people work together and divisions based on materials are being replaced by a different approach to mediation, transformation, and making. Curiosity, collaboration, innovation, and application have come to define Factum Arte's working spaces that have been set up to maximise artists intentions. Everything is based on transforming an idea into its optimum form and understanding the mediations that are involved in the digital and the physical world.

Over 50 people work together in a space of 8000 sq meters. Their skills are diverse, architects, product designers, scientists, moulders and casters, welders, conservators, fine and applied artists, printers, electrical and physical engineers, machine operators, accountants, photographers, filmmakers, 3D scanners, textile specialists, typographers, sculptors and furniture restorers all work together. Teamwork is at the heart of this C21st renaissance and the workshops are only the tip of the iceberg. They connect to precision engineering, CNC-milling, foundry work in many materials (at every scale and level of detail), waterjet cutting, laser technologies of various kinds, structural engineering, architecture, museum collaborations, printing, exhibition design, 3D printing, electro-forming and electroplating, wood carving, stone carving, computer programming, filmmaking, anthropology, scientific innovation... the list responds to needs. The aim has been to create a 'playground' for artists who can work supported by skilled and creative digital artisans.

Factum Arte applies these skills to contemporary artists - Factum Foundation applies many of the same tools to the preservation of the past through high-resolution documentation, sharing information and the creation of exact facsimiles. What has emerged is an atemporal and anachronistic approach to art - the past shapes the present and is shaped by it - both shape the future.



GRAYSON PERRY's *Covid Bell* to celebrate the end of Covid, during casting at Pangolin Foundry, Gloucestershire, 2021

AREAS OF WORK

Factum Arte uses digital technology to:

- Inspire experimentation
- Promote teamwork
- Create at the interface between the digital and the physical
- Generate and share knowledge in different forms
- Give ideas form – both physical and digital
- Connect the ideas of the past, the realities of the present, the aspirations for the future
- Inspire and facilitate a new generation of artists and creative individuals
- Preserve artworks and monitor change

Services for Artists and Institutions

- Outdoor installations
- Theatre production
- Framing – standard and specialist framing
- Art handling, installation services
- Logistics, crating and packing
- Conservation and maintenance
- Lighting
- Experimental installations and events

This multilateral and diverse approach draws on the skills of experts from around the world specialising in the following areas of creative production:

- 3D input and manipulation – 3D Scanning, Photogrammetry, Organic modeling, AR/VR/MR
- Engineering workshops. Electrical/Mechanical
- Printing Hub – re-thinking printing – bridging 2D and 3D printing
- Mechanical/Chemical/Digital – rethinking art production
- Photography – Contemporary and Historical processes
- CNC-milling – 7 and 3 axis CNC-milling for stone, wood and other materials
- Metalworking Studio – laser cutting, waterjet cutting, welding, forging
- Painting studios/paint chambers for artistic production and high-quality paint finishes
- Electroplating and Electroforming
- Fine art Foundry casting different alloys and metals
- Ceramic workshop
- Tapestry and Fabric workshop
- Facsimile production
- Long-term Archiving of digital data

A team of 60 craftsmen, painters, sculptors, specialists in casting, in traditional and digital printing, 3D modelers, engineers, programmers, colour specialists, software writers, electrical engineers, physical engineers, photographers, textile specialists, conservators, welders work together to create works for artists.

The goal is to demonstrate what can happen when technology is developed and applied by creative thinkers and where the line between the digital and the physical no longer exists.



Aniuska Martin working on the stereolithographic print of Amico Aspertini's *Deposition of Christ*



Damián López Rojo and Iván Allende working on one of SHIRAZEH HOUSHIARY's Murano glass brick sculptures



Carlos Bayod Lucini recording El Greco's *Annunciation* (Banco Santander collection) using the Lucida 3D Scanner



The rematerialisation of the tomb of Raphael

A number of spaces have been designed for craft work. The 'dirty workshop' is for moulding and sculpting in materials such as fibreglass, resin, scagliola, wood and gesso. This space is large and various projects are carried out simultaneously. In this area, different teams work side by side.

The 'clean studio' specialises in metal assembly, glass works and special projects requiring precision. The 'metal studio' is composed of two designated areas, one for large complex fabrication and the other for precise work with metals. Other spaces are used for experimentation and innovation.



Francesco Cigognetti and Javi Barreno Pérez working on the recreation of al-Idrisi's silver map

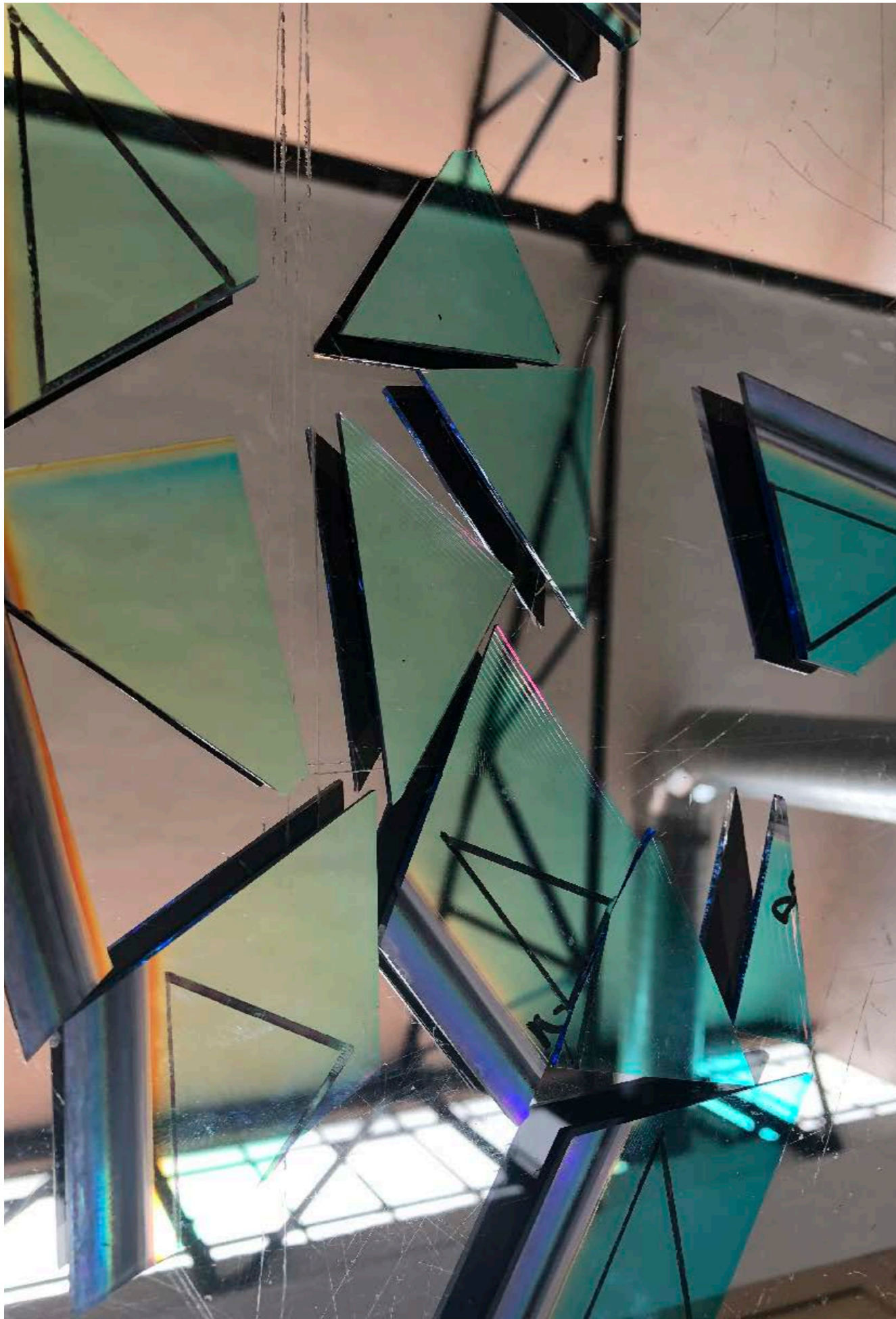


Damián López Rojo working on ANISH KAPOOR's concave mirror series

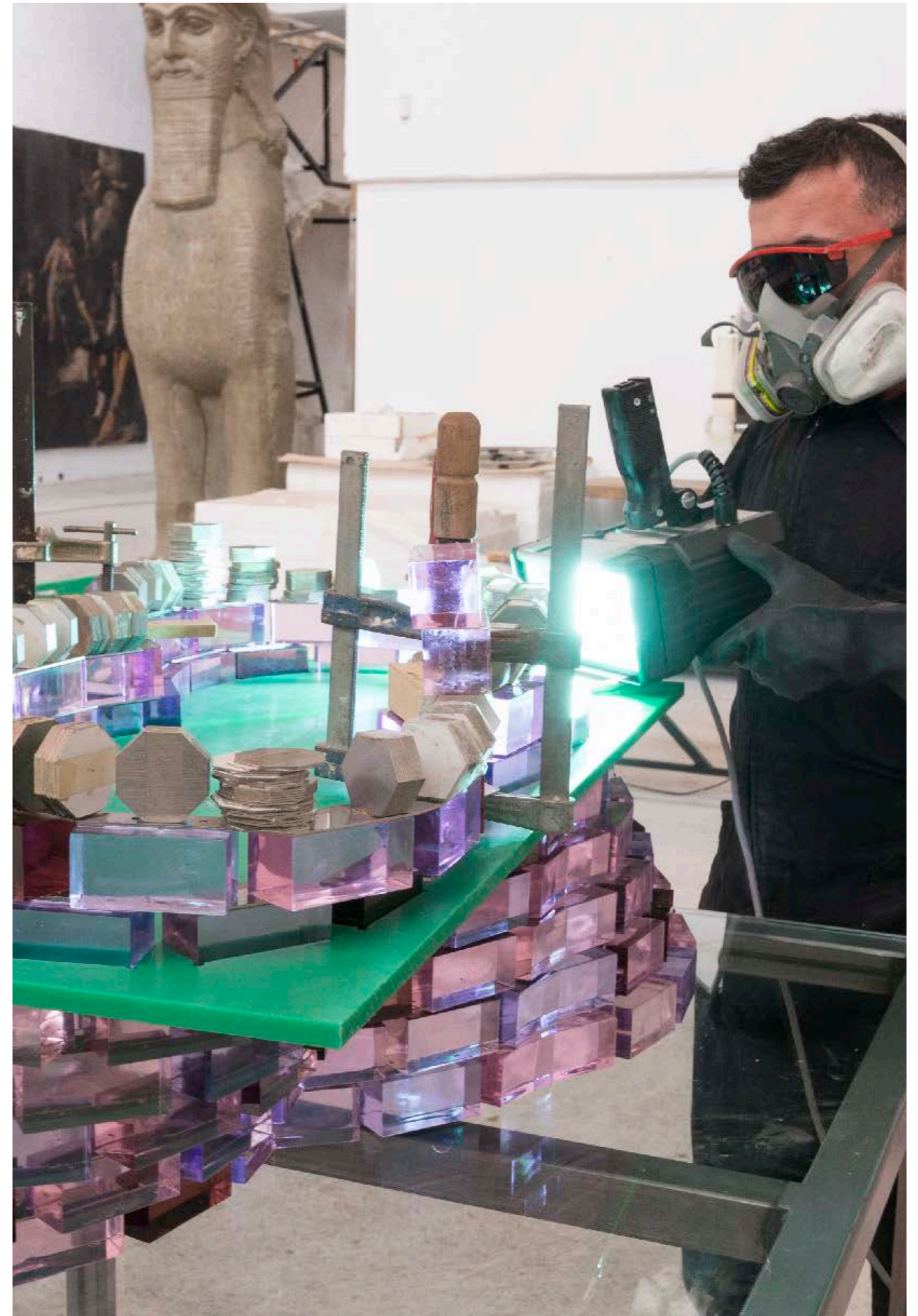


Robot for MUHANNAD SHONO's *On Losing Meaning*. Artur Weber and Quinner Baird during the setting up, 2021
Photos by Muhannad Shono





Dichroic glass experiments for PAULA CROWN



Damián López Rojo working on one of SHIRAZEH HOUSHIARY's Murano glass brick sculptures

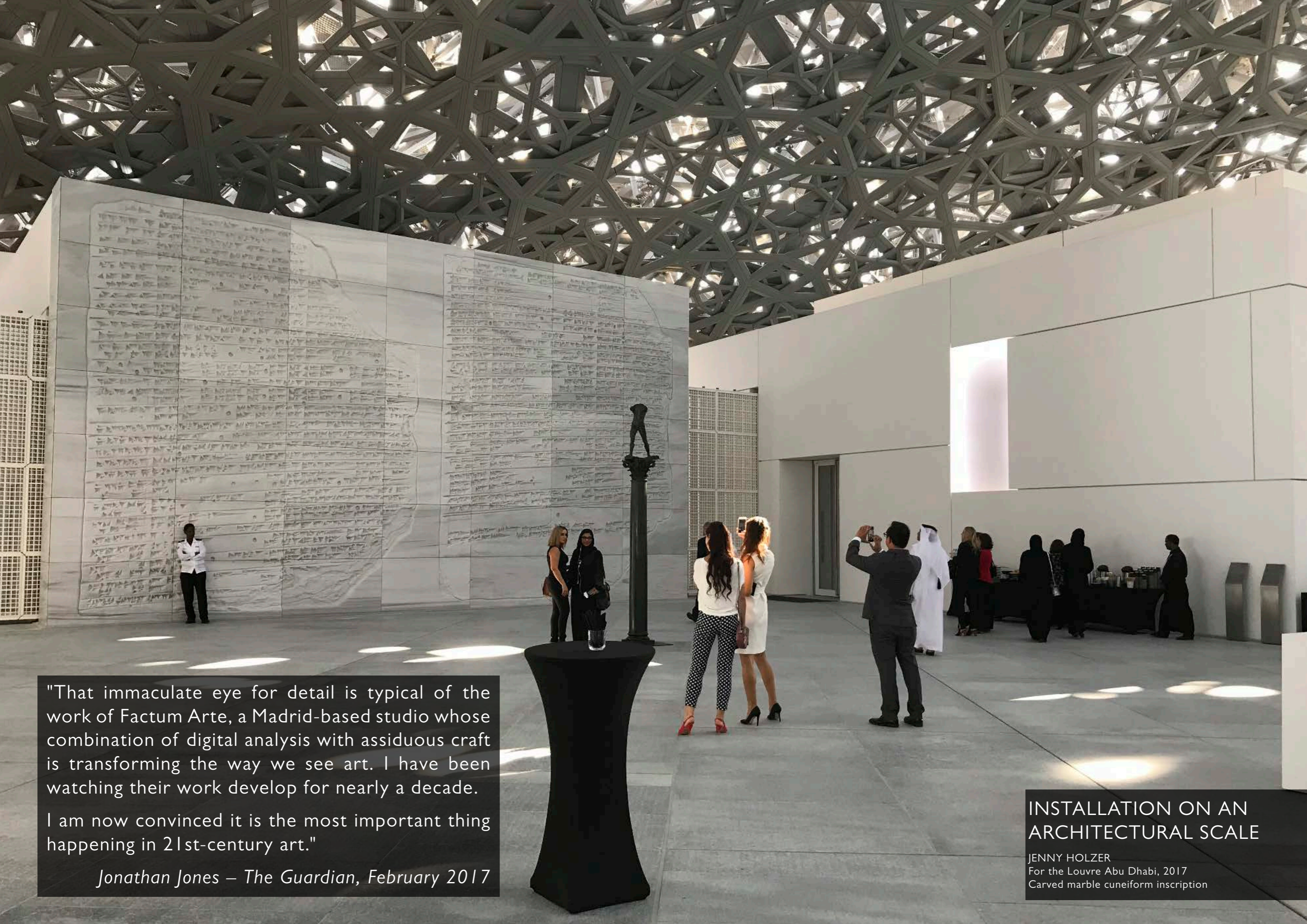


Working on the facsimile of the sarcophagus of Seti I, 2016. Elevated colour prints were fixed onto a CNC-routed core. The original sarcophagus was recorded in high resolution at Sir John Soane's Museum in London



BRONZE CAST

PAULA CROWN, *Resilience*
2019-2021, silver patinated bronze
The 3D files from the recording of a plastic Solo cup were scaled scaled 27:1 and CNC-milled in polyurethane before casting



"That immaculate eye for detail is typical of the work of Factum Arte, a Madrid-based studio whose combination of digital analysis with assiduous craft is transforming the way we see art. I have been watching their work develop for nearly a decade. I am now convinced it is the most important thing happening in 21st-century art."

Jonathan Jones – The Guardian, February 2017

INSTALLATION ON AN ARCHITECTURAL SCALE

JENNY HOLZER
For the Louvre Abu Dhabi, 2017
Carved marble cuneiform inscription

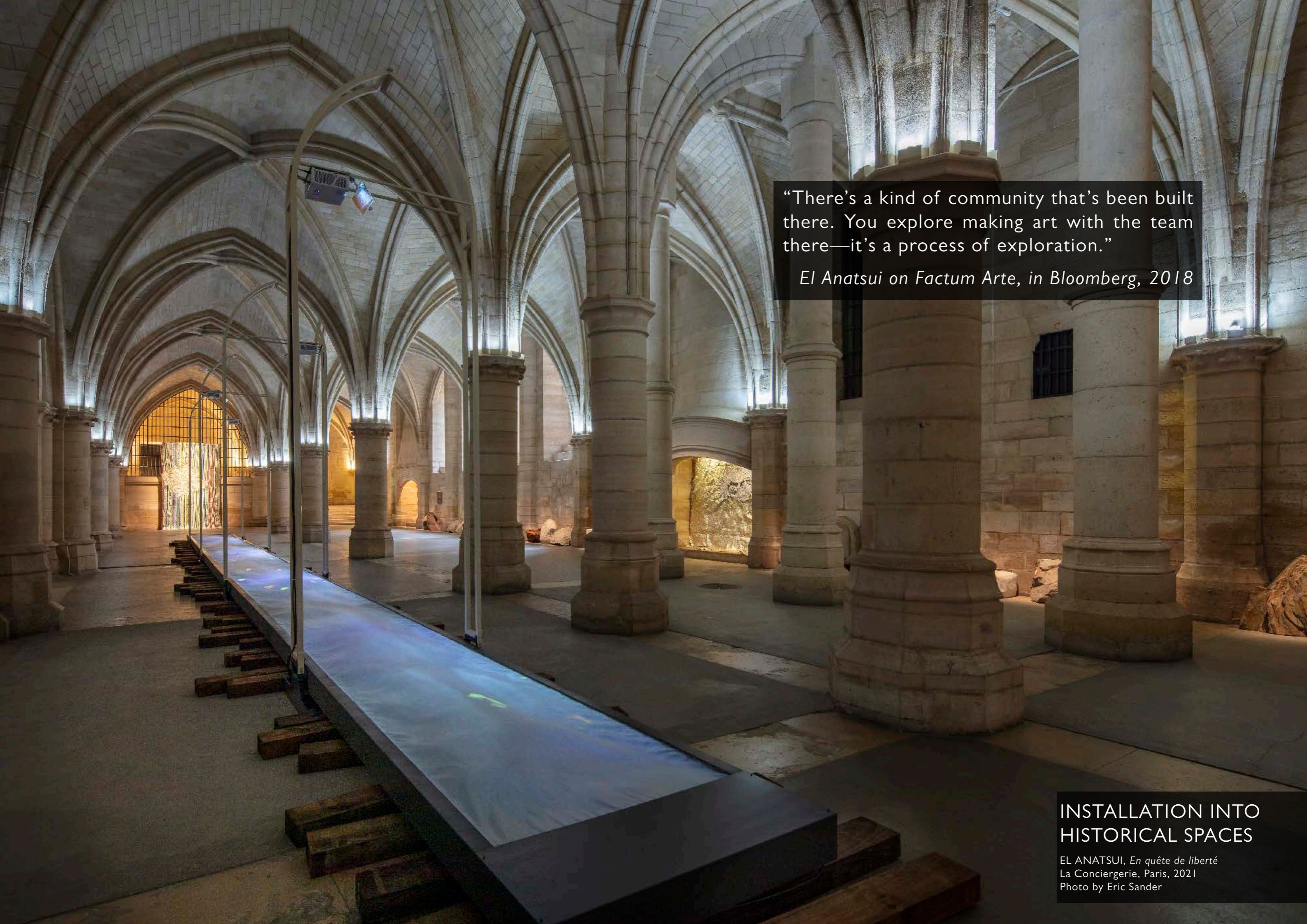
“The vast size of many of the artworks in Factum, combined with the high-tech carving and 3D printing machinery, gives room after room the air of a Willy Wonka factory, but one where art, not candy, is the treat of choice. Lowe, who presides over all of it, is here to make sure that the artists who enter have the tools, technology, and support staff to make whatever they dream up.”

James Tarmy – Bloomberg, March 2018



THEATRICAL INSTALLATION

MICHAEL HANSMEYER
Opera set of *The Magic Flute / Die Zauberflöte*, directed by Romeo Castellucci and presented at the Théâtre Royal de La Monnaie de Munt in Brussels, 2018



“There’s a kind of community that’s been built there. You explore making art with the team there—it’s a process of exploration.”

El Anatsui on Factum Arte, in Bloomberg, 2018

INSTALLATION INTO HISTORICAL SPACES

EL ANATSUI, *En quête de liberté*
La Conciergerie, Paris, 2021
Photo by Eric Sander



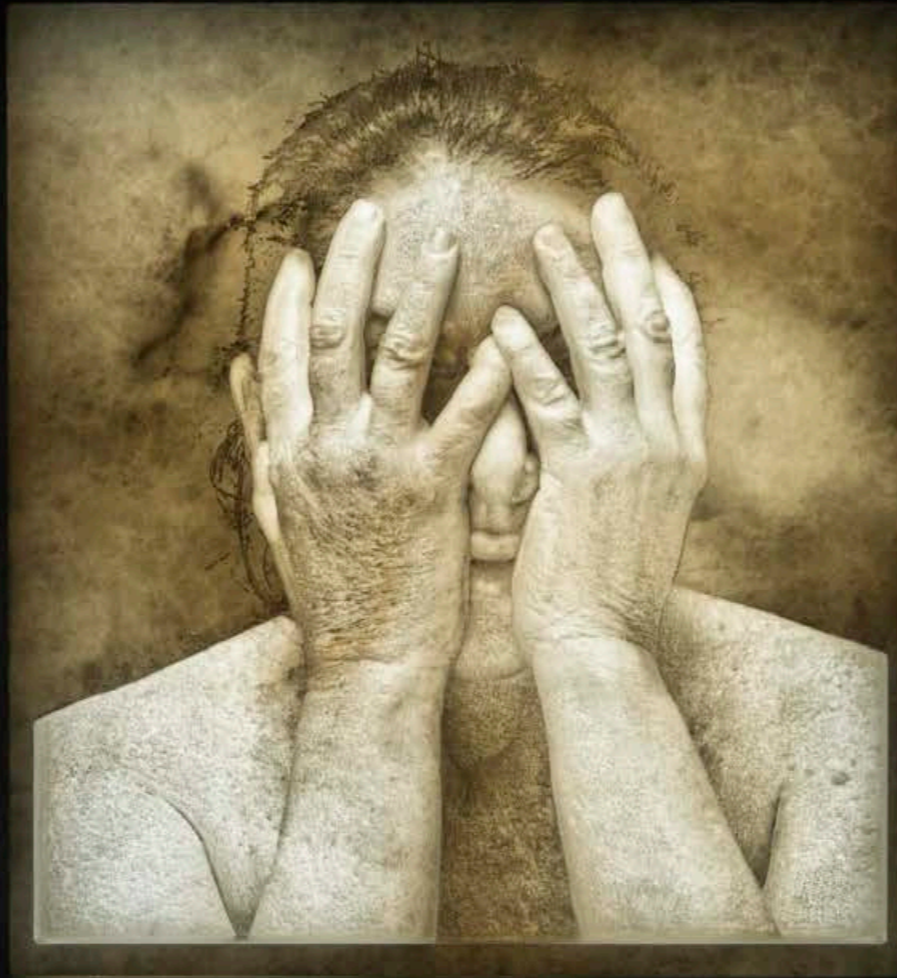
"Bringing together these strands – technical, human, aesthetic – combined with fanatical attention to detail has secured the company's reputation."

Matthew Sturgis – Patek Philippe, October 2017



GRAVITY-DEFYING INSTALLATIONS

MARC QUINN, *Planet*
Chatsworth House, Derbyshire, 2008
Gardens by the Bay, Singapore, 2013



“It is one of the curious places where, as an artist, you feel that it is possible to reinvent the process of ‘making’ works of art, and where at the same time the word ‘no’ almost doesn’t exist.”

Marina Abramović on Factum Arte – Harper’s Bazaar, 2019

EXHIBITION DISPLAY

MARINA ABRAMOVIĆ, *Five Stages of Maya Dance*
Masterpiece Presents, London, 2018



"Because it connects the most advanced technology with the deepest care for the materiality, history and intricacies of works of art... what the Factum Arte team has managed to assemble allows for a set of skills impossible to find anywhere else....that has become synonymous with creation and innovation."

*Bruno Latour, Sociologist of Science and anthropologist,
Professor at Sciences Po, Paris & recipient of the
Holberg Prize, 2013*

PROJECTION MAPPING

*The Wedding at Cana. A vision by PETER GREENAWAY
Fondazione Giorgio Cini, 2010*

"... But perhaps the most radical achievement of Factum, and one that's acutely welcome in our new world of lockdown, is the way its creations can dissolve museum walls and reconnect their treasures not just with new audiences but with the raw, real world they came from."

Jonathan Jones – *The Guardian*, November 2020



EXHIBITION INSTALLATION

On the left, the facsimile of *The Sacrifice at Lystra*, one of the Raphael Cartoons at the V&A, compared with its correspondent tapestry at the Vatican Museums




PRESERVING AND DISPLAYING
VULNERABLE HERITAGE

FACSIMILE OF THE HALL OF BEAUTIES FROM THE TOMB OF SETI I
Antikenmuseum Basel, 2017-2018

"Reproduction today by companies of this sort of quality, is more than just a technical achievement - it is the window to lost works, to mysterious worlds of great beauty, and is a vital educational tool helping bring the stories of myriad cultures to a much wider audience."

Lucia van der Post – Spears, May/June 2018

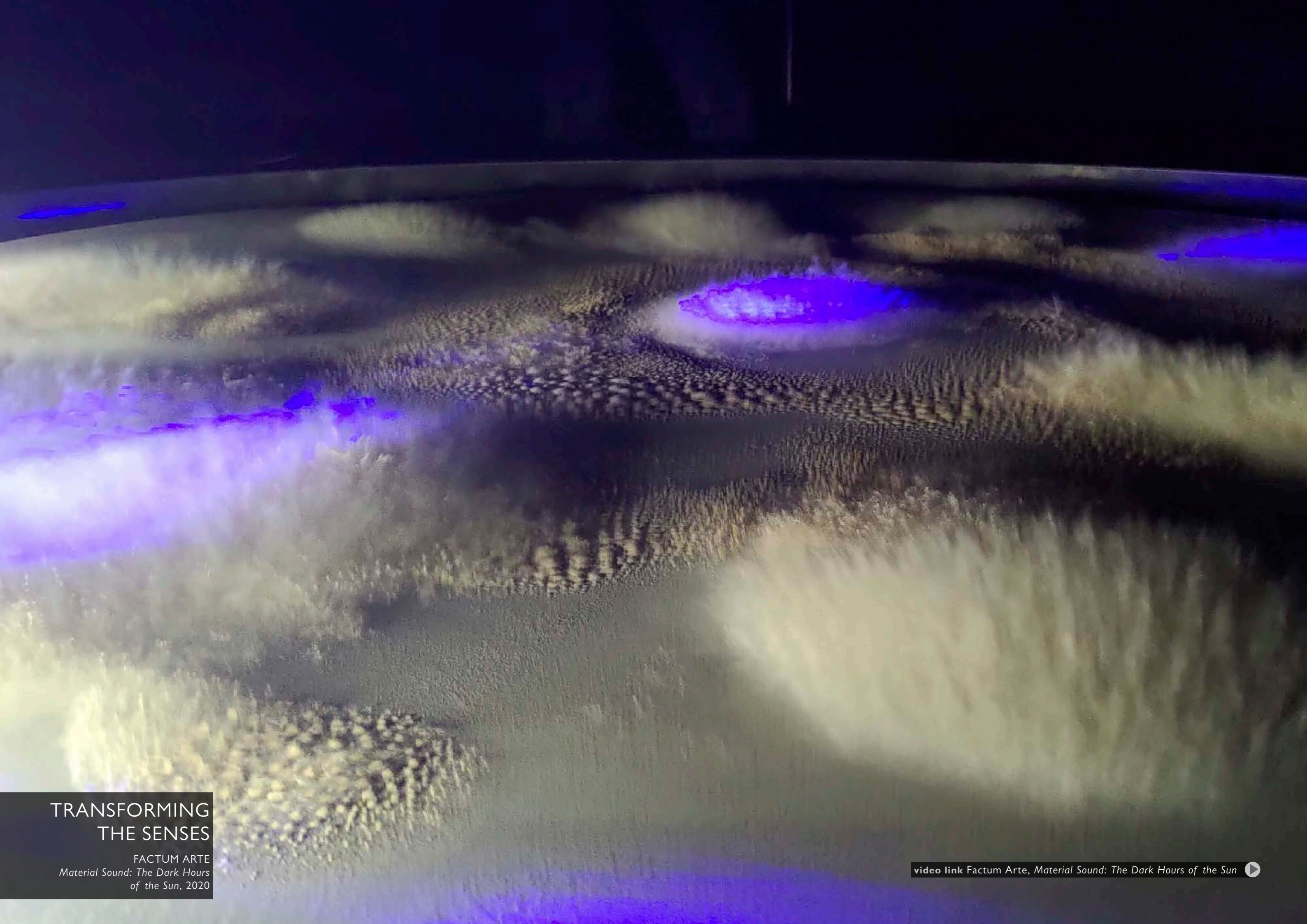


"Anish Kapoor cares how different materials make different performances possible. To recover or generate order and form from more chaotic and randomly distributed material is a job for an artist of soft matter. The world of soft matter has been expertly compared to a frontier zone between empires, not a fiercely walled and defined boundary of bottlenecks, customs posts and border guards, but rather a fluid territory of nomads and vagabonds, constantly shifting its controls and patterns. A provocative region that is mobile, diffuse and active."

Simon Schaffer – Unconformity and Entropy, 2009


INNOVATIVE
COLLABORATIONS

ANISH KAPOOR
Royal Academy of Arts, 2009



TRANSFORMING
THE SENSES

FACTUM ARTE
*Material Sound: The Dark Hours
of the Sun, 2020*

[video link](#) Factum Arte, *Material Sound: The Dark Hours of the Sun* 



MARINA ABRAMOVIĆ and Adam Lowe sharing ideas on one of the pieces for the artist's solo exhibition at the Royal Academy of Arts
Photo by Caterina Barjau for *El País*

A PLAYGROUND FOR ARTISTS

Factum Arte's innovative production facility merges technology and traditional craft skills to meet the needs of the artistic community.

The workshops in Madrid are based on teamwork, curiosity, experimentation, specialised skills and sharing knowledge in order to make great works of art.

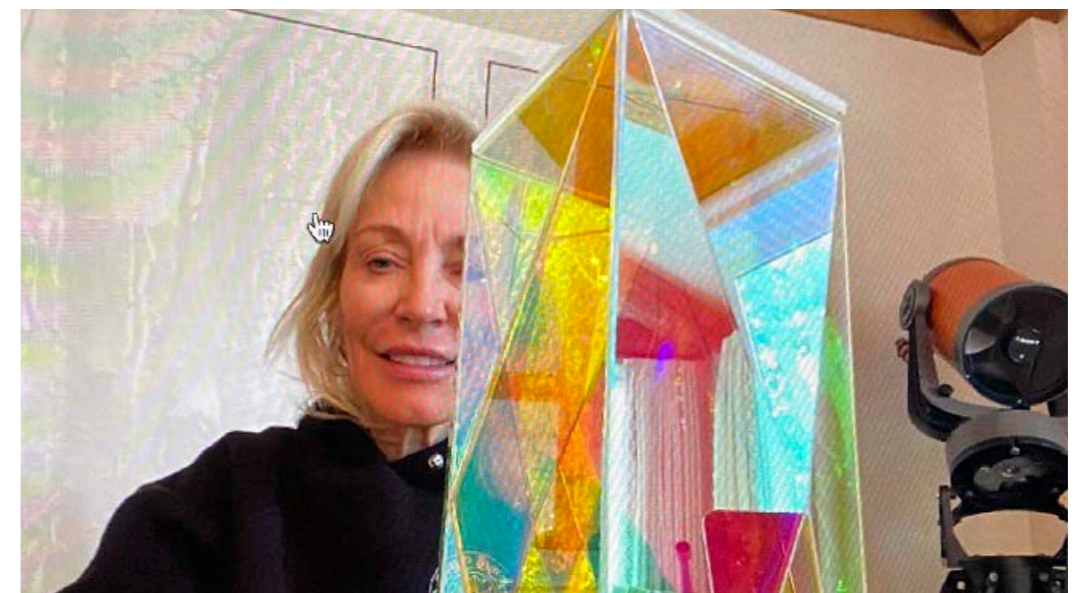
This experimental and open approach provides a complete range of services for artists, museums and institutions.



RACHID KORAÏCHI inspecting one of his calligraphic sculptures from the series *Les Vigilants*



AKRAM ZATAARI and Adam Lowe at the digital print studio in Factum



PAULA CROWN during an online meeting to discuss her latest projects



video link
Factum Arte's Diary: Ahmed Mater



video link
Factum Arte's Diary: Jan Hendrix



video link
Factum Arte's Diary: Shezad Dawood



video link
Factum Arte's Diary: Paula Crown



video link
Factum Arte's Diary: Rachid Koraïchi



video link
Factum Arte's Diary: Shirazeh Houshiary



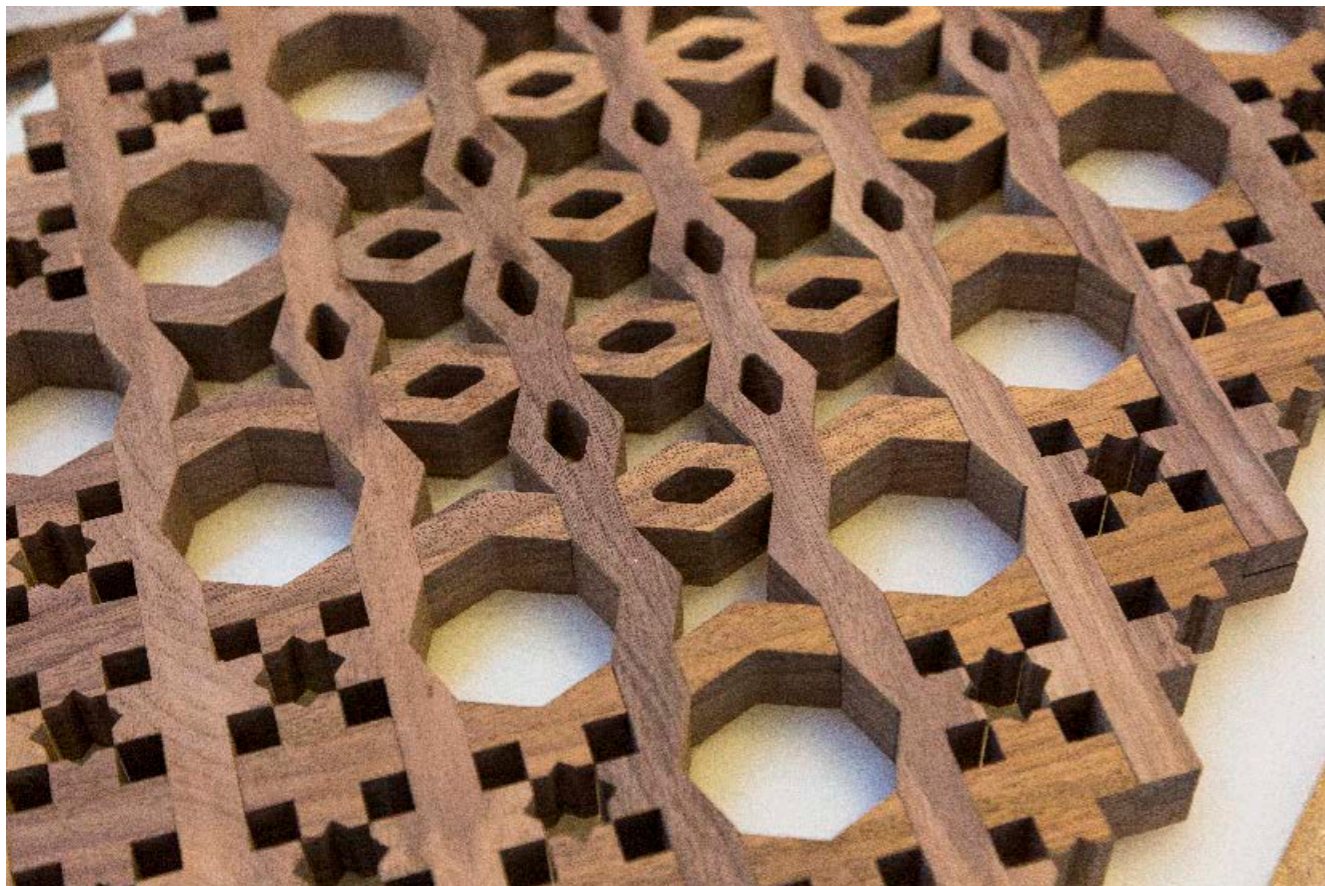
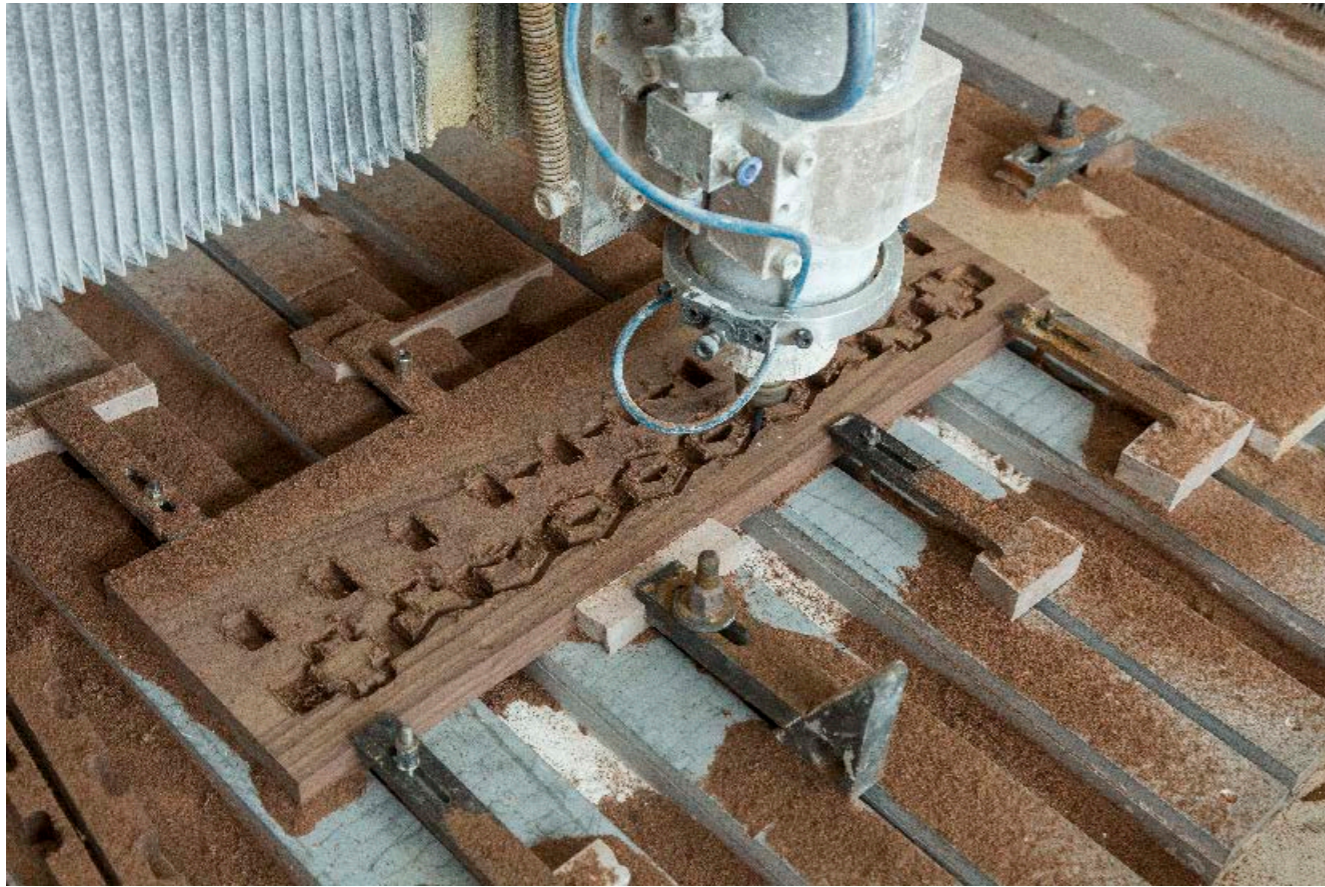
video link
Factum Arte's Diary: Michael Kagan



video link
Factum Arte's Diary: Mariana Cook

Artists working with Factum Arte between 2001 and the present, who want the collaboration acknowledged. There are others who want to remain anonymous:

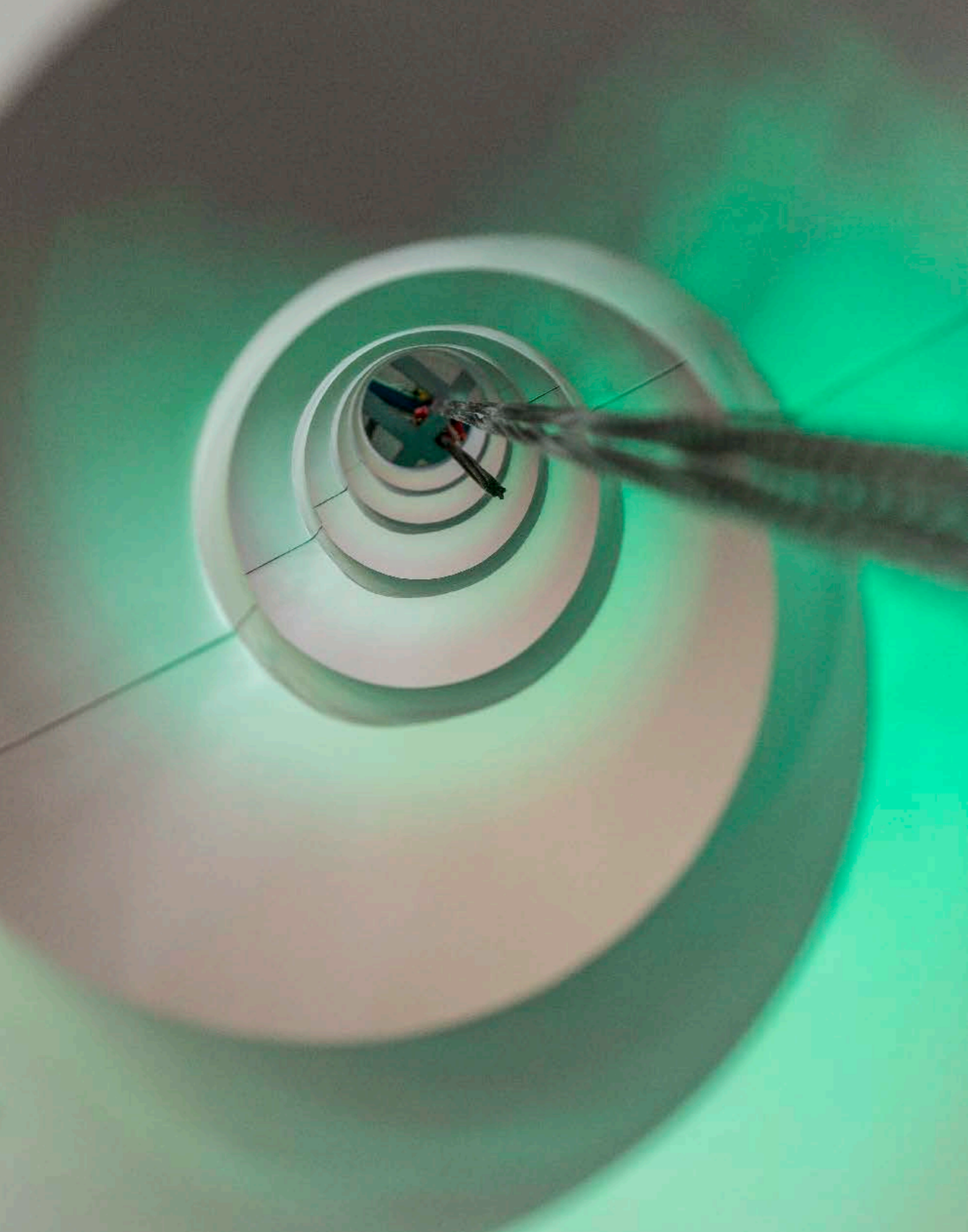
- | | | |
|------------------------------|-------------------------|------------------------|
| Abramović, Marina | Fuss, Adam | Nakhova, Irina |
| Al Dhaheri, Afra | Garaicoa, Carlos | Nicolaissen, Bernd |
| AlDowayan, Manal | Ghareem, Abdunasser | Orozco, Gabriel |
| Allora, J. & G. Calzadilla | González, Dionisio | Parker, Cornelia |
| Anatsui, El | Greenaway, Peter | Perry, Grayson |
| Angawi, Ahmad | Guijarro, Alejandro | Princen, Bas |
| Ansarinia, Nazgol | Gupta, Subodh | Qasim Ashfaq, Mohammed |
| Arrechea, Alexandre | Hadjithomas and Joreige | Quayola, Davide |
| Baladi, Lara | Hansmeyer, Michael | Quinn, Marc |
| Ballester, José Manuel | Hendrix, Jan | Rego, Paula |
| Bengtsson, Mathias | Hernandez, Jonathan | Sansour, Larissa |
| Blake, Quentin | Horsfield, Craigie | Sarkissian, Hrair |
| Bourgeois, Louise | Houshiary, Shirazeh | Sarmiento, Julião |
| Carter, Rob and Nick | Hudson, Henry | Savelev, Boris |
| Casasempere, Fernando | Höllner, Carsten | Shawcross, Conrad |
| Catalán de Ocón, Álvaro | Irijalba, Carlos | Shono, Muhannad |
| Chivers, Mat | Jaffe, Lee | Smith, Dillwyn |
| Collishaw, Mat | Kagan, Michael | Starling, Simon |
| Cook, Mariana | Kapoor, Anish | Stuart Smith, Tom |
| Crown, Paula | Kato, Jimena | Sze, Sarah |
| Curto, Felix | Koraichi, Rachid | The Haas Brothers |
| Cyursek-Gedir, R. & K. Galos | Lacey, Andrew | Trabulo, Maria |
| Darikovich, Elena | Law, Roger | Tsuzuki, Kyoichi |
| Dartizio, Fabio | Leon, Glenda | Vas, Abdul |
| Dawood, Shezad | Lin, Maya | Walker, Tim |
| De Commarque, Cyril | Logsdail, Rory | Wall, Jeff |
| De Francia, Peter | Los Carpinteros | Wearing, Gillian |
| De la Rue, Denise | Martynov, Vladimir | Winter, Clark |
| Deacon, R. & E. Parry | Mater, Ahmed | Yuyang, Wang |
| Dávila, Jose | Mead Moore, G. | Zaatari, Akram |
| Facey, Laura | Mori, Mariko | Zhou, Meng |
| Fischer, Urs | Morrison, Jasper | |
| Franquelo, Manuel | Muntadas, Antoni | |



