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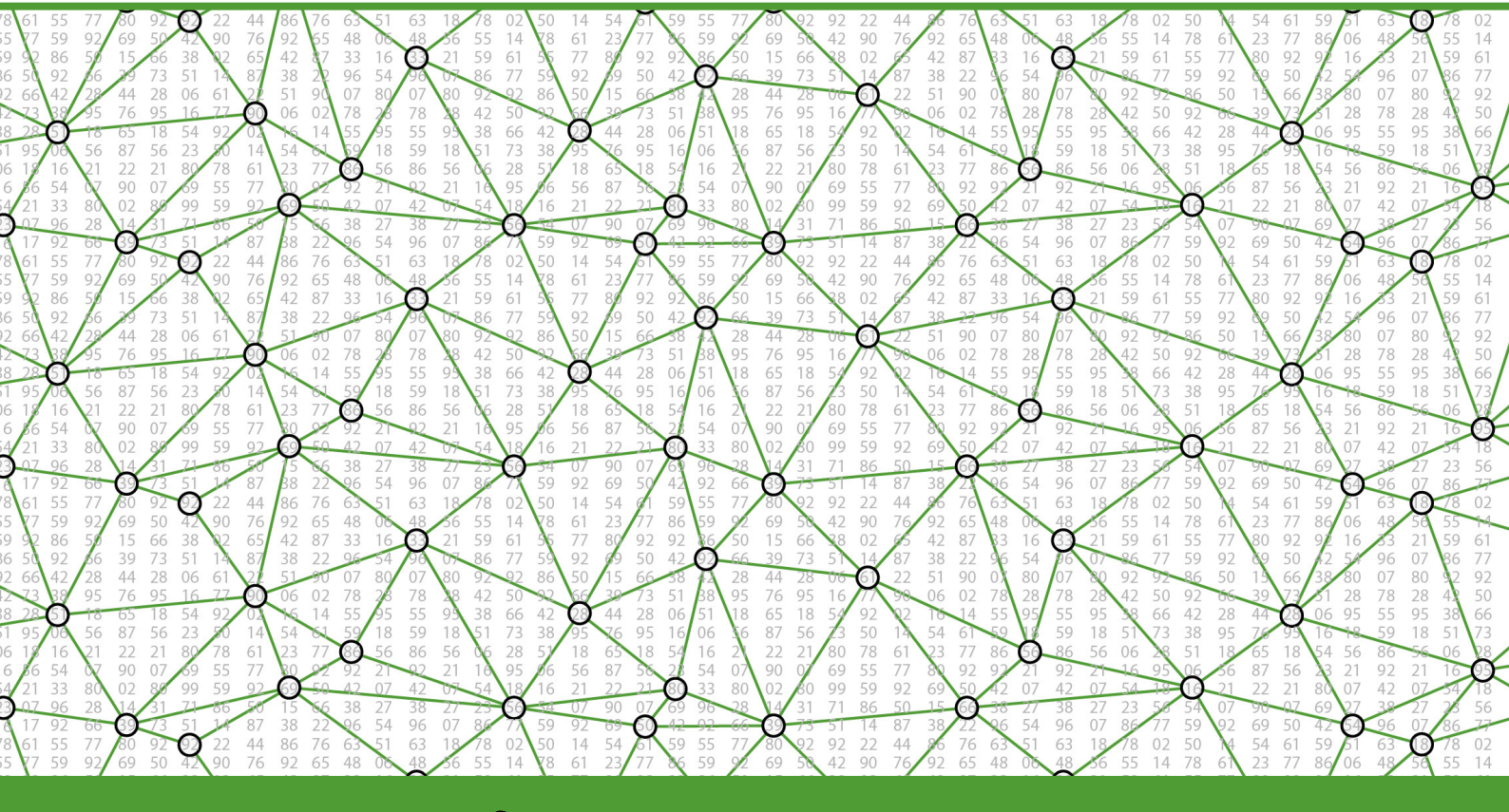
New Frontiers of AR and AI Research for Cultural Heritage and Innovative Design

edited by

Andrea Giordano

Michele Russo

Roberta Spallone



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The via Annia in Padua: Digital Narratives for a Roman Consular Road

