

# CITIES IN THE DIGITAL AGE

EXPLORING PAST, PRESENT AND FUTURE

COORD.  
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CITCEM  
CENTRO DE INVESTIGAÇÃO TRANSDISCIPLINAR  
CULTURA, ESPAÇO E MEMÓRIA

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CIDADES NA ERA DIGITAL: EXPLORANDO  
PASSADO, PRESENTE E FUTURO

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# INTRODUCTION/INTRODUÇÃO

ALEXANDRA GAGO DA CÂMARA\*

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The city is by definition a living entity. It translates itself into a collectiveness of individuals who share and act in a material, social and cultural setting. Its history is one of dreams, achievements and loss. As such, it also bears a history of identity. To know the history of cities is to understand our own place in contemporaneity.

The past is always seen through the eyes of the present and can only be understood as such.

Time erases or changes memory through development and disaster. Cities can simply disappear because they lost their status in society, suffered severe catastrophes or transformed themselves so radically that their history is no longer materially traceable. They can also exemplarily absorb the built and cultural heritage through rehabilitation and re-use. Archaeologists, historians, art historians, geographers, anthropologists and sociologists try to decipher and interpret a diverse but comparable amount of data in order to translate remote realities into a contemporaneous discourse. The more interconnected the research is, the more efficient it becomes.

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Digital technology is playing a major role in the study of the city and the preservation of its built and cultural heritage. It allows the collecting, processing and testing of an extensive amount of data in a swift and proficient manner. It also fosters an integrative perspective of the study of the city as it favours interdisciplinary research teams to work collaboratively, often in real time. Digital technology applied to the study of cities and their cultural heritage not only widens the scope of the research, but also allows its dissemination in an interactive fashion to an extensive and diverse audience.

Through the intersection of digital technology with historical practice it is possible to convey a perspective of the past as a sensorial-perceptive reality. The resulting knowledge furthers the understanding of the present-day city and the planning of the city of the future. Cities in the digital realm are, therefore, presented in their historical continuum, in their comprehensive and complex reality, and are open to interaction in a contemporary social context.

This text was the motto for the conference *Lost and Transformed Cities: a digital perspective*, which took place in Lisbon from the 17th to the 18th of November 2016.

This event was successful in gathering researchers with different backgrounds, most of them young authors and professionals, working on the city as heritage/history, communication, planning and education in the context of the interplay with digital technology and its relentless advancement.

A selection of these contributions is presented in this book. This selection allows a threefold outlook on the city and a methodological challenge, i.e. the study of the historic city as the subject of analysis of multiple digital perspectives; the viewing and exploring of the city and its memory as a virtual museum and the impact of the digital on the creation of a contemporary urban identity. These perspectives encompass big cities and small towns; they spread from the South Mediterranean to Central Europe and from Europe to other parts of the world. This book aims for diversity in the proposed fields of research, methodologies, case studies and geography, seeking those lost and transformed cities through a digital perspective.

\* \* \*

Por definição, a cidade é uma entidade viva que traduz um coletivo de indivíduos que partilham e atuam num determinado contexto material, social e cultural. A sua história constrói-se de sonhos, conquistas e perdas, pelo que é também uma história de identidade.

Conhecer a história das cidades é compreender o nosso lugar na contemporaneidade. O passado é sempre observado a partir do olhar do presente e apenas poderá ser compreendido enquanto tal.

O tempo, através do desenvolvimento e da catástrofe, apaga a memória. As cidades podem simplesmente desaparecer porque perdem o seu estatuto na sociedade, são vítimas de terríveis catástrofes ou se transformam tão radicalmente que a sua história deixa de ser materialmente perceptível. Também o seu património cultural e arquitetónico pode ser absorvido através da reabilitação e da requalificação. Arqueólogos, historiadores, historiadores de arte, geógrafos, antropólogos ou sociólogos tentam decifrar e interpretar um conjunto diversificado, mas comparável, de dados por forma a traduzir realidades remotas num discurso contemporâneo. Quanto mais interligada estiver a investigação, mais eficiente esta se torna.

A tecnologia digital tem um papel cada vez mais preponderante no estudo da cidade e na preservação do seu património cultural e arquitetónico. Permite a recolha, processamento e experimentação de um conjunto significativo de dados, de um modo rápido e eficaz. Também permite que equipas multidisciplinares trabalhem de forma colaborativa, geralmente em tempo real. A aplicação da tecnologia digital ao estudo das cidades e do seu património cultural não só alarga o âmbito da investigação, como também contribui para a sua disseminação de um modo interativo para um público mais alargado e diversificado.

Através do cruzamento da tecnologia digital com a prática histórica, é possível transmitir uma perspetiva do passado enquanto realidade perceptivo-sensorial. O conhecimento resultante faz avançar o entendimento da cidade de hoje e o planeamento da cidade do futuro. Assim, as cidades no domínio digital são apresentadas no seu *continuum* histórico, na sua realidade compreensiva e complexa, abrindo-se à interação com o contexto social contemporâneo.

Este texto serviu de mote à conferência *Lost and Transformed Cities: a digital perspective*, que teve lugar em Lisboa, de 17 a 18 de novembro de 2016.

Esta iniciativa conseguiu reunir investigadores de diferentes áreas, a maior parte dos quais jovens autores e profissionais que trabalham sobre a cidade como património/história, comunicação, planeamento e educação no contexto da dialética com a tecnologia digital e o seu avanço inexorável.

Uma seleção destas contribuições é apresentada neste livro. Da seleção resultou um triplo olhar sobre a cidade e um desafio metodológico: o estudo da cidade histórica enquanto objeto de análise de múltiplas perspetivas digitais; a observação e exploração da cidade e da sua memória enquanto museu virtual; os impactos do digital na criação de uma identidade cidadina contemporânea. Estes olhares espraiam-se pelas grandes cidades, como pelos pequenos aglomerados urbanos; pelas cidades mediterrânicas do Sul, assim como pelas do centro europeu; pelas urbes europeias, mas igualmente pelas de outros continentes. A proposta que aqui apresentamos pretende ser assim multifacetada, nas disciplinas, nas metodologias, nos objetos de estudo, nas geografias, procurando essas cidades perdidas e transformadas através de um olhar digital.





I

THE HISTORIC CITY:  
FROM 2D TO VIRTUAL AND  
AUGMENTED REALITY/  
A CIDADE HISTÓRICA:  
DO 2D À REALIDADE  
VIRTUAL E AUMENTADA



# PROJECT ÉVORA 3D: RESEARCH, METHODOLOGY, RECONSTRUCTION AND VISUALIZATION

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## INTRODUCTION

The Évora 3D project was born from the collaboration between the Municipality and the University of Évora, through the two research centres of CIDEHUS<sup>1</sup> and CHAIA<sup>2</sup>, with the objective of completing a virtual reconstruction of the city in a long-time frame. In the national and international context, the use of new technologies has led to the diversification of this type of proposal, both at the urban level and in the reconstruction of concrete spaces. The application of this same model to Évora, contemplating several chronological layers, seems to impose itself in a city that, in the medieval and modern periods, was one of the most important of the kingdom, as Court city, and that today is classified as World Heritage Site.

Évora's Municipality began this pioneering work with the proposal of the 3D model of the Islamic city (Yábura), finished in 2015 and that led to an archaeological exhibition (Figs. 1, 2, 3, 5). It is intended to continue the project, in a broader collaboration and in a broader chronological perspective. At the moment, the proposal explores the reconstruction of the medieval period, considering two chronological layers (14th

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and 15th century). The work methodology, which will be repeated for the other chronological periods, starts from a database, defined by the working group, and focused on the definition, characterization and location of properties (built and not built). For this purpose, a systematic survey of primary sources is carried out in Évora, which will later be complemented by the insertion of data related to the archaeological survey.

The project underlies the fundamental idea of a more in-depth knowledge of the city in the different time frames, implying a systematization of numerous studies already carried out, a methodical survey of primary sources and archaeological data, coupled with a spatial interpretation of the city itself. A double strand shapes it, as it was mentioned: the urban evolution and the socio-economic dynamics, connecting the people to the spaces. In this sense, and in the broader view of the project's design, the complementarity of resources and the combination of scientific and technical knowledge of the Municipality and the University, through its two centres, CIDEHUS and CHAIA, largely grounds the pursuit of the proposed objectives.



Fig. 1. Exhibition space of the Islamic city (Yábura), 2015



Fig. 2. Video of the reconstructed Islamic city in the main exhibition area



Fig. 3. Screenshot of the reconstructed environment of the Islamic city

## RESEARCH METHODOLOGY: HOW CAN MEDIEVAL DOCUMENTS HELP URBAN 3D DIGITAL RECONSTRUCTION?

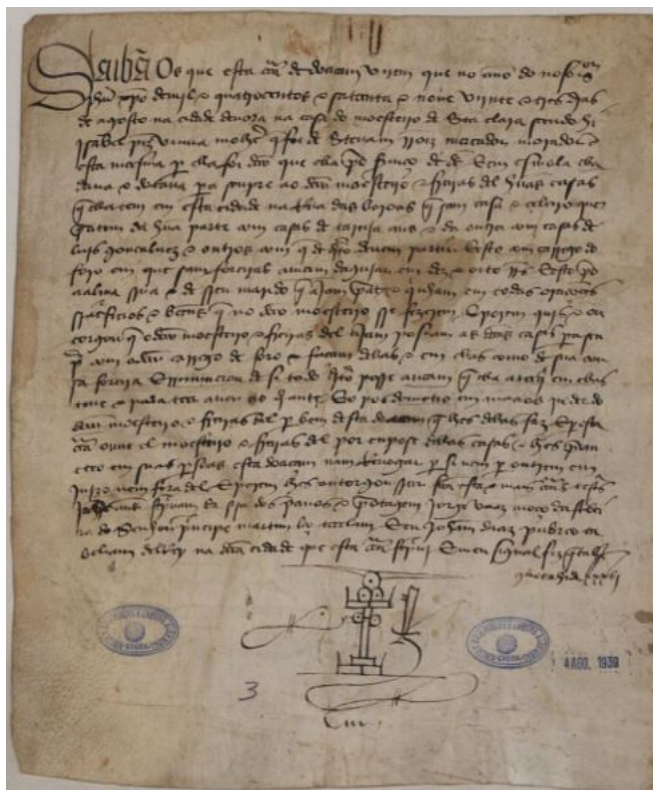


Fig. 4. Scan of one of the archival documents



Fig. 5. Screenshot of one of the houses of the Islamic period

For the medieval period, archival documents (Fig. 4) constitute the comprehensive basis of the research methodology intended to complement and broaden the archaeological and other data from the urban space. A systematic research was carried out in the archives of Évora, in the National Archive (Arquivo Nacional da Torre do Tombo, Lisbon) and in the collections of published primary sources. The elements were then inserted in a database outlined by the team of this project. The property and its owners/tenants were the focal point of the analysis. In this sense, a wide documentary typology was used, privileging notary documentation related to patrimony — rental contracts, deeds of property partition, sentences involving real estate disputes, donations — but also including wills and different records from the municipal and royal administration.

A sole contract (Fig. 6) provides a typology of the property (e.g. house, cellar, oil/wine press, stable, backyard...), its location and its confrontations, allowing the identification of several other assets that can be cross-checked with further documents and spatial references. It also provides the names and sometimes the social status or labour occupation of its owners, tenants and even neighbours.

#### Example 1

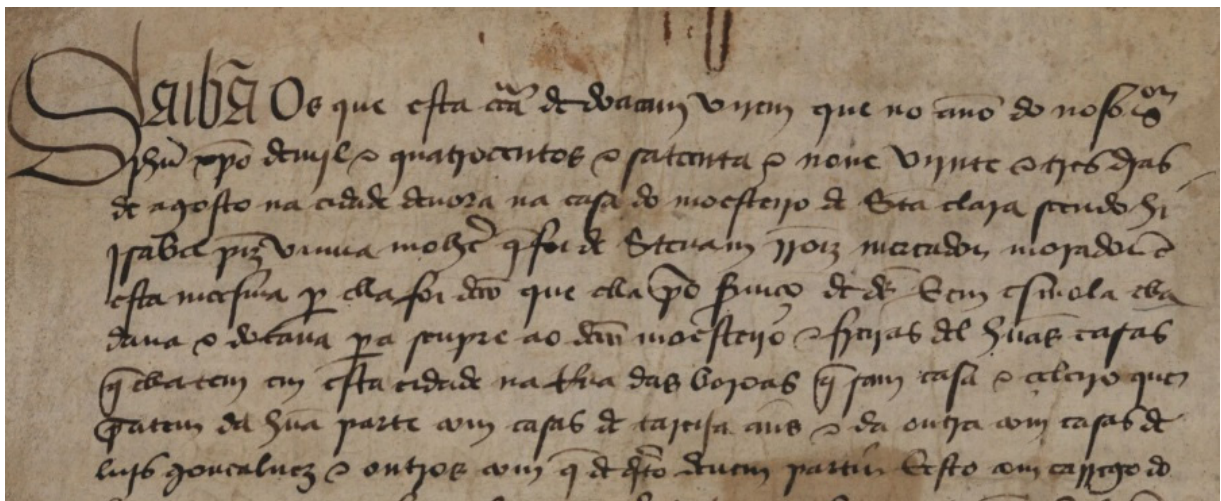


Fig. 6. Scan of a part of a sole contract that provides a typology of the property

Évora, 1479-08-23 — Biblioteca Pública de Évora, *Pergaminhos Avulsos*, pasta 14, doc. 79

Line 4: «Isabel Peres, widow from the merchant Stevam Rodrigues [...]»

Lines 6-8: «houses/that she has in this city, in the Street of Boroas, which are house and barn that/are limited, from one side, with houses from Tareija Anes and, from the other, with houses of Luis Gonçalvez [...]»

These elements were individualized into two major database sections: Document (identification, date, typology and abstract) and Property (typology, location — see



Example 2 [Tab. 1], dimensions, description — see Example 3 [Tab. 2] —, owner and tenant, with the reference of the respective social status or/and labour occupation — see Example 4 [Tab. 3]). In this relational database, the ID (primary key) of each property is linked to a pre-defined thesaurus related to zones, materials and architectonic elements to identify, as accurately as possible, the space and to enable a texture mapping of the virtual world (see below «Editability of architectonic elements»).

Example 2

<b>Tipo estrutura</b>	<b>Localização</b>
Casas	Rua de João Airas, à Porta do Moinho de Vento
Bens de raiz	Rua de João Airas, à Porta do Moinho de Vento
Bens de raiz	Rua de João Airas, à Porta do Moinho de Vento
Azinhaga	Rua de João Airas, à Porta do Moinho de Vento
Pardieiros	Bairro de São Mamede
Casas	Bairro de São Mamede

Example 3

<b>Tipo estrutura</b>	<b>Localização</b>	<b>Dimensões</b>	<b>Descrição</b>
Casas	Rua da Freiria	A casa dianteira mede 7 varas e terça de longo e 4 varas em ancho, tendo as mesmas medidas a casa de cima; o celeiro mede 5 varas e meia de longo e 4 varas escassas em ancho, tendo as mesmas medidas por cima	Casas derrubadas, na Rua da Freiria, foreiras ao Cabido, que partem de uma parte com casas de morada de Constança de Vila Lobos, da outra com quintal de Pêro Jusarte, por trás com casas do dito Pêro Jusarte. A casa dianteira deverá ter sido sobradada, pois tem uma escada de tijolo e uma chaminé redonda; o celeiro tem uma janela pequena para trás, sobre as casas que vão de trás

Example 4

Enfiteuta	Estatuto/Profissão
Judas Ruivo	Alfaiate, judeu
Isaac Braguel	Judeu
n/a	n/a
Gonçalo Vasques e Maria Afonso, sua mulher	Mercador
Gonçalo Afonso e Maria Martins, sua mulher	Hortelão
Diogo Gonçalves e Margarida Mendes, sua mulher	Escudeiro
João de Vilares e Margarida Lourenço, sua mulher	Almocreve
João Fernandes Ravasco e Leonor Eanes, sua mulher	Azeiteiro
Pedro Anes e Joana Martins, sua mulher	
n/a	Trombeta
n/a	n/a
Rodrigo Eanes	n/a
	Vendeiro

The primary written sources and the related database are therefore instrumental components to analyse the urban evolution and the socio-economic dynamics, connecting people to spaces. Digital models represent *memoryscapes*, since «it is not the disappeared cities which are recreated, but the memories retained from them through the available documentation and their present interpretations»<sup>3</sup>. So, the aim to recreate the memories of the urban fabric of Évora, minimizing the degree of hypothesis, goes side by side with the relation with the human element. It's intended, for example, to define and visualize the artisanal and/or commercial areas, the popular streets *vs.* the ones of the elite, the aristocratic zones and the minor quarter of the main landlords' patrimony (king, bishop, churches, monasteries, military orders, council, confraternities)<sup>4</sup>. Furthermore, the different stages of this 3D project, even for the Middle Ages, provide the evolution of both the urban space and the socio-economic dynamics.

Nonetheless there are limits and difficulties that require selection criteria. The city is an organic element — it grows and suffers constant transformation. Non-built spaces are transformed into buildings, the functionality of structures often changes, the itinerary of the streets is altered and new ones gradually take shape — among many other possible modifications. And all that can occur within a short period. To recreate a 3D urban environment is not only to crystallize the memories of a chosen moment but also to select sources within a credible, informed, critical, and logical framework that must be visible and understandable for his «readers». In short, historical methodology is as valid for this multidisciplinary approach as for in any other study of a strictly historical subject.

<sup>3</sup> MURTEIRA *et al.*, 2017: 79.

<sup>4</sup> These data will broaden and complement general studies previously published about the medieval city, namely BEIRANTE, 1995 and CARVALHO, 2004; CARVALHO, 2007.

## DIGITAL RECONSTRUCTION

In terms of the approach to the modelling part of the project, the different time frames lead to different strategies, also dependable on the amount of knowledge available regarding a specific urban space or time frame.

As such, what defined the Islamic city of Évora is not what is considering, in its micro scale, when modelling its Roman counterpart, let alone its medieval layers. For these last ones, the attempt was to minimize the degree of hypothesis, accepted in its majority for the centuries that preceded it. However, the overall research enabled the imperative of the fixed points, or historical focal points (Fig. 7) in the urban space, such as the medieval walls or the structure of the Roman Temple. Like all virtual reconstructions, the tools to provide an accurate (as best as possible) model need to confront archaeological information, document data and establish a series of comparative analyses, to enable a visual correspondence to other known sites.



Fig. 7. Historical focal point

A new workflow includes the reconstruction of the city in a modular manner such as that the first imprints of the building will be modelled with traditional 3D tools, however different architectonic elements will also be modelled separately so that they can be used and swapped when more research is made.

Despite the aim being the full-scale reconstruction, to provide the sense of the sequential growth and adaptation of the urban space of Évora throughout time, the specific areas in which the knowledge can provide a greater detail to the model, the team decided to enhance certain areas, not only for visual concerns, but also in a pedagogical form.

It was always understood that there will be «blank areas», in which the information possessed is close to none. When in that, the applied imagination requires a solid basis

for proposal of an urban setting, without removing the hypothesis from the context in which it lies (Fig. 8).

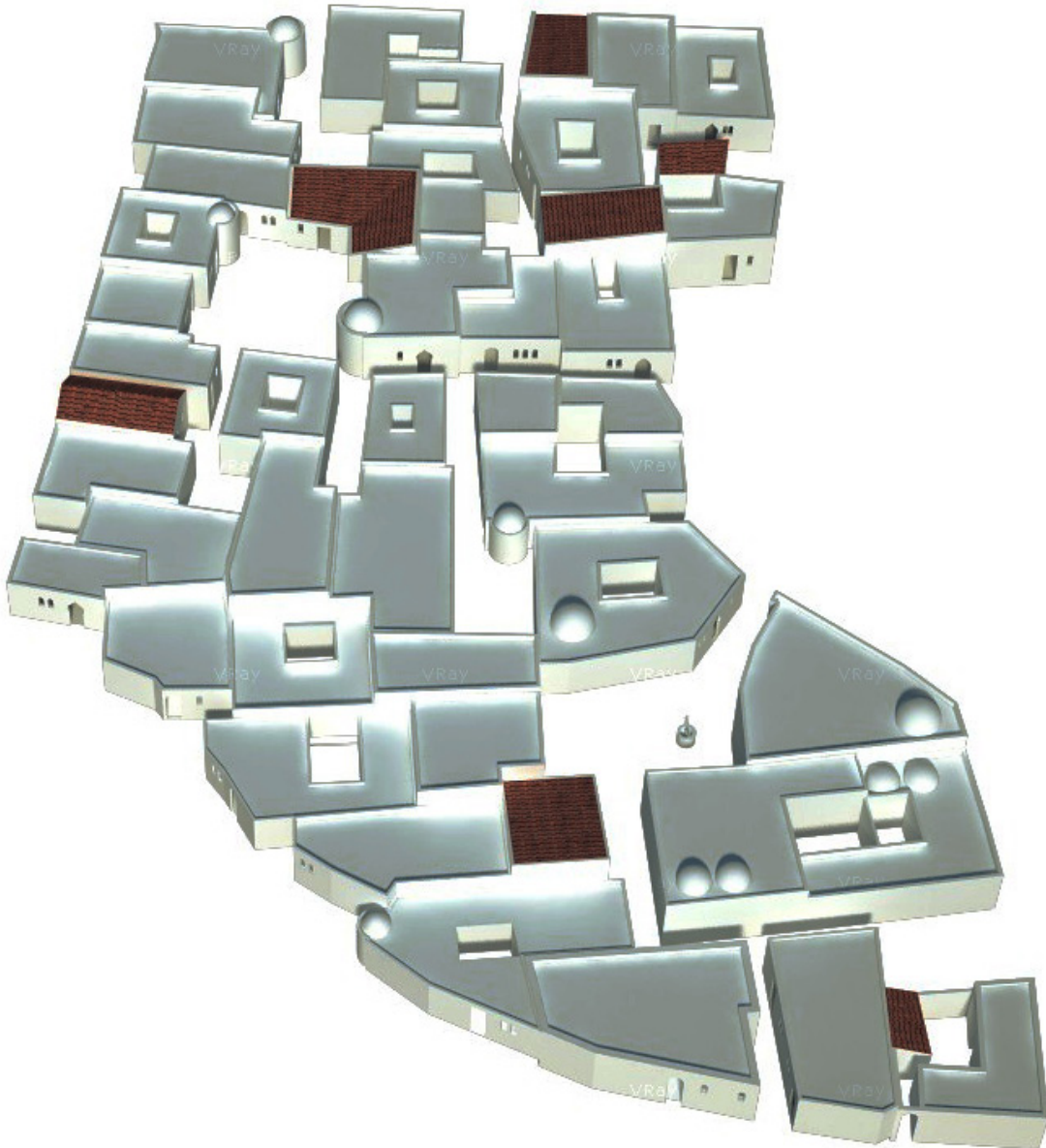


Fig. 8. Screenshot of the modular approach for modelling the houses

Apart from the raw modelling parts, the project also involves a solid texture mapping of the virtual world, gathering the information available about old techniques, not only in terms of roofing and stucco, but also in the fields of limestone pigmentation, types of wood used, and especially the survey regarding mural paintings, particularly important when considering the time frames from the 15th century onwards.

As such, it is particularly interesting to understand that despite the attempt to connect all the different models, within their specific time frames, it is also mutable the visual aspect of its own representation.

The final model of the Islamic city is rather different than the one of the Roman city (Fig. 9), and the first attempts to model the medieval city also lead to different decisions in terms of visual tools.

The amount of software required to achieve the desired effect that can also lead peacefully to the divulgation strategies, compiles an all-around project, in terms of the modelling phase. To counterbalance the «blank spaces» and the decision to allow space for some creativity and imagination, one of the team's strategies is to adopt the Archaeological and Historical Evidence Scale, developed by César Figueiredo and Pablo Aparicio Resco (Fig. 10), in which a colour scale is attributed to the totality of the model, to show the degree of knowledge about each specific area. This can be considered a visual response to the guidelines proposed in the London Charter<sup>5</sup> and the Seville Principles<sup>6</sup>.



Fig. 9. Map of the difference in the layout between the Medieval and the Roman city

<sup>5</sup> *London charter for the Computer-Based Visualization of Cultural Heritage*, 2014.

<sup>6</sup> *Principle of Seville*, 2011.



### ESCALA DE EVIDÊNCIA HISTÓRICA/ARQUEOLÓGICA (PT) v2

Escala de cores correspondente à evidência histórica ou arqueológica dos elementos representados na arqueologia virtual.



Fig. 10. Archaeological and historical evidence scale

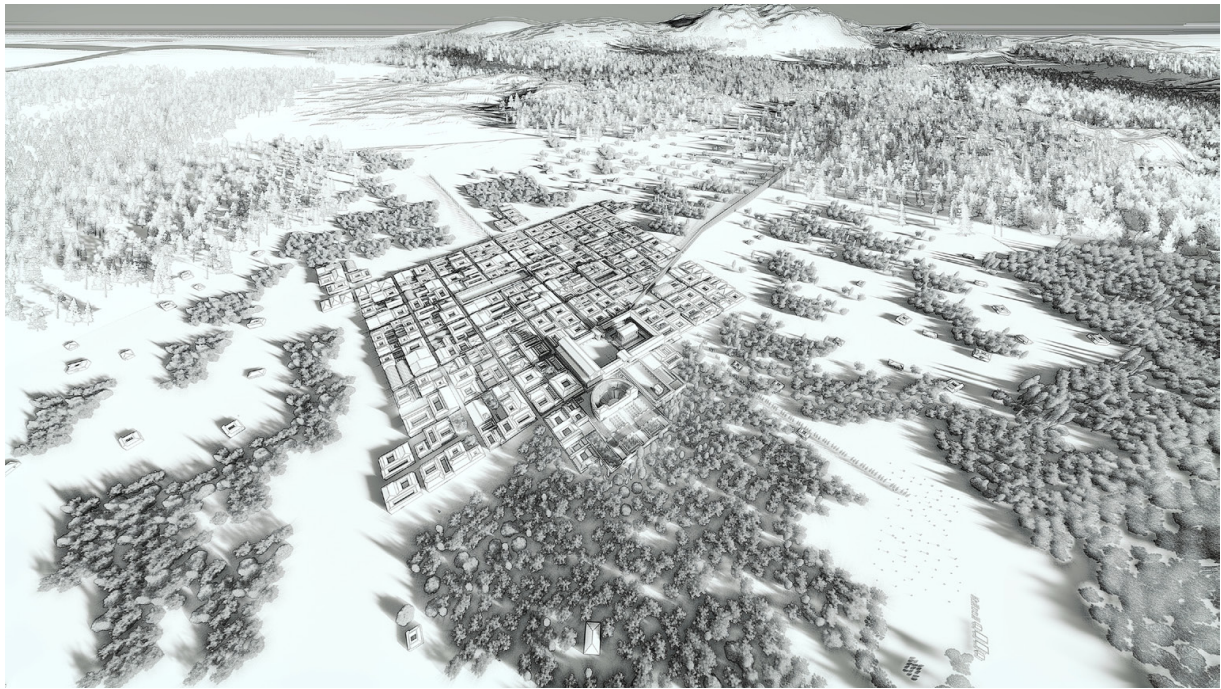


Fig. 11. Screenshot of the recreated Roman city

## VISUALIZATION & DIVULGATION

In the last decade, the production of 3D visualizations in heritage for public dissemination has grown exponentially. The rises and the evolution of many different tools, for the documentation, the creation and the publication of this type of contents, has helped the production stage of many projects that otherwise would remain entangled in a more academic environment. This has certainly brought a positive public response in the educational field of cultural digital heritage. For example, more appreciation by a younger audience due to the use of a familiar visual language found also in commercial videogames<sup>7</sup> (Fig. 11). However, 3D visualization and VR environments in Cultural Heritage have also brought some issues such as the use of excessive spectacularization pointed out by Daverio<sup>8</sup>. When dealing with cultural heritage virtual environments a distinction must be made: although virtual archaeology is certainly an important tool for scientific research, when translated into CGI and real-time applications for the public, it needs to be addressed not only with scientific methods but also with new specific visual languages<sup>9</sup>. On the other end, to sustain the final product for a long period of time the constructed model must also be sustainable. By rendering only a single virtual tour or even several, this remains difficult, expensive, unsustainable and most of all can only show one perspective, the one of the person that composed the shots sequence. In most

<sup>7</sup> MALONE & LEPPER, 1987 *apud* ANDERSON *et al.*, 2010: 255-275.

<sup>8</sup> DAVERIO, 2013: 14.

<sup>9</sup> SCHIAVOTTIELLO *et al.*, 2016.

of the cases this factor accentuates the emotional effects if done properly, like in a film or first-person modern videogame sequence. However, it does not leave too much space for public interpretation, updatable contents and scientific debate.

In this research, we aim to overcome this problem by proposing a new methodology for the final publication of the cultural virtual space. We aim to achieve this by proposing a method that makes use of modern 3D interactive techniques found in commercial videogames but adapted to specific needs for virtual heritage environments.

Project Évora 3D has been chosen as a case study for the experimentation of this new type of workflow that will be implemented once the full 3D reconstruction of the medieval city is completed.

As a container of the final hybrid model we will use a virtual interactive environment, built with traditional videogames engines such as Unity 3D. However, at this stage, an extra layer will be added on top of the final application. This layer can only be accessed by special users such as museum curators, historian and academic content creators. These types of users cannot modify the basic underline structure of the city, such as for example the position of the houses and their dimension, however they will be able to access many other editing capabilities. The platform will explore the implementation of different basic features, such as the possibility of tuning the natural environment by changing the weather, the time of the day and the background sound. However most of the work is concentrated in developing three major features that will permit the inheritance of updatability and sustainability of the virtual environment. These are: rapid historical contents creation, editable architectonic elements, and virtual tours to propose an emotional experience as well as scientifically valid.

### **Historic content creation for the public**

VR environments are mere doomsday like environment without its corresponding historic contents, at the best we can say that are tools of wander<sup>10</sup>. To appreciate their value and to gain some knowledge about the topic that they propose, the final user must be able to query all the existing elements that are present within the historical 3D reconstruction. We recognize, of course, that attaching information to each single element is a difficult task when dealing with project deadlines and uncertainties. Therefore, we think that leaving this task to the experts such as historians, archaeologists, museum curators and the academic editors rather than the designers is probably the best possible solution. This is very difficult to achieve when the creation tools are specifically designed for a technical user. With our added new layer on top of the final application the non-specialist user will be able to insert contents directly attached to a certain visual element. This can show up in three different manners: as textual descriptions at

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<sup>10</sup> FARAGO, 2017.

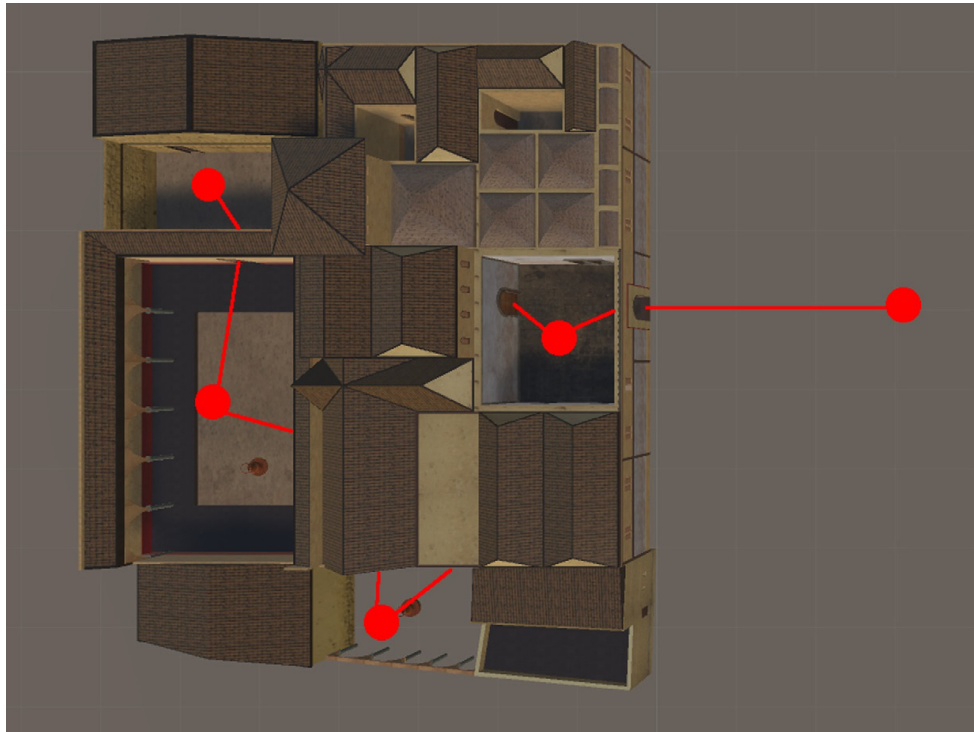


the bottom of the main application's window, as an audio overlay and finally by using a virtual character that can describe the chosen element and count its history when the public interacts with him/her. The choice of these three different forms will be left to the content creator and not the designer of the application.

### **Editability of architectonic elements**

This feature will be implemented with a textual interface that will permit to swap the architectonic elements and their intrinsic features (such as colours and textures) by choosing them from a pre-built-up thesaurus. This pre-compiled dictionary, which will be specific to this project, is linked to an XML-schema that describes the architectonic elements themselves. The choice of an element will be pursued directly within the textual description by tagging words, the file will be saved in a XML format that the 3D application will be able to read and show instantaneously.

For example, we can say: «The house had a rooftop». The word house can be tagged with the element description that characterizes a house with a rooftop. Or we can also say, for example: «The house had a terrace top». This time around the word house will be tagged with an element description that characterizes the house with a terrace top (Fig. 12).



**Fig. 12.** Screenshot of tours creation tool

This process can be repeated for many other features of the house such as colour and texture and therefore for the whole model of the city. This is easily done by maintaining

a unique identifier number for all the elements introduced when importing the first hybrid model and for all the hidden elements that need to be swapped if necessary. The number of existing swappable elements is decided by the constructors of the city and can be incremented whenever more research is added to the project, thus giving the possibility of maintaining an open and infinitely updatable solution.

## **Virtual tours**

Although virtual non-playable interactive environments have been extensively used for the communication of cultural heritage contents, they can deviate from their purpose if not accurately planned<sup>11</sup>. For example, young audiences usually seek a quest or a game when presented with a game-like environment; they don't know why but they just play<sup>12</sup>. Moreover, full interactive environments are not always the key for all types of audience: there are people that want to experience a virtual exhibition without having to decide what to explore. In this case we added the option of creating virtual tours (Fig. 13). These tours can be totally guided, where contents are presented in a linear fashion such as when viewing a movie, but with the added possibility to look around similar to a VR rendered application; or partially interactive, where the contents are presented with a certain linearity but the audience can also choose where to go from the last visited point within the city. The user can also decide if visiting or not some related suggestion given at the end of each short story description previously presented. Of course, the tours can and must be created by the same content creators that introduce historic information. At the end, we hope to create a strong binomial bound between the content creators and the final audience in such a way that the final application will result in a scientifically open collaborative platform for the content creators and an emotional and attractive experience for the final user.

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<sup>11</sup> Arqueología Virtual, 2011.

<sup>12</sup> GOUVEIA, 2010: 11.

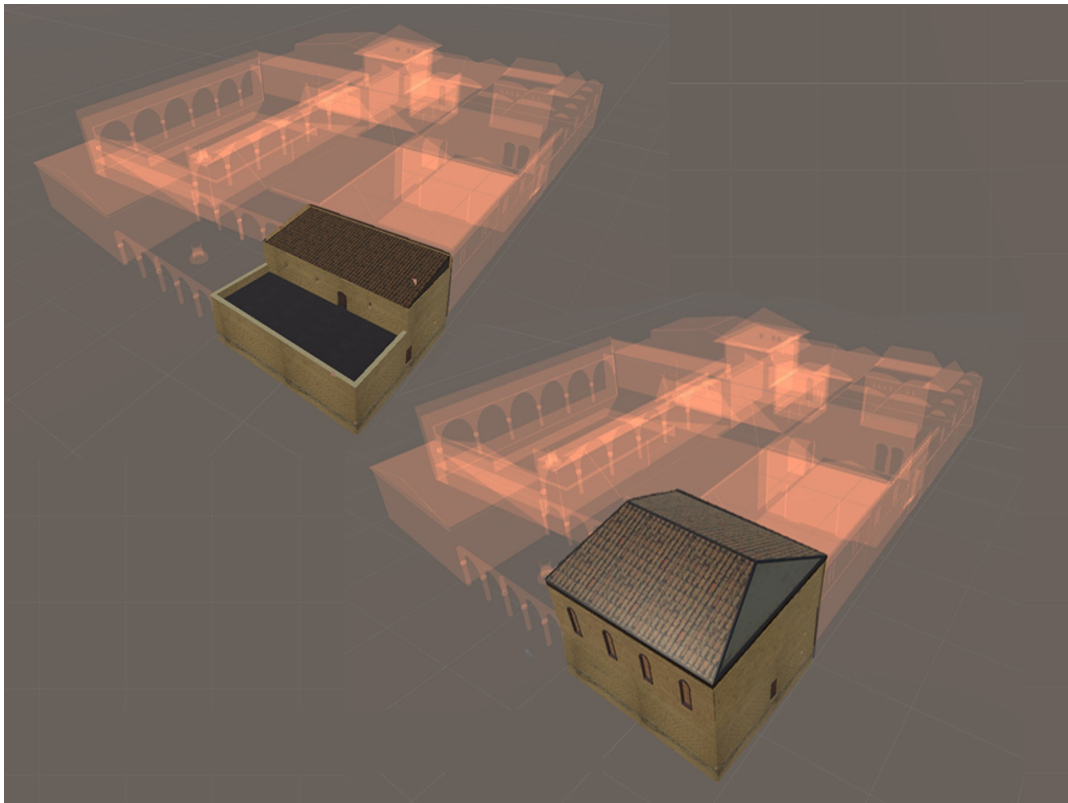


Fig. 13. Screenshot of the module swapping building tool

Lastly, we must remember that 3D real-time applications as well as rendered scenes can also result in a non-sustainable solution. Therefore, we aim to introduce the concept of persistency, where the created virtual environment will always exist online. This will give the opportunity to access this space at any given point of production and execution. Here the editors will have the possibility of updating the contents at any time while the public will experience the changing and the enhancements almost instantaneously.