Precision CNC-milling of the *Mangour* screens for the British Museum's Albukhary Foundation Gallery of the Islamic World



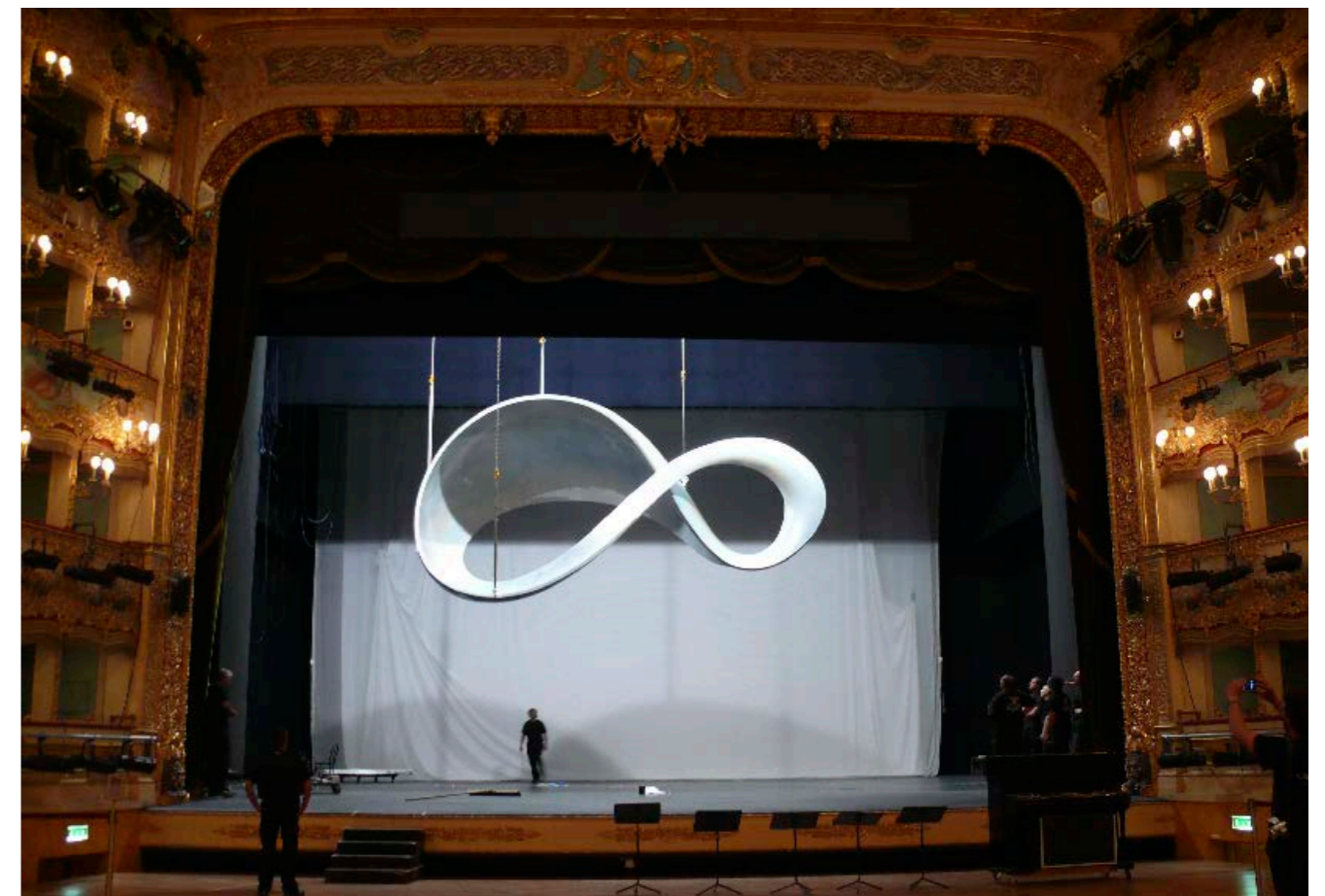
AHMED ANGAWI, *Mangour* screens
British Museum, 2018
Walnut wood



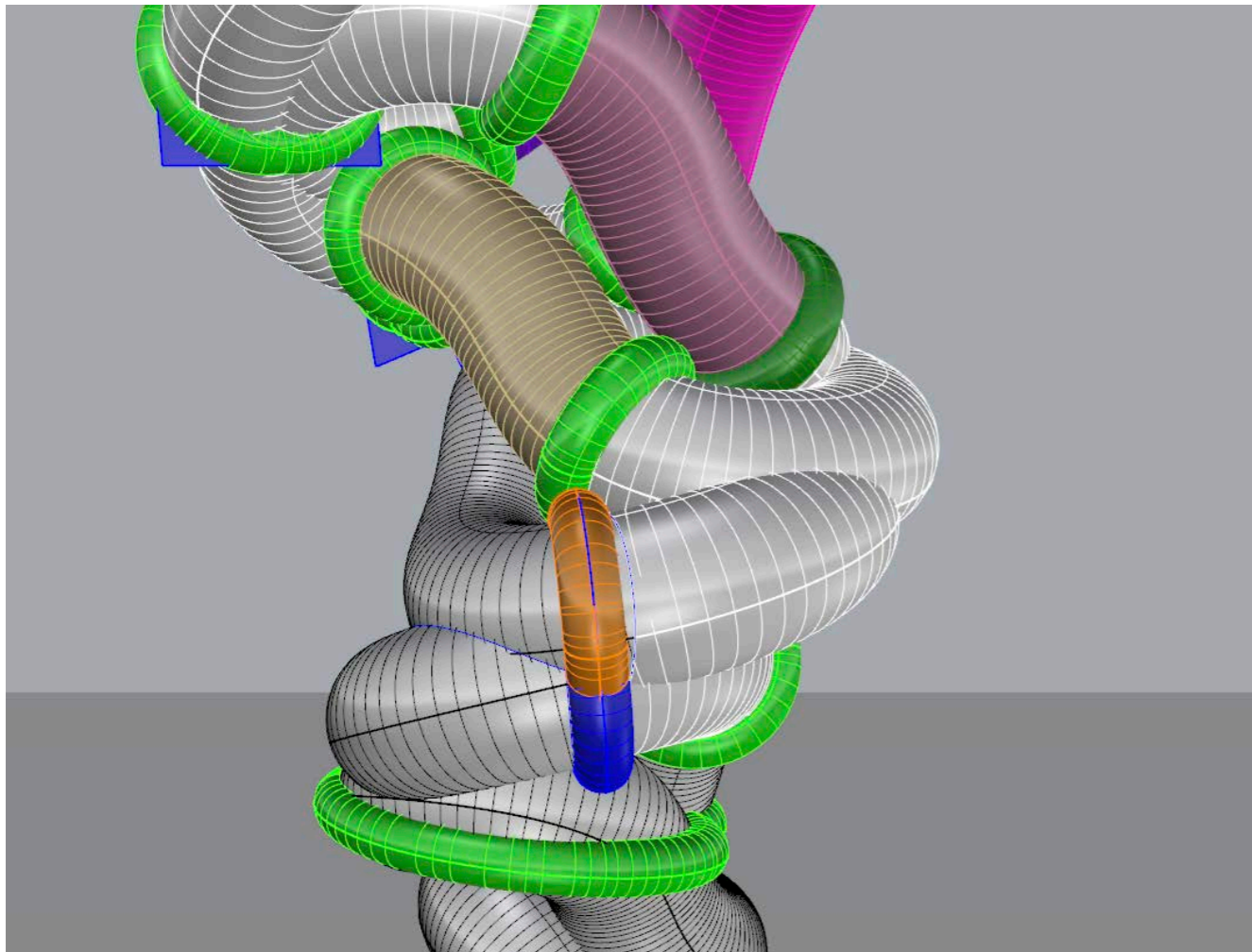
MARIKO MORI, *Infinite Energy*
Espace Louis Vuitton, Tokyo, 2013
Precision CNC-milling, engineering and casting



MARIKO MORI, *Infinite Energy and Renew Sculptures* inside the Espace Louis Vuitton, Tokyo



Möbius by MARIKO MORI during installation at La Fenice Opera House, Venice, 2013



CONRAD SHAWCROSS, *Crossrail Moorgate Manifold*, London
Highly engineered bronze casting in controlled alloys
with x-ray testing of all welds



RACHID KORAÏCHI, *This Long Journey Into Your Gaze*
Casa Árabe in Madrid and Córdoba, 2019



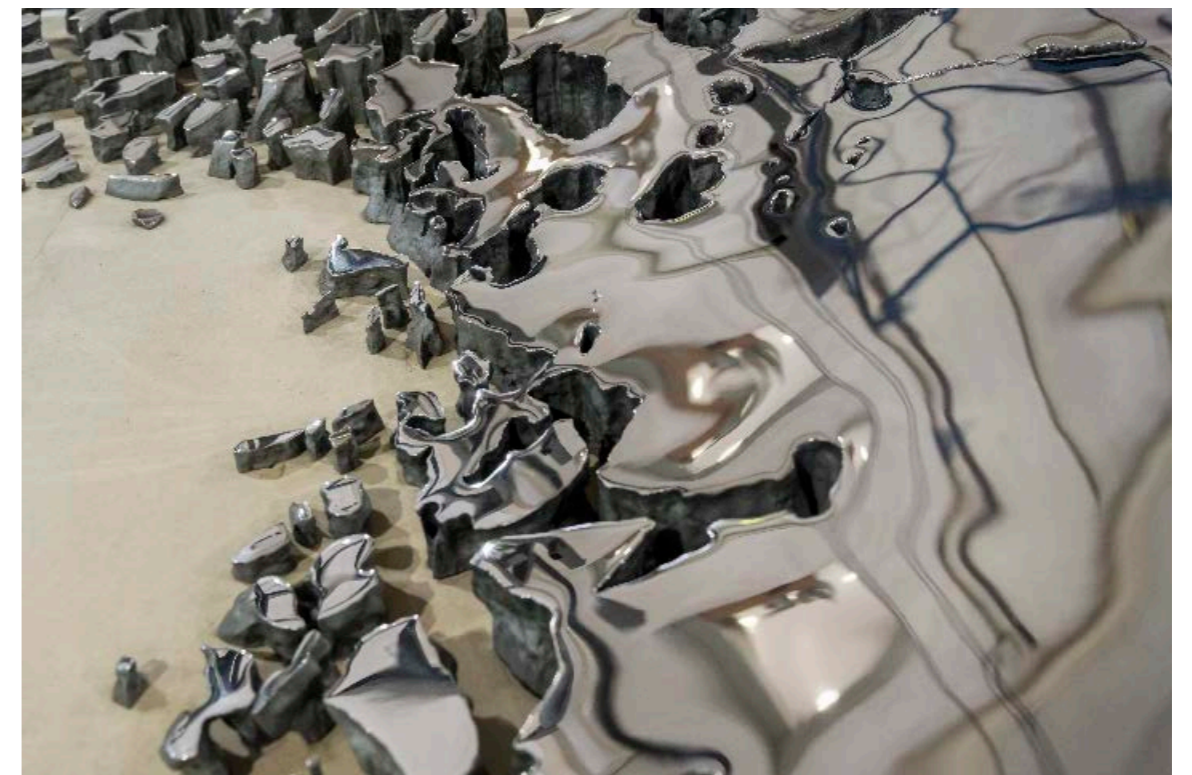
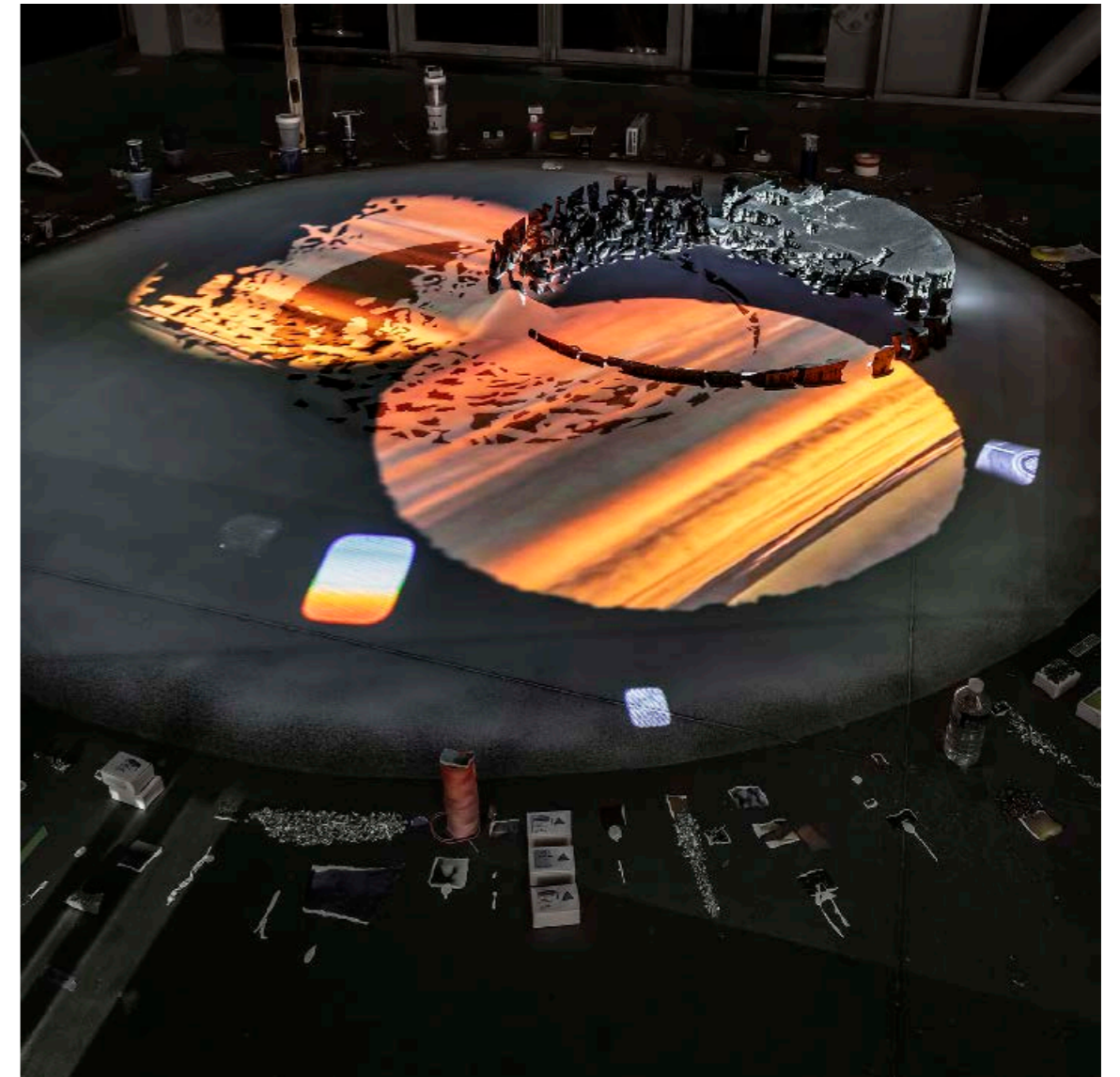
MARINA ABRAMOVIĆ, *Seven Deaths*
Lisson Gallery, 2021



MARINA ABRAMOVIĆ, *Cross: The Evil*
Near completion prior to display at Wilde Gallery during Art Basel, 2019



SARAH SZE, *Tracing Fallen Sky*
Fondation Cartier pour l'art contemporain, Paris, 2020
Finding fabrication solutions at various scales
Photo by Luc Boegly



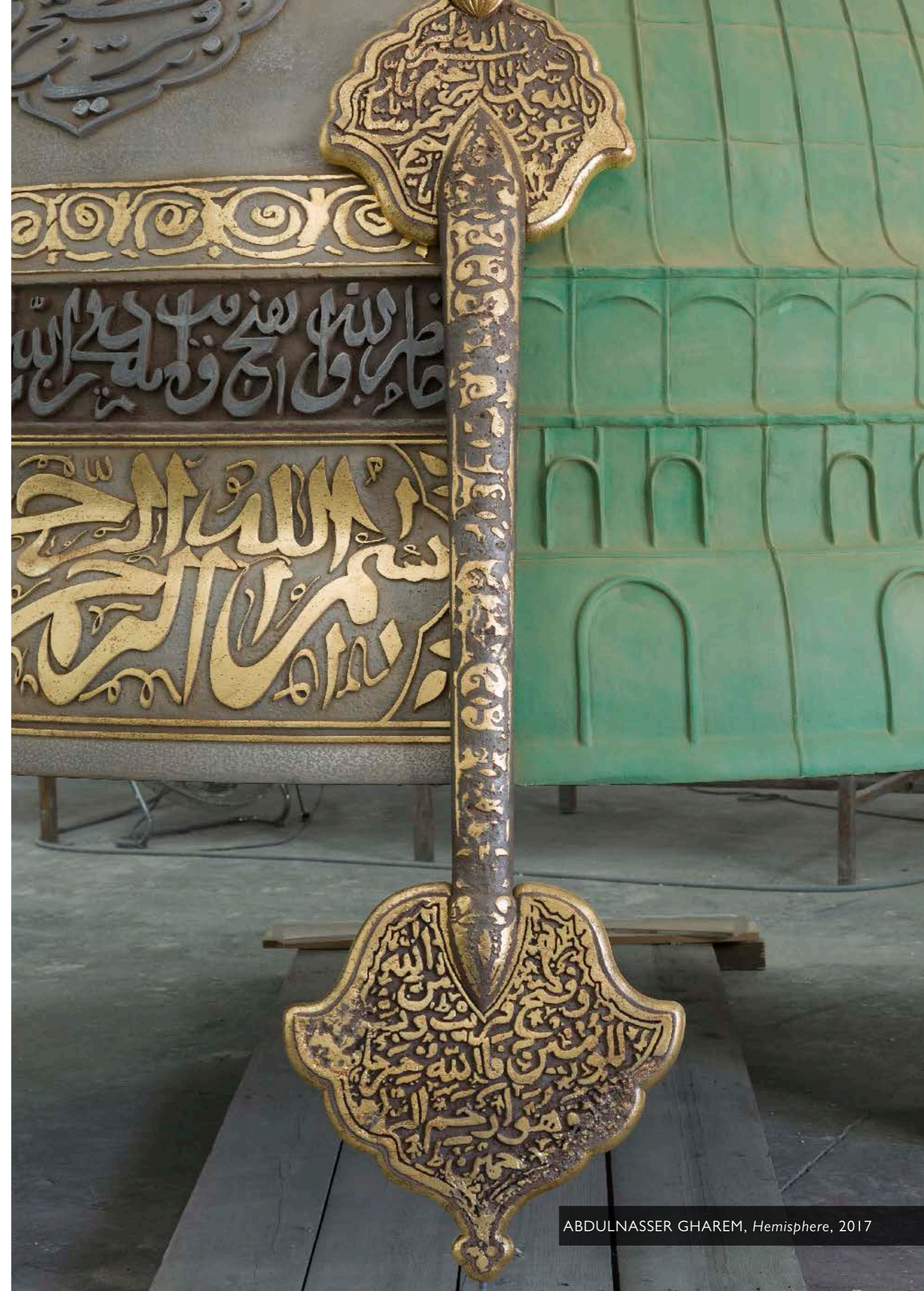
Detail of the mirror-polished surface



Abdulnasser Gharem, *Hemisphere* was on display at Los Angeles County Museum of Art (LACMA), 2017 and Sharjah Art Museum, 2018



Applying the gold foil



ABDULNASSER GHAREM, *Hemisphere*, 2017



JAN HENDRIX, *Hoja, Árbol y Bosque*
Instituto Natural de Antropología e Historia, Cancún, 2012
Waterjet cutting, powder coating and finding lighting solutions



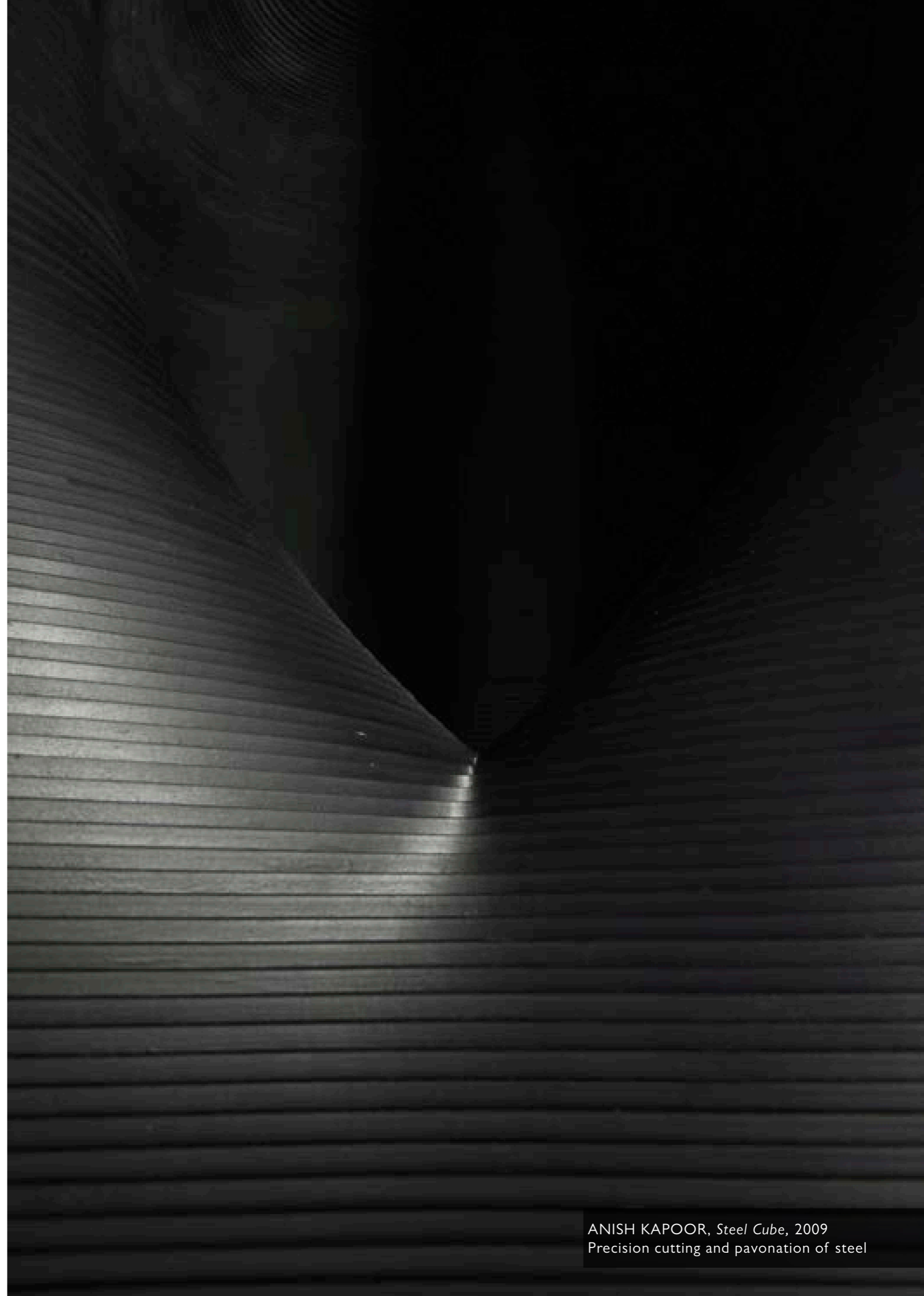
JAN HENDRIX, *Puebla*, Mexico, 2009



Welding stainless steel

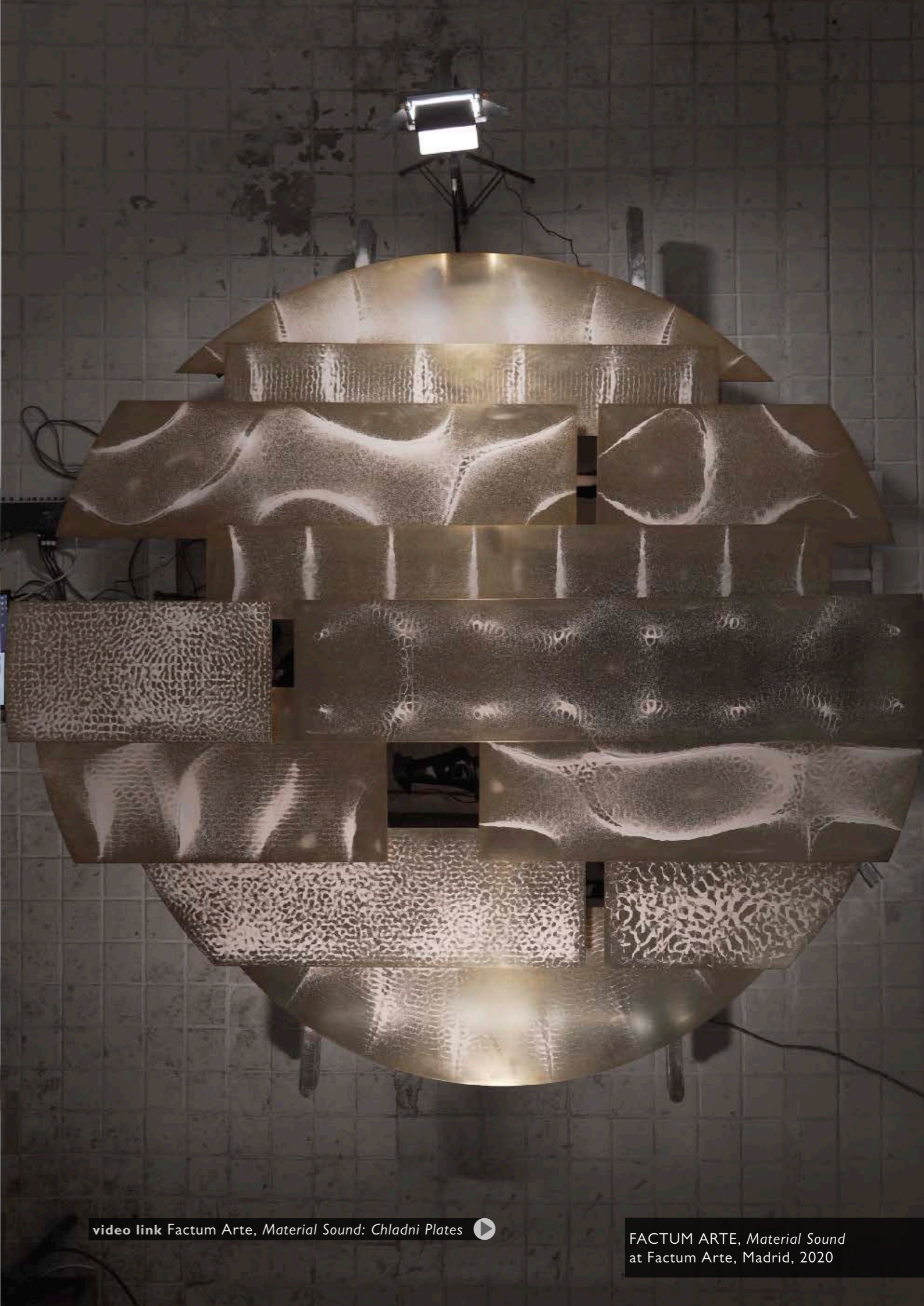


Installed in Ciudad Real, Spain





WANG YUYANG
Detail of the 3D-printed and cast elements (in six different alloys),
clustered in Tetris-like shapes on a mirror polished steel surface



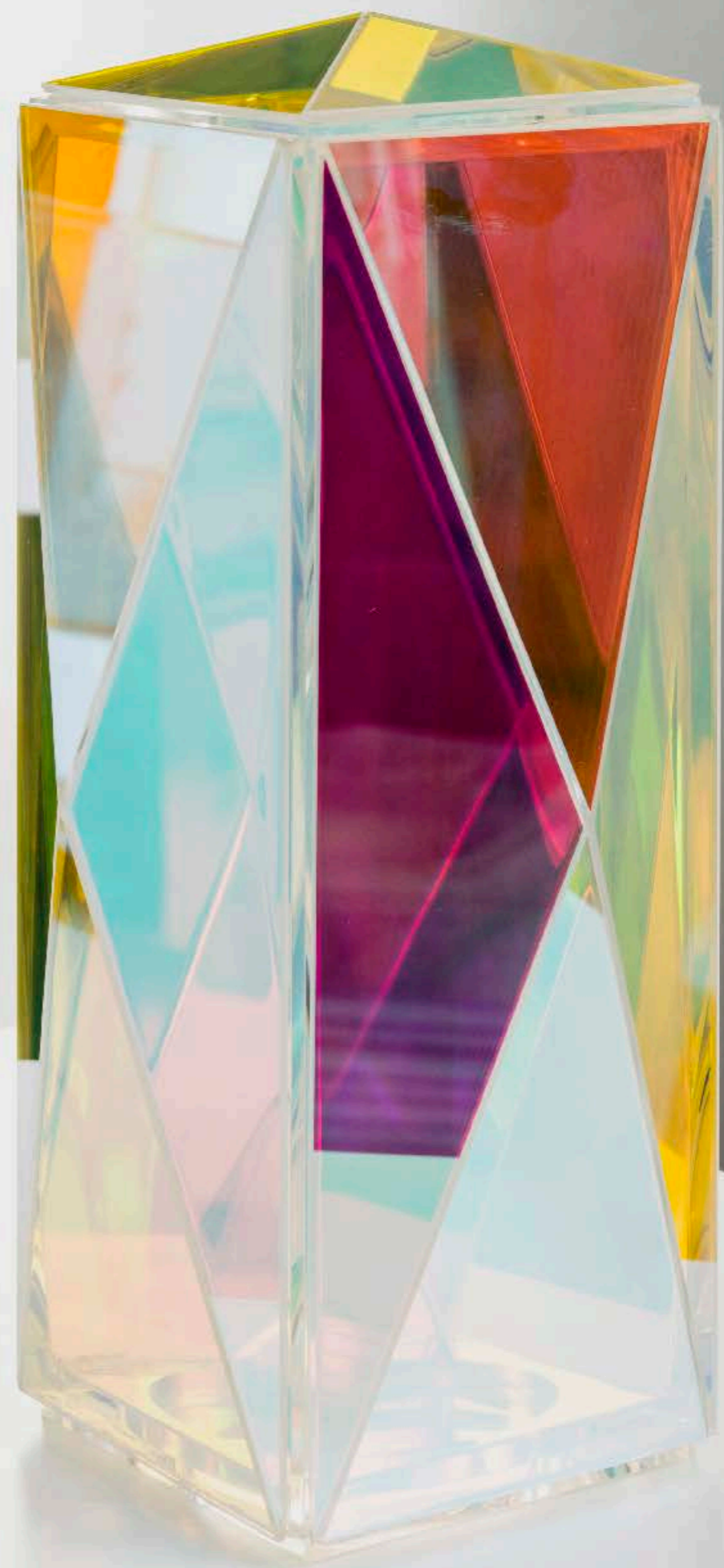
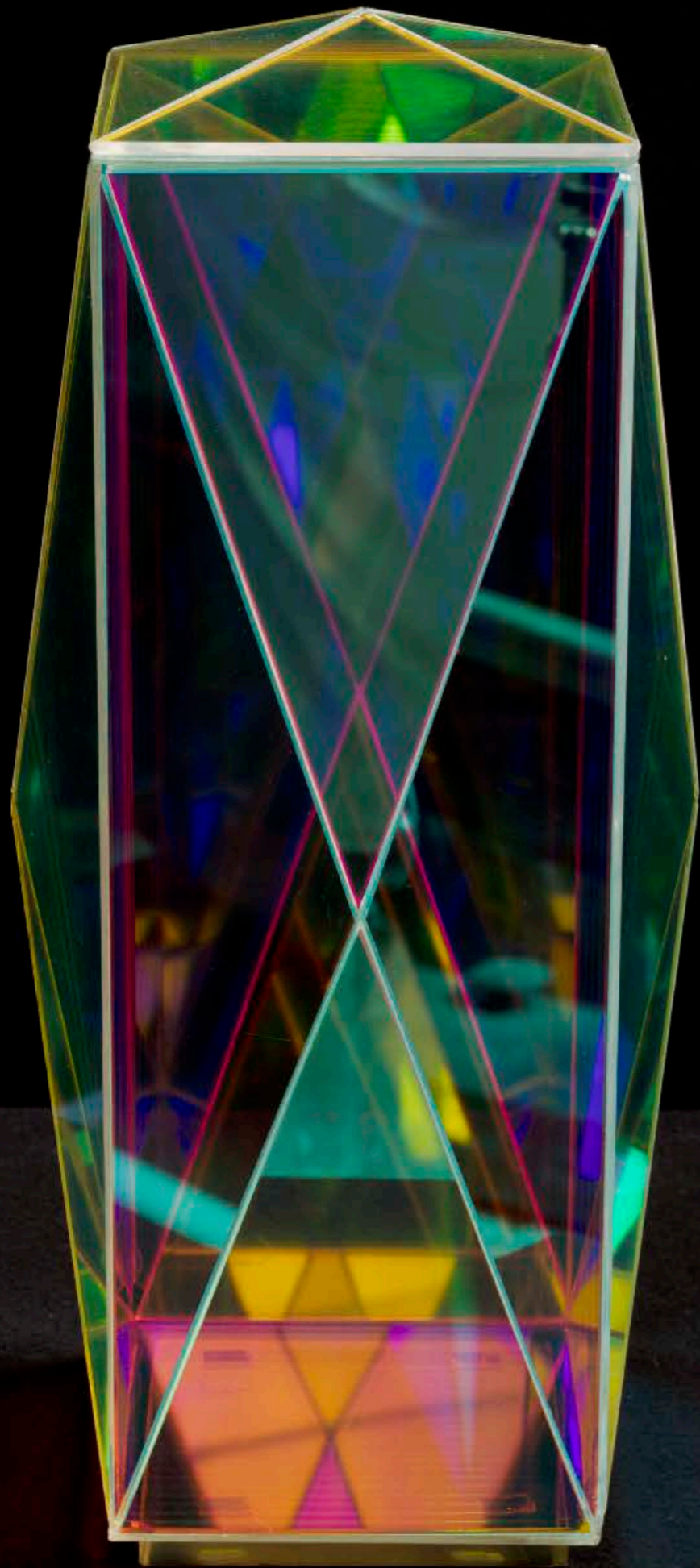
[video link](#) Factum Arte, *Material Sound: Chladni Plates*

FACTUM ARTE, *Material Sound*
at Factum Arte, Madrid, 2020





AFRA AL DHAHERI, *Pillow Fort Playground*
Expo 2020 Dubai, 2021.
Photo by Afra Al Dhaheri



PAULA CROWN
Wine case in dichroic glass, 2020-2021



DIONISIO GONZÁLEZ, *Transfigured Schönberg*
Patio Herreriano, Valladolid, 2009



AHMED MATER, *Eagle*, Frieze 2021 with ATHR Gallery, 2021



PARTNERS AND COLLABORATING INSTITUTIONS

Factum Foundation and Factum Arte have ongoing partnerships with the following institutions:

| | |
|------------------------------------------|------------------------------------|
| Art Jameel, Jeddah | ICONEM, Paris |
| Athr Gallery, Jeddah | Canon Production Printing, Venlo |
| Book Works, London | PIQL, Oslo |
| Capturing Reality, Bratislava | Open Care |
| Divirod, Boulder | Royal Commission of Al-Ula, Riyadh |
| École Polytechnique Fédérale de Lausanne | |

Highlited providers:

| | |
|----------------------------|----------------------------------|
| Caliper, Madrid | Flanders Tapestries, Wielsbeke |
| Dust and Scratches, London | Materialise, Leuven |
| Esfinge, Madrid | Skene Catling de la Peña, London |
| Fademesa, Madrid | Structure Workshop, London |

We have also collaborated and continue to collaborate with many other institutions, either on one off projects /events or on a regular basis:

| | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Austria Kunsthistorisches Museum, mumok - Museum moderner Kunst Stiftung Ludwig Wien. | and Design, University of Oulu. |
| Belgium Koninklijk Museum voor Schone Kunsten Antwerpen (KSMKA), La Monnaie de Munt (Bozar). | France Ateliers Jean Nouvel, Bibliothèque Nationale de Bordeaux, Centre des Monuments Nationaux, Fondation Cartier, Galerie Didier Claes, La Conciergerie, Musée Condé du Château de Chantilly, Musée Cluny, Musée des Arts Décoratifs, Musée des Beaux-Arts (Orléans), Musée du Louvre, Musée Jacquemart-André, Musée Quai Branly. |
| Brazil Associação Indígena Kuikuro Alto Xingu, People's Palace Projects, Spectaculo. | Germany Alte Pinakothek Munich, Leipziger Museums der bildenden Künste (MdbK), Museum der bildenden Künste. |
| Canada Antimodular Research Inc., Canada Digitization, Think to Thing (Toronto); Carleton University (Ottawa). | Greece Benaki Museum, Kaparos Fine Art Foundry, Greek Ministry of Culture. |
| Chad Ministry of Culture, Ministry of Tourism. | Iraq Iraqi Embassy in Spain, University of Mosul. |
| Chile Museo Antropológico Sebastián Englert (Rapa Nui) | Italy ABI - Associazione Banche Italiane, ALES - Arte Lavoro e Servizi (Rome), Autogrill, BALLANDI Multimedia, Basilica di San Petronio (Bologna), Berengo Studio (Venezia), Biblioteca Nazionale Marciana (Venice), Biennale di Venezia, CARISBO, Casa Buonarroti (Florence), Castello Sforzesco (Milan), Cavina Terra Architetti, Complesso Monumentale della Pilotta (Parma), Comune di Caravaggio, Comune di Urbino, Convento di Santa Maria delle Grazie e Cenacolo Vinciano, Diocesi di Bologna, FEC - Fondo Edifici di Culto, Fondazione Giorgio Cini, Fondazione Palazzo |
| China University of Hong Kong, WorldSkills Museum. | |
| Denmark Aarhus School of Architecture, SMK - National Gallery of Denmark. | |
| Egypt American University in Cairo, Ministry of Antiquities, Tarek Waly Centre, TedX Cairo. | |
| EU European Commission | |
| Finland Arctic Drone Labs, Alvar Aalto Foundation, City of Jyväskylä, Oamk - Oulu University of Applied Sciences, Tampere University, The Oslo School of Architecture | |

Te, Fondazione Musei Civici di Venezia, Fondazione Querini Stampalia, Galleria Continua (San Gimignano), Galleria Nazionale d'Arte Antica di Palazzo Barberini, Galleria Borghese, Gallerie dell'Accademia (Firenze), Genus Bononiae. Musei nella città, ISIA Urbino, Italgas - Heritage Lab, IULM Università, Mart - Museo d'arte moderna e contemporanea di Trento e Rovereto, Michele de Lucchi, Musei Capitolini, Musei Vaticani, Museo Archeologico Nazionale (Florence), Museo Canova (Possagno), Museo Civico Archeologico (Bologna), Museo Civico di Bassano del Grappa, Museo Palladio (Vicenza), Museo Correr (Venice), Museo della Città di Rimini, Oratorio di San Lorenzo (Palermo), Ordine dei Cavalieri di Malta (Venice), Palazzo Ducale (Mantua), Palazzo Grimani (Venice), Pinacoteca Ambrosiana, Pinacoteca di Brera, Pinacoteca Nazionale (Ferrara), San Luigi dei Francesi (Rome), Santa Maria dello Spasimo (Palermo), Scuderie del Quirinale (Rome), Sky Arte, UNIBO - Università di Bologna, Università Ca' Foscari (Venezia), Università IUAV di Venezia, Villa Cagnola (Gazzada).

Japan

Tokyo University of the Arts.

Kingdom of Saudi Arabia

AFALULA French Agency for AIUla Development, Art Jameel, Athr Gallery, Community Jameel, MISK Foundation, Noor Riyadh Festival of Light, Royal Commission of Al-Ula, Royal Commission for Riyadh City, Diriyah Contemporary Art Biennale (Riyadh).

Lebanon

Arab Image Foundation, Association pour la protection des sites et anciennes demeures au Liban (APSAD), Ministry of Culture.

Mexico

Universidad Autónoma de México.

Netherlands

Mauritshuis (Den Haag), Museum Boijmans Van Beuningen (Rotterdam), Museum Catharijneconvent (Utrecht), Leiden University, Rijksmuseum van Oudheden (Leiden), Rijksmuseum Twenthe, TU Delft, Utrecht University.

Nigeria

The Trust for African Rock (TARA), University of Calabar.

Norway

Architectural Department of the University of Oslo, Henie Onstad Kunstsenter (Oslo), Norsk Folkemuseum, Romsdal Museum.

Portugal

Faculdade de Engenharia da Universidade do Porto.

Russia

Archaeology and Ethnography of the Dagestan Scientific Center of the Russian Academy of Sciences

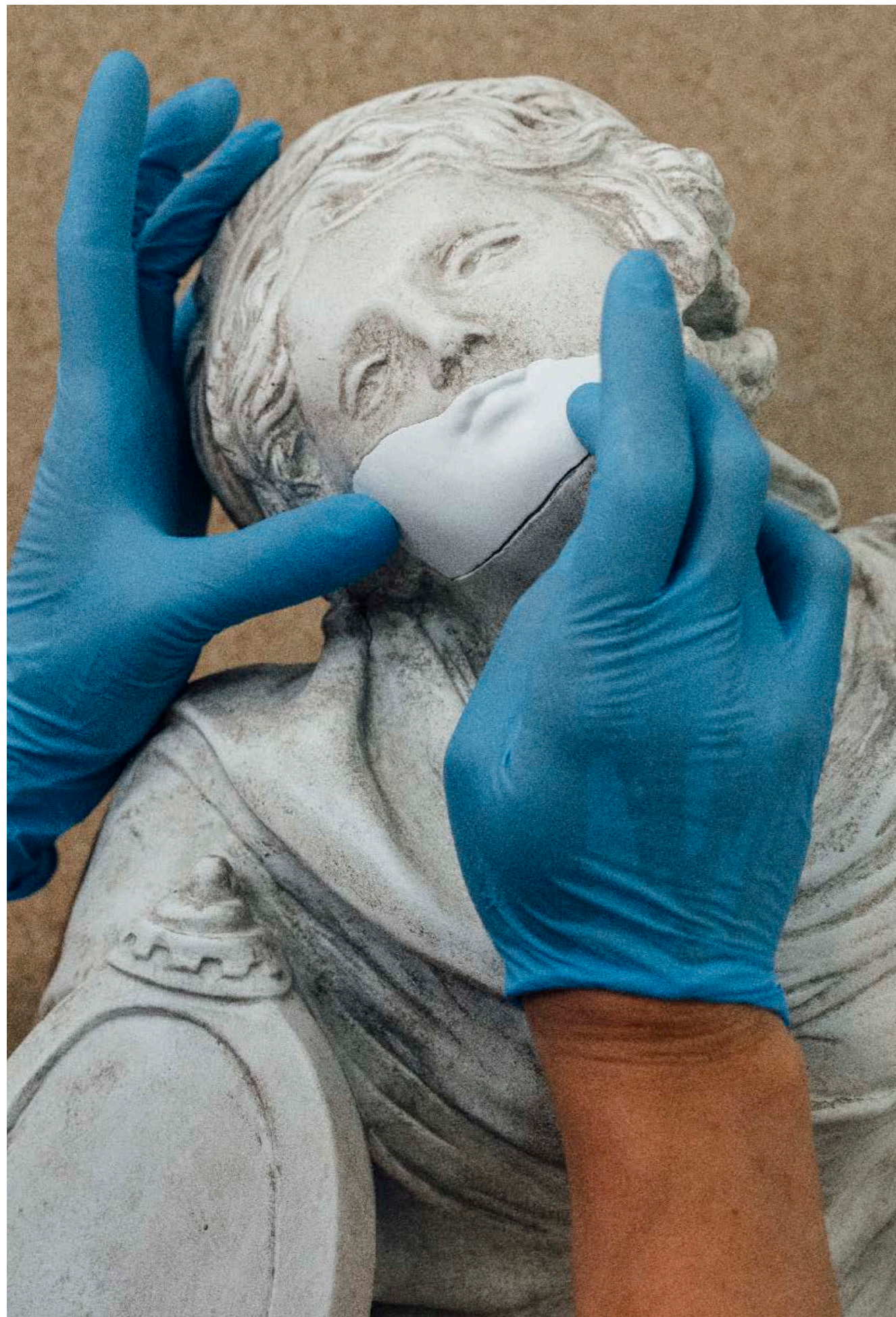
(IHAE DSC RAS), Peri Foundation, Kala-Koreysh, Institute of History, Monastery of Ferapontov, Museum Sanctuary and Ethnographic Complex Dag-Aul Museum, Tretyakov Gallery.

Somaliland

Hargeysa Cultural Centre, Redsea Cultural Foundation.

Spain

Archivo Histórico Provincial de Sevilla, Asociación de los Amigos de la Catedral de Tudela, Asociación Española de Museólogos, Ayuntamiento de Arroyo Molinos, Ayuntamiento de Barrado, Ayuntamiento de Priego de Córdoba, Ayuntamiento de Sevilla, Real Alcázar (Sevilla), Ayuntamiento Toralba de Ribota, Banco Santander, Biblioteca Nacional (Madrid), Bilbao Fine Arts Museum, Cabildo de Gran Canaria, Cabildo Insular de La Palma, Caixa Forum (Madrid and Valencia), Calcografía Nacional, Casa de Mesa (Toledo), Casa de Pilatos (Sevilla), Casa Natal de Velázquez (Sevilla), Casa Árabe, Catedral de Mejorada del Campo, Centro de Arte Botín, Patrimonio Nacional, CEEH - Centro de Estudios Europa Hispánica, CITpax - Centro Internacional Toledo para la Paz, Comunidad Valenciana, Conjunto Arqueológico Madinat al-Zahra, Consejo Superior de Investigaciones Científicas (and CSIC: Proyecto Djehuty), Convento Santa Clara la Real (Toledo), ETSAM - Escuela Técnica Superior de Arquitectura de Madrid, Filmoteca de Andalucía (Córdoba), Fundación Amigos Museo del Prado, Fundación Banco Santander, Fundación Casa Ducal de Medinaceli, Fundación Juan March, Fundación María Cristina Masaveu Peterson, Fundación San Millán de la Cogolla, Fundación Telefónica, Galería Betty Guerreta, Generalitat Valenciana, Hermanas Clarisas Franciscanas, Hermandad de la Santa Caridad, Hermita de San Baudelio de Berlanga, Hospital de la Caridad (Sevilla), Hospital de Tavera (Toledo), Instituto Andaluz de Patrimonio Histórico, Instituto Valencia de Don Juan, Junta de Andalucía-Consejería de Cultura y Patrimonio Histórico, LÔAC - Alaior Arte Contemporáneo (Menorca), Ministerio de Asuntos Exteriores, Ministerio de Cultura y Deporte de España, Ministerio de Defensa de España, Museo Arqueológico Nacional, Museo Bilbao Bellas Arte, Museo Cerralbo, Museo de Colecciones Reales, Museo del Traje (Madrid), Museo Nacional Centro de Arte Reina Sofía, Museo Nacional de Escultura (Valladolid), Museo Nacional del Prado, Museo Naval de Madrid, Museo Sefardí - Sinagoga del Tránsito (Toledo), Museo Sorolla, Museo Tiflológico de la ONCE, Palacio del Capricho, Real Academia de Bellas Artes de San Fernando, Real Academia de la Historia, Real Fábrica de Tapices, Real Santuario Insular de Nuestra Señora de las Nieves, Real Armería - Patrimonio Nacional, Spanish Embassy



Innovative restoration project of the *Virtues* from the sepulchre of Cardinal Tavera for the Spanish Gallery at Bishop Auckland

in Iraq, TEDx Madrid, Museo Universidad de Navarra, Thyssen-Bornemisza National Museum, Universidad Complutense, Universidad de Castilla la Mancha (UCLM), Universidad Politécnica de Madrid.