Giuseppe D'Acunto
Maddalena Bassani

Abstract

A new collaboration between luav University of Venice and the Musei Civici of Padua was introduced in 2021 as part of the activities of research and teaching of luav University. Its aim is the study and the enhancement of finds preserved at the Archaeological Museum of Padua. This collaboration has also given the opportunity to carry out a series of research on matters related to Padua as a roman city and its urban developments, and on some artefacts preserved in the city Museum. The supervisors of this collaboration are Maddalena Bassani and Giuseppe D'Acunto, professors at luav University of Venice, and Francesca Veronese, director of the archaeological section of the Musei Civici of Padua. In the following paragraphs, we present the first outcomes of this collaboration, which has been particularly promising on several levels. First of all, it has been a fruitful opportunity for luav scholars involved in this project to approach pragmatically the urban and architectural becoming of one of the most important cities of the Roman period of the Veneto region. Secondly, it has enabled to go to the Museum, appreciate the exhibitions, and to face the problems linked to the graphic restitution of finds and ancient environments. This project has also lain the foundations for further collaborations between luav University and the Musei Civici with the aim to encourage the knowledge of an already known – but only partly visible – past, and to make the general public appreciate it.

Keywords

archaeology, digital reconstructions, immersive reality.



The Object of the Research: the Via Annia in the North-Eastern Area of Patavium

The analysis of the particularly stimulating north-eastern area of Padua in its Roman times [1] has been the subject chosen among the various possible topics of study and research offered by the rich and articulated Paduan Museum. This part of the city is characterized by significant monumental and infrastructural complexes because it was crossed by the roman via Annia, which took its name from Tito Annio Lusco, consul in 153 BC [2], who promoted its construction.

The via Annia and its path between Adria and Aquileia have been the object of a long-time interdisciplinary project [3]. This project has allowed not only the publication of various contributions useful for reconsidering known aspects and proposing original [4] ones but has also allowed to analyse in depth and display the remains of the road and the monuments overlooking it in the cities crossed by the road itself and which have an archaeological museum.

An *ad hoc* exhibition about the via Annia in the territory of Padua has been set up inside the Musei Civici of Padua with panels and, in particular, finds that help the understanding of buildings, infrastructures, and funerary monuments that could be seen by those who entered or exited the city via the consular road.

The choice of the north-eastern area of the city was determined by two main factors. Firstly, in this part of the city there are multiple ancient evidence that could therefore be easily accessed by the students in valid and recent publications. Secondly, funerary monuments are exhibited in the Museum and can be studied *in situ* by the students by permission of Francesca Veronese and the staff.

The focus of the first phase of the research was the analysis of the section of the Roman consular road delimited by Porta Altinate and the area of the eastern necropolis along the old road (Fig. 1) [5]. The first steps required a preliminary and essential study of the history of the city and its main evolutionary phases from the urbanistic, monumental, and historic-cultural points of view.

