ARCHITECTURAL MODEL POINT OF VIEW
MINIATURE AND ITS REPRESENTATION BEYOND WORDS

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With this article, the author intends to reflect on the role of the plastic model and its representation through the use of photography and images as a means of narrating the architectural project, arguing that they are very often more effective than words.

This reflection stems from the contemporary debate on the role of the model in the era of digitisation and its tendency to become an increasingly autonomous object. Moreover, with the progressive spread of digital technologies and the ease of access to software and devices for producing, storing, manipulating, transmitting and sharing images, the number of images in circulation has increased dramatically (Pinotti, 2016).

The expressive capacity of the model is manifested not only through its materiality but also through two-dimensional visual representations, which contribute to further reflexive reading of the project. In this context, we intend to present a practical case concerning the creation of two-scale *maquettes* and the production of photographic images of preferential views of the model aimed at the dissemination of the project.

INTRODUCTION

For centuries, architects have used maquettes as a tool to verify the design process by visualizing formal, functional, or structural hypotheses and to present the project to the public and clients, executors, and manufacturers (Maldonado, 2015).

Today, however, their task is not only limited to the visual anticipation of a design proposal but seems to become an autonomous element itself, the result of an internal logic capable of generating creative thought flows that move between architectural design and artistic investigation (Daguerre, 2020).

Several examples can be identified in this area of formal experimentation: the studio models of Herzog & de Meuron, Peter Zumthor, Peter Märkli and Angela Deuber, with different declinations and material expressions. They tend to become media narrative devices of the studio work illustrated in international exhibitions and publications.

Models have a specific relationship with the body. There is an 'object' means that they can be held and manipulated without necessarily requiring explanations in words. We, humans, are, as Hejduk noted, much larger than the model: "we walk around it, we hold it in our hands" (Hejduk et al., 1989, p. 69).

Its compactness gives the object a sense of reality: the way light hits a surface, the parallax effects of a moving viewpoint, can be simulated and perceived more quickly and effectively with a physical model. The miniaturisation and lack of detail help trigger a process of free association in the observer.

Models are not just an end product of a design process. They are a tool through which future perceptions and aspects are projected.

The expressive capacity of the model is also manifested, not only through its materiality, but also through two-dimensional visual representations, such as photographic images or graphic reworkings in general, which contribute to the observer's reflective reading of the design. Taking photographs of the model means, for example, looking for a final image that somehow encapsulates the concept of the building.

Models, photographs of models, are a way of getting closer and closer to an image that is already in our minds, it is about articulating all the qualities of that image.

Caruso St John argues

in a competition one can try to communicate the concept and the atmosphere of a project in one or two such images. I would say that the preoccupation in the office is not the production of models, but of finding the image of a project (Teerds et al., 2011, p. 131).

In this context, the author intends to present a practical case relating to the creation of two scale maquettes for the *Lishui Exhibition Centre*, presenting not only the plastic models but also their associated graphic contents and photographic images. All this is characterised by a precise narrative and communicative register aimed at the dissemination of the project.

The design phase of the models involved the definition of a framework of requirements within which the following were established: the function of the model, the choice of content to be displayed, the characteristics of the location, the type of audience and the possible need to anchor immersive technologies (AR and VR). The plastic model can thus become a 'narrative' artefact to which information about the architectural artefact can be anchored, thus generating different levels of interactivity and immersivity (Meschini et al., 2016).

EXHIBITING ARCHITECTURE: THE PLASTIC MODEL AND ITS IMAGE. THE STATE OF THE ART

After a long history culminating in the Renaissance and Baroque periods, the architectural model suffered a decline in the 19th century mainly due to changes in representational cultures and then a subsequent revival during the 20th century, becoming a tool for design education and practice. This revival also coincided with the increasing role of photography in the symbolic construction of modern architecture by aligning it with mass media culture.

In fact, the model has hardly ever appeared in isolation. It has often been reconfigured by procedures of visual reproduction. A significant example is certainly Mies van der Rohe's design for the glass skyscraper in Berlin (1922) (Figure 1). The dissemination of these few images in the press elevated the design of the glass skyscraper to image status and made it an icon of architectural modernism (Deriu, 2016).