## CONCLUSIONS

The project Évora 3D has explored the possibility of recreating a city in various historic periods. In this occasion, after the completion of the Islamic town in 2015 and the Roman one yet to be published, we have presented an innovative solution to rebuild the Medieval period. However, this time around, in order to understand the complexity of the building's layout, it was necessary to recover ancient documents that describe the memory of the place and the time frame. We tackle different issues that are present when using virtual environments for the reconstruction of ancient cityscapes. In this specific case, we have argued that it is possible to recreate an historic place by using ancient documents as a primary source of our interpretation. The virtual reconstruction, although it is the central element for the final interpretation, will not be the objective of our study but rather the means to understand the first impression of a possible layout. Our model

will remain open and throughout a new type of collaborative 3D platform will propose a new way of composing and updating 3D elements, historic contents and virtual tours. By doing so, we aim to propose a new method of presenting to the public an historic virtual reconstruction which is open, scientifically valid and always accessible.

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# RECONSTRUCTING THE IMAGE OF THE IDEAL CITY IN RENAISSANCE PAINTING AND THEATRE: ITS INFLUENCE IN SPECIFIC URBAN ENVIRONMENTS. DIGITAL TECHNOLOGY AND VISUAL CULTURE\*

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ISABEL SOLÍS ALCUDIA\*\*\*

## INTRODUCTION

The virtual reconstruction that we propose in this study aims to provide a model that allows visualizing how, in specific urban projects or reforms carried out since the Renaissance, the image of the ideal city represented in pictures and scenery still persists. Paraphrasing Foucault, our purpose is directed towards an «archaeology of the imaginary» or perhaps, more accurately, a «virtual» archaeology of the imaginary.

From this point of view, we consider it necessary to begin with a brief reflection on an idea that has been latent throughout the preparation of this work, a concern that has to do with what some researchers with a well-established trajectory in the field of Digital Humanities, and in particular, in the area of spatial analysis and reconstruction, have been proposing in recent years. We refer to the critical reflection on the part of fantasy and uncertainty that all virtual reconstruction entails. From this approach, it is accepted that most digital projects dedicated to the reconstruction of historical monuments, archaeological sites, or collections of museums, contain an element of deception, and require, therefore, the will and complicity of the viewer to accept the reality that is offered to them.

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*To varying degrees, they ask the viewer to believe that he or she is “really there”. While admitting that the AutoCAD reconstruction is not the actual building, nor the museum catalog the physical collection, many presentations nonetheless ask viewers to assume Coleridge’s “willing suspension of disbelief” while viewing these substitutes<sup>1</sup>.*

To save this important hurdle, the discipline of Digital Humanities has adopted an ontological approach, often called «knowledge representation», a terminology which encourages readers and users of digital technology to recognize the problematic fidelity between the model and its referent. In this sense, we should not disregard the fact that all reconstruction is usually a matter of interpretation, especially when it comes to reconstructing an absent object or building.

Pamela Fletcher recently returned to the subject of the different degrees of uncertainty between reality and fantasy that a virtual reconstruction involves:

*Researchers involved in such projects are also cautious about the fantasy of perfect historical accuracy. As projects increase in sophistication, they can seem to provide a total immersion in an alternative world, along the lines of Renaissance Italy as recreated in extraordinary detail for the video game Assassin’s Creed II. How do scholars represent relative degrees of uncertainty in their recreations<sup>2</sup>?*

In our case, besides, our commitment on the virtual lies in the intangible space of the imaginary, since what we try to reconstruct does not come directly from material culture, but from the visual culture of an era. To this avail, we previously address an approach to the characteristics of three specific and interrelated manifestations in the context of the Italian Renaissance: scenography, painting and urbanism.

## **1. PAINTING, SCENOGRAPHY AND URBAN ENVIRONMENT**

Between the utopian city and the royal city of the Renaissance, there is a link which is the scenic town. The recreation of the city of classical antiquity, systematized by Vitruvius in the tragic scene, is a cliché of Renaissance scenery, but extends beyond the stages invading the pictorial and urban spaces.

The relationship between theatrical scenery and urban design during the Renaissance and the Baroque has been suggested by authorized voices in the subject of History of Urbanism, such as Pierre Lavedan or Antonio Bonet Correa. In addition, the close relationship between painting, scenography and urban environment from the 16th century in Italy was also established by Giorgio Simoncini in his comprehensive book on

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<sup>1</sup> BONDE *et al.*, 2009: 363.

<sup>2</sup> FLETCHER, 2015.

the city and society in the Renaissance<sup>3</sup>. With all this, today, the possibilities offered by digital technology allow us to point further and carry out a simulation of a kind of urban space that demonstrates how certain urban projects, as we will try to show in this article, correspond to the visual culture of a time, a culture of images taken from the theatre and painting<sup>4</sup>.

The new way of contemplating the world, symbolically represented through the use of perspective, can be seen in paintings that represent the ideal city. We refer in particular to the famous tables of Urbino, Baltimore and Berlin, which for a time were related to scenic projects. In fact, the urban perspective showing the famous Berlin table (Fig. 1) was used by Eugenio Battisti in a hypothetical reconstruction of the scenography designed by Leon Battista Alberti for the performance of his comedy *Filodoto*<sup>5</sup>.



Fig. 1. Ciudad ideal (c. 1477). Gemaldegalerie, Berlin

The scenic practice was offering suggestive images of the ideal city in Italy. Castiglione described the staging of the *Calandria* of Bibbiena in Urbino in 1513 in the following way: «La scena poi era finta una città bellissima con le strade, palazzi, chiese, torri, strade vere, e ogni cosa di rilievo, ma aiutata ancora da bonissima pittura, e prospettiva bene Intesa»<sup>6</sup>.

Machiavelli, in his foreword to *La Mandragola* (1518), also invited the spectator to visualize the design of a stage which corresponds to the standard typology of the utopian city (Fig. 2):

<sup>3</sup> SIMONCINI, 1974: 232.

<sup>4</sup> Vide GONZÁLEZ-ROMÁN, 2001: 143-165.

<sup>5</sup> BATTISTI, 1990: 73-83.

<sup>6</sup> Cf. PINELLI & ROSSI, 1971: 107.





Fig. 2. Ciudad ideal (c. 1480-1490). Galleria Nazionale delle Marche, Urbino

*Vedete l'apparato,  
 Qual or vi si dimostra:  
 Questa è Firenze vostra,  
 Un'altra volta sarà Roma, o Pisa,  
 Cosa da smascellarsi delle risa.  
 Quell'uscio, che mi è qui in sulla man ritta,  
 La casa è d'un dottore,  
 Che 'mparò in sul Buezio legge assai;  
 Quella via, che è colà in quel canto fitta,  
 È la via dello Amore,  
 Dove chi casca non si rizza mai. [...]  
 El tempio che all'incontro è posto [...]*<sup>7</sup>

Unlike such descriptions, or those contained in the social or moral utopias of the Renaissance, in which a completely new city was drawn, some artists and theorists of the Renaissance, who did not believe in the possibility of transforming the city as a whole, were inclined towards projects that could change the outward appearance of the buildings and, therefore, of the city.

Leon Battista Alberti (*De Re Aedificatoria*, 1452), who had restored Roman monuments commissioned by Pope Nicolás V, and had designed buildings in historically given environments, considered the ancient city as a contemporary problem. In this sense, Alberti seems to have realized that it was not the task of the architect to build the city *ex novo*, but *characterize* it monumentally<sup>8</sup>.

<sup>7</sup> MACHIAVELLI, [1518]. «See the decoration/That we present to you;/This is your Florence,/Pisa or Rome it will be tomorrow/The plot is right to die laughing./The door to your right hand,/That is the house of a doctor/Who learned in his Boethius many laws./That way that is displayed at the end/Is the path of love,/Where whoever falls never rises [...]/The temple that is seen in front [...]». Recently, Antonio Bonet Correa, upon receiving his 2014 University of Málaga Honoris Causa Doctorate, gave a speech entitled: «La perspectiva, el territorio y la escenografía renacentista en Maquiavelo», where he developed the same idea that, at this point, we have expressed here.

<sup>8</sup> RAMÍREZ, 1983: 48.

Nearly a century later, a clear example of this type of urban development approach involving the adaptation of the existing city to the new ideals of the Renaissance can be found in Serlio, for whom — as Gaetana Cantone already held — the question was not to transform the entire city, but to reorganize the already existing one<sup>9</sup>.



Fig. 3. Sebastiano Serlio. *Scena tragica*. Secondo libro, 1545

Cantone's suggestive hypothesis was developed by G. Romanelli, in a monograph published in 1980 (*Architettura e utopia nella Venezia del Cinquecento*). Romanelli related the Serlian tragic scene (Fig. 3) with a specific programme of renovation of Venice which took as a motif the «Piazzetta» of San Marcos<sup>10</sup>. It consisted, therefore, of renewing the urban structure in the area that was the heart of the City Government, providing it with symbolic buildings that preserved the myth of Venice as *urb perennis*.

<sup>9</sup> CANTONE, 1978: 110.

<sup>10</sup> ROMANELLI, 1980: 96.

It is in this Venetian context where the urban scheme designed by Serlio appears as scenographic background in numerous paintings, particularly in Tintoretto's painting (Figs. 4 and 5).



Fig. 4. (Left) Tintoretto. *The Lavatory* (detail) embedded within the Serlian theatre set design (Right) Tintoretto. *The Lavatory* (detail) (c. 1547). Museo Nacional del Prado



Fig. 5. (Left) Tintoretto. *Christ with the Adulterous Woman* (c. 1555). Rijksmuseum, Amsterdam (Right) The same painting embedded within the Serlian theatre set design

We can identify intentions similar to those of Serlio, in regards to the reorganization of the city according to new urban ideals, in other artists like Leonardo or Raphael, for whom the relationship with the existing city is posed in terms of restoration or improvement of infrastructure<sup>11</sup>. The possibility of materializing the ideal city by modifying some key points of the urban fabric, as well as the revaluation of emblematic places of the city through some significant construction, is the direction that we find in the interventions of Palladio in Venice and Michelangelo in Rome, an urban planning of a marked scenographic accent.

<sup>11</sup> CANTONE, 1978: 110-111.

The influence of the scenery in the configuration of the urban atmosphere seems to be present in the theoretical approaches of Palladio, when he states:

*Nondimeno in tal caso per maggior ornamento, e commodo della Città si deve far la strada più frequentata dalle principali arti & da passaggieri forestieri, larga, & ornata di magnifiche, e superbe fabbriche, conciosiache i forestieri, che per quella passeranno, si daranno fácilmente à credere, che alla larghezza, & bellezza sua corrispondono anco le altre strade della Città<sup>12</sup>.*

In fact, this definition of the «main street» of a city coincides with the design of a *frons scaenae* that Palladio himself made for the edition of Vitruvius' *De architectura* by Daniele Barbaro (Fig. 6).

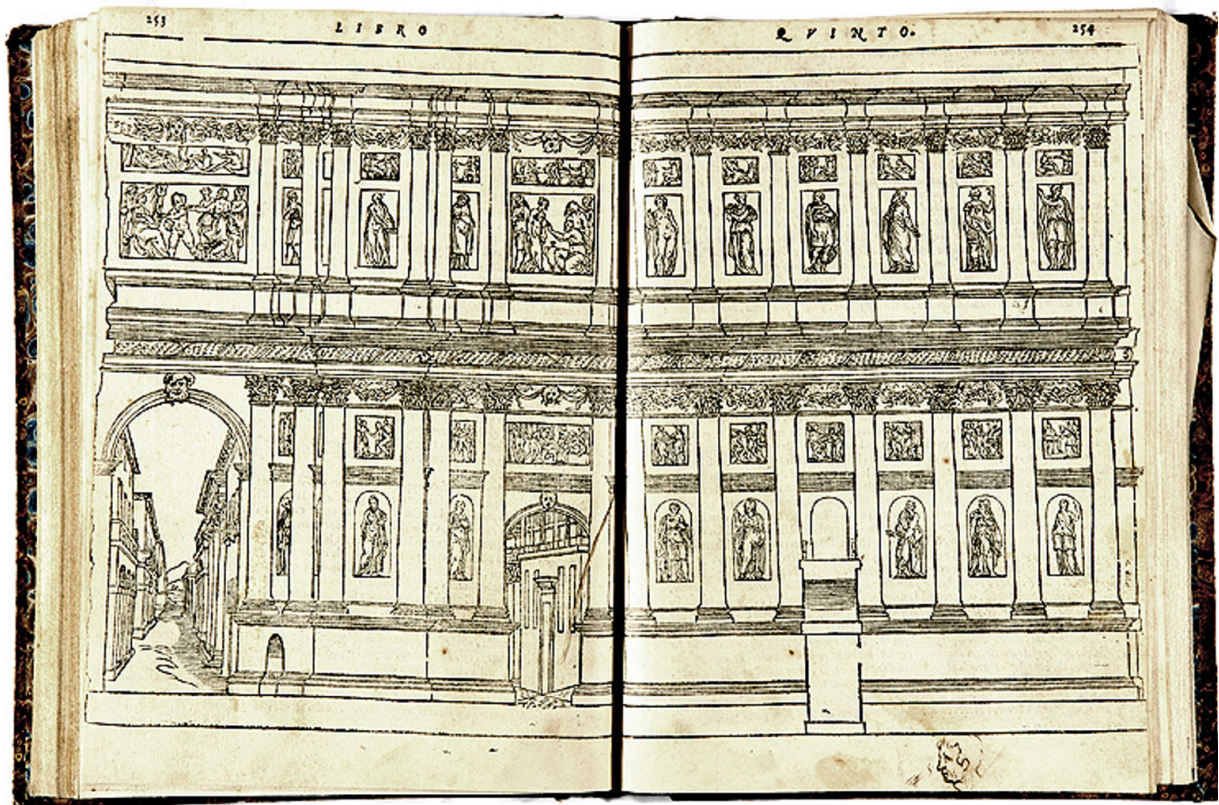


Fig. 6. A. Palladio. *Frons Scaenae*. I dieci libri dell'Architettura di M. Vitruvio tradutti et commentati da Monsignor Barbaro... Venezia: Francesco Marcolini, 1556

<sup>12</sup> PALLADIO, 1570: 8. «For more ornament and comfort of the city the street most frequented by the main arts and foreigners must be made wider and must be adorned with gorgeous and superb buildings so that the foreigners who walk along it will be inclined to think that its width and beauty also correspond to the other streets of the city».

## 2. THE VIA PIA (ROME): SCENOGRAPHY AND URBAN IDEALS

Pope Pius IV (1560-1565) took the first steps for a complete recovery of the Quirinal and the «Monti» as development area for the Rome settlement. The axis of this urban development was the Via Pia, a straight street that, from the Quirinal square, leads to the Michelangelesque background of Porta Pia<sup>13</sup>. At the northeastern end, the Pope commissioned this gate to Michelangelo in the Aurelian wall which, surprisingly, looks inward, toward the street, and not defensively outwards, which confirms our idea that its purpose was to be a «backdrop» of the street. When Sixtus V moved, years later, the Dioscurs from the nearby Baths of Constantine to the southwest end of the Via Pia (1586-1587), this street became a single work of art with two monumental foci on both ends, the first street with these features in Roman Renaissance (Fig. 7).



Fig. 7. The Quirinal and the Via Pia. Lateran Palace. Hall of the Popes

<sup>13</sup> The *Via Pia* will go straight out of the wall into the *Via Nomentana*, a straight-lined street that arrives at the Basilica of Sant'Agnese and Mausoleum of Constanza («fuori le mura»).

According to Marcello Fagiolo, the exemplary street had the value of «pilot enterprise», the first of such significance in the «Monti» area. But in addition, we must think that the urban project offered Pope Pius IV the opportunity to realize the image of the ideal city, in line with his humanistic ideals. Thus, one of his aims was to revalue a zone largely occupied by orchards and vineyards, as well as archaeological sites, with the aim of developing a new axis of expansion of the city of Rome. The focal point of such urban enterprise was the Porta Pia, a real scenographic background of this new urban axis around which new constructions would be built that, according to the intentions of Pope Pius IV, would boost the area. In addition, in Michelangelo's original design (Fig. 8), the Porta Pia was flanked by two obelisks, which, should it have been carried out, would have contributed to further emphasizing the similarity with the background drawn by Serlio for the tragic scene (Fig. 9 left and right). On the other hand, it seems plausible that the Pope was advised by Michelangelo in regard to the design of the street in addition to the Porta Pia<sup>14</sup>.

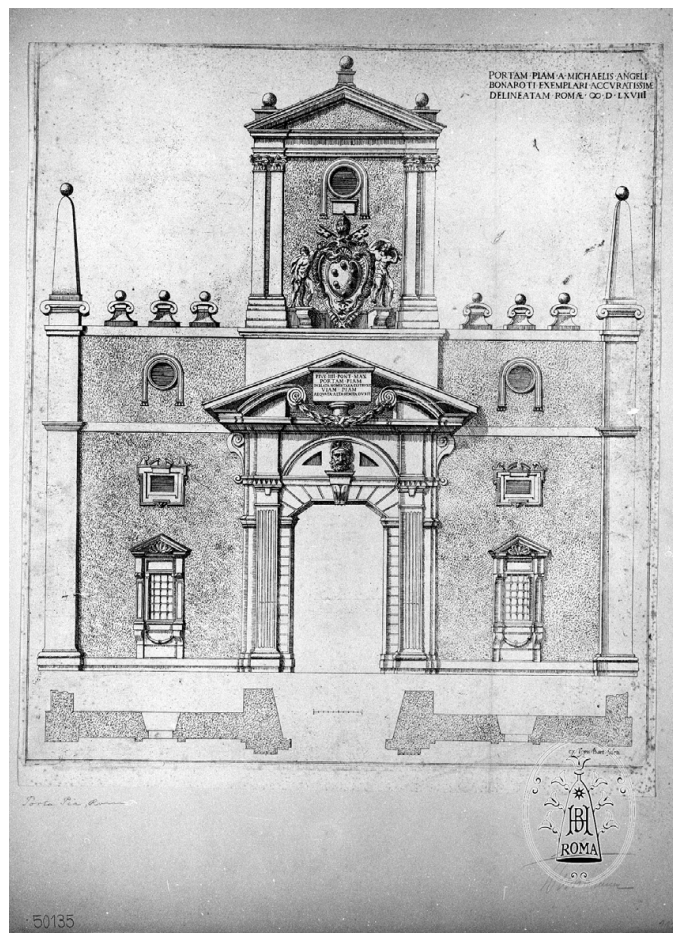
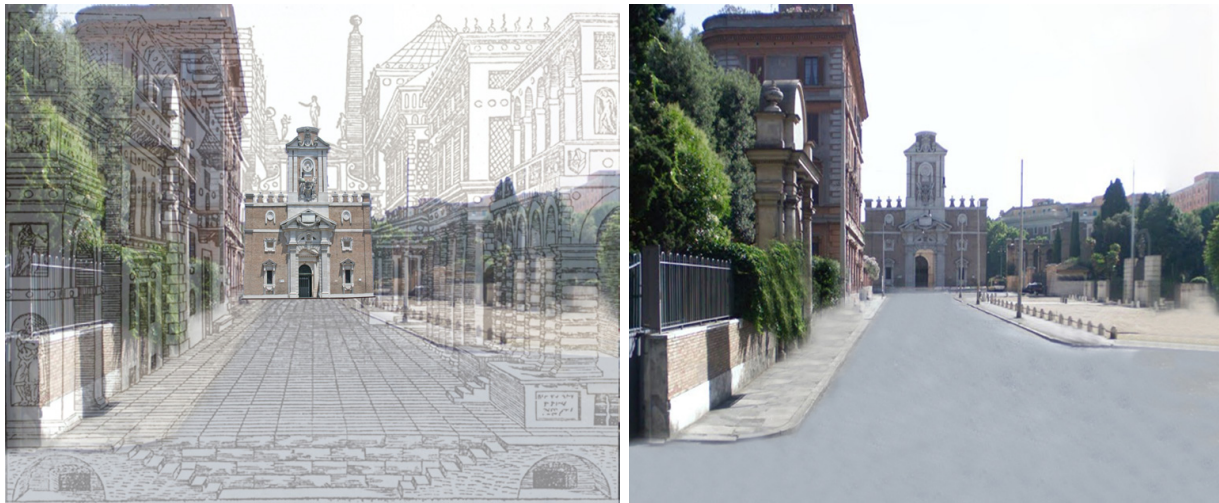


Fig. 8. Porta Pia. Original design by Michelangelo. Bibliotheca Hertziana, Rome

<sup>14</sup>The Porta Pia, originating from the «rustic façade» style, will have influence in the «rustic façade» of several «villas» projected along the street. Furthermore, the trapezoidal arch and the two obelisks — located, originally, on both sides of Michelangelo's door — will appear, later, in the Fountain of Moses (cf. FAGIOLO, 2013: 317).



**Fig. 9.** (Left) Screenshot of the video animation which reconstructs Via Pia in the Serlian stage  
(Right) Via Pia, Roma (current *Via XX Settembre*). Screenshot made with Google Earth. [Accessed on 16/10/2016]

Since the pontificate of Pope Pius IV, the Via Pia was progressively completed with the construction of the Pontifical Palace of Monte Cavallo (Quirinale), started by Gregorio XIII and enlarged by Sixtus V and Clement VIII<sup>15</sup>. Right in the centre of the rectilinear shaft between Porta Pia and the Quirinal Palace (Fig. 10), was erected years later the Fountain of Moses, by Domenico Fontana, a fountain that culminated the aqueduct commissioned by Gregorio XIII (successor of Pope Pius IV), who contributed with this project to the recovery of the Monti area, and in particular the new Palace of the Quirinale promoted by himself.

In the following decades, important buildings were built in this intermediate zone of the Via Pia: the Church of Saint Susanna, completely renovated between 1595-1603, and the Church of Santa Maria della Vittoria (1608-1620). However, the rest of the adjoining land remained mostly occupied by villas until the end of the 19th century in which they will be replaced by modern buildings<sup>16</sup>.

<sup>15</sup> TOTTI, 1689: 278.

<sup>16</sup> FAGIOLO, 2013: 313-327. Fagiolo has suggested that the Via Pia is a kind of «Strada del Sole», a long street which had, on one side, the «Temple of the Sun» and, on the other side, the Mausoleum of Constanza that was, at that age, considered the «Temple of Bacus», another solar divinity.

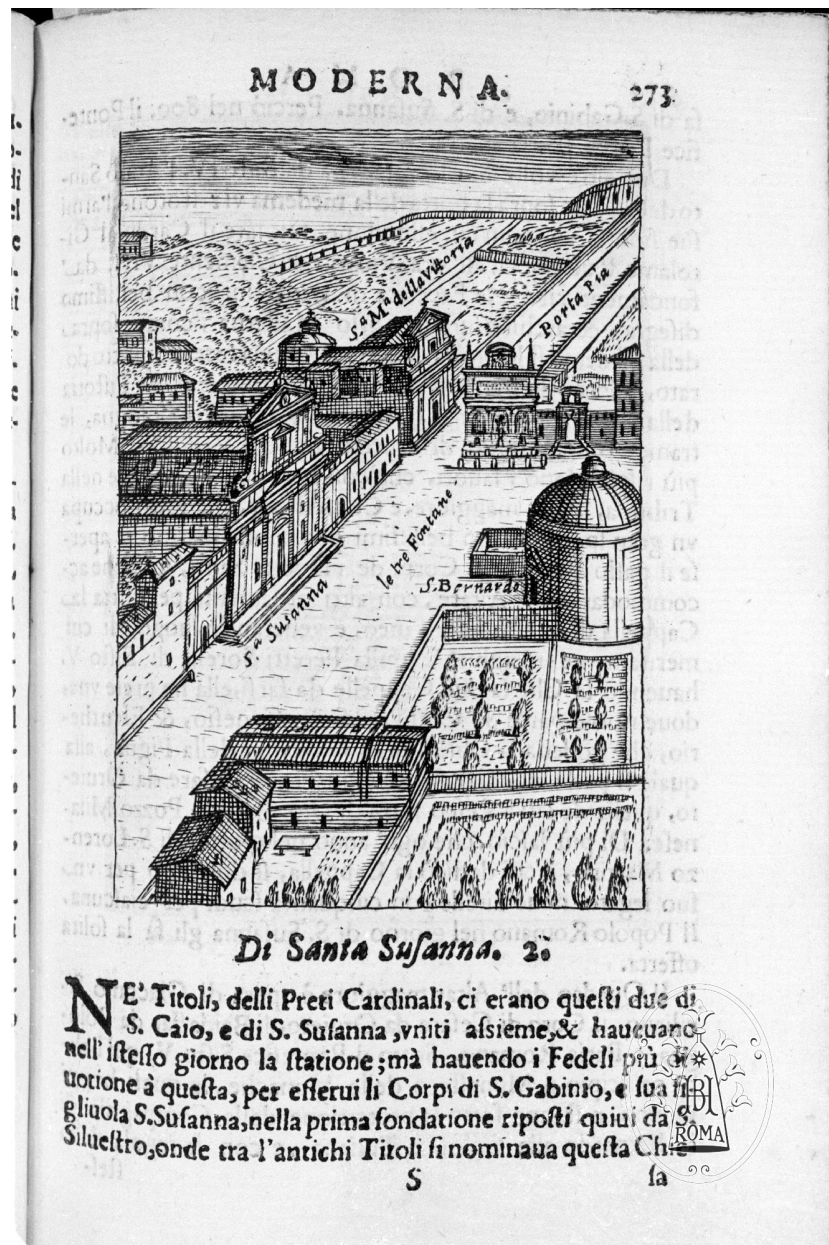


Fig. 10. Pompilio Totti. *Ritratto di Roma moderna...*, 1689. Bibliotheca Hertziana, Rome

If the Pincio or the Gianicolo hills were maintained as a place of meditation and contemplation, the Quirinale Hill prevailed as the hill for study and reflection on Antiquity, an idea fuelled by the vision of the great architectural monuments, by colossal statues, or by the continuous discovery of sculptures and ancient objects. Indeed, near the Via Pia, were found the remains of the Baths of Constantine and the ruins of the «Temple of the Sun», and at the other end, beyond the Michelangesque arch, the street would connect with the mausoleum of Constance, a circular building that, although not visible from a distance, would evoke similar constructions present in the urban views of ideal cities both in paintings and theatrical sets of the Renaissance.



### 3. THE INTERSECTION OF THE «QUATTRO FONTANE»: A SUGGESTIVE URBAN THEATRE

Sixtus V continued the urban reform of Pope Pius IV and integrated into the area of the «Monti» the route of the Via Felice.

According to Marcello Fagiolo, above the space occupied by the villas was drawn up a kind of consecration cross. The resulting quadrivio — systematized by virtue of the will of Sixtus V and Muzio Mattei between 1588-1593 — represents for Fagiolo «the centre of an ideal ‘garden-city’, with the four small nymphaea projected by the myths and rites of a triumph of the water»<sup>17</sup>. The idea of associating the resulting path of urbanization of this area of the city of Rome — occupied mostly by villas and gardens — with a «garden-city» is complemented, as has also been stated by other researchers, with the fact that the availability of fountains at the corners is a typical solution of the garden<sup>18</sup>.

For our part, we find in the urban organization resulting from the crossing of the ancient Via Pia and Strada Felice — the space between «Quattro Fontane» — a sort of urban theatre combining the nymphaea located in chamfers with urban views in perspective made up of monumental scenographic backgrounds. The vedute of the Flemish artist Lievin Cruyl, preserved in the Cleveland Museum of Art (Fig. 11 left and right), show us the urban perspectives which, from the «theater of the quattro fountains», could be seen around 1665<sup>19</sup>.



Fig. 11. (Left and right) Lievin Cruyl. *Diciotto Vedute di Roma. Veduta delle Quattro Fontane. Prospecto Primo y Secondo*, 1665. The Cleveland Museum of Art

<sup>17</sup> FAGIOLO, 2013: 318.

<sup>18</sup> This is the opinion pointed by E. Guidoni and A. Marino, who consider that the isolated architectonic elements, such as an obelisk, an ancient column, or a triumphal arch, constitute, in a similar way as a fountain, the monumental backdrops of the garden's avenues of the second half of the 16th century (cf. GUIDONI & MARINO, 1985: 632).

<sup>19</sup> The Flemish artist Lievin Cruyl is considered, like Giovanni Battista Falda and Israel Silvestre, a true innovator of the Roman *veduta* of the 17th century. He offers a non-idealized image of the modern city by using a bird perspective, a method developed in Cartography in the 16th century. That method allowed him to lengthen and distort the space in order to represent — in a particular way — certain places. Probably, those views weren't designed on site but by heart (cf. LEONE *et al.*, 2002: 124).

The similarity of the organization of this urban environment with the project of a large theater room that the German architect Joseph Furttentbach included in his *Mannhaffter Kunstspiegel* («The Noble Mirror of Art») treaty of 1663<sup>20</sup> seems quite clear (12), although the model's migration could be in the opposite direction, i.e. from the city to the theatre.

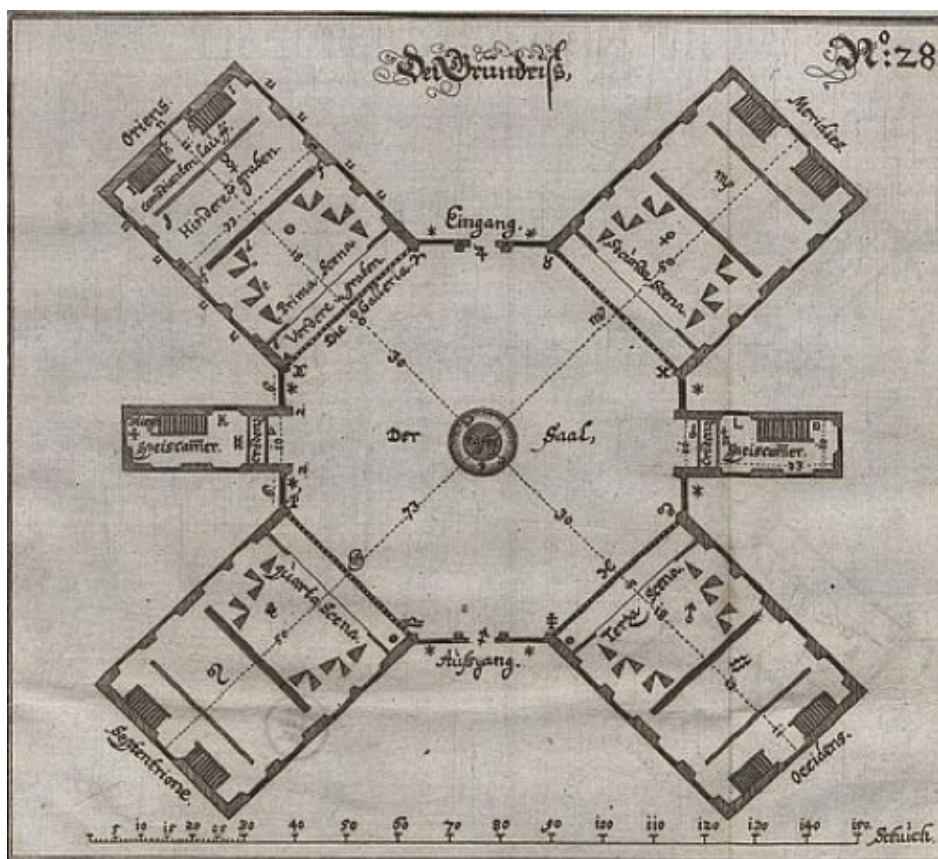


Fig. 12. Joseph Furttentbach. *Mannhaffter Kunstspiegel*, 1663  
Large theater room with four perspective stage design (*Schawspilsaal*)

In our virtual reconstruction, we have rotated the axes drawn in that fantastic large theatre room designed by Furttentbach, making the design of the four stages with a perspective coincide with the two streets that crossed the «Quattro Fontane». In this reconstruction, we have inserted the views of Lievin Cruyl, adding and remarking the original monumental backdrops. This scenographic urban axis is completed by the four fountains located on the chamfers (Fig. 13).

<sup>20</sup> The *Mannhaffter Kunstspiegel* is a collection of sixteen treatises about Arithmetic, Geometry, Fireworks, Stage Design, Perspective, etc., where Furttentbach devotes a chapter to the civil architecture and includes a design for a large room with four stages: the *Schawspilsaal*.



Fig. 13. Adaptation of the design of theatre room with four stages (*Schawspilsaal*) by Joseph Furtenbach in the crossing of the «Quattro Fontane» (Rome)

Following such compositional scheme, at one end of the *via Pia* we find as a backdrop the *Porta Pia*. At the other end stood, originally, the fountain of the Dioscurs, at the Quirinal square, a fountain made by Domenico Fontana, who had moved the sculptures of the Dioscurs — coming from the nearby Baths of Constantine — to a more central point of that square (Fig. 14), being thus used to close the stage of the long *Via Pia* (current *Via del Quirinale* and *Via XX Settembre*)<sup>21</sup>.

<sup>21</sup> It would remain this way until 1782, when the Pope Pius VI carried out a project to redesign the square, thus dismantling the fountain and repositioning the Dioscurs on a pedestal on both sides of an obelisk originating from Augustus's tomb.



Fig. 14. Giovanni Battista Piranesi. Fontana dei Dioscuri. Vedute di Roma. T. I, tav. 25

On the other axis, from the intersection of the four fountains, at one end the perspective closes monumentally with the Sixtine Obelisk and the apse of Santa Maria Maggiore (Fig. 15 left and right) and, on the opposite side, the backdrop was Santa Trinità dei Monti and Villa Medici.

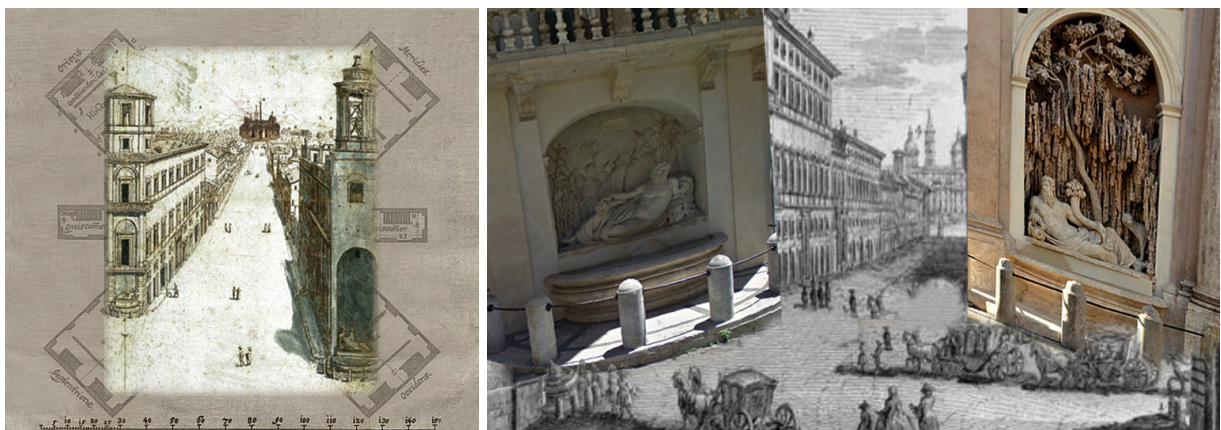


Fig. 15. (Left and right) Stages of the animation carried out for the virtual reconstruction of the crossing of the «Quattro Fontane»

#### 4. FINAL CONSIDERATIONS

As we pointed out at the beginning, all virtual reconstruction represents a bet and a scientific challenge. The researchers, as is our case, that have decided to use digital technology to translate aspects of material or immaterial culture heritage in images assume that risk. However, the opportunity to visually illustrate a specific aspect of the imagery of an era, as it is the relationship between certain planning projects and images of the ideal city present in the painting and the scenery of the Renaissance, compensates for, we believe, the degree of uncertainty or fantasy implicit in such reconstructions.

In the case that concerns us, we use tools based on current digital technologies to make virtual reconstructions that are based on images obtained through the digitized funds of museums, as well as tools such as Google Street View.

In the process, we have established work protocols with advanced methodologies, with the intention of introducing a virtual reality with the help of a historical narrative, thus creating a scenic city which is an illusion, using images of the royal city of the Renaissance with overlays of the utopian city. The virtuality obtained changes the temporal and spatial pattern of written media, providing a spatial dimension of reality in real time.

In order to achieve the main purpose of this research, a simultaneous reading of the different images, it has been necessary to coordinate image, text and video, being able to read it in the stage of painting, scenography and urban environment. Thanks to the application of image editing techniques to photographs through digital media, new images have been created from the editing of existing ones. Such editing has consisted of selecting, arranging and merging different sketches of selected images, according to the idea proposed in our research, and turning them into a scene that appears to be real.

This environment generated with computer technology must be interconnected with a three-dimensional reality, to be able to see the world through the use of the perspective that the artists of the Renaissance invoked.

Thus, it has been necessary to create 3D graphics with the help of software in a mathematical process on 3D geometric shapes which has allowed us to generate a flat visual projection. Furthermore, the city has been shaped lighting it with an atmosphere modified using RGB values which, despite being primary colours, require a great physical understanding of the light in the new scene created, benefiting from the programming interfaces of applications specialized in the creation of graphics, so essential in this field.

On the other hand, we have animated images and performed a rendering process to achieve an effect that is closer to reality through the redirection of time.

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# LISBOA E A REAL ÓPERA DO TEJO: UM MÓDULO ILUMINADO, ENTRE ATLANTES E TRITÕES

LUÍS ALVES DA COSTA\*

## INTRODUÇÃO

250 anos após o Grande Sismo, a Ópera de Giancarlo Sicinio Galli Bibiena reposicionou-se nos interesses. Se ela é um marco na transição cultural do operático religioso, de D. João V, para o operático civil de D. José, o seu custo foi desmesurado, «ciento ochenta tres millones noventa nueve mil cuatrocientos setenta y tres reis (183:099\$473rs)»<sup>1</sup>, para uma infortunada vida, de escassos testemunhos de esplendor. Diversas reflexões e hipóteses são hoje o pretexto estético para a reconstrução do ícone perdido. Tal foi o móbil das equipas de Alexandra Gago da Câmara, Pedro Miguel Januário e Aline Gallasch-Hall.