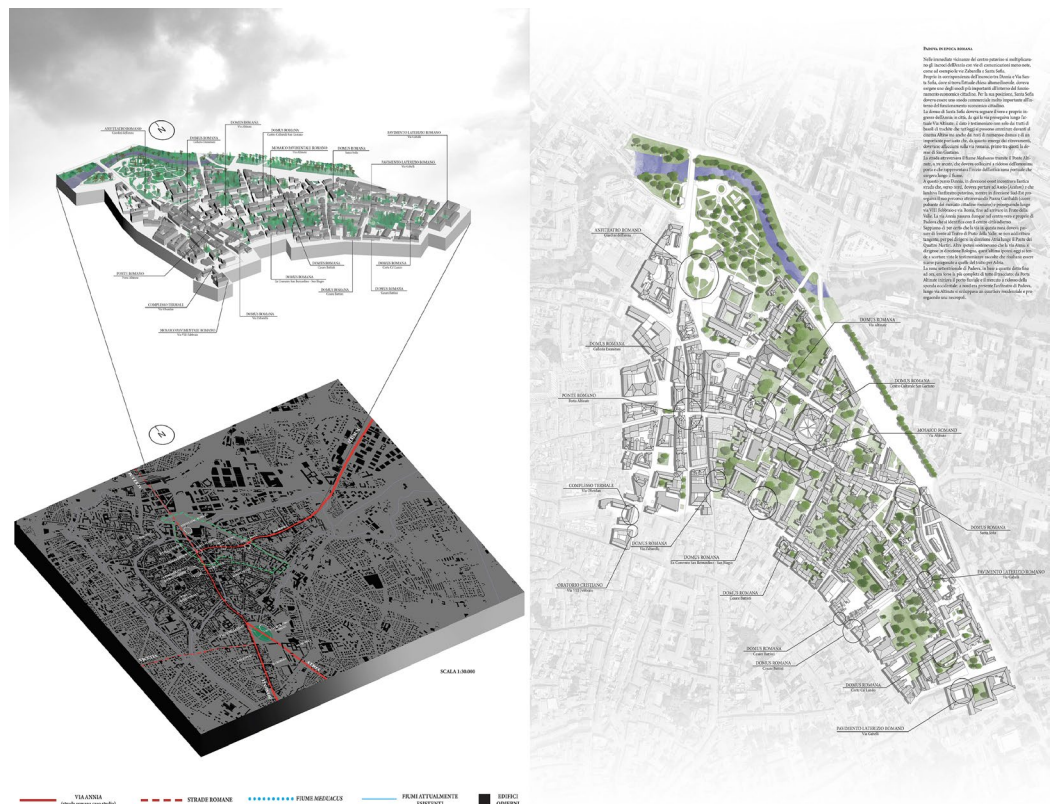


Fig. 1. Reconstruction of the northeastern sector of Roman Padua along the Via Annia. Digital processing by Andrea Maso and Paolo Chiocchetti.

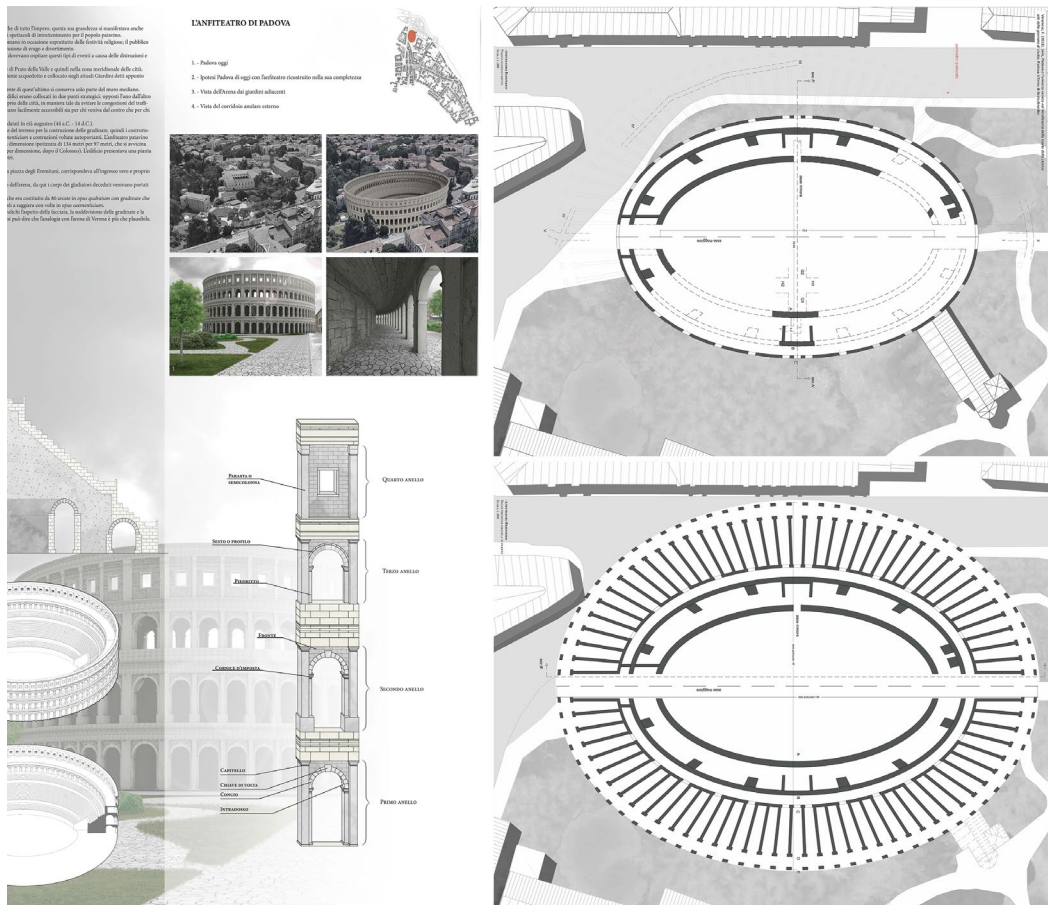


Fig. 2. Reconstruction of the Roman amphitheatre of Padua. Digital processing by Andrea Maso and Paolo Chiochetti.