Today, many models circulate outside the studios through the filter of photographic images and graphic re-elaborations.

These models are, through the photographic medium, decontextualised and isolated from physical and realistic ele-

Fig. 1 Ludwig Mies van der Rohe, Glass Skyscraper project (View of lost model), Berlin, 1922. Retrieved September, 2022 from <https://www.moma.org/collection/works/82759>.

ments, resulting in floating and weightlessness. The resulting images are, like the models, in tension between the real and the abstract, they have a documentary value as a transcription of reality, but at the same time, the image of reality is flattened, cropped, resized, rendered in false colours and digitally manipulated (Allen, 2020). Lighting, point of view and background are controlled, thus creating a narrative within the narrative.

Significant and illustrative examples of this approach emerge from the Nemestudio studio's plastic models. The projects are presented on the website through photographs of monochrome plastic models superimposed on graphic re-

Fig. 2 Nemestudio, Manual of Instruction, 2019. Retrieved September, 2022 from <http://nemestudio.com/projects/manual-of-instructions>.

Fig. 3 MOS Architects, House
Parts Collected. Retrieved
September, 2022 from <https://
www.mos.nyc/>.
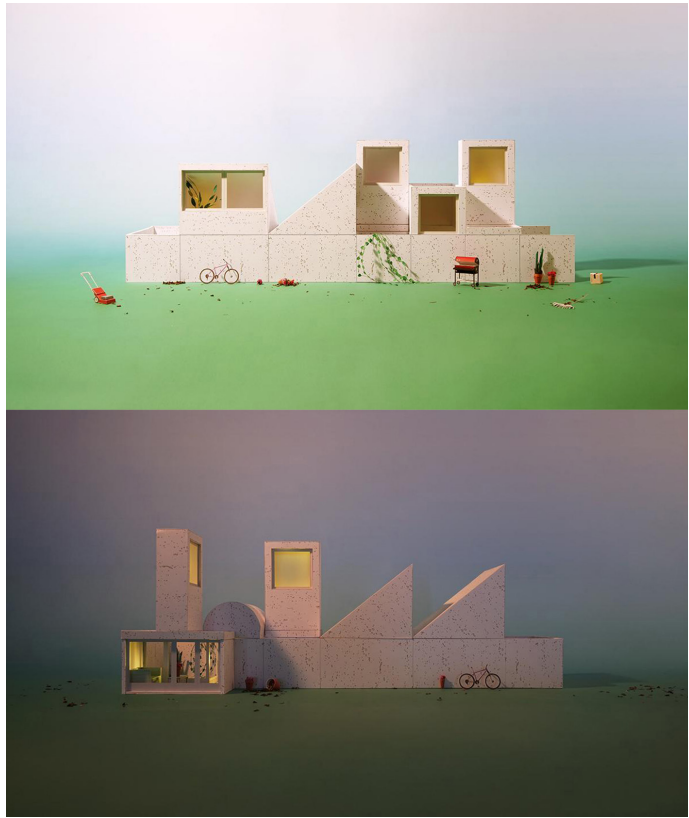
elaborations. The latter, containing renderings of the models
superimposed on digital reworkings, is intended to establish a
dialogue between large-scale environmental imagery and the
everyday life of architecture and construction. These images
become exhibition spaces, places where the making, assem-
bling and unmaking of architecture is discussed, both as rep-
resentation and performance (Nemestudio, 2020) (Figure 2).

A second interesting example are the projects of the New
York studio MOS Architects. The architect and co-founder of
the firm, Michael Meredith, argues that model photography
has become more important today than the model itself. Ac-
cording to Meredith, whereas in the past the maquette was
used by the studio to work on ideas, now it is used to create
images. The model has increasingly become a kind of set de-

Fig. 4 Cupertino Apple Park (2017). Visiting Apple Park in Augmented Reality. Retrieved September, 2022 from <https://www.youtube.com/watch?v=fCU0eeYBuJc>.

sign, a collection of objects aimed at creating images, special effects, and short videos. These operations over time have become more and more technically demanding, requiring greater precision to achieve a kind of abstract or surreal realism (Meredith, 2020) (Figure 3).