O nosso modelo posiciona-se como hipótese de restituição espacial das ruínas do Real Teatro, e é sua finalidade participar nesse debate de fixação das características do monumento. A proposta assenta nas fontes primárias de uma gravura de 1757, de Philippe Le Bas, fundamentada no testemunho de MM. Paris e Miguel Tibério Pedegache Brandão Ivo<sup>2</sup>, e em atuais evidências da Rua do Arsenal. Materiais técnicos, plantas, levantamentos *Autocad* e fotogramétricos sustentam-na e permitiram a disposição dos

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<sup>1</sup> JANUÁRIO, 2008: 525.

<sup>2</sup> Nascido em Lisboa, em 1730, e falecido em Setúbal, em 1794, foi poeta, escritor, tradutor e técnico militar. Moço de câmara do cosmopolita Infante D. Manuel, e Coronel do 2.º Regimento de Infantaria de Elvas, redigiu a *Nova e Fiel Relação do Terremoto que experimentou Lisboa e todo Portugal* (1756), assim como esboçou a matriz da gravura, de Le Bas, da ruína da Ópera do Tejo.



elementos em planta<sup>3</sup>. O modelo executou-se na versão Sketchup Pro 2016, e destina-se a integrar a base de dados do Google Maps Pro.

Para lá das qualidades visuais, aqui se revaloriza a obra de Pedegache, como figura sinalizada das Luzes nacionais. Pretende-se reler a sua ilustração não como escatologia iconográfica do Sismo, mas como documento técnico da ruína de um edifício. Se Matos Sequeira a considerou *fantasia* de um artista estrangeiro, e Paulo Pereira lhe contrapôs o carácter «muito rigoroso» dos importantes elementos, já sinalizados por Sérgio Infante<sup>4</sup>, na nossa abordagem, e contra o espírito pré-romântico das ruínas, secundariza-se a leitura bucólica do ícone, e privilegia-se a sua vertente de rigor. Nela se entende a *Desolação da Ópera* como uma inscrição possível de dados fiáveis, suscetíveis de transmitir ciência. Nessa qualidade, ela deve suportar a crítica dos olhares da arquitetura, engenharia, urbanismo, ou da física, química e botânica<sup>5</sup>.

## O MODELO

Sendo sabidas restrições, e inseguras as precisões, um dos motivos do debate é o da localização. A nascente, o limite possível é o Palácio da Ribeira; a norte, situa-se o complexo da Patriarcal; a sul, constrange-a o pendor técnico da Ribeira das Naus e, a ponte, posiciona-se o Palácio do Infantado. «Ao beco da fundição segue a caza da Opera q(ue) tem de extensão pella Sua frente athe o Arco do Ouro ou da Ribeira das Naus, cento outo varas quatro palmos e quatro decimos»<sup>6</sup>. Da concordância das limitações, emerge um edifício esforçadamente longo, de eixo paralelo ao Tejo<sup>7</sup>, e esta é a exata imagem da representação de Pedegache. Correlata com a gravura da Igreja de S. Nicolau, tal leitura longitudinal da ruína comporta um valor estético autónomo.

O primeiro dado concreto é o do desastre urbano precedente do Sismo. À esquerda, fundem-se fachada das Naus e limites de imagem. À direita, figuram-se escoras e cantarias da Rua do Arco dos Cobertos. Confronta-se-nos a objetividade de ruas estreitas, impróprias para a inserção de obras notáveis. Inexistem espaços de recuo indispensáveis para a real apreensão das dimensões do Teatro. Aqui se atesta continuar a ser a Lisboa de novembro de 1755 uma capital de becos repletos de monumentos.

A segunda indicação ilide a liberdade da profundidade, e baliza-a visualmente, pela lógica dos arcos transversos. Os seus pilares convidam o espectador a atravessar planos e prosseguir. Marcam-nos passagens e aberturas de interpretação adstrita a funções técnicas, e de circulação<sup>8</sup>. De nascente a oriente, implantam-se inferiormente

<sup>3</sup> Disposição assente no levantamento Autocad do projeto, de 2006, de revalorização da Baixa Pombalina.

<sup>4</sup> JANUÁRIO, 2008: 106.

<sup>5</sup> JANUÁRIO, 2008: 603.

<sup>6</sup> JANUÁRIO, 2008: 101.

<sup>7</sup> Também a desproporção de um para três, do testemunho verbal do Chevalier de Courtils, assim se torna plausível.

<sup>8</sup> JANUÁRIO, 2008: 603.

filas de arcos de suporte do nível chão. Eles ditam, em planta, as alterações de largura. No primeiro plano, quatro deles<sup>9</sup> correspondem à secção estreita do monumento. Após o primeiro estrago, e até ao último *arco carpanel de cinco centros*, a explicação arquitetónica mais satisfatória<sup>10</sup>, o número de elementos, embora fragmentário, concorda com o ressalto da construção, e passa, como comprovável no corredor atual da porta mãe do Arsenal, de quatro para cinco.

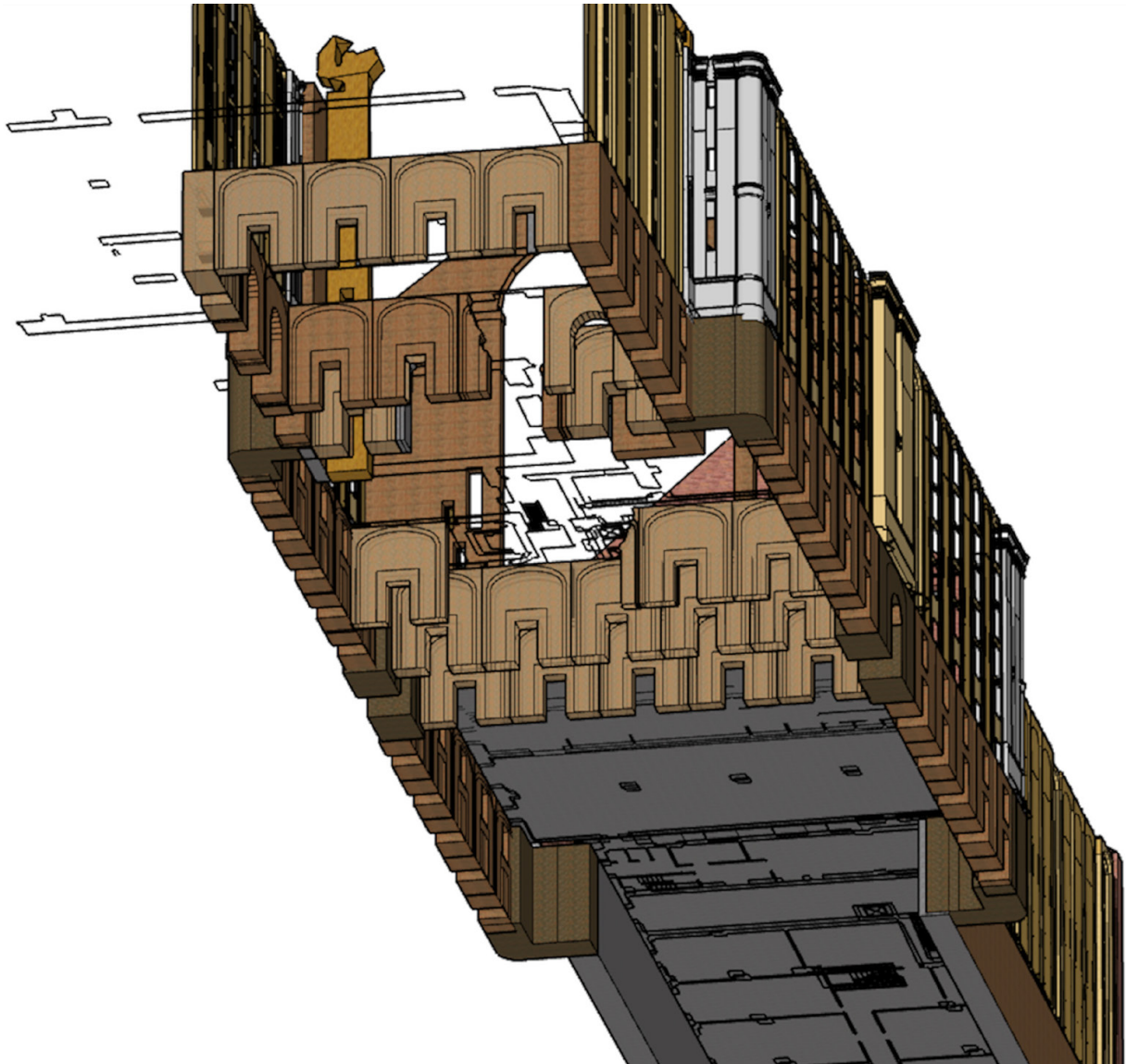


Fig. 1. Perspetiva inferior dos arcos<sup>11</sup>

<sup>9</sup> JANUÁRIO, 2008: 606.

<sup>10</sup> JANUÁRIO, 2008: 607.

<sup>11</sup> Todas as imagens, exceto a 6, fotografia original de Pedro Miguel Januário, são captações do modelo original de Luís Alves da Costa, realizado na versão 2016, do Sketchup Pro. As figuras 4 e 8 foram compostas com a gravura original de Le Bas, em Microsoft PowerPoint 2016.

O terceiro testemunho é o da simetria norte e sul das paredes, imposta por vãos e métricas de janelas de arcos de meia volta. Independentemente das irregularidades, os topos contêm informação bastante sobre fachadas e alturas. Delas se torna possível inferir a cércea original da Casa da Ópera.

## CUNHAIS E VESTÍGIOS

O corpo proeminente é uma *unanswered question* da monotonia pombalina e o inspirador das conjecturas sobre o quarteirão do Arsenal<sup>12</sup>. Por analogia, ele introduz a possibilidade de adequar à imagem uma escala, ou *petipé*<sup>13</sup> próprio. As propostas de reconstituição adotaram diversos matizes das dimensões<sup>14</sup>. Aqui, adotamos a ótica literal das coincidências.

A tese dos vestígios arquitetónicos<sup>15</sup> introduz o terceiro parâmetro de conceção. Aceita-se como concreta a compatibilidade das singularidades do edifício e da gravura. Assim, após o cunhal nascente, há uma concordância entre o fragmento dextro do arco arruinado na imagem e a atual incongruência da água norte do telhado do Arsenal. Esta coincidência corresponde ao momento inicial da nossa compatibilização. Por abdução, tudo o que se segue é consequente: também o primeiro carpanel concorda com o corta-fogo do telhado central, e, no cunhal ocidental, sincronizam-se corta-fogo e segundo arco. Tais premissas esgotam a leitura horizontal da saliência, e validam um isomorfismo entre três elementos iconográficos e três elementos da cobertura. Esse isomorfismo fixa as dimensões e a situação em planta, ditando a primeira ordem de corolários:

- 1) São vizinhos cunhal nascente e vestígios do primeiro arco;
- 2) Após o cunhal nascente, Arsenal e ruína da Ópera salientam-se em planta;
- 3) Tal alargamento mantém-se até ao arco poente;
- 4) Após o arco poente, Arsenal e Teatro tornam à largura inicial.

Não aprofundando os efeitos da hipótese nos atuais modelos de reconstrução, a segunda ordem de consequências posiciona, por dedução, a Ópera relativamente ao Palácio Real:

- 1) Sendo vizinhos cunhal oriental e ruína do primeiro arco, todo o setor frontal de enfenestramentos estará a montante da saliência, no sentido do Terreiro do Paço;
- 2) Por simetria, também as fenestranças da Ribeira das Naus se situam aquém do cunhal nascente.

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<sup>12</sup> De José de Figueiredo a Soares Carneiro.

<sup>13</sup> Na senda do Cartesianismo, a cientificidade das escalas é a grande luta do Engenheiro-Mor Azevedo Fortes (1660-1749), como relatado na minuciosa monografia de Luís Manuel Bernardo (BERNARDO, 2005: 77-78).

<sup>14</sup> CÂMARA, 2005: 21-33.

<sup>15</sup> GALLASCH-HALL, 2012.

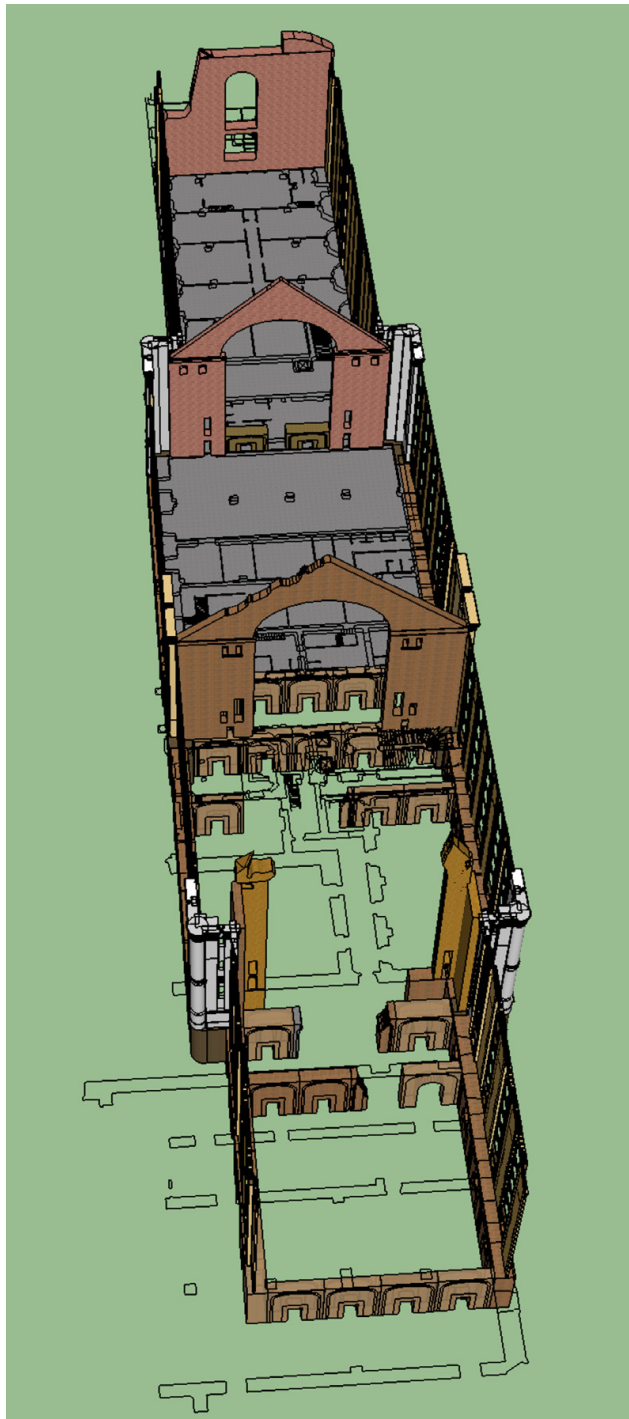


Fig. 2. Distribuição em planta

## PERSPETIVAS E ATRATORES

Na tradição simbólica, a *perspetiva real* deveria presidir à conceção da Ópera. Na ruína, Pedegache substitui-a pelo princípio iluminista da *perspetiva do cidadão*, o mesmo olhar de Hubert Robert, em *Incendie de l'Opéra* (1781). Enquanto convenção e limitação, tais perspetivas projetam volumes em superfícies planas. São-lhe inerentes princípios de ocultação, os quais, por sobreposição, tornam ilegíveis, ou invisíveis, os elementos

afastados. A nossa investigação doutoral, estados de equilíbrio, e *teoria das catástrofes*, como morfogénese dos intervenientes estéticos<sup>16</sup>, sugere aqui a necessidade de um número de *atratores* suficiente para a fundamentação da imagem. Assim, por indução, e pelo *Princípio de Maupertuis*, haverá um atrator, independente da visibilidade, a assegurar-nos um padrão de janelas longitudinalmente sustentado. Arquitetonicamente, nada de novo ocorrerá. Na gravura, esse atrator sustenta um simultâneo carácter operativo do valor estético da profundidade, enquanto bucólica e emoção barroca do infinito.

O segundo atrator posiciona o observador na Rua dos Cobertos, e guia a leitura frontal da fachada norte. À direita e esquerda, a mediana do corpo saliente impõe semelhanças de elementos. Ao atrator longitudinal contrapõe-se um atrator de simetria. À sequência de janelas orientais sucede-se o cumhal nascente, e, entre cumhais, nova sequência de janelas, após a qual o atrator se tornará vago.

O terceiro atrator é funcional, e assenta na concordância das propostas de reconstrução. Para este, estão camarotes, plateia e zonas de aparato. No ressalto, entre proscénio e poscénio, situam-se palcos, e, para oeste, zonas técnicas e de bastidores. A conjugação do funcional com o atrator de simetria valida a génese da zona poente da fachada norte. Esta simetria inclui os acessos exteriores, onde a proposta do modelo é meramente hipotética: após o arco ocidental, impõe-se menor presença de janelas e maior afastamento vertical. Retorna-se à perspetiva do cidadão, e afinam-se conhecimento e dados da gravura: imediatamente antes do carpanel ocidental e da fachada poente, o autor atesta sequências de janelas idênticas ao timbre frontal.

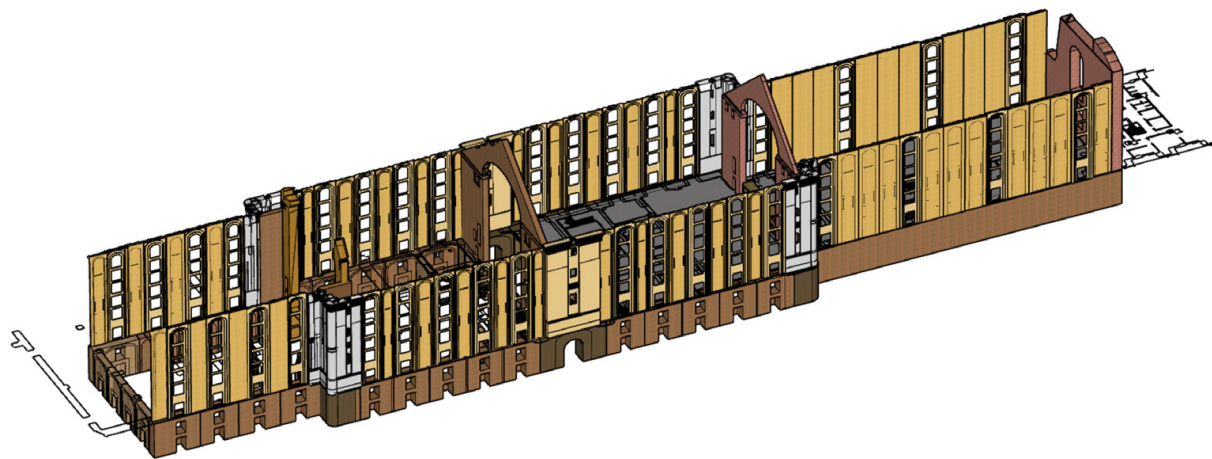


Fig. 3. A ruína, na Rua do Arco dos Cobertos

Desta conjugação se pode finalmente inferir a organização arquitetónica dos vestígios: à direita e esquerda, quatro fileiras verticais de janelas, interrompidas por um arco danificado, atrás do qual se situa o ressalto e um maior número de arcadas inferiores.

<sup>16</sup> COSTA, 2016.

Entre ele e o cunhal poente, reproduzem-se janelas. Na secção longínqua da gravura, subsistem moderados enfenestramentos, de distribuição hipotética. Após a sequência dos arcos de sustentação do piso<sup>17</sup>, desenha-se um plano horizontal contínuo, geralmente identificado como palco. De cada lado, perfilam-se duas volumetrias, com o significado de portas. Incluída a assimetria, o arco da fachada poente, e, no lugar exato do cidadão, a propositada (?) ausência de frontaria nascente, a imagem parece ter-nos transmitido toda a informação possível sobre os vestígios da Ópera.

## OS LUGARES INVISÍVEIS



Fig. 4. A perspectiva do cidadão, no modelo e na ruína

Outras diferenças separam a gravura de Le Bas da variante litográfica (1837) do «Jornal Encyclopédico»<sup>18</sup>. Na litografia, amontoam-se destroços de alvenaria das paredes-mestras da Ópera. Em ambas, as paredes do Teatro são menos espessas e mais altas do que as da Patriarcal. Só na gravura, as segundas surgem sustidas, decerto, pela

<sup>17</sup> No nível térreo, a atual descontinuidade estrutural aventa a hipótese do sacrifício de um eventual cunhal original, nascente/sul.

<sup>18</sup> JANUÁRIO, 2008: 599.

presença de varandas. O valor proposto para Bibiena é de 1,45 metros de grossura<sup>19</sup>, cifra verosímil para a resistência de 1755, mas incompatível com a representação. Incongruente com o olhar científico de Pedegache, esta discrepância assenta na finalidade de enfatizar elementos e otimizar informações.

A tacanhez da Rua do Arco dos Cobertos impede o respeito das escalas. Uma exata projeção de tal espessura de fachada colidiria com a rua exígua e tornaria ilegíveis os elementos humanos. Essa distorção tem caráter expressionista, e possibilita um notável arquetónico num urbano confinado. Apesar de óticamente inverosímil, a simultânea visibilidade, a norte e sul, de quatro enfenestramentos é o recurso adotado para maximizar dados e permitir caracterizar simetrias laterais. Respeitada a largura do Arsenal, também o modelo comprovará a dificuldade desta sincronia.

Esgotada a literalidade, devem-se concordar convenções de perspetiva e elementos locais. Após o cunhal nascente, o ressalto da Casa da Ópera posiciona-se num plano paralelo aos enfenestramentos frontais. Até ao arco poente, esta situação gera ocultação parcial de janelas e elementos. Embora determinantes da sobrevivência das fachadas, *tais cunhais encontram-se, pelas leis da ótica*<sup>20</sup>, *visualmente ocultos*. Qualquer opção estética assente na profundidade interior das ruínas os tornaria despercebidos. Pedegache decide sacrificá-los. Essa invisibilidade é uma pedra-chave do modelo.

Nela se formam, por abdução, os derradeiros corolários:

- 1) Ao adotar a perspetiva interior do ponto único de fuga, a gravura contém informação visível e informação invisível;
- 2) As distorções premeditadas maximizam dados, impedindo-os de colidir com outros dados;
- 3) De nascente a poente, a existência de simetrias norte e sul dita um módulo único de enfenestramentos;
- 4) Os quatro cunhais são uma cláusula fóssil da Reconstrução, sobreviveram ao Grande Sismo, e constituem uma explicação física da subsistência das paredes.

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<sup>19</sup> JANUÁRIO, 2015: 246.

<sup>20</sup> Januário atribui à atual saliência da esquina o valor total de 3,80m, sensivelmente 2,62 vezes maior do que a espessura das paredes-mestras. Perspetiva e distorção consideradas, a única possibilidade de visualização do cunhal nascente confina-se à fileira de janelas imediatamente anterior à direita do arco arruinado. Então, a breve zona iluminada, não perturbada por escoras, é a representação possível do cunhal nascente (JANUÁRIO, 2008: 670).

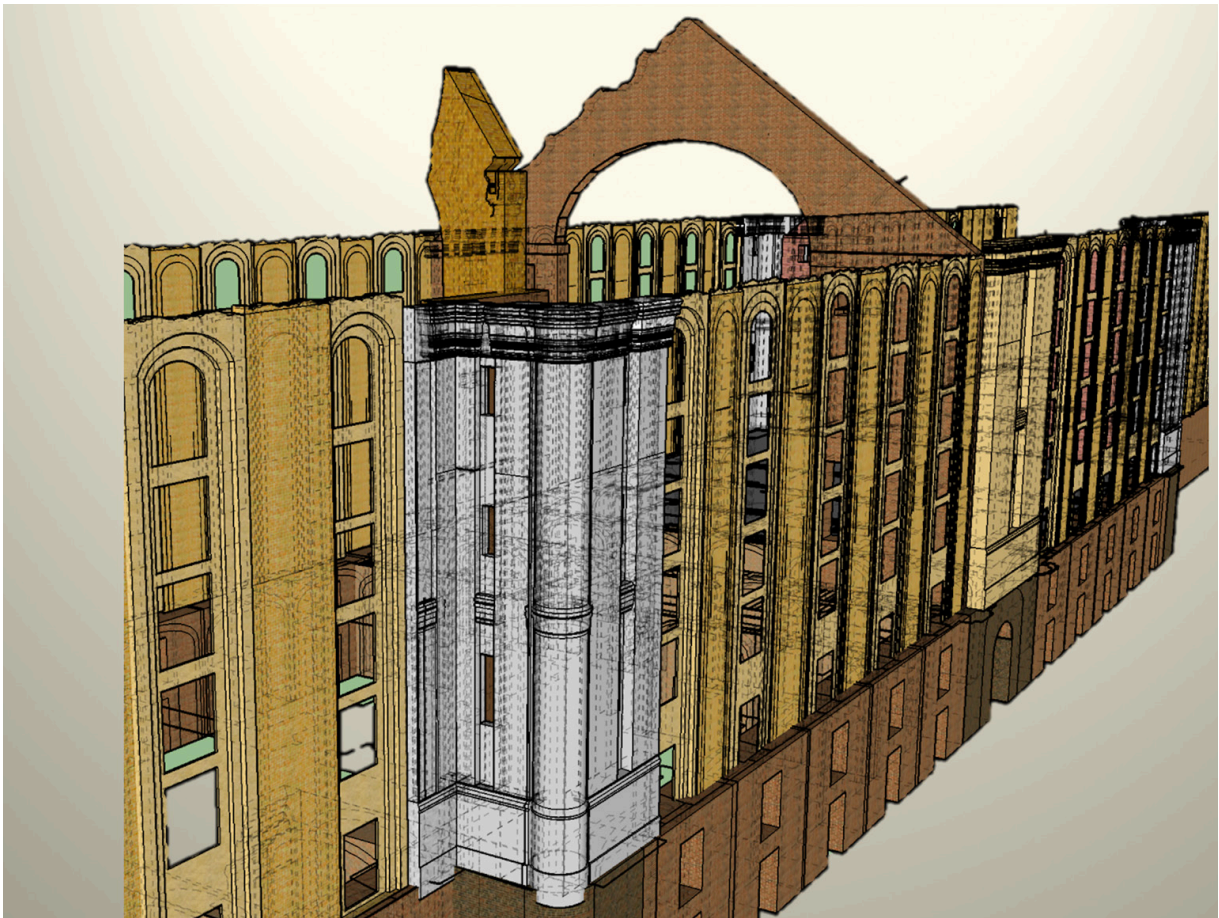


Fig. 5. Os cunhais ocultos

## A RATIO MUNDI

Dadas tais conclusões, passámos ao impacto da ruína na Reconstrução. Na *Relação* (1756), do Terremoto, Pedegache analisa as edificações, dividindo-as entre afetadas grandes e pequenas. «Todas [essas] casas descreverão hum arco, tanto maior, quanto mais altos foraõ os edificios, e quanto maior foy a sua distancia de centro»<sup>21</sup>. Pelo princípio de conservação angular, a velocidade aumenta nos pontos mais elevados e «os maiores edificios padeceraõ maior estrago [...] que os mais pequenos»<sup>22</sup>. Para os padrões do tempo, a Ópera não era obra baixa e sofreu severas perdas.

O pensador devolve aos danos a lição de uma peritagem de engenharia. Um dos arcos colapsou, mas os restantes ostentam estereotomias<sup>23</sup> próprias, e indicam um majo- rante natural da altura sísmica capaz. Ao cair, a madeira das asnas impediu-as de se tornarem em cunhas involuntárias de ruinosos esforços horizontais. «[...] O madeira- mento dos colmos fazendo-se sempre sem traves, as asnas se encolherão sobre o mesmo

<sup>21</sup> PEDEGACHE, 1756: 21.

<sup>22</sup> PEDEGACHE, 1756: 21.

<sup>23</sup> JANUÁRIO, 2008: 606.



muro, de sorte que o pezo do tecto, e do telhado faz o mesmo effeito, que hum cunho, e empurra os muros para fora»<sup>24</sup>. Na Ópera, todavia, e até aos níveis mais altos, as paredes-mestras resistiram. Na desfavorável topografia paralela ao rio, os simultâneos extremos da Terra, Água e Fogo transformaram o seu longo pano estrutural no desenho de uma quase incólume silhueta atmosférica. Também as fundações são notáveis, porquanto, constrangidas por aluviões e solos alagados<sup>25</sup>, sobreviveram à instabilidade e liquefação sísmica<sup>26</sup>. Excetuado o posterior colapso de topo da fachada oeste<sup>27</sup>, a volumetria do Teatro encontra-se em estado de ruína estável. Mesmo na lógica chã do ensaio destrutivo do laboratório, atravessou meteoros, e estoicamente sobreviveu à guerra dos elementos. O aterro diminuirá alturas, mas a sua resistência mais sairá reforçada, pois a Ópera é um milagre laico, a testemunhar direção e futuras dimensões possíveis. As suas paredes fazem o eclipsado Bibiena reemergir num inesperado triunfo da Engenharia.

Num inédito protocolo de circunstâncias<sup>28</sup>, Manuel da Maia inverte tradições e reúne artistas e técnicos para uma lógica agrimensural de sinalização<sup>29</sup> de «bandeiras firmes»<sup>30</sup>. Na memória futura das plantas da Sala do Risco, ela deverá refletir a real situação do terreno<sup>31</sup>. Obriga-se ao aterro dos escombros e à elevação e consolidação dos solos. O decreto de 29 de novembro de 1755 ordena-lhes a associação de paredes e posses<sup>32</sup>. Já o tombo dos estragos dita duas dinâmicas, a do «bota abaixo», do sargento-mor de engenharia, José Monteiro de Carvalho<sup>33</sup>, e a da «correspondência» de Da Maia, prevista na *Dissertação*<sup>34</sup>, do «antigo com o moderno, no caso de haver alguma comutação do velho com o novo, que he aonde consiste a mayor dificuldade»<sup>35</sup>. Entre tais destinos, indiferente ao profundo exercício de reafetação da propriedade<sup>36</sup>, o *Decreto da Ribeira das Naus* fixa-lhe, em 1758, a definitiva metamorfose do Cetro: «a indispensavel necessid.de q[ue] há não só de reparar as sobreditas roinas [...] mas de ampliar os m.<sup>mos</sup> edificios, de sorte q[ue] nelles hajaõ as competentes accomodaçoens de q[ue] antes careciaõ, p.<sup>a</sup> constituïrem o primeiro Arsenal da n.<sup>a</sup> Real Marinha»<sup>37</sup>.

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<sup>24</sup> PEDEGACHE, 1756: 21.

<sup>25</sup> JANUÁRIO, 2008: 521.

<sup>26</sup> CHESTER, 2003: 374.

<sup>27</sup> «Mr. Ward, [...] vizinho imediato do monumento me contou no dia seguinte, que naquele instante ia ele a sahir de casa, [...] quando a parte do teatro que olhava para Occidente desabou toda» (JANUÁRIO, 2008: 593).

<sup>28</sup> SILVA, 2008: 132.

<sup>29</sup> FORTES, 1729: 35.

<sup>30</sup> AYRES, 1910: 31.

<sup>31</sup> AYRES, 1910: 39.

<sup>32</sup> AYRES, 1910: 21.

<sup>33</sup> MONTEIRO, 2008: 92.

<sup>34</sup> AYRES, 1910: 34.

<sup>35</sup> AYRES, 1910: 45.

<sup>36</sup> AYRES, 1910: 46.

<sup>37</sup> GALLASCH-HALL, 2012: 72.

A frase final afina-lhes a função de *templum*<sup>38</sup> e lugar técnico da conceção das naus. Por «comutação», o monumento torna-se na sede administrativa e militar do Ministério das relações ultramarinas da Marinha, de onde provêm os principais rendimentos da Fazenda e da Coroa<sup>39</sup>.

A Eugénio dos Santos, *Arquitecto do senado*, incumbe «dar desenhos» sobre as simetrias de altura e formas encontradas em portas e janelas, para inspiração das partes da cidade a edificar de novo<sup>40</sup>. Esses serão os esboços de Gualter da Fonseca, Pinheiro da Cunha, José e Elias Pope, Carlos Andrea e Eugénio dos Santos. Uma das melancolias da *Dissertação* é a Rua Nova dos Ferros, a *decumanus maximus* dos traçados romanos: «conservar algúas ruas no seu próprio estado, como [...] a rua nova dos ferros, e ainda a dos Escudr.<sup>os</sup> e Odreiros»<sup>41</sup>. Esta persistência dita o pentágono irregular da tensão entre a Rua Nova e a ortogonal do Paço e Ópera<sup>42</sup>. Nada dela subsistirá, para além da inflexão da Rua da Alfândega, e dos vestígios integrados da Misericórdia, pois que, ao pentágono, os modelos ora opõem retângulos secos, concordantes, ou longitudinais, ao rio. Paralela e perpendicularmente, respeitam-se as reservas científicas de Kant<sup>43</sup>, e o novo xadrez da Baixa, elidindo a predominância de paralelismos ao rio, sobretudo expõe, à propagação das ondas sísmicas<sup>44</sup>, fachadas e eixos de mais diminuta extensão<sup>45</sup>.

Às expensas das fronteiras minimizadas do princípio protetor, o novo plano secular<sup>46</sup>, «regular e decoroso»<sup>47</sup>, da zona nobre e «erudita»<sup>48</sup> da Reconstrução, acresce armazenamentos, e incrementa interfaces comerciais. Após a *Patriarchal* e a *Residência*, também os teatros da majestade devem agora partir em busca de novos lugares. O derradeiro Eugénio dos Santos culmina a dialética na proporção de lados quadrangulares da Idade Moderna, onde as três paridades, simbólica, bélica e mercantil, se sacralizam, na definitiva morfogénese de frente em U.E., com o rei recolhido *in Absentia Principis*<sup>49</sup>, todo o espaço se reordena<sup>50</sup>, *in melodiam absentia*. Porquanto, por economia e equilíbrio, também o «grande L»<sup>51</sup> do eixo fóssil de Lisboa definitivamente colapsa no eixo

<sup>38</sup> «Templum, espace délimité dans le ciel par le bâton des augures pour servir de champ d'observation au vol des oiseaux. La projection sur le sol de cet espace délimite les temples et autres espaces consacrés» (DURET & NÉRAU-DAU, 1983: 13).

<sup>39</sup> AYRES, 1910: 36.

<sup>40</sup> AYRES, 1910: 41.

<sup>41</sup> AYRES, 1910: 35.

<sup>42</sup> SANTOS, 2012: 125-129.

<sup>43</sup> KANT, 2005: 43-44.

<sup>44</sup> MIRANDA, 2011: 14.

<sup>45</sup> AYRES, 1910: 6.

<sup>46</sup> ANDRÉ, 2012: 269.

<sup>47</sup> MONTEIRO, 2008: 83.

<sup>48</sup> SILVA, 2008: 132.

<sup>49</sup> FARIA, 2012: 223.

<sup>50</sup> RATTON, 1920: 221.

<sup>51</sup> FRANÇA, 1989: 33.

topológico do Tejo<sup>52</sup>, onde, *thomsianamente*, se identifica a *catástrofe*, uma típica catástrofe em forma de cúspide, na qual o tensor morfológico da organização da malha, pelo atrator inicial da Rua dos Ferros, passa à obediência do atrator axial da Rua do Arsenal<sup>53</sup>. Sob o olhar do estilizado rei-estátua, a cidade é agora finalmente livre de comerciar.

## CONCLUSÃO

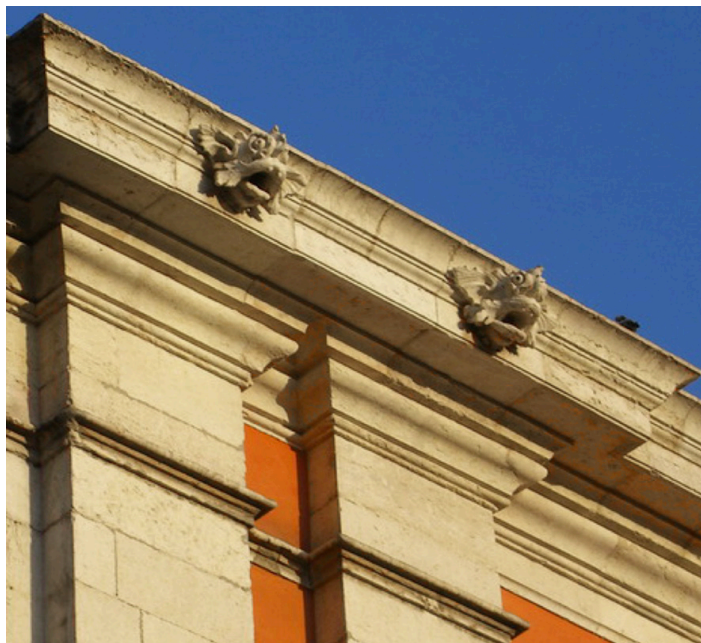


Fig. 6. Os tritões<sup>54</sup>

Este ensaio aceitou a tese da persistência dos despojos arquitetónicos da Casa da Ópera, identificados por Gallasch-Hall na imparidade dos pisos do Arsenal com a métrica das janelas da ruína<sup>55</sup>, e aplicou-lhe o destino «económico» das «pedras mortas»<sup>56</sup>, condenadas, pela arquitetura, à sobrevivência<sup>57</sup> expedita das *fachadas-epitáfio*. Tal foi o ajuste de contas proporcionado pela «desgraça mais feliz»<sup>58</sup>, do Grande Sismo, às antigas pelejas<sup>59</sup> entre italianos arquitetos e nativos engenheiros<sup>60</sup>, pois que, por «comutação» da *Arquitetura* em *Urbanismo*, a cidade inviável de Ratton<sup>61</sup> assim se viu extinta no simplismo da escola militar.