The focus of the second phase of the research was instead the acquisition of the available bibliographic documentation relating not only to the road in its urban and suburban development, but also to its whole layout in the Decima Regio Augustea. The aim was to understand its peculiarities and recurrences inside the five main Roman centres (Adria, Padua, Altino, Concordia Sagittaria and Aquileia).

Thus, several buildings and infrastructures in the areas of Garibaldi Square and the hospital of Padua were selected and studied in detail. They correspond to five different monumental typologies related to the Roman road. The first one is the Roman Amphitheatre, which is among the main monumental public buildings of Patavium and can be dated to the first decades of the I century AD (Fig. 2) [6]. The second one is the Altinate Bridge which, together with san Lorenzo Bridge, is one of the flagships of the ancient Patavium with relation to civil construction (Fig. 3) [7]. In this area and beyond, towards the ancient city of Altino (from which the bridge and the gate take their name), the research focused on private buildings such as the *domus* – unfortunately only relatively known but with interesting mosaics as floor decorations (Figs. 4-5) [8] – and, above all, on the remains of graves situated outside the urban centre. It is well known that in Antiquity the funerary *monumentum* (from the Latin verb *moneo*, 'to exhort, to remind') was the means through which one's memory could be transmitted to the posterity. It is not by chance that the remains of some of the graves that were lined up along the via Annia in Roman times are multiple and significant. Two of these manufactures, both exhibited in the Musei Civici, have been digitally re-elaborated: a I century AD [9] festooned ara commissioned by Attia Secunda for her husband Manius Cutius Philargurus (Fig. 6), and the famous I century BC stele of Ostiala Gallenia. The latter is one of the most significant finds of the Musei Civici, because it is a tangible proof of the crucial moment of cultural and political transition of Padua from city of the Venetians to Patavium as Roman city [10].

The Digital Actualization of the Research: from the Acquisition of Data to Representation

The research on the via Annia and the collaboration with the Musei Civici of Padua have been a new and interesting chance for Luav University of Venice to reflect once again on the theme of "digital humanities". "Digital humanities" is the digital transposition of reality, also meant as memory of the past, in which it is possible to create new relations and new connections between contents usually distant from one another and based on interpretative methodologies that lead to a reconsideration of the whole cultural heritage.

One of the fields in which this debate is more fruitful is indeed the archaeological one, where new protocols and paradigms are widely applied to digital reconstructions of archaeological models with a strong semantic character and critic interpretative style. In that sense, the rigor of the reading and the interpretation of archaeological data can be expressed in digital reconstructions based on a professional and thorough philological approach and therefore on the critic and informed analysis of trustworthy historic and various sources – all elements that originate an interesting debate and an interdisciplinary dialogue. The digital models created with the above-mentioned approach become a synthesis of different and heterogeneous information, capable of evolve towards a rich and rigorous graphic apparatus long-awaited in the archaeological field. In this specific case, this apparatus becomes the cornerstone of a narration that uses sophisticated digital and interactive systems to express its ability to dialogue with the general public.

As an example, we can sum up the main phases of the digital reconstruction of the amphitheatre. This work fully expresses, maybe better than anything else, the multidisciplinary approach of the whole project and its ambition to offer a complete and unitary representation of the manufact in its original state by transforming the few remains still visible nowadays, obtained with a metric and digital survey, into a digital model that enables to complete the missing parts. In this process of completion, meant as reconstruction in the widest sense possible, the dialogue between archaeologists and designers is essential. The model, in the process of its virtual creation, becomes the object of check and verification by the scholars of the different hypotheses proposed by the critics, who do not always agree on the formal and dimensional aspects of the original manufact.

The critics agree that the Paduan amphitheatre was built in Augustan times. It seems certain that the Paduan arena was meant to be the third biggest one of the whole empire and it was built demolishing a pre-existing water main in the northern part of the city – the current Giardini, which are in fact called Giardini dell'Arena (Gardens of the Arena).