Switzerland

Antikenmuseum Basel, ARCH – The Alliance to Restore Cultural Heritage in Jerusalem, Art Basel, Carène Foundation, ETH Zurich: Department of Architecture, Michelangelo Foundation, Universitat Basel, Vitromusée Romont, Wilde Gallery.

US

Adam Williams Fine Art, amfAR – The Foundation for AIDS Research, Case Western Reserve University, Cleveland Museum of Art, Columbia University, Gannon University, Google Arts&Culture, Institute of Ecotechnics, Menil Collection, Miami Map Fair, MoMA - Museum of Modern Art, Morgan Library, Museum of Fine Arts Boston, National Gallery of Art in Washington, The Frick Collection, The Metropolitan Museum of Art, University of California (Berkeley), US Institute of Peace.

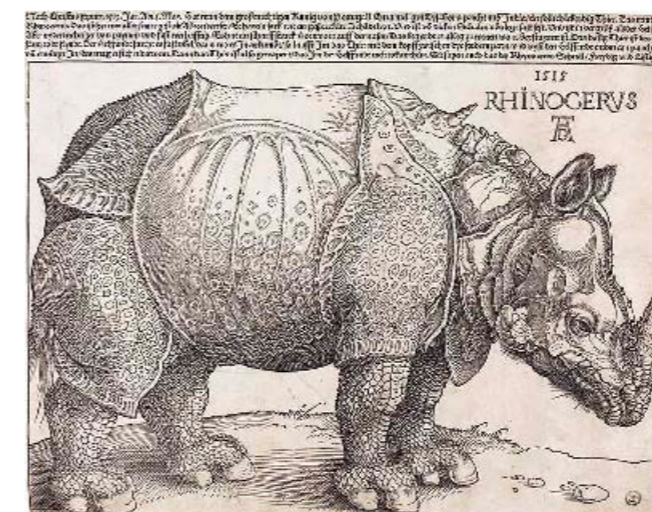
UAE

Department of Culture and Tourism Abu Dhabi, Green Art Gallery, Hay Festival, Juma al Majid Centre for Arts and Heritage (Dubai), Louvre Abu Dhabi, MEFA - Middle East Falconry Archive, The Museum of Al Ain.

UK

Art UK, Ashmolean Museum, Bodleian Library, Book Works, British Library, British Museum, Bronze Oak Tree Project, Burgess Studio, C. Hoare & Co, Cambridge University, Colnaghi, Connaught Hotel, Courtauld Institute of Art, Dovecot Studio,

Durham University, Ecotechnics Maritime Limited, English Heritage, Errol Fuller Collection, Griffiths Institute, Grinling Gibbons Society, Helen Hamlyn Trust, Historic Scotland, Houghton Hall, ICRA - International Catalogue Raisonné Association, JamJar Flowers, Lisson Gallery, Littoral Arts Trust, London Bell Foundry, Made by Many, Mappa Mundi Trust – Hereford, Masterpiece London Art Fair, National Galleries of Scotland, National Gallery (London), National Trust, October Gallery, Pangolin Foundry, Paragon Contemporary Editions, Photo London, Re-Form Heritage, Royal Academy of Arts, Royal Collection Trust, Rupert Wace Ancient Art, Scan Lab, Sir John Soane’s Museum, Skene Catling de la Peña, Société Générale UK, Stonewall Equality, Strawberry Hill House, The Frontline Club, The Rothschild Foundation, The Auckland Project, Tolkien Society, UCL - University College London, United Kingdom Historic Building Preservation Trust, Victoria and Albert Museum, Victoria Miró, Waddesdon Manor, Warburg Institute, Wellington Collection, Whipple Museum of the History of Science, Wilton House

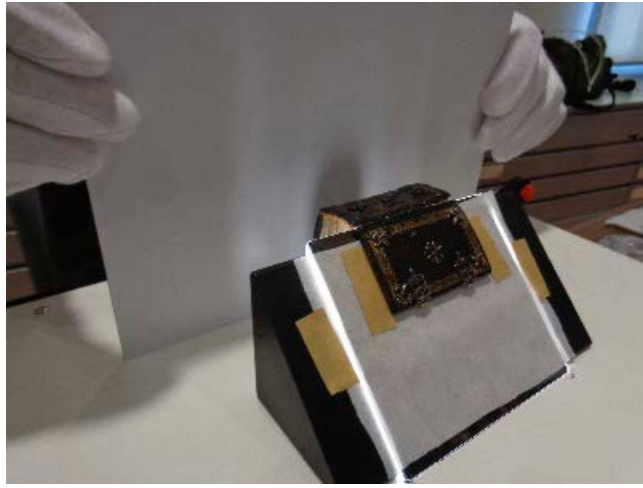


Albrecht Dürer's *Rhinoceros* print and its 3D recreation by Factum Arte for the Musei Civici di Bassano del Grappa

DIGITAL INPUT



Two Lucida 3D Scanners recording Bartolomé Esteban Murillo's *The Miracle of the Fish and Bread*
Instituto Andaluz de Patrimonio Histórico, Seville, 2018



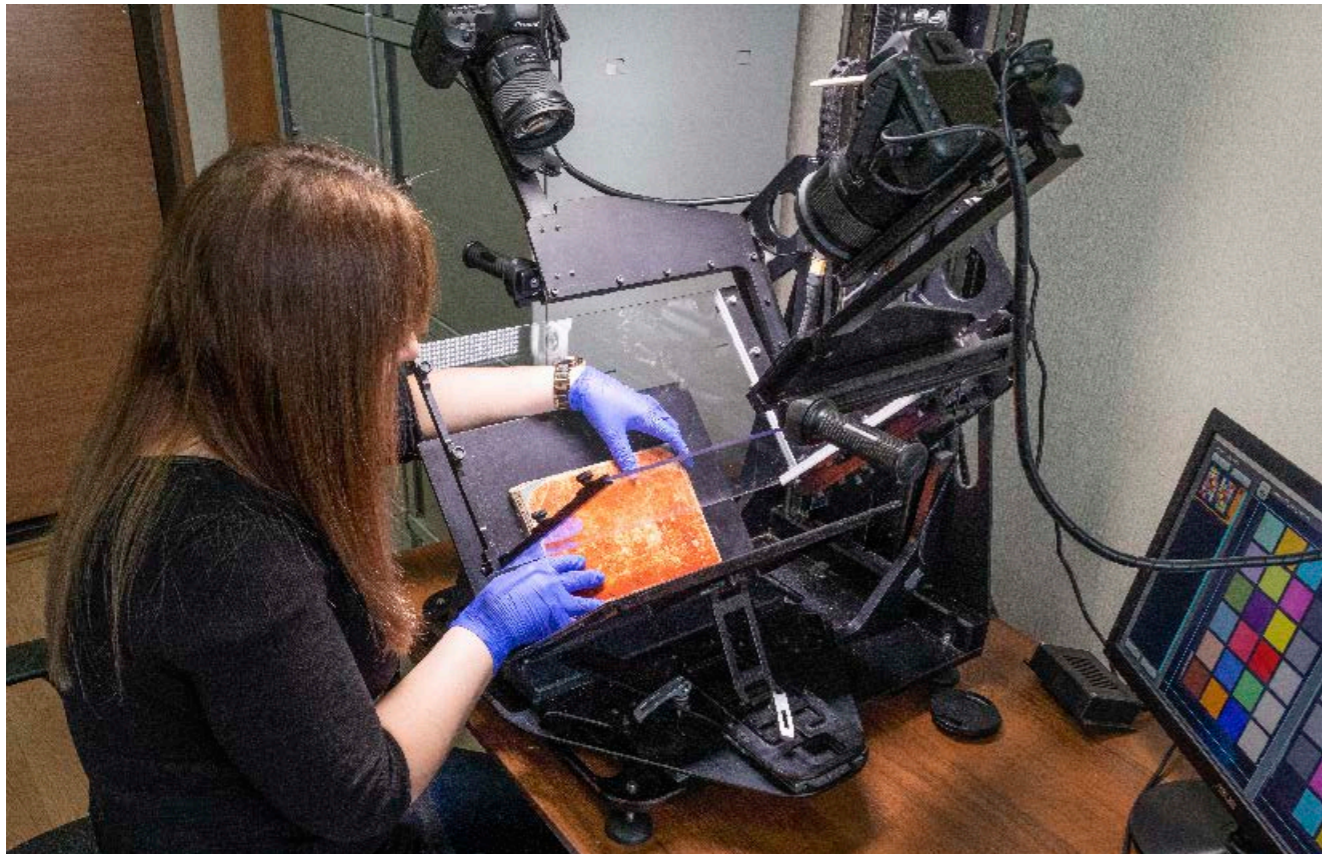
Miniature Book Scanner at work on the Offiziolo di Carlo VIII



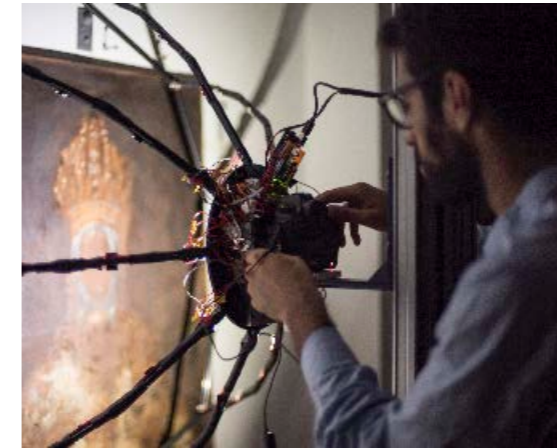
DIGITAL INPUT



Factum's team of engineers has designed, built and written software for numerous systems including manuscript scanners, face scanners, relief scanners and more



Photographic Manuscript Scanner for the IHAE in Makhachkala, Dagestan



Photometric Scanner prototype



There are various types of spaces devoted to digital input that are shared by programmers, engineers, digital modellers, colour specialists, photographers, 3D scanning specialists, digital conservators and experimental technicians. Their interdisciplinary background facilitates the development of technologies such as the Lucida 3D Scanner, designed by Manuel Franquelo, and the Veronica Choreographic Scanner, designed by Manuel Franquelo Junior with Factum's team, but also the refinement of techniques and approaches to digital restoration, composite photography, 3D recording and photogrammetry.

Equipment design and Engineering Studio

The work in and out of the studio requires equipment that is not always available commercially. Over the years, Factum Arte's engineers have designed and built systems to digitise fragile cultural heritage. Different systems have been developed to record the surface, relief and texture of objects at the highest possible resolution. All systems are 100% non-contact and work with specially written open source software.

Digitisation encompasses a series of activities that have expanded the creative process and the possibilities for making, studying and preserving works or art. Factum Arte's digital specialists are using these technologies to restore objects digitally and produce applications to visualise data. The move from physical object or idea to digital data and back into the physical world requires new skill sets and a different way of thinking that is transforming the way artists work and the way cultural heritage is preserved and shared.

The technologies are being used to create new works of art, produce accurate facsimiles of existing objects and to recover and re-imagine lost works based on available records.



Replica 360 Scanner for the Heritage Lab at Italgas, Turin

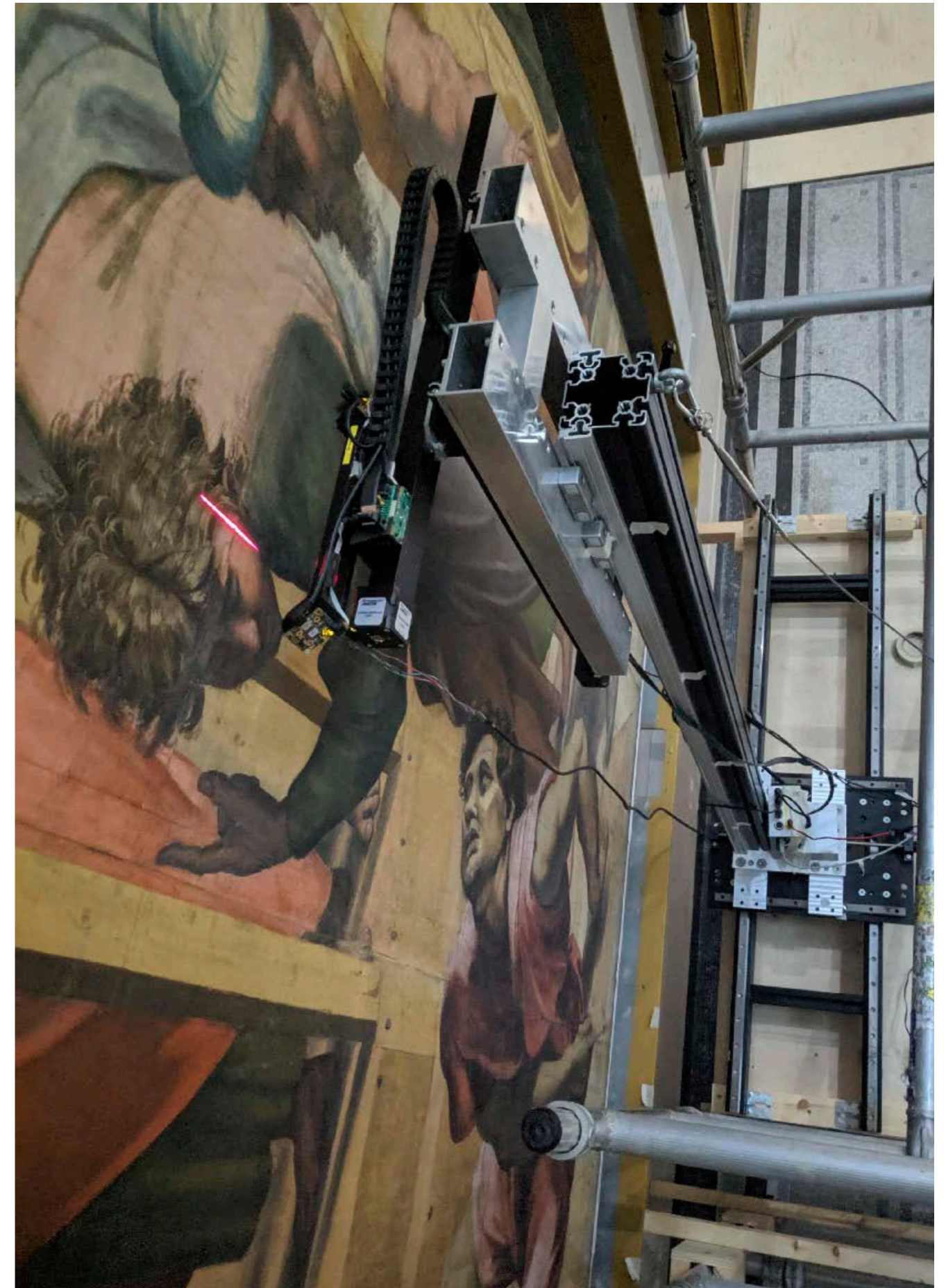
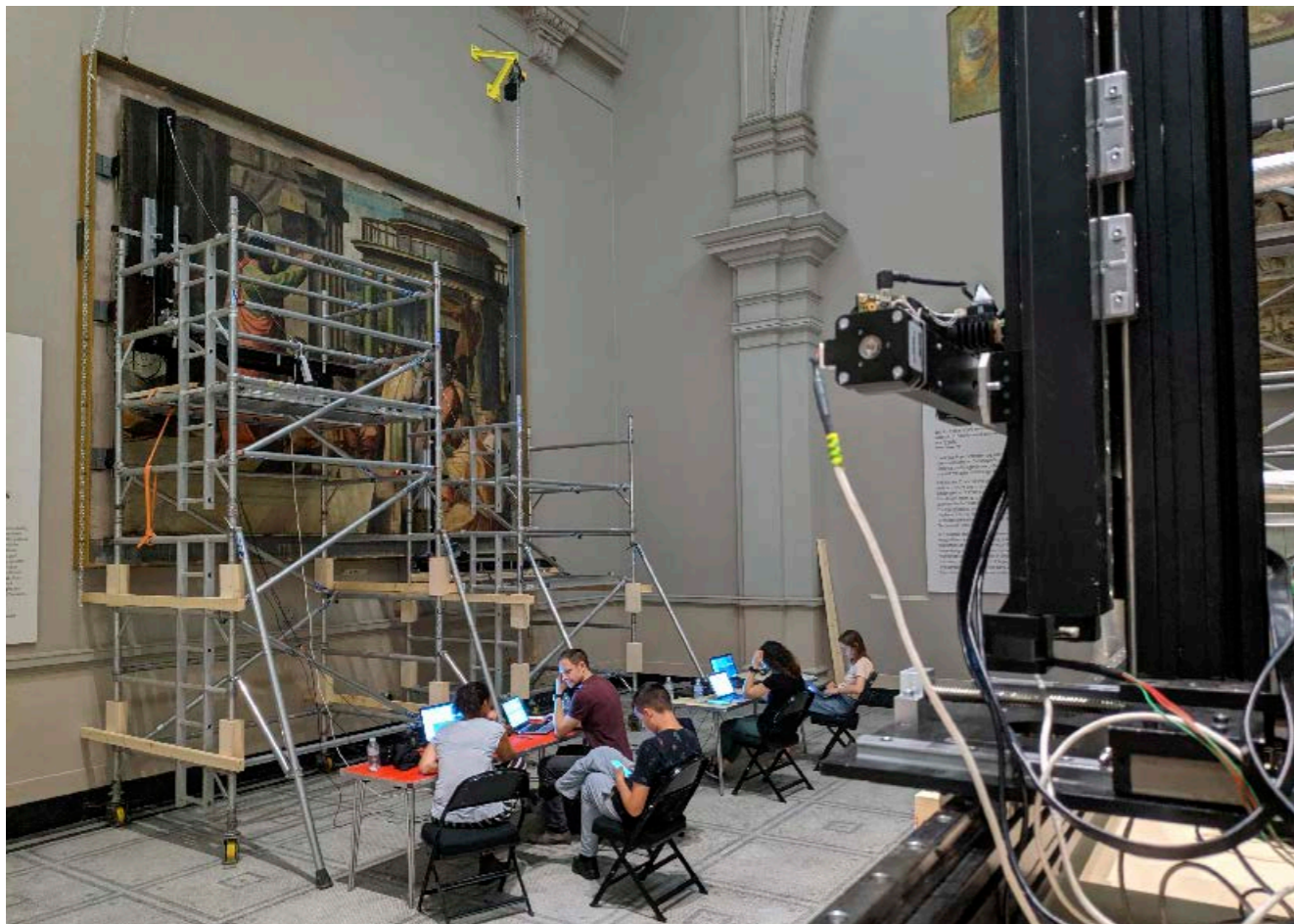




Abdo Ghaba and Aliaa Ismail, part of the Theban Necropolis Preservation Initiative, working on the Lucida 3D Scanner inside the 3D Scanning, Training, and Archiving Centre at Stoppelaëre House, Luxor



Carlos Bayod Lucini and Teresa Casado recording Fra Angelico's *Annunciation* at the Museo del Prado using the Lucida 3D Scanner. Óscar Parasiego records them as they work for a video about the process and reasons for doing this work.



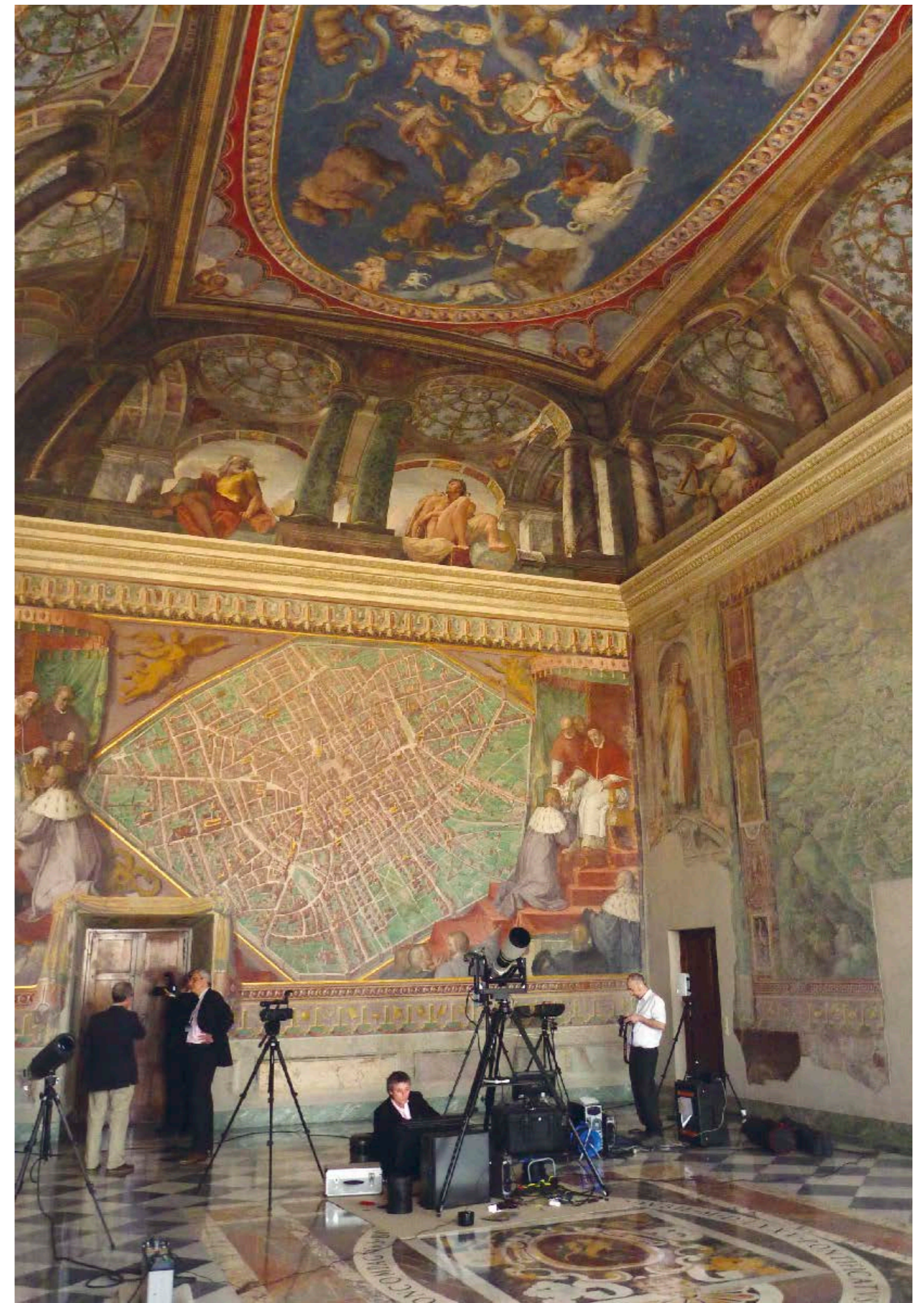
Recording the Raphael cartoons, V&A, London, 2019. One of Factum Foundation's most ambitious digitisation projects to date and has set new standards for large-scale, high-resolution digital documentation of low-relief surfaces. The Lucida 3D Scanner and panoramic composite photography were employed to capture detailed information for the surfaces of the seven monumental Cartoons and provided the original and processed data to the V&A for study and dissemination.



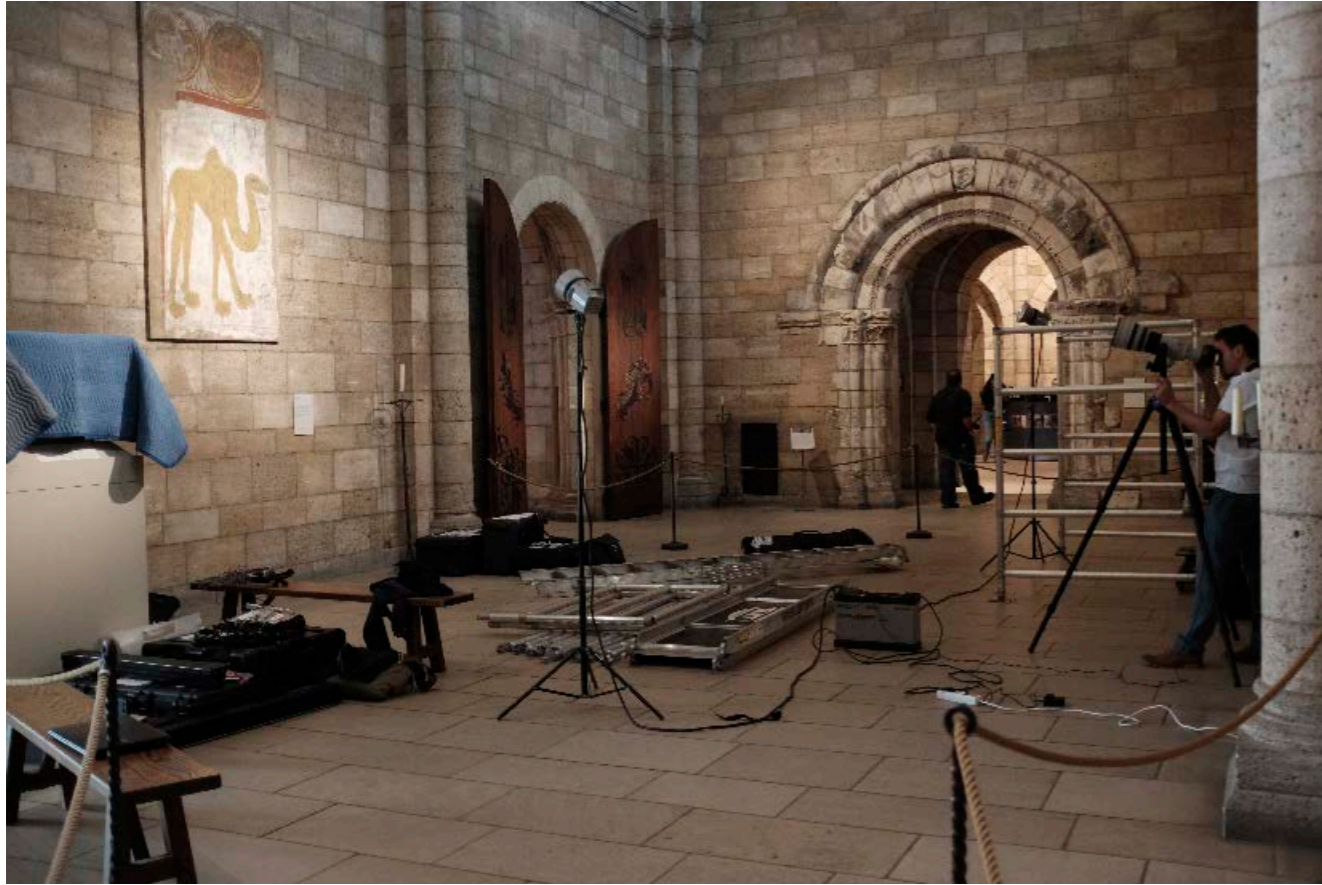
The Lucida 3D Scanner recording Michelangelo's *Epifania*, British Museum, 2019



Gabriel Scarpa recording the colour of Anton Van Dyck's *Philip Herbert, 4th Earl of Pembroke, with his Family* using panoramic composite photography, Wilton House, 2020



The Sala Bologna during the recording in 2010. The south wall, depicting the map of Bologna, and the west wall, depicting the map of the province of Bologna, were both recorded in high resolution



Gabriel Scarpa recording the colour of a fragment from the frescoes from the Chapel of San Baudelio in Casillas de Berlanga, MET Cloisters, New York, 2016



Otto Lowe using photogrammetry to record one of the caves of Laas Geel, Somaliland, 2021



Otto Lowe teaching photogrammetry in AIUla, Saudi Arabia, as part of an agreement with Art Jameel, 2019



Abdo Ghaba recording the 3D surface of the tomb of Seti I, Luxor



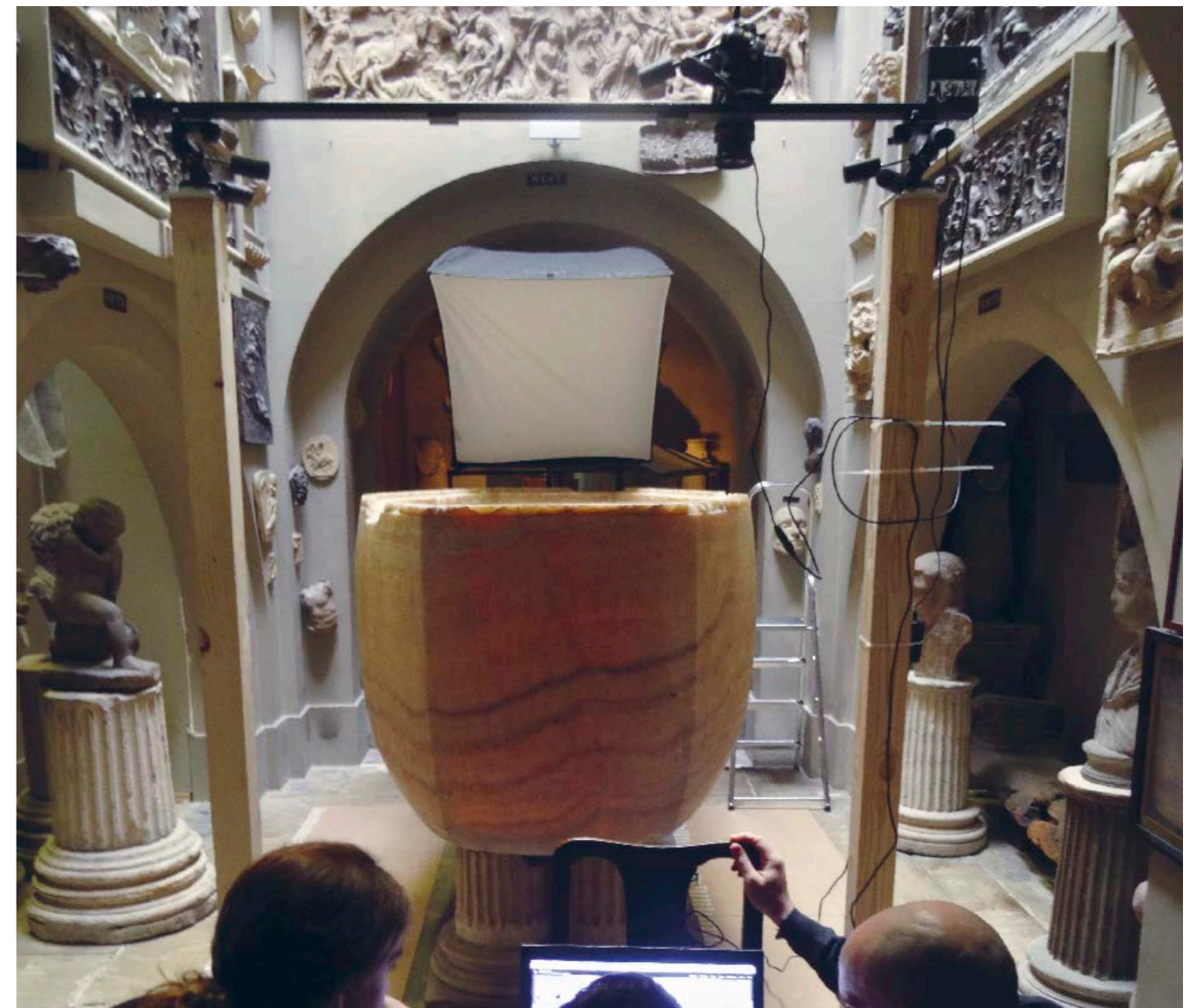
Ferdinand Saumarez Smith using close-range photogrammetry to record the tombstones from the cemetery of the Khala Khoreysh mosque, Dagestan, 2016



The recording of the mosque also employed aerial photography using a drone



Preparing one of the Bakor monoliths on the Nkrigom site for photogrammetry recording, Nigeria, 2016



Recording the sarcophagus of Seti I at Sir John Soane's Museum, London, 2016



Portable Manuscript Scanner being used at the State Archives in Makhachkala, Dagestan to record their collection of Arabic manuscripts



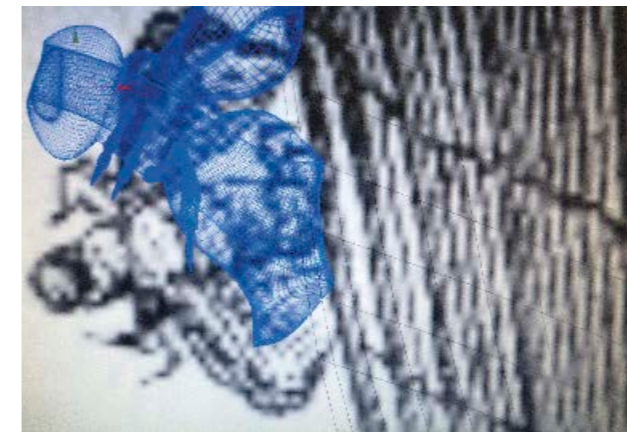
The 3D and photogrammetry room is where digitised objects become 3D models that can be printed or milled



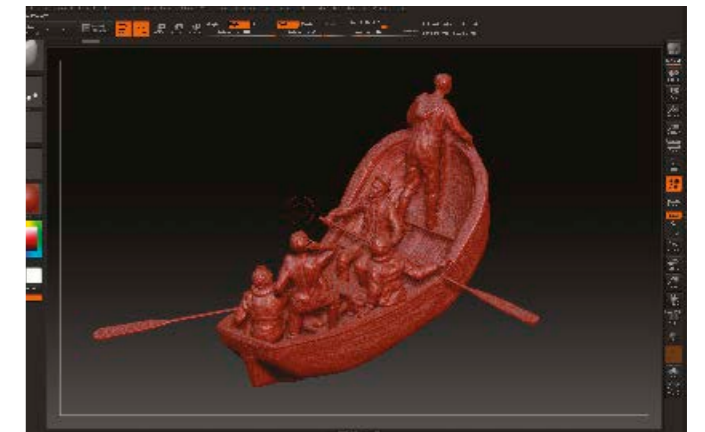
The dark room: a space for experimenting with photography and photogrammetry



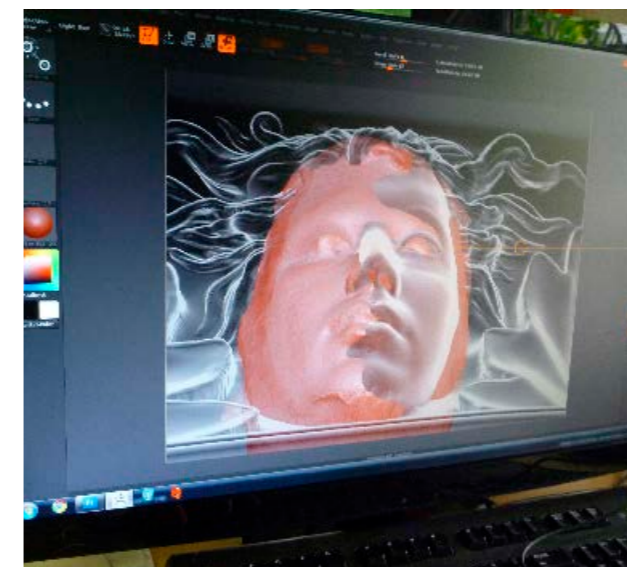
Irene Gaumé working on a 3D model



Merging modelled and scanned data to make a silver coffeepot designed by Giambattista Piranesi



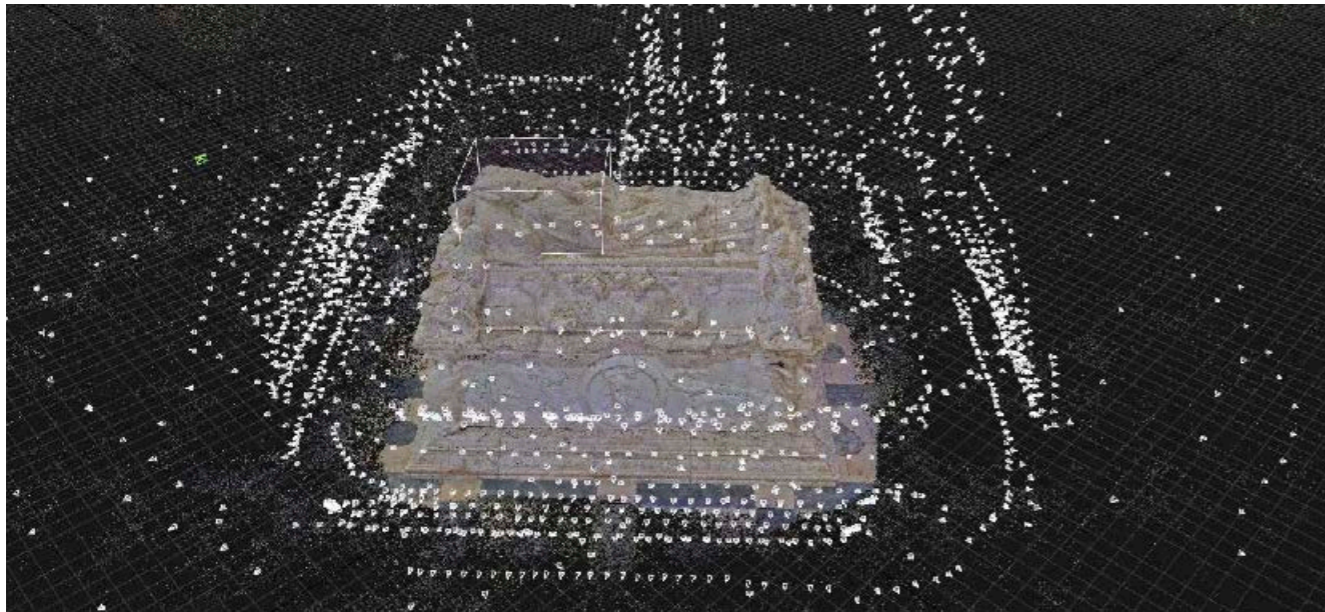
Some of Shezad Dawood's sculptures have been 3D modelled at Factum Arte



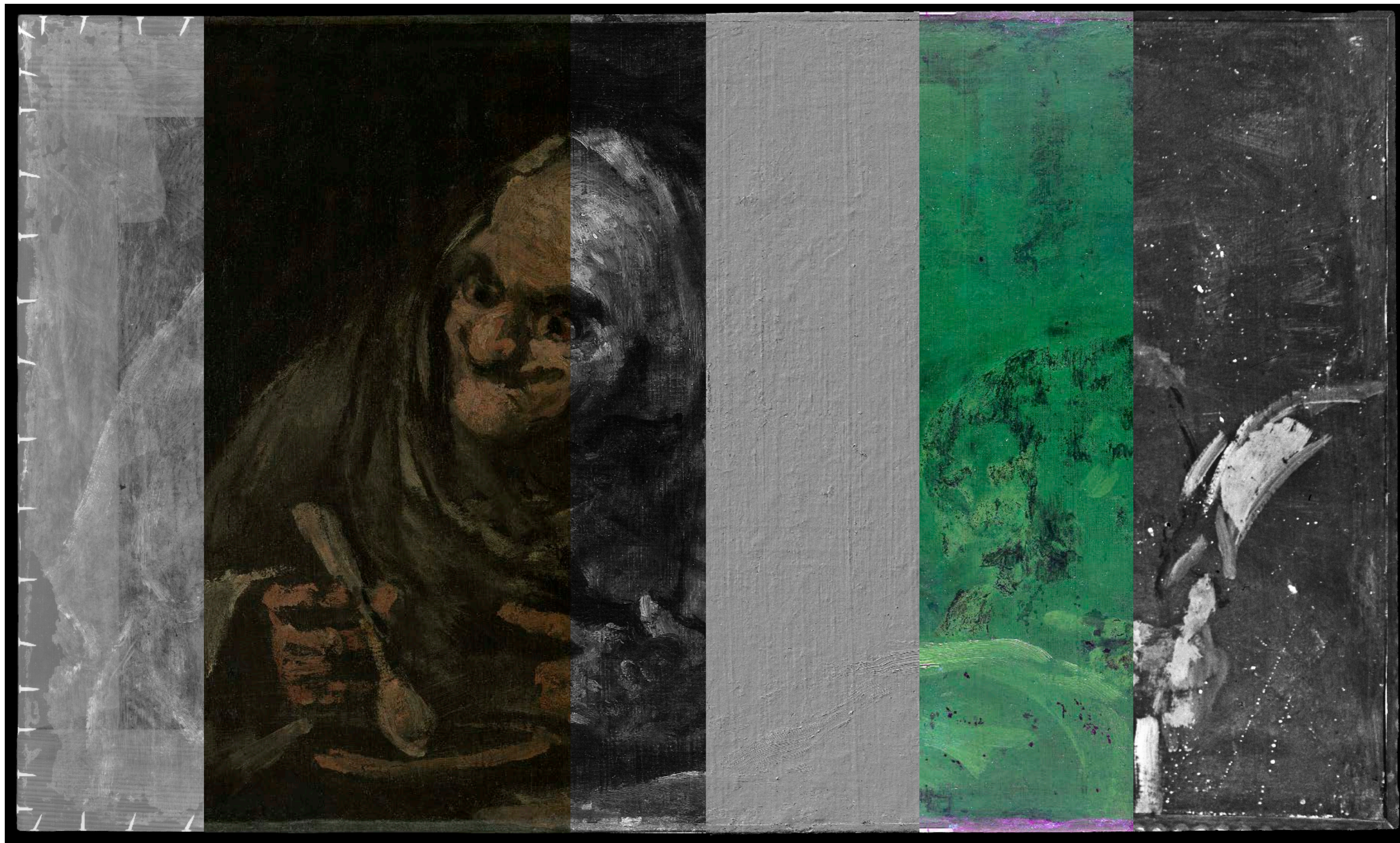
3D modelling from an 18th century print



3D animation produced by Grégoire Dupond

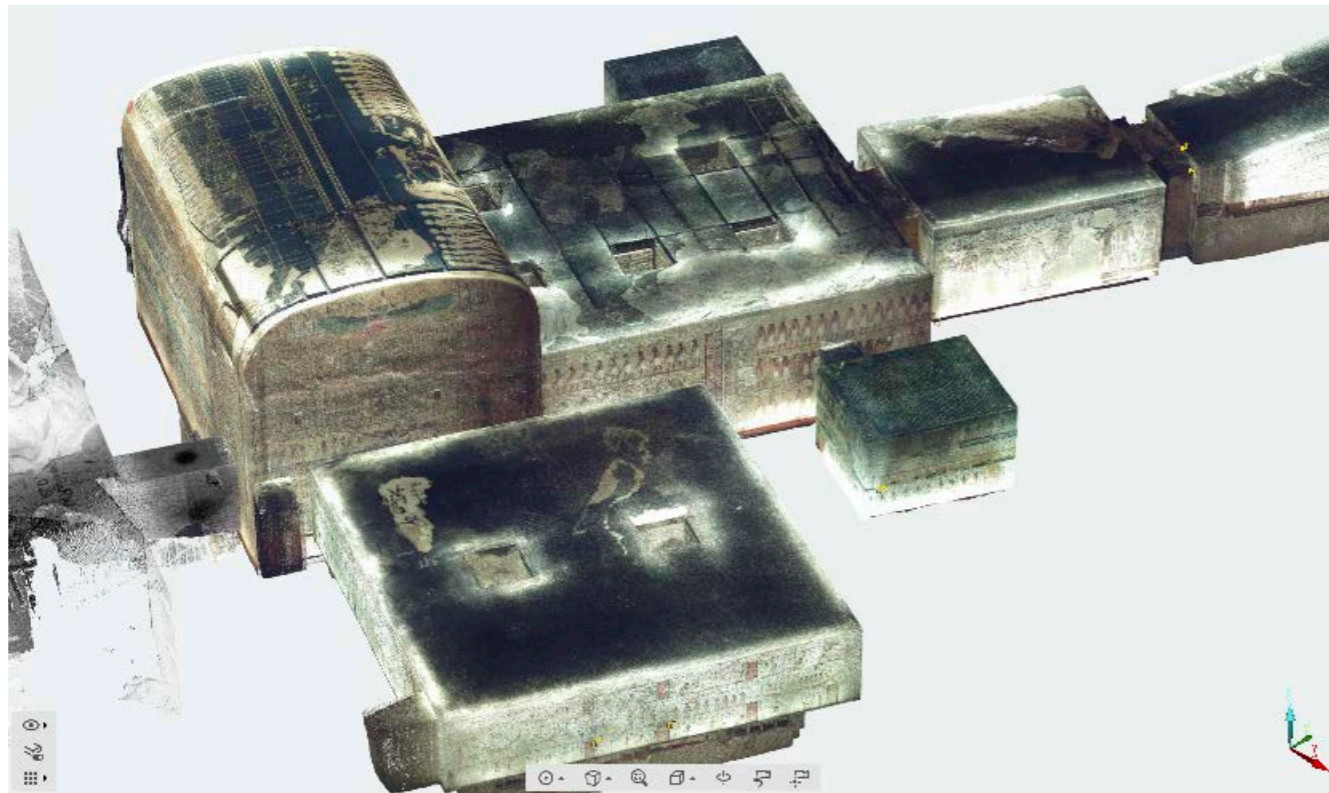


Rematerialising the sepulchre of Cardinal Tavera by Alonso Berruguete. Close-range photogrammetry, LiDAR and a white-light scanner were employed to record the object and its environment in high resolution before producing a highly accurate 3D model

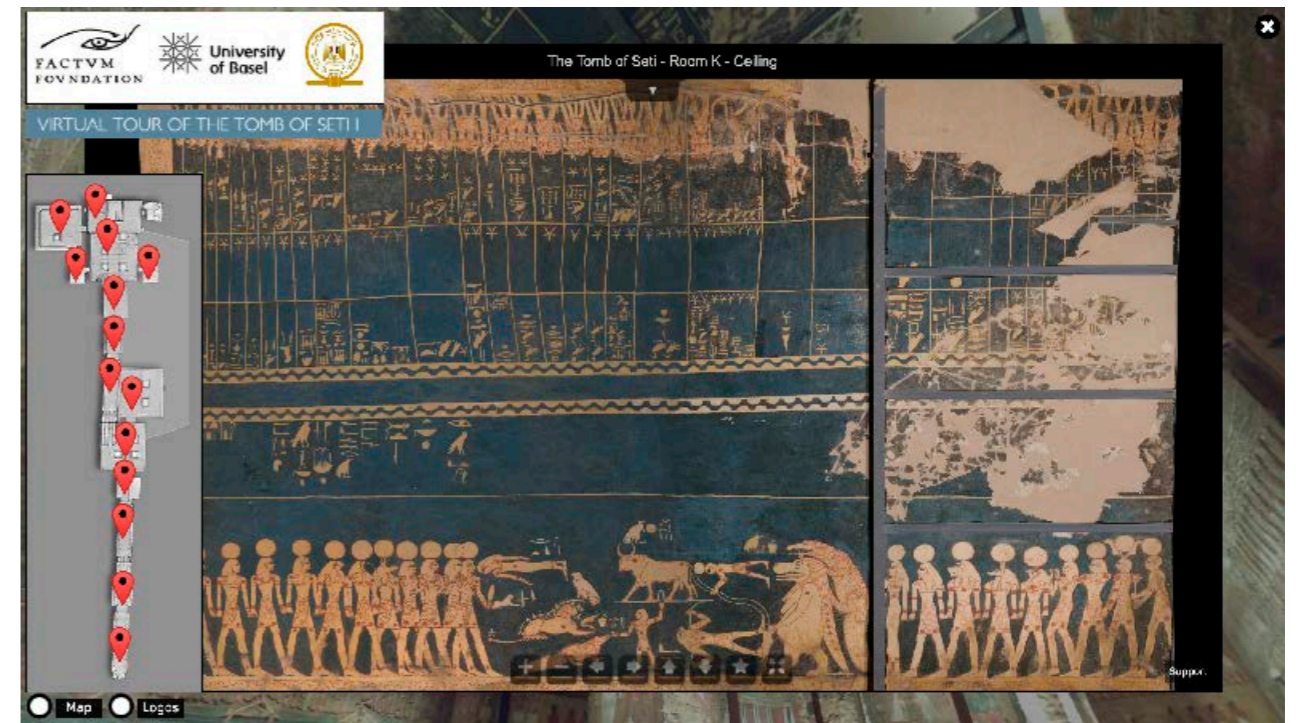
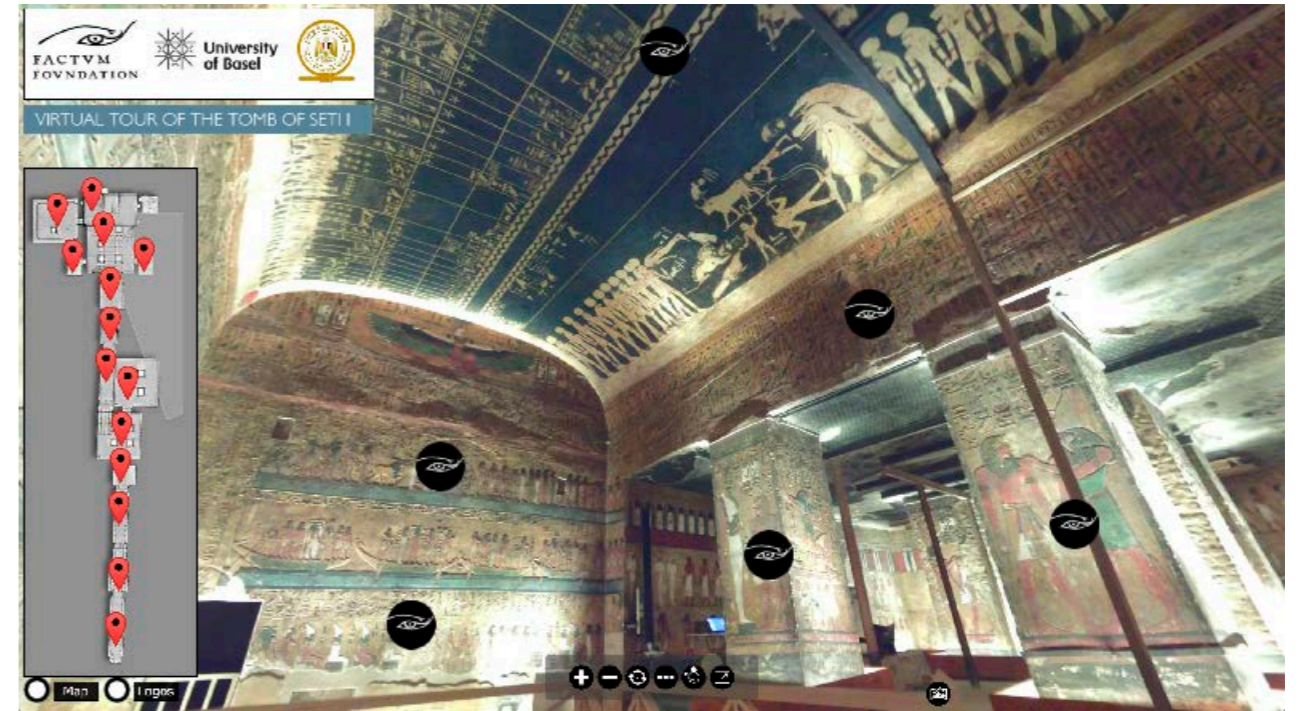


The various layers of information acquired and collected by Factum Foundation and the Museo del Prado during the recording of the *Black Paintings* by Francisco Goya in 2014.

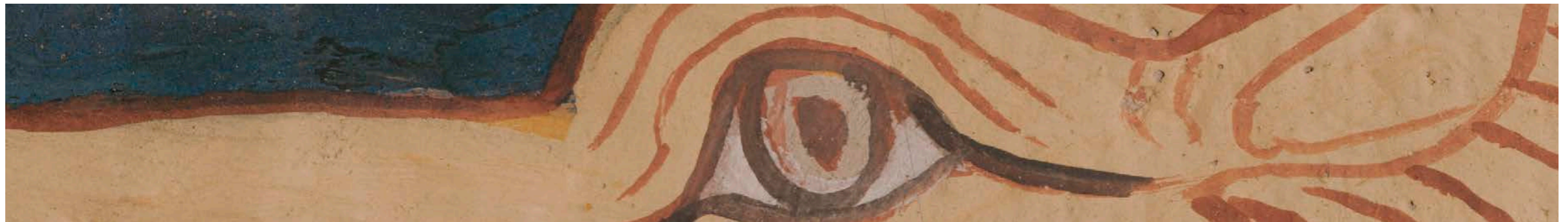
X-ray, colour, infra-red, 3D surface, ultraviolet and historical picture by Jean Laurent over *Two Old Men*

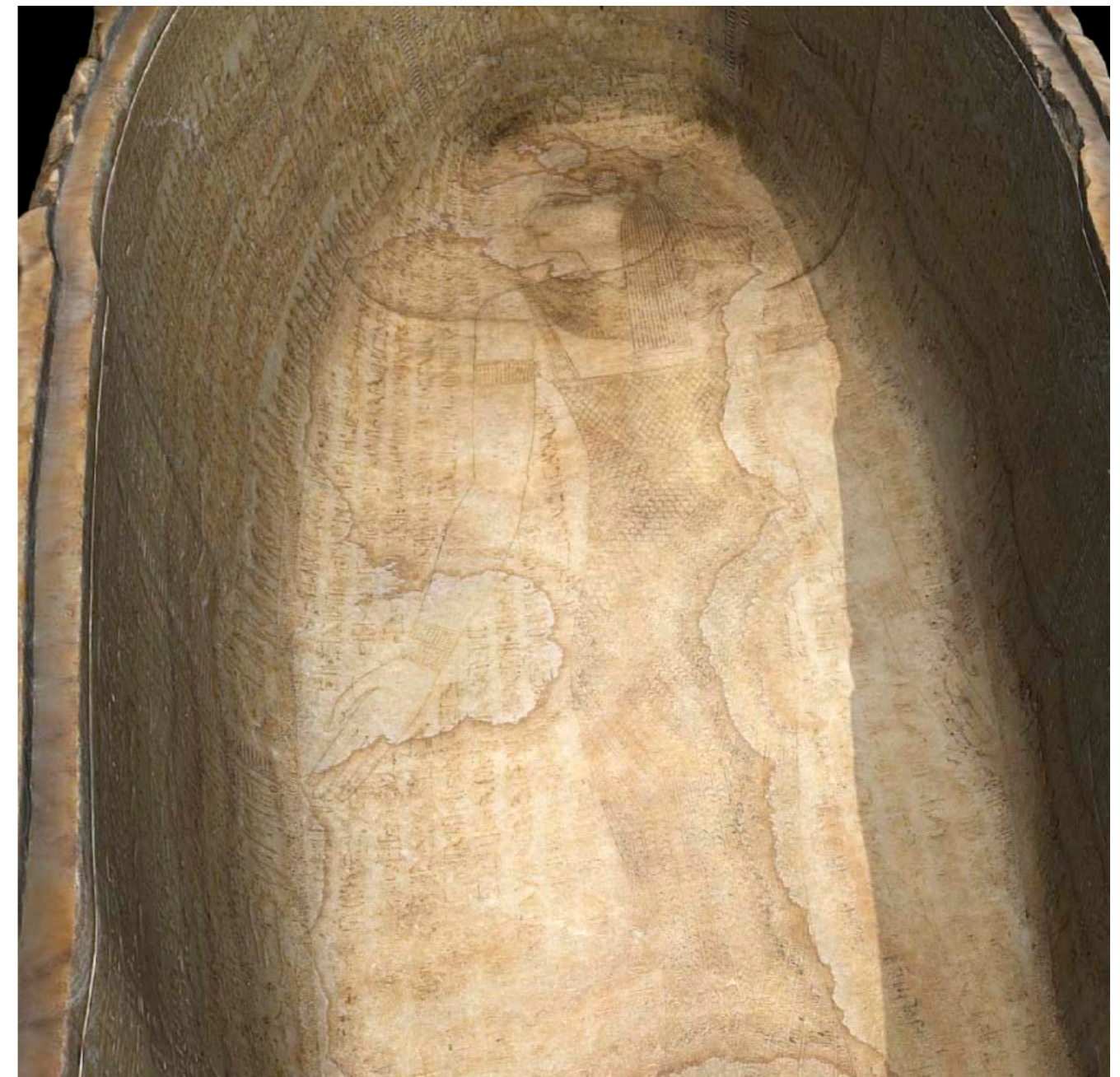
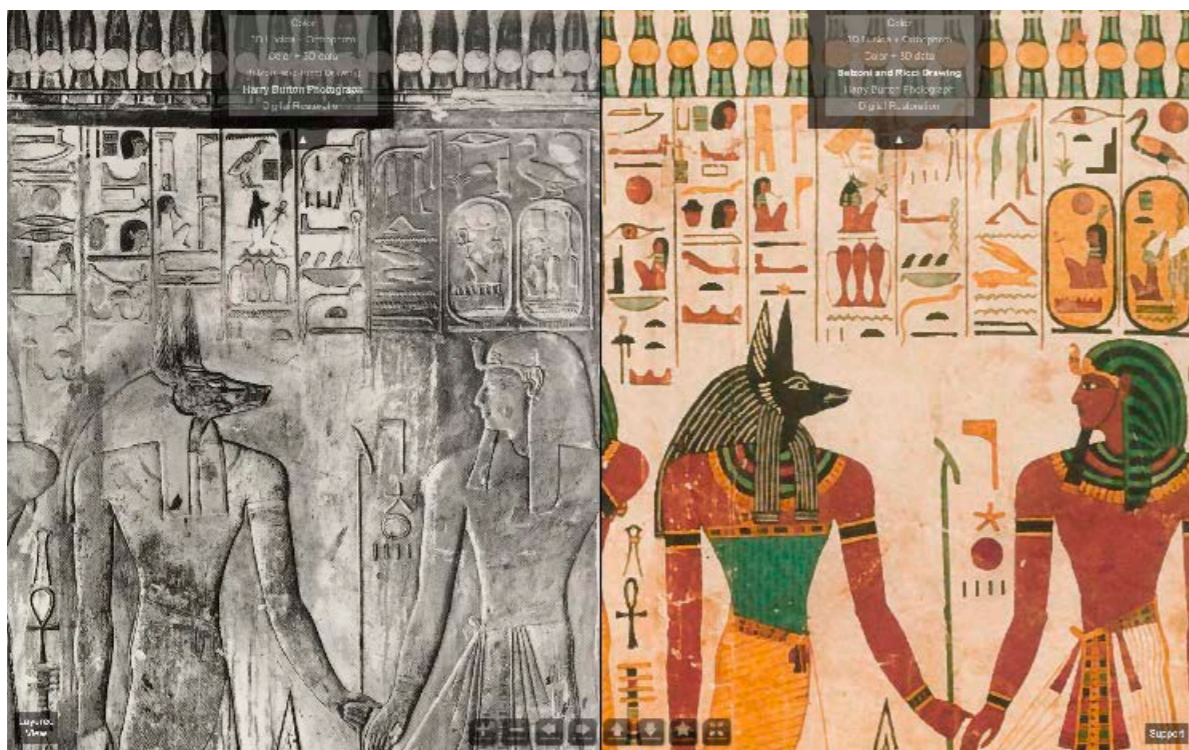
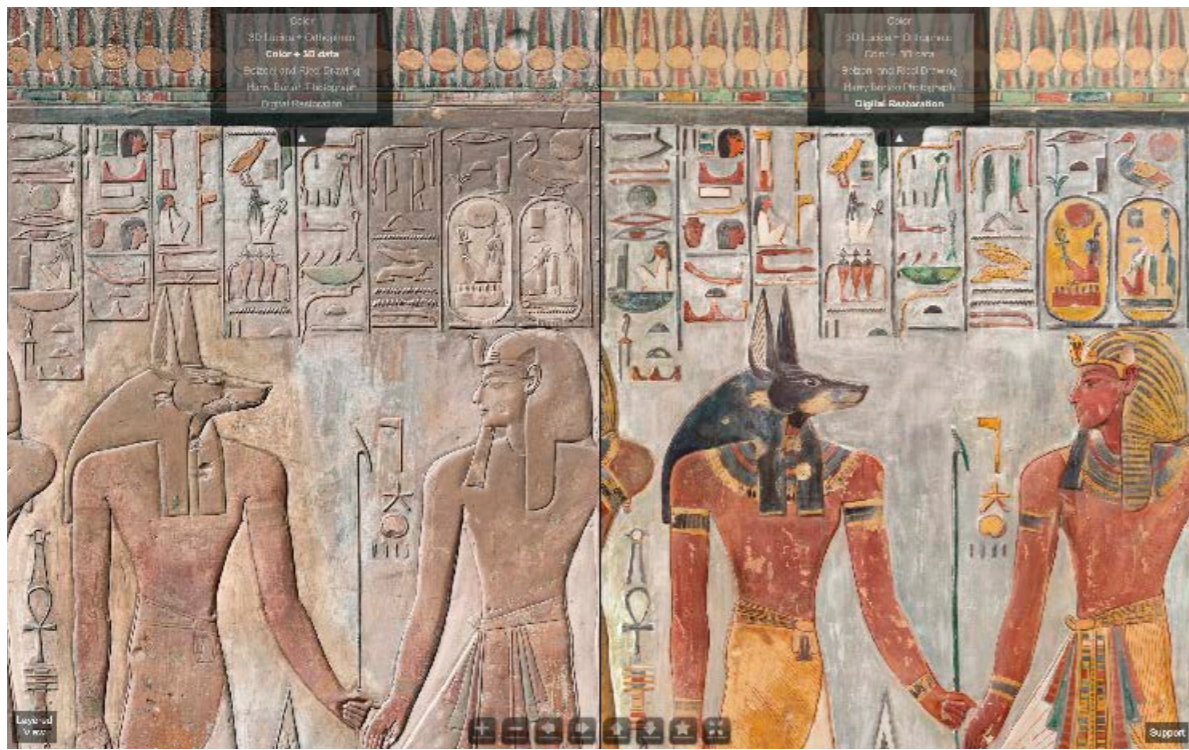


LiDAR scan of the tomb of Seti



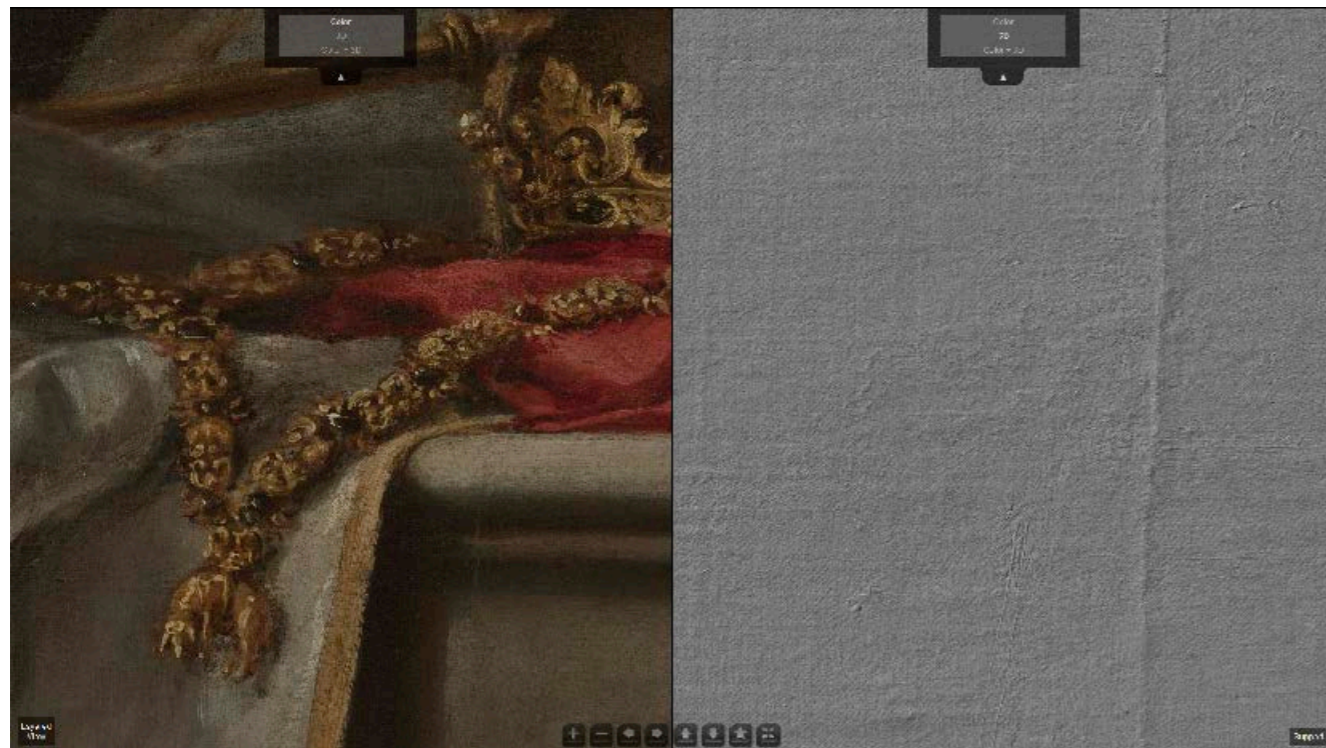
The Virtual Tour of the tomb of Seti I, made in collaboration with the University of Basel and the Egyptian Ministry of Antiquities



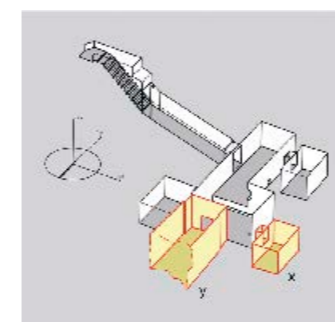


Details from the high resolution viewers of the tomb of Seti, freely available online

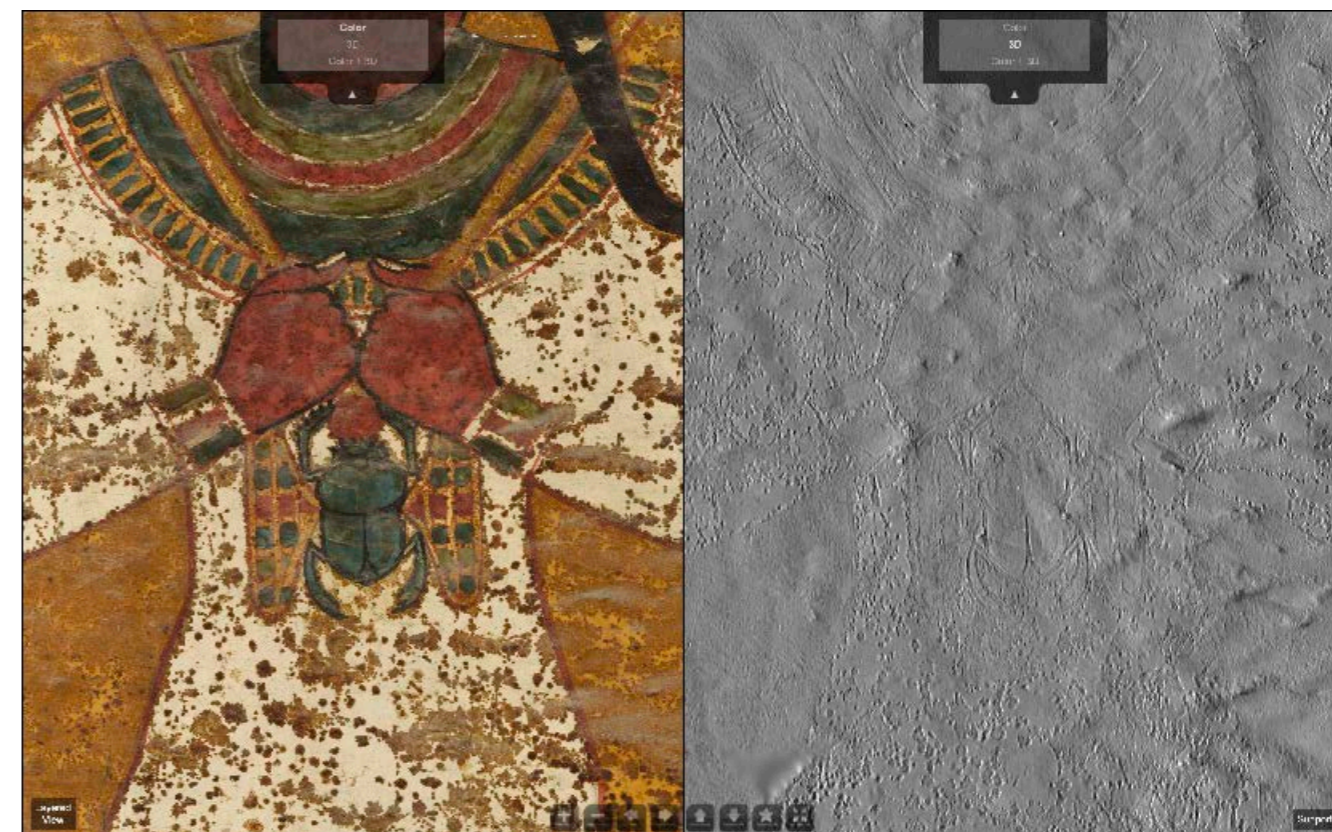
The 3D model of the sarcophagus of Seti I

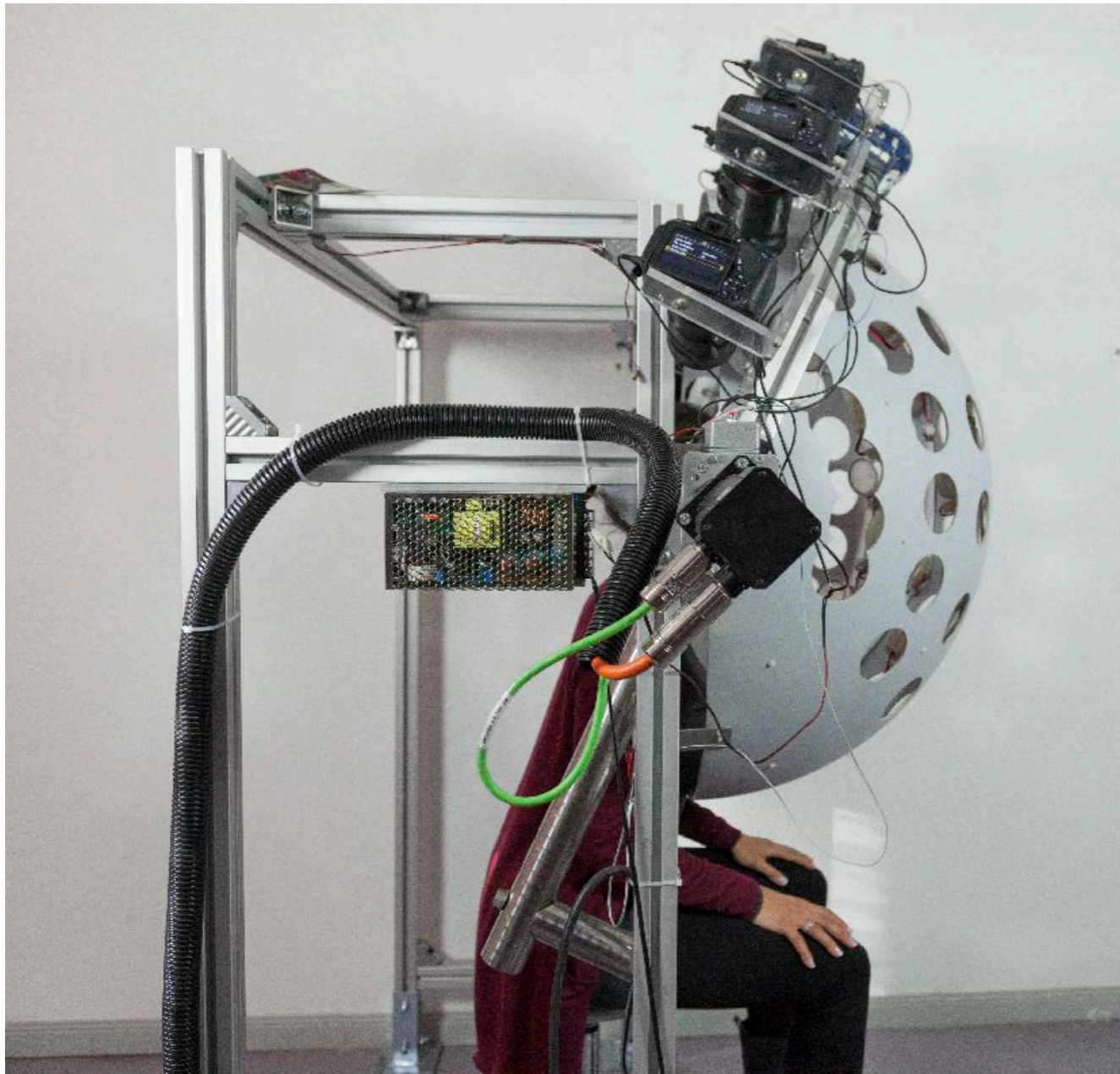


Details from the high resolution viewer of Valdés Leal's *In Ictu Oculi*

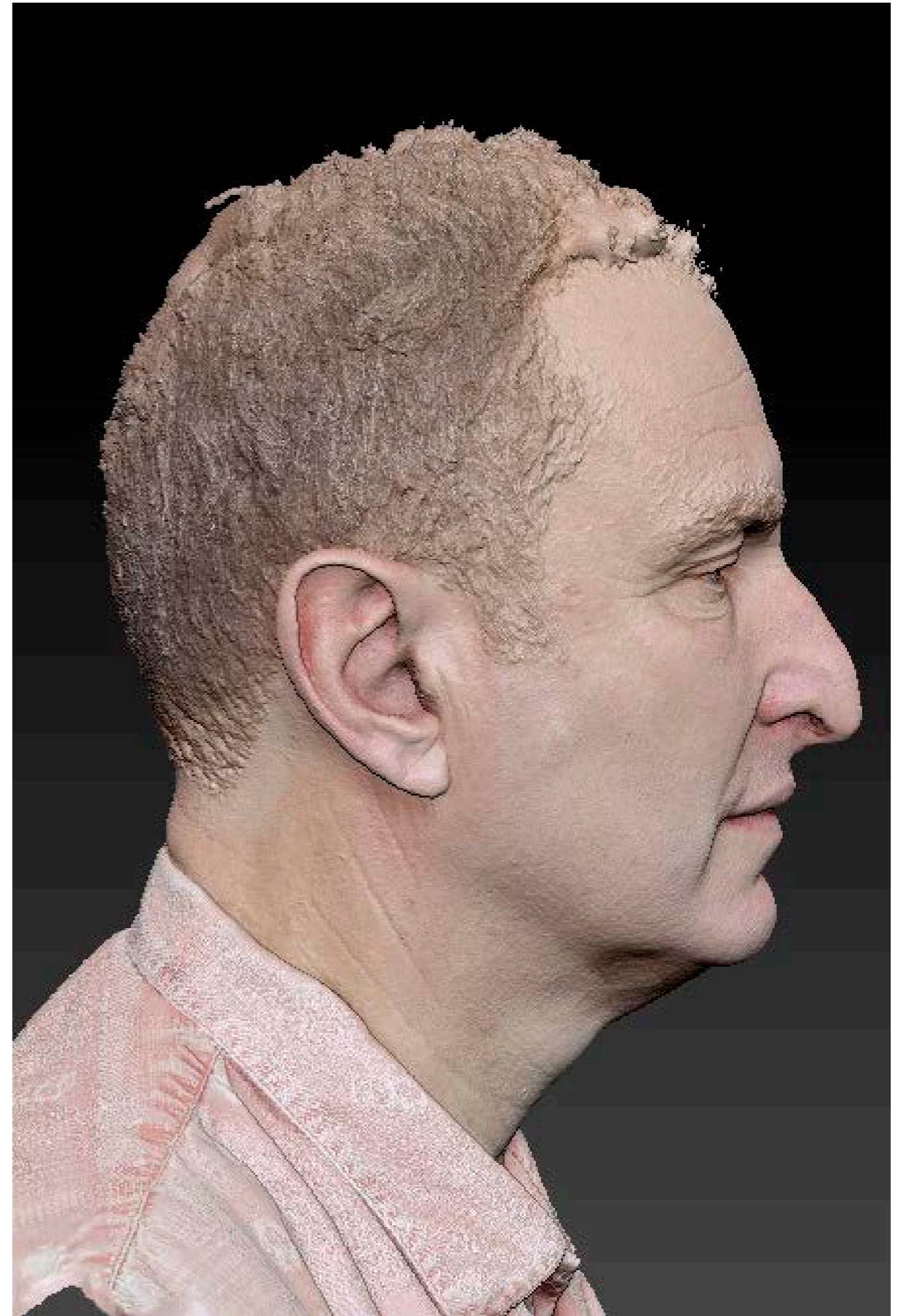
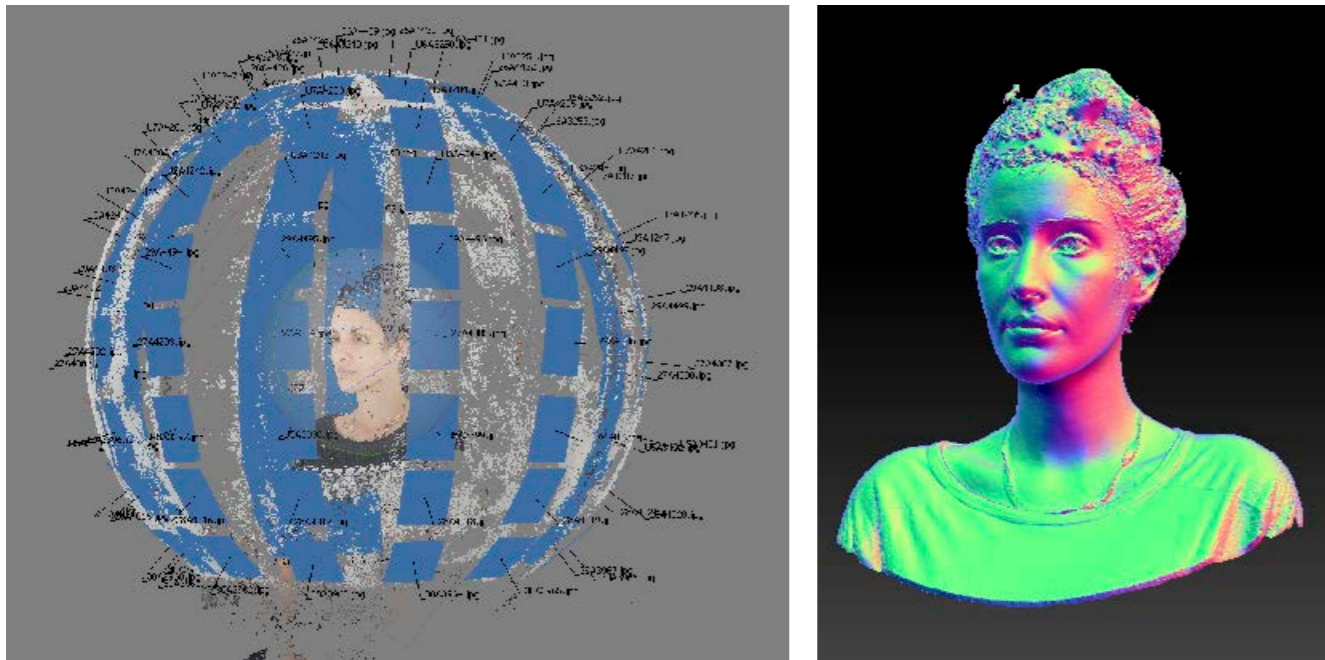


In 2015, using the high resolution viewers of the tomb of Tutankhamun, Egyptologist Nicholas Reeves theorised the existence of two additional chambers behind the North wall of the burial chamber



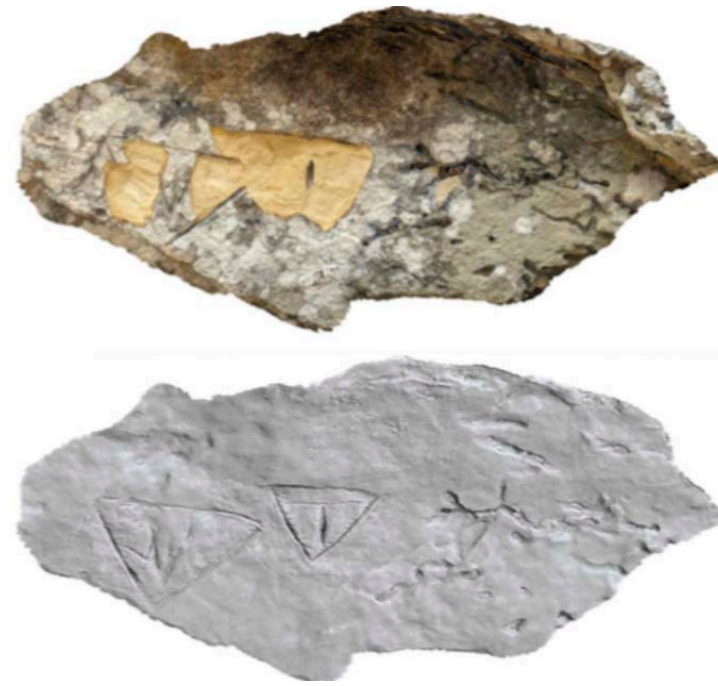
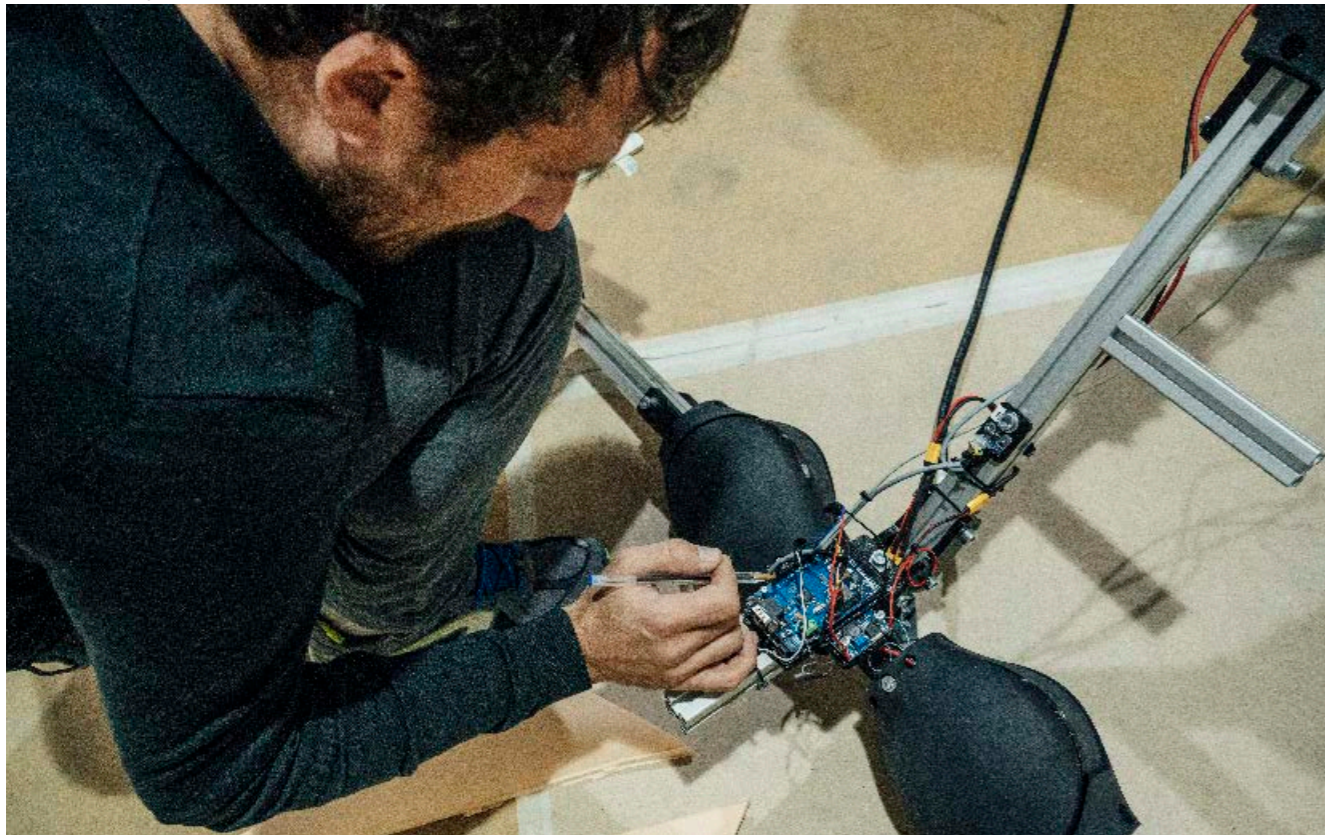


The Veronica Chorographic Scanner

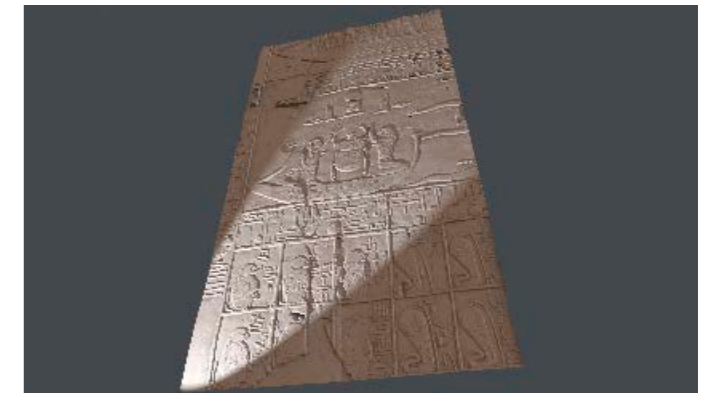
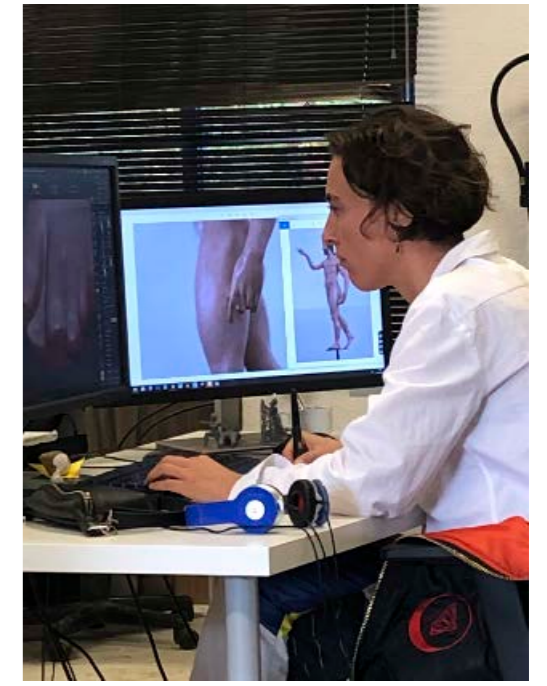




The engineering team (Jorge Cano and Matt Marshall) works to develop new technologies for both cultural heritage and contemporary artists

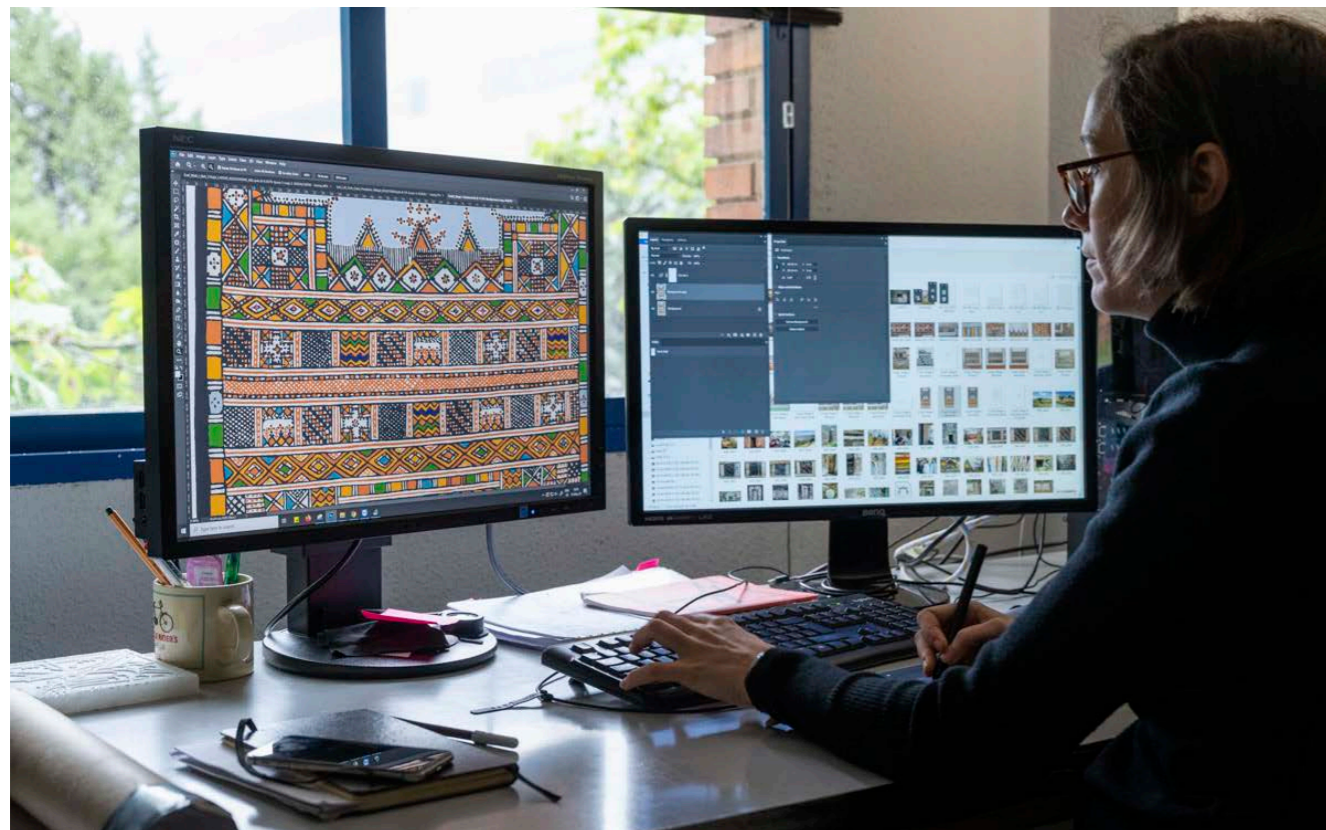


Irene Gaumé, Factum's 3D sculptor, works on a variety of projects involving digital mediation and digital restoration

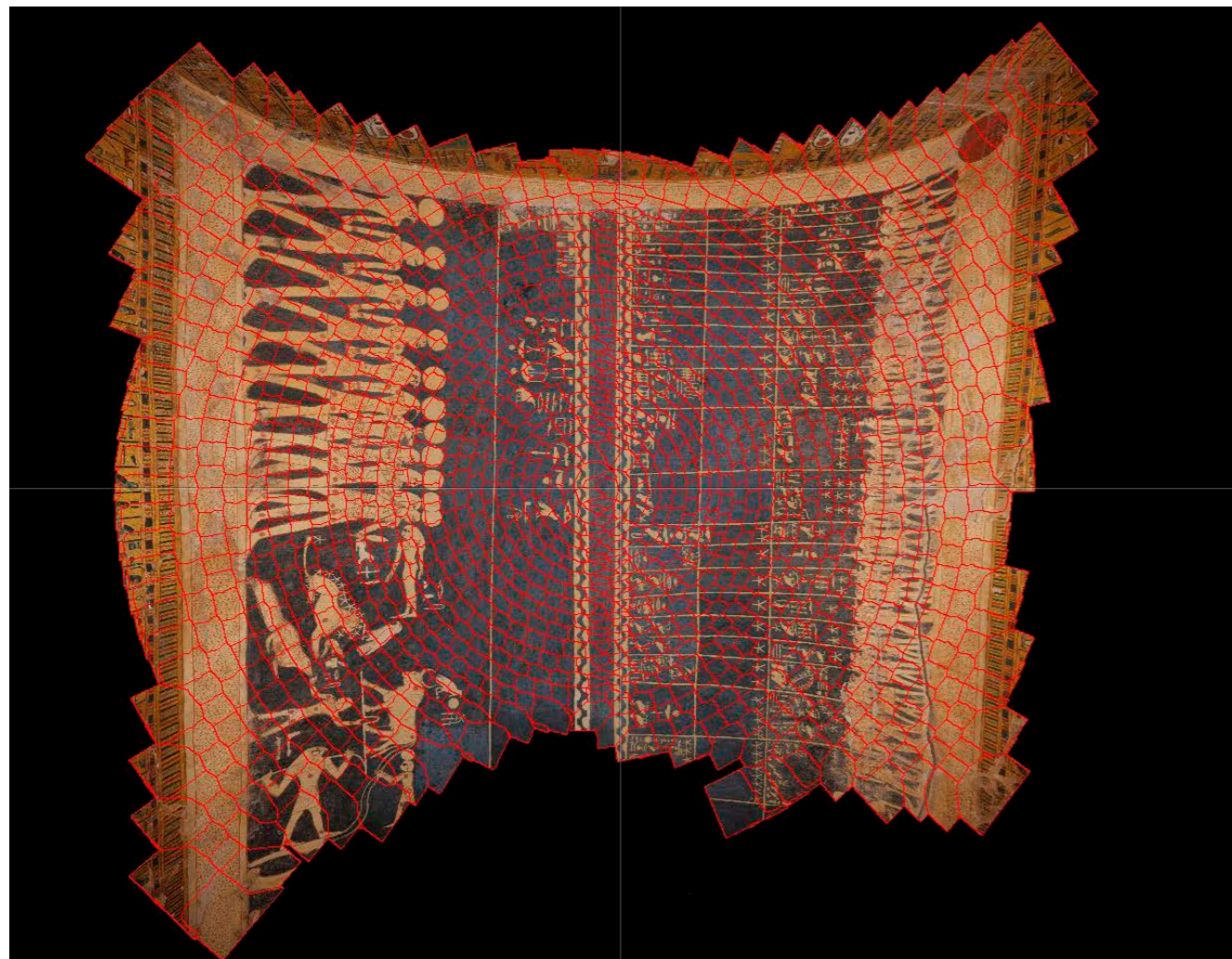


[video link Experiments with Unreal Engine: the Tomb of Tutankhamun](#)

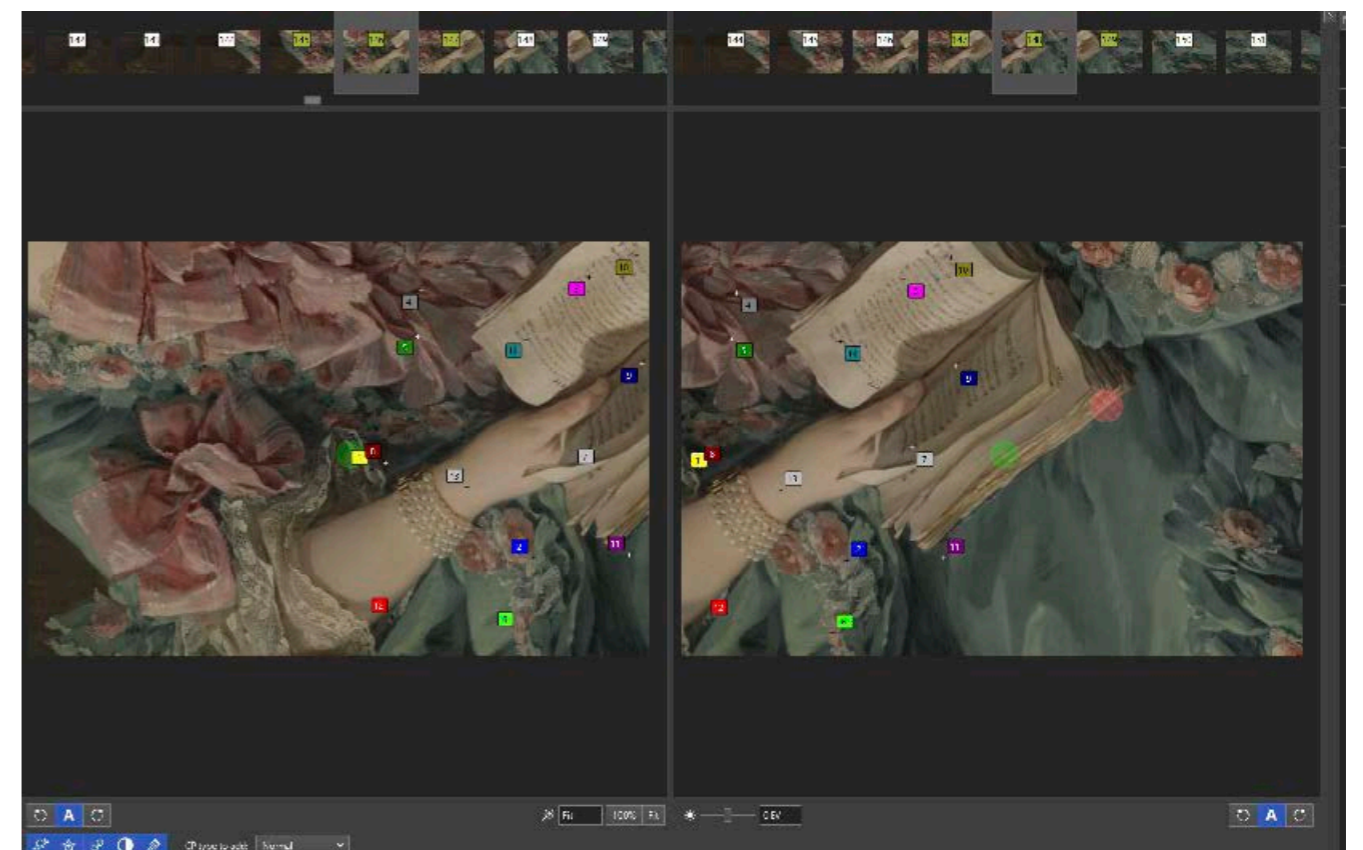
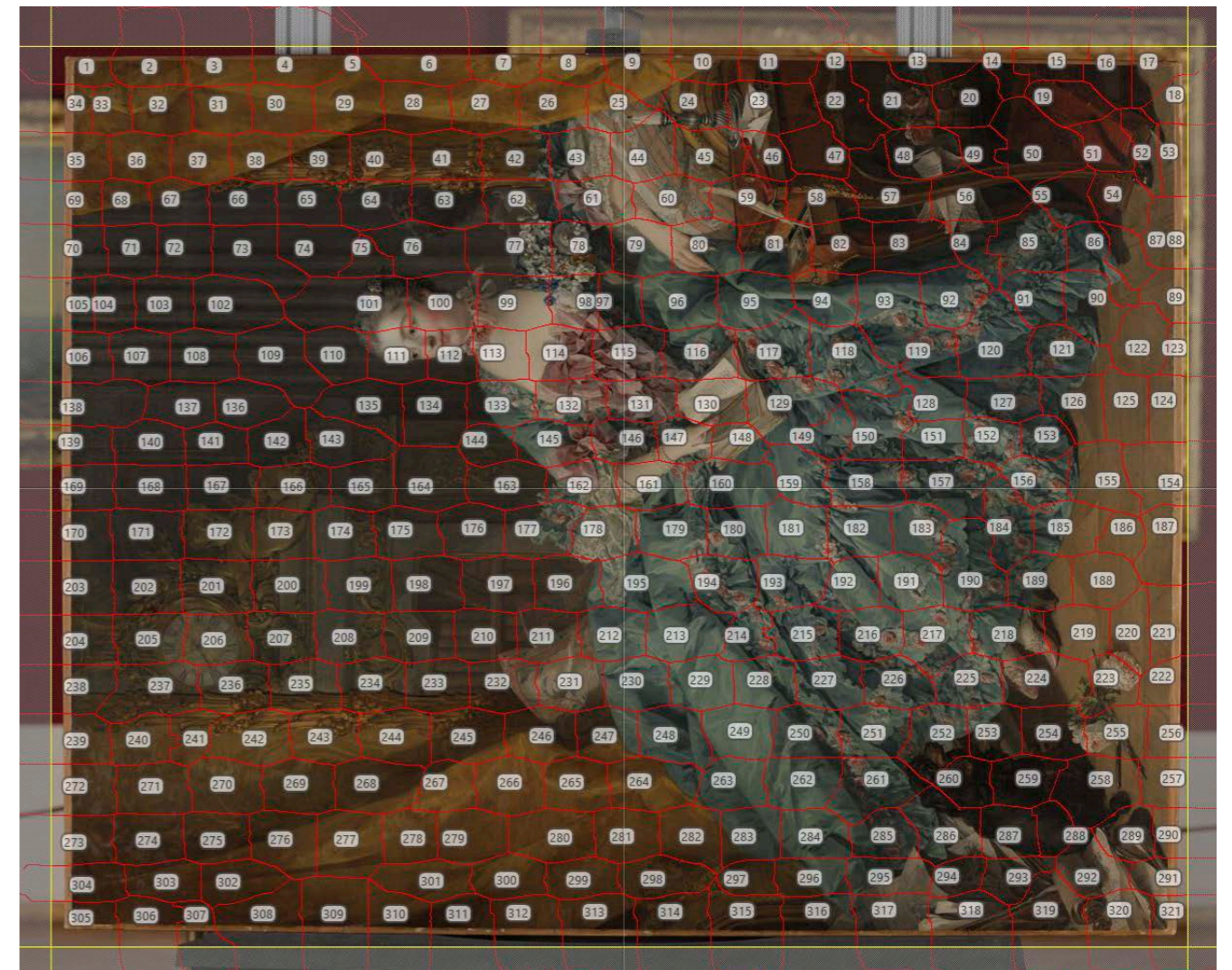




In the colour and composite photography lab Gabriel Scarpa, Teresa Casado and Eduardo López work to stitch together and restore digital images



The digital team specialises in digital restoration, colour matching and the production of various means of visualising data



Composite photography stitching and colour registering on the *Portrait of Madame de Pompadour* by François Boucher



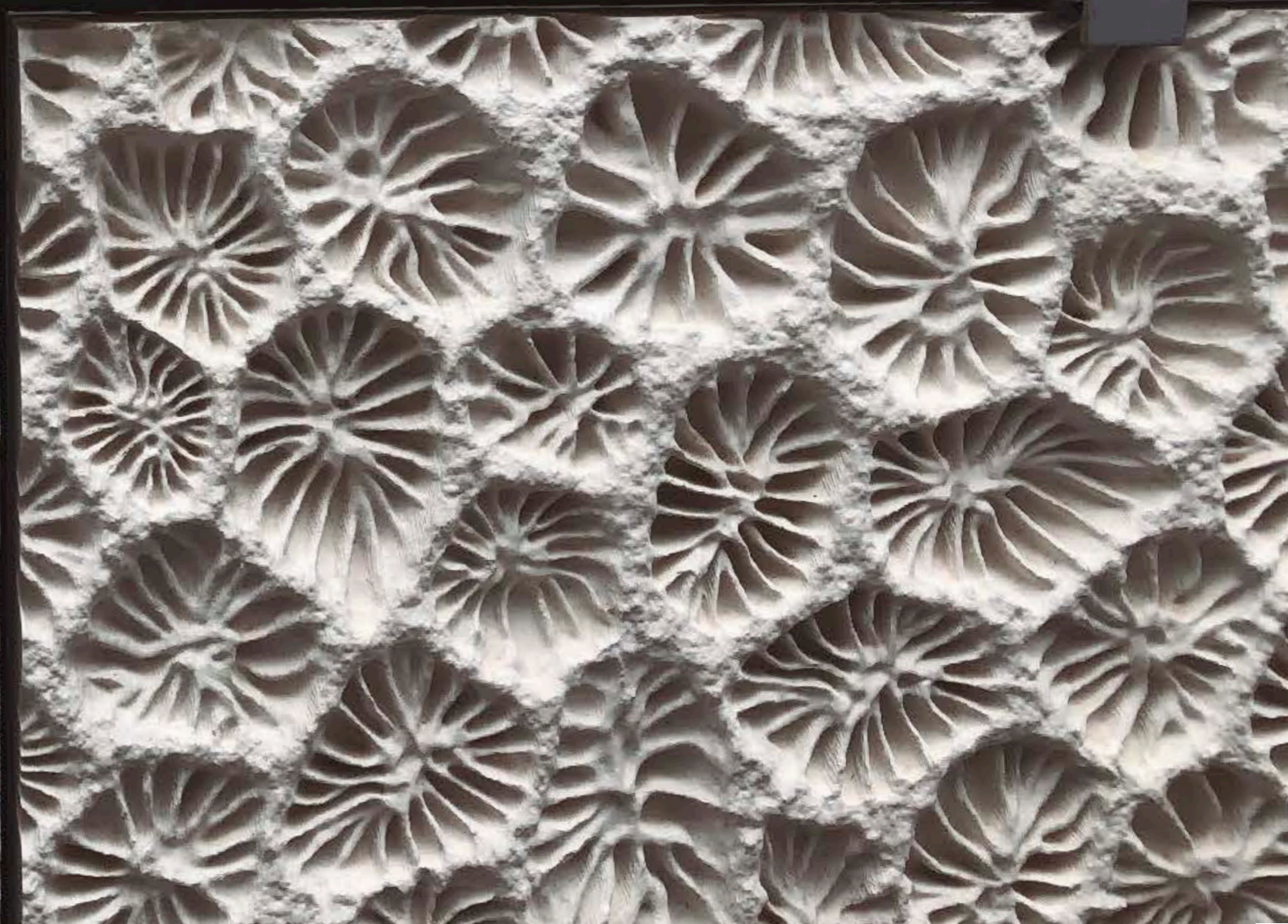
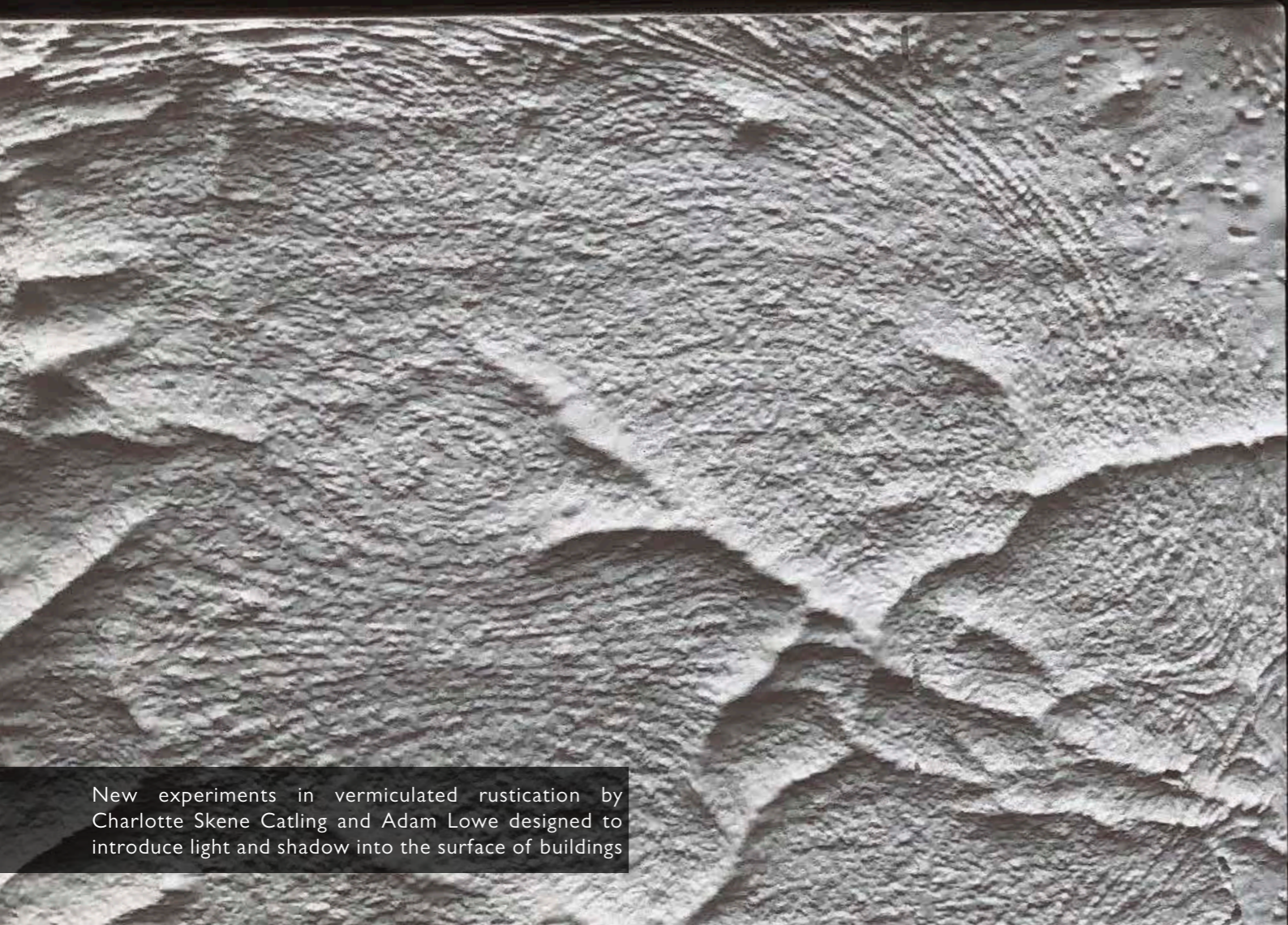
The Last Supper. A vision by PETER GREENAWAY, Refectory of Santa Maria delle Grazie, 2010



Not all heritage exists in physical form: composer and sound designer Nathaniel Robin Mann is involved in projects aiming to preserve sounds



DIGITAL OUTPUT



New experiments in vermiculated rustication by Charlotte Skene Catling and Adam Lowe designed to introduce light and shadow into the surface of buildings

DIGITAL OUTPUT

The techniques, technologies and processes of re-materialisation adapt to each project. Many projects involve CNC-milling in stone or metal and 3D printing prototypes in nylon, resin and plastics. These spaces remain flexible and evolve as new technologies become available. The facilities are equipped with six CNC-milling machines, a cement printer, a fulgurite printer, a 7-Axis robot, and small 3D printers. Factum Arte uses a number of local and international companies for specialised process and large-scale 3D printing.



One part of the digital output area. MUHANNAD SHONO, *On Losing Meaning*, 2021



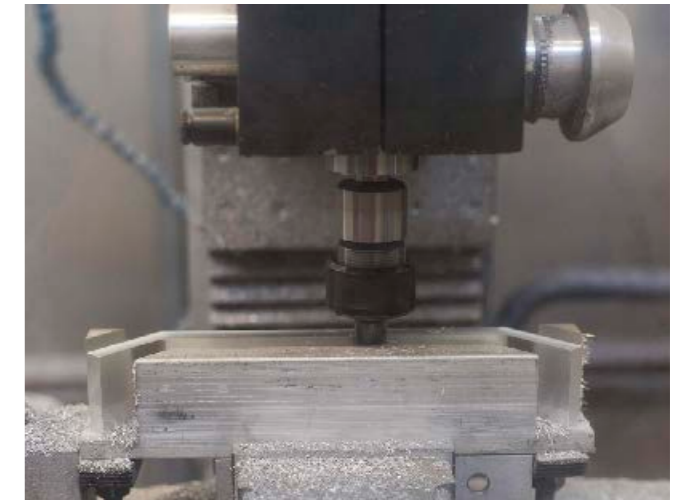
The second concrete printer working in ANISH KAPOOR's studio



Fulgurite experiments for AHMED MATER



Elevated printing



Precision milling of components for new recording and output systems



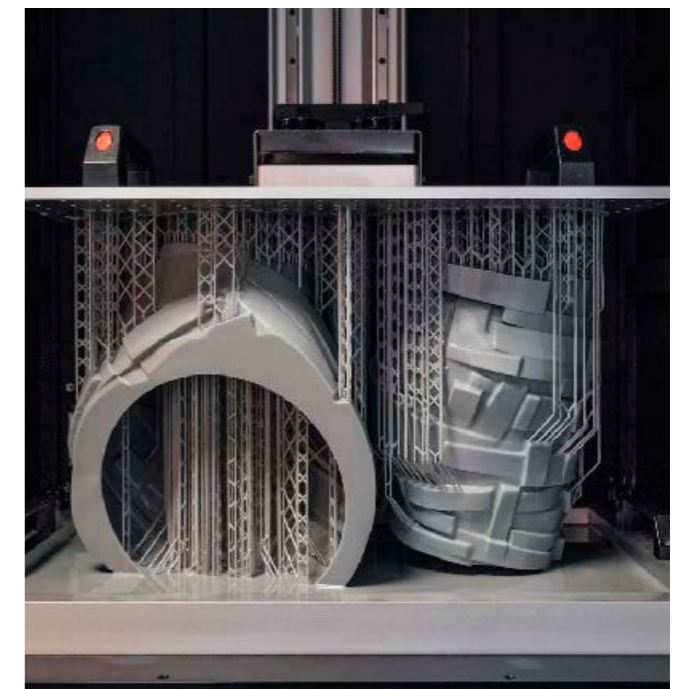
Routing an alabaster block



Seven-axis 3D milling



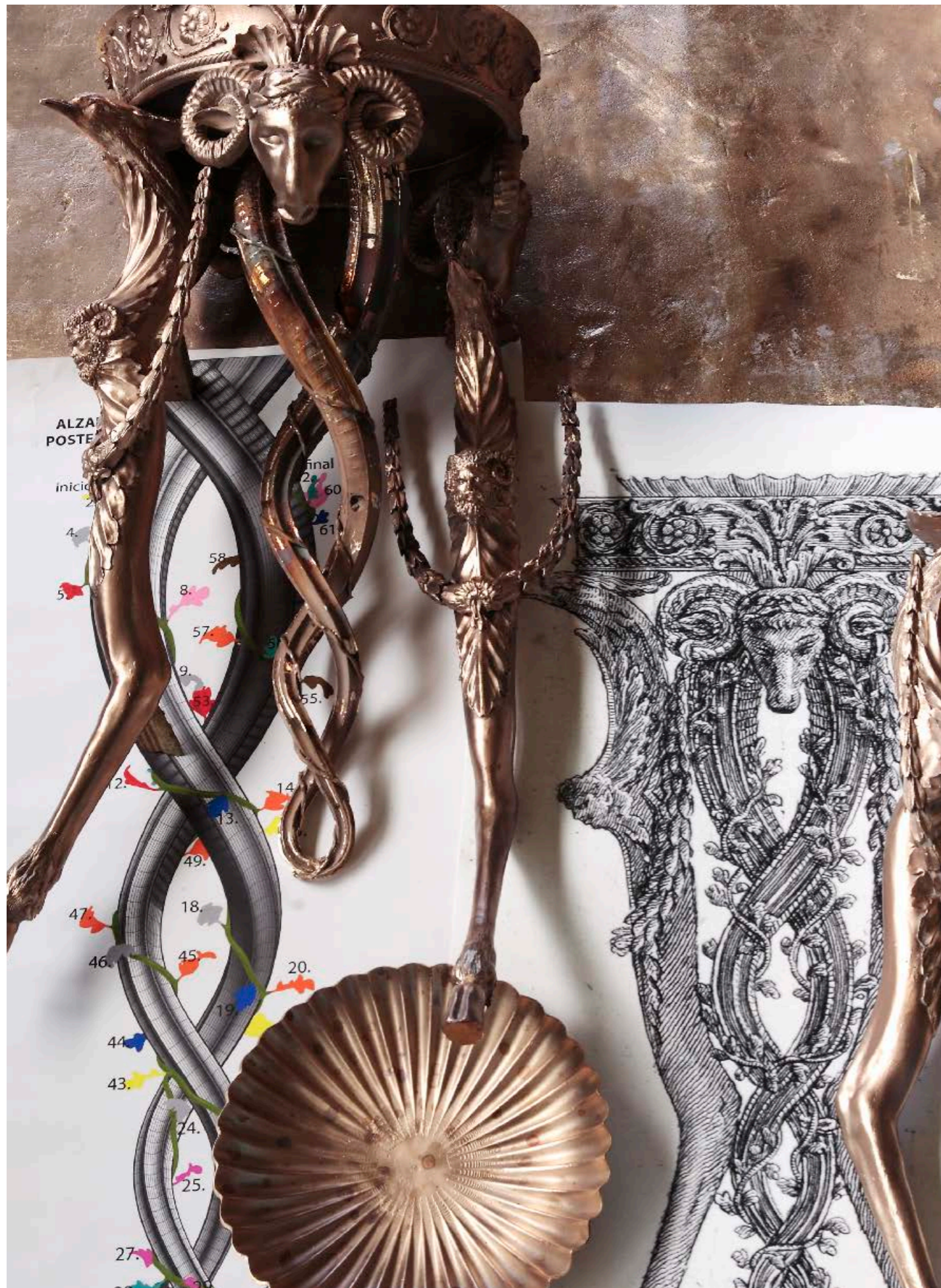
CNC-milling aluminium



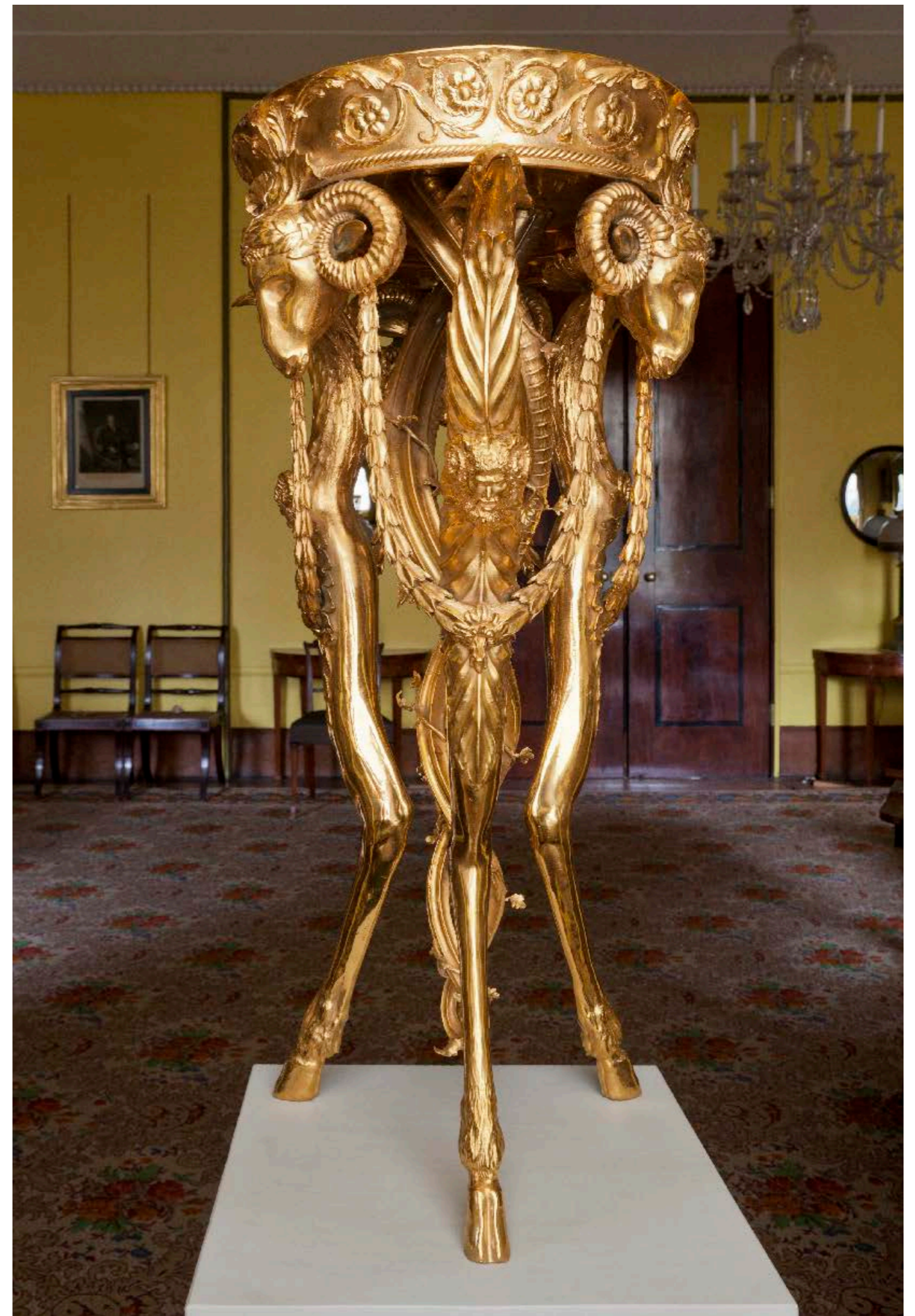
3D printing process that uses an exposure unit to cure layers of material and literally build a 3D photographic image



3d modelling and finding new ways to visualise and display data is an increasingly important part of Factum's work



Innovative exhibition displays are increasingly interested in recreating objects in 3D: giving materiality to the ideas of artists and designers of the past is also part of Factum's work



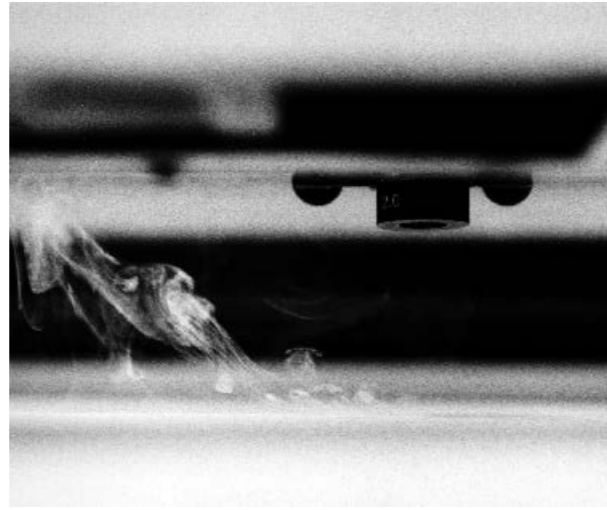
Recreation of Giambattista Piranesi's *Helix Tripod* for the exhibition *The Arts of Piranesi*, 2014

DIGITAL OUTPUT

DIGITAL OUTPUTS WITH SUB-CONTRACTORS



Large-scale precision engineering



Laser cutting



Laser sintering



Wire cutting stone



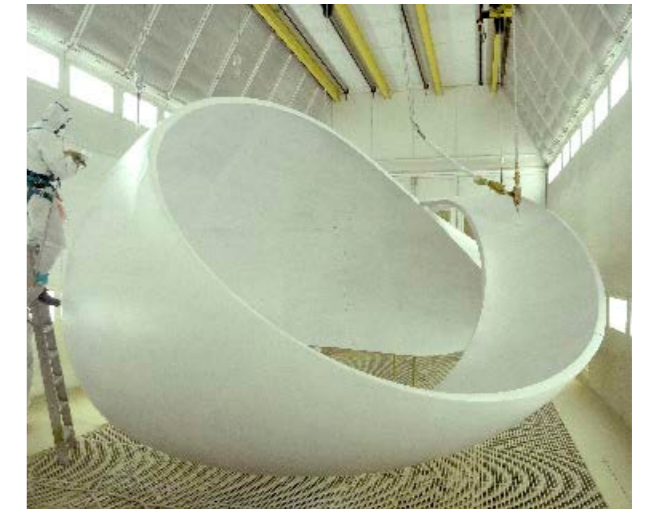
Robot polishing



Stone cutting



Stone carving



Large painting chamber



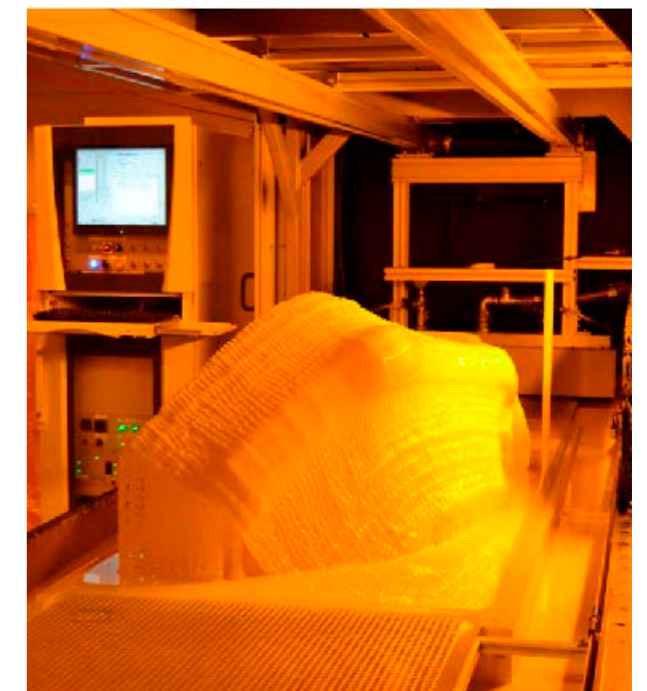
Waterjet cutting



Large-scale stone lathe



Centrifugal casting



3D printing with Materialise's Mammoth SLA printer

DIGITAL OUTPUT

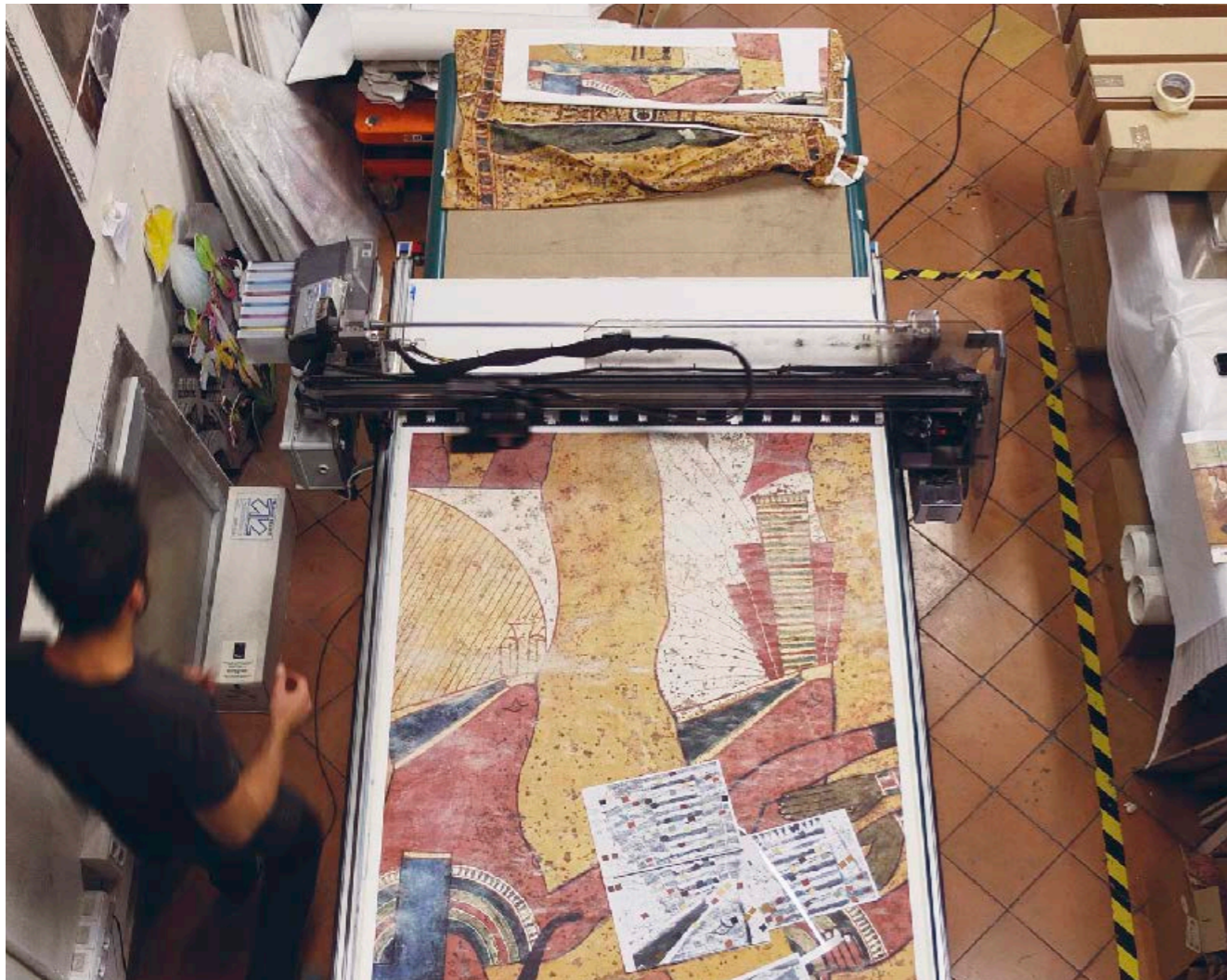
PRINTING AREA: DIGITAL STUDIO



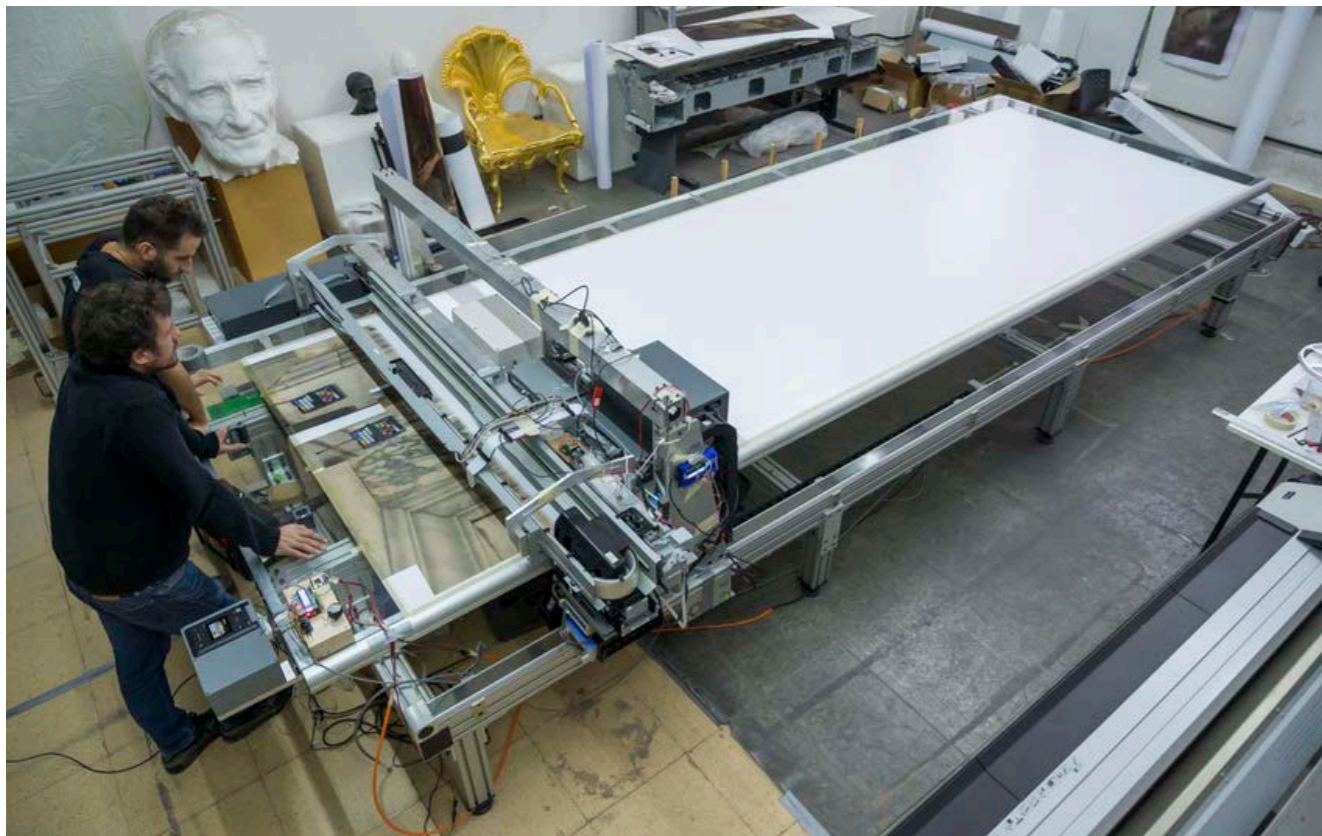
Printing the Bartolomé Esteban Murillo's *The Miracle of the Fish and Bread* with Factum's flatbed printer

The digital printing area is at the heart of studios and plays a central role in Factum's approach to the relationship between tone and form. It has been developed around a flatbed printer designed by Dwight Perry. A new version of this printer is currently being developed by

Quinner Baird. Both systems enable Rafa Rachewsky, Jordi Pons and Eduardo López to print onto diverse surfaces (coated in house) by building up layers of colour. This approach has created new possibilities for artists and facilitated the creation of exact facsimiles of paintings.



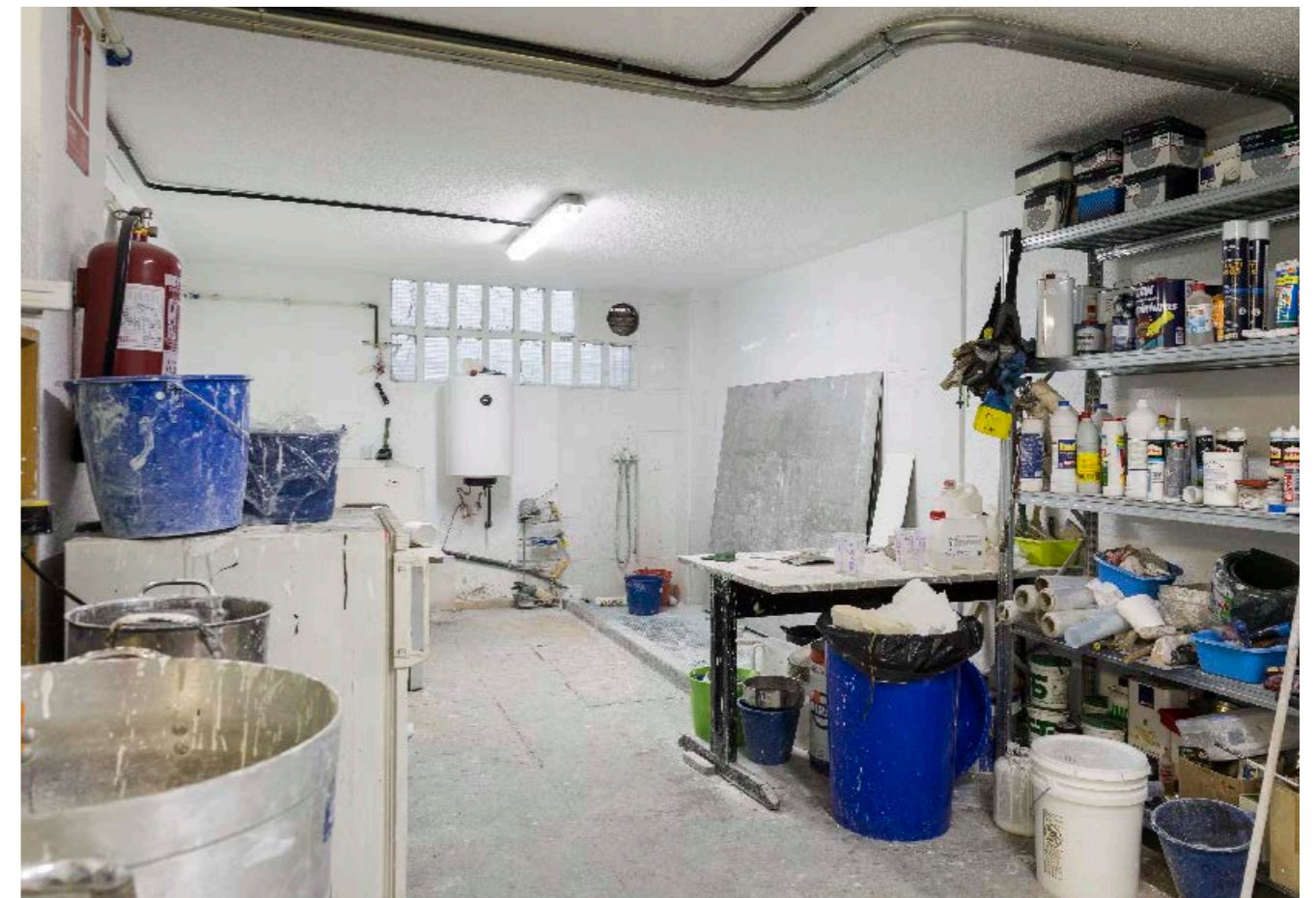
The first flatbed printer in 2001



Factum's engineering and printing team developed a new flatbed printer in 2019, able to print an area of 1.6 x 4.5 meters



General view showing the creative chaos in Factum Arte's digital print studio



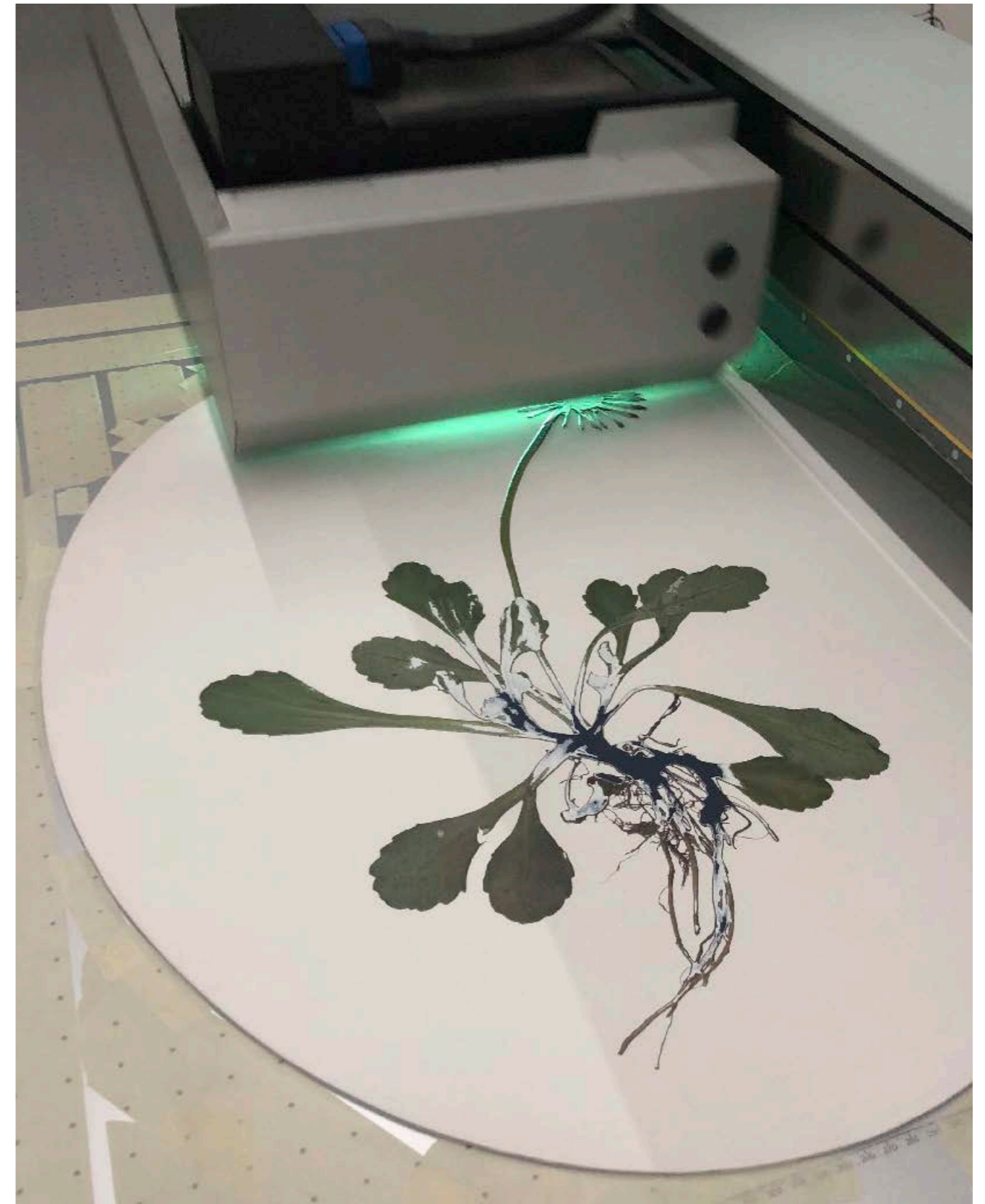
The coating room where gesso, gelatine and other materials are applied to different surfaces



The elevated printing studio

DIGITAL OUTPUT

PRINTING AREA: ELEVATED PRINTING (2.5D)



Elevated printing technology, developed by Canon Production Printing, allows the creation of full colour textured prints. It works similarly to flatbed printing, although in this case, layer upon layer of UV-cured ink is deposited onto a surface to produce high-resolution three-dimensional surfaces. The thickness of each layer varies between 2 and 4 μ m. It works similarly to flatbed printing, although in this case, layer upon layer of UV-cured ink is deposited onto a surface to produce high-resolution three-dimensional surfaces. The thickness of each layer varies between 2 and 4 μ m

DIGITAL OUTPUT

PRINTING AREA: 3D PRINTING



Woodburytype: Constanza Dessain printing a CNC-milled woodburytype plate in pigmented gelatin



Relief printing: a digitally generated relief block (part of the heart-shaped map of Hajji Ahmed from the Biblioteca Marciana, Venice) being printed by Michael Ward with surface rolling

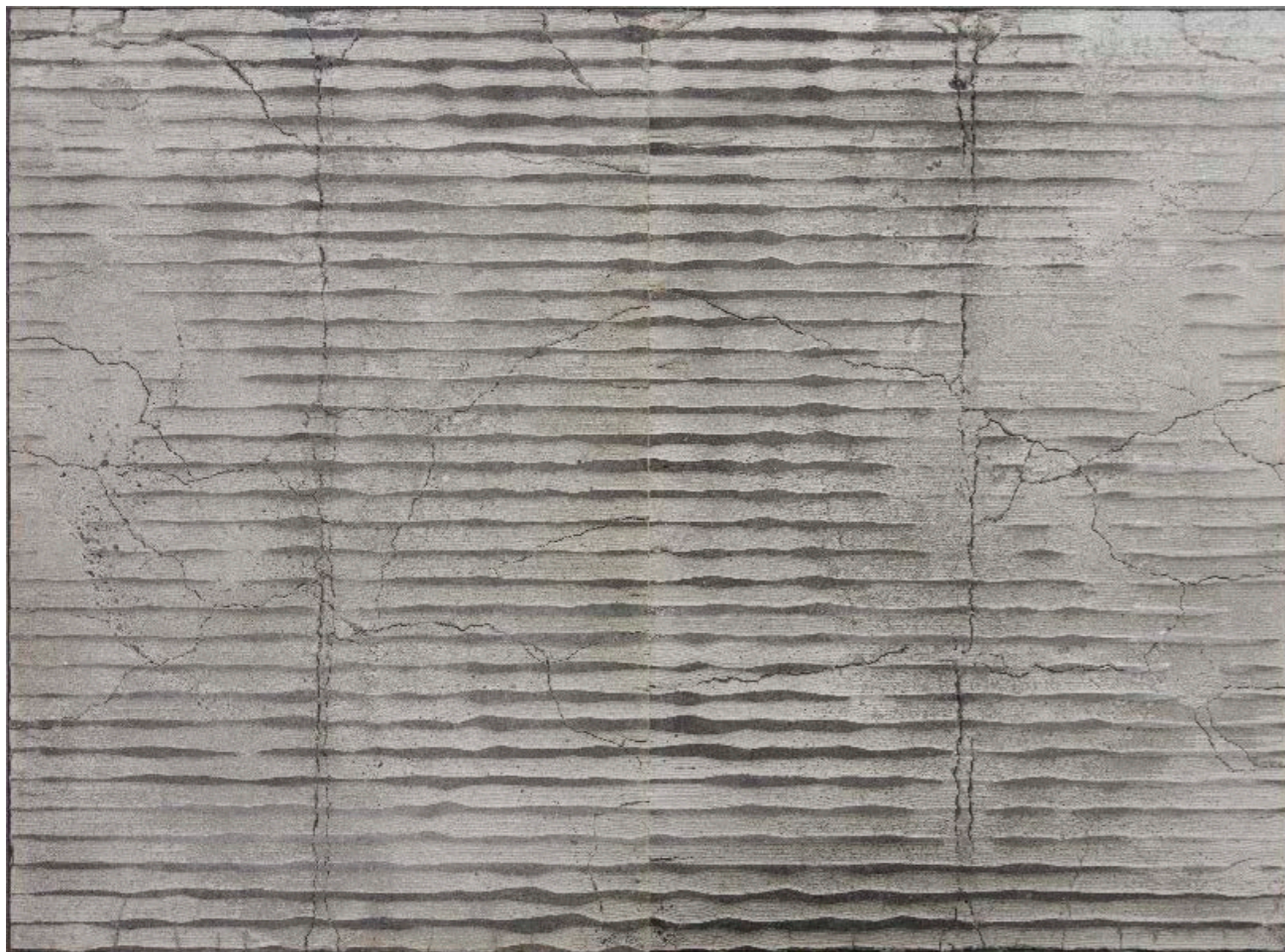
DIGITAL OUTPUT

PRINTING AREA: INTAGLIO AND TRADITIONAL PHOTOGRAPHIC PROCESSES

The cutting-edge digital printing technology co-exists with a traditional printing presses making intaglio and relief prints. Traditional techniques such as mezzotint and woodburytype are being reinvigorated by the possibilities for plate making with CNC machines. Cyanotype is another process that has benefitted from the ability to print large scale negatives. Historical photographic process are also in use.



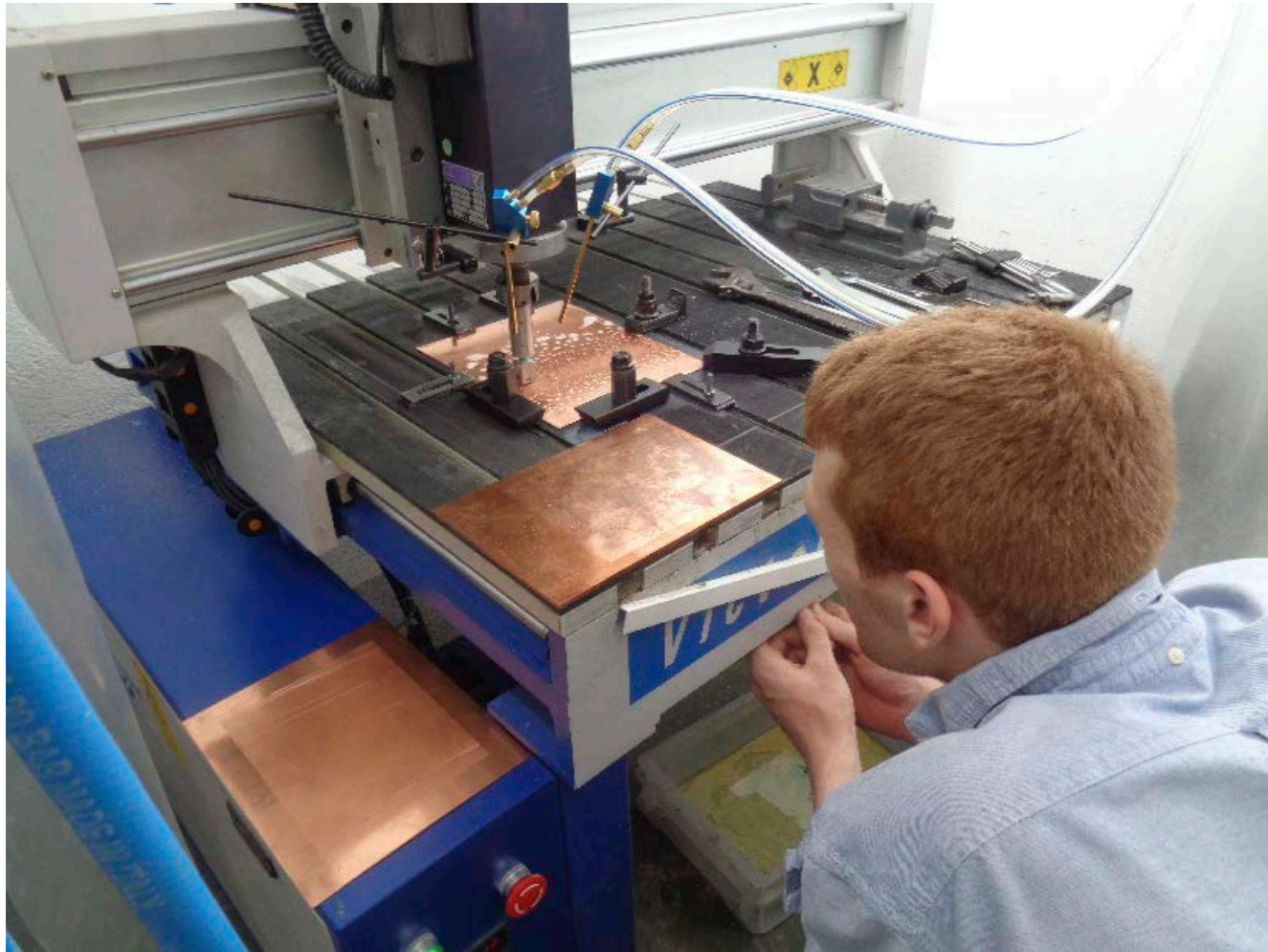
Top: A facsimile of Goya's etching press is still used alongside an electric press that once belonged to Lucio Muñoz. Bottom left: The photographic dark room where cyanotypes, woodburytypes and other traditional photographic process are carried out. Bottom right: Michael Ward working with CNC-milled aluminium plates to produce new prints for EL ANATSUI



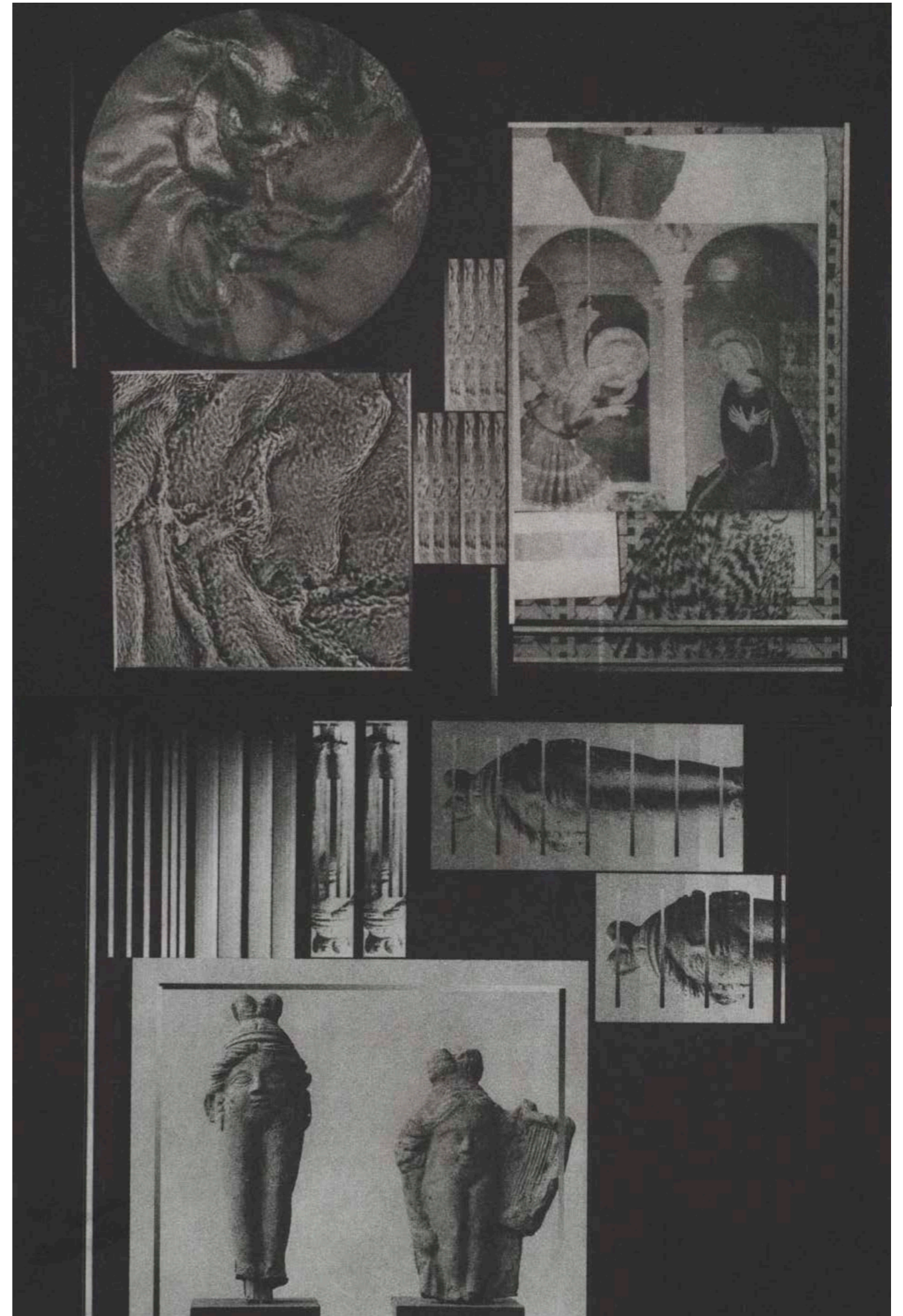
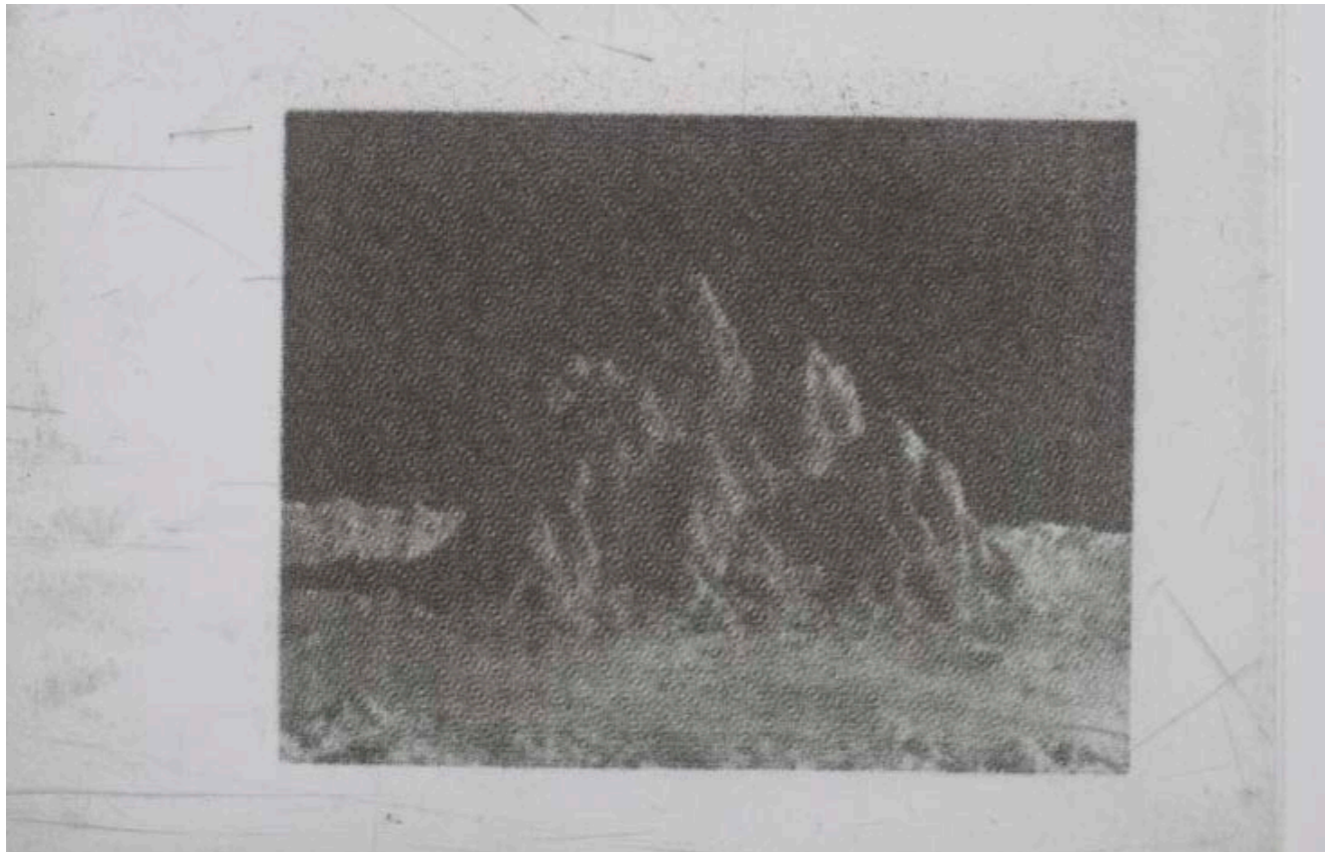
Cyanotype (top) and CNC carved salt panels: *Harmonic Distorsion* by MATT CHIVERS, 2017

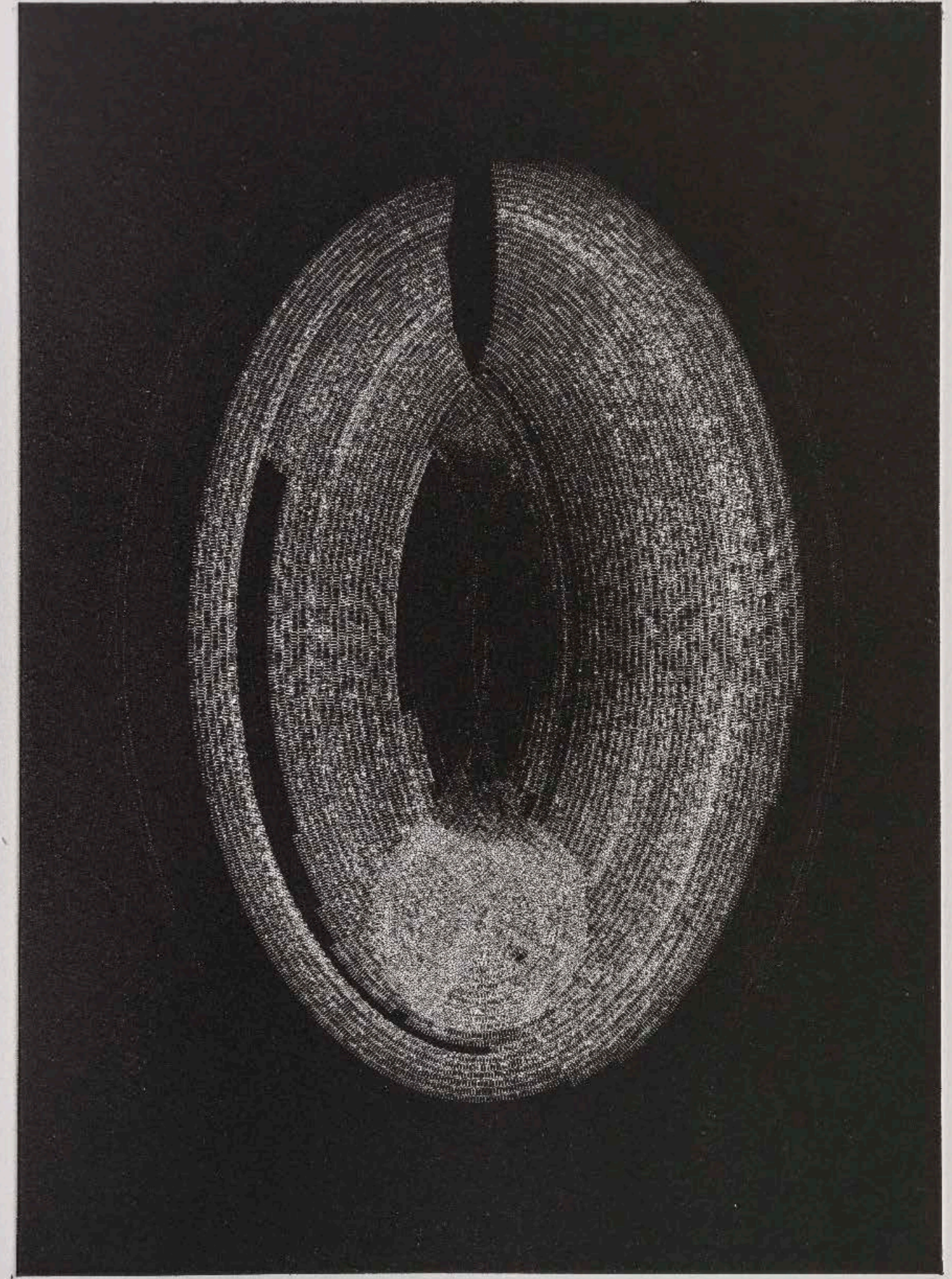
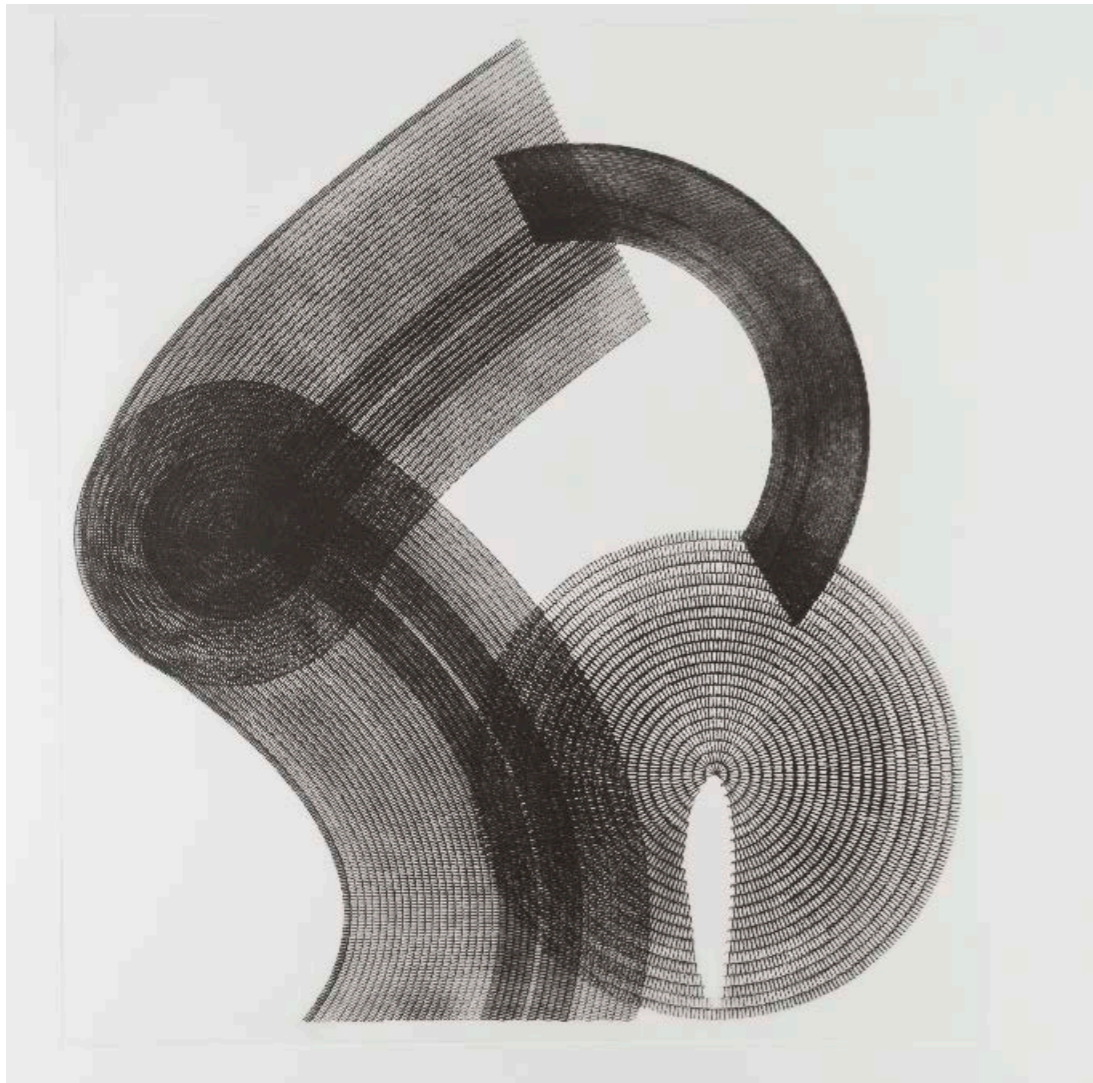
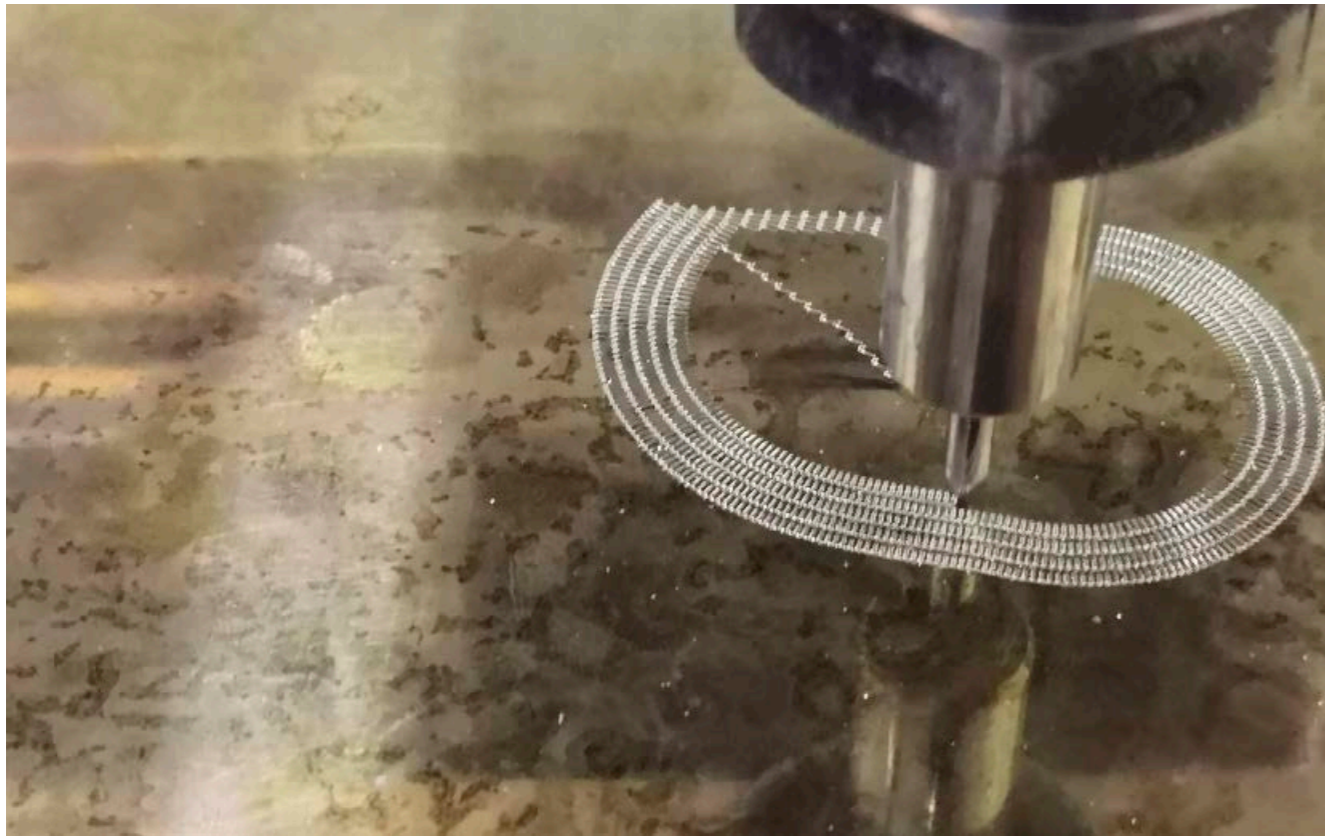


A variety of prints derived from the same plates, belonging to the Arab Image Foundation (AIF) in Beirut, for AKRAM ZAATARI, 2017

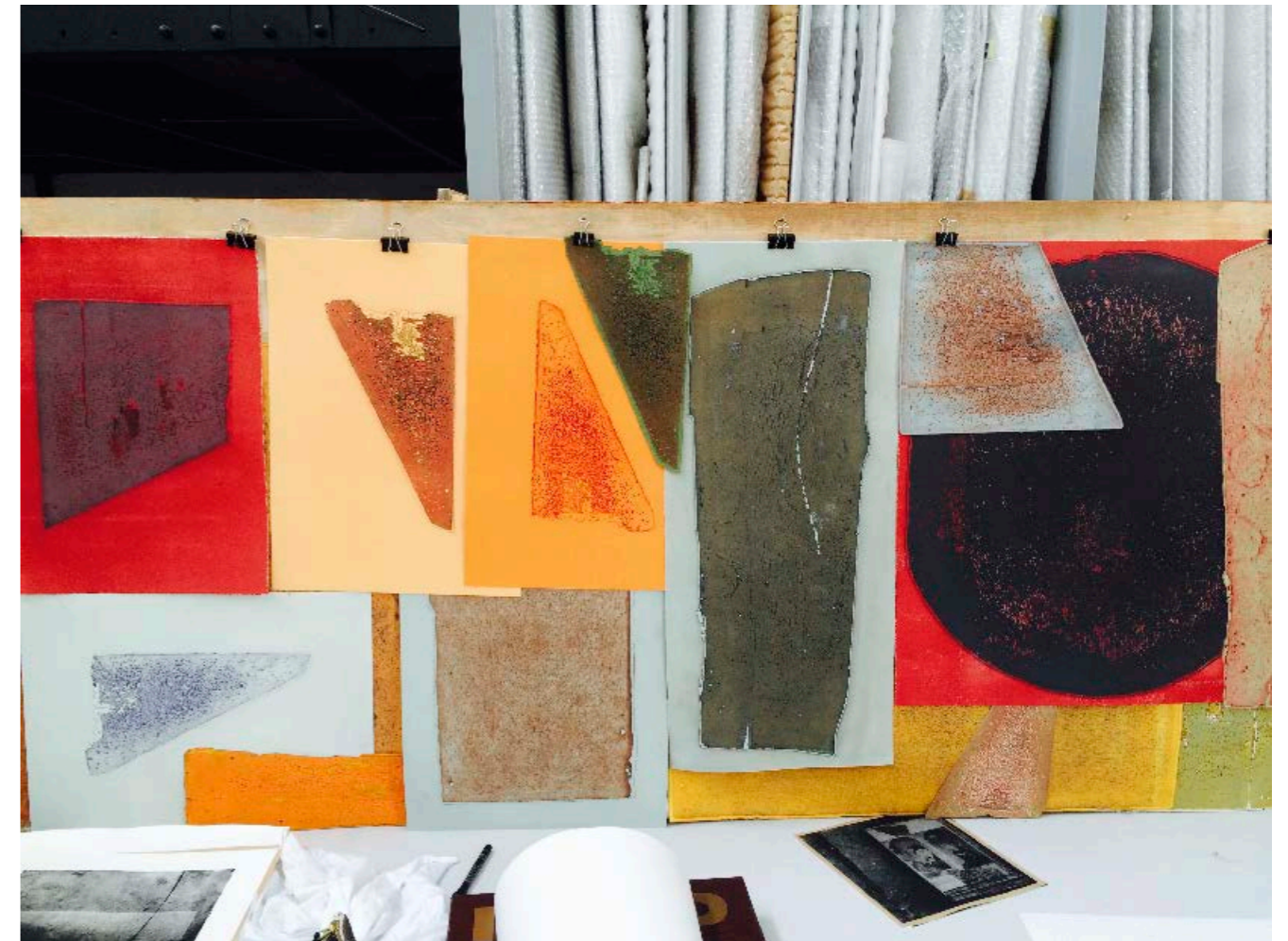
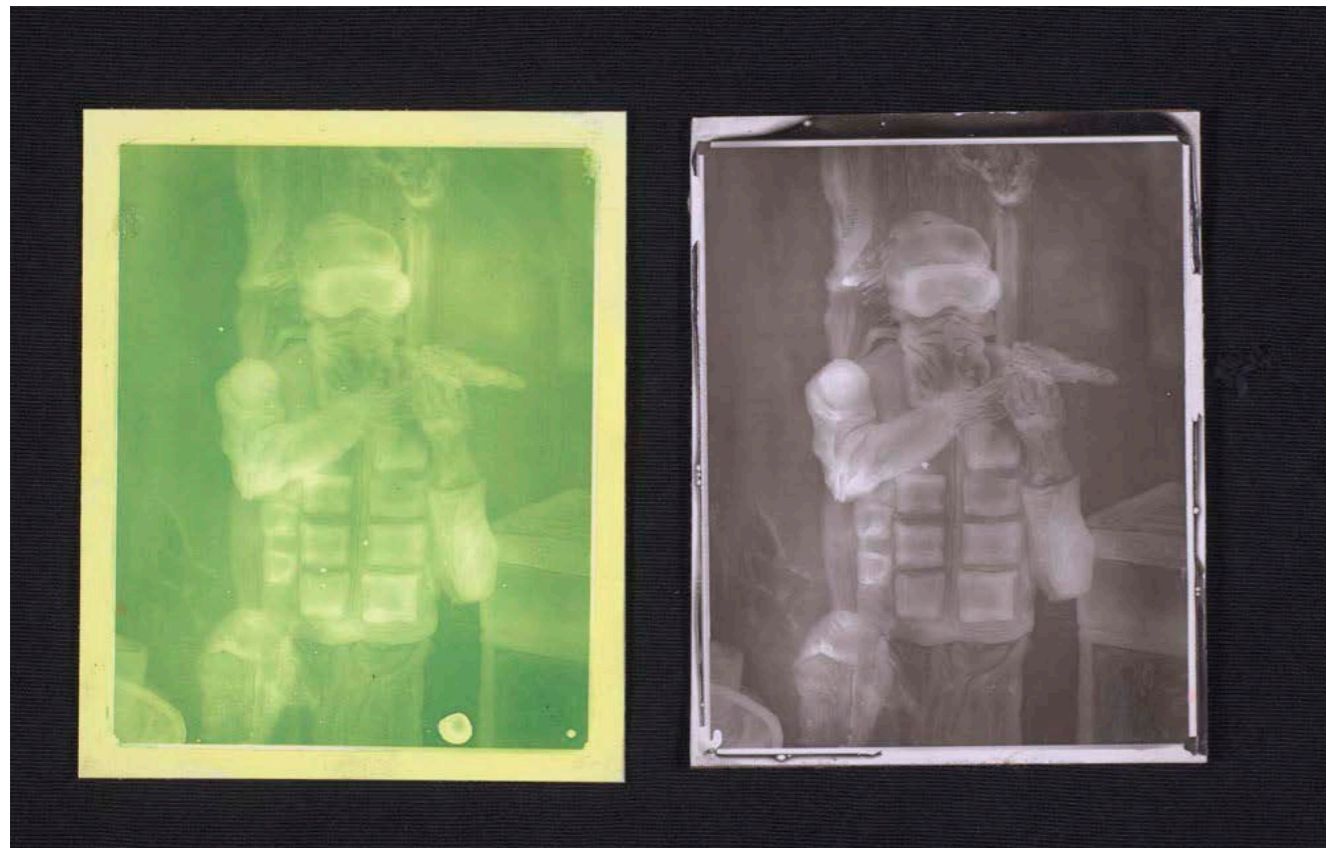
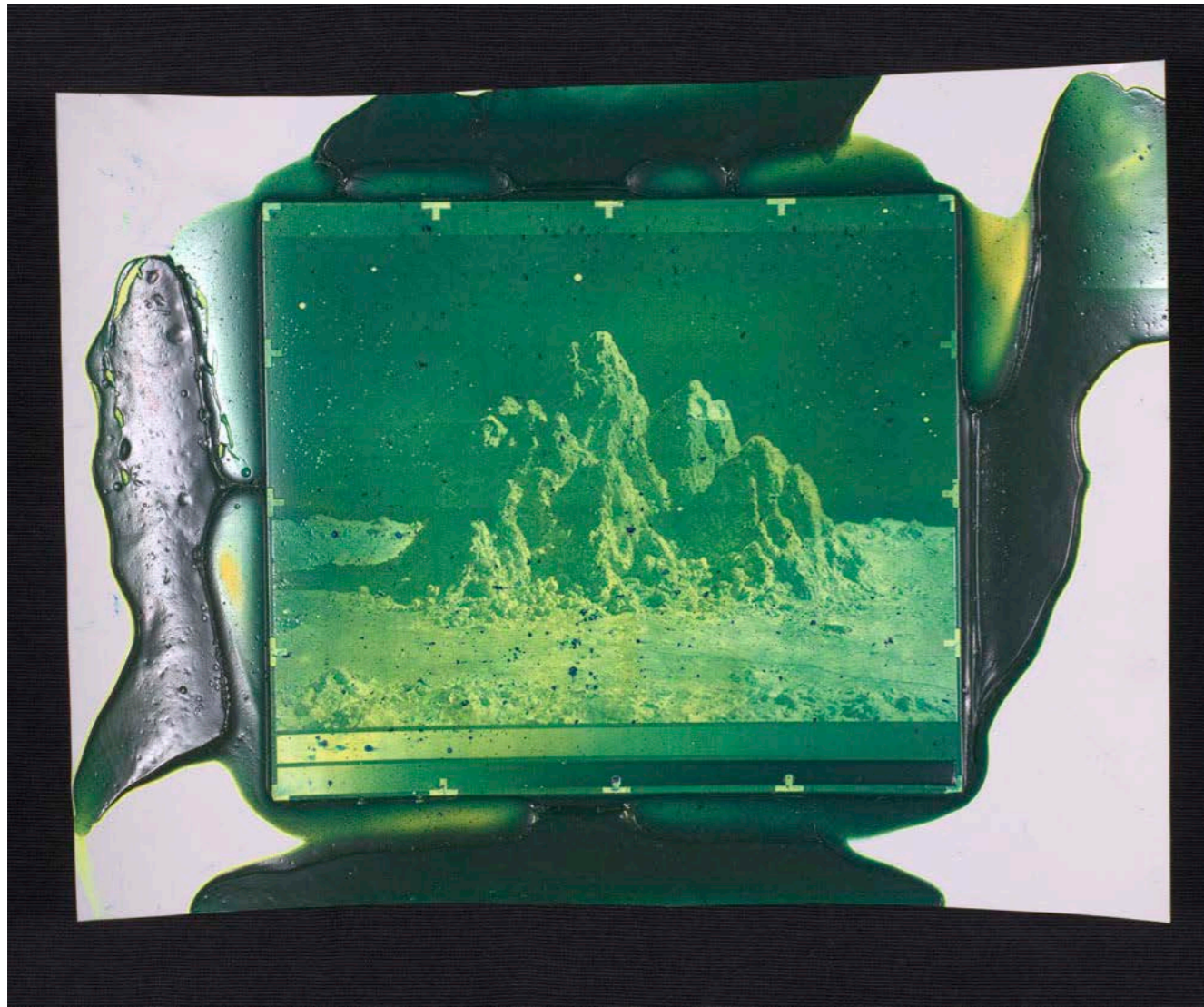


Arthur Prior experiments with Mezzotint plates and CNC-milling

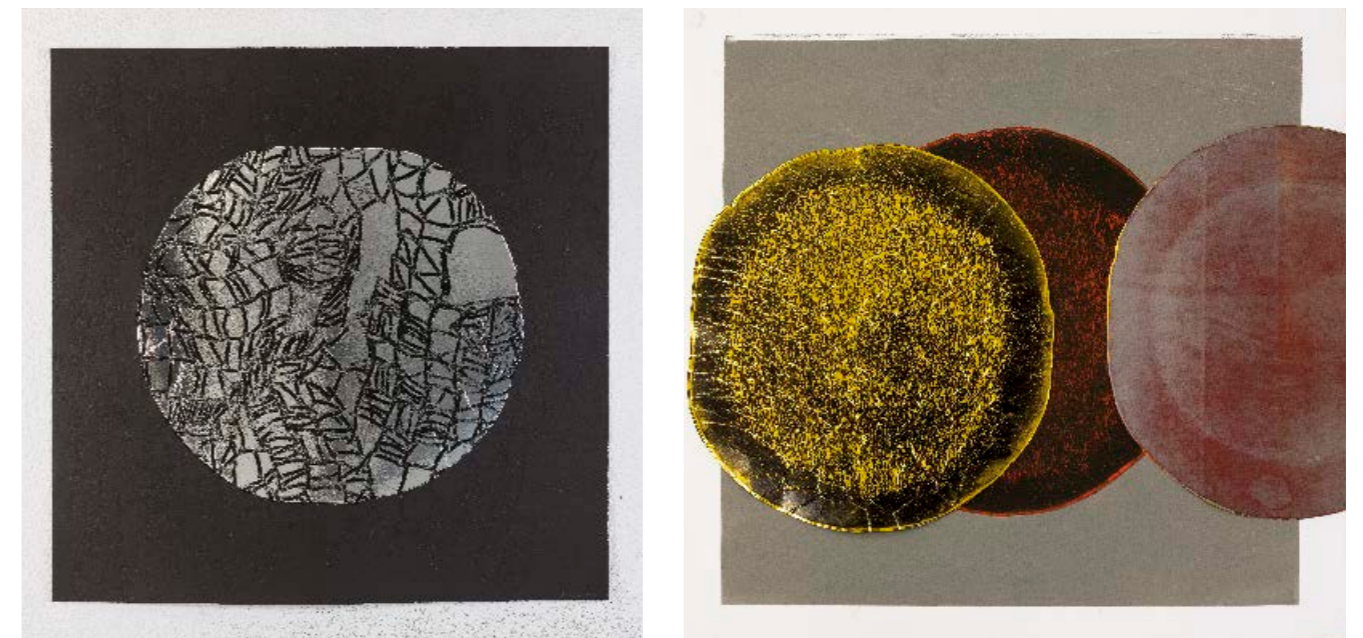




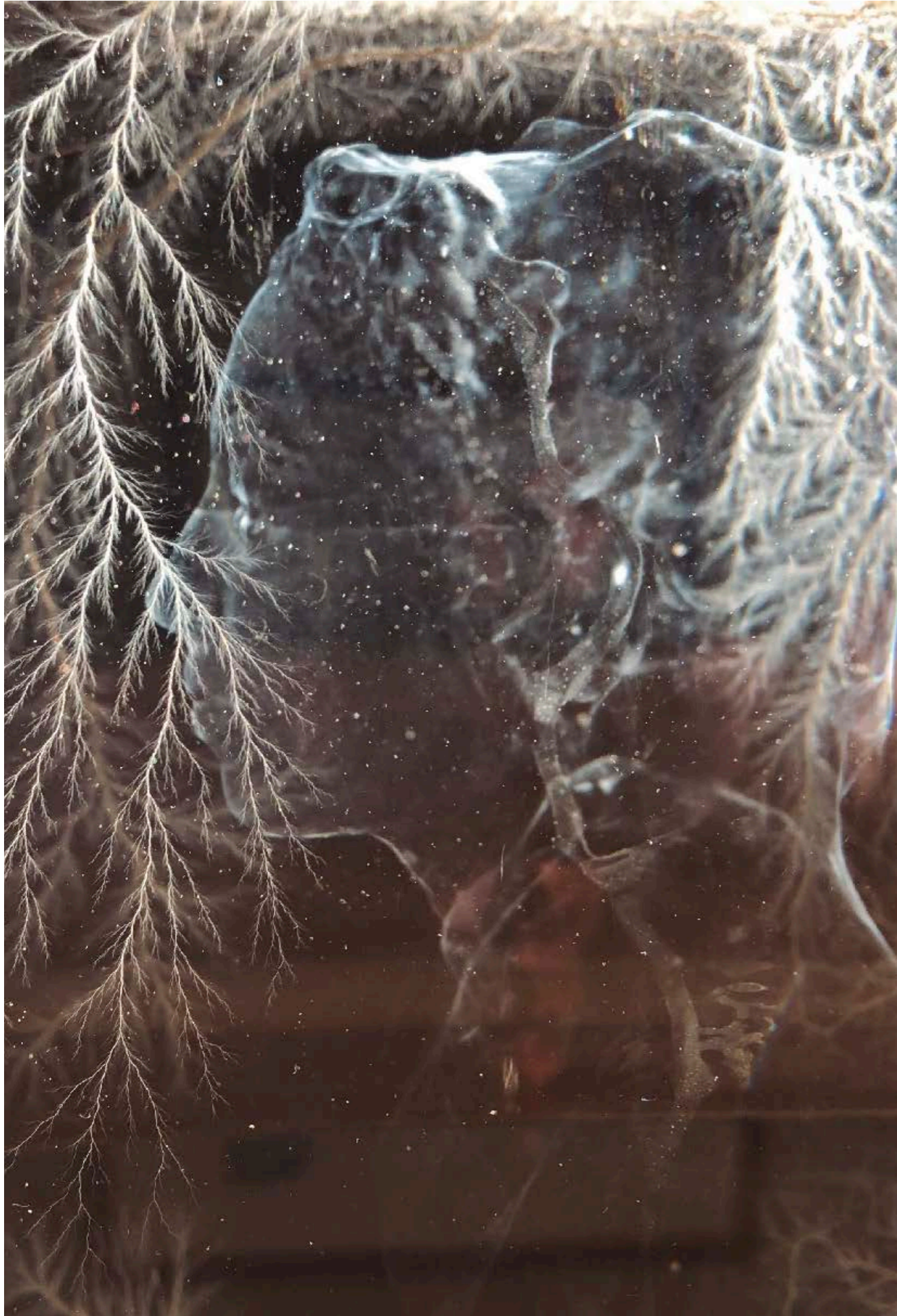
Digital drypoint test for WAQAS KAHN



EL ANATSUI's *Benchmark* series was developed at Factum Arte



EL ANATSUI, *Eclipse* series, chine collé handpainted and foil blocking



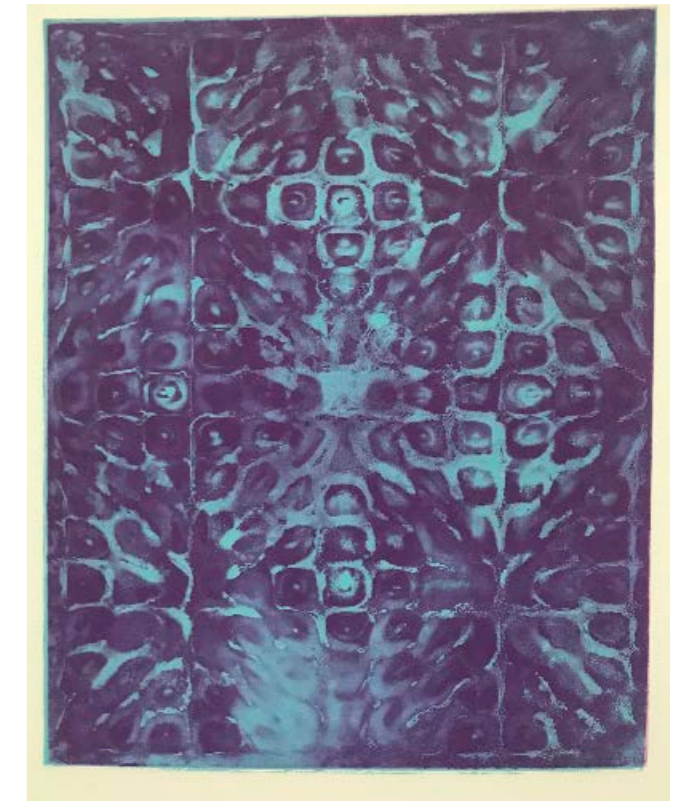
Experiments with resin and electricity are taking place both in Factum's studios and in Chicago

DIGITAL OUTPUT

ELECTRICAL TRANSFORMATIONS



Development of *Material Sound*





The clean workshop for precision work in glass, stainless steel, silver and many different materials



Factum's craftsmen working on small and big scale contemporary art pieces in the 'dirty' space

DIGITAL OUTPUT

DIGITAL ARTISANS AT WORK



Moulding, casting and transforming materials are at the heart of Factum's production

A number of spaces have been designated for craft work. The 'dirty workshop' is for moulding and sculpting in materials such as fibreglass, resin, scagliola, wood and gesso. This space is large and various projects are carried out simultaneously. In this area, different teams work on diverse projects.