<sup>52</sup> «a morfologia pode sempre ser [...] encarada como uma resposta local a uma predominância de [atratores]» (COSTA, 2014: 31).

<sup>53</sup> «En tout point, le régime qui l'emporte est le minimum le plus bas» (THOM, 1980: 91).

<sup>54</sup> Os tritões do Arsenal.

<sup>55</sup> GALLASCH-HALL, 2012: 69.

<sup>56</sup> SILVA, 2008: 132.

<sup>57</sup> SILVA, 2008: 46.

<sup>58</sup> ROSSA, 2008: 46.

<sup>59</sup> AYRES, 1910: 20.

<sup>60</sup> AYRES, 1910: 40.

<sup>61</sup> RATTON, 1920: 223-224.

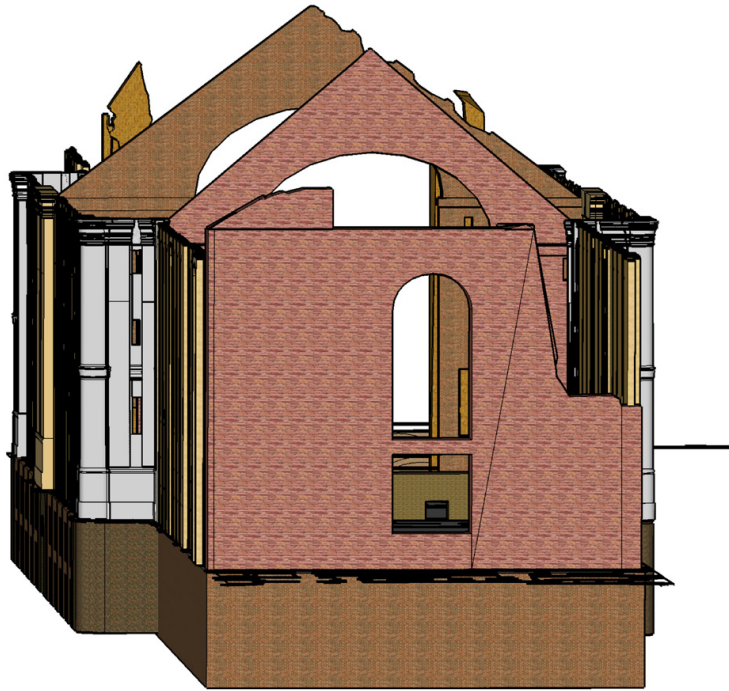


Fig. 7. Ruína da fachada ocidental

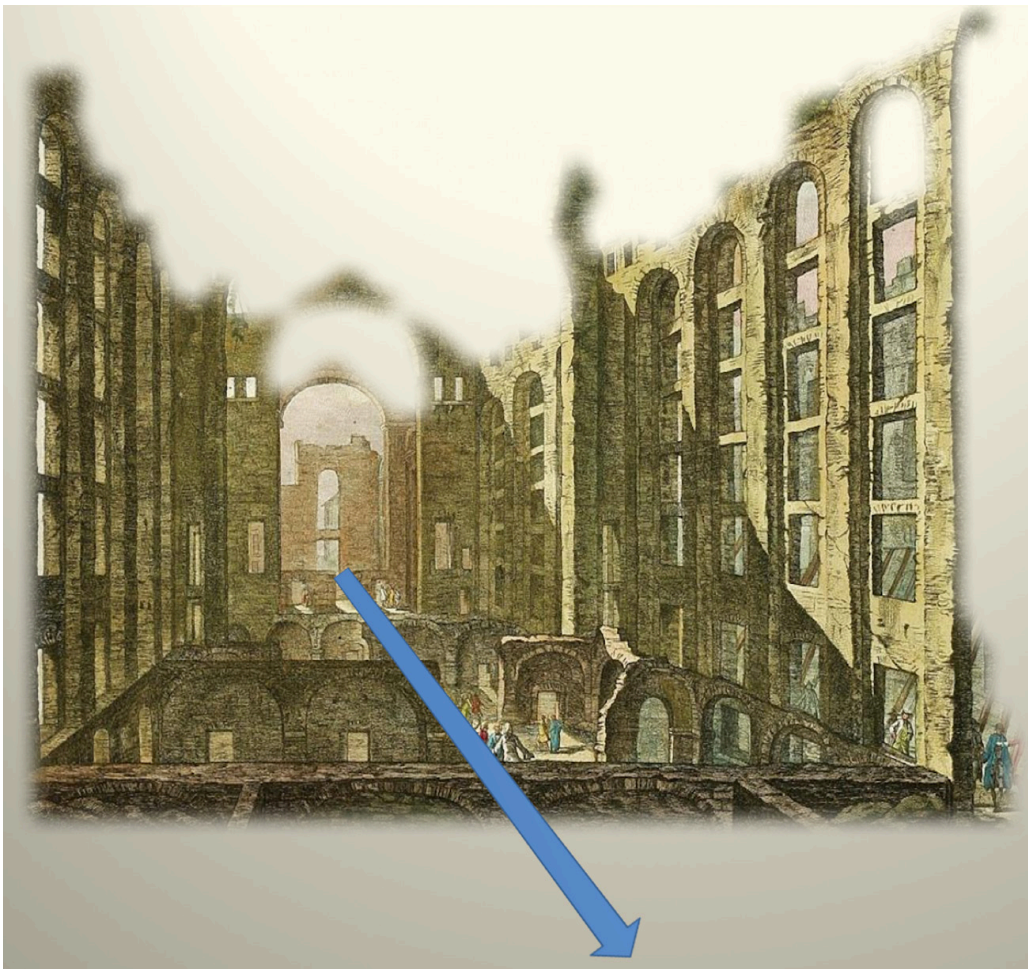


Fig. 8. Mira da fachada poente

Dada a evidência do singular desvio axial entre a Baixa e o norte geográfico, a nossa hipótese considerou, *ratio mundi*, a mira natural da janela da fachada poente como eixo inaugural da Reconstrução. Por ela, e findo o esplendor interior, a ruína da Ópera impôs, *vanitas vanitatum*, e a *cerca de 13° NO*, a definitiva orientação da Reconstrução. Sobre tal linha, os técnicos da Sala do Risco assestaram instrumentos<sup>62</sup>, talvez a velha *groma*, a *prancheta*, o *livel*, ou o *oculo*, de Azevedo Fortes, e fixaram a nova *decumanus maximus*. Nem a aplicação dos *textos gromáticos*, de Higino, ou dos *cadastros* de Orange, nem a divisão em centúrias, ou o seu eventual alinhamento com a estátua e o torreão nascente, ainda que remanescendo meras conjeturas, aqui se excluem ou aprofundam, apenas se retendo que, fixado o *locus gnomæ* e a *cardus* da Rua Augusta, todo o traçado hipodâmico da Baixa se tornou racionalmente viável<sup>63</sup>. E é nesse traçado simplificado que o sonho barroco do monumento sofreu a osmose final de uma reconciliação cartesiana: tal o ângulo do Picadeiro, o desvio da Conceição Velha e as esquinas chanfradas do Convento Corpus Christi, também os edifícios do Arsenal cumprem hoje a derradeira missão de *mausoléu* do Real Teatro de Bibiena.

Foram os seus 100 metros, ritmados de fachadas calcinadas<sup>64</sup>, a ditar aos olhos e mentes da Sala do Risco as formas, a *cércea*<sup>65</sup> e as bitolas do passeio oposto do Arsenal. Neles se cumpriu o majorante natural dos gabaritos norte e sul da rua<sup>66</sup>, primeiro, se espraiando à desejada largura mínima da via, de Manuel da Maia<sup>67</sup>, «formando novas ruas com liberd.º competente, tanto na largura, como na altura dos edif.ºs q nunca poderá exceder a largura das ruas»<sup>68</sup>, e, em seguida, contagiando a volumetria, a orientação e as próprias formas da Praça do Comércio. As questões finais serão porventura ainda mais hipotéticas, por ecoarem um Arsenal apoteótico na influência das envergaduras e quarteirões da Reconstrução, a ditar, pela metamorfose das ruínas da Ópera de Sicino, um silencioso módulo póstumo, inspirador de toda a morfologia pombalina.

Para lá das intuições, apenas a peritagem forense, e a datação laboratorial dos elementos, adequando quantidades e dimensões de cadernos originais de encargos às volumetrias possíveis, poderá desfazer suspeitas, e é esse o desafio dos leitores do texto. Num tom quimérico, a nossa dissertação cessa aqui, por que também o modelo será aperfeiçoado, e, na desapareição decorativa dos seus atlantes interiores<sup>69</sup>, acreditaremos em muitos tritões ocultos, vigiando ritmos nos cunhais originais de Bibiena. Tal a

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<sup>62</sup> BERNARDO, 2005: 77.

<sup>63</sup> FORTES, 1729: 34.

<sup>64</sup> RATTON, 1920: 20.

<sup>65</sup> Dimensão vertical medida desde a cota de soleira até ao ponto mais alto do edifício, incluindo a cobertura. O termo *cércea*, *bitola* ou *gabarito*, é usado, em engenharia, para referir a altura da edificação.

<sup>66</sup> AYRES, 1910: 30.

<sup>67</sup> RATTON, 1920: 221.

<sup>68</sup> ROSSA, 2008: 49.

<sup>69</sup> JANUÁRIO, 2008: 108.

Pompeia e Herculano, de Carlos III de Bourbon-Nápoles, assim Miguel Tibério voltará a ocultar o infortúnio do arquiteto nos segredos da sua gravura, oferecidos ao Rei de Portugal como espantosas ruínas. E, como previsto, da mesma forma, o grande Cometa Halley voltará, não no modo de Kepler, mas no de Cassini e Pedegache<sup>70</sup>, pois que, numa estranha analogia dos céus, também os abalos conhecem a lógica dos ciclos, e se regem por uma simples equação cósmica, num outro paradoxo do Grande Sismo de Lisboa.

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<sup>70</sup> Contraposto a Kepler, o intelectual Pedegache adota a tese Cassini da órbita cíclica dos cometas (PEDEGACHE, 1757).

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# TEMPORARY POLYCHROME: COLOUR DIGITIZATION OF THE ORNAMENTATION FOR CARLOS IV'S ENTRY INTO MADRID, 1789\*

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ISABEL SOLÍS ALCUDIA\*\*\*

The aim of this proposal, from a digital perspective, was to test out the polychrome of temporary structures erected in 1789 for the occasion of the enthronement of Carlos IV, an event that has been considered as the last festivity of the Old Regime in Spain<sup>1</sup>. All the towns in the kingdom celebrated this glorification of the new sovereign with diverse degrees of ostentation<sup>2</sup>, but it was in Madrid where the maximum splendour was attained, with the presence of Carlos IV himself, his wife, María Luisa, and the Prince of Asturias. The royal couple and their eldest son formed part of the entourage that paraded the streets of Madrid on the 21st and 23rd of September, this second day to attend the oath of allegiance of the Crown Prince. The hopes vested in the new king were a good reason for adorning the city; an event that exalted the king and which was to transform a specific area of the city's fabric for just a few days: calle Mayor, calle de Atocha and the Carrera de San Jerónimo, including the square of the Royal Palace, the Plaza Mayor and the Salón del Prado. The main dignitaries of the time: the aristocracy; corporations and guilds; and the religious institutions, all put their efforts in erecting

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<sup>1</sup> BONET, 1983.

<sup>2</sup> SOTO-CABA, 1990.



series of arches and colonnades upon curtained façades to conceal the old, ramshackle mansions of Madrid.

A publication by the *Imprenta Real* (royal printers), the year of the celebration, gives a detailed account of these temporary structures in the *Descripción de los Ornatos Públicos con que la Corte de Madrid ha solemnizado la Feliz Exaltación al Trono de los Reyes Nuestrros Señores Don Carlos III. Y Doña Luisa de Borbón, y la Jura del Serenísimo Señor Don Fernando, Príncipe de Asturias* (*Description of the public decorations with which the Royal Court of Madrid has celebrated the happy Enthronement of our King, Don Carlos IV and Queen, Doña Luisa de Borbón, and the Oath of the Most Serene Don Fernando, Prince of Asturias*). This work was anonymous, although the text has been attributed to the permanent secretary of the Academy, Joseph Moreno (Fig. 1).

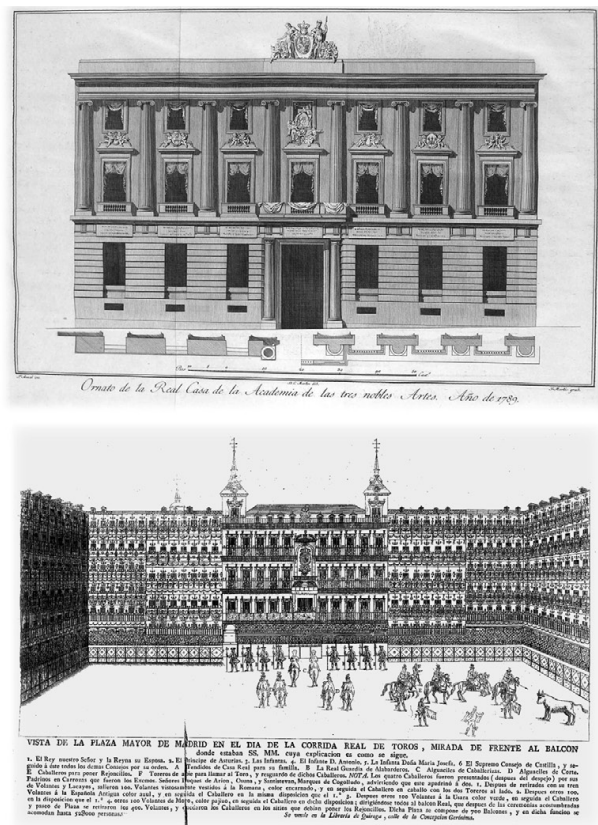
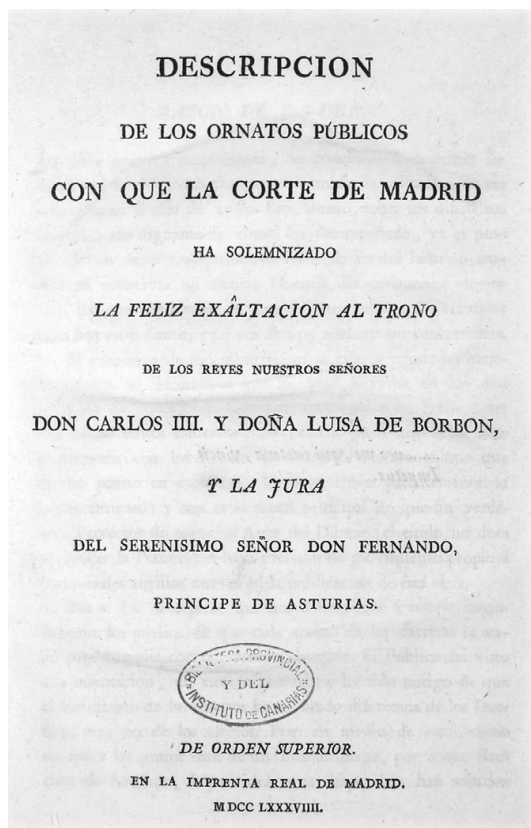


Fig. 1. Cover of the leaflet of *Descripción...* of 1789, and two cards of the ornaments

This was the fundamental source for our project to produce a video on the festival and a virtual reconstruction of some of the temporary decorations. This book does not centre on the actual ceremonies and festivals of the celebration, however. Its sole purpose is to describe the temporary decoration that was erected in the two *carreras*, which the monarchs and their entourage paraded along. This ornamentation involved a total of 29 decorations, 9 of which are depicted in 11 prints by Francisco de Paula Martí, taken from original designs and drawings (Fig. 2). Four of these drawings are housed

in Madrid's Academy of History<sup>3</sup>. There is also another document that accurately maps out the route of the entourage: *Prevenções y Reglas que deben observarse para el mejor orden y quietud en las fiestas Reales dispuestas en celebrad de la exaltación al trono del Rey. N. Sr. Don Carlos IV. Y Jura del Serenísimo Príncipe de Asturias Don Fernando en los días 21, 22, 23 y 24 de Septiembre de 1789* (Prohibitions and Regulations to be observed for the best possible order and calm during the royal festivities, arranged for the celebration of the coronation of King Carlos IV and the oath of allegiance of the most serene Prince of Asturias, Don Fernando, on 21st, 22nd, 23rd and 24th September, 1789). (Madrid, 1789, print works of Don Pedro Marín).

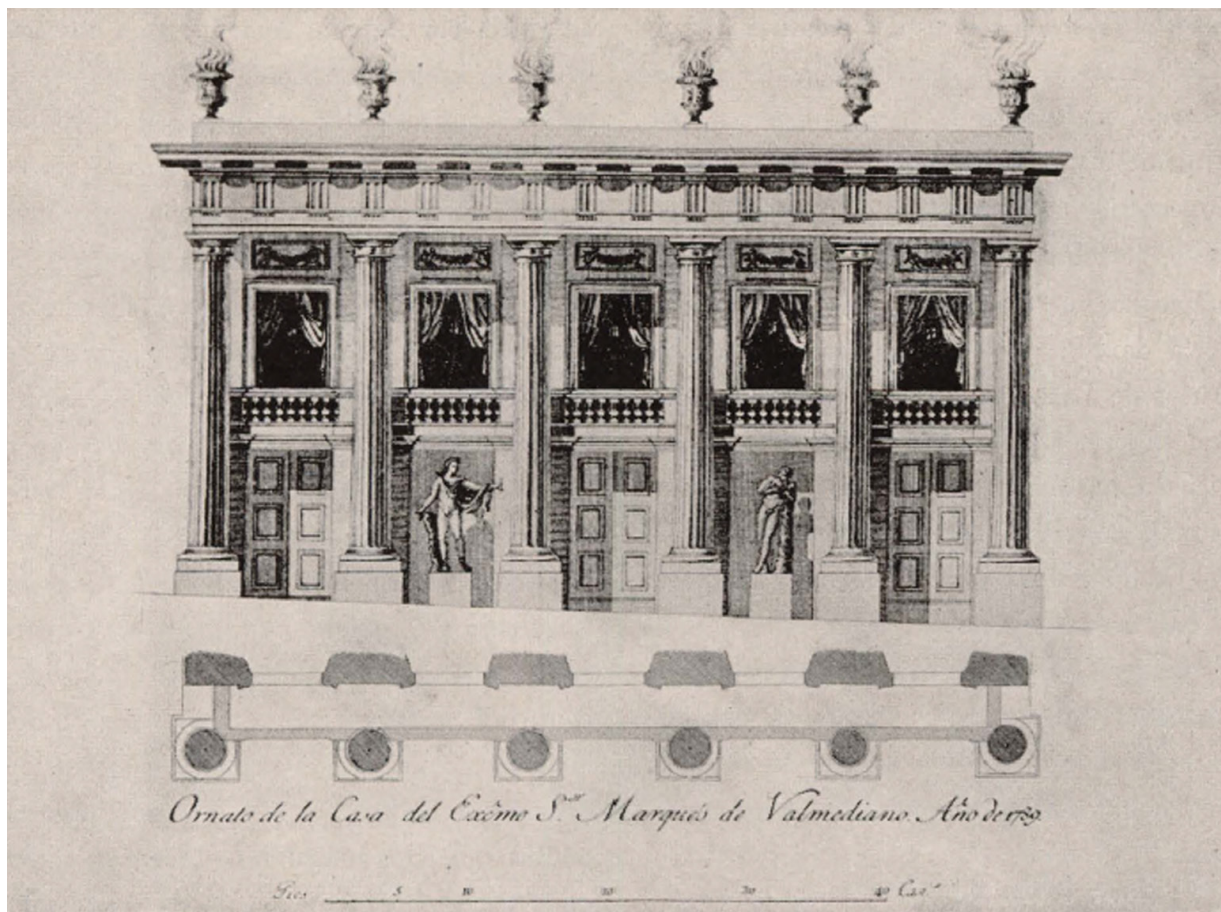


Fig. 2. Card of the ornament built in Marquis of Valmediano's house, included in the *Descripción...* of 1789

This is a set of provisions that enabled us to rebuild the route of the entourage and closure of streets using palisades, where the entourage passed, using a 1785 plan of Madrid by Tomás López. This was, thus, an urban map of this great spectacle, demonstrating the scale of absolute control exercised upon the city. It is at the beginning of the modern age that we find the beginnings of this circular route for the celebration

<sup>3</sup> TOVAR MARTÍN, 1980.

of festivities, proclamations and the entry of queens, however in 1789 this already formed a triangle with three vertices (the Royal Palace, the Basilica of Nuestra Señora de Atocha and the Palacio del Buen Retiro), in a circular route that demonstrated the power over the city within a process of urban appropriation. After reconstructing this circuit visually, the temporary decorations were placed along their respective *carreras* (Fig. 3).

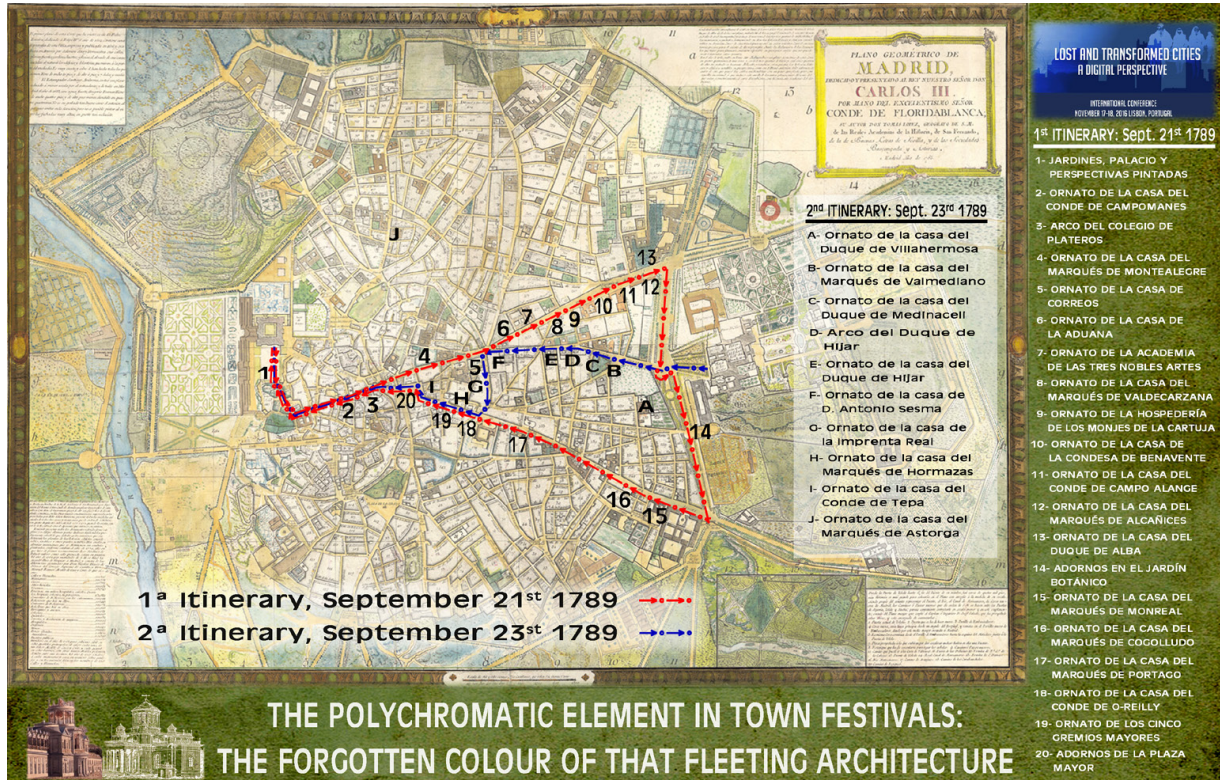


Fig. 3. Routes of *carreras* for the Carlos IV exaltation throne, frame from the video presented in *Lost and Transformed Cities* (Lisbon, 2016) by Victoria Soto-Caba and Isabel Solís Alcudia

These festivities have attracted the attention and interest of historians of art and architecture due to the fact that they formed part of the culmination of neoclassical expression and because the best architects, sculptors and painters of the time were involved in producing these temporary structures: Pedro Arnal, Manuel Martín Rodríguez and Juan de Villanueva — the triumvirate of neoclassicism who had begun during the previous reign of Carlos III, as well as architects of a next generation, such as Silvestre Pérez and Antonio López Aguado. There were also architects such as Mateo Guill, Mateo Medina, Carlos de Vargas Machuca and Blas Cesáreo Martín. Drawings by the already deceased architect of Madrid, Ventura Rodríguez, were used to devise some of these façades. The work was undertaken by masters such as Manuel Bradi, as well as many involved in assembly. The sculptors who participated were: Alfonso Bergaz, Josef Piquer, Josef Ripoll, Manuel Tolsá, Francisco López, Lázaro Rodríguez Medina, Josef Ginés, Anselmo Doret, Pablo Cerda, Vicente Rudiez, and Pedro and Felipe Salve, all teachers of sculpture.

Also involved were architects of stage design, such as Felipe de la Fontana and the brothers Antonio and Angel Maria Tadey, all three of Italian origin. Among the painters, the book mentions Josef Perroqueti, Isidro Carnicero, Bernardo Costa, Josef Micó, Josef López Enguidanos, Zacarías Velázquez and Luis Paret and Alcázar. Also forming part of this temporary architecture were portraits of the new monarchs by Francisco de Goya.

Advisers such as Jorge Balsá and a large number of general workers, gilders and painters should also be added, in view of the scope of these temporary projects. Coverings were mostly curtained façades, which, in the opinion of the author of the *Descripción*, concealed the aberrations, extravagances and monstrosities of the ‘vulgar’ and ‘small-minded’ Madrid architecture, as in the case of Academy of the Three Noble Arts itself. This printed book is a genuine plea against the Baroque past, as well as a clear exaltation of the neoclassical good taste which, for just a few days, illuminated the city of Madrid.

The fact that the most salient feature of ‘official’ art, neoclassical aesthetics, should be summarised in a festival at the close of the last decade of the eighteenth century has been a recurring theme in Spanish historiography on temporary art. Here is not the place to expound upon that topic. However, it should be remembered that many years later, in 1945, and still in full post-war reconstruction, the architect and town planner, Pedro Bidagor, wrote an article on the architectures of that celebration in the magazine *Reconstrucción* which, from a year after the Civil War, was edited by the General Directorate for Devastated Regions and Repairs, to publicise the restoration work after the damage caused by the war.

Bidagor, who, at that time, headed the Technical Office for the Madrid Board of Reconstruction, and at a time when building policy was trying to recapture the most prestigious and outstanding periods of Spanish architecture — that is, the tradition of Juan Herrera and therefore the emblematic constructions of Villanueva — this clearly identified with the exceptional value of the great compositions of figurative architecture, overflowing with classicism in 1789, as what is ‘critical’ and what is ‘applause’ «was seen then, as it is now»<sup>4</sup>. The full participation of Juan de Villanueva, leader of the neoclassical movement, was also a reason for reflection a decade later with Luis Moya.

When Moya took on the celebration project, he analysed Villanueva’s temporary façade for the front wall of the garden of the Duke of Alba’s house and included a drawing of it in an axonometric perspective. This we used for virtual reconstruction (Fig. 4), and compared it to the projects of the then Royal Office of Natural History, today the Prado Museum — the great legacy of that neoclassical architect<sup>5</sup>.

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<sup>4</sup> BIDAGOR, 1945: 82.

<sup>5</sup> MOYA BLANCO, 1952: 18-25.

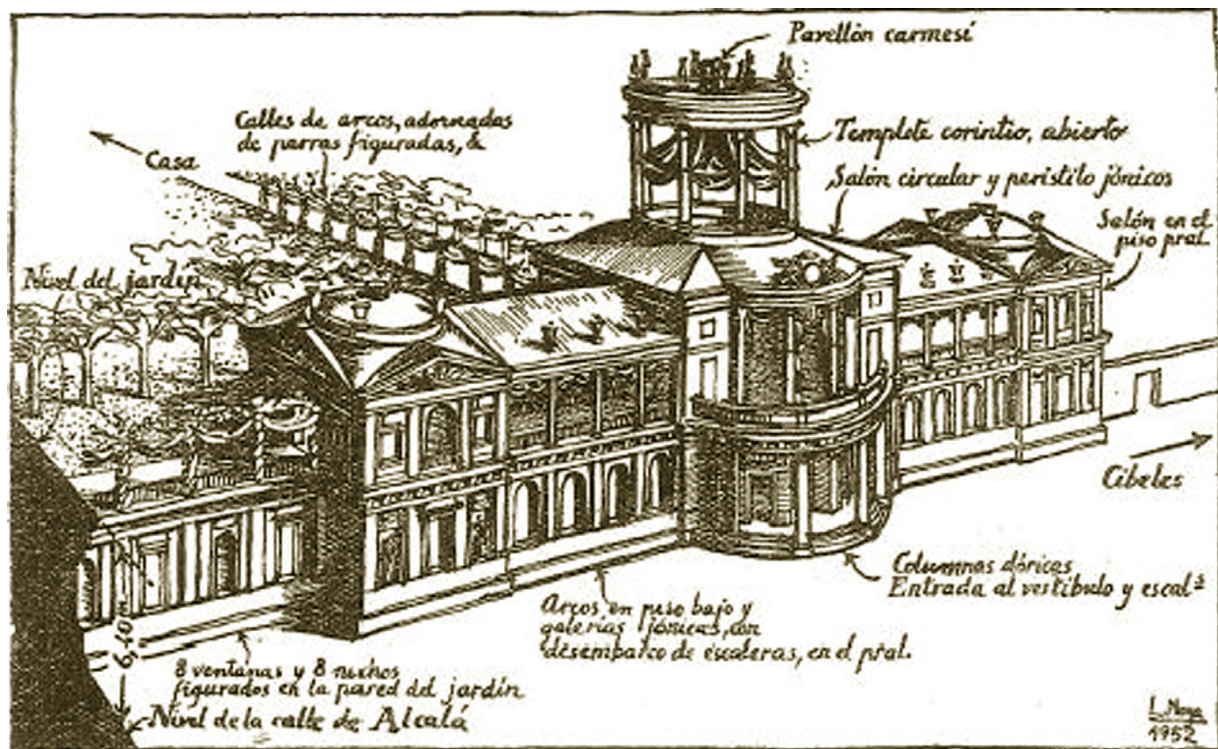


Fig. 4. Axonometry of the ornament projected by Juan de Villanueva for Duke of Alba palace (MOYA BLANCO, 1952)

The interest in studies on the festivities of the modern age was to continue in the numerous works of Antonio Bonet, where we find the proclamation of 1789<sup>6</sup>. This is also the case of other authors<sup>7</sup>. The research into Juan de Villanueva followed the same pattern from the point at which Chueca Goitia, along with Carlos de Miguel, entrusted themselves with the biography of the architect<sup>8</sup>, as well as other neoclassical architects<sup>9</sup>. This continued with contributions from recent years<sup>10</sup>, which have run parallel with numerous texts of exhibition catalogues.

If the festivities of 1789 and their principal craftsmen have been the object of a generous bibliography, there is, however, one aspect of all this that cannot make the same claim. This is the polychrome element in the decoration; the element that made the festivities of the Old Regime bright and colourful<sup>11</sup> and whose analysis is usually ignored, although this is almost always mentioned in studies. For Tojas López this is a fundamental component of temporary ornamentation, reiterated repeatedly by the descriptions that emphasize «the value that is given to these structures where everything

<sup>6</sup> BONET, 1983; BONET, 1990; BONET, 1993; BONET, 2000.

<sup>7</sup> FERNÁNDEZ DELGADO, 1984.

<sup>8</sup> CHUECA GOITIA & DE MIGUEL, 1949; CHUECA GOITIA, 1983.

<sup>9</sup> SAMBRICIO, 1986; SAMBRICIO, 1988.

<sup>10</sup> AA. VV., 2009; MOLEÓN, 1988; MOLEÓN, 1998; MOLEÓN, 2011; MOLEÓN, 2012.

<sup>11</sup> SOTO-CABA, 2004: 351-370.

architectural is jasper, in various different tones, and *virtuoso* imitation: the supposed stone in shafts, architraves and friezes; the gold on pedestals, capitals, cornices and decorative details... and a multitude of statues, usually of bronze, gold and silver», to which must be added the pictures that were hung; the clothes; the draperies and textile elements that added colour scheme to this temporary device, in addition to the candelabras, crystal chandeliers and other forms of illumination. The printing of the chronicles has deprived us of this chromatic image and there are only a few drawings conserved — views and painted canvases, such as those attributed to Lorenzo Quirós in Madrid's History Museum: the entry of Carlos III (Madrid, 1759). These can, indeed, offer us «the value of the colourful and insistent imitation of jasper and metals»<sup>12</sup>.

Naturally, the colour of these temporary structures was recorded and detailed — albeit briefly — by the author of the *Descripción de los Ornatos*. In his account he refers to pretence, with the application of colour to achieve the appearance of reality, and defends the fact that «the prints should be sufficient to form an idea». However, this, today, is a monochrome idea, in black and white (Fig. 5). The image of the print is not sufficient to gauge the final finish of what was so fleeting.

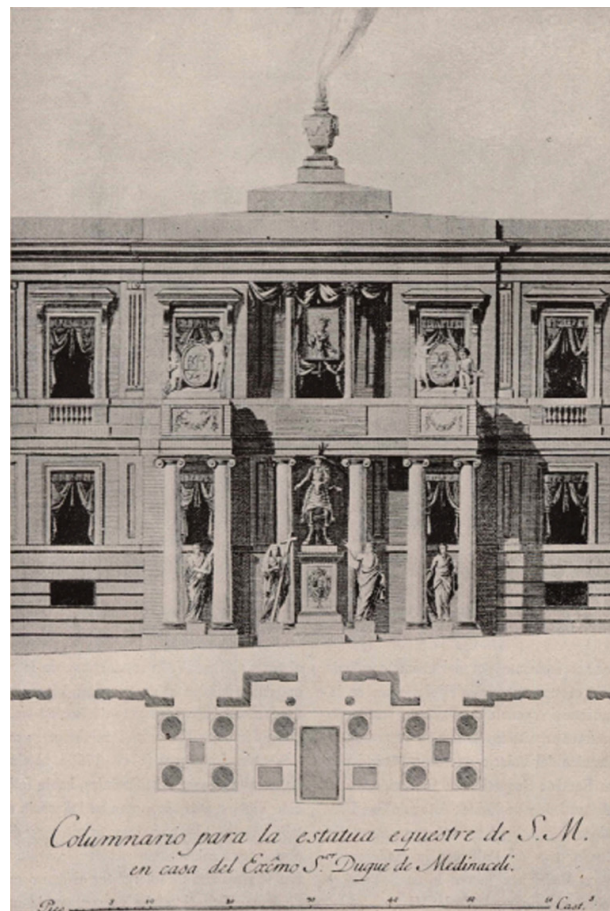


Fig. 5. Card of the ornament built in Duke of Medinaceli's house, included in the *Descripción...* of 1789

<sup>12</sup> TOAJAS LÓPEZ, 1992: 115.

Moreno insisted on a polychrome specialised in faking granite, marble and jasper, and thus speaks of three-dimensional structures, where «nothing was feigned, and even the smallest decorative border was real and corporeal», as was the case of the free-standing archway erected by the Duque of Híjar (Fig. 6), or the decor to conceal the facade of the Academy of the Three Noble Arts. In the latter case, these were facades built as a series of projections, made essentially of wood, which could provide some depth or a real third dimension. Moreno also mentions the facades of unique and smooth surfaces where «everything was painted in perspective», such as the house of the Marquis of Valdecarzana in Calle de Alcalá, where six colossal jasper Corinthian columns, capitals and pedestals of gilded bronze were reproduced in imitation, with the remainder in imitation stone.

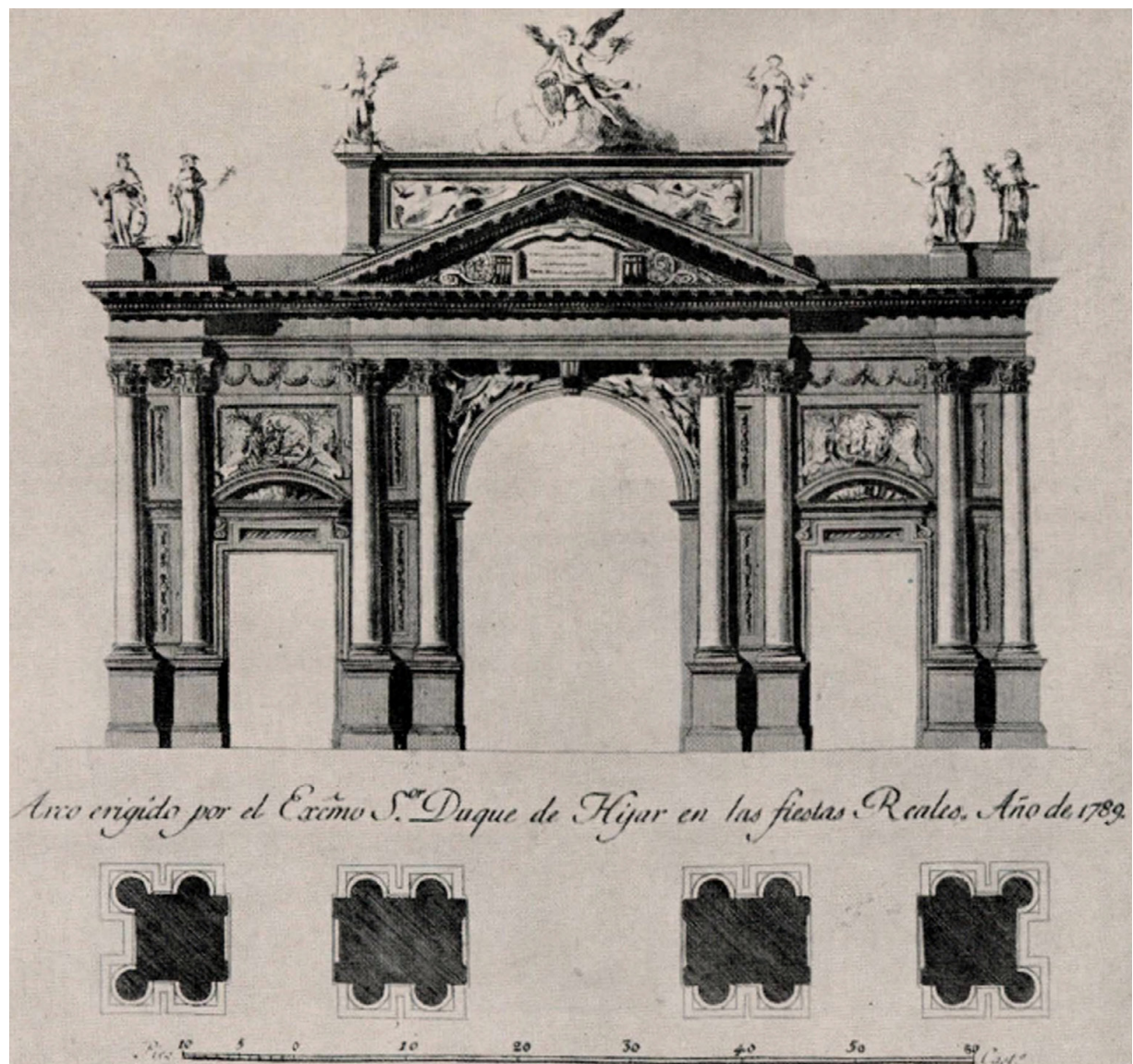


Fig. 6. Card of the arch built at the expense of Duke of Híjar for Carlos IV proclamation, included in the *Descripción...* of 1789

Likewise was the case of the house of the Marquis of Alcañices, where «balconies, parapets and balustrades were painted on frames imitating stone» (Fig. 7). In other cases, such as the house of the Conde de Campo Alenge, «the entire façade was decorated with plasterwork». These imitations on smooth surfaces respond to the pictorial practice of illusionism through perspective and geometry, and undoubtedly refer to the maximum visual and spatial device achieved by the *quadrature* (illusionistic ceiling painting) from the sixteenth century onwards<sup>13</sup>.