Nowadays only part of the middle wall is visible. This enables to presume the whole planimetric layout and its relative dimensions – an elliptic plan with its major and minor axes measuring respectively 134 and 97 metres [11].

Scholars agree also on the hypothesis that the ordinary plan of the Paduan amphitheatre was similar to the one of the Verona Arena from both the dimensional and the constituent points of view. This theory was particularly relevant during the whole process of digital reconstruction, because the plan was completed with its missing parts thanks to symmetries with the surveyed ruins and the identification of the different concentric and coaxial ellipses that define the perimeters. Then, the totally missing parts were integrated by means of formal and distributive analogies with the plan of the Verona Arena. No element able to envision the original appearance of the façade, the subdivision of the stairs, and the position of the respective *vomitoria* has survived. In this case too, the analogies with the Verona Arena and the estimated data of the plan suggest a vertical building spaced by 80 arcades in *opus quadratum* with stairs supported by a system of cylindrical vaults in *opus caementicium* and by spaces arranged in a radial pattern.

Therefore, similarly to what has been done with all the other buildings that are the object of the present research, the digital reconstruction of the amphitheatre was based on the data of the survey of the ruins obtained from laser scanning and photo modelling, and from formal and dimensional analogies with contemporary buildings that were

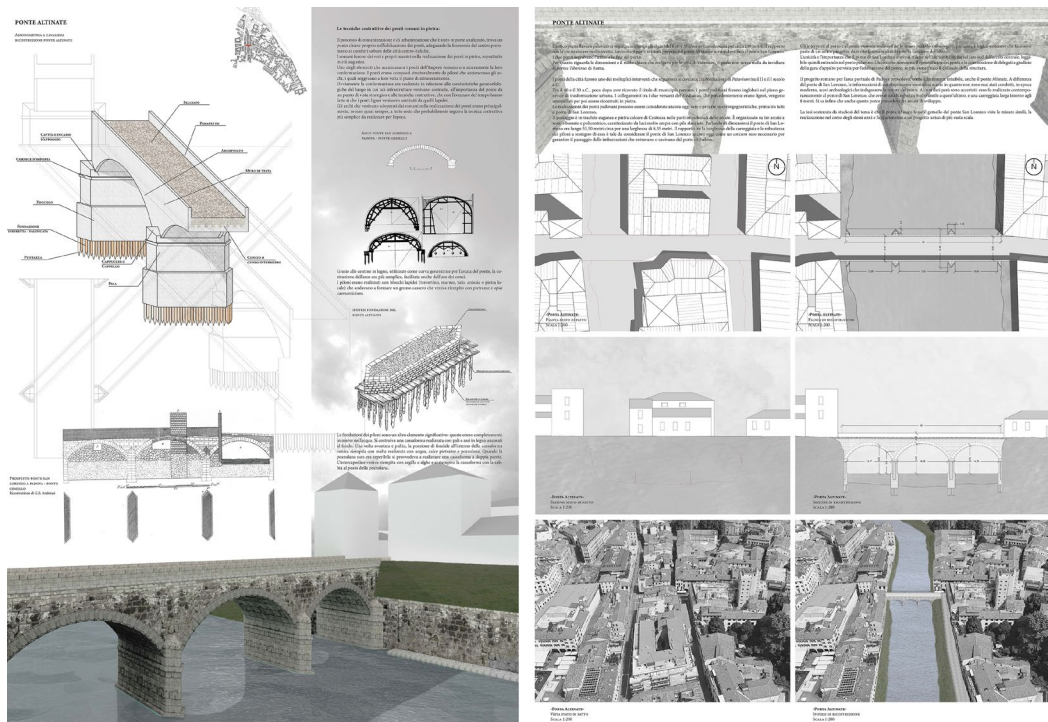


Fig. 3. Reconstruction of the Altinate Bridge in Padua. Digital processing by Andrea Maso and Paolo Chiochetti.

situated in neighbouring places, were of the same typology, and had the same function. In the second phase of the research, which is currently in progress, these digital reconstructions are inserted in a sophisticated explanatory and narrative system that works with the perceptive and sensory mechanisms and exploits the illusory effects generated by the use of various devices. Thus, it allows to turn a chosen space inside the Paduan Musei Civici into an immersive environment able to virtually “immerse” the public in an experience that can enrich and integrate the narrative themes in the real exhibition space each time. In this case, the choice to use immersiveness derives from a thoughtful critic reflection and from a strategy that is coherent with the rest of the exhibition process, where the integration of traditional solutions and “storytelling” merge into a highly effective narration thanks to the ability of those two systems to dialogue and complete each other.

