



**Giuseppe Amoruso**  
Associate Professor at the Department of Design of the Politecnico di Milano, PhD in Drawing and Survey of Building Heritage. He is the author of 170 publications on: representation, architectural drawing, experiential design, digital museology, digital heritage and cultural studies, perspective, architectural survey and BIM, documentation and historic settlement rehabilitation, post-earthquake reconstruction.

## ***The Tale of the Roman Theater of Philadelphia, Amman. Representative and experiential methodology of the theatrical space***

The project aims to present the 3D reconstruction of the Roman Theater of Amman, the ancient Philadelphia of the Palestinian Decapolis, through rigorous representative models. The outcomes will be part of a future exhibition providing site-specific installations and user experience artifacts based on digital interaction and tactile models. The paper illustrates the multidisciplinary approach associated with using 3D virtual reconstruction and game engine applications to reflect on the practice of representing ancient monuments and the digital museology installations. Travelers of the 18th and 19th centuries drafted the fascination of discovery as an experience in their notebooks. At the same time, their written records could address contemporary visitors to an extensive cultural knowledge of places and buildings, the *historia* of Philadelphia. Investigations are shifting scientific models towards a dynamic cultural experience representa-

tive of cultural heritage, including intangible heritage, stories, and new technological paradigms, increasingly rapidly making it possible to duplicate art and heritage. This digital shift is pinpointing the role of representation for cultural studies and humanities, experimenting with practices and tools to drill methodologies, and producing models for interaction design, socialization, gaming, and museum experience.

## INTRODUCTION

The antique Greek word *historíai* (history), which meant “research,” was introduced by Herodotus to describe his method of investigation which until the 4th century BC., was not based on criteria that today we would modernly define as scientific. Herodotus pioneered historiography, that is, the drafting of documents that extensively record facts, stories, and historical periods, a work of collection, processing, and transmission based on the analysis and interpretation of the sources of those events deemed worthy of being handed down to future generations.

Not having libraries and archives, institutions established only in the Hellenistic age, that is, two centuries after the activity of the first Greek historians, historiography had to fulfill, above all a practical utility, demonstrating the educational function as well as inspiring public morality and political action; for this reason there is often no shortage of novelistic and epic elements, considering historical truth not as a priority objective linked to the rigorous reliability of the sources but directing the action to verisimilitude, to the direct taking of stories (rarely verified) through the few written documents. Only later did the word *historia* take on the meaning of investigation, exploration, result of research, and historical work.

Culture, in its contemporary form and society of images and data, is a mainly multimedia but participatory experience of inclusion, social interaction, and political experience if guided by emerging global themes (wars, pandemics, migrations, material loss). (Fig. 1)

Given the growing production, sharing, and cultural participation following the pandemic shock, a significant update of tools and concepts is necessary. Through computer science, cultural heritage has become the subject of new interpretation, understanding, and dissemination forms. In this way, the traditional activities of historical and cultural production and consumption have changed, and a large amount of digital data is available to determine its undisclosed meaning.

*Digital Heritage* is a digital cultural heritage, and



UNESCO sanctions such cultural heritage as an integral part of *Cultural Heritage* (CH) or *Intangible Cultural Heritage*. If the contemporary conception of cultural heritage includes its complex, material, and immaterial nature and if its social representation today is to offer inclusion and accessibility, what are the media that the scholar must use to create interpretative models? In the creative industries sector, for example, the concept of a digital museum emerges and the need to transform environments and contents according to a new functional target: this shift introduces the disciplinary implications in the area of representation and interaction design due to technological innovations, strategies and museography solutions offered by new media. (Fig. 2)

Fig. 1 - Léon-Emmanuel-Simon-Joseph Laborde 1827. Views of the theaters of Amman (Philadelphia) and Jerash (Gerasa) from the author's travel notes (Laborde 1837).