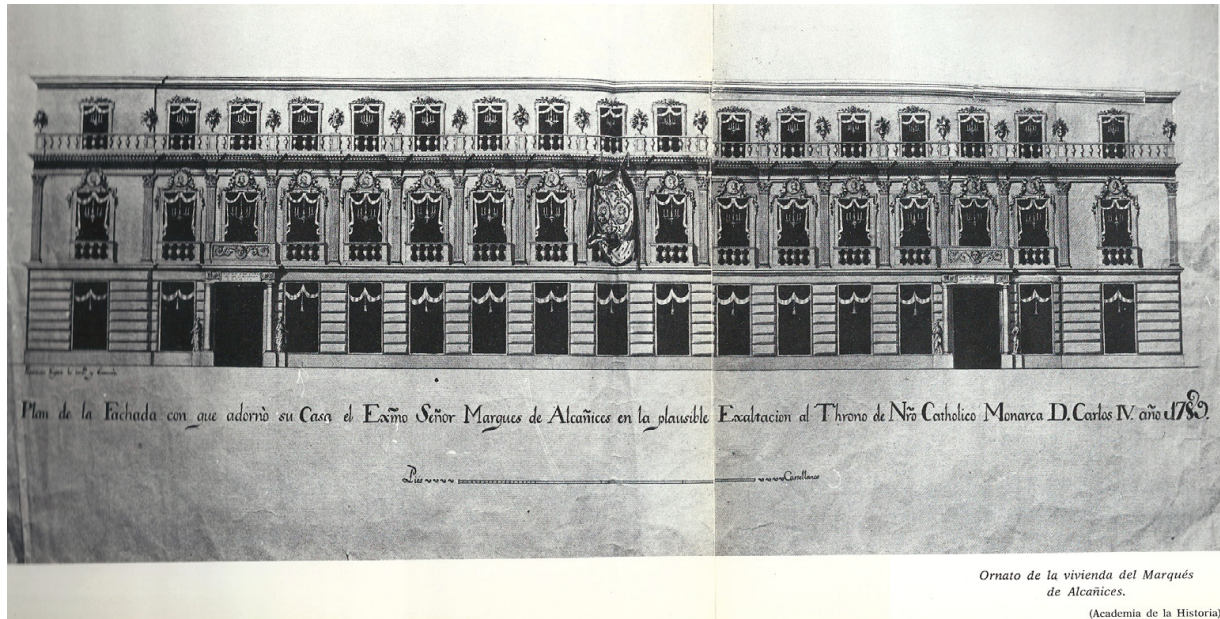


Fig. 7. Project for the ornament built in Marquis of Alcañices' house, drawing by Francisco Lopez, 1789  
Academy of History, Madrid

In this temporary architecture of 1789, fine brass sheeting continued to predominate, giving the appearance of precious metals, since bronze, silver and gold on statues was a repeated feature (works in silhouette, cut out on panels, or in full relief in plaster), alternating with figures also profiled in *chiaroscuro*. Nevertheless, there is an insistence on a balance in this new taste: white and gold decoration for shells, scallops, garlands, pendants or cornucopias — or on the choice of «soft and well-chosen colours» in the decorations for the house of the Countess of Benavente. The description, on occasions, accentuates the stone materials to be feigned: an imitation of «several stones of the kingdom», white stone, natural stone and granite. In the decoration of the Academy of Three Noble Arts, the description indicates:

*All the sculpture and balustrades of the parapets were imitated in white marble; the columns and all the order, in blue Montesclaros stone; and the shelves, in yellow stone from Redueña [...]*

<sup>13</sup> TOAJAS LÓPEZ, 1992: 115.



To the above we should also add San Pablo marble, green marble, blue jasper, porphyry, etc. — fake materials that stand out for their crystal chandeliers, large candles, and all kinds of lighting devices, accentuating the contrast with the textile element in the hollows of balconies and parapets, such as «gold-coloured taffeta, garnished with gold», crimson pavilions with drapes and curtains «with blue and cane-coloured back», etc.

The impression today of this polychrome colour scheme seems to us more tempered than what had been described for previous anniversaries, and although the Quirós canvases of Charles III's entry (1759) may be a reference of colour (Fig. 8), the temporary architecture of 1789 had a more sober bias, following the premises of the simplicity and «good taste» of neoclassical aesthetics.



**Fig. 8.** Ornament for Platerías street (Mayor street) because of Carlos III's entrance in Madrid, attributed to Lorenzo Quirós, oil/canvas. Museum of History of Madrid

There was a predominance of natural stone, granite and white marble as noble materials to be imitated, in accordance with the decree of 25th November, 1777, which prohibited the construction of altarpieces in wood and the use of gold — a metal that was to be limited to decorative and ornamental elements, thus losing the symbolic and aesthetic protagonism it had previously had<sup>14</sup>. The temporary ornamentation of 1789, in part, was a result of the royal decree. However, the simplification of colour in neoclassical

<sup>14</sup> BARTOLOMÉ GARCÍA, 2006: 16.

architecture, whether temporary or permanent, contained a deep paradox, since it conveyed an erroneous impression of Antiquity.

As Gage has pointed out, each historical period has only been able to see the colours of the past «through the colours of its own present», and «from the Renaissance it was thought that the dazzling purity of white marble was one of the most remarkable features of ancient art»<sup>15</sup>, as Winckelmann was later to extol in the mid-eighteenth century. Since the 1980s, through antiquaries, travellers, early architects and archaeologists such as Chandler, Stuart and Revett, we have certain knowledge of the presence of polychrome and bright colours in ancient Greek architecture; a matter not devoid of controversy, which spread in the early decades of the nineteenth century<sup>16</sup>.

In 1789 colour was added to temporary ornamentation and for this purpose traditional procedures were followed, using a wide variety of different techniques and resources, applied to both altarpieces and wooden sculptures<sup>17</sup>. In Spain the theoretical principles go back to Carducho and Pacheco, later to be adopted by Palomino, however we should also consider the practical experience passed down and extending as far as the eighteenth century: the practical manuals in use at the time<sup>18</sup>. At this juncture our proposal does not aim to obtain the colours and painting of the eighteenth century, but rather an approach to polychrome or polychrome coating on temporary ornamentation as a methodology using digital technology<sup>19</sup>.

As indicated by Fernández Delgado, the prints from the temporary architecture of 1789 are simple and linear *intaglio*, expressing architectonic and sculptural motifs, and have been treated in an austere manner, alien to the urban setting and festive context<sup>20</sup>. The fact that they reflect the ground plan, elevation and scale has facilitated the first step towards a virtual reconstruction of the colourfulness of the temporary ornamentation. Once the prints were scanned, the criteria for digital reconstruction were laid down (location and geometrisation), enabling us to proceed with the virtual reconstruction process (modelling, mapping and texturing).

The potential of digital technology serves the interests of this research, using working protocols with advanced methodologies, where a simultaneous reading of historical narrative and print images becomes virtual reality. This is used not to see magnified detail, but rather to unveil a staged *ambience* full of colour. On the other hand, the process does not attempt a reconstruction or faithful reproduction, but rather the memory of an event of the past to complete our knowledge of it.

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<sup>15</sup> GAGE, 1993: 11, 38.

<sup>16</sup> RIVAS LÓPEZ, 2010: 162.

<sup>17</sup> ECHEVERRÍA GOÑI, 2003; AA. VV., 2004.

<sup>18</sup> Amongst the most recent works are in GONZÁLEZ-ROMÁN, 2015; GUTIERREZ PEÑA, 2016.

<sup>19</sup> BORST, 2006.

<sup>20</sup> FERNÁNDEZ DELGADO, 1984: 64.

It should be remembered that virtual reality has gained a great deal of strength in recent years, as it enables us to innovate in many of the current fields of research. This can be seen in archaeological studies and much of the refurbishment work on architectural heritage, studied over many years in the universities of Europe. This proves a valid instrument to recover the heritage of the past, and thus find the traces of identity that in many cases have been lost, either due to the passage of history, catastrophes or the radical transformations that have taken place in cities.

This experience attempts to offer an appearance of reality, but not in the immersive sense, rather through «responsible use of technology». In this regard, reference should be made to the objectives of *Los Principios de Sevilla* (the Principles of Seville), as well as to the London Charter, a 2009 document which standardised a series of principles on the visual computerisation of cultural heritage, based on the results obtained by computer, and which, to date, is the most advanced international document in this direction. And although the document, in its preamble, recognises the need to develop appropriate guidelines for the different fields, in its Principle 1, «Implementation», it states that «the application of computerised visualisation is valid wherever, for the purposes of researching into cultural heritage or its dissemination». This enables us to implement particular guidelines, appropriate to our discipline, provided that they are governed by the principles of the Charter of London. An interesting model for screening festive architecture is the work of Laura Fernández-González, who, besides recreating the Lisbon arches for the entry of Felipe II and Felipe III, has also considered including colours and textures wherever there is documentation available on this<sup>21</sup>. In our case, the information on colour scheme for the festivities of 1789 is more complete, since the sources used are more precise.

Our purpose has been to interpret *bona fide* historical documentation, which can be endorsed in the future by other professionals or scholars on the subject. The short-term objective, however, is directed towards presenting the public with an unknown part of the colour in history through the circulation in «full colour» of a forgotten cultural heritage. These are reasons that are supported by The London Charter, which takes into consideration the planning, documentation and dissemination of virtual reconstruction projects, in addition to their use in education.

As stated earlier, we started with prints with no colour and those which did not reflect the «life» of the decorations in 1789 (Fig. 9 and Fig. 10). They then underwent a technical procedure (presented as a poster at SIDOP 2017 in Granada<sup>22</sup>), which started with advanced software, providing us with the results we aimed to obtain: ‘the simulated polychrome image’. Thus, in our methodology we have had to use different software programmes: firstly, a drawing programme, MicroStation, to delineate the sketch and

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<sup>21</sup> FERNÁNDEZ-GONZÁLEZ, 2010.

<sup>22</sup> SOLÍS ALCUDIA & SOTO-CABA, 2017.

obtain a polygon structure, known as ‘wire cage’ (Fig. 11 and Fig. 12), to which volume was then added using the same software to export it to 3D Studio Max (similar to Blender and SketchUp), to create a 3D animation and obtain shadows at the moment of rendering (Fig. 13 and Fig. 14). Secondly, with Photoshop the materials were prepared so that they could be applied to the chosen temporary decorations.

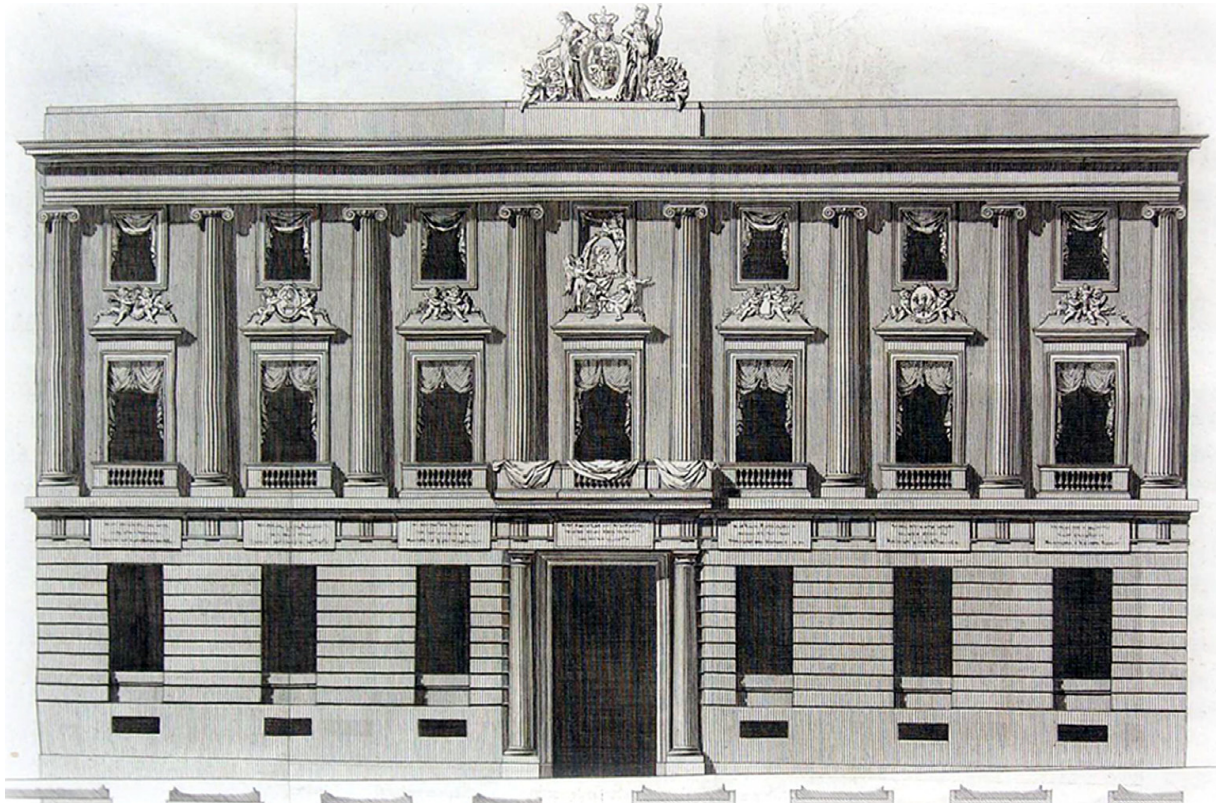
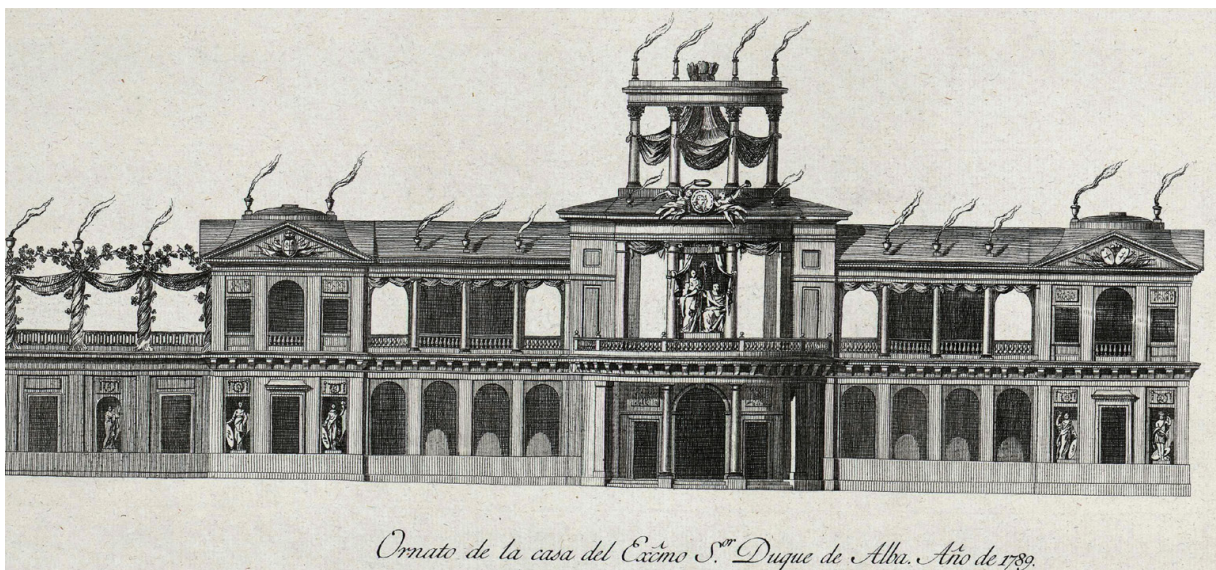
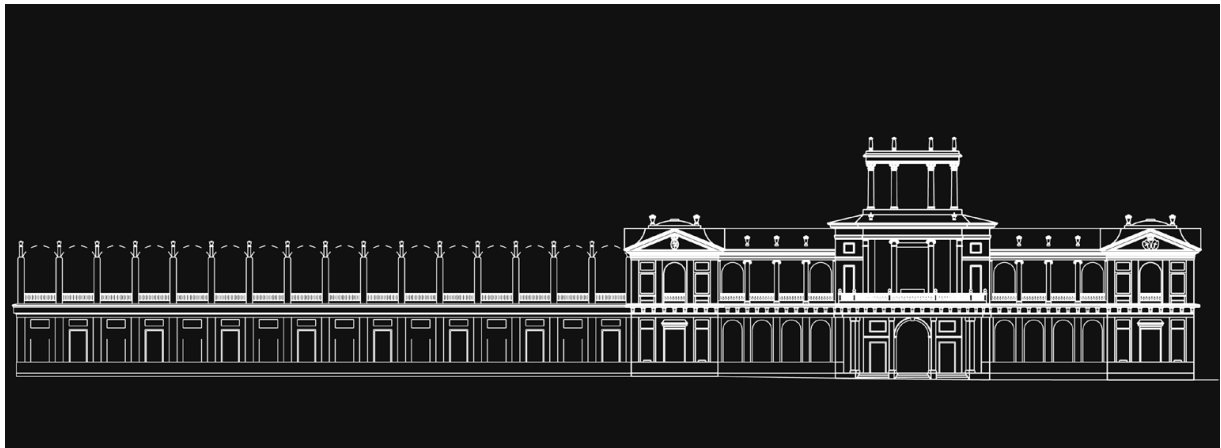


Fig. 9. Card of the ephemeral ornament projected by Pedro Arnal for the Academy of the Three Noble Arts, included in the *Descripción...* of 1789

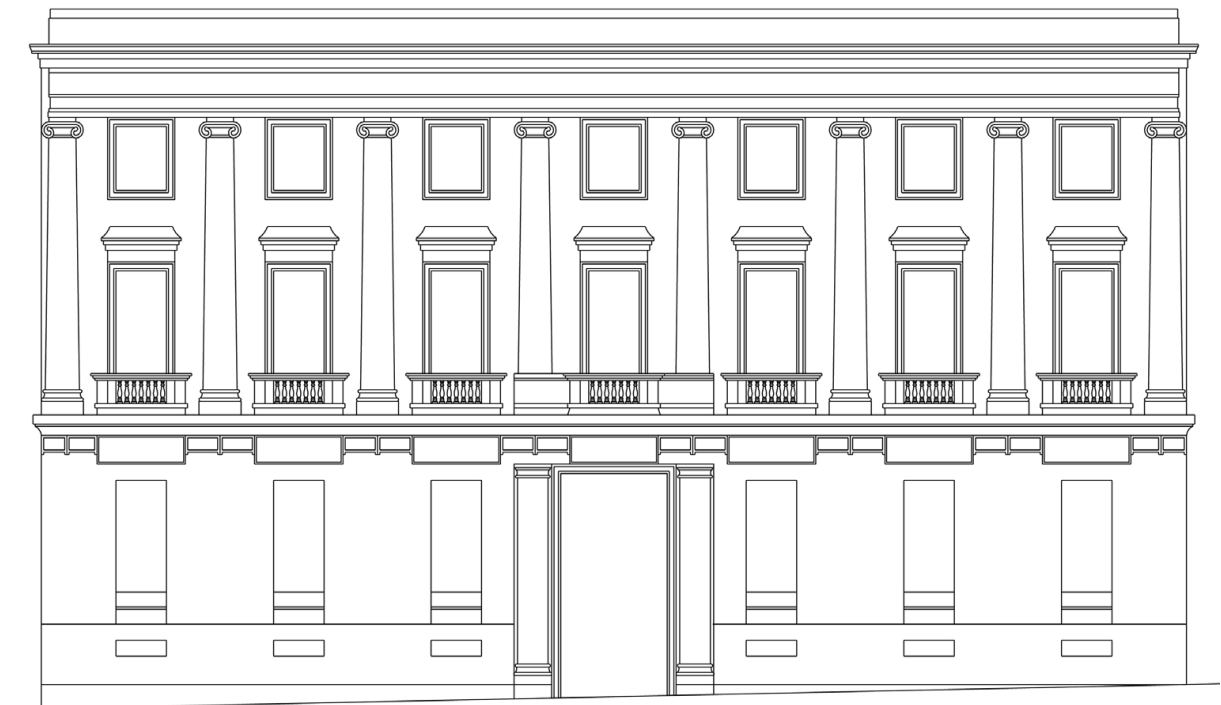


*Ornato de la casa del Excmo S.<sup>ra</sup> Duque de Alba. Año de 1789.*

Fig. 10. Card of the ephemeral ornament projected by Juan de Villanueva for the Duke of Alba's palace, included in the *Descripción...* of 1789



**Fig. 11.** *Jaula de alambre* or computerised delineation of the ornament projected by Juan de Villanueva for Duke of Alba's palace. Essay made for the video presented in *Lost and Transformed Cities* (Lisbon, 2016) by Victoria Soto-Caba and Isabel Solís Alcudia



**Fig. 12.** *Jaula de alambre* or computerised delineation of the ornament projected by Pedro Arnal for the Academy of the Three Noble Arts. Essay made for the video presented in *Lost and Transformed Cities* (Lisbon, 2016) by Victoria Soto-Caba and Isabel Solís Alcudia



Fig. 13. Simulated, non-rendering, polychrome of the ephemeral ornament projected by Pedro Arnal for the Academy of the Three Noble Arts. Essay made for the video presented in *Lost and Transformed Cities* (Lisbon, 2016) by Victoria Soto-Caba and Isabel Solís Alcudia



Fig. 14. Simulated, non-rendering, polychrome of the ephemeral ornament projected by Juan de Villanueva for the Duke of Alba's palace. Essay made for the video presented in *Lost and Transformed Cities* (Lisbon, 2016) by Victoria Soto-Caba and Isabel Solís Alcudia

The process continued with a realistic simulation of the behaviour of lights, textures and materials that provided a reliable finish. Then, to conclude the virtual reality, we proceeded to filter all the results using photo-editing software that edits the rasterized images, as does Photoshop. This procedure was applied to two specific decorations: that of the Academy of the Three Noble Arts (Fig. 15), and the Duke of Alba's house (Fig. 16). Both temporary architectures are of special interest in this virtual narrative, as a result of their stylistic and ideological significance in historical narrative. The peculiarities that have emerged from the infographic process will be considered in other works, as they have revealed a possible fundamental way forward in historical research into this question of polychrome, besides being a powerful instrument in working with this intangible (temporary) cultural heritage.



**Fig. 15.** Result of rasterized polychromy of ephemeral ornament projected by Pedro Arnal for the Academy of the Three Noble Arts. Essay made for the video presented in *Lost and Transformed Cities* (Lisbon, 2016) by Victoria Soto-Caba and Isabel Solís Alcudia



**Fig. 16.** Result of rasterized polychromy of ephemeral ornament projected by Juan de Villanueva for the Duke of Alba's palace. Essay made for the video presented in *Lost and Transformed Cities* (Lisbon, 2016) by Victoria Soto-Caba and Isabel Solís Alcudia

Some results may look artificial, at first sight, as we are not accustomed to seeing prints of this type in colour. For the time being we have used the colour that digital programmes provide us with for the rendering process, and have taken this as a basis. Obviously, for the colour to be real, polychrome remnants must be extracted from the conserved stone and polychrome materials, to avoid going beyond the limits or principles laid down for many years.

Our biggest challenge was that high resolution texture packs do not have many of the materials that are essential for a true polychrome result of the elements that make up these decorations. For the future, we hope to be able to have a technology of «real-life textures» and be able to apply them to 3D projects. But before that we have to work on them, since real-life textures are photographs taken from real life, and in our case we do not have many of those materials that were used in the eighteenth century to make festive decorations. For that reason we resorted to primary sources, which are sometimes pictorial images which, in turn, must be treated before use. With the results we manufactured our own package of real-life textures to apply in chromatic reconstructions.

Finally, an objective to be pursued will be to continue work on the eighteenth-century scenography, contextualizing the images we are dealing with, depicting the city as reflected through the life and atmosphere of the time, far from an empty city



with solitary decorations, which would lead to a misleading story. Imagine the pictorial representation of Lorenzo de Quirós at the Puerta del Sol in Madrid in 1759 (Fig. 17), where what was really reproduced were urban stage sets: characters acted in the way and form required by the particular moment, and buildings were *dressed* accordingly. This would be the line of research to follow in the future.



Fig. 17. Ornate of the Puerta del Sol on the occasion of the entrance in Madrid of Carlos III, attributed to Lorenzo Quirós, oil/canvas, 1789. Museum of History of Madrid

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# THE STORY OF THE VENETIAN GHETTO IN THE NINETEENTH CENTURY. A VIRTUAL HERITAGE DIGITALLY REVEALED

ALESSANDRA FERRIGHI\*

## INTRODUCTION

March 29th 2016 saw the commemoration of the 500th anniversary of the foundation of the world's first ghetto, the Jewish Ghetto in Venice. This date was the starting point for a large number of events staged in Venice and round the world throughout the year just passed<sup>1</sup>. The exhibition entitled *Venice, the Jews and Europe 1516-2016* provided another occasion for identifying and pursuing a few avenues of research into the story of the Venetian Ghetto. Among these was a study of the Ghetto from an urban perspective, from the opening of its gates ordered in 1797 by Napoleonic decree.

The public visiting the exhibition was treated to a run-through of the history of the Ghetto, its development within a changing perimeter, and a reading of the transformations between the situation before segregation and that after its end. With the help of digital technologies and multimedia display devices, it was possible to make research results available to view. In particular, a touch screen monitor was installed in the room devoted to «Napoleon, the opening of the gates and assimilation» to recount the story of the Ghetto after 1797. The telling of this story was split between two different narrative devices: the first introduced the theme of the actual throwing open of the gates with a

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<sup>1</sup> See the website <[www.veniceghetto500.org](http://www.veniceghetto500.org)>. [Accessed on 02/04/2017]. Translated by John Francis Philimore.

video loop, while the second allowed the visitor to choose interactively between alternative pathways to follow through the urban history of the Ghetto after its opening<sup>2</sup>.

The aim of our research, conducted along philological lines, was to track down and analyse primarily first-hand accounts, with a view to fleshing out the two storytelling approaches. In the first, the voices, the words, of the main players of those crucial days were the key to putting together a video that would involve the emotions of the visitor and create an empathy between him or her and the show. For the second, the surveys and drawings from the «Building Projects» section of Venice's Municipal Archive provided day-to-day reports of collapses, demolitions and remodellings, that afforded, with close reading, a view of the changing aspect of the Ghetto over time. For this latter approach three interactive channels were set up: the first covering the urban history of the Ghetto as a whole; the others on the two different areas of the Ghetto Nuovo and the Ghetto Vecchio. Different language registers were adopted for the two foci. The first more emotional — with images and sound effects, like the fire consuming a frame which we take to be the Ghetto enclosure going up in flames — brings history home to us immediately through the senses; while the second, also more technical in content, foregrounds a Ghetto that no longer exists, the Ghetto as it was, or how it must have seemed to the eyes of the early 19th-century observer (Fig. 1).



Fig. 1. Some frames from the video *After the Ghetto*. ©Ferrighi, Studio Azzurro, Pellizzari

<sup>2</sup> FERRIGHI, 2016a.

## AFTER THE GHETTO

Today's Ghetto, while still notionally contained within a perimeter setting it apart from the rest of the city, is profoundly different from how it would have been when lived in by the Jews from its foundation in 1516 to its abolition in 1797 (Fig. 2). Over these centuries and decades, it was expanded beyond the initial settlement known (already) as the Ghetto Nuovo, with the addition in 1541 of a considerable area towards the Cannaregio canal, being the Ghetto Vecchio, and in 1633 with a final extension eastwards over the Rio di Ghetto, called the Ghetto Novissimo<sup>3</sup> (Fig. 3). Each expansion meant a new closing off point, with doors hung on hinges driven into the uprights of the entrance portal, which would be opened during the day and locked for the hours of darkness. The daily lives of the Jews, confined within the Ghetto precinct, involved their residences, places of worship and assembly, such as the synagogues and the *Scuole*, or the pawnshops and kosher stores, remodelling and transforming the existing buildings, although these were not their own property. On top of which it is worth emphasising that the number of Ghetto residents continued to grow over time<sup>4</sup>, this too leading to the internal fragmentation of housing, constant adding of floors and expansion outwards with the building of porticoes and *liagò* (oriels).

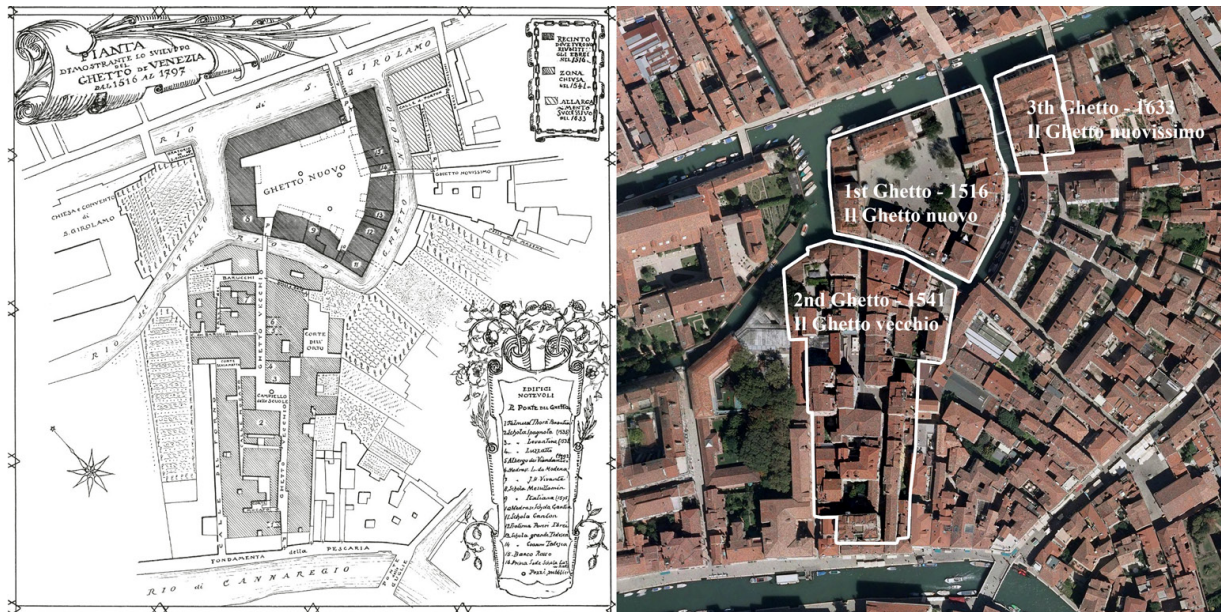


Fig. 2 (left). The Ghetto of Venice at the fall of the Republic by Guido Sullam, *Pianta del Ghetto di Venezia alla caduta della Repubblica*, 1930. In OTTOLENGHI, 1930. «La Rassegna mensile di Israel»

Fig. 3 (right). Aerial view of the three Ghettos

A real world within a world took shape around the needs and requirements of the different national communities inhabiting the Ghetto, a world which began to dissolve

<sup>3</sup> CALIMANI, 2001; CALABI, 2016a.

<sup>4</sup> CALIMANI, 2001: 169.

quite quickly as early as the closing years of the 18th century after the fall of the Republic, a process which accelerated in the first half of the 19th century for a variety of reasons. Among these were the abandonment of many habitations, already begun in the preceding century<sup>5</sup> with a consequent lack of maintenance; a failure to keep track of the final owners of buildings, let and sublet to Jews under the *Jus gazaka*<sup>6</sup>, which meant that by the beginning of the 19th century it was in many cases impossible for the municipal authorities to identify them. These factors led to many demolitions and rebuildings of whole housing blocks, effectively transforming the aspect of this unique area, enclosed by the city of Venice, but at the same time separate from it. It was on the basis of these considerations that it became clear we would have to work backwards through the whole of the 19th century to arrive at a virtual reconstruction of the Ghetto's buildings and urban spaces shortly before its opening. Only in fact by piecing together the history of individual buildings, however fragmentarily, and of the modifications to the physical disposition of the three ghettos, was it possible to reach their 1797 configuration.

## THE OPENING OF THE GHETTO

The fall of the Venetian Republic occurred in the spring of 1797. It was followed by a very brief first French occupation, lasting from May 12th, the day on which the Great Council abdicated and handed over power to a democratic Commission, to October 17th, and the signing of the Treaty of Campoformio, under which Venice was ceded by Napoleon to Austria<sup>7</sup>. These few months saw the promulgation of a series of decrees aimed at the renovation of Venice, which Napoleon hoped to transform into a modern city, importing many changes to its civil, religious and social arrangements. Notable among these are: the reduction in the number of parishes and the suppression of the religious orders, the equality of all citizens before the law, the abolition of noble titles and an end to the segregation of the Jews in the Ghetto. A Municipal decree dated July 7, 1797 (or 19 Messidor, according to the French Republican Calendar) declares as item 1 that three «Jewish Citizen Deputies» should be elected, and as item 5 that «The gates of the Ghetto should be removed forthwith, so that there be no separation between these and the other citizens of this city»<sup>8</sup>. On July 9th, an assembly of all the Jewish citizens resident in the Ghetto gather in the Spanish Synagogue<sup>9</sup>. Isaac Greco is nominated president of the electoral commission, with Jacob Cracovia, Samuel Morpurgo, Jacob Maimon Vivante and Vita Polacco as secretaries. The assembly closes with a great shout of «Long

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<sup>5</sup> CARLETTO, 1981.

<sup>6</sup> CALIMANI, 2001: 154; CONCINA, 1991: 51.

<sup>7</sup> LANE, 1991: 506-507; PRETO, 2004: 47-50.

<sup>8</sup> *Raccolta di carte pubbliche...*, 1797: 69.

<sup>9</sup> OTTOLENGHI, 1930: 12.

live Fraternity, Democracy and the Italian Nation»<sup>10</sup> after a day has been named for the pulling down of the gates of the Ghetto, the gates that for over two and a half centuries have kept the Jews separate.

The day fixed for the permanent opening of the gates is that following the meeting, July 10th 1797 (22 Messidor), which will definitively mark the end of the Ghetto, in the sense of a compulsory place of residence for the Jews of Venice. The festive atmosphere, the joint participation of all the citizens, Jewish and Venetian, and the symbolic enactment of the end of the ghetto are described in several contemporary accounts: in the «Gazzetta Urbana Veneta» for July 12th which carried an article over three columns headed «Celebrations in the Ghetto for its liberation from the slavery imposed by the Aristocracy»<sup>11</sup>; in the report of the chief officer of the National Guard recorded in the minutes of the 13th July sitting of the provisional administration<sup>12</sup>; and in the speech of Citizen Raffaele Vivante delivered in the Campo di Ghetto Nuovo on the day of the event, subsequently published by Giovanni Zatta<sup>13</sup> (Fig. 4). And it is Vivante's speech, honed for delivery during the celebrations, that gives us an insight into the separation of the Jews from their fellow citizens as lived day by day:

*That vast abyss, that separated from the other Nations has been utterly removed, and here we have flung down before us the terrible doors that kept our Nation as if locked in a prison, and which were reinforced with a thousand bars of iron devised by the most odious of tyrannies. Yes, my brethren, those very men who earlier looked down on us, oppressed and despairing, with indifference, now hold out to us the means to rise up and be enlightened, to improve ourselves, inviting us to love them and no longer see them in the loathsome guise of our persecutors<sup>14</sup>.*

Published under the auspices of the Society for Public Education, of which Vivante was himself a member, it speaks at length of the oppression and injustices endured, but at the same time of openness and forgiveness towards those who for centuries were responsible for as much, deciding and implementing the machinery of segregation (Fig. 4).

*And if we have acted so, when everything should have inflamed our indignation and our revenge, from the time when we were driven from the places which had witnessed our birth and were afflicted with insults and miseries, will we not now open our arms to those who so guilelessly seek to make good the injuries they have*

<sup>10</sup> OTTOLENGHI, 1930: 14.

<sup>11</sup> *Feste del Ghetto...*, 1797.

<sup>12</sup> ALBERTI & CESSI, 1928: 243-248.

<sup>13</sup> VIVANTE, 1797.

<sup>14</sup> VIVANTE, 1797: 3-4.