Final Notes

The first steps of this new collaboration between luav University of Venice and the Musei Civici di Padova have therefore enabled not only the realisation of a first phase of the research, but also, and most of all, the prefiguration of further in-depth studies that will be carried out in two different ways. On one hand, new research dealing with the study and the digital reconstruction of other areas of the city and its suburb could be carried out, enabling scholars and students of luav University to approach the knowledge of the historic and archaeological heritage of Padua and to become aware of their perception in view of their professional career. On the other hand, the enhancement of finds exhibited in the Museum could be the means to reconstruct their origin, their complete morphology (if the find is a fragment), and their “history” through time in a broad sense. Thus, it will be possible to give visitors a wider and more articulate narration, both in terms of content and of exhibiting system, of an inscription, a mosaic, or a tomb panel – which could otherwise all be perceived as mute and not attractive manufactures, apart from the “aesthetic” or functional points of view. Ultimately, this collaboration constitutes another piece of the currently wide panorama

regarding digital reconstructions of great contexts and individual archaeological manu-
 facts realised for museums, archaeological sites, or precise excavation sites. Above all,
 an approach towards the study of antiquities that involves different disciplinary fields
 can be developed through this type of research, putting young people in contact with
 the knowledge of the past in order to plan the(ir) future.
 Archaeology and architecture can therefore only be joint partners in the construction
 of the future.

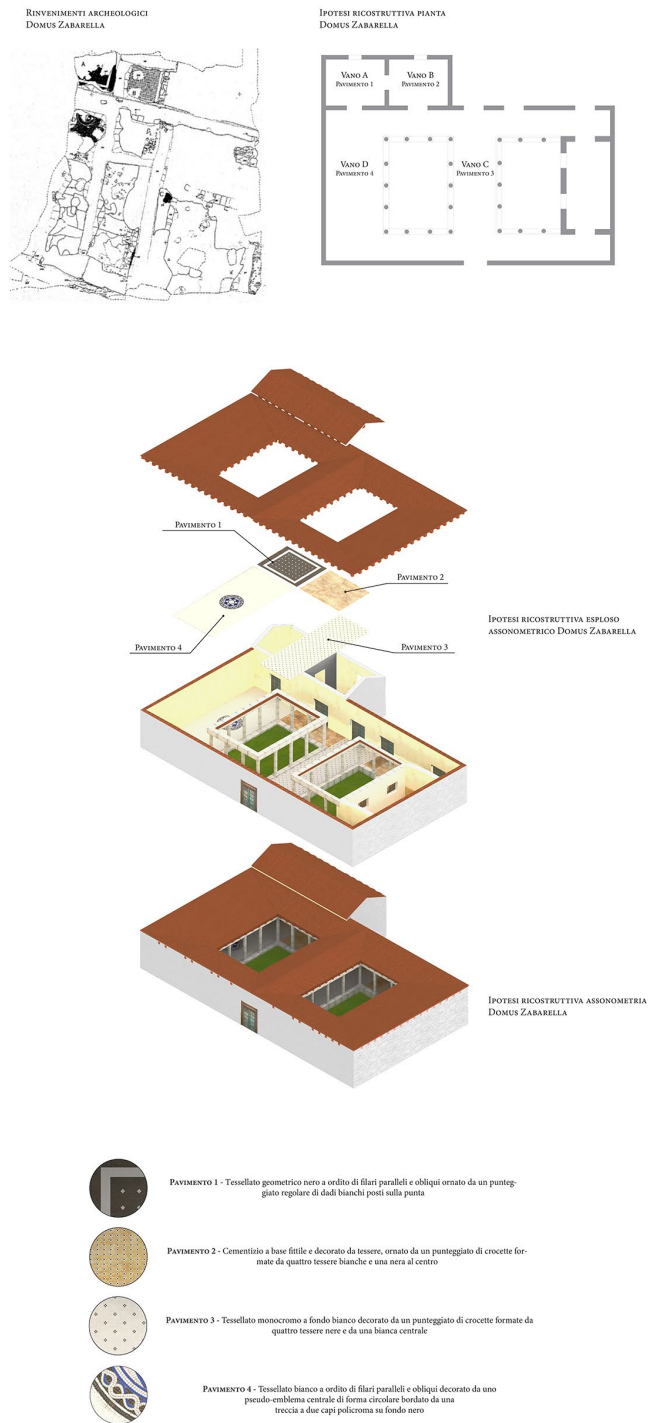


Fig. 4. Reconstruction of the Domus Zabarella in Padua. Digital processing by Andrea Maso and Paolo Chiochetti.