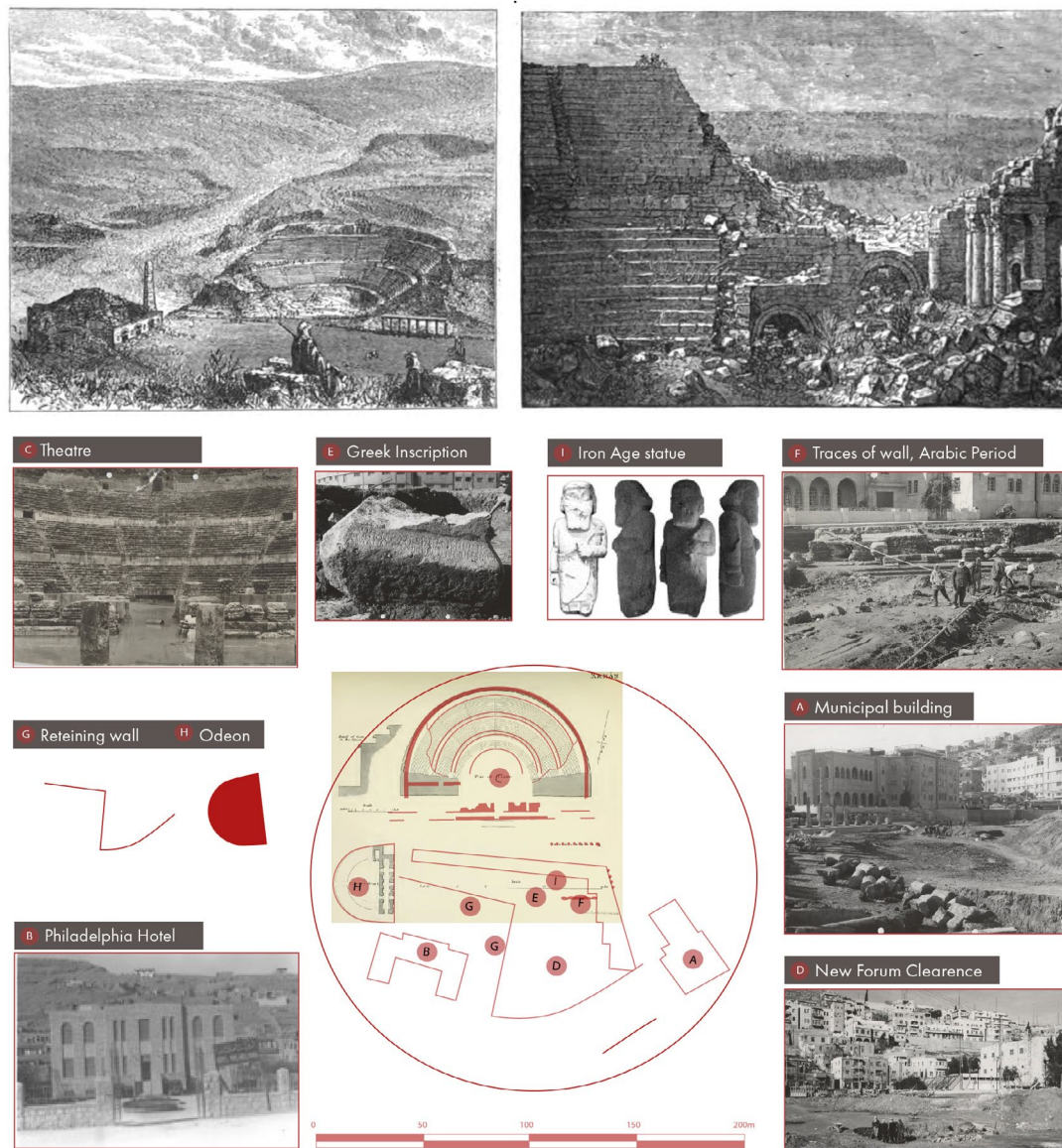
In *Software Takes Command*, Manovich asks “What happens to the idea of a “medium” after previously media-specific tools have been simulated and extended in software? Is it still meaningful to talk about different mediums at all? Or do we now in ourselves in a new brave world of one single monomedium, or a metamedium? What is “media” after software? architects working with the media of 3D computer graphics started to imagine different things than their predecessors who used pencils, rules, and drafting tables”. (Manovich 2013)

## THE THEATRICAL SPACE BETWEEN KNOWLEDGE AND REPRESENTATIVE MODEL

In their stories, Homer and Herodotus amplify the visual imagination of readers who transform themselves step by step into spectators. In Greek, “to read” is “to recognize” (*anaghinòskein*), writes Segal (2012). The Greek culture originated by the theater drama forms a population of spectators, fueling the extended sense of curiosity, its seductive, pervasive power that fuels the desire to see and know. According to Homer, the warrior’s true strength has a visual force, imagining him “splendid to behold,” such as to arouse representations taken from the world of nature and which strike the eye. Similarly, Herodotus selects and describes what is “worth seeing,” *axiothèeton*; his work is an “exposition,” or “description,” *apòdeixis*. How do we pass on what should be worthy of being remembered? Like Homer, Herodotus is interested in preserving the great deeds of men with something verbally equivalent to the monument. In the seventh book of the Iliad, Hector underlines the importance of memory through a material form that materializes in the funerary monument, an object-image of the memory of his adversary that will inspire other words among men of the future. What belongs to hearing remains memorable, that is, capable of resisting over time and still being able to tell a story; what worse fate, according to Homer, was to die without leaving a sign that he could eternalize his life? Time, therefore, is a measure of the ability of scientific representation to make the vision eternal and the experience memorable. (Fig. 3) The survival of memory and the transmission of culture depend on hearing. However, in epic, as in tragedy, sight is the primary field of knowledge that allows the

Fig. 2 - Selah Merrill 1875-1877. Views of the theater of Amman/ Philadelphia y Jerash/Gerasa (Merrill 1881, p. 272).