*visited on us, and who yearn to bury the hatreds, the wrongs, the vengefulness and the oppression, in a fraternal embrace of cordial reconciliation*<sup>15</sup>.

The orchestration of this long-awaited event, set for July 10th, was for security reasons, planned down to the smallest detail over the preceding days.

Picture a hot summer afternoon, with the sun still high in the sky, just after nine o'clock, according to the reckoning of that period (about six o'clock in the afternoon). Here is the chief of the National Guard in full uniform, accompanied by three deputised citizens from the Jewish community, and here they are arriving from the Fondamenta di S. Gerolamo (now degli Ormesini), making a formal entrance into the Campo di Ghetto Nuovo and forming up into «a soldierly cordon of fine aspect with their matching uniforms»<sup>16</sup>. We can hear the sound of the band's trumpets, the thump of dancing feet, the happy voices of the people flocking to the spot. In the midst of this, all the gates that had separated and physically cut off the Jewish community from the Christian are lifted from their hinges and taken down, carried to the centre of the *campo* to the middle of the human circle that was quickly forming, and symbolically burnt after being «hewn with axes, riven and shattered»<sup>17</sup>. A tree of liberty is planted and speeches heard, first from citizen Vivante, who scrambles up onto one of the *campo*'s well-heads the better to be heard, followed by a priest and then another citizen, one Isacco Grego.

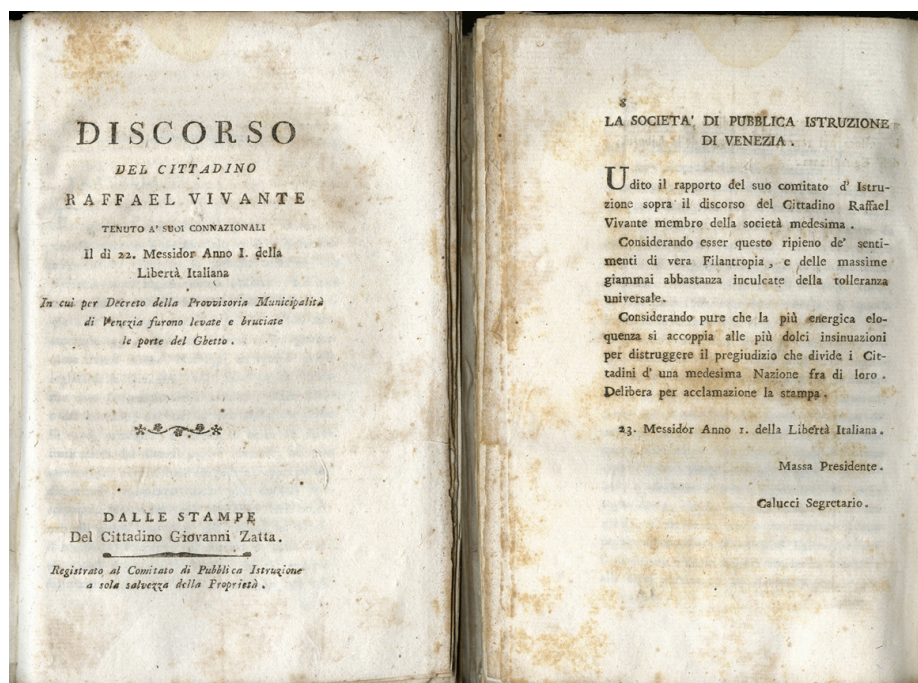


Fig. 4. Title page (left) and page 8 (right) of *Discorso del cittadino Raffael Vivante tenuto a' suoi connazionali il dì 22 Messidor Anno I della Libertà Italiana*. 1797

<sup>15</sup> VIVANTE, 1797: 5.

<sup>16</sup> *Feste del Ghetto...*, 1797: 440.

<sup>17</sup> *Feste del Ghetto...*, 1797: 440.

The day concludes with a party at the Vivante residence. Over the days following, a number of accounts of the events will go to press, and so ends once and for all the segregation of the Jewish people in Venice begun in far-off 1516. The Venetian Jews will now be able to participate fully in civic life, opt to live elsewhere in the city or on the mainland, and own property, all these measures being introduced in the early decades of the 19th century<sup>18</sup>.

## URBAN CHANGES IN THE EARLY 19TH CENTURY

For the whole of the first half of the 19th century Venice underwent continual structural changes. Bonaparte was a great innovator and he foresaw a new destiny for the city, involving public gardens, tree-lined boulevards, new building complexes and a great port<sup>19</sup>. And in fact the large body of laws and executive decrees promulgated during the second French occupation (1806-1814) bear witness to a process that would usher in considerable transformations. Among these was a ‘Decree containing various provisions for the future of the city of Venice’ (n.º 261, 7 December 1807), whose provisions included a reduction in the number of parishes from 68 to 39 over the ensuing years and their consequent geographical reorganisation<sup>20</sup>.

The extent of urban change can be readily taken in from a quick comparison of the land-registry maps of the time, not least in that part of the Cannaregio area containing the Ghetto (Fig. 5). Among the many possible case-histories belonging to the first half of the nineteenth century, we chose the more representative examples from the huge corpus of archive documentation and those lending themselves best to virtual presentation via multimedia video display<sup>21</sup>.

Comparing the 1808 census map with that from 1838, for example, we see immediately the large gaps left by the demolition of buildings facing onto the Campo di Ghetto Nuovo. The whole side backing onto the Rio di S. Gerolamo has been razed to the ground, many of the porticos demolished and the house abutting the Scuola Canton, on the Rio della Macina (now Rio del Batelo), also knocked down. The same occurs, a few years later, in the Corte Barucchi area of the Ghetto Vecchio, not far from the Campiello delle Scuole (the Levantine and Spanish *Scuole*), where several large buildings were completely demolished. The empty expanses created by these operations would become new buildings or public spaces.

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<sup>18</sup> CALABI, 2016a: 141-156.

<sup>19</sup> ROMANELLI, 1988.

<sup>20</sup> *Bollettino...*, 1807: 1195; TONIZZI *et al.*, 2013; FERRIGHI, 2016c.

<sup>21</sup> FERRIGHI & BORIN, 2016.



Fig. 5. The Ghetto in time. Redrawn corresponding to the land-registry maps of 1808-1811, 1838-1842 and 1867-1913. ©Ferrighi

How did the resident population of the Ghetto react to these changes? The opening of the gates provided many Jews with the opportunity to find other lodgings and leave the Ghetto altogether. A contemporary snapshot of the Ghetto's existing residents at the end of 1797 is provided by a census conducted by Saul Levi Mortera<sup>22</sup>, which gives us family by family a cross-section of the trades and origins of the 1626 inhabitants of the precinct, foreigners included, comprising 421 family units<sup>23</sup>. Certainly a notable figure,

<sup>22</sup> ASV — *Anagrafi degli abitanti del Ghetto, o contrada della Riunione, fatta da me Saul Levi Mortera, 1797.*

<sup>23</sup> LUZZATTO, 1956; BERENGO, 1989.

but indicative of a density more than matched elsewhere in the city<sup>24</sup>. In any case, the abandonment of the Ghetto was not a sudden phenomenon<sup>25</sup>, and was besides linked to a number of factors, such as the absence of a proper maintenance regime for the housing, owing to its occupation by renters rather than owners, and the neglected state of a number of units, as recorded by the 1713, 1739 and 1771 censuses<sup>26</sup>, which duly led to a series of collapses. There were also many houses left uninhabited and storerooms unused, whose owners were receiving no rent or even whose owners' identities were unknown.

In response to all this came a measure from the French authorities in 1806 regulating the maintenance of buildings overlooking public thoroughfares. The «Regulations for construction, alteration and conservation of the streets», promulgated on May 20th as n.º 79 (Heading V. Street Policy) states, article 33:

*In cases where a building is in perilous condition, the Municipality may order its repair, and the owner is required to effect such forthwith; work will otherwise be carried out ex officio, at the owner's expense. Should the owner prefer to demolish the dilapidated structure, he must do so immediately, or it will otherwise be done ex officio at the expense of the same*<sup>27</sup>.

In 1816 the municipal Council of the incoming Austrian government establishes a «Civic Commission for dilapidated housing» with a view to preserving «the decency of this City with the conservation of its buildings»<sup>28</sup>. The Council is invested with the power to fine or even imprison owners who demolish their houses, notwithstanding their perilous structural state. In the Ghetto, however, an alternative procedure had to be adopted. In the majority of cases, as we have said, it was not possible to trace the true owners of the houses in the Ghetto, the tenants continuing to live in them without paying rent. Entire buildings were in fact demolished *ex officio* for reasons of public safety. These were the measures that would lead to the empty spaces within the Ghetto, that would begin to appear in the 1820s, under the still operative 1806 regulations.

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<sup>24</sup> BELTRAMI, 1954.

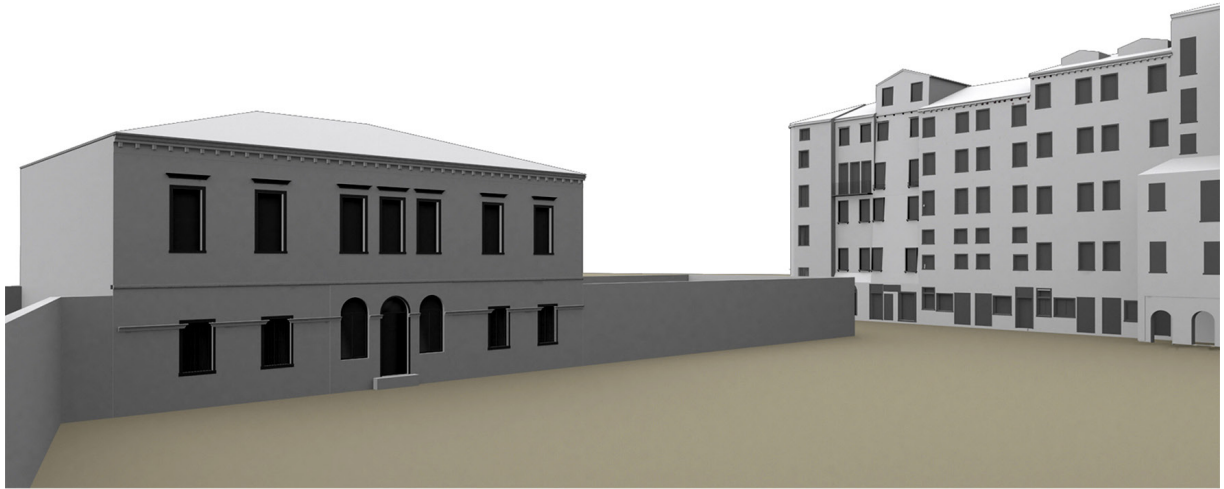
<sup>25</sup> BERENGO, 1989; CALABI, 2016a: 141-156.

<sup>26</sup> CARLETTO, 1981.

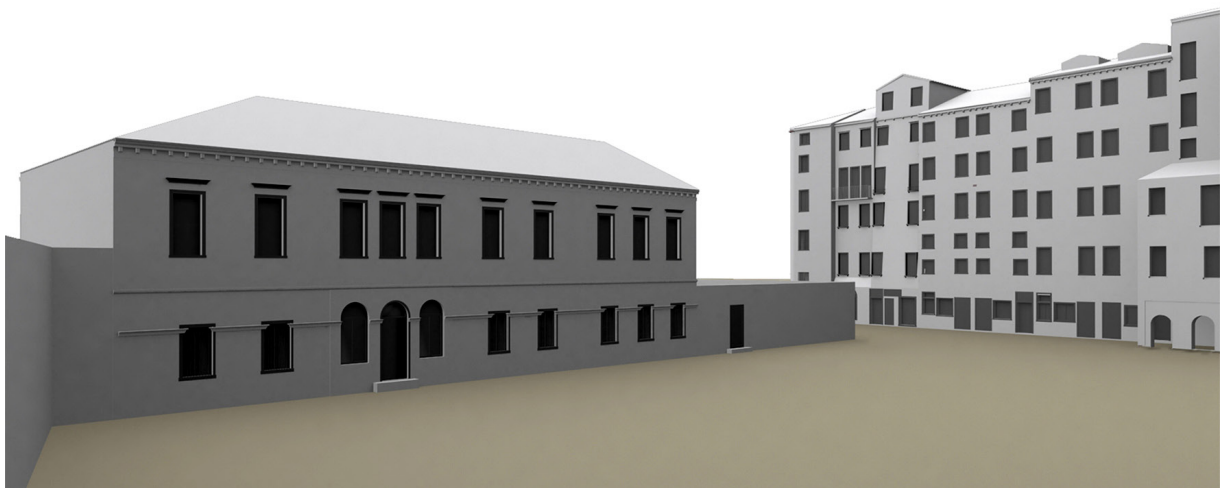
<sup>27</sup> *Bollettino...*, 1806: 515.

<sup>28</sup> AMV — *Fabbricati in pericolo*, 1816.

about 1845



after 1867



after 1939

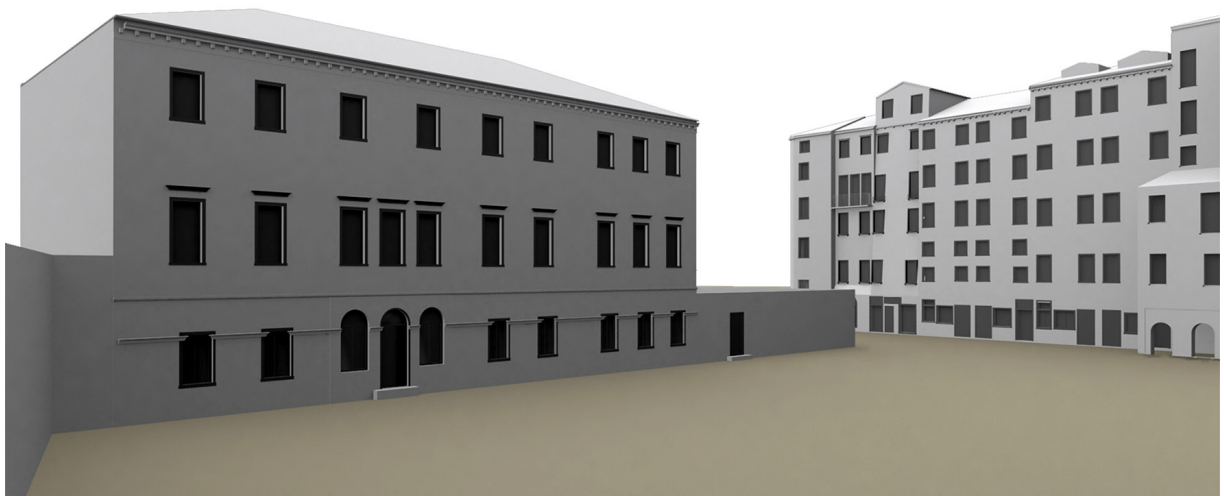


Fig. 6. Transformation of buildings in the Ghetto Nuovo (©Borin, Ferrighi, Friso, Panarotto)

In the Campo di Ghetto Nuovo, plots 7377 to 7410 of the 1808 census map<sup>29</sup> were the subject of serpentine bureaucratic proceeding from 1829 onwards. The offices of the city council found themselves involved in a never-ending search for the identities of the owners so as to induce them to put in train repairs to their buildings — repairs that acquired increasing urgency with the passage of years, to the extent that the city itself had to effect provisional emergency work in the first instance, and subsequently wholesale demolition. The contractors hired for the work ended up having to carry the costs of the work for many years before being reimbursed by the council. By the end of proceedings a great hole was left in the urban fabric, following the loss of all the buildings that had closed off the Campo di Ghetto Nuovo on the Rio di S. Gerolamo side. Only much later on, in 1857, did the Jewish Relief Committee request the free concession of the now public land with a view to building a Rest Home<sup>30</sup>. As a consequence a two-floor building was erected on the site, with an adjacent brick-walled courtyard, as an Old People's Home for the Jewish community. Subsequently the edifice would be enlarged and a floor added (Fig. 6).

A similar fate overtook the blocks enclosing the Calle di Ghetto Vecchio down to the point where it opened out into the Campiello delle Scuole. All the buildings identified as lots 7437 to 7448 in the 1808 census map were the subject of repeated demolition operations carried out by the city council. An illustration from 1842 shows fragments of the cornice of a demolished building off the Calle di Ghetto Vecchio<sup>31</sup>. The document accompanying the drawing mentions a site inspection carried out by the surveyors to establish which parts of the block could be saved from demolition. Many of the units were without window-frames or access stairs, and were in a state of long-term abandon. The survey concluded that «a general conservation [was] not possible without a general rebuilding»<sup>32</sup>. Once again the outcome was vacant lots. The line of buildings that ended with the passageway to Corte Barucchi acquired a new frontage, while the remainder of the space was partly filled some decades later by a new nursery school (Fig. 7).

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<sup>29</sup> ASV — *Catasto napoleonico*, 1808-1811.

<sup>30</sup> AMV — *Instrumento di cessione fatto dal Municipio di Venezia...*, 1857.

<sup>31</sup> AMV — *Piante, alzati e spaccati dello stabile in Ghetto...*, 1842.

<sup>32</sup> AMV — *Protocollo verbale*, 1842.



**Fig. 7.** Transformation of buildings in the Ghetto Vecchio and in the area of Corte Barucchi  
©Borin, Ferrighi, Friso, Panarotto

The work of repairing facades, consolidating walls and carrying out demolitions was nearly always at the municipality's expense, which in some cases became the default proprietor of the buildings in the Ghetto, to the considerable detriment of the public purse. «Ultimately it must be recognised that the better-off families now live outside the Ghetto, and the value of the properties there is collapsing as a consequence», noted

Angelo Artico, the chief engineer of the works department, in 1856<sup>33</sup>. Nor was this the end of demolition and reconstruction elsewhere in the Ghetto, changing its outward aspect and transforming it into an urban area altogether different in character to that inhabited by the Jews down to the opening of the gates.

## CONCLUSIONS AND THANKS

The multimedia displays installed in the exhibition, thanks to the storytelling approach detailed above and the navigation options provided, were able to offer the public an opportunity to appreciate the reopening of the ghetto and its 19th-century transformations presented in a contemporary language. The differing focus on the changes in the urban fabric afforded by the interactive channels left visitors free to dedicate as much time as their curiosity allowed to deeper investigation.

The historical research underpinning the drafting of the narratives was conducted by the present writer for the exhibition *Venice, the Jews and Europe 1516-2016*<sup>34</sup>. For the research project into the story of the Ghetto in the 19th century, I used as far as possible the tools and methods adopted in *Visualizing Venice*, now tried and tested after years of trialling and application to a variety of case studies<sup>35</sup>. For the making of the *After the Ghetto* video, I assembled a research team composed of Paolo Borin, PhD student at Iuav University in Venice, Federico Panarotto, researcher from Padua University, and Isabella Friso, adjunct Professor at Milan University, all veterans of the VV group led by Prof. Andrea Giordano from Padua University. On the basis of an interdisciplinary collaboration we produced a series of graphic re-elaborations of the 19th-century elevations, working from archival sources and analyses deriving from them. A rigorously philological reconstruction of the facades, buildings and open spaces permitted the visualisation of the various phases of transformation. The Milan Studio Azzurro<sup>36</sup> worked alongside the researchers preparing the exhibition. Specifically, my team enjoyed the support of Leonardo Sangiorgi as artistic director, Olivia Demuro, project coordinator, and Silvia Pellizzari for the video editing. It was with their help that we were able to design and produce the multimedia videos accessed via the touch screen installed at the show. My warmest thanks to them all for their not always easy teamwork. Finally, a special thank you to Donatella Calabi, who believed from the beginning to the end, when others faltered, in the value of investigating in depth and virtually displaying the urban history presented in *The Ghetto after the Ghetto*.

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<sup>33</sup> AMV — *Alla congregazione municipale*, 1856.

<sup>34</sup> See *Visualizing Venice* (VV). Available at <[www.visualizingvenice.org](http://www.visualizingvenice.org)>. [Accessed on 06/04/2017].

<sup>35</sup> FERRIGHI, 2015; FERRIGHI, 2016b.

<sup>36</sup> See *Studio Azzurro*. Available at <[http://www.studioazzurro.com/index.php?com\\_works=&view=detail&work\\_id=143&option=com\\_works&Itemid=22&lang=it](http://www.studioazzurro.com/index.php?com_works=&view=detail&work_id=143&option=com_works&Itemid=22&lang=it)>. [Accessed on 06/04/2017].



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- ASV — *Catasto austro-italiano* (1867-1913), *Censo stabile*, mappe austro-italiane, sestiere Cannaregio, f. 2, 3, 7 and 8.
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# VISUALIZING THE PHYSICAL CHANGES IN THE HISTORIC TISSUE OF SAMOS VILLAGE BETWEEN 1889 AND 1931\*

ESTEFANÍA LÓPEZ SALAS\*\*

## INTRODUCTION

In the late 19th century, a new road was built over the centre of the village called Samos, which is located in the northwest of Spain, next to the monastery of San Julián de Samos. The idea of building a new road had its origin in a national plan for the improvement of the state road network<sup>1</sup>, and particularly, it was made to connect Sarria and Pedrafita do Cebreiro, which are two well-known stops in the pilgrimage route to Santiago de Compostela (Fig. 1). When the road arrived at Samos, the engineers decided to cross the village centre as well as an important area of the land that belonged to the former enclosed space of the monastery of San Julián de Samos<sup>2</sup>. The following study aims to understand to what extent the village of Samos was changed due to the road. In other words, we try to recover the memory of a historic village that was partially erased due to a civil work of which an analysis is essential to understand the present urban plan.

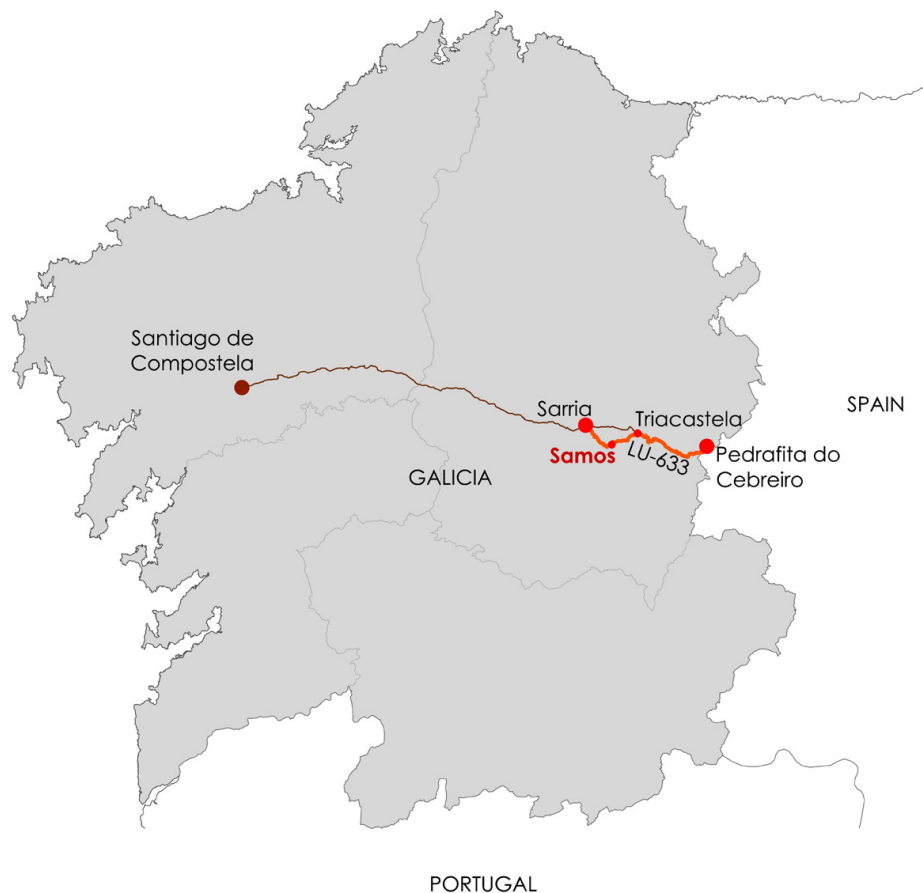
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\* The research for this article is based on a part of my PhD dissertation entitled *The monastery of San Julián de Samos (Lugo-Spain), a study and interpretation of the monastic space and its evolution*, which was presented in June 2015 at A Coruña. My PhD dissertation was partially financed by Universidade da Coruña (Pre-doctoral Fellowship 2011-2012) and by Xunta de Galicia (Pre-doctoral Fellowship of Research, Innovation and Development Galician Plan 2011-2015 – IC2 Plan, cofunded with Social European Fund FSE-FEDER).

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<sup>1</sup> That fact was recorded by the memory of the following project: AHPLu — *Carretera de 3.ª orden de Sarria a Pedrafita do Cebreiro...* 1889. Catalogue number: 32935/2, 1r.

<sup>2</sup> The only reference to the building of a new road in Samos in the existing bibliography was made by: ARIAS ARIAS, 1950: 405-406.



**Fig. 1.** Map of Galicia with the location of Samos, Pedrafita do Cebreiro, Triacastela and Sarria in the pilgrimage route to Santiago de Compostela. The new road between Sarria and Pedrafita do Cebreiro is highlighted in orange. Source: Author

## THE FIRST PHASE: THE PROJECT AND CONSTRUCTION OF THE SECTION ROAD BETWEEN SARRIA AND SAMOS

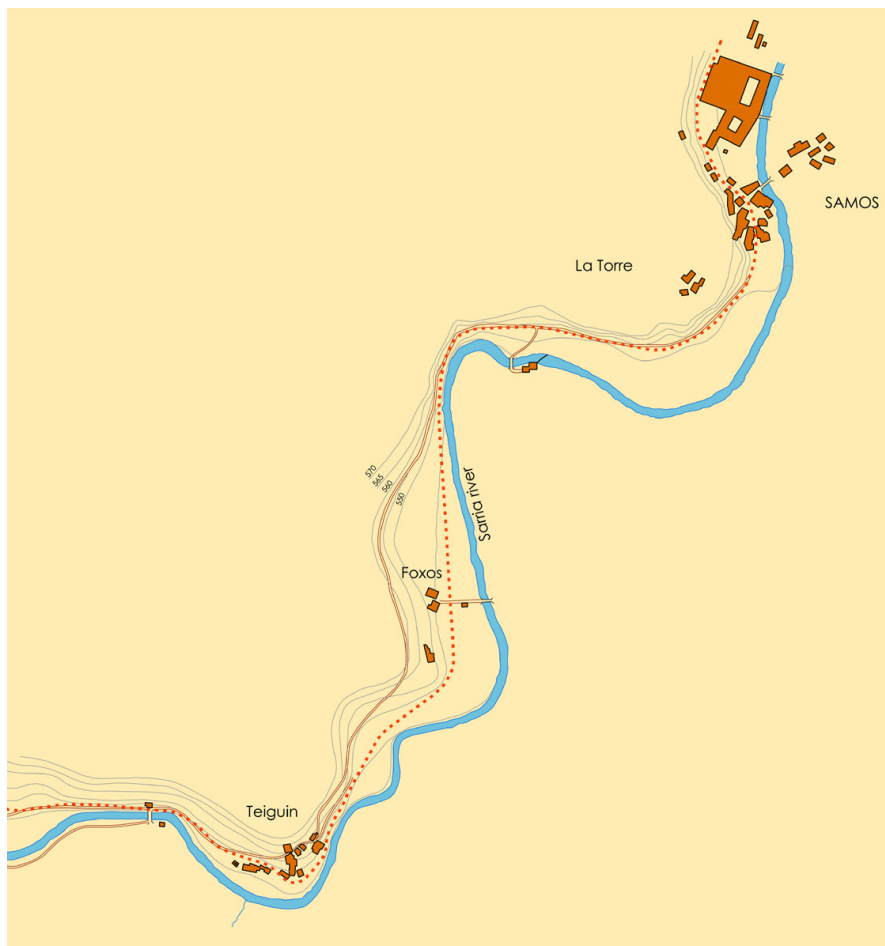
The great length of the new road compelled the engineers to divide it into several sections whose design and construction was undertaken in different phases. Each one of them was solved with an individual project. Among all of them, the most important ones for the present research are those that pass through Samos village. That is, the road section that goes from Sarria to Samos, and the other one that connects Samos and Triacastela.

The first dated project that is preserved of the road section between Sarria and Pedrafita del Cebreiro is from January 1889<sup>3</sup>. It was made by the civil engineer Godofredo Álvarez Cascos with the final target of designing the first section road that begins in Sarria village and ends in the east corner of the northern facade of the monastery of San Julián de Samos, after passing through the village with the same name.

<sup>3</sup> AHPLu — *Carretera de 3.ª orden de Sarria a Pedrafita do Cebreiro...* 1889. Catalogue number: 32935/2. One previous project is extant at the present. However, it is undated: AHPLu — *Anteproyecto de la carretera de Sarria a Seoane por Samos*. Catalogue number: 32850/6.

In the memory of the project we find a detailed description of the general features of the territory that was necessary to cross, that is the lowest area of the valley where the Sarria River runs through<sup>4</sup>. In addition to this, each of the two road stretches in which this first road section was divided were described as well as some of the most important villages or towns that connects.

In particular, the engineer explained that the village called Samos, which is the capital of the municipality with the same name, was formed by seventy buildings when this project was made<sup>5</sup>. Fifty of these buildings were sketched in the large scale maps that accompanied the memory of the project. The other twenty ones were spread over a nearby area that was located at the other side of Sarria River, where the new road was not planned. As a result of that fact, these twenty buildings were drawn in the small scale maps of the project (Fig. 2).



**Fig. 2.** Project of the road section between Sarria and Samos: map of the second stretch, scale 1:5,000, 1889. The new road is a red dashed line

Source: Drawing by the author from the original map, which is preserved at AHPLu

<sup>4</sup> AHPLu — *Carretera de 3.º orden de Sarria a Pedrafita do Cebreiro...* 1889. Catalogue number: 32935/2, 6r.

<sup>5</sup> AHPLu — *Carretera de 3.º orden de Sarria a Pedrafita do Cebreiro...* 1889. Catalogue number: 32935/2, 53r-54r.

Moreover, the engineer explained in the memory the reason for the construction of the new road through the centre of Samos village<sup>6</sup>. He based the decision on geographic and economic matters, although it seems that he did not realize the serious consequences that these works would cause in the historic tissue. In fact, in a second project he made in April 1890 to study individually the fragment of the road that crosses the village on request of the applicable law<sup>7</sup>, the same engineer pointed out that the location of Samos village between steep slopes and the river led to the construction of the new road through the village centre (Fig. 3). However, in this project he also recognized that some expropriations would be necessary, but he said that «nothing would be lost due to the road»<sup>8</sup>.



**Fig. 3.** Project of the road that passes through Samos village, scale 1:1,000, 1890. The new road is a red dashed line  
Source: Drawing by the author from the original map, which is preserved at AHPLu

After the approval of the two above-referred projects, the process to carry out the expropriations of some rural and urban properties began. Firstly, the list of affected properties was done<sup>9</sup>. Each of them was assigned an identification number, followed by a set of data such as the name of the owner, tenant, municipality, and location, as well as the type of property. The next step of the process was the valuation of the pieces of land and buildings that would be expropriated by a surveyor. The valuation depended on the previous knowledge of the estate to be expropriated, and, as a result of that fact, a

<sup>6</sup> AHPLu — *Carretera de 3.º orden de Sarria a Pedrafita do Cebreiro...* 1889. Catalogue number: 32935/2, 56r.

<sup>7</sup> AHPLu — *Proyecto de travesía de Samos...*, 1890, catalogue number: 32853/1.

<sup>8</sup> AHPLu — *Proyecto de travesía de Samos...*, 1890, catalogue number: 32853/1.

<sup>9</sup> For the list of affected properties see: AHPLu — *Expropiaciones en los términos municipales de Sarria y Samos...*, Signatura: 32851/2.

description card was done for each of them<sup>10</sup>. All these documents are part of the thick expropriation records that are extant at the present. Their study is essential to understand the transformations that this village suffered as a consequence of the new road, as we will see from this point on.

The description of each expropriated property contains in writing all the following data: the name of the owner, the neighbourhood, the type of land, the purpose of the property, the enclosing walls if they existed, and their features (material, height and thickness), the name of the place, the area, the property boundaries by the four cardinal points and the valuation made by the state. Moreover, the description cards were accompanied by the so-called plot maps where the expropriated properties were sketched in detail.

The high number of expropriated properties led to their valuation in different records. At the present, the extant expropriation records are the ones corresponding to 1892-1893<sup>11</sup>, and 1895-1896<sup>12</sup>, in the case of the first section road. The expropriation record from 1892-1893 dealt with the valuation of the rural properties, and the second one contains the valuation of the urban estate, because some buildings must be completely or partially demolished.

In addition to these exhaustive descriptions, in the present research other documents of the expropriation records are even more important than the previous ones to achieve our final goal. I refer to the plot plans that belong to the 1892-1893 expropriation record<sup>13</sup>. These maps were made after dividing the whole road into several small parts of roughly 400 meters length. Each part was sketched in a detailed plot map, where we see the existing past urban and rural structure on a 1:100 scale, that is in a detailed way.

Dated to November 1892, these plot maps were made by Manuel Carballido, who was the state surveyor; Avelino Navia, who was the surveyor of the owners, and José López de Rego, who was the site manager on behalf of the state engineer. Each map contains the drawing of the existing plot tissue, not only in the case of the areas that the new road crosses, but also of those ones located immediately (Fig. 4).

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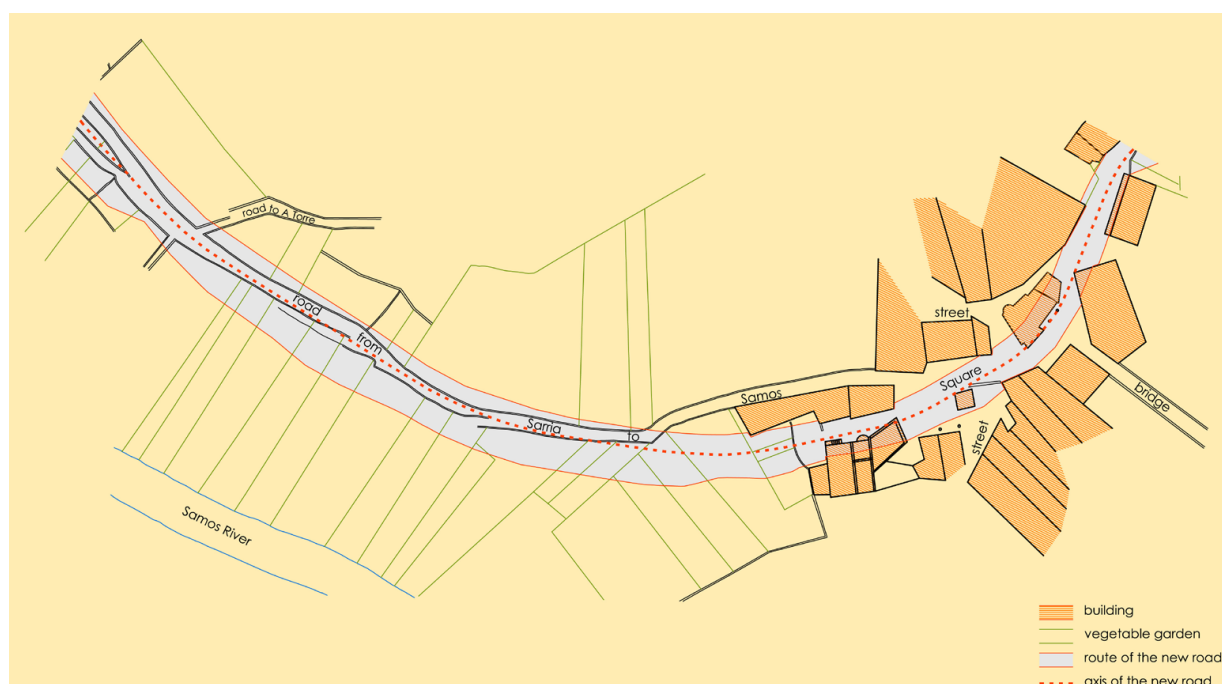
<sup>10</sup> AHPLu — *Expropiación forzosa del Ayuntamiento de Samos 1891...* Catalogue number: 32855/1.

<sup>11</sup> AGA — *Expediente de expropiación forzosa... de los años 1892 y 1893.* Catalogue number: 46/01436.

<sup>12</sup> AHPLu — *Expediente de expropiación forzosa de fincas urbanas... (1895-1896).* Catalogue number: 32855/2.

<sup>13</sup> AGA — *Expediente de expropiación forzosa... de los años 1892 y 1893.* Catalogue number: 46/01436.