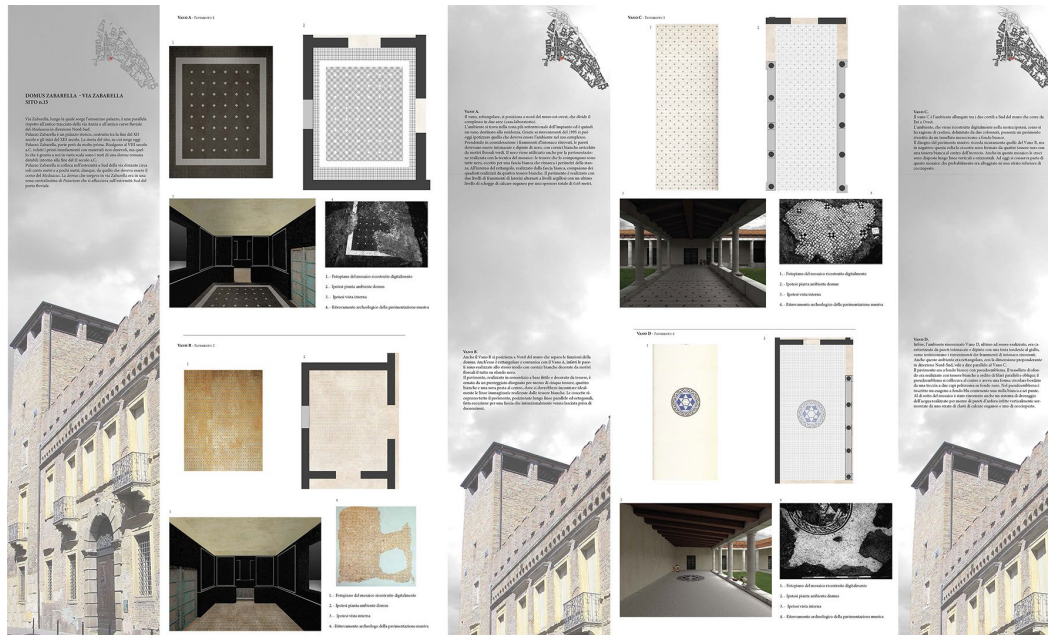


Fig. 5. Reconstruction of the Domus Zabarella in Padua. Digital processing by Andrea Maso and Paolo Chiochetti.



Fig. 6. Reconstruction of the circular festooned altar and the funerary stele of Ostialia Gallenia. Digital processing by Andrea Maso and Paolo Chiochetti.

Notes

- [1] On the history of the city see the concise but recent compendium in Bonetto, Pettenò, Veronese 2017 and Veronese 2018.
- [2] On the reconstruction of the entire route of the Roman consular road, see Uggeri 2012 and 2017.
- [3] The project was coordinated by Francesca Veronese from 2007 to 2010.
- [4] Veronese 2009; Rosada, Frassine and Ghiotto 2010; on the reconstruction of the traces of the Roman road between Altino and Padova, particularly about the urban section, see the contribution of Bassani 2010.
- [5] The research mentioned here and the images in this contribution are taken from the dissertation presented at luav University of Venice for the academic year 2020-2021 titled *L'Annia e la Padova Romana* by graduands Andrea Maso and Paolo Chiochetti in a work dedicated to luav University of Venice for the Master's Degree in Architecture and Innovation, with Giuseppe D'Acunto and Maddalena Bassani as supervisors.
- [6] Bressan, Veronese 2017.
- [7] Galliazzo 1995; Braccesi, Veronese 2014.
- [8] Rinaldi 2007.
- [9] Pettenò 2009.
- [10] Di Filippo Balestrazzi 2012.
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