Fig. 3 - Reconstruction hypothesis of the Forum area, with the most significant hallazgos by part of the Department of Antiquities of Jordan. Reconstructive plan initially based on the discussions of Conder (1889, fig. p. 37), and corrected according to the topographical elevation of Almagro (1988, fig. 2).



most vigorous and articulated representation of emotions (Segal 2012). The vision also dominates the climactic scene of the Iliad. From this knowledge, the idea of describing the theatre was born through the representation of the different experiences to which the spectators were devoted. However, the monument cannot speak alone; it needs a man's voice. Otherwise, it has no story to tell. Visual culture refers to this world of inner visualization, which appeals to imagination, memory, and fantasy. Memory has both a visual and verbal codification and has a link with rhetoric. Psychological notions of vision – inner vision, imagination, dream, and memory – are activated by both visual and literary means. The theater is the place where mass emotion is fully manifested [1]. The primordial one of Dionysus is associated with irrationality, madness, women, frenetic dances and music, and the lability of limits. The other metaphor is that of the mask, which makes possible the mimetic representation of myths in dramatic form, the fusion between different identities, essences, or categories of experience: male and female, stranger and friend, initiate and profane. The fixed gaze of the mask thus becomes central in the theatrical experience as a sign of the audience's willingness to submit to the illusion, to the game, to the fiction, and to pour emotional energy into something fictitious. In this significant power of language, the tragedy redefines the role of the spectator, a forerunner of the modern visitor who can be involved again as an audience in the tragedy [2], in synesthetic metaphors and the explicit harmonization of visual and acoustic experiences in moments of high dramatic value draw attention to this interconnection of different senses. Both the graphic space of writing and the theatrical space of drama depend on creating a field of symbolic activity in which the minor signs can take on the most significant meaning. It may seem paradoxical to associate tragedy, which powerfully combines visual spectacle, music, and poetry for an excited and often noisy crowd of thousands, with the austere, monochrome communication we associate with unspoken literature. (Fig. 4)

However, the power of writing behind the scenes

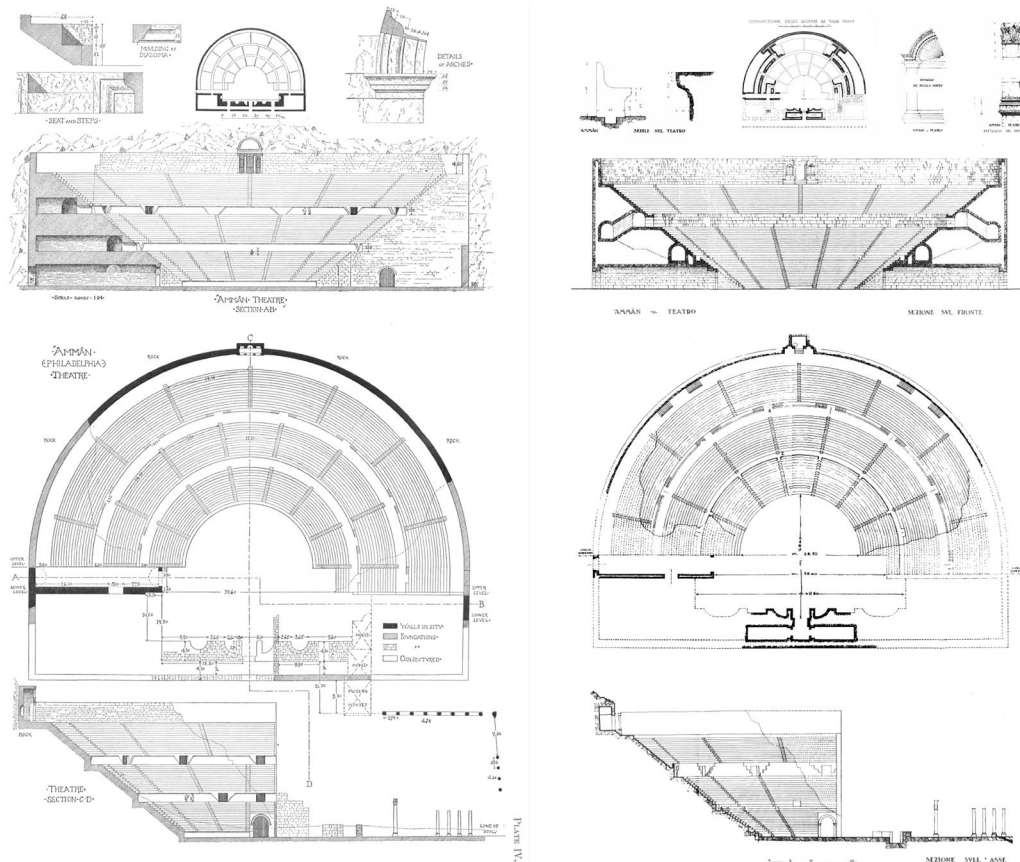


Fig. 4 - Drawing of the Amman theatre by Howard Crosby Butler (1907, plate IV), left. Italian archaeological mission in Transjordan, 1927-1938. Archive "Renato Bartoccini". (Anastasio Botarelli 2015, fig. 287, 289, 303), right

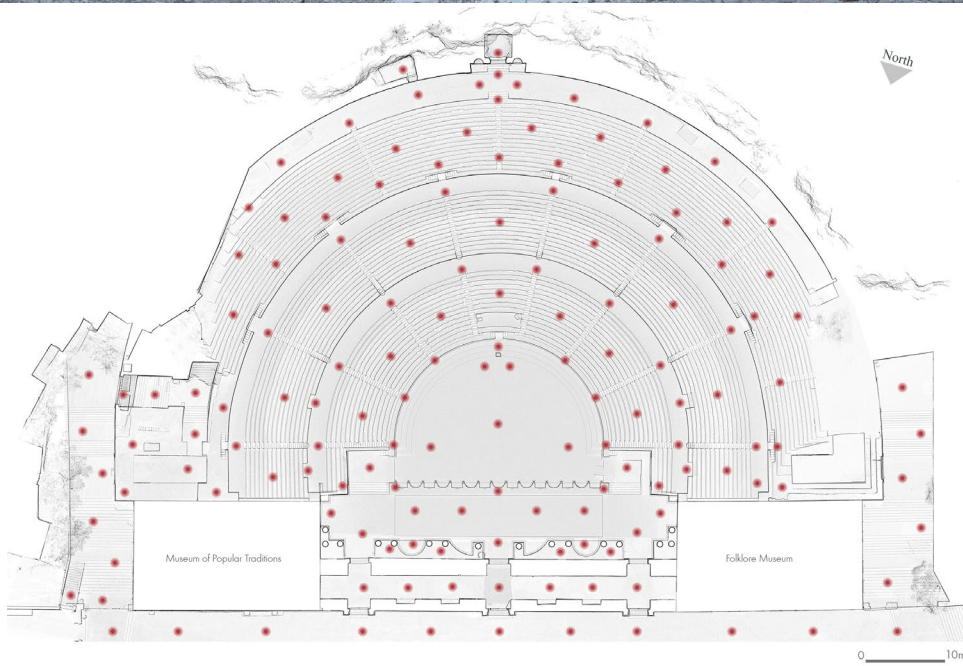
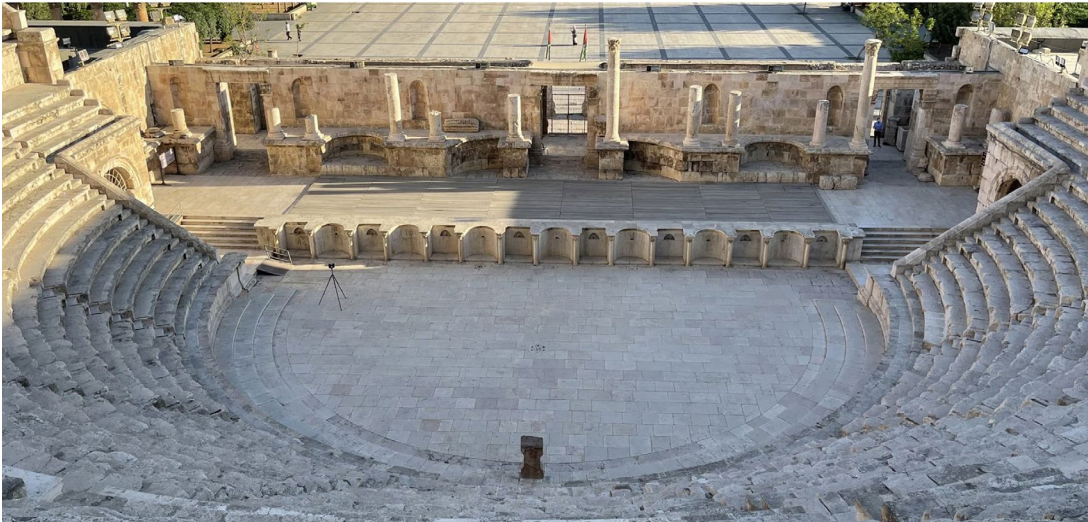
allows vision, discourse, and listening to be organically brought together in multimedia representation. Highly indispensable for the structure of the tragedy: the preordained concentration of a complex action in a highly structured form which manifests itself in a symbolic, geometric, and conventional space, that imaginary space co-existence of what is seen with what is not seen. Anne Ubersfeld distinguishes three categories of