An example that fits into the sphere of augmented reality applications and deals with the subject of image-real model superimposition is the model of the Apple Park in Cupertino, in the heart of Silicon Valley. Photorealistic renderings can be superimposed on the neutral-coloured model using *Apple* tools, thus seeing a virtual version of the campus. They can change the time of day to see how the huge glass structures look when hit by the morning sun. They can also touch any building to get a small view of the interior and see how solar energy is collected by cells on the roofs of the buildings and how the air moves through them (Cupertino Apple Park, 2017) (Figure 4).

MODELS FOR SHANSHUI CITY. THE CASE STUDY

The aim here is to show a practical case concerning the creation of two static scale models made using Digital Fabrication technologies and the associated photographic images and graphic processing.

The activity of creating the models started after the Politecnico di Torino won the third prize in the *Future Shanshui City - Dwellings in Lishui Mountains International Urban Design Competition* in October 2020. The project was developed by China Room's research group (DAD and DIST) and DAD's Institute of Mountain Architecture. Following the outcome of the competition, the ModLabArch laboratory, of which the author of this contribution is a research fellow, produced two 1:200 scale models of two buildings representative of the project: a logistics hub and a residential building. The first is a circular logistic hub, located at the intersection of the air and road transport system crossing a valley, the second is a residential building grafted onto the mountain and with different levels of roads, low and high traffic roads and trains within it with the overlapping of public and private functions (Figure 5).

The production of the models and graphic content was designed both for a real exhibition context, the *Lishui Exhibition Centre*, and for the dissemination of the projects through digital platforms and publicity activities. Therefore, it was necessary to consider aspects related to the heterogeneity of the public, trying to overcome linguistic limitations as much as possible and favouring a communicative immediacy completely free from verbal language.

The work involved the following workflow: the definition of the aesthetic and dimensional characteristics, the choice of materials and printing techniques for the realization of the models; the three-dimensional digital modelling of the plastic models on a 1:200 scale and rendering; the post-production of renderings and graphic elaborations starting from the 3D models; the photo shooting of the models and post-production; video editing and production of a stop motion video; AR simu-

Fig.5 Prosperous Lishui logistic hub and residential building. South China University of Technology: School of Architecture and Politecnico di Torino, China Room and Institute of Mountain Architecture, *Future Shanshui City - Dwelling in Lishui Mountains International Urban Design Competition*, 2020.
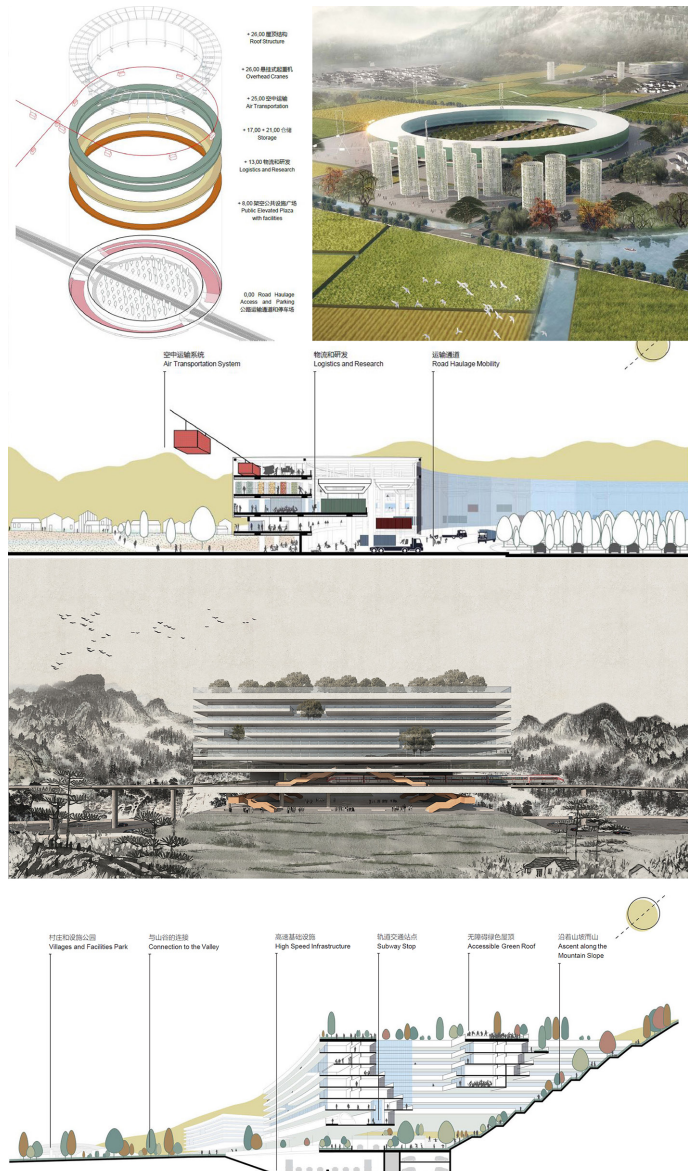
lations using *Vuforia*® and *Unity*® software with superimposition tests between the digital model and the real model.

In particular, given the absence of any particular design detail, it was decided to create conceptual models, diversifying

materials and colours according to the different functions per-
formed within the buildings in order to emphasise and high-
light the formal and distributive aspects. In particular, grey
cardboard was used for the context, transparent and opaque
Plexiglas for the distributive elements, and white PLA for the
structural elements, processed by means of a 3D printer and
laser cutting machine. The use of digital fabrication tech-
niques presupposes the design and creation of preparatory
three-dimensional digital models for the printing and cutting
of the various pieces (Figure 6). The digital model makes it pos-
sible to quantify the various parts by organizing them within
a single file and counting time, costs and materials. From the
digital model, a series of images, were subsequently derived
that were useful for the dissemination of the designs on the
web and publishing platforms. These images, when combined
with the photographs of the model, allow additional infor-

Fig. 6 Bertola, G., *The 3D model:
example of organization and
numbering of some pieces of the
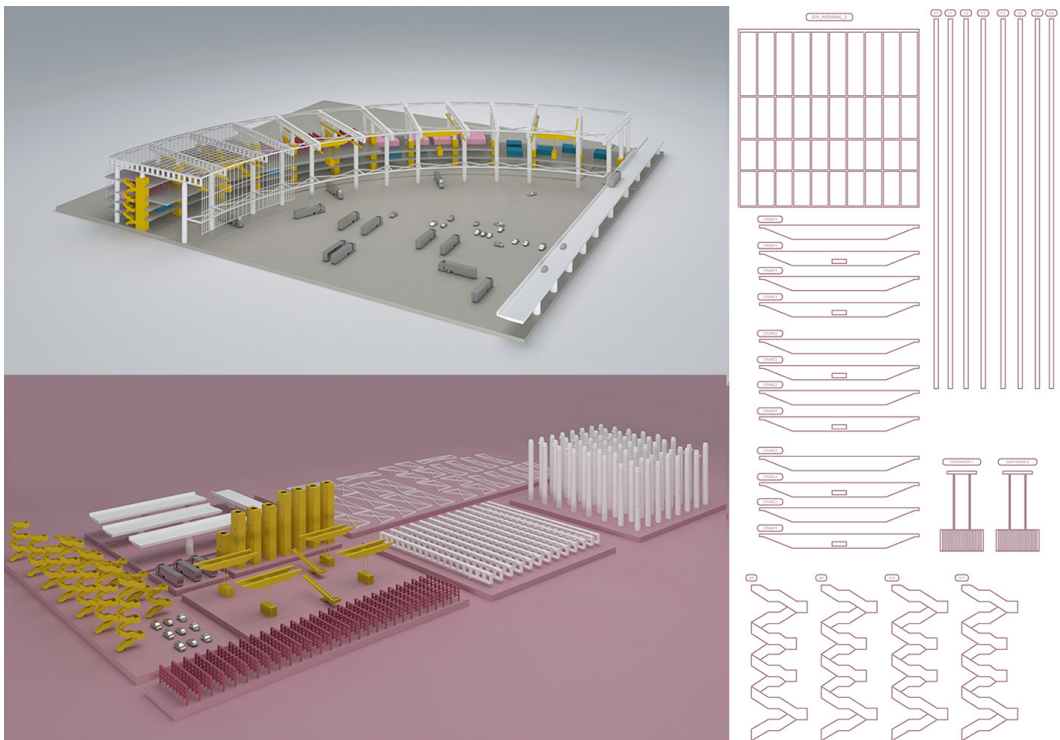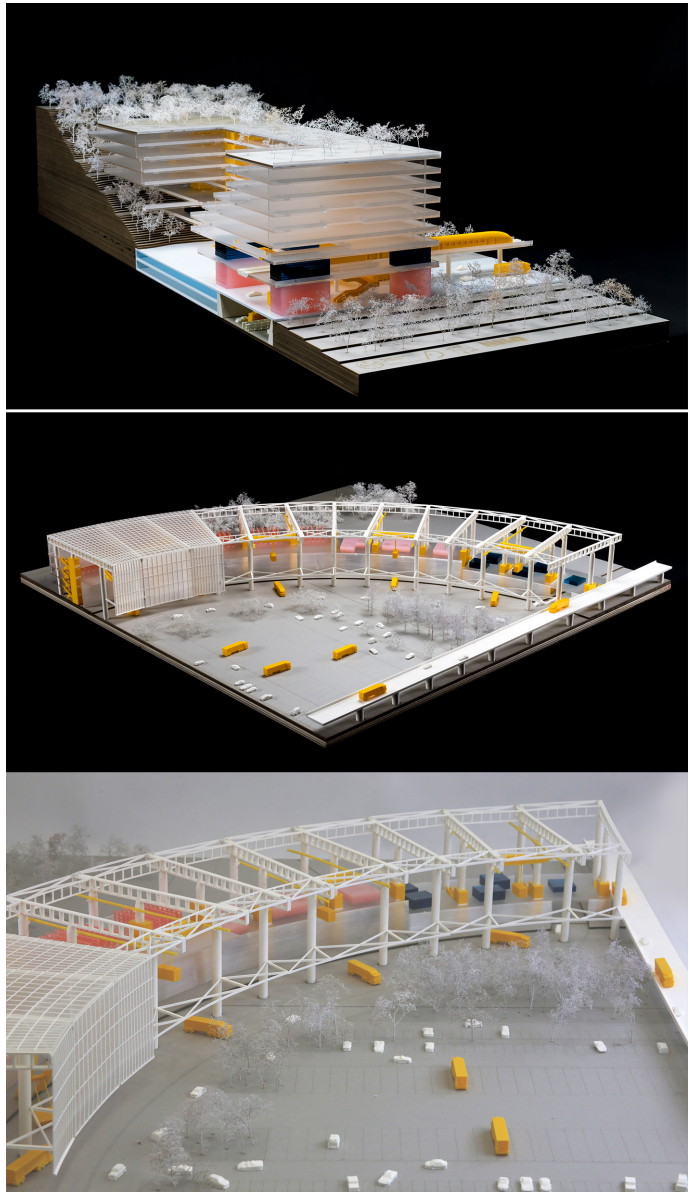model and rendering images*, 2021.

Fig. 7 Bertola, G., Pupi, E., Awada, A. *Production and assembly of the models*. 2022. Merlo, P., *Photographs with a black background*, 2022. Bertola, G., *Photographs with a white background*, 2022.

mation to be conveyed, thus broadening the accessibility of knowledge of the architectural project.

Once the models were assembled, several series of photographs were then taken (Figure 7). In particular, the photo

shooting project involved the choice of framing, lenses, background colour and type of lighting. In particular, axonometric views were favoured, considered more objective and suitable for understanding the model in its entirety, over perspective views, considered more subjective. Indeed, the choice of a point of view tends to focus more on the composition of the image and less on the architectural work; proportions are distorted and tectonic ideas tend to be lost. Two series of photographs were taken, the first, subsequently discarded with a white background to give a more narrative and surreal aspect, and the second with a black background to make the white of the structures stand out against the background. During the assembly of the models, a series of consequential photos were also taken, to give space not only to the design aspects of the buildings but also to the design aspects of the real models. subsequently edited into a stop-motion video (Figure 8).