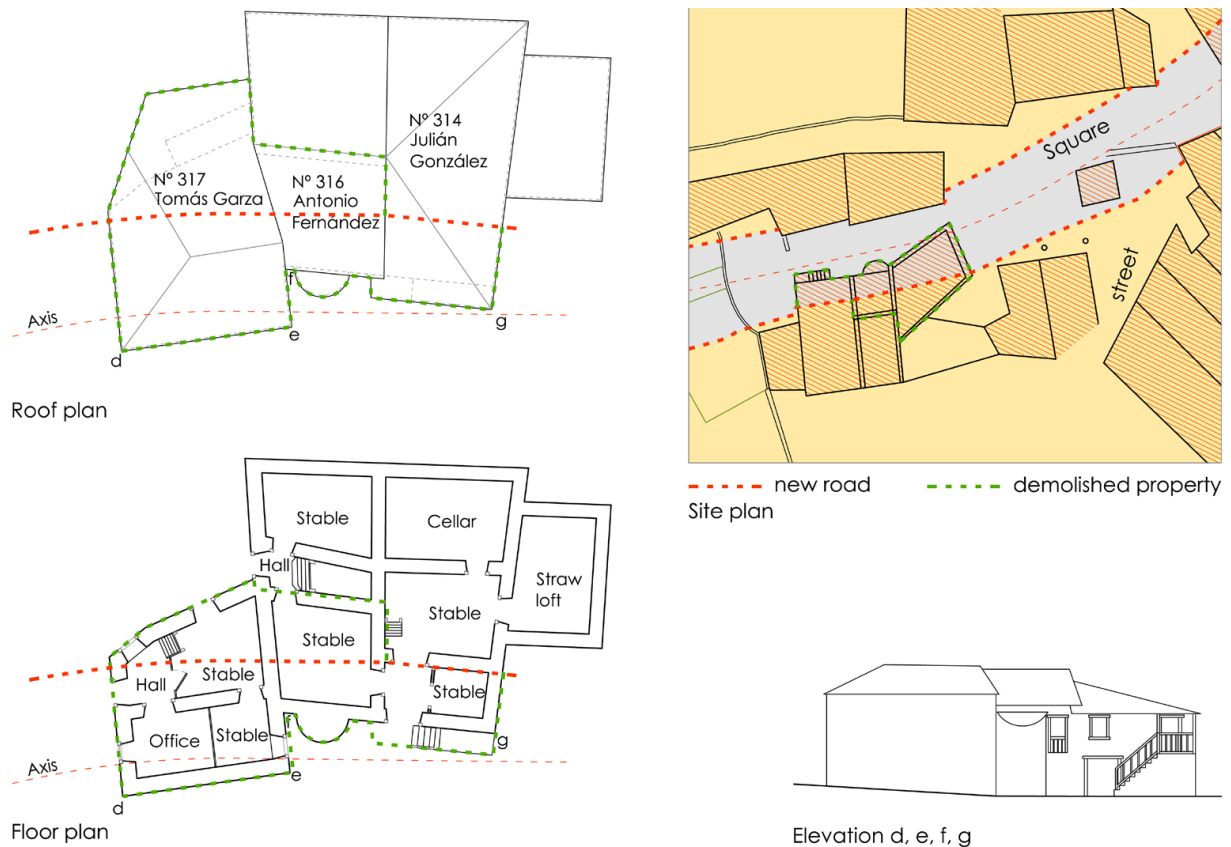
**Fig. 4.** The plot map of the village centre, scale 1:100, 1892

Source: Drawing by the author from the original map, which is preserved at AGA

In addition to that, the urban tissue of some villages and towns that were affected by the new road was sketched in these maps from 1892, as it happened in the case of Samos village. These documents are unique to know the appearance of the village centre in the late 19th century, just before the construction of the new road. The rural properties located in the south of the village are drawn in these maps, as well as the ones situated between the village centre and the monastery. Moreover, we see the buildings of the village centre that would be completely or partially demolished due to the road works, and the buildings that adjoined the previous ones. Besides, through these maps we know the former streets: the alley that connected the central square of the village to the river, the street that went from the village centre to the monastery, the alley that went up to the place of A Torre and a part of the former Royal road between Sarria and Samos, the one that defined a main street when it passed through the village.

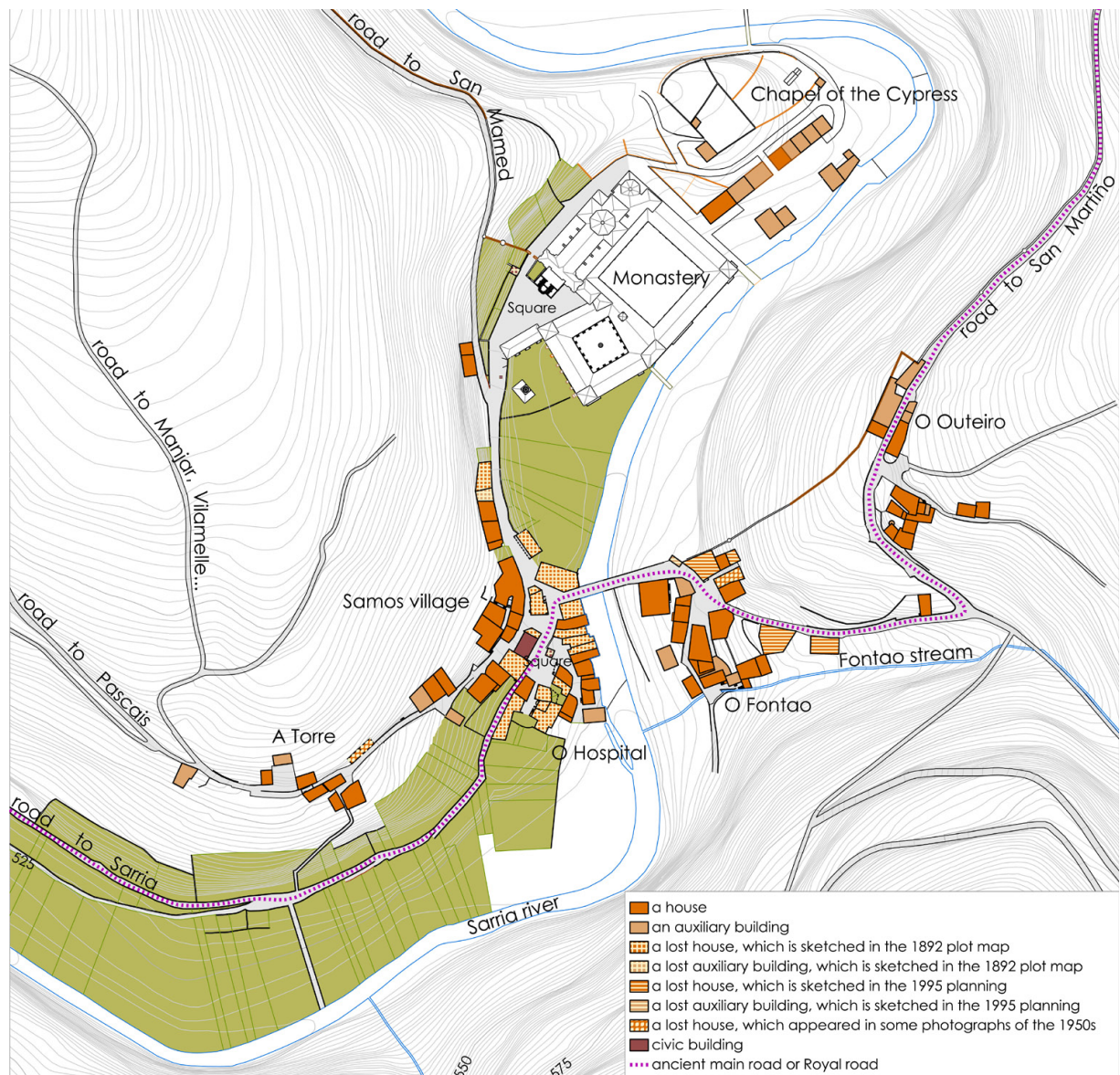
The valuation and description of each and one of the existing buildings in Samos village that were expropriated and sketched in the previous plot maps was developed in a second expropriation record that dates from 1895-1896<sup>14</sup>. As a complement to the written study, a series of floor plans, principal plans, elevations and cross sections of each urban property was done on a 1:100 scale between 1894 and 1896. These graphic documents let us garner an understanding of the traditional, disappeared dwellings that defined the historic tissue of this settlement (Fig. 5).

<sup>14</sup> AHPLu — *Expediente de expropiación forzosa de fincas urbanas...* (1895-1896). Catalogue number: 32855/2.



**Fig. 5.** One example of the houses that were expropriated and partially demolished due to the new road  
 Source: Drawing by the author from the original maps, which are preserved at AHPLu

All these maps that derive from the design and construction of a new road are an essential tool to know the appearance of this village in two main stages of its development. The first one is the village of the late 19th century and its inherited tissue. This was formed over the course of several centuries of monastic domain, and it was only slightly transformed during the Spanish religious confiscation (Fig. 6). The second stage is the village after the construction of the new road over the historic tissue; that is the village of the early 20th century (Fig. 7).



**Fig. 6.** Samos village before the building of the first road section, 1892.  
Source: Author

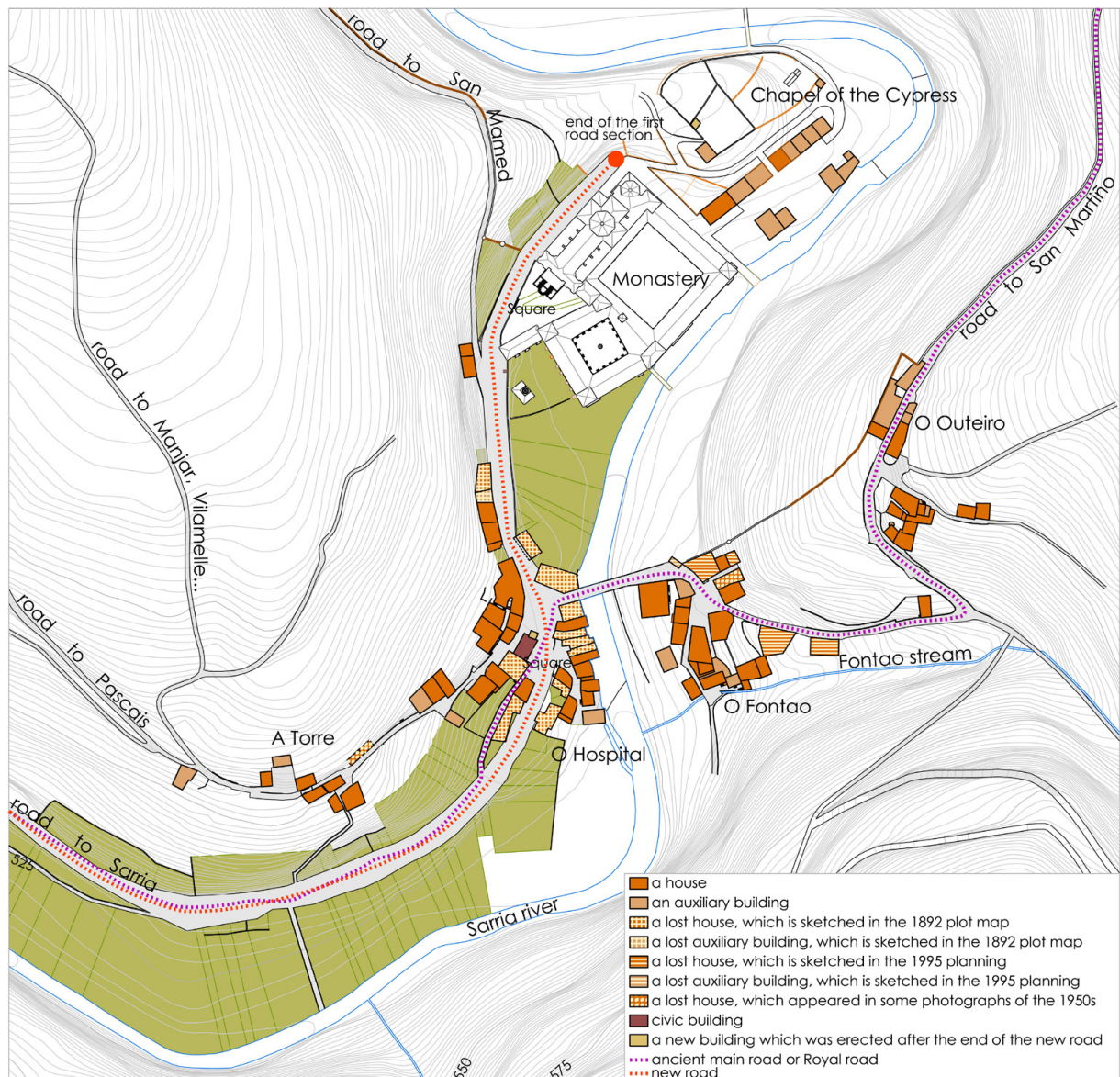


Fig. 7. Samos village at the end of the building of the first road section, 1901. Source: Author

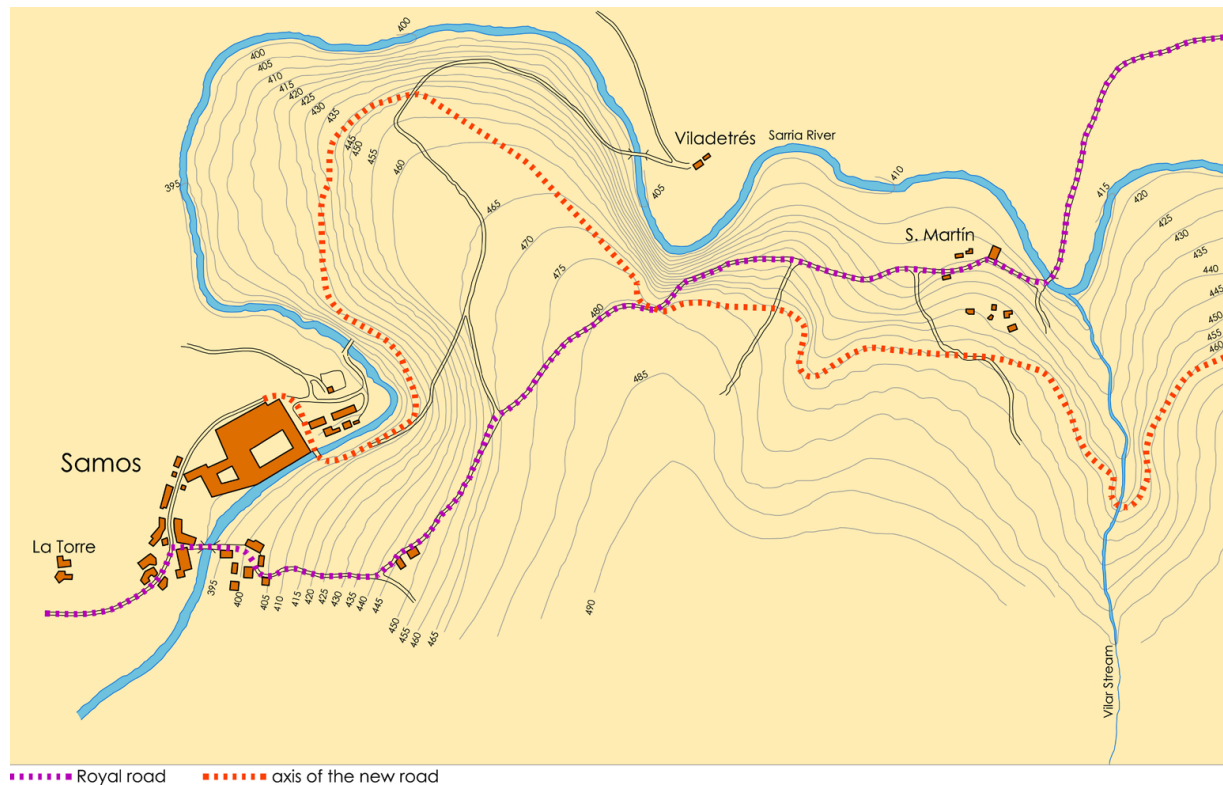
## THE SECOND PHASE: THE PROJECT AND CONSTRUCTION OF THE SECTION ROAD BETWEEN SAMOS AND TRIACASTELA

Shortly after the end of the first road section, the works to go on the construction of the road between Sarria and Pedrafita do Cebreiro began through the design of the second road section; that is the one that connects the villages of Samos and Triacastela.

The final project of this second section dated to March 1908, and it was made by the engineer Julio Murúa Valerdi<sup>15</sup>. It contains a descriptive memory where the reasons of the chosen route were explained, as well as a general map on a 1:5,000 scale, where the proposal to the section road was drawn over the topography of the area (Fig. 8).

<sup>15</sup> AHPLu — *Carretera de Sarria a Pedrafita; sección de Samos a Pedrafita... 1908*. Catalogue number: 32861/4.

In addition to that, in this map we see the watercourses, the former road network and the existing towns and villages, although the drawing is simplified due to the scale. Unlike the first road section, this second one does not follow the route of the former Royal road or the pilgrimage route to Santiago de Compostela due to different reasons such as geographic features and economic matters.



**Fig. 8.** Project of the road section between Samos and Triacastela: a fragment of the general map, scale 1:5,000, 1908. Source: Drawing by the author from the original map, which is preserved at AHPLu

Once the project was defined, the next steps were the same as in the previous road section, although in this case the works of expropriation lasted several years. In fact, the first, extant expropriation record was not presented until 1929<sup>16</sup>, despite the works related to it had already begun in 1920.

Among all the properties that were expropriated in this second stage, we are especially interested in those ones that were located at the north of the monastery, where the first road section ended, as well as in the pieces of land over which the second road section goes through during the first meters of its route, but still within the sphere of influence of the village. These pieces of land were a part of the ancient enclosed space of the monastery in the past. In other words, they belonged to the sacred area where the religious community developed its day-to-day life. This is also the reason to understand

<sup>16</sup> AHPLu — *Expediente de expropiación dentro del...* Catalogue number: 32865/1.

why this area was not still occupied or developed in the early 20th century despite its proximity to the village, because this land came from the hands of the monks, from whom these properties were seized due to the Spanish religious confiscation in 1836<sup>17</sup>.

In fact, the expropriation record from 1929 shows that only one building of the village was affected in the first meters of the second road section. It was one of the former monastic stables, although in the maps we can see that some more buildings existed in this area towards the north. Therefore, the majority of the expropriated properties for the construction of the second road section were pieces of land.

In this expropriation record of 1929 we also find one descriptive card for each expropriated property, as well as a set of plot maps that complete the knowledge of those ones. Every plot map was drawn on a 1:400 scale. They dated back to March 1923 and they were made by Enrique Gómez Giménez, who was the state engineer, and Navarro, who was the head engineer<sup>18</sup>.

All the data the descriptive cards gather together with the plot maps let us garner the understanding of the appearance that a part of the village area had at the north of the monastery. At the same time, the reading and analysis of this expropriation record show the deep change that the construction of the new road caused in this territory. In addition to that, the consequences of the works on the monastery were several, because the road goes right around the west and east facades of the monument, and in a higher level than the original dirt roads. All these changes and their consequences are still recognizable at the present.

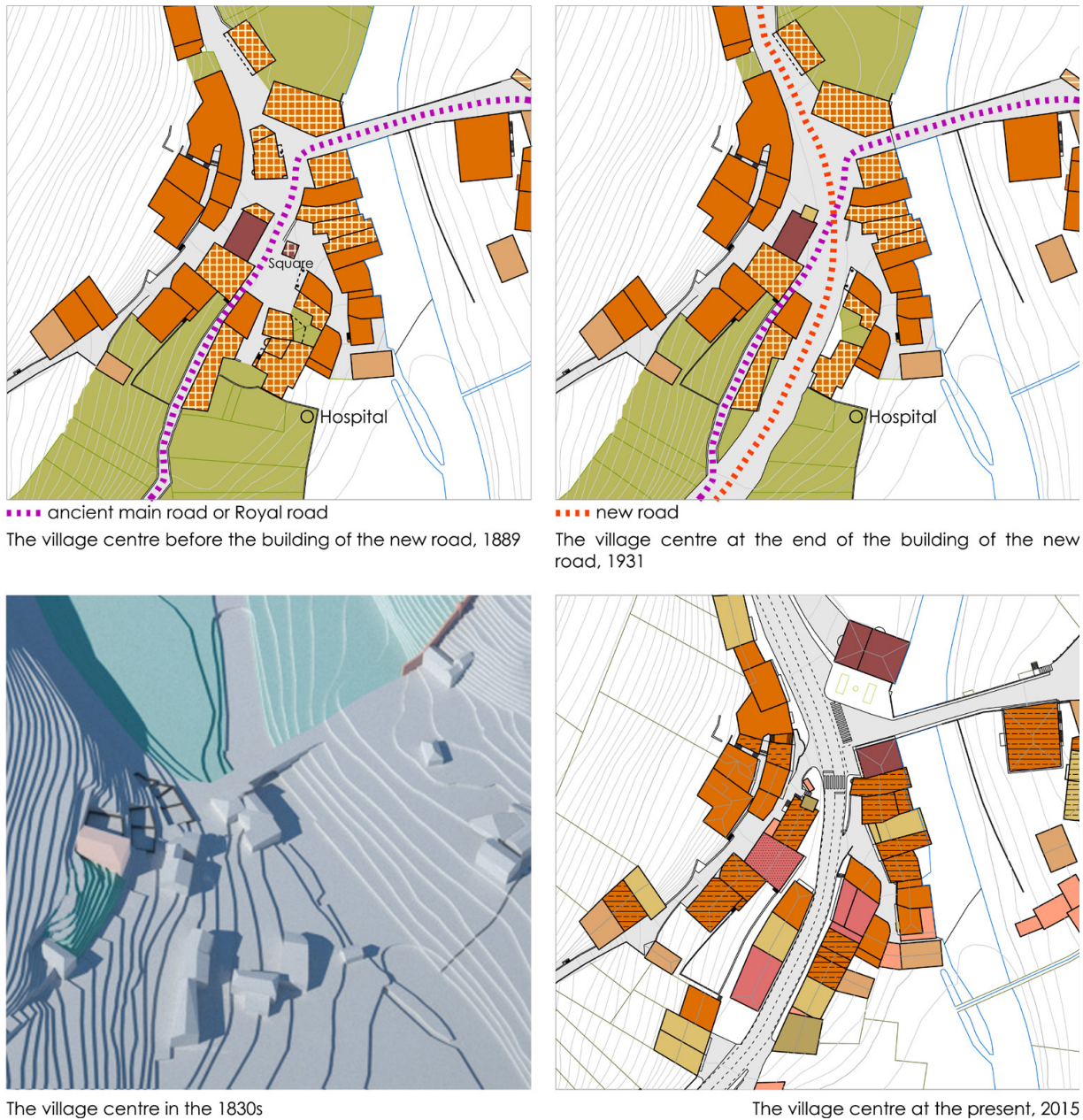
## THE ANALYSIS OF THE CONSEQUENCES OF THE CONSTRUCTION OF THE NEW ROAD OVER THE HISTORIC TISSUE

If we compare the present plan of Samos village with the resulting one from the construction of the last meters of the first road section between Sarria and Pedrafitas del Cebreiro, and the first meters of its second road section, we see that the contemporary image of the village centre is a direct consequence of the road works that were made between the late 19th and the early 20th century (Fig. 9).

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<sup>17</sup> Regarding the secularization of the monastery of San Julián de Samos see: ARIAS ARIAS, 1950: 330-336; ARIAS CUENLLAS, 1976; ARIAS CUENLLAS, 1992: 371-385; PORTILLA COSTA, 2003: 19-21.

<sup>18</sup> AHPLu — *Expediente de expropiación dentro del...* Catalogue number: 32865/1.



**Fig. 9.** The changes in the village centre between the 1830s and the present, as a consequence of the building of a new road. Source: Author

The different written and graphic documents we analyzed previously show that the route of this new road transformed the traditional tissue of the village forever as well as some buildings, streets and public spaces in the most significant area from a historic point of view, and it partially erased the former memory of the village.

Although the new road follows approximately the route of the ancient Royal road between Sarria and Samos, the need of a bigger width to meet a foreseeable traffic growth, and the unfavourable geographic features that did not allow another option to build the road without an increase of the cost, were the key factors that led to the break with the inherited tissue.

In regard to the buildings of the historic centre, the most affected area of the village was the place called Hospital. In this place the new road did not follow the route of the ancient Royal road, and the nineteenth-century engineers decided to build the new road by crossing the most developed zone. This way, they avoided the slight detour towards the north that the ancient road followed in order to go to the square of the village.

Although the former Royal road crossed the bridge of the village to arrive at the place of Fontao, from this point it went up to the place of O Outeiro, and then it went on towards the nearest town called San Martiño del Real; the new road was extended from the village centre to the monastery, taking as a base the route of an ancient, dirt road to the monastery, and going on beyond the entrance door of the former enclosed monastic property. The construction of this stretch caused mainly the loss of some buildings located right in the village centre, the disappearance of the parish cemetery, and the demolition of the entrance door to the remote monastic space as well as a part of the enclosing wall.

In regard to the second road section between Samos and Triacastela, it was designed distant from the routes of the historic roads, unlike the previous one. Therefore, these former routes are extant at the present. However, the construction of this second road section caused the final break with the historic boundaries between the sacred area and the secular village that the monks had protected zealously over the course of their centuries-old monastic domain. Moreover, an important part of the historic plot tissue was erased on the east bank of the river. Nevertheless, we also have to say that the transformation of this last area had previously begun due to the Spanish religious confiscation in 1836 onwards, though not so dramatically, but gradually.

When the road works ended, a new phase started in the evolution of Samos village. Firstly, the affected or partially demolished buildings were restored, and a new site for the lost public spaces was sought. Then, the village began an urban growth towards the north and the south of the existing settlement, and the new road was used as the main axis to support this contemporary development.

Verifying this process is possible through the applications for construction permits that the local administration of Samos accepted in the early 20th century<sup>19</sup>. Twelve of these documents are extant from the period between 1899 and 1907, that is from the end of works of the first road section to the beginning of the design of the second one. Four records contain the application for the reform or extension of some existing buildings, especially among those ones that were damaged by the new road. The remaining applications asked for the necessary license to build a new dwelling at one side of the new road, in most cases. The number of construction permits in the same area was maintained until the 1930s. In fact, seven new applications were accepted between 1908

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<sup>19</sup> AMS — *Obras mayores (1885-1910)*. Catalogue number: 471.



and 1931<sup>20</sup>. With these documents we verify that the new road became the main axis for the urban growth of this village since its ending up to now (Fig. 10).

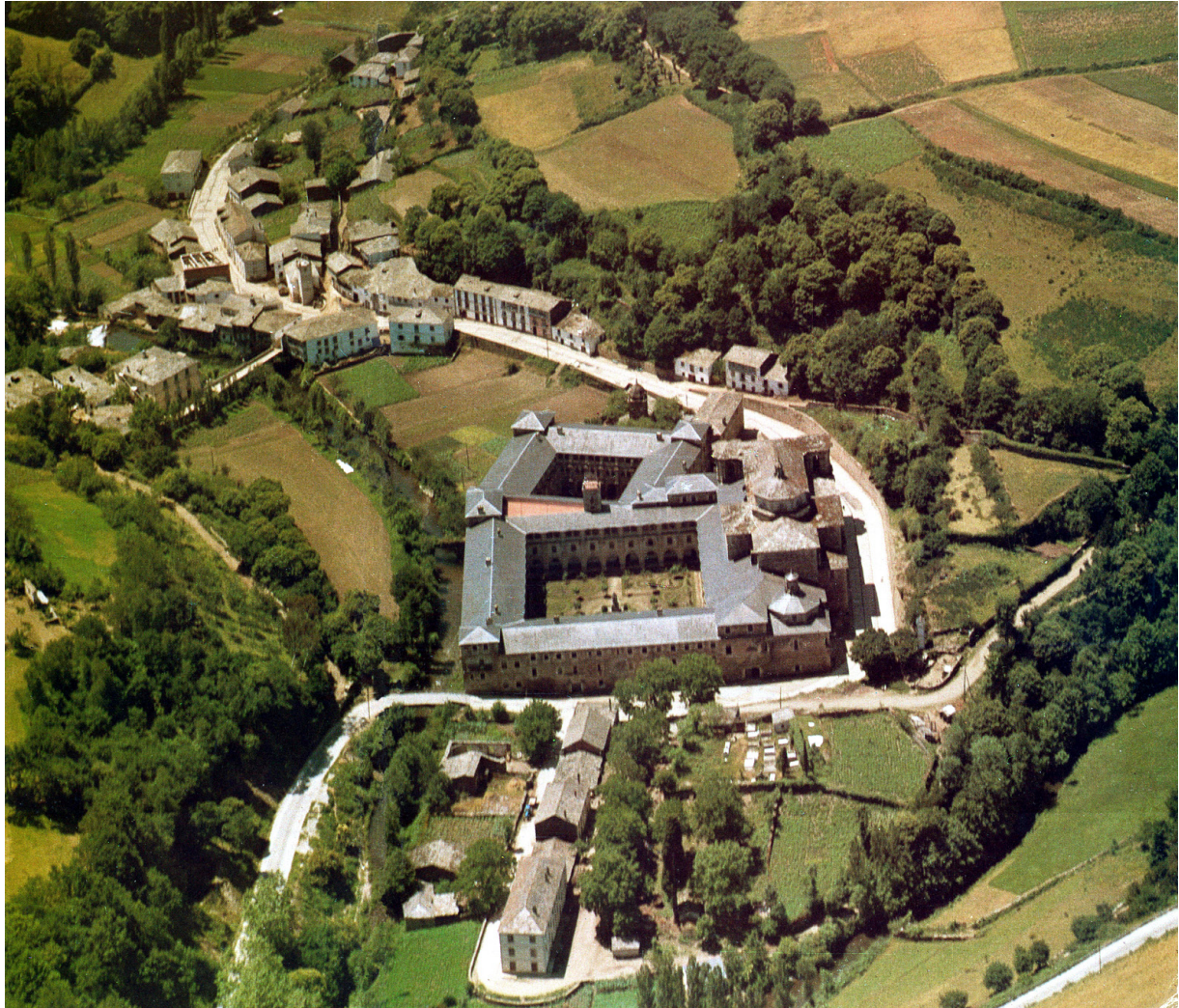


Fig. 10. Samos village in the 1970s. Source: PORTILLA COSTA, 1984: 4-5

## THE FINAL REFLECTIONS

To sum up, we can affirm that Samos village is a clear example of how time erases historic urban memory. In this case, the process took place in a radical way through a development work, which was the construction of a new road. On the other hand, the research we present shows that the graphic reconstruction of a remote physical reality that is deeply transformed or even completely lost at the present is possible through an interdisciplinary approach. The method we use is based on the intersection of diverse documentary sources with the study of the present urban reality as well as using digital tools for the creation of analytic maps that show the results we achieve.

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<sup>20</sup> AMS — *Obras mayores (1885-1910)*. Catalogue number: 471; AMS — *Obras mayores (1912-1972)*. Catalogue number: 472.

In addition to that, we want to highlight that this research is based on one type of documentary source, among others, that is scarcely used in the study of the urban or rural present reality. We refer to the nineteenth-century projects of civil works. However, these historic sources are full of written data, but the most important thing is they contain the first maps of some towns, villages and cities that maintained their traditional appearance up to that moment, or, at least, an image that was closer to their most immediate past reality. Finally, we just want to point out that this work reveals how valuable the analysis of these documentary sources is to trace the history of some contemporary cities, villages and towns and, for this reason, we extremely believe they should not be rejected.

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### Archivo Histórico Provincial de Lugo

AHPLu — *Anteproyecto de la carretera de Sarria a Seoane por Samos*. Undated. Public Works Collection. Catalogue number: 32850/6.

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AHPLu — *Expediente de expropiación forzosa de fincas urbanas del término municipal de Samos (1895-1896)*. Public Works Collection. Catalogue number: 32855/2.

AHPLu — *Expropiaciones en los términos municipales de Sarria y Samos, trozos 1.º y 2.º (1891-1900)*. Public Works Collection. Catalogue number: 32851/2.

AHPLu — *Expropiación forzosa del Ayuntamiento de Samos 1891-1893-1894*. Public Works Collection. Catalogue number: 32855/1.

AHPLu — *Proyecto de travesía de Samos (ingeniero Godofredo Álvarez Cascos) 1890*. Public Works Collection. Catalogue number: 32853/1.

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**II**

CITIES AS VIRTUAL  
MUSEUMS/  
CIDADES ENQUANTO  
MUSEUS VIRTUAIS



# DESIGNING THE «SABROSA: TERRITORY AND HERITAGE» EXHIBITION AT THE GOOGLE ARTS & CULTURE: CHALLENGES AND RESULTS

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LÚCIA ROSAS\*\*

HUGO BARREIRA\*\*\*

## INTRODUCTION

From a contextualized analysis of a pedagogical experience, carried out as part of the MA in History of Portuguese Art offered by the Faculty of Arts and Humanities of the University of Porto during the 2015/2016 academic year, we wanted to show how to create heritage dissemination products in an academic context. These products were assumed as an investigation experience/learning process, bringing together teachers and students from two mandatory curricular units: Project Seminar I (1S) and Project Seminar II (2S). The project involved a learning method that allowed students to master methodologies and the vocabulary of scientific research, as they directly contacted with a concrete heritage case study. As the academic year advanced, the students developed skills to draw, construct and disseminate the project, identifying and cataloguing objects, and to build an expository narrative with a digital format in mind. Cohesion and cooperation among students were encouraged, promoting an entrepreneurial spirit in order to answer a common goal.

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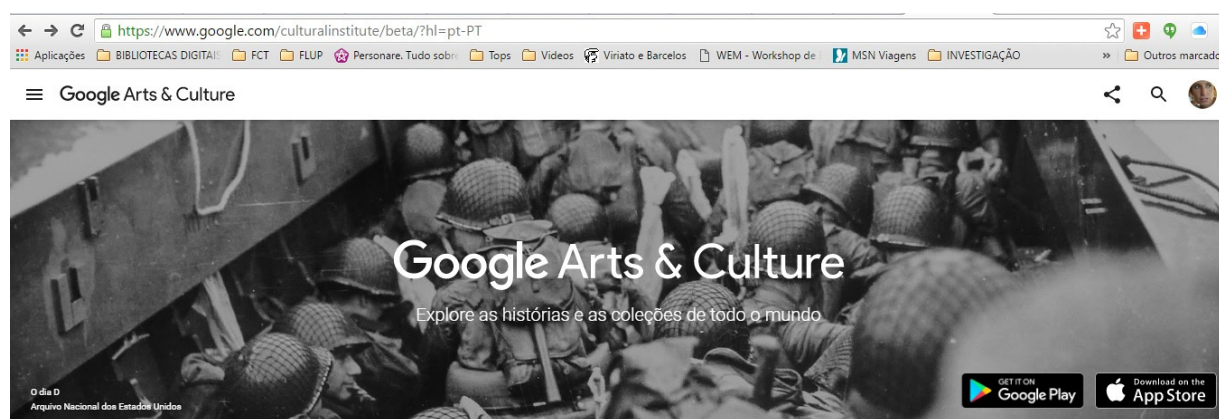


Fig. 1. Frontpage Google Arts & Culture. Available at <<https://goo.gl/XupNJo>>

The contacts between the Faculty of Arts and Humanities of the University of Porto and the Google Cultural Institute (nowadays known as Google Arts & Culture) started in 2014. In July 14, 2015, we shared the first results, in a worldwide inauguration that took place at the Noble Saloon of the Rectory of the University of Porto. *Porto Património Mundial (Oporto World Heritage)*<sup>1</sup> was thus presented. In September 23 of the following year, and taking advantage of the European Heritage Days 2016 (that were devoted to the theme «Communities and Cultures»), we inaugurated a virtual exhibition in Sabrosa, entitled *Sabrosa: Territory and Heritage*<sup>2</sup>. What these two exhibitions had in common was not only the dissemination of results in a bilingual format (PT and EN), but the fact that they concerned two locations inscribed on the UNESCO World Heritage List, in 1996 and 2001, respectively. Both shared with a global audience two narratives of landscapes, urban and rural. Both were built from the knowledge of the respective territorial characteristics, their History and their Heritage, and always from a contemporary point of view<sup>3</sup>.

The present paper intends to reflect upon the ways of interpreting and presenting the Heritage and the Landscape of Sabrosa, which is inscribed on the UNESCO List as part of the ADWR, as an evolving and living cultural landscape (2001). The basis of our narrative consists of images, whose «Details» present the information resulting from the scientific investigation process, and their respective interpretation, which in turn led to the production of contents and guided the definition of the narrative. This level of discourse, that provides images and texts for multiple individual uses (the collection), is complemented by the route of the exhibition. The route develops a number of narratives — created by the images themselves — and stimulates visual and dynamic dialogues that try to translate the conceptual relationships behind their selection and articulation. In this sense, and according to M. Forte, «the more we have learnt, the more we can tell; but also

<sup>1</sup> FLUP, 2015.

<sup>2</sup> FLUP, 2016.

<sup>3</sup> BOTELHO *et al.*, 2017.

the objects, the places, the sites, tell»<sup>4</sup>. A symbiotic relationship is created between student and object, empowered by the common goal of a highly object-oriented visual narrative.

The concept and the construction of this exhibition were, therefore, defined by teachers and students, who devoted their time to the necessary fieldwork, bibliographic and archival research, and a critical content systematization within the classroom. The field lessons, that covered the council of Sabrosa<sup>5</sup>, were fundamental. In these, the students had the opportunity to «educate» their gaze and, attended by the teachers, were prepared to see beyond things. The need to learn in articulation with the visual culture of each context was highlighted, as was its role as the main tool with which a History of Art researcher interacts with the object, in this case the landscape and the heritage of the council of Sabrosa do Douro.

## SABROSA: TERRITORY AND HERITAGE

The goal of this exhibition is to present the landscape and heritage of the Sabrosa council, which is part of the ADWR Cultural Landscape, classified by UNESCO as a World Heritage Site in 2001. It is an invitation for the visitor to wander through, and enjoy, this unique landscape.

The cultural landscape of the Alto Douro Wine Region (ADWR) is listed as World Heritage<sup>6</sup>. Although wine production dates back earlier, it was in the 18th century that it became the main crop in the region. Port wine became renowned worldwide for its quality. This long winegrowing tradition produced an exceptional cultural landscape which reflects its technological, social and economic development.



Fig. 2. Frontpage from the virtual exhibition *Sabrosa: Território e Património* (2016) at Google Arts & Culture  
Available at <<https://goo.gl/v8pjHp>>

<sup>4</sup> FORTE, [s.d.].

<sup>5</sup> We thank here the support from the Council of Sabrosa and four wine producers for the accommodation of all the students and teachers involved in the project: Quinta do Crasto, Quinta da Marka, Quinta Nova de Nossa Senhora do Carmo and Quinta do Portal.

<sup>6</sup> UNESCO, [2001].



As a cultural, evolving and living landscape, the ADWR was appreciated for its land use that, apart from representing the evolution of a wealth of material and immaterial culture, comprises a type of landscape which illustrates representative moments in history, patent in its terraces, vineyards, settlements, chapels and pathways. It is also a unique testament of a tradition that still lives on but has been modernised, that uses and builds a new landscape, builds material heritage and preserves its immaterial legacy. The ADWR is indeed Living Cultural Heritage.

The listing of the ADWR as World Heritage «involves the space and mankind and, consequently, the activity generated through a centuries-long relationship, which is constantly renovated by the soil, the cultivation of wine, wine production and a whole range of associated material and immaterial heritage assets»<sup>7</sup>.

The *Québec Declaration* on the preservation of the spirit of place («*Spiritu Loci*»)<sup>8</sup> emphasises the need «to safeguard and promote the spirit of places, namely their living, social and spiritual nature». The ADWR materialises a way of life connected to the culture of vines and wine, which shape the monumental and humanised landscape, designing unique forms with its terraces; for its religious and civil heritage, which is only intelligible in its perfect relationship with the more vernacular culture. But above all, for the intangible heritage which bestows meaning, values and context on this cultural, evolving and living landscape. According to the *Québec Declaration*, «Spirit of place is defined as the tangible (buildings, sites, landscapes, routes, objects) and the intangible elements (memories, narratives, written documents, rituals, festivals, traditional knowledge, values, textures, colors, odors, etc.), that is to say the physical and the spiritual elements that give meaning, value, emotion and mystery to place»<sup>9</sup>. In the ADWR and in Sabrosa, the spirit of place persists, shaped by mankind in response to their most varied needs, part of «a continuously reconstructed process, which responds to the needs for change and continuity of communities»<sup>10</sup>.

This exhibition intends to respond to one of the most innovative principles of the *Québec Declaration*, the use of new digital technologies «to better preserve, disseminate and promote heritage of places and their spirit»<sup>11</sup>.

## The Territory

Heritage encompasses all that has quality for the cultural and physical life of man and has profound meaning for the existence and affirmation of communities, from the rural and parochial to the municipal and regional, as well as national and international.

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<sup>7</sup> CENTRO NACIONAL DE CULTURA, 2013: 46.

<sup>8</sup> ICOMOS, 2008.

<sup>9</sup> ICOMOS, 2008.

<sup>10</sup> ICOMOS, 2008: Art. 3.

<sup>11</sup> ICOMOS, 2008: Art. 7.

Heritage is quality and a wealth of memory that is ideally alive. Without quality, whether intrinsic or circumstantial, there is no fundament. Heritage cannot be seen only as a reserve and even less as a recollection or nostalgia of the past. It should, rather, be regarded as part of our present<sup>12</sup>.

Based on these ludic reflections, and considering heritage as the conjugation between past and present, we have selected the council of Sabrosa as the theme for this exhibition, selecting parishes that are most closely related with winegrowing, due to their location.

The quality of the council's landscape, a *handmade landscape* (common to the entire territory of the Alto Douro Wine Region), results from domination of adverse geomorphological conditions. We owe the aesthetic wonder the landscape has today to the arduous work of man over the centuries and to the control the dams built have taken of the irregular, turbulent waters of the Douro River.

In the council of Sabrosa, spatial planning has mitigated the dissonances arising from the expansion of the settlements. Its wealth of heritage, of incalculable quality, comprises old and contemporary architectures for housing and production, vernacular constructions, urban design, religious architecture and public architecture dedicated to culture. The quality of this heritage has been its own cause and effect.

## Heritage

The heritage of Sabrosa is spread through the parishes described in the exhibition, such as Provesende, Celeirós do Douro or Vilarinho de São Romão, among others. They either stand out due to the appreciable number of noble houses they are home to, their orderly urban design, the richness of their sacral interiors, or the presence of a vernacular heritage and high-quality contemporary architecture. These parishes reveal a diversity that should be viewed within a historical process and according to the distinct economic power of their populations. The council's heritage landscape, in the area closest to the Douro and Pinhão river valleys, is profoundly marked by constructions from the 17th and 18th centuries, as well as the 20th and 21st centuries. It is home to the region's more imposing heritage, richer and more visible, revealing greater «artistic will». Viticulture and the international trade of wine are the cause and effect of buildings of an accentuated architectural quality, both in the 17th and 18th centuries, as well as today.

The old settlements, founded in the Middle Ages, show a taste of the Baroque in manor or noble houses, the parish churches and chapels, the fountains, crosses and *via sacra*. It is in the wealth of the churches' interiors especially that the Baroque stands out. Elevated with imagery and retables in gilded woodcarvings, the elaborateness and decorative detail of the interior contrast vividly with the exterior, which is often quite modest.

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<sup>12</sup> ALMEIDA, 1998: 10-17.

This heritage remains alive due to its use in the present, with rituals of devotion and new collective celebrations, the dynamics of viticulture and winegrowing supported by modernised facilities of attentive architectural design, and a keen awareness for the value of the heritage of the past in contemporary life and the region's international projection and that of its products. Thus, the council of Sabrosa is today highly sought-after by those who wish to discover the Alto Douro Wine Region in the present and past.

## **Wine Production**

The cultivation of wine and of other products typical of the Mediterranean gastronomic culture found expression with the Romanisation of this region. It is proven archaeologically that vines already existed at least since the 3rd millennium B.C. when the Romans settled in the Douro Valley. Although the grape seeds found in various excavations are not proof of the transformation process of grapes into wine, they do prove that vineyards and grapes did exist in this region<sup>13</sup>. The extension of vineyards or where they were planted across the territory is still unknown. The cultivation of vines and the transformation of their fruit into wine were boosted during Roman times. This is shown in the various archaeological findings over time, for example, the various ruins of wine-related facilities such as wine-presses, and also ceramic fragments of containers used for storing wine<sup>14</sup>.

## **THE EXHIBITION AT THE GOOGLE ARTS & CULTURE: CHALLENGES AND RESULTS**

The creation of virtual exhibitions<sup>15</sup>, as projects that congregate research processes, resulted in enriching pedagogical experiences for the students, who authored the images and texts. The students were imbued with the significance and the pertinence of the contents that were to be presented, the need to direct their discourses, regardless of the vehicle that delivered the message, by selecting and communicating a way of seeing the object, that is, the narrative.

For the teachers, the project became an exploratory tool for research methodologies applied to a collective project, based on what is known as «Learning by doing»<sup>16</sup>. The responsibility to coordinate the project was assigned to the teachers of the Project Seminar I and II curricular units, which in the case of Sabrosa involved additional curricular units. The scientific commission ultimately involved the entire faculty of the MA in Portuguese History of Art. In order to incorporate the exhibition design in the curricular context, we decided to: 1) include the global project in the curricular unit program,

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<sup>13</sup> ALMEIDA, 2006: 370-372.

<sup>14</sup> ALMEIDA, 2006: 372-373, 375.

<sup>15</sup> BOTELHO *et al.*, 2017.

<sup>16</sup> WINN, 1995.

developing the concept of the virtual exhibition in Project Seminar I and its construction and dissemination in Project Seminar II; 2) assume the project as a mandatory evaluation component, with a weight corresponding to 30% of the final grade, in order to increase the output and stimulate student participation. The adopted methodology was adjusted to the goals defined for each curricular unit.

It is important to note that the high number of students involved, with different levels of motivation, posed challenges in terms of coordination, more so as their activities were taken into account in the evaluation process, demanding more from both parts. Where teachers are concerned, the exploratory nature of the project, the responsibility to carry out what had been agreed with Google Arts & Culture and the pressure imposed by the intended impact/visibility were, most certainly, significant challenges that directly influenced every decision in terms of exhibition curatorship.

Also to be considered was the challenge posed by the size and scale of the territory under study, its distance from Oporto (159 km) and the absence of surveys and reference studies on the council of Sabrosa. All of this increased the effort involved in the research work, as did its exploratory and unprecedented character. Notwithstanding, we need to stress the coherence of the obtained results and the continuity of the investigation process, which roused the inclination of a number of students towards this field of scientific research. Some of them have continued to study this territory in their theses and internship reports.

## FINAL CONSIDERATIONS

Based on different starting points, the *Sabrosa: Territory and Heritage* exhibition extends an invitation to visit the council of Sabrosa, offering a glimpse of a certain aspect of the landscape or heritage element. The exhibition focuses on the landscape, feeling the spirit of place and its quality. This approach tried to capture, by visual means, the ambiance provided by the integration of architectures in the wine region or urbanized landscape. The scale used is sometimes altered — sometimes dramatically — because the ADWR demands it so. Moreover, *Sabrosa: Territory and Heritage* is an exhibition that, based on the quality and the spirit of place, is observed and discovered by walking its paths, by visiting different agglomerations and farms, something that an isolated or static image would be incapable of encompassing.

Instead of merely attesting to the possibility of creating heritage diffusion products within a pedagogical context, as a learning experience involving several investigation methods, this project ultimately stood out as a heritage diffusion product itself, capable of reaching a global audience on the Google Arts & Culture platform. We believe we were able to captivate different audiences and to effectively transmit knowledge concerning the Heritage and the Landscape of the Sabrosa council, as part of the World Heritage List. We adopted a digital communication method, focused on heritage, showing that it

«should be oriented towards the capacity to change ways and approaches of learning»<sup>17</sup>. A digital tool is, by nature, more dynamic and, consequently, more appealing.

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<sup>17</sup> FORTE, [s.d.].

# VIRTUALIZATION AND THE PRESERVATION OF RAILWAY HERITAGE\*

FERNANDA DE LIMA LOURENCETTI\*\*

## INTRODUCTION

In order to promote a reflection on the use of virtual media in the design of sustainable urban projects, this paper will present a way of management and valorization of historical railway heritage. Broadly speaking, this work is based on the creation of an industrial inventory of Araraquara, a Brazilian city located in the state of São Paulo, Brazil, to highlight the influence of the *Estrada de Ferro Araraquarense*<sup>1</sup> on the development of the State's hinterland. Araraquara was the first city of the old railway, the reconstruction of its history allowed discovering many industrial heritage areas related to the expansion of the railway across the unknown territory of São Paulo between the late 19th century and the early 20th century.

The creation of technical industrial heritage files of all industries established along the railway line aims at encouraging the development of a database to support the creation of a virtual museum. This initiative would allow showing and illustrating the importance of the Araraquara railway line, along the history of the industrial expansion

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<sup>1</sup> My interest in this railway began with my Master's thesis *Estrada de Ferro Araraquarense in the Framework: The industrial landscapes of the West of São Paulo State as a heritage of the mobility* developed under the Erasmus Mundus TPTI (Techniques, Patrimoines, Territoires de l'Industrie) programme, implemented by Université Paris – 1 Panthéon-Sorbonne, Università degli Studi di Padova and Universidade de Évora in 2015.

of São Paulo. Between 1885 — when the first railway station was built in Araraquara — and 1950 — when the train reached its last stop in the state of São Paulo —, industrialization followed its tracks. Currently, many of the listed industries are in ruins or no longer exist. The lack of importance given to the industrial heritage in Brazil is related to the abandonment of these old industries, which causes the growth of certain crime rates.

As time goes by, the railway becomes an increasingly significant part of this scenario and, at the same time as the industrial heritage, the railway infrastructures and their entire history, an important technical heritage, are being marginalized. The preservation and valorization of the railway heritage depend on its acknowledgement by the population as a component of urban identity.

France, one of the countries seen as a good example in the heritage field, was a pioneer in the production of inventories. Currently, it is working on the dissemination of virtual databases to help researchers and other interested parties to preserve their memories. One of the most famous French digital databases is *Architecture – Mérimée*, a virtual platform that everyone can access and help to upgrade.

Platforms like this lead France to the «Big Data Challenge», which arises from the accumulation of large amounts of data that must be organized and verified<sup>2</sup>. Some countries, such as Portugal (*RENNER Living Lab and Smart Cities Portugal*)<sup>3</sup> and the United States (*Legacy Cities Design*)<sup>4</sup> have built virtual platforms to be able to share their urban experiences. These initiatives are also ways of dealing with the «Big Data Challenge».

The municipality of Araraquara, in the State of São Paulo, is deactivating its urban rail tracks and, therefore, this line, with a length of approximately 15 km, which divides the city into two spatially and socially different parts, needs to be addressed within the scope of an urban rehabilitation project. So, to reintegrate this infrastructure into the urban grid, it is important to highlight its contribution to the city's development and, nowadays, the most efficient way to achieve this is by using new technologies to draw people's attention.

The 1990s witnessed the emergence of several debates about whether virtualization was a threat or an opportunity for traditional museums<sup>5</sup>. Institutional museums, like the *Cité des Sciences et de l'Industrie* in Paris, use virtual exhibitions to highlight the influence of this means of transportation by emphasizing the relationship between its development and that of the urban environment through the use of virtual and interactive technologies. Therefore, virtualization can become an important tool for the preservation, valorization and reintegration of the Araraquara railway heritage into the urban grid.

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<sup>2</sup> FINGUERUT & FERNANDES, 2014: 36.

<sup>3</sup> SMART CITIES PORTUGAL, 2016.

<sup>4</sup> As an online platform, Legacy Cities Design shares some innovative projects of cities that lost a big number of population and jobs. Available at <<http://www.legacycitydesign.org/about>>.

<sup>5</sup> NEGRI, 2011.

## VIRTUALIZATION AS A TOOL

Virtualization does not necessarily need to be associated with the immaterial or the unreal. The French philosopher Bernard Deloche<sup>6</sup>, of the Université Lyon 3 and a member of the INCOM (International Council of Museums), made a series of studies on museology, one of which is based on the concept of virtual museum. He explained that in order to give life to such a museum, there is the need to use «substitutes»<sup>7</sup>. This kind of method allows preserving the original object, or items that cannot be integrated into a museum, by using alternative techniques. This concept is not new and it is not solely related to the new means of communication. It was introduced several years ago, when the philosopher mentioned the Alexander School's inventory, which displayed machine miniatures in order to preserve the memory of their existence.

*The inventory is, therefore, one of the operations of the Museum (the act of making an inventory), yet delocalized: a museum without collections and buildings — or, at least, without buildings intended for the preservation of collections. In short, a museum that is reduced to one purpose: to transcribe the sensitive reality into a symbolic support using various techniques (writing, photography, drawing, photogrammetric paths, etc.). In fact, since its inception, an inventory involves the exploration of information and image databases. Unlike a classical Museum, an inventory archives a potentially unlimited number of works and allows, thanks to its computerized image databases, accessing data at a speed that has nothing to do with the traditional consultation of manual files<sup>8</sup>.*

Inventories are a virtual way of preserving memories and they make it possible to preserve items that cannot be kept in their material form, as in the traditional Institutional Museums. Cassiano dal Pozzo made a catalogue of watercolor paintings that allows disseminating the knowledge obtained in the 17th century in a variety of fields, including biology, geology, zoology and botany, which is based on the preservation of objects with a short life span. François de Clarac made an inventory to support an Imaginary Museum of Modern Sculptures, based on the sculptures kept at the Louvre Museum, which cannot be brought together and displayed in a single space<sup>9</sup>.

*[...] Virtualization is the very dynamics of the ordinary world, something that we use to share a reality. Far from encapsulating the kingdom of lies, virtual reality is precisely the mode of existence from which both truth and falsehood arise<sup>10</sup>.*

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<sup>6</sup> DELOCHE, 2003.

<sup>7</sup> DELOCHE, 2003: 162.

<sup>8</sup> DELOCHE, 2003: 148. Translated by the author.

<sup>9</sup> DELOCHE, 2003: 149-154.

<sup>10</sup> LÉVY, 1995: 101. Translated by the author.



If we combine the concept presented in the quote above with the theory used by Deloche<sup>11</sup>, we may infer that any kind of faithful reproduction of something that already exists can be considered a virtualization and may be used to preserve the original object. Some researchers in the painting and sculpture field are against virtualization, some arguing that it is a sort of forgery; on the other hand, in the urban planning field using new technologies to reconstruct the past is a very common form of preservation that, nevertheless, has its dangers. Photos, videos, electronic sketches help researchers reconstruct old urban designs, but over time these reconstructions may undergo changes as a result of new discoveries or different interpretations. Thus, reconstruction is a never-ending task and the result can never be seen as an absolute truth, as it depends on interpretations that may vary for many different reasons.

To proceed with this kind of preservation it is important to rely on a good research on the subject in question, based on old maps or images from different periods. These can be used as references for the development of a new form of representation, which can be designed to provide information to all kinds of visitors, and not only to people who have some kind of specific knowledge. This is important because one of the purposes of the museum is to be informative. According to Pierre Lévy<sup>12</sup>, another French philosopher, information is already a virtualization of facts; it is transmitted, interpreted, related to other information that will differ from person to person, and updated by the recipients, if they deem it necessary. Lévy described knowledge itself as something virtual, which can undergo many changes to allow an individual to adapt to new circumstances<sup>13</sup>.

Cristoforo Sergio Bertuglia (1999), professor of Urban and Regional Urban Planning at the Politecnico di Torino, stated, in a preamble about Paolo Galluzzi, an Italian historian of science, that in order to rebuild an urban center it is necessary to recover its history and display its legacy as a museum exhibition.

*It is not just a question of creating entirely virtual museums (a phenomenon that is, nevertheless, present and has the ability to develop itself in surprising ways, opening up possibilities that are currently unimaginable) but also, and above all, of introducing virtual elements and, with these, a crucial innovation into the so-called real museums<sup>14</sup>.*

However, the Institutional Museum can use virtual reality as an element of its exhibitions. This can improve the museum's educational component and enhance its repertoire by enriching the collection. Additionally, virtual accessories can be easily upgraded, as they are open to the insertion of new information. Building a space for the Chair

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<sup>11</sup> DELOCHE, 2003.

<sup>12</sup> LÉVY, 1995.

<sup>13</sup> LÉVY, 1995: 36.

<sup>14</sup> BERTUGLIA *et al.*, 1999: 255. Translated by the author.

Museum of Lyon is unfeasible, but a virtual museum can include countless objects and offers the possibility of continuously adding new ones.

A virtual museum can be used as a way to disseminate knowledge and to rebuild a specific period of history. The case presented in this paper is merely part of an extensive legacy whose value can be recognized by society and enhanced by studies on other cities crossed by the *Estrada de Ferro Araraquarense*. Virtual reality can be used to put all the pieces of the history of the state of São Paulo's industrial, technical and territorial development together. This railway heritage, the product of many changes occurred throughout the years, will always have an impact on urban life, even after the decommissioning of the line. A sustainable urban planning strategy is already on the municipality's agenda, and bringing virtual reality to Araraquara opens the door to the introduction of the concept of Smart City.

## SMART CITIES AND DATABASES

Many studies are currently being developed on Smart Cities, as they have become one of the most sought-after solutions within the urban market. Studies made by the Smart Cities Portugal group (2014) show that, according to ABI Research (2011), between 2010 and 2016, the global market of technologies that support smart city programs and projects would grow to 31 billion dollars. Generally, these technologies use Geographic Information Systems to collect high-resolution geographical data which are interpreted in order to allow assessing the current potential of cities with a view to support future sustainable urban planning projects.

The transportation system is one of the many items assessed in territorial potential surveys. One of the best-known transportation solutions is the Light Rail (LR). The Institute for Transportation & Development Policy (ITDP) made a research that showed that 17 cities in the United States, Europe and some Asian countries have already replaced their viaducts; these initiatives aim at saving money, as the costs with viaduct preservation are rather high, and at revitalizing large urban areas<sup>15</sup>. In a research made in 2013, Smart Cities Portugal (2014) observed that mobility is the second largest field of activity when it comes to providing products and services to solve urban problems. Most of them are based on the development of electric mobility, parking management and integrated ticketing solutions.

There is the need to establish a connection between the city and its territory, but the communication within road networks is complex and generates its own kind of social structure. To change the forms of mobility is to change the city's dynamics, as well as some of its social values. In many cultures, the car is seen as a sign of social status, independence and comfort. So, it is not possible to ignore the city's history and the people's

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<sup>15</sup> SILVA, 2015: 16.

culture while developing new products. That is the reason why one of the principles that support smart cities is the inclusion of different social players.

There are many initiatives aimed at defining ways to generate interactions between the citizens and the urban planners in cities known as «Legacy Cities», affected by the loss of population and jobs. The most famous one is «Placemaking», based on the creation of emotional connections between places and people. One of its challenges is the revitalization of old railways left by the industrial era. Just like Araraquara, many cities saw their railways face neglect, generating industrial hub corridors.

*The road, rail and water systems that serviced industry are not effectively integrated or designed to allow different types of access, and often have to be retrofitted to allow for non-motorized transit. Moreover, the existing transportation networks are often woefully insufficient and underfunded. This limits options for residents and for disconnected, often racially segregated, neighborhoods. Connectivity and accessibility are significant challenges [...]*<sup>16</sup>.

Any smart solution must be based on a mainstream integration of technology and on connections between diagnoses and databases. So, Big Data is the main challenge faced by 21st-century urban planners<sup>17</sup>. Residents should be included as part of long-term solutions and, in this context, the preservation of heritage should be taken into account in any urban planning strategy concerned with social habits and urban development, as highlighted since the publication of the *Athens Charter* in 1931.

*Ventura (24) mentions the attention paid by Giovannoni precisely to these two management and intervention scales: the large transportation networks and the communications network, which induce urbanization beyond the existing city and the “nuclear urban spaces” [...]*<sup>18</sup>.

This is a reference to the book *Vecchie città ed edilizia nuova* (1913), by Gustavo Giovannoni, which already addressed concerns about the «new concepts of urban planning», highlighting the importance of both transportation and communication. The French historian Françoise Choay points out that, in this book, Giovannoni tries to establish a connection between «urban traditions» and «technological changes» as two sides of the same coin<sup>19</sup>. The relationship between new technologies, urban development and heritage preservation became inseparable from social progress ever since the first concerns about urban heritage and the creation of urban strategies emerged.

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<sup>16</sup> NEW SOLUTIONS GROUP, 2013: 40.

<sup>17</sup> FINGUERUT & FERNANDES, 2014: 36.

<sup>18</sup> CABRAL, 2015. Translated by the author.

<sup>19</sup> CABRAL, 2015.

In this context Vittorio Guido Zucconi provides a new interpretation of Giovannoni's analysis, dividing the design of an urban planning strategy into three parts: the first one is the thesis, which presents all the problems and losses faced by the old city; the second part is urban expansion, which presents the changes occurred in urban planning over the years and how they coexist; and the last one is the result of a merger of all the theory into an urban design that is able to unify the entire city. Combining these notions with what the «digital era» is able to provide to the urban market, the database is the first step of interpretation towards a sustainable urban design strategy.

## ARARAQUARA DATABASE PROPOSAL

The industrialization of Brazil began after the Portuguese Royal family's arrival in the country (1808) and reached the Araraquara region via the plantation of coffee. This product was not the most common in the region, but it was the country's most important output and the one that financed most of the railways built across the state of São Paulo. So, agricultural machinery began being introduced in the Araraquara region a few years after the arrival of coffee, in the 1880's. However, the most intense period of urban expansion began after the railway reached the city, in 1885.

Currently, the city is crossed by a railway branch that is approximately 15 km long. This scar divides the city into two parts: the historic centre, which witnessed the construction of tall buildings and large infrastructures, and the old working-class districts, where the social areas are still concentrated today. The railway was deactivated in 2015, following a popular request approved in 2005. The population was weary of the accidents and the pollution associated with the trains. They were only serving corporate interests, as the passenger service had been suspended in 2001<sup>20</sup>, so, for the residents, the old railway was merely a dark, dirty and dangerous passageway.

To change the people's opinion on the railway, we need to tell another part of its history. The Araraquara urban heritage survey was prepared following the development of a comprehensive historical research. This knowledge base was crucial for understanding the decline of the railways and the industrial development process, making way for a series of heritage analyses. Considering what we have mentioned above, having a catalogue will allow virtualizing an array of information that is fading away. However, to ensure the reliability of the information that is collected, we should take into account many other facts and sources. So, the identification of Araraquara's industrial heritage began with a comprehensive research on the Brazilian industrialization process and on the city's history.

Once these data had been collected, we prepared a series of lists to organize the industries found by production type and year of arrival. However, this became our first

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<sup>20</sup> MARTINS & BERGAMIN, 2012: 182.

challenge, as some documents and newsletters showed the industries' names, but did not include any further information — not even the year of inauguration —, a fact that highlighted the importance of the first collection of data. This first catalogue comprises 71 industries, which should be studied in further detail. Many of them no longer exist, others are merely destroyed buildings, but some are still operating.

Despite the fact that we did not find as much information about each industry as we had expected, this first survey allowed revealing that many of these industries were located in areas surrounding the railway and that they arrived in Araraquara after the trains did. Furthermore, the catalogue illustrates the importance of the food market to the Araraquara region, as more than half of the data correspond to food producers. However, given that so much information has been lost, we were only able to find basic data regarding 16 of these industries, which we used to create a preliminary inventory based on the datasheet shown below.

<b>Industry (name)</b>	<b>000 -</b>
<b>Opening Date</b>	
<b>Entities Responsible for the Construction</b> (name and place of origin)	
<b>Engineers Responsible for the Construction</b> (name and place of origin)	
<b>Type of Industry</b> (infrastructure, basic and transformation industries, capital and durable goods Production, agribusiness, etc.)	
<b>Technical Workers</b> (place of origin and level of education)	
<b>The Kind of Technology Used</b> (place of origin)	
<b>History of the Industry</b>	
<b>Current Situation of the Building</b>	
<b>The Building Location</b> (geographical references and address)	
<b>The Building Design</b> (over the years)	
<b>Photos</b> (over the years)	

Fig. 1. Datasheet used as basis for the industrial inventory

Among the information required to create the inventory, the item «location» drew our attention. The industries located in the areas surrounding the railway were built before the 1950s, while the most recent ones are located outside the city centre, close to the highways. This highlights the significant role played by railway heritage as a connecting element and as a common denominator in industrial development. As a result of this first observation, we designed a special map of Araraquara based on five old city maps from different periods — 1880, 1929, 1938, 1963 and 2014. These maps allow us to have an idea of how the city grew in different railway development stages: before the railway,

after the railway's arrival, during its expansion, after its decline and in the present day. This new virtual survey allowed illustrating the relationship between urban growth and railway expansion. And, once again, the railway proved to have played a key role in the development of the city's identity.

As we can see, all these analyses became possible after the identification of Araraquara's industrial heritage. The creation of a catalogue to be studied in further detail is, undoubtedly, the first step towards the reconstruction of the industrial history of Araraquara. Future studies will allow showing the influence of the railway on the city's dynamics to the present day. Understanding the impact of this infrastructure as the backbone of the Araraquara region's industrialization process will allow people to recognize the importance of preserving its memory. Since part of this memory has already been lost, a careful use of virtual tools to highlight the railway's potential can change Araraquara's future.

A new railway branch was built around the city and some industries have already been attracted by it. Now Araraquara should learn how to deal with both the old and the new railway lines. For the citizens, the new branch represented a new hope for economy, and now they should feel closer to the old railway heritage to achieve a renewed urban life. The city knows the roots of its identity, but it needs to understand its present situation in light of its past to ensure a sustainable future.

## CONCLUSION

The use of virtual tools for the preservation of railway heritage allows building databases able to support the creation of virtual museums and the development of urban analyses. The production and dissemination of this knowledge have the power to influence Araraquara's future. All the industries that were identified had some kind of connection to the railway, which was responsible for their arrival in São Paulo's hinterland. This means of transportation fostered the expansion and mobility of different types of trade. On the other hand, we find that some industries changed their location after the expansion of the railway line, leaving behind a series of abandoned buildings.

Virtualization allows creating new urban planning products and the use of databases can be adjusted according to different purposes and interpretations. In the «digital era», the data overlay technique is becoming increasingly common in the urban market. According to Smart Cities Portugal, several companies are already dealing with this type of market and they see Latin America as an increasingly valuable opportunity.

The analyses made while the virtual inventory was being created showed that the concentration of data allows disseminating information that initially seemed to have been lost. An industrial catalogue allows understanding how the collection and organization of data can enhance the value of the railway heritage and give rise to new fields of study. However, in order to be effectively useful for the development of new urban

strategies, this database should be further organized and systematized according to a specific goal.

The use of modern technologies can make understanding and valorization easier when it comes to studying popular awareness of urban planning and heritage. These technologies are giving cities a new status, and showing them how to become sustainable while being smart. The associated technological products should be supported by urban and historical theories that highlight their importance to future changes.

The historical survey and the industrial heritage list made us recognize that creating an inventory is an unavoidable step in the urban planning process that feeds and guides new visions and strategies. This knowledge is an inseparable part of the history of the Araraquara city due to the role the railway played as the main driver of industrial development along the *Estrada de Ferro Araraquarense*, a history that can be preserved by virtualization.

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# PAISAGENS INVISÍVEIS, UMA IMAGEM DIGITAL DA ESTAÇÃO FERROVIÁRIA DE S. BENTO NO PORTO

CRISTINA FERREIRA FONSECA\*

Algum tempo antes da invenção oficial da fotografia em 1839, o fotógrafo francês Nicephore Niépce utiliza a sua *camera obscura* para criar aquela que se considera ser a primeira fotografia do mundo<sup>1</sup>, cerca de 1826-1827. Esta primeira imagem, captada a partir de uma janela da sua casa, mostra uma paisagem urbana, um espaço público. A fotografia acompanhou, desde a sua origem, a evolução das cidades ao longo de muitas imagens que registam o seu desenvolvimento. Desde Niépce as pessoas continuam a fotografar as cidades de todo o mundo.

Para esta reflexão sobre a temática das «Lost Cities» surgiu a ideia de realizar um retrato digital sobre um espaço da cidade onde vivo a maior parte do tempo, o Porto. Dentro dessa mesma cidade foi escolhido o espaço da Estação de S. Bento, sobre a qual já realizei várias reflexões fotográficas.

A Estação está constantemente habitada. As pessoas que por lá passam são normalmente turistas ou utilizadores apressados em busca do seu comboio.

Os olhares que deitam à Estação variam entre o *tourist gaze*<sup>2</sup> e o olhar que apenas procura informações sobre destinos e horários nos painéis luminosos. As pessoas olham em várias direções mas as paisagens que veem são aquelas que querem ou conseguem ver, as outras que são invisíveis passam completamente despercebidas. É com base nesta

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<sup>1</sup> NIÉPCE, Joseph Nicéphore (1826-1827) — *Vista da janela de Gras* [Heliografia]. 16,5x20cm.

<sup>2</sup> URRY, 2005.



invisibilidade latente, de uma Estação com muitas imagens perdidas, que surge a ideia de realizar um projeto fotográfico sobre as «Paisagens Invisíveis» de S. Bento<sup>3</sup>. Estas paisagens não são apenas aquelas que desapareceram na história do local, mas também aquelas que, embora estando presentes no espaço, não são vistas.

Convém aqui salientar que a fotografia na presente reflexão não é abordada como um documento socialmente realista e objetivo. O seu papel neste retrato é ser um meio de compreensão imaginária da sociedade, embora chamando a si algumas fotografias do universo documental que existe sobre a Estação e o território que esta ocupa. O processo criativo inerente a esta reflexão constitui a própria metodologia de pesquisa. Por conseguinte, o ato de fotografar e de procurar imagens sobre a Estação «perdida» é, tal como refere Anna Fox<sup>4</sup>, uma das partes mais elementares do processo de pesquisa. Por um lado podemos fotografar sem sequer pensar no que estamos a fazer, mas se pararmos um momento para refletir sobre como, onde e porque estamos a fotografar começamos a montar a história da pesquisa. A autora prossegue afirmando que as fotografias são feitas através de um processo de exploração de soluções práticas. Os fotógrafos experimentam diferentes câmaras, tipos de luz, alturas do dia, para fotografar e examinam como esses fatores afetam o resultado final. O processo de fazer fotografias é uma pesquisa baseada na prática.

Estas «Paisagens Invisíveis» propõem a exploração do chamado «efeito duplo», segundo Rosalind Krauss. Uma vez que a experiência vivida pelo olhar é traduzida pelo «lado de fora» em forma de imagem, isto é, a realização das imagens implica estar a fotografar acompanhado simultaneamente da consciência de estar a ver. O que interessa não é captar o visual mas o que se pode chamar de «visuality-effect»<sup>5</sup>. Dito de outro modo, importa mais o efeito que a visualidade produz do que a captação do real. Assim, o retrato procura dar a ver as paisagens invisíveis que fazem parte do lugar, no presente e no passado, em vez de replicar o que é imediatamente visível ao olhar. Sendo que esse mesmo olhar, real ou imaginário, é o centro de tudo e traduz-se na criação de um retrato de formato circular. Num universo de imagens que são por norma ortogonais, o olhar não está treinado para ver imagens como as que eram fabricadas pela Kodak n.º 1<sup>6</sup>. De facto, as imagens das primeiras máquinas vendidas ao público fabricavam imagens em forma de círculo. A estranheza que este formato pode causar atualmente acentua o tal efeito de visualidade que a tecnologia imprime aos artefactos visuais. Ao adotar este formato distinto, o retrato «Paisagens Invisíveis» demarca-se do universo imagético

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<sup>3</sup> Ver Anexo 1 — «Paisagens Invisíveis».

<sup>4</sup> FOX & CARUANA, 2012: 61.

<sup>5</sup> KRAUSS, 1998: 55-56.

<sup>6</sup> A Kodak n.º 1 — «1888, Kodak n.º 1 camera — É a câmara fácil de usar para todos. Não há controlo para o tempo de exposição ou abertura — basta apontar a câmara e clicar. A câmara mais as 100 imagens devem ser enviadas de volta à Kodak após a exposição, sendo depois devolvida com as fotos circulares concluídas e um filme recém-carregado». Mais informações em <<https://www.kodakmoments.eu/en/history/>>.

que é normalmente fabricado sobre a Estação, para assumir-se como uma visão nova daquele espaço.

O espaço surge fragmentado em cenas do quotidiano da Estação, em pormenores do espaço e imagens de outros tempos daquele mesmo local. As várias imagens que compõem o retrato procuram criar uma continuidade visual através da matriz do seu formato circular. Este retrato é em simultâneo um conjunto de imagens e um dispositivo visual através do qual podemos ver uma sequência de imagens que constroem, uma após a outra, uma leitura nova e reconfigurada daquele espaço. Cada imagem é assim uma ideia visual que se justapõe a outra ideia. Deste modo a imagem resultante não se dá a ver de imediato ao espectador, existe um processo de revelação e compreensão que reivindica algum tempo ao olhar e ao pensamento. Tal como o ato de olhar a própria Estação ao vivo implica. Sobre o modo como vemos os edifícios, o arquiteto catalão Ignasi de Solà-Morales refere que «a perceção que temos da arquitetura é uma perceção esteticamente reelaborada pelo olho e a técnica fotográfica»<sup>7</sup>, expressando-se no caso de «Paisagens Invisíveis» num tipo de visão *redonda* do mundo. Estas paisagens propõem uma metáfora visual, em forma de fotografia, das memórias efémeras e múltiplas que se conservam do espaço através da cumplicidade da objetiva. De certa forma é como se a objetiva recortasse porções daquele espaço, presente e passado, como se fosse uma *camera obscura* mágica. A *camera obscura*, espécie de caixa fechada onde a luz penetrava através de um orifício projetando uma imagem do exterior, foi o conceito que serviu de base para a criação do projeto principal. A questão da tecnologia, não sendo o centro deste estudo, é algo que está sempre latente e que o acompanha, assim como sempre acompanhou a história da fotografia e os modos de olhar o espaço que envolve o ser humano. Determinou modos de estar, modos de olhar, ritmos do dia a dia, marcando e condicionando a perceção e a visão que se tem do mundo. A convivência humana com as máquinas, desde os meios de transporte aos painéis luminosos que povoam as cidades, molda a leitura que se faz do mundo. Mas também é a própria tecnologia que, desenhando uma elipse sobre si mesma, cria novos modos de ver as coisas através das imagens de que ela própria participou e que resgatam aquilo que o ritmo célere do quotidiano faz passar despercebido. É através da tecnologia que as coisas passam do imaginário invisível para algo visível, material ou virtual. São os dispositivos que servem para olhar o mundo e fabricar imagens, que transformam as coisas imaginadas em coisas tangíveis. Mas, esse papel intermediário é como um plano — ou uma vidraça — que a tecnologia cria e que vai interferir na relação entre o observador e o mundo. Essa interferência tem início com a Câmara Obscura. Segundo Jonathan Crary, desde «os últimos dois mil anos tem sido conhecido que, quando a luz passa através de um pequeno orifício na escuridão, num interior fechado, uma imagem invertida irá aparecer na parede oposta

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<sup>7</sup> SOLÀ-MORALES, 2002: 183.

ao orifício. Pensadores tão distantes entre si como Euclides, Aristóteles, Roger Bacon e Leonardo notaram este fenómeno e especularam de várias formas sobre como poderia ou não ser análogo ao funcionamento da visão humana»<sup>8</sup>. O autor prossegue afirmando que a *camera obscura* não era apenas uma peça inerte e neutra de equipamento ou um conjunto de premissas técnicas para serem pensadas e melhoradas ao longo dos anos; em vez disso, foi embutida numa muito maior e densa organização de conhecimento e do assunto observado. Apesar desse facto, a *camera obscura* colapsou enquanto modelo para o observador e para o funcionamento da visão humana. Paralelamente dão-se alterações profundas no modo como o observador é visto na ciência, filosofia, e nas novas práticas da visão. Para Descartes, a *camera obscura* era uma demonstração de como um observador pode conhecer o mundo «exclusivamente pela percepção da mente»<sup>9</sup>. Crary refere que há uma passagem do paradigma da *camera obscura*, de uma visão verídica do objeto, para o modelo do corpo como produtor de uma visão não vertical relativamente indiferente à referência mundana<sup>10</sup>. Segundo o autor, no início do século dezanove ocorre um deslocamento teórico do perspectivismo cartesiano devido à mudança da ótica geométrica para uma descrição sociológica da visão.

De certa forma este retrato da Estação traduz vários modos de ver aquele espaço, esse processo é idêntico ao que a caixa-preta opera quando devolve uma determinada imagem (que não controlamos completamente), como diz Flusser as imagens são conceitos do mundo<sup>11</sup> fabricados por aparelhos (caixas-pretas), no entanto podemos sempre tentar interferir no processo de criação da imagem operando o branqueamento da caixa. Seguindo essa linha de pensamento, estas imagens que compõem o retrato são conceitos da Estação. Como por exemplo, as imagens do passado, pormenores do edifício, pormenores e movimentos de quem lá passa. A ideia é dar a ver modos, distintos dos habituais, de olhar aquele espaço e explorar, através da *camera obscura*, a ideia de que a visão não depende apenas da vista mