

## From un-real to real and return

### Some example of activities of a modern model's lab

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### Abstract

The Architectural Models Laboratory (LMA) has completed its first 6 years since its foundation. Perfectly integrated into the DIDALABS system of the Dipartimento di Architettura, University of Florence, Italy, it offers support for student's exams and bachelor/master thesis graduation, PhD research as well as thematic seminars and workshops, coordinated by researchers or professors of Florentine Athenaeum. During these moments, students together with the technical and research staff of the laboratories realize physical models and study prototypes (Moon, 2005).

The Architectural Models Laboratory also collaborates with other universities, departments, and external organizations such as museums or architectural firms, to offer them a specific set of competencies and digital/physical tools (Gavinelli, 1993).

The Laboratory offers different technologies both traditional and modern (Mi-young, 2012). From woodworking to 3D printing, from 3D scanning to laser-cutting (Ratzlaff, 2016), with the consultancies of the laboratory team, it is possible to build and/or refine ideas (cp. Knoll, 2007; Ansgar, 2011). In this poster, a selection of experiences presents the main occasions and solutions connected to Architecture, Archaeology, Cultural Heritage, with a special focus on those planned and defined in recent years. The selected works will be presented in the will of sharing the procedures and results of each specific case study.

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## Vieux Port and Hotel Gourara

The traveling exhibition “FERNAND POUILLON opere scelte 1948–1968 COSTRUZIONE CITTÀ PAESAGGIO” (Selected Masterpieces from FP, 1948–1968, BUILDING, CITY, LANDSCAPE) curated by Giulio Barazzetta from the Dipartimento di Architettura, Ingegneria delle costruzioni e Ambiente costruito (DABC) Milan Polytechnic, Renato Capozzi from Dipartimento di Architettura (Di-ARC) University of Naples “Federico II”, Catherine Sayen president of the Association “Les Pierres sauvages de Belcastel” Toulouse and Prof. Francesco Valerio Collotti From Dipartimento di Architettura (DIDA), University of Florence, was an opportunity to contribute to the dissemination of the results of a research on the work of Fernand Pouillon.

The architectural models of Vieux Port in Marseille and of the Gourara hotel in Timimoun were the contribution that the Laboratory gave to the exhibition, and together with others, were exhibited in Florence, Rome, Milan, Venice, Cesena and later in Lausanne, Marseille, Lyon and Paris.

Both architectural models, in scale 1:200, were made using wood and white and opal polymethyl-methacrylate plates, cut with a CO<sub>2</sub>-based laser system.



*Fig. 1. Model of the Vieux Port in Marseille, detail (© Authors).*

## A new face for the new Novoli thermal power station

During the thematic seminar “Un nuovo volto per l'ex centrale termica Fiat” (A new face for the former FIAT energy facility in Florence) organized by Prof. Antonio Capestro and Prof. Leonardo Zaffi and with the collaboration of the artist Clet Abraham, two models were created. One in wood, 1:25 scale, representing the “Ex-centrale termica FIAT” in Florence, a backdrop on which the artist would have placed his work. The second model represented the artist's work and was created starting from paper sketches made by Clet himself, subsequently scanned with a Microscribe 3-D G digitizer coupled with a Skiron laser scanner head. This process led to the final definition of a virtual model of the work that can be used for its prototyping with both additive and subtractive technologies.

## Marina Abramović - The Cleaner

In April 2018, the Palazzo Strozzi foundation – after a direct request of the artist Marina Abramović— it was commissioned to the LMA an architectural model representing the First Floor and the basement of the Florentine Palace from which the foundation takes its name. The required scale—1:50— led to the creation of two models of about three square meters each.

Marina Abramović worked on the model for designing the exhibition “Marina Abramović – The Cleaner” opened in September 2018 (Abramović, 2018).

## Medusa’s heads from the Istanbul Cistern

These models are a typical example of what the collaboration of students and researchers can produce in the model laboratory. Starting from the digital modelling of a photogrammetry work, a procedure to represent the geometries and the ideas through the exchange with the laboratory technicians, the technologies and the interests of the students/researchers have brought in most of the positive results. In this case, it is a model of Istanbul Medusa’s heads, printed with colour binder jetting technology, producing a scaled model extremely useful to understand this specific spolia and bring them back to their original story. From a personal research project curated by prof. Giorgio Verdiani, in collaboration with dott. Andrea Pasquali and dott. Ylenia Ricci.



Fig. 2. Model of the basement of Palazzo Strozzi in Florence (© Authors).

## Ando’s Ito House Series

These four small models of Ito House by the architect Tadao Ando are just a few pieces of a wider collection of models in production at LMA. One of the aims of this project is to examine the expressiveness of different materials and techniques in a physical architectural model: maintaining the same scale how is the models’ ability to communicate going to change? How will the chosen material influence this ability? Through the realization of these models, we can study how the matter information influences the perception of a scaled architecture. The project, Casa Ito, has been selected because it contains point-like elements, as well as curved and thin ones, elements that usually generate difficulties in the realization of a scale model. The reproduction scale has been set at 1:300 for all models, to have compact volumes, to investigate the management of small-scale detail and at the same time guarantee variety of materials.

## The Earlier Mona Lisa

The laboratory has worked to expand the accessibility of cultural heritage by creating tactile models of works of art such as the Earlier Mona Lisa by Leonardo Da Vinci. Starting from the geometric data of the paint, the tactile aspects of the work were analysed. The geometries were modelled in using Pixologic Zbrush and then 3D printed. Finally, the laboratory prepared the geometries of the painting of the famous Louvre Mona Lisa, to be used for comparison purpose. Some Details of the territory and from the figure in the masterpieces were printed to complete a full “learning by touch” desk integrated into the “Earlier Mona Lisa” exhibition (which opened in Florence during June–July 2019, Beijing 2020). Responsible for research: Prof. Giorgio Verdiani.



*Fig. 3. Mona Lisa's physical model (© Authors).*

## Research Project in Jerusalem

The request from Prof. Fabio Fabbrizzi was the construction of four solid wooden models. The idea was to create expressive models using a single wood kind, for all the volumes, and satin Plexiglas for some small details. The chosen scale was 1:250 to allow legibility of the project through his inclusion in the urban context, his richness through the right balance of details and the enhancement of the wood characteristics. The adjustments made concerning the original model have had the purpose of maintaining the maximum possible detail allowed by the workability of the material and the timing of its realization.

## Wind gallery

Different models for the wind tunnel have been made with the CRIACIV laboratory of the Dipartimento di Ingegneria Civile e Ambientale (Civil and Environmental Engineering Department, University of Florence). These functional models take a different approach than the architectural representative models. Using the technologies present in the laboratory and the expertise of the staff, it was possible to satisfy the demands of the CRIACIV and to realize some sample models of the new terminal of the airport of Rabat.

This series of examples, presented in form of summary in the poster and then expanded in the following paper will show different approaches to design, cultural heritage, archaeology and artworks

from the architect's point of view. The balance between the tactile experience to the materialization of the ideas will be examined in two parallel paths: the use of the model as an element of the exhibition (for attraction or learning purposes) and the use of the model as an element of visualization/understanding of the effect of the design process. In this, the list of proposed samples will be not in order or aligned to an "evolution" but presented in a mix of different questions where the skill to find a solution pass by the production of a physical model using both traditional and/or digital procedures of production.

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