Finally, the experience of AR has shown how it can be a very effective means of conveying additional information about architectural projects when placed alongside the real model. Indeed, it is possible to create different types of static or dynamic content in which images, videos, design drawings are linked to the real model through a system based on image recognition (Piga et al., 2017).

Users can access the content through downloadable applications or connect directly to a website dedicated to the project, accessible through devices such as phones or tablets.

Fig. 8 Bertola, G., Pupi, E., Awada, *Frame of the stop-motion video of the Logistic Hub*, 2022.
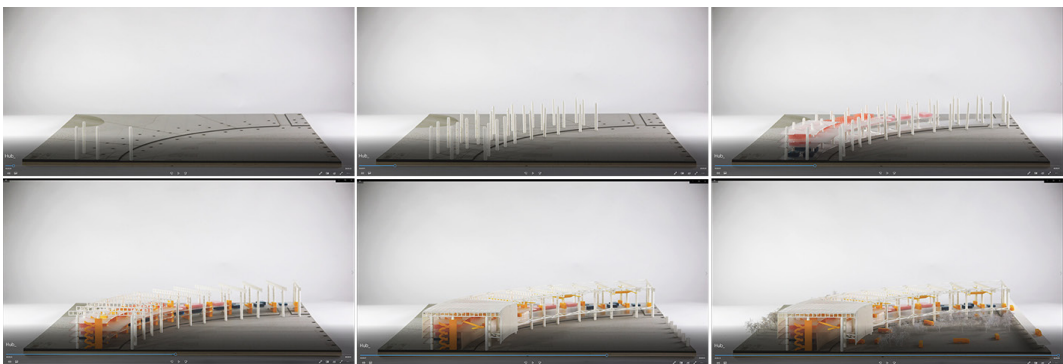
Fig. 9 Bertola, G., *The Augmented Reality Project. Model Target creations on Vuforia® and the project on the Unity® platform (the recognition of the model target following the overlapping of the real model and the appearance of the Child object in AR)*, 2022.

In this case, it was decided to create static three-dimensional content to be displayed dynamically directly on the real model. With regard to the choice of tracking tools, the following applications were used: *Unity®*, a cross-platform graphics engine and *Vuforia Engine®*, a software development kit for augmented reality for the realisation of the Model Target (Bertola et al., 2022) (Figure 9).

WORDLESS MINIATURE. THE REAL MODEL BETWEEN DIGITAL AND ANALOGUE SPACE.

The subject of the plastic model and its representation today opens up many questions that often find contradictory answers. Two of these are the role of the plastic model in the age of digitization and the trend towards the autonomy of the model capable of conveying information without the aid of words.

Brian Massumi's 'On the Superiority of the Analog' argues that analogy is the system that enables the digital, the analog is the primary and the digital is the secondary. In contrast, the philosopher Alexander Galloway argues that they are equivalent and inextricable. Today, we work in an intermediate space, consisting of both digital and analog, and perhaps we can place all practices. The other topic of discussion is the question of the autonomy of the model. A concept that has its basis in the exhibition curated by Peter Eisenman *Idea as Model* in 1976; this exhibition presented numerous models of the American

architectural avant-garde of the time at the Institute for Architecture and Urban Studies (IAUS) in New York. The aim was to promote the architectural model not only as a tool for communicating ideas to clients in miniature form but by elevating it to a work of art in its own right. But can the architectural model and its representation be considered works of art? In this regard, the position of Christian Hubert is interesting. In his 1981 publication about the exhibition, he stated that this autonomy was impossible, given its univocal relationship to the project proposal it was meant to represent (Morris, 2021).

It is therefore important to consider the model, not as a work in itself, but as a tool capable of communicative immediacy and of performing an informative task, free from verbal language. This work has shown how these aspects are not only present in the actual model but also in the representation of the model itself. The viewer's attention is focused on certain elements through the choice of framing, colours, materials and graphic techniques. It is therefore necessary to evaluate the collaborative role between the two communication systems as this could lead to the creation of new digital and analogue spaces giving the model new ways of visualization and further influencing the critical reading of the project and the stimulation of the viewer's imagination (Gulinello et al., 2019).

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