The 'clean studio' specializes in metal assembly, glass works and special projects requiring precision. The 'metal studio' is composed of two designated areas, one for large complex fabrication and the other for precise work with metals. Other spaces are used for experimentation and innovation.



The workshop for mould-making and casting



A studio for precision finishing



Electronic and audio work being carried out in an experimental studio



Different teams carry out different processes and work with diverse materials

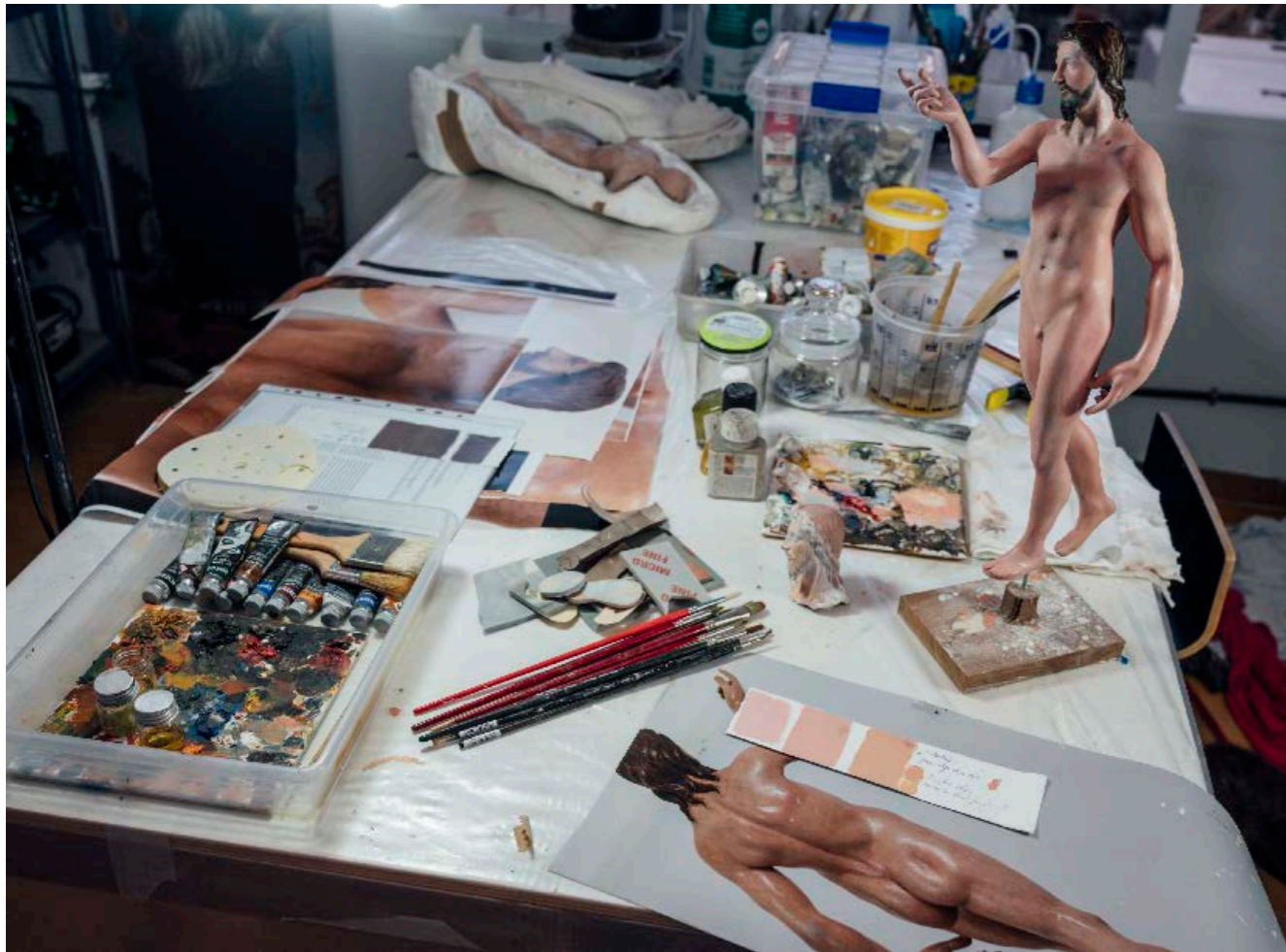


The workshop for mould-making and casting





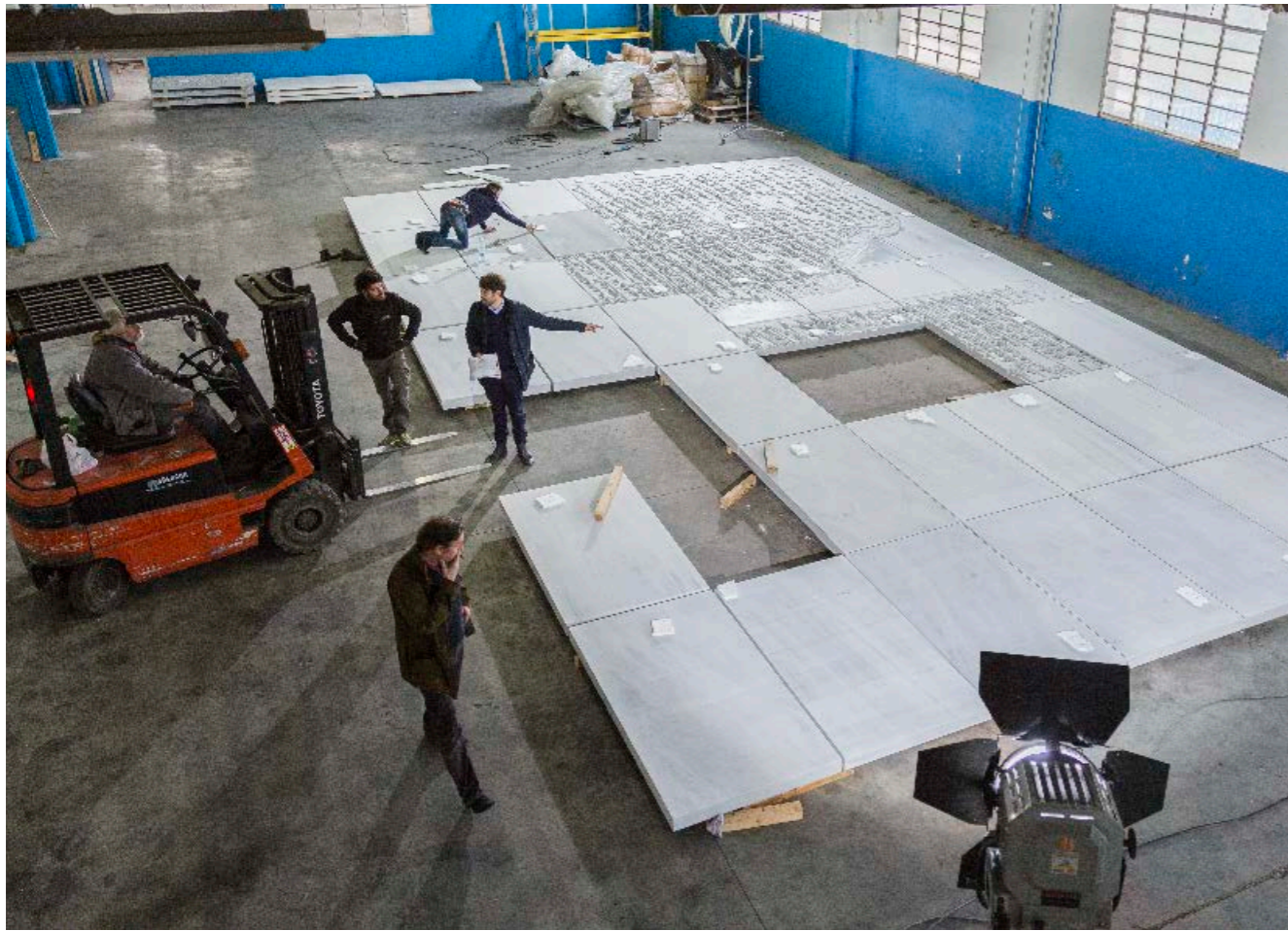
Different stages of the production of the facsimile of the *Risen Christ* by Doménikos Theotokópoulos, known as El Greco



MAT COLLISHAW, *All things fall*, 2014

[video link](#) Mat Collishaw, *All things fall*

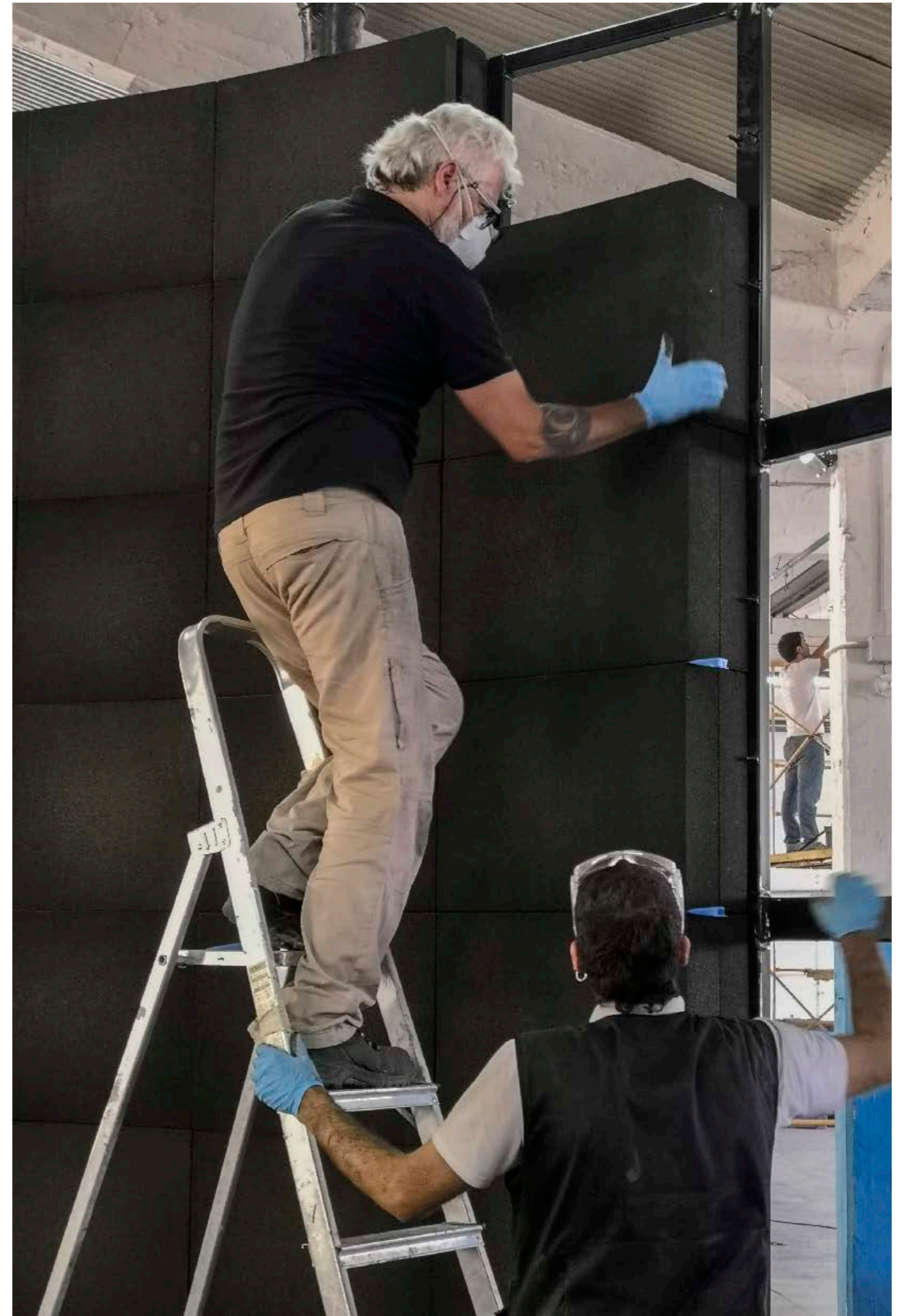




Preparing JENNY HOLZER's installation for Abu Dhabi Louvre in Factum Arte's largest workshop space



Foamglas® building design by Skene Catling de la Peña for *Material Sound*





Factum Arte works with artists to push the boundaries of this versatile medium by researching new formats, fabrics and fibers

DIGITAL OUTPUT

TEXTILE STUDIOS

The textile studio is used for the design and preparation of all digital stages involved in Jacquard weaving. Factum does not have a loom and works with craftsmen in Belgium to weave the tapestries. All finishing and assembly is done in Madrid. The Textile Studio is also involved in making replica tapestries and fabrics for museums and historic buildings where the fragile original materials can no longer be exhibited. Hand-tufting and embroidery is also carried out under the supervision of Blanca Nieto and Isabel Fernández.



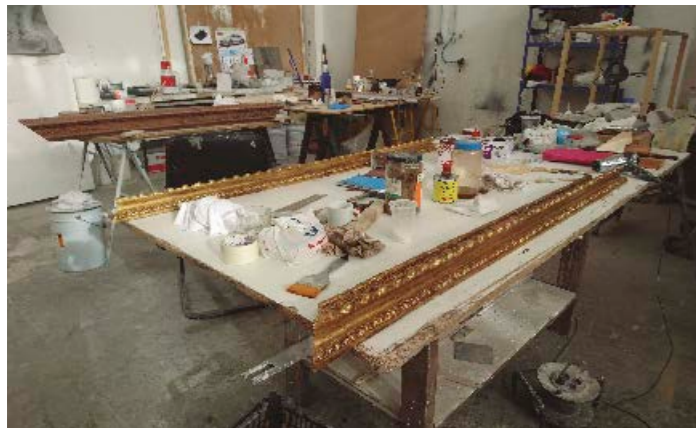
The textile studio specialises in contemporary tapestry and textile preservation



DIGITAL OUTPUT

FRAME STUDIO

3D scanning and printing are leading to new innovations in frame making that depend on both new technology and traditional skill.



Experts in gilding and conservation create facsimiles of frames. The frame-making studio specialises in traditional gilding and finishing over 3D printed surfaces



DIGITAL OUTPUT

CONSERVATION STUDIOS

The conservation studio led by Silvia Álvarez applies traditional conservation and restoration skills to finish the objects made in the workshops.



DIGITAL OUTPUT

PAINTING STUDIOS

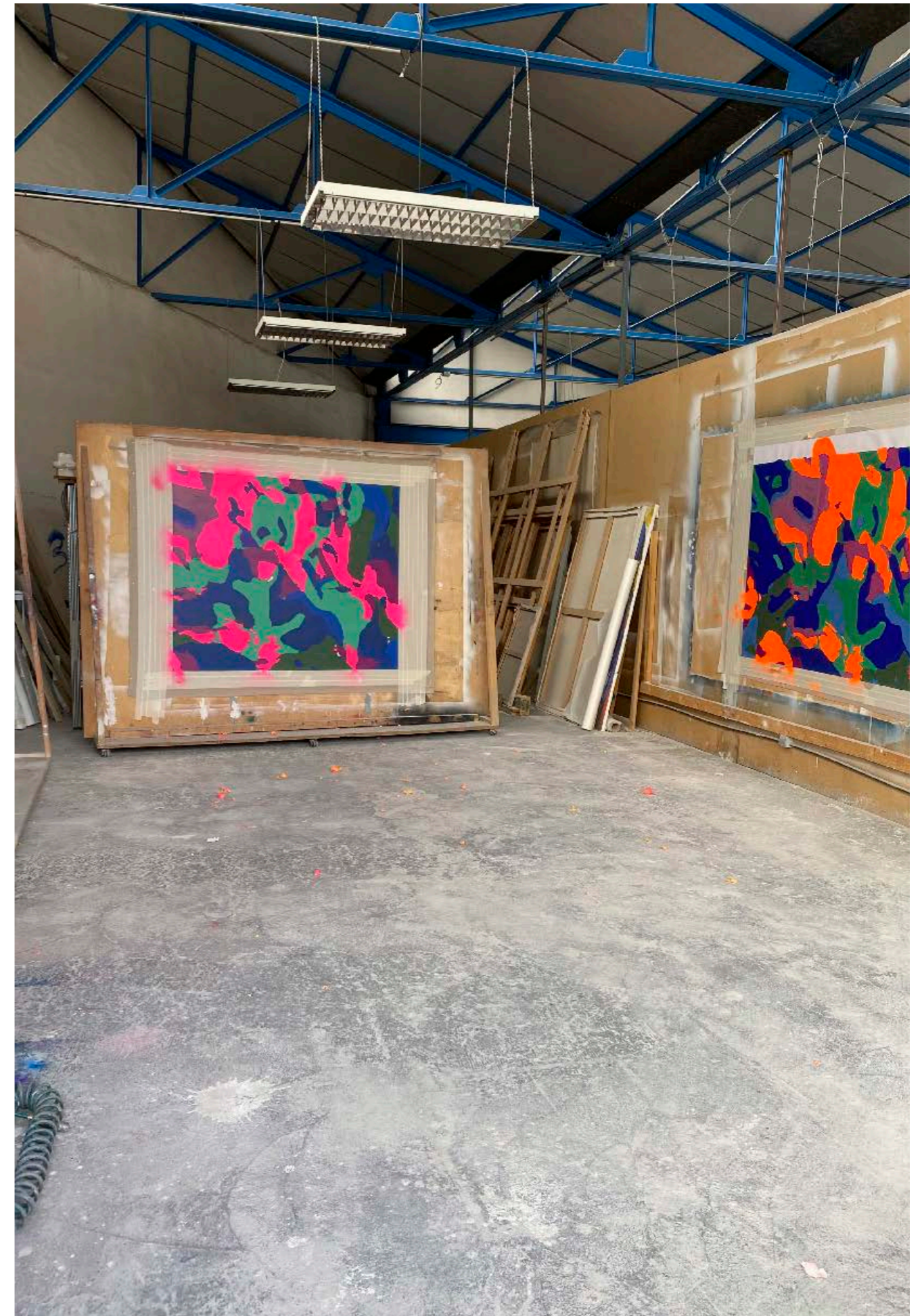
The transfer of data between image and form means we often depend on painting and manual work as well as printing.



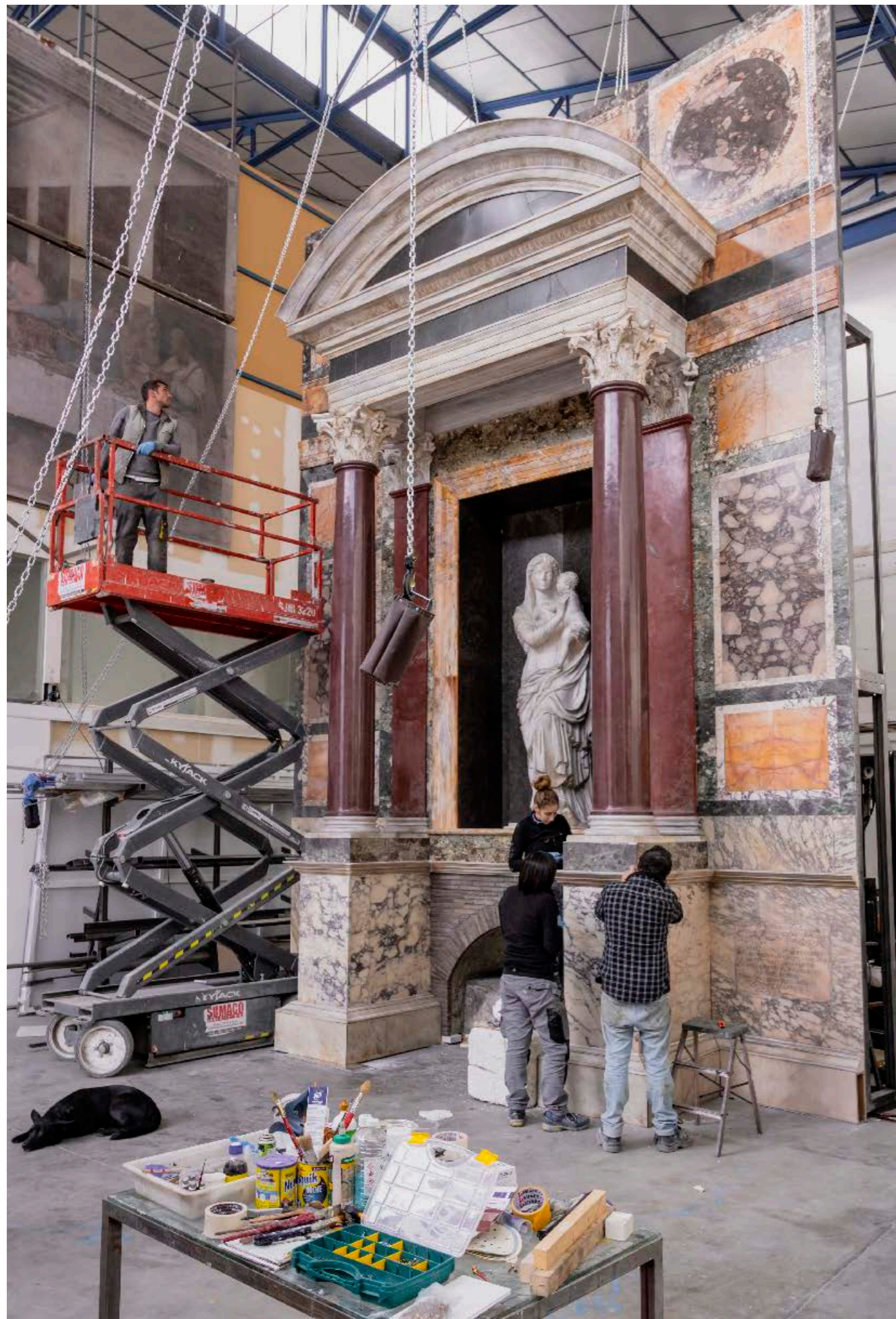
Jordi Garcia Pons working on the recreation of Gustav Klimt's *Medicine* for the tv series *Mystery of the Lost Paintings* (Sky Arts, 2018)



The workshop also contains a pressurised heated painting chamber for special paint finishes



Fluorescent paint experiments on prints for PAULA CROWN



Recreating Raphael's tomb, 2019-2020

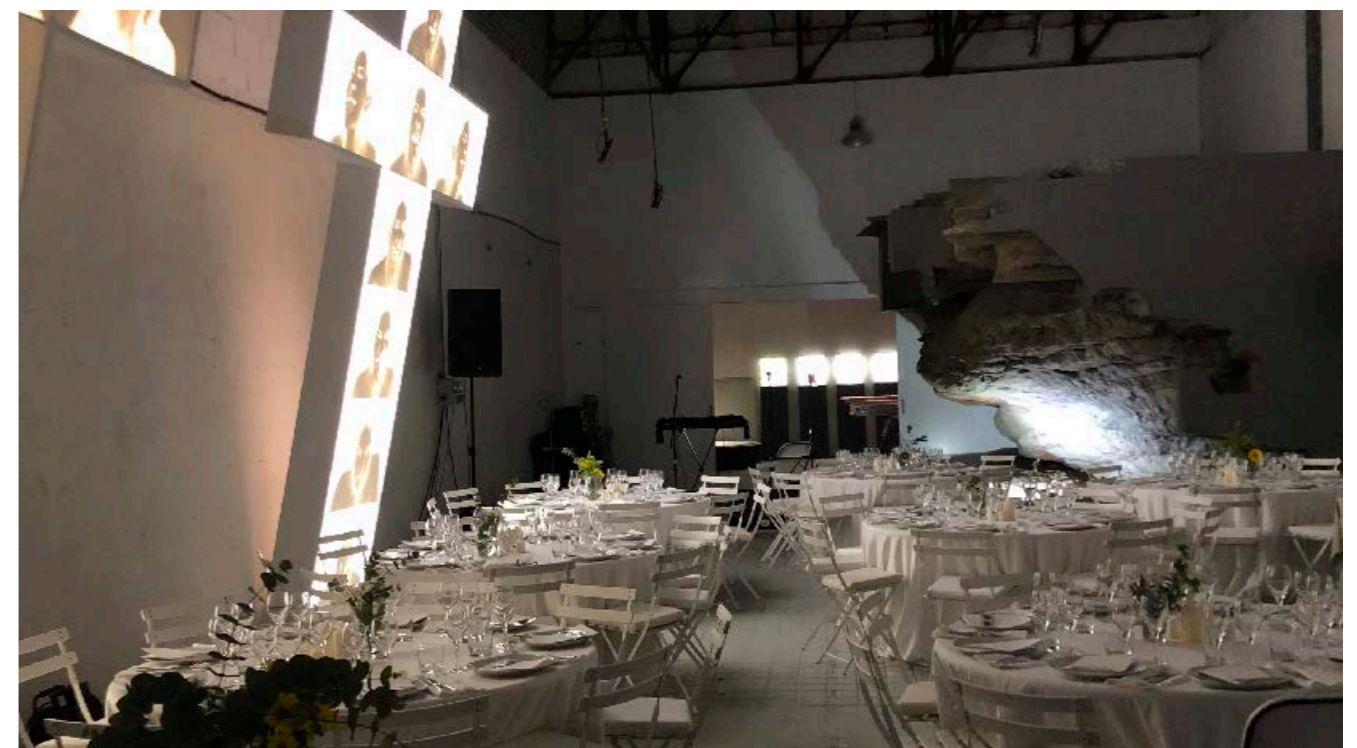
DIGITAL OUTPUT

MULTIPURPOSE SPACES

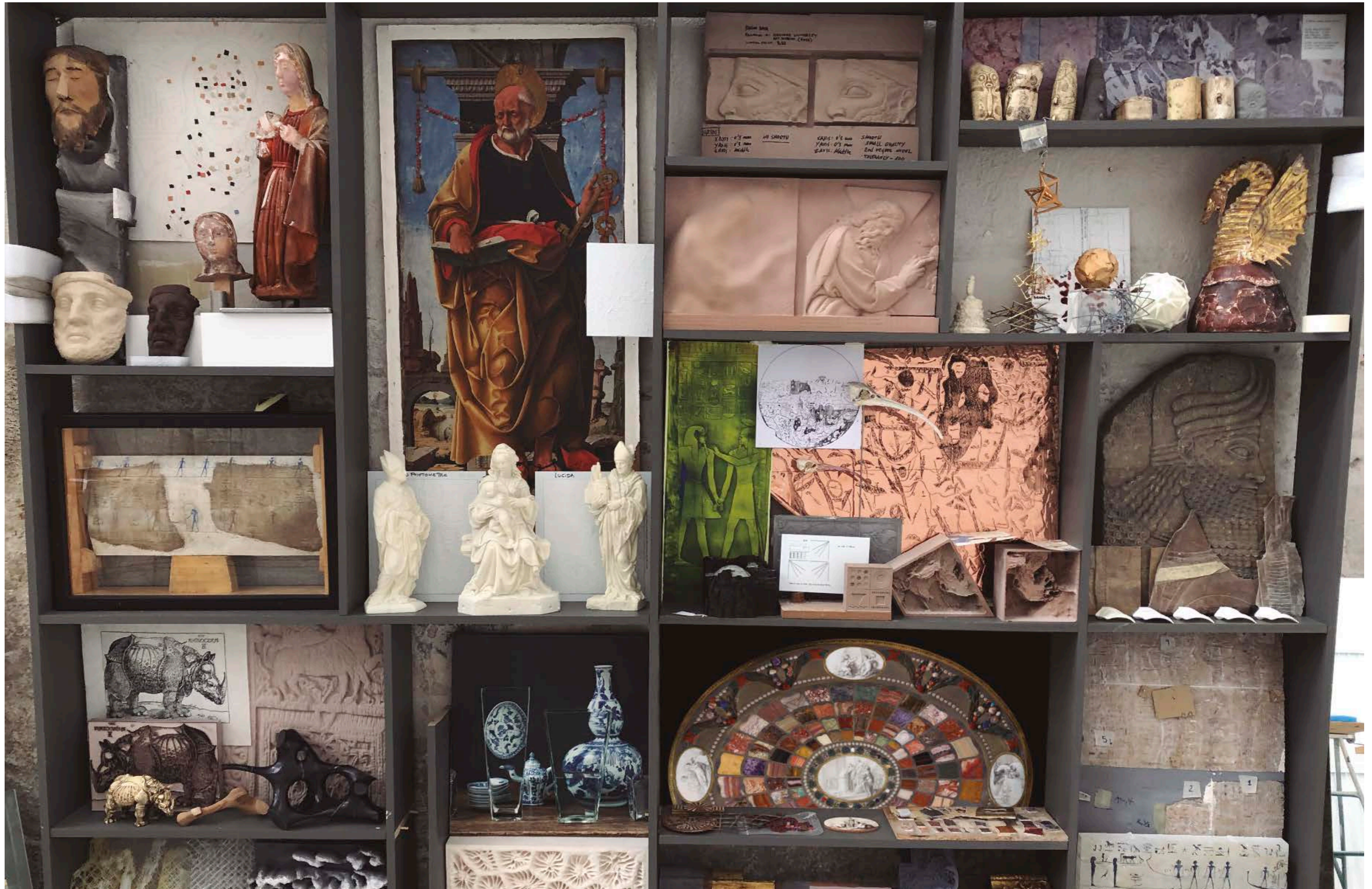
This section of the studio is reserved for special activities requiring a large and quiet space. This area is often used to mount exhibitions or to teach special workshops about art techniques and recording technology, but also hosted special events and dinners.



Multipurpose space used for preparing exhibitions and teaching courses



Celebratory dinner hosted for MARINA ABRAMOVIĆ in 2019



The 'techne' shelves for *Madame de Pompadour in the Frame* at Waddesdon Manor, 2019. These shelves contain fragments and samples from a range of projects using diverse materials and processes

DIGITAL OUTPUT

CASTING PROCESS IN DIVERSE MATERIALS



Stainless Steel: MARC QUINN, 8-meter long fragment of a shell cast in stainless steel 316 at Fademesa foundry, Madrid



Brass tree for the Mercato del Duomo, Milan. Cast at Esfinge, Madrid



Flexible alloys: experimentation and material science



Aluminium: MARIKO MORI's Möbius strips cast in aluminium



Bronze: RACHID KORAÏCHI calligraphy cast in bronze



Concrete: MARC QUINN *Eye of History* cast in concrete



Corten: CONRAD SHAWCROSS *Manifest* cast in corten



Silver: Giambattista Piranesi's coffee pot cast in silver cast at Pangolin, UK



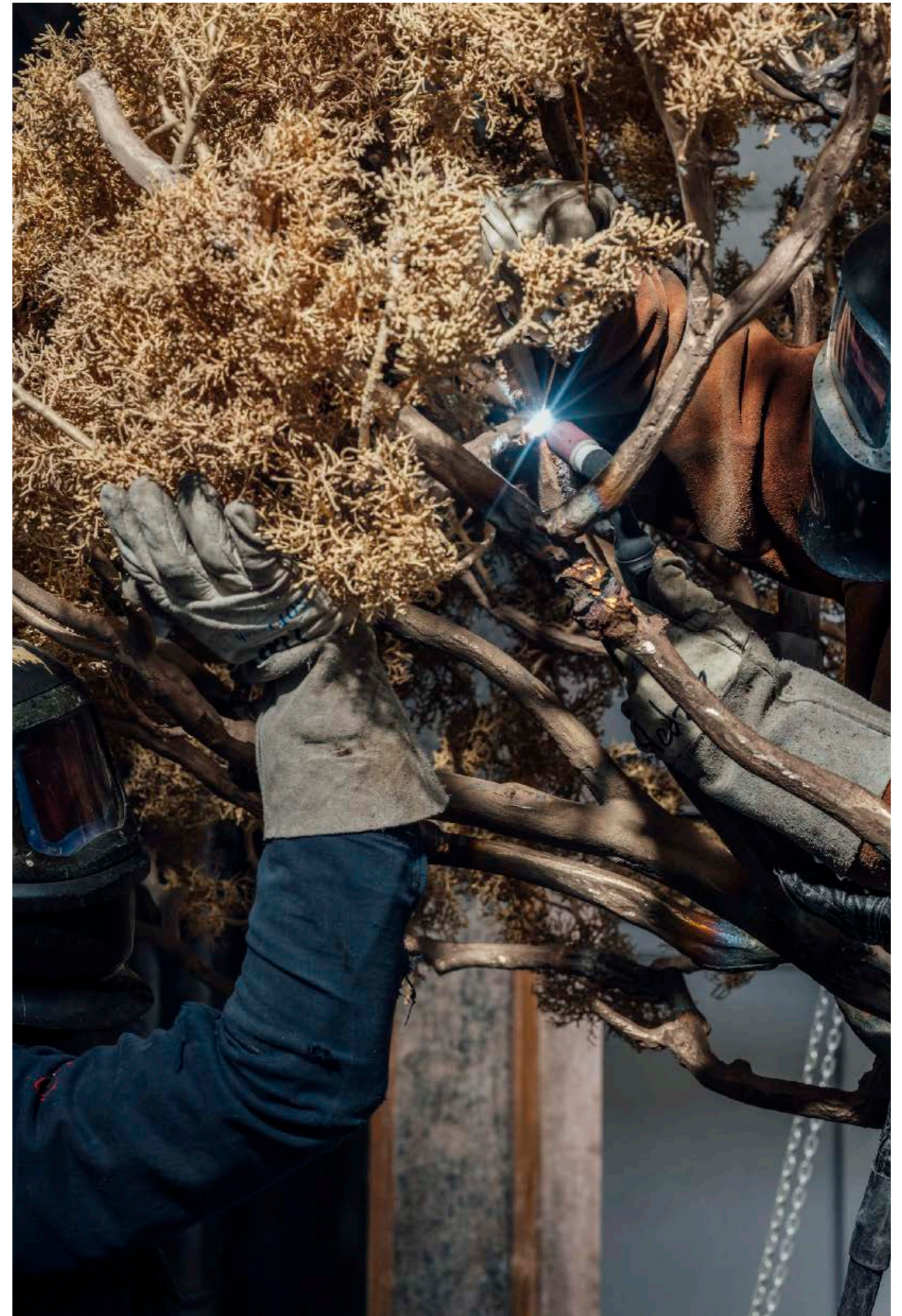
Glass: Antonio Canova's *Paolina Borghese* cast in glass by Giberto Arrivabene, Venice



The Serpentine Tree, 2021. Cast in bronze



LOS CARPINTEROS, *Susurro del Palmar*, Galerie Peter Kilchmann, 2018





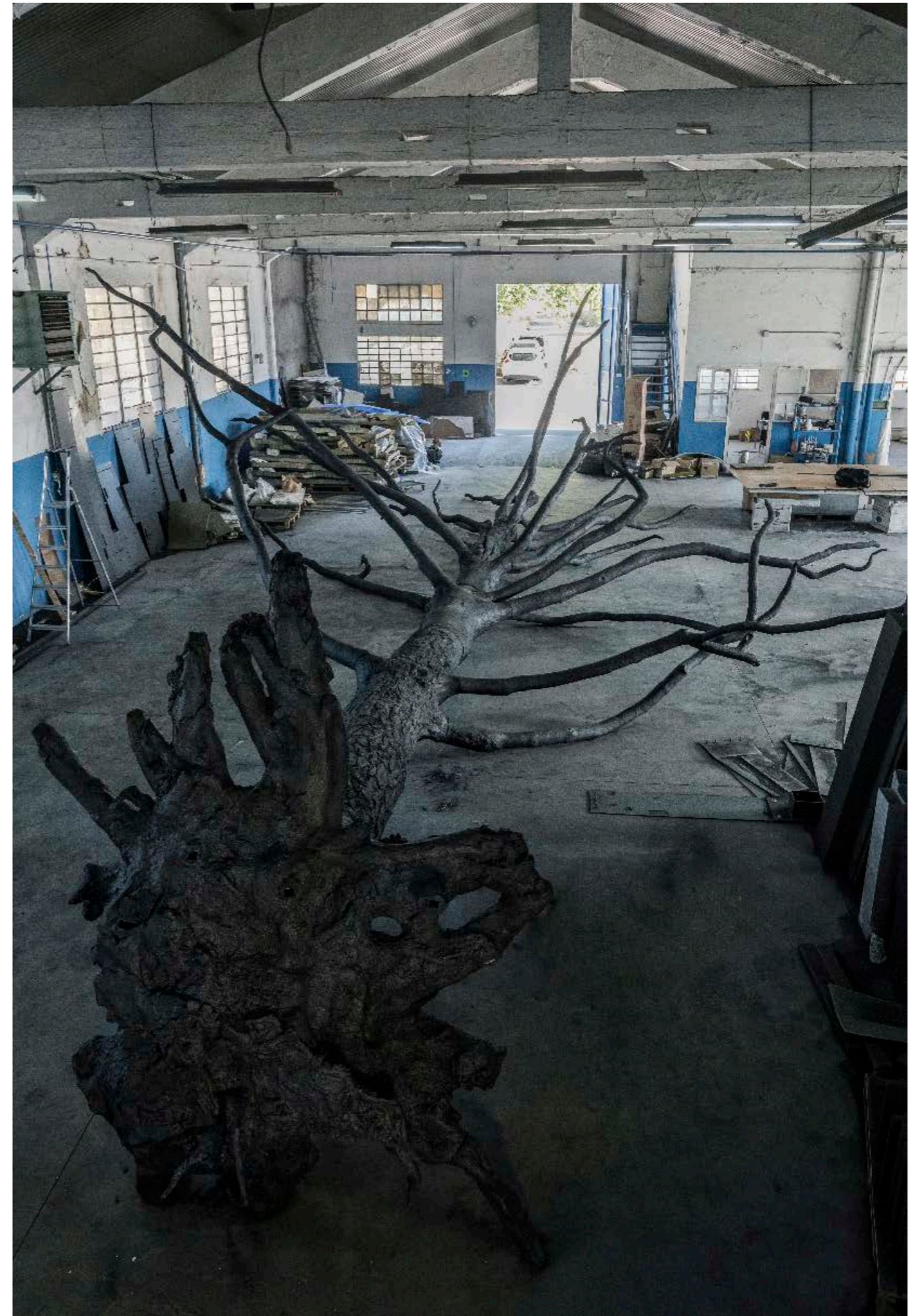
ADAM LOWE for TOM STUART SMITH, *Moon Tree*, Connaught Hotel, London, 2013



ADAM LOWE for MICHELE DE LUCCHI, *Autogrill Olive Tree*, Mercato del Duomo, Milan, 2015



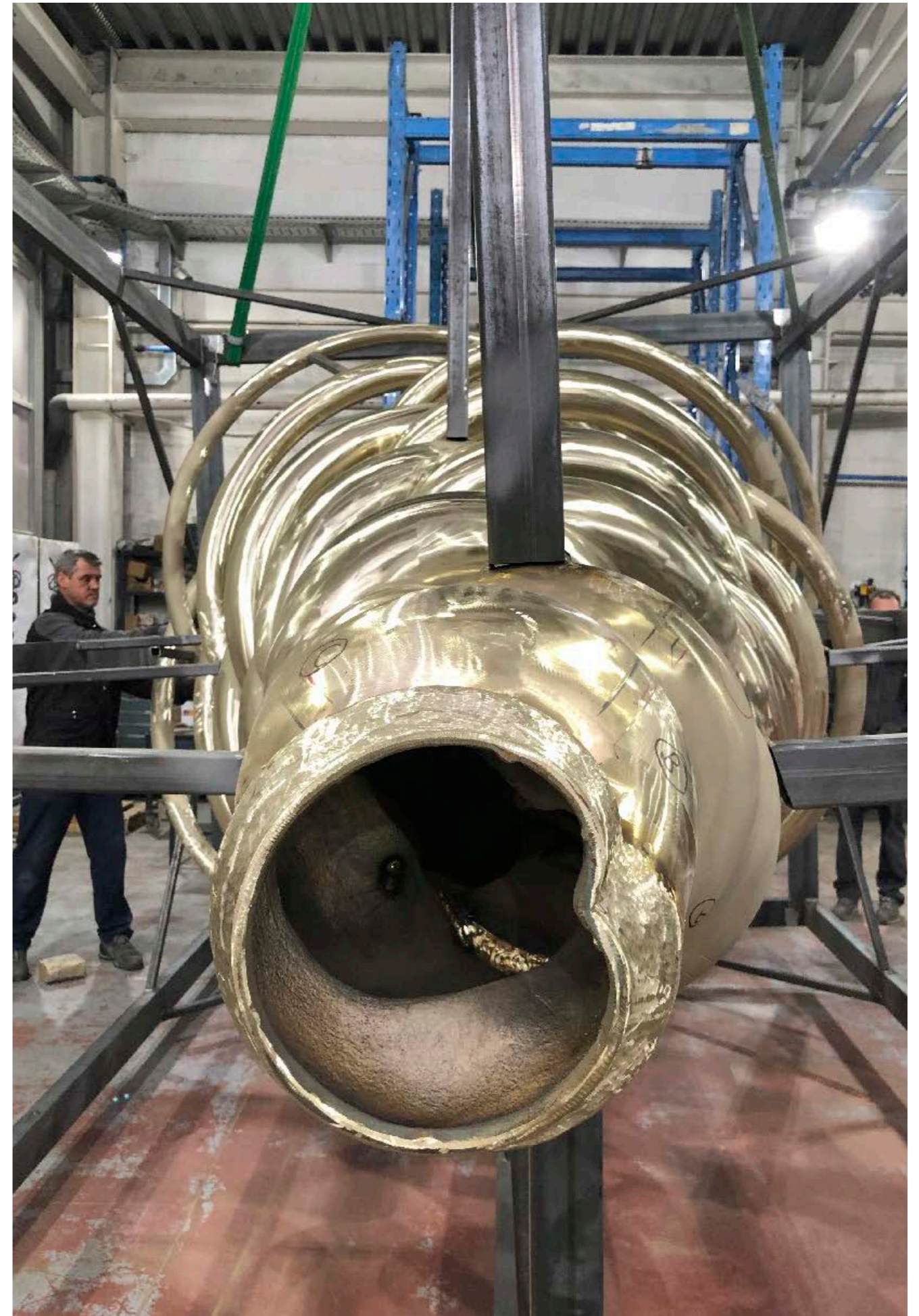
The Bronze Oak project, 2016



JENNIFER ALLORA & GUILLERMO CALZADILLA, *Entelechy*, 2021



Facsimile of a 1st century Roman horse statue, 2021



Work in progress for CONRAD SHAWCROSS, *Crossgate Moorgate Manifold*, London

DIGITAL OUTPUT

MATERIAL TRANSFORMATION



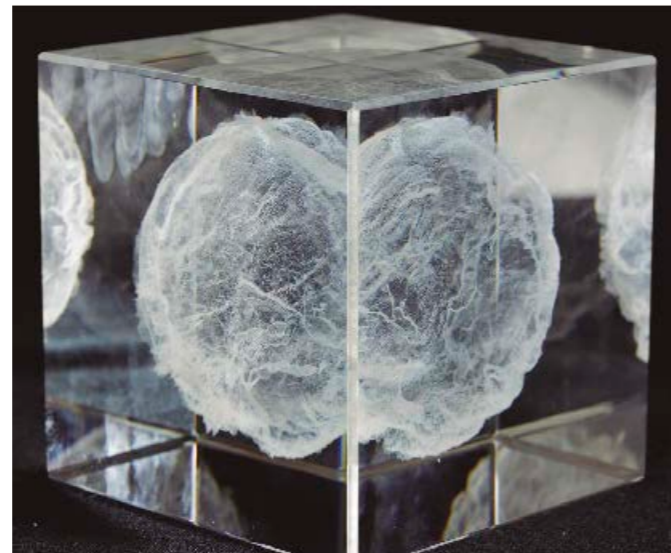
Cast lava



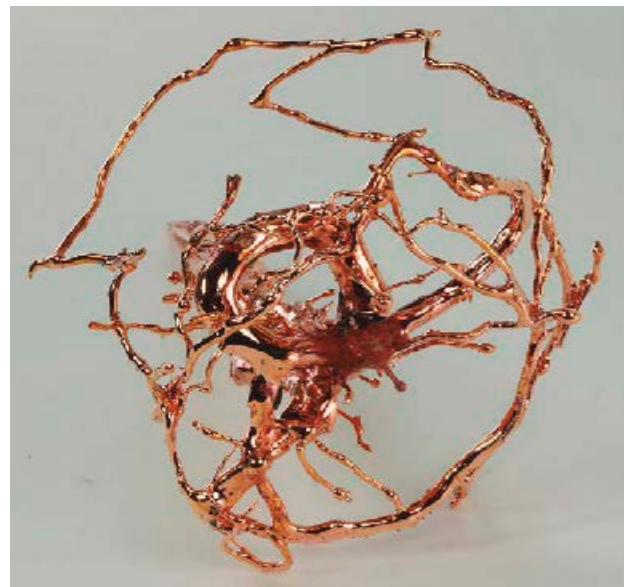
Salt: MARINA ABRAMOVIĆ cast in salt



Micro CNC-milling and gold plating



Laser engraving glass



Electroplating



Electro formed silver



CNC-milled alabaster: MARINA ABRAMOVIĆ, *5 Stages of Maya Dance*, 2013



Fibreglass: SHEZAD DAWOOD, *Why Depend on Space and Time* cast in fibreglass with trichromate paint



CNC-milled woodburytype mould



CNC mezzotint burnishing



3D large-scale stereolithographic printing

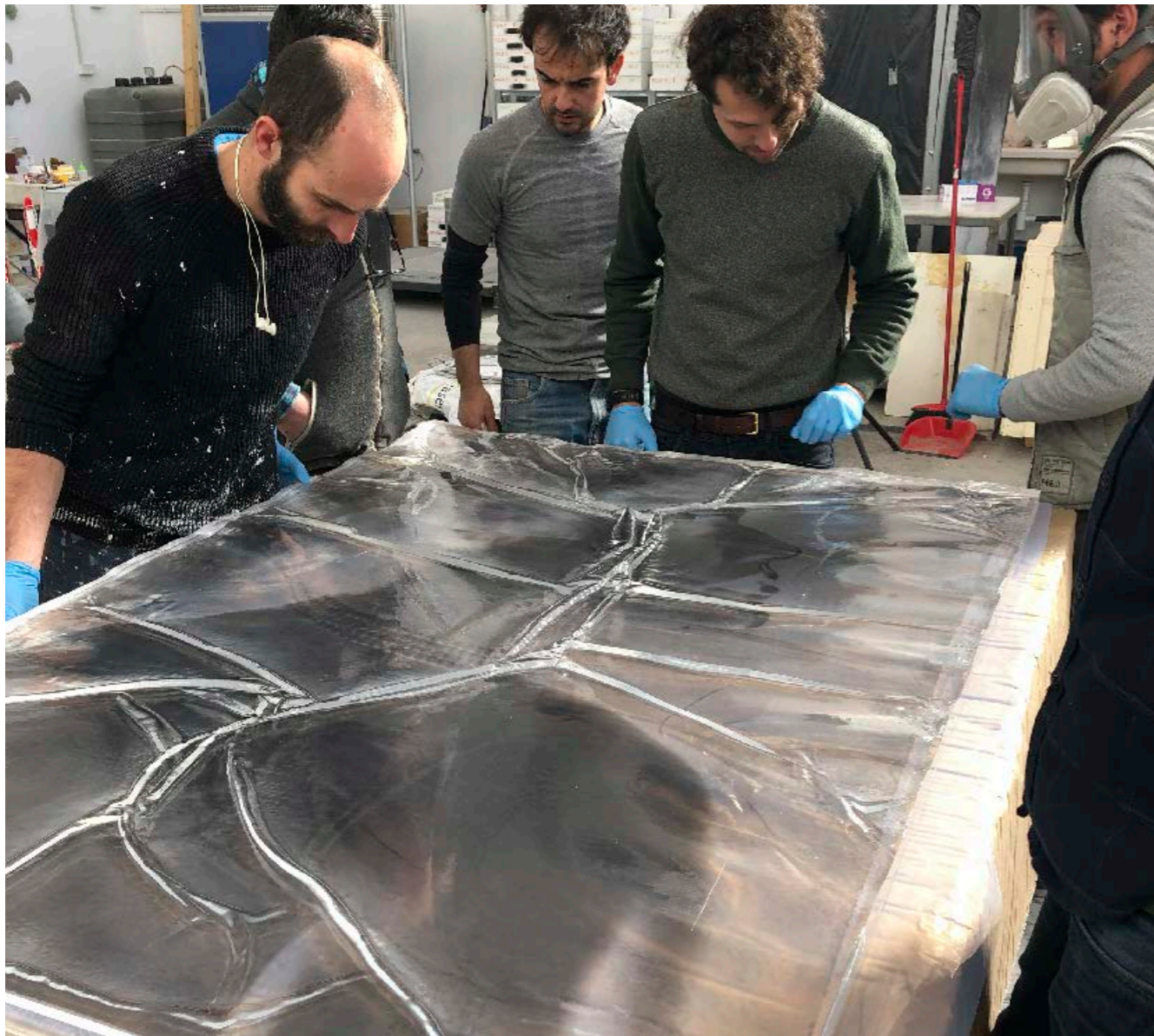
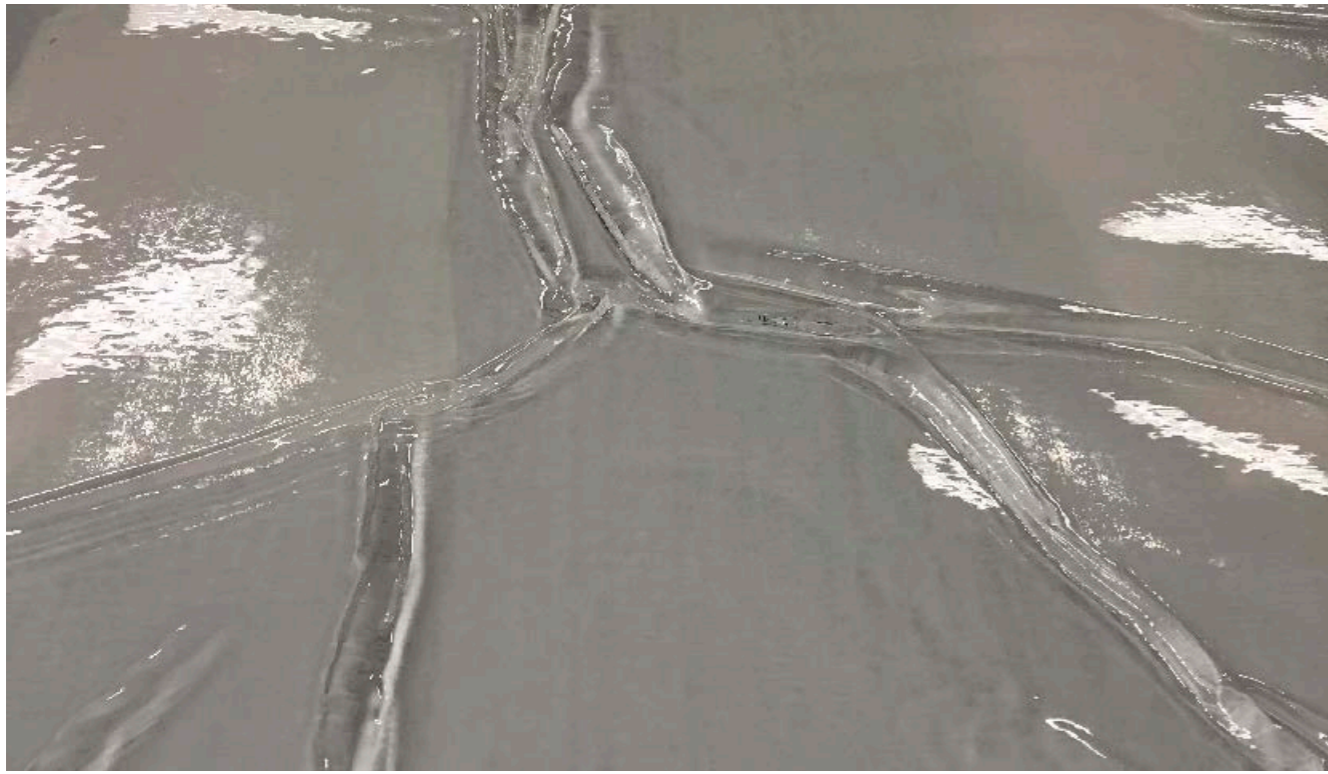


Experiments with Foamlas® heated to different temperatures



Handmade glass tears for MARINA ABRAMOVIĆ





AKRAM ZAATARI experimenting with materials

SPECIAL INTERIOR FITTINGS



Waney-edged oak screens designed by Charlotte Skene Catling for *The Woodshed*, North Mimms, 2021



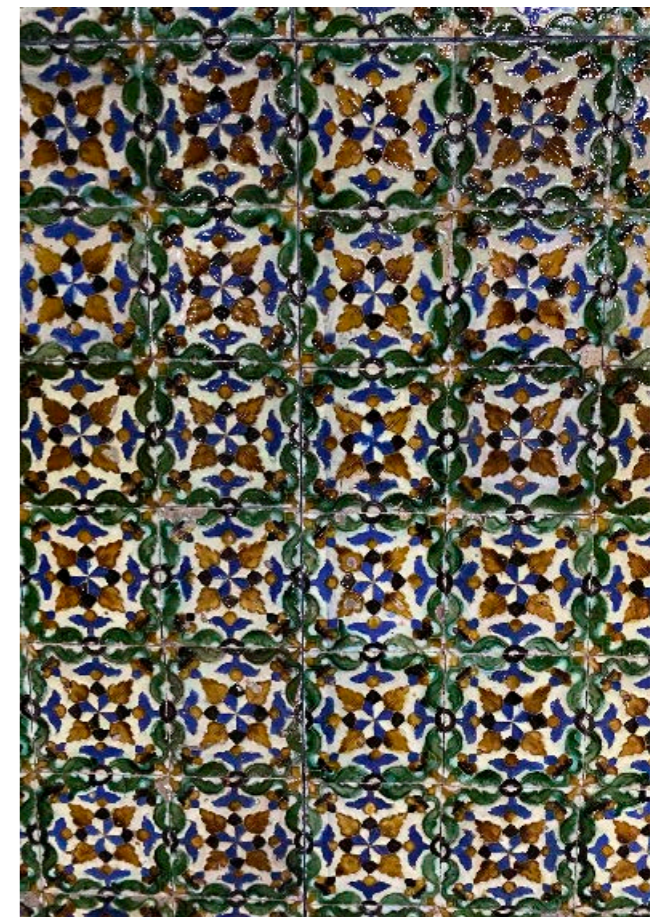
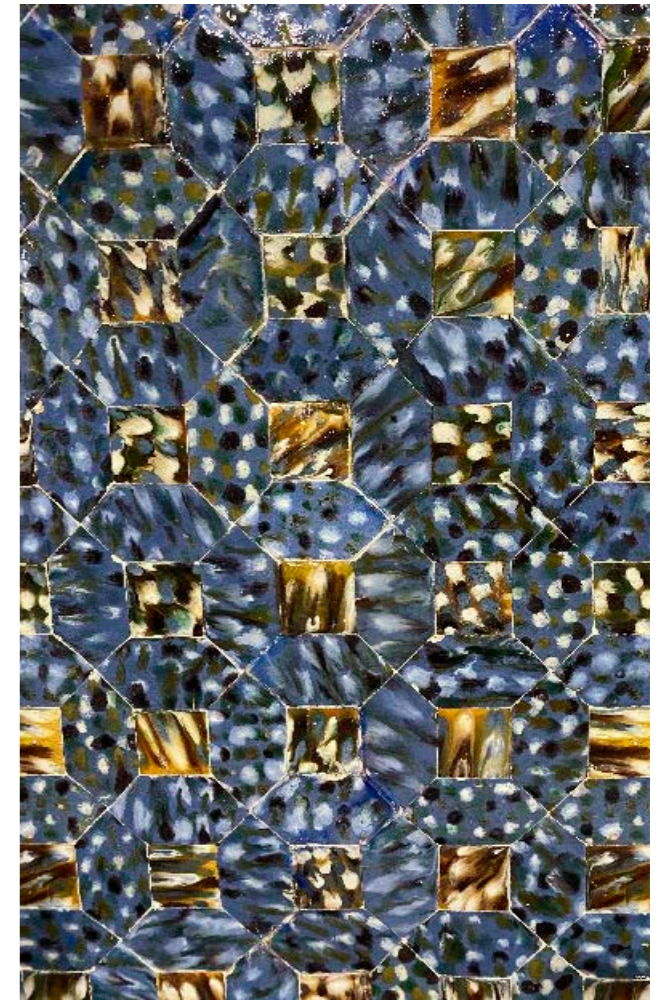
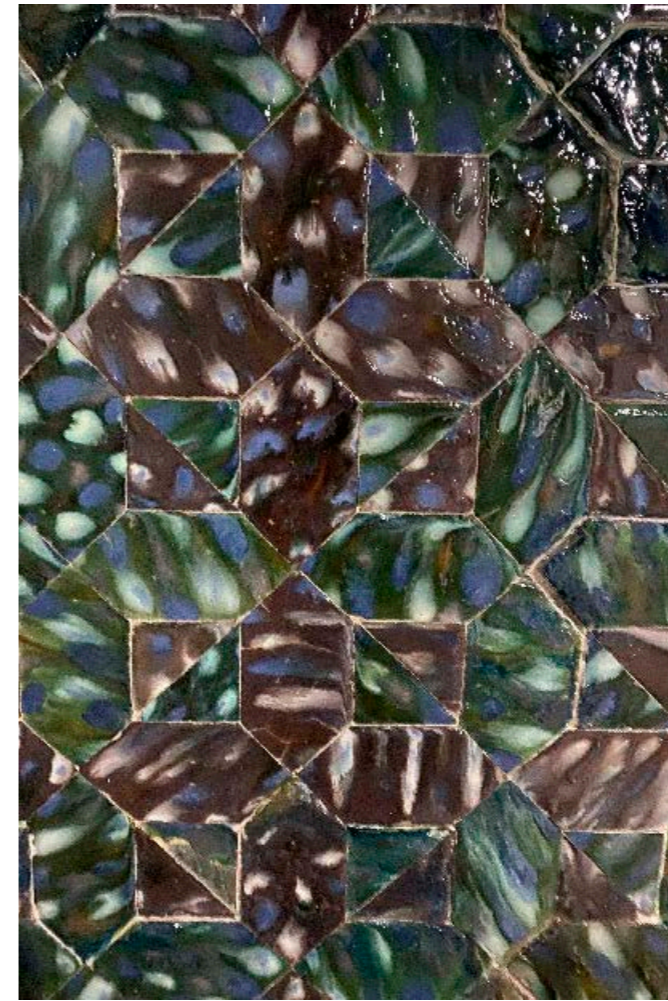
Alabaster table with bronze legs designed by Adam Lowe for Louisa Guinness, 2012



Hood for 12 metre light system, for a house in Virginia Water, 2021



Alabaster firesurround designed by Charlotte Skene Catling for *The Woodshed*, North Mimms, 2021



Facsimiles of the azulejos from Casa de Pilatos, Seville, 2020. Installed in the Spanish Gallery for The Auckland Project, 2021

LOGISTICS



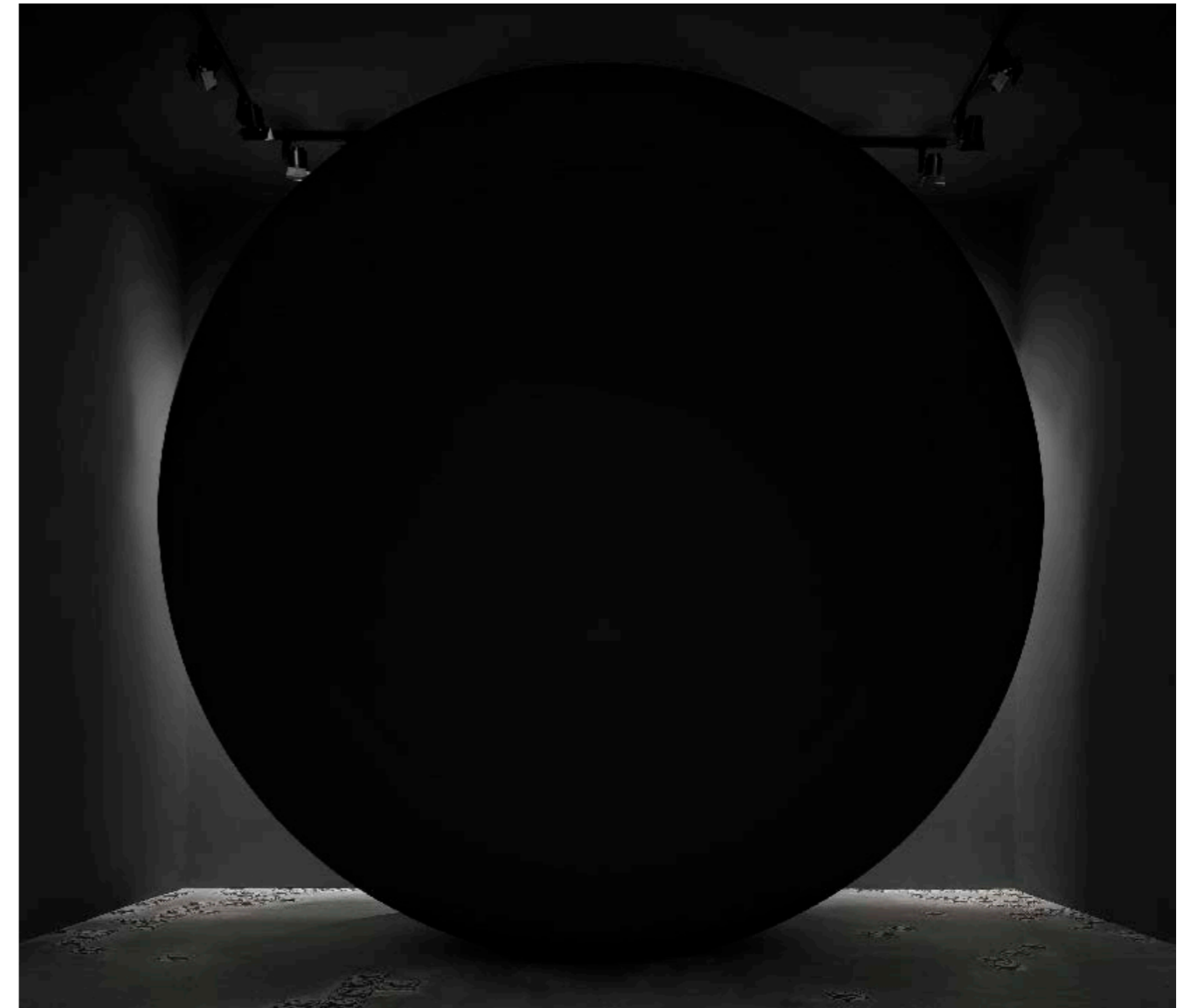
Installing the bronze *Autogrill Olive Tree* into Mercato del Duomo in Milan, 2015. The 7-meter sculpture of an olive tree and its roots was made in collaboration with the Italian architect and designer Michele de Lucchi.



Installing one of the two facsimiles of the Nimrud lamassu statues at the University of Mosul, 2019. This was carried out in collaboration with the British Museum in London, the University of Mosul, the Rijksmuseum Van Oudheden, the Spanish Ministry of Defense and the Iraqi Government [video link Lamassu facsimiles installation, University of Mosul](#)



Installing the replica of the Borgherini Chapel, from the convent of San Pietro in Montorio in Rome, inside the National Gallery, 2017



LARISSA SANSOUR, *Monument for Lost Time*, 2019. A vast spherical structure is made from glass-fibre-reinforced epoxy resin installed in the Danish Pavillion at the 58th Venice Biennale



Installing the facsimile of Tutankhamun's sarcophagus inside the replica of the burial chamber, donated to Egypt in 2014

EXHIBITIONS



*IN ICTU OCULI - IN THE BLINK OF AN EYE:
TRANSCIENCE AND ETERNITY IN THE SPANISH GOLDEN AGE,
Spanish Gallery, Bishop Auckland, 2021
Photo by James Morris*

EXHIBITIONS



THE ARTS OF PIRANESI: ARCHITECT, ENGRAVER, ANTIQUARIAN, VEDUTISTA, DESIGNER. THE EXHIBITION
Fondazione Giorgio Cini, Venice, 2010



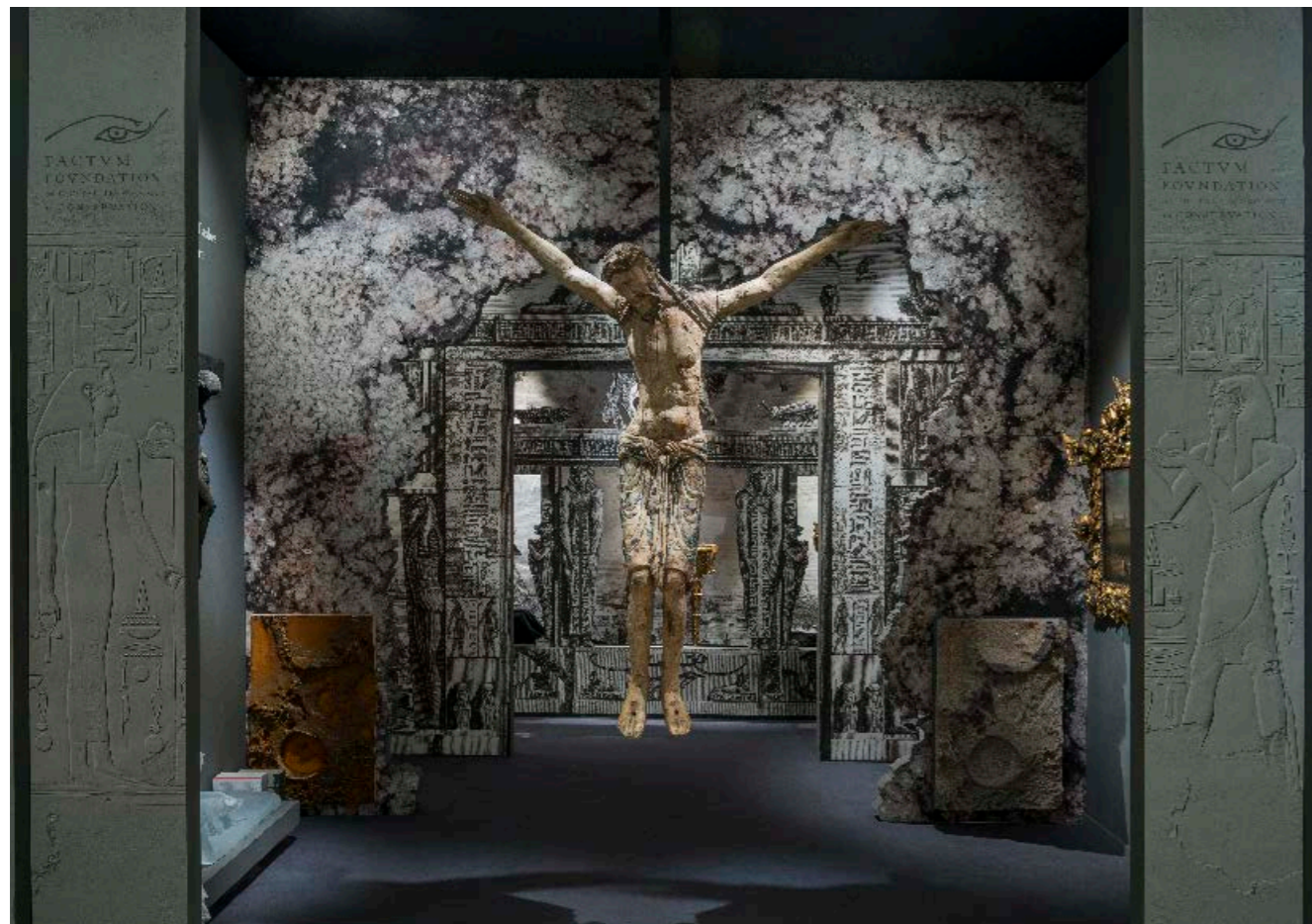
PENELOPE'S LABOUR - WEAVING WORDS AND IMAGES
Fondazione Giorgio Cini, Venice, 2011



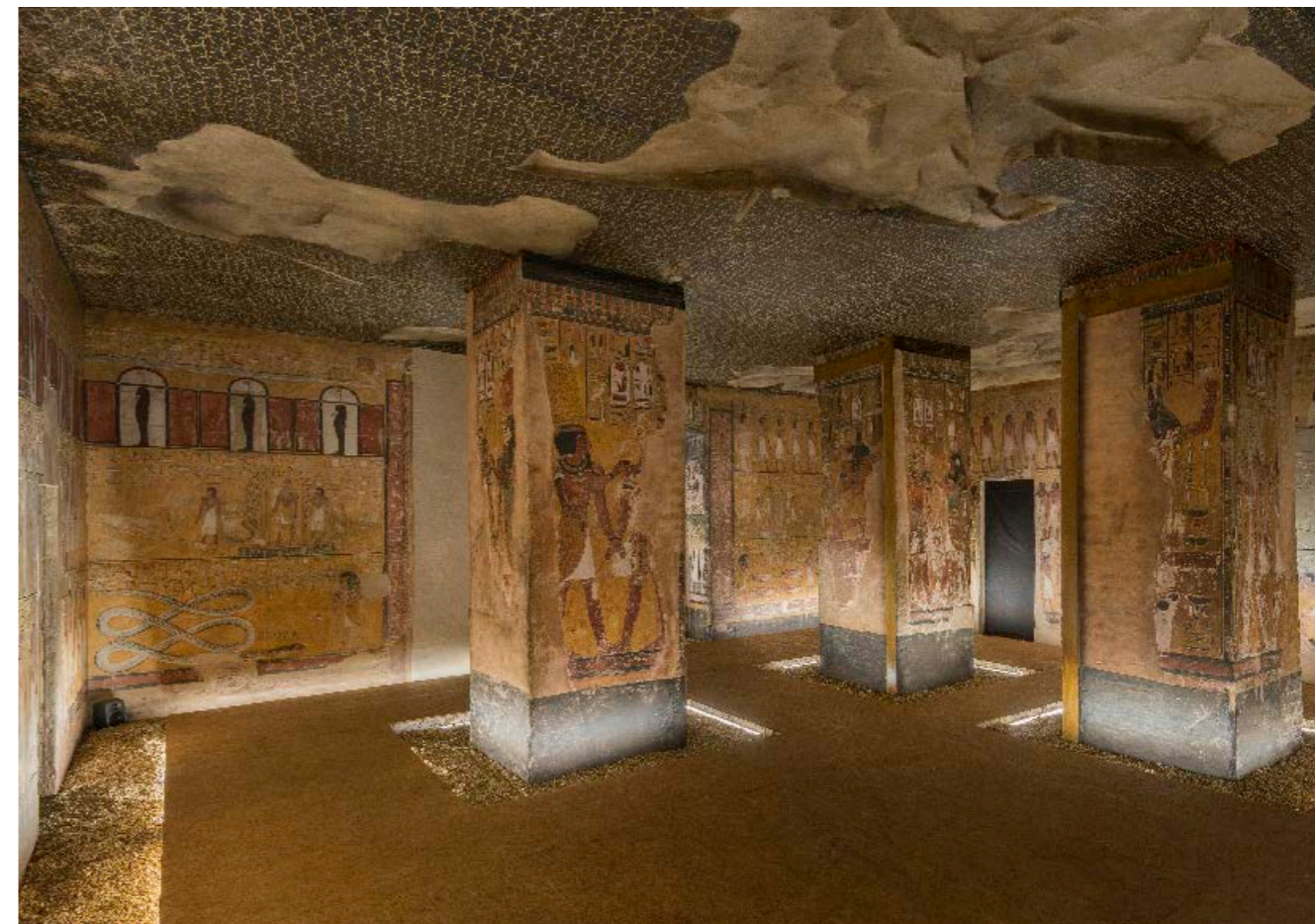
FACSIMILE OF THE TOMB OF TUTANKHAMUN
Installed at the entrance of the Valley of the Kings, 2014



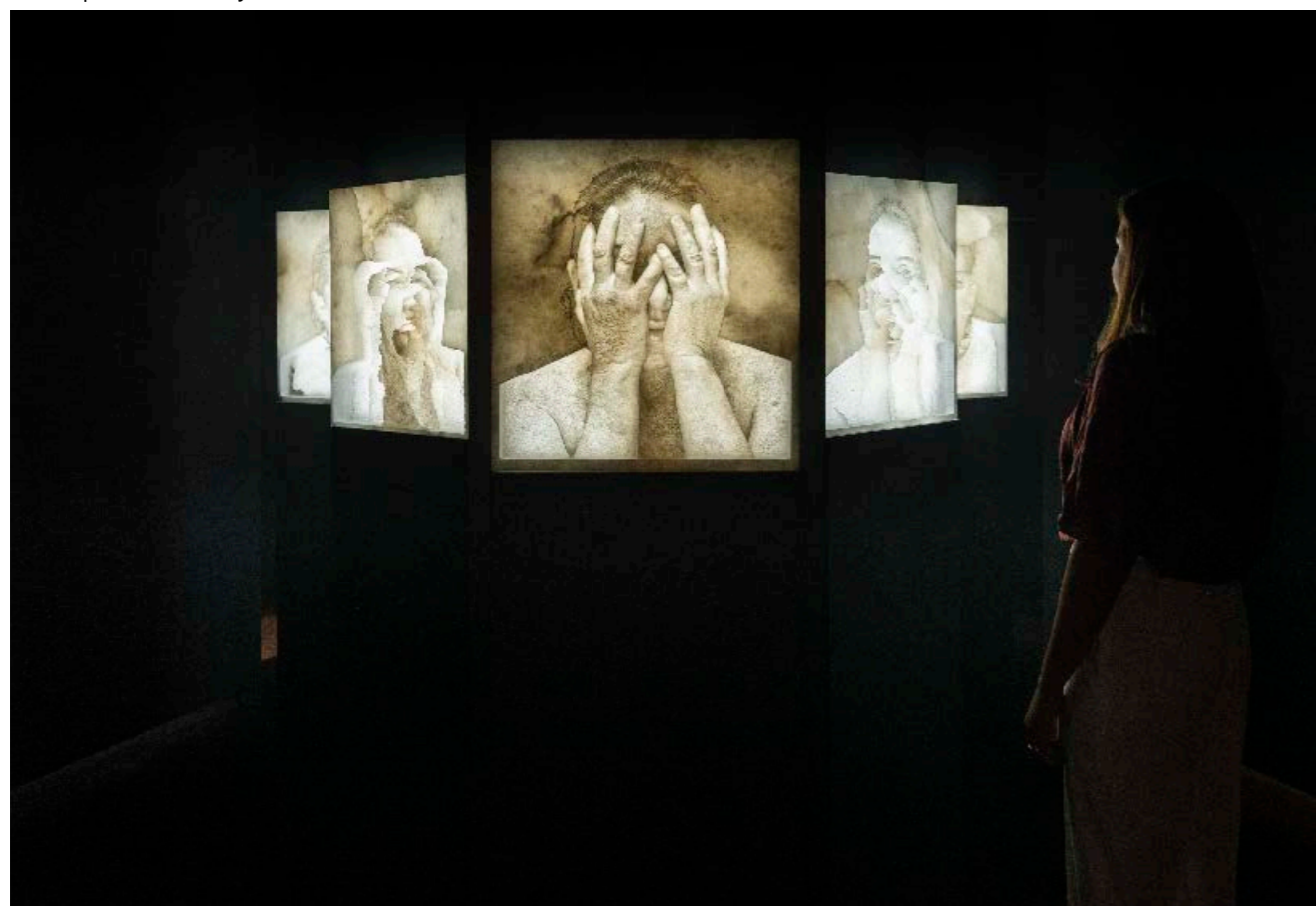
MINDFUL HANDS. MASTERPIECES OF ILLUMINATION FROM THE FONDAZIONE GIORGIO CINI
Fondazione Giorgio Cini, Venice, 2016



FACTUM FOUNDATION INSTALLATION
Masterpiece London, June 2016



SCANNING SETI: THE REGENERATION OF A PHARAONIC TOMB
Antikenmuseum Basel, 2017-2018



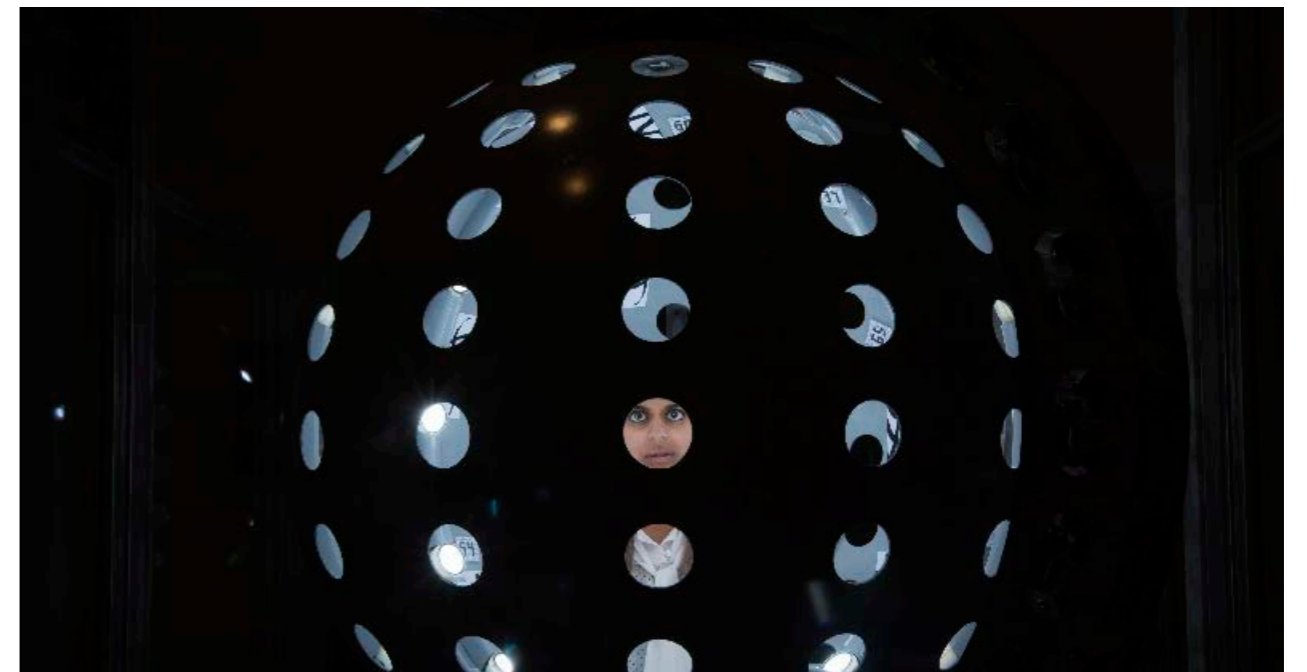
MASTERPIECE PRESENTS
London, June 2018



MADAME DE POMPADOUR IN THE FRAME
Waddesdon Manor, 2019



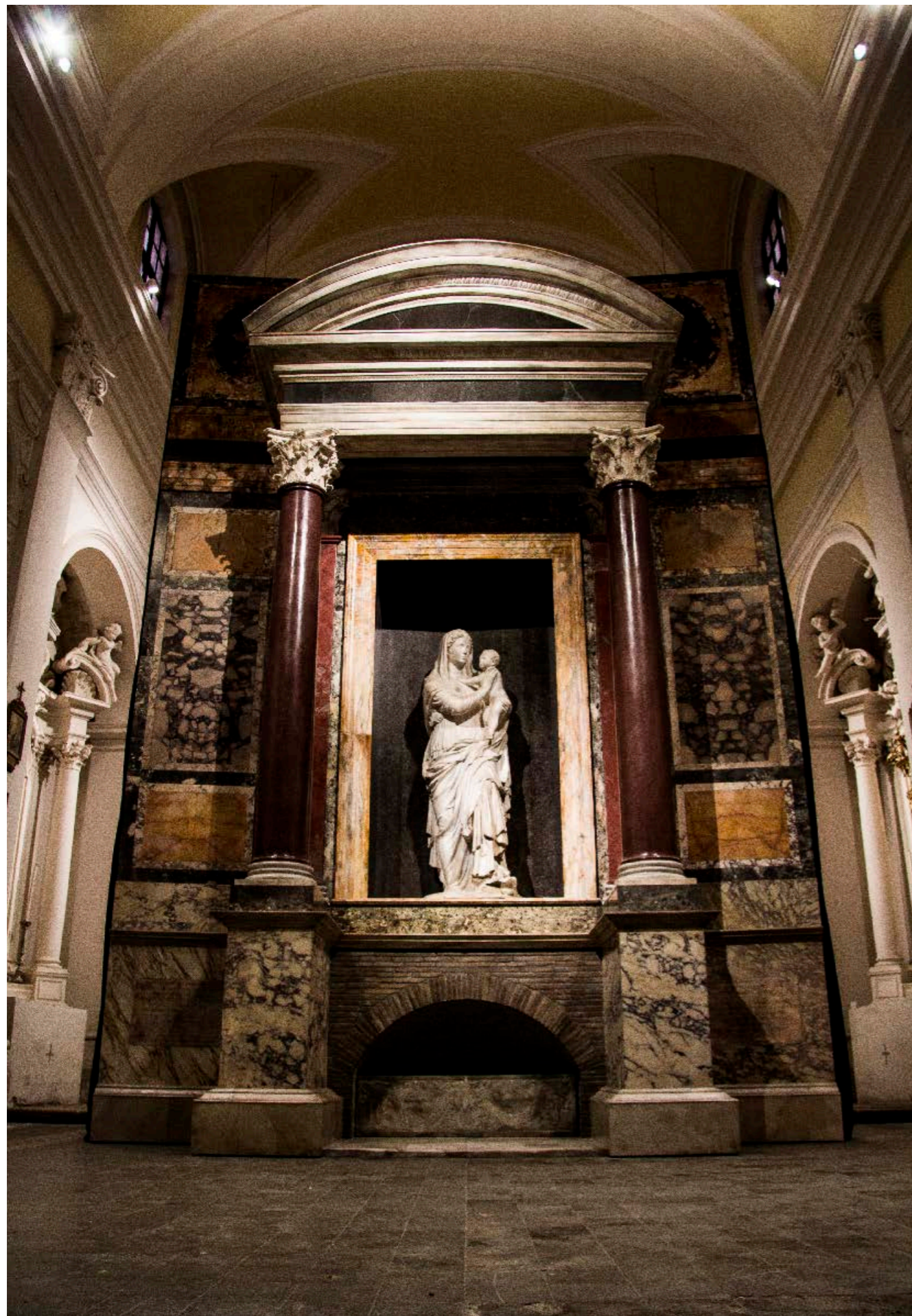
IL POLITTICO GRIFFONI RINASCE A BOLOGNA
 Palazzo Fava, Bologna, 2020. Photo by Paolo Righi for Genus Bononiae



THE MATERIALITY OF THE AURA: NEW TECHNOLOGIES FOR DIGITAL PRESERVATION
 Palazzo Fava, Bologna, 2020



THE VERONICA SCANNER: LIVE 3D PORTRAITURE
 Royal Academy of Arts, 2016



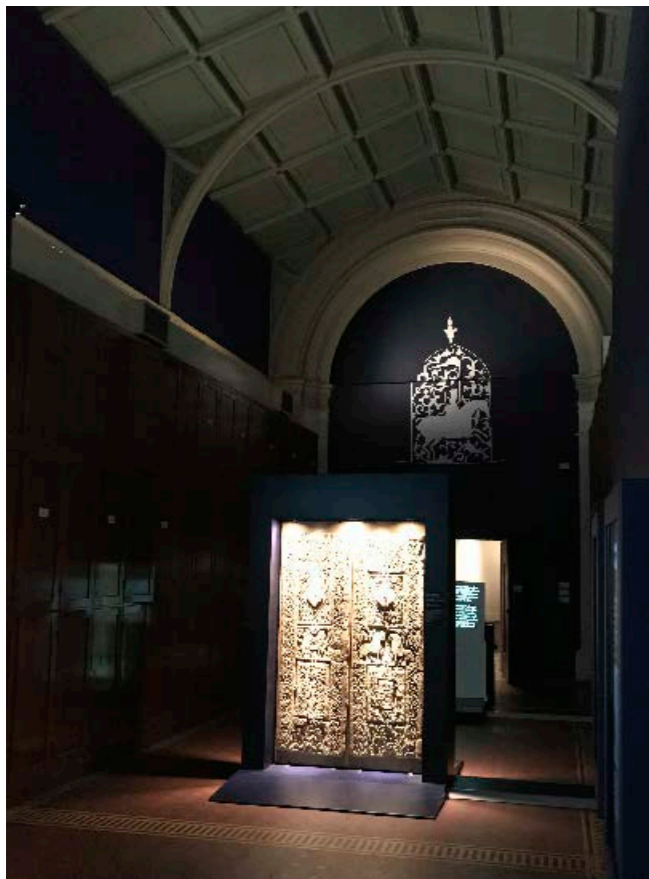
The rematerialised tomb of Raphael on display in the Chiesa dei Carmelitani Scalzi, Urbino
Photo by Comune di Urbino



IL RITORNO DEI CAPOLAVORI PERDUTI
Palazzo Abatellis, Palermo, 2019



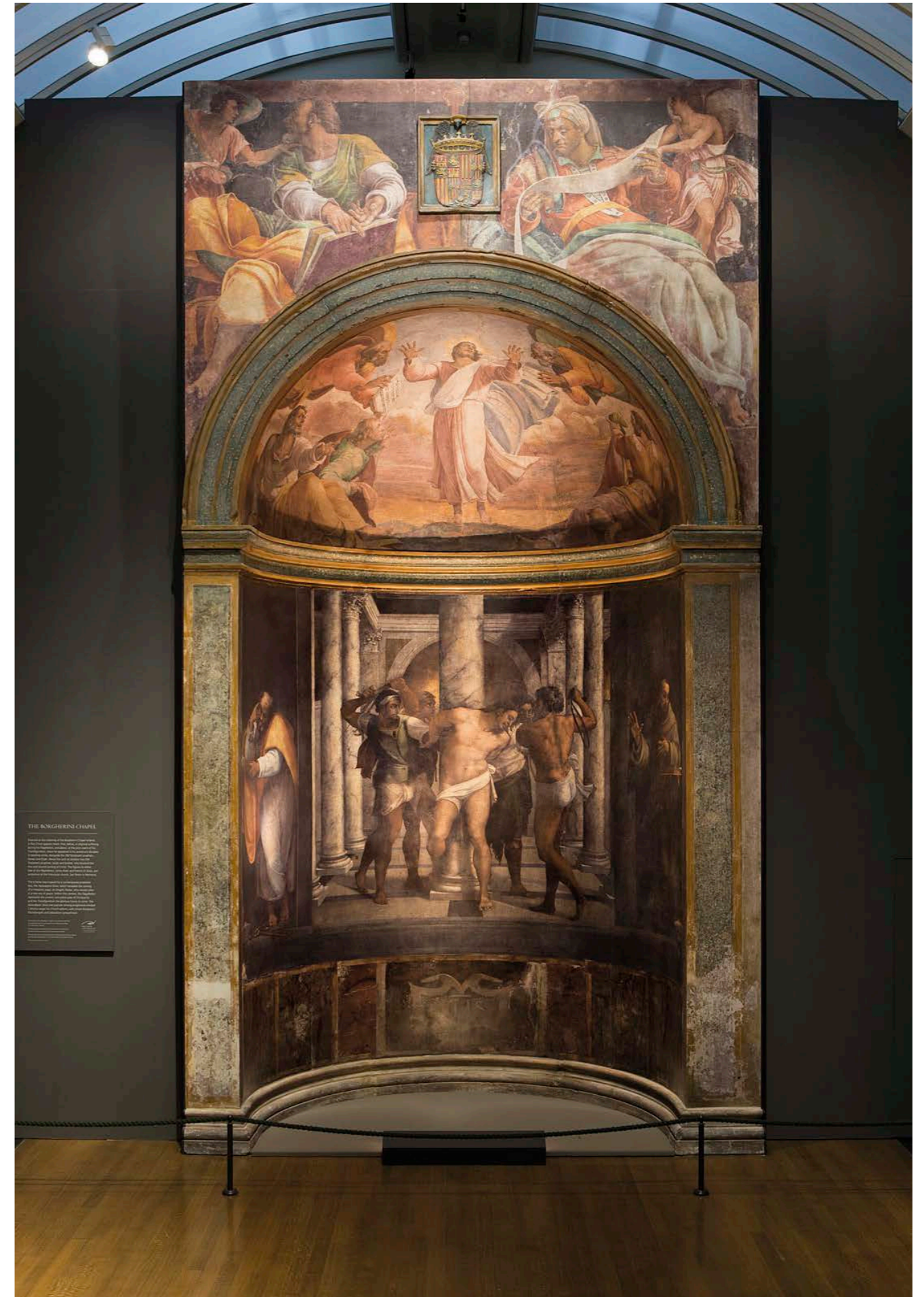
Facsimiles of Caravaggio's St. Matthew paintings, from the church of San Luigi dei Francesi in Rome, installed in the church of St. John the Baptist, Caravaggio, 2010



WORDS OF STONES
The State Hermitage Museum, St Petersburg, 2017
Victoria and Albert Museum, 2017-2018



Facsimile of Caravaggio's *Nativity with Saint Francis and Saint Lawrence*, in the oratory of San Lorenzo, Palermo, 2015



MICHELANGELO & SEBASTIANO
The National Gallery, London, 2016



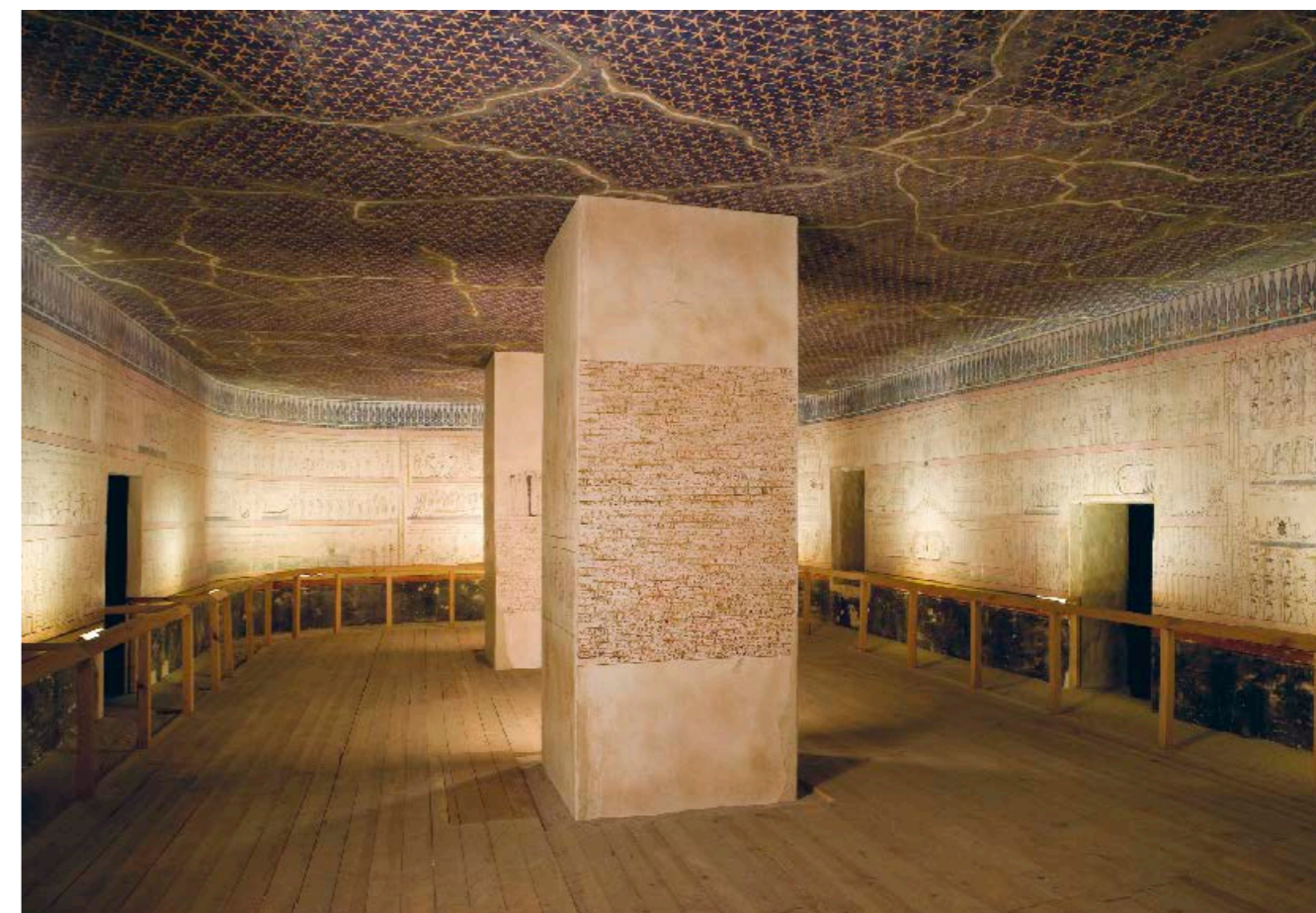
Recreations of Antonio Canova's Paolina Borghese are part of the V&A Cast Court since December 2018



Facsimile of the south wall from the Sala Bologna, depicting the map of the city made by Lorenzo Sabbatini, was installed in the hall of the Museo della Città di Bologna in 2011



DOMUS GRIMANI 1594 – 2019
The facsimile of Francesco Salviati's ceiling painting *The Dispute between Minerva and Neptune* was installed at Palazzo Grimani, Venice, in 2019



IMMORTAL PHARAOH
Facsimile of Thutmosis III made by Factum Arte. A touring exhibition organised by United Exhibits Group, that opened at the National Gallery, Washington in 2002



IN ICTU OCULI - IN THE BLINK OF AN EYE: TRANSIENCE AND ETERNITY IN THE SPANISH GOLDEN AGE
 Spanish Gallery, Bishop Auckland, 2021. Photo by James Morris

FOR MORE INFORMATION

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FACTUM arte



FACTVM
FOVNDATION
FOR DIGITAL TECHNOLOGY
IN CONSERVATION



Skeleton of a dodo in bronze, 2021
With Errol Fuller and Wilhelmus Goree