space: the theatrical, that is, the building, the scenic, that is, the acting area, and the dramatic, that is, the space of the text. (Wiles 1997) The interpretative metaphor for the staging and narration of the Roman theatre [3] connects with the theatrical world: the breaking of the fourth wall. The space can be seen as the stage. The guests act as actors and audience, while all the activities within the space make up the show. From the visitor's point

of view, the museum becomes an empathetic place that eliminates the distance between modern people and ancient artifacts. The poetic concept of transforming the museum environment into a multi-sensory exhibition space is abstracted from the idea of scenography in a theater or other interactive places. The term fourth wall indicates an imaginary wall placed in front of the stage of a theater, through which the audience observes the action that takes place in the world of the work represented [4]. This function of “listening” is a mechanism that belongs to today’s media and social media world and is only part of the digital, cultural, and museum experience. In the era of rapid reproducibility of images, the media, according to Boehm, distracts from their essence, excessively shifting attention towards the media aspect of figurative representation. Therefore, returning to that “genuine” figurative essence that dwells in the metaphorical aspects of language can increase the understanding of what is essential in the image concept. In *Iconology* (1986), Mitchell reminds us how, in the representation model of classical Western metaphysics, there are image objects (or images tout court, in the case of mental visualizations) on the one hand. On the other, there are objects of the material world, of which the images are images. Therefore, writes Mitchell, «consciousness is itself understood as an activity of producing, reproducing and representing images, governed by mechanisms such as lenses, receiving surfaces and devices for printing, imprinting or leaving traces on these surfaces.» (Purgar 2020) The research introduces some key concepts: the first is that of the ‘social object’, a concept theorized by sociologist Jyri Engeström in the context of a broader theory called ‘object-centered sociality’ (Engeström 2005) and adopted in the museum by Nina Simon (Simon 2010). Recognizing the importance of artifacts or ‘third entities’ that create processes of conversation and socialization between people who do not know each other, Simon suggests rethinking the objects in a museum’s collection as points of contact for conversation, with oneself (i.e. how inner reflection), with the cultural organization and its staff, and



Fig. 5 - Drawings of the Amman theater, Carlo Ceschi, 1930. Italian archaeological mission in Transjordan, 1927-1938 (Almagro 1983, fig. 11-15, 21).



with the other participants, present and future. In particular, it is important to point out that this process gives technological players a strategic role which enables them to participate in the “multi-level dialogue” both synchronously and asynchronously. When it is impossible to recover the real, it is essential to trigger the suspension of disbelief. The project will select from the variety of social concepts mentioned by Simon [5], those which have an explicit link to interpersonal use. The immersive installation, on the other hand, enables the concept of suspension of disbelief that is to say the imaginative condition in which the individual arises to escape from reality and “enter” the fiction. This concept, which has been central to the performing arts and is typically through immersive installations, also appears in an exhibition or museum context. Typical of the use of theatrical performances but increasingly adopted in the exhibition / museum environment (typically through immersive installations), the state of suspension of disbelief it is induced in the audience through extreme care and coherence of the contextual / scenic elements of the narrated world.

Once it is achieved, a viewer and visitor are presented with an experience of which they can feel as if it were true. This form of total absorption brings learning to an irrational level: the viewer lives the experience, and only consequently finds himself having learned things. The same dynamic is also the basis of ‘gamification’, a technique known as suspension of disbelief in order for users to be able to play an actual character role.

#### THE THEATER OF PHILADELPHIA. A MODEL FOR THE MUSEUM EXPERIENCE

What are the uses and purposes of digital reconstructions, specifically of theatres; who are the recipients? Three-dimensional models and other multimedia products are bearers of incisive messages with a high degree of involvement. In an undeniable crescendo over time, the virtual has aimed to amplify the innate propensity to address

Fig. 6 - Positioning of the laser station during the survey campaign and scanning phase, July 2021.

a large and diversified user base, made up of visitors to archaeological sites, museums, and exhibitions but, especially in recent years, more general users online – many theater reconstructions are available online. [Viccei 2019] (Fig. 5) Often, the graphic reconstruction restores the imagery of a monument and its literary story in the memory of travelers of every era who had introduced suggestions, myths, and images rather than scientific documents. The representative models in the archaeological field are visually experiential, conceived to fulfill a verification and subsequently communicative function, primarily in its visual dimension, synthesis of the apparent oppositions between theoretical model (see writings of Vitruvius), typological (Greek, Roman, a combination of the two) and built. (Fig. 6) Reconstruction examines, checks, and summarizes data, analytically observes conjectures, and visualizes reconstructive issues and inconsistencies. Even more so in these cases, the research path must be clear, on sources, history of studies, graphic and photographic material, and the database easily accessible and consultable. (Fig. 7) At the beginning of the 1980s, Almagro carried out for the first time a comparative study of the surveys of the theater previously carried out [6]. The scholar listed the errors of the reconstructions in detail, highlighting how the reconstructive models in the drawings of the beginning of the century introduced preconceptions derived from the paradigms of classical architecture. [Almagro Almagro-Vidal 2007] According to Mark Wilson Jones, there has always been a tendency to reconstruct the gaps left by the archaeological record by drawing from our “idea” of monument rather than delving into the dimension of the architectural tradition of the ancients, which those monuments had built. [Jones 2000] In particular, Almagro highlights the inconsistencies of the apparatus of corridors accessing the sectors of the first and middle cavea, the details of the first steps of the cavea and of the orchestra and of the pulpitum, i.e., the sectors that remained covered at Butler’s time [7] and Ceschi [8]. The fig-

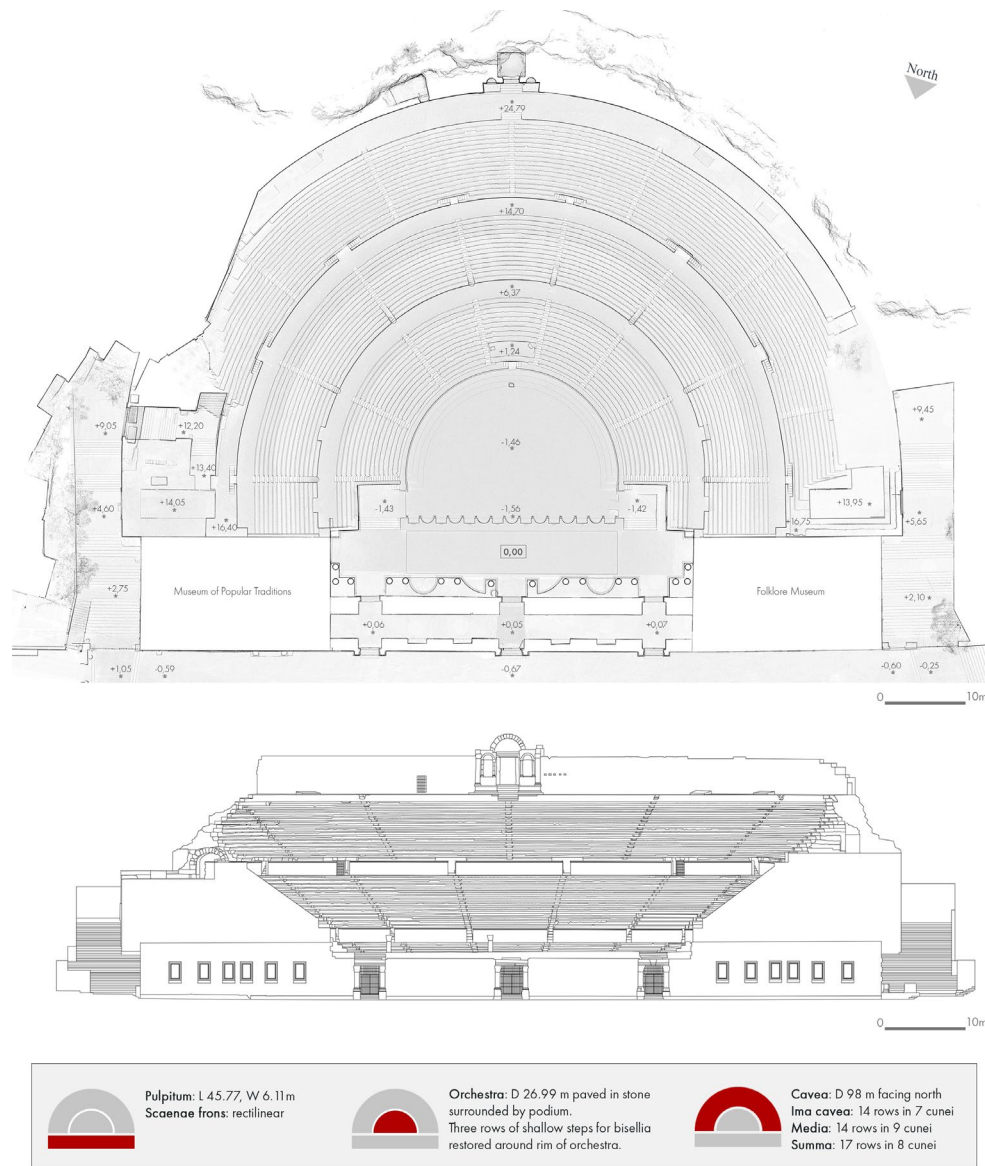


Fig. 7 - Architectural survey of the floor plan and façade of the theater.



orous and scientific digital model includes the 3D metadata of the Theatre building, its components (decorative, epigraphic), and metadata. Moreover, the same model can be used for simulations to test the validity of working hypotheses on statics, capacity, visibility, lighting, use of structures and space, on their functionality. (Viccei 2019) The methodology was applied to the Roman Theater of Amman (former Philadelphia), part of the Decapolis league (Chancey Porter 2001), the largest theater in Jordan with its 6000-spectator cavea. The literature review not provided adequate information and visitors do not have any awareness of the Roman site. The reconstruction of the theatre, which were made after centuries of neglect, have led to a significant impact on tourism and gave rise to unusual additions or new construction technologies. Furthermore, there was a significant failure to carry out reliable surveys [9]. To develop the knowledge model, the principles and recommendations of the 2011 *Seville Charter* were applied [10] and the *London Charter for the*

*Computer-Based Visualisation of Cultural Heritage* (2009). Once the cognitive model was completed, the representations aim to fill the cognitive deficit, complete the collection of sources and documents, and disambiguate the different authors' interpretations. Subsequently, the aim is to produce an updated logical model responding to the typological classification of Greco-Roman theatres and carry out, at the same time, a detailed survey campaign by laser scanning [12]. By graphically highlighting the alterations and inconsistencies resulting from the restorations of the 1970s, it was possible to formulate scientifically validated reconstructive hypotheses that summarize the architectural form of the theater space in a qualified 3D model. Finally, since the "truth," *alêtheia*, in ancient Greek poetry, is associated with "not forgetting," returning the theater to its narrative voice and memory through a procedure based on the expressive form of the place, on that iconological model that the ancient forum of Philadelphia through his spirit,

Fig. 8 - Digital prototype of the Roman Theatre exhibition at the Museum of Popular Traditions: timeline and evolution of the site (right), tactile model of the cavea (left).

can still pass on. To that end, the exhibition will bring to life the profound link between the building and its social importance, between the past and the present, the material and the intangible memory. The project for reconstruction proposes an investigation of three various *Representation Models* in order to produce a digital replica of the theatre. (Amoruso Carioni 2023).

#### *Cognitive Model*

An informative and heterogeneous model is the container of all information, data collection, photographs, papers, documents, and considerations regarding the subject. Such a model fits perfectly within the guidelines of the *London Charter* [13]. The different types of data collected regards notes, reports and archive documents as travelers' descriptions and old pictures that clearly show the area's state at the end of the Eighteenth and beginning of the nineteenth century. Architectural drawings, plans and surveys, archaeological records, comparative studies and data relating to other theatres, which can support the understanding of typological concepts and provide information on the missing parts of the building.

#### *Architectural Model*

A technical and specific model, which talks to the technical drawings and any relevant information. A collection of reconstructions, measured drawings, methodologies and equipment, and analyzer of the state of alterations. The model can be turned into an excellent technical document. Direct analysis, on site measured drawings, and laser scanner data collection were part of the documentation campaign. The direct measurements, including detailed description of the state of the monument, have provided a significant degree of precision in relation to the dimensions of each part. Finally, comparing old and new images pointed out all the modifications obtained during the restoration works. Ideally, this procedure and a correct stratigraphic excavation constitute the base for the reconstruction of the main historical phases of the building: the area before the construction of





Fig. 9 - Prototype of the Roman Theatre exhibition at the Museum of Popular Traditions: tactile model of the cavea with information on the geometric and construction genesis (right), panels with personas storytelling the site (left).

the Theatre); settlement and construction); minor works and structural modification of some parts of the building); loss of structural integrity, abandonment, superimposed buildings; severe injuries, and collapse); reconstruction, restoration, re-use.

#### *Reconstructive Model*

Represents a model of cultural enhancement that enhances the functions and functionality through the *Cultural Heritage and Intangible Cultural Heritage* valorization. A scientific reconstruction is a tool with great cognitive value since it facilitates the management and understanding of complex information thanks to 3D simulations (Demetrescu Ferdani 2021). The reconstruction of the different phases of the building has multiple purposes, primarily, a tool for collecting information for the correct interpretation of the building history by using all the data available. The model is built as a media for the valorization and dissemination of the theatre building in a future exhibition and also designed to be improved as the metadata holder

that will be the digital contents available online to the public audience.

In order to stimulate the sensory perception of historic, residential and architectural spaces, Roman theatre's experience is concerned with applying *Innovative Digital Methodologies for Archaeological Research*. Research challenges are to examine how digital media can perceive the social relevance of spaces through a multisensory perspective, namely sight, hearing, smell, touch and taste. A separate three-step process (research, analysis, acquisition/simulation) was designed at the same time as assembling and completing three representation models.

Each step is associated with completing purposes related to models of representation. The research have made it possible to develop a cognitive model as a sorted catalog, a collection of data and information derived from studying historical sources and the processing carried out over the years. In the past, the lack of this model has led to the publication of inaccurate or incomplete texts and ge-

ometric descriptions. Starting from the logical and cognitive model, updated with the data collected during the survey phase, it was possible to develop a reconstructive model with a very high level of detail and accuracy aimed at a new audience of "spectators and listeners."

Future visitors, "new spectators," will be made participants in a visionary, imaginary, acoustic cultural experience, experiencing, alternatively, the background in the voice of the actors and the spectators according to the different social categories of the polis.

The project, therefore, wants to provoke the experience of ancient human action by recalling the *genius loci* of the theater and translating into images the pleasure of collectively attending a show. The word theater derives from the ancient Greek *theatron*; initially, this word described the spectator, the act of seeing a show, the vision rather than the building. (Fig. 8, 9)

The Greek term for "spectator" was *theoros*, which has the same root as theory, a term referring to the concept of "seeing" (*theoréin*) and, therefore, to watching a show in a theatre, namely the *théatron*. The theatre, therefore, is the place dedicated to emotions, where mass emotion finds its maximum social manifestation.

The theatrical space, in a renewed empathy thanks to interaction and technologies, enhances the role of oral tradition to create visions, images, seductions, and deceptions. Therefore, the significant power of the language of representation and its multimedia forms appears to be the leading scientific theme in the valorization of theatre. The rediscovery of values and meanings linked to intangible heritage and those human stories that nourished it will make it possible to make the cultural experience of the contemporary spectator, citizen, and tourist memorable again.

## NOTES

[1] Plato considers this release of emotions dangerous, and therefore excludes poets from his ideal Republic.

[2] There is a tendency for writings on drama to assume that it is made up of a number of self-evident elements. These will include a text, an author, actors and an audience.

[3] The exhibition is scheduled inside the Museum of Popular Traditions at the site of the Roman Theater in Amman.

[4] The ancient Romans already had the concept of the fourth wall, so much so that some authors of comedies from the 3rd and 2nd centuries BC, such as Plautus, were the first to break the fourth wall, a stylistic technique which involves the inclusion of the audience in the show, which was highly appreciated by the popular audience.

[5] Nina Simon identifies four categories of social objects: Personal, Active, Provocative, Relational.

[6] On the occasion of the preliminary works for the excavation campaign of the Spanish mission at the Umayyad palace in the citadel of Amman (1974-1981).

[7] Howard C. Butler's explorations began in 1899: between 1901 and 1905, the first graphic study of the auditorium and the wall structures of the front of the stage. The cavea is divided into three sectors, ima, media and summa cavea, but the lowest part, the ima cavea, was not visible in Butler's time; the archaeologist's attempt to reconstruct the lower part of the monument caused some significant errors. (Butler 1907).

[8] Between 1927 and 1938 the Italian mission of Giacomo Guidi and then of Renato Bartoccini. In 1930, Carlo Ceschi created some drawings of the Theater and the Odeon, reconstructing a hypothetical system of corridors passing under the auditorium which would have given access to the steps of the three different sectors. These reconstructions are very different from Butler's tracings, integrating them but introducing other hypotheses which were then not confirmed.

[9] A significant phase was that relating to the restoration work of the entire area of the forum, which took place from 1967 to 1970 and was preceded by excavation activities (1964 - 1967) to highlight the first cavea and completely clean the structure. At the end of the restoration, Fawsi Al-Fakharani published the planimetric survey and highlighted the inconsistencies due to the reconstruction (Al-Fakharani 1975).

[10] See <http://smartheritage.com/sevilleprinciples/seville-principles>, accessed 30 Nov. 2023.

[11] Sear, Frank, Roman Theatres: An Architectural Study (Oxford, 2006; online edn, Oxford Academic, 31 Oct. 2023), <https://doi.org/10.1093/oso/9780198144694.001.0001>, accessed 30 Nov. 2023.

[12] The scanning phase required a high number of stations (180) due to the remarkably sunny days with a wide luminous gradient between light and shadow and the particular stepped geometry of the auditorium.

[13] See [www.londoncharter.org](http://www.londoncharter.org), accessed 30 Nov. 2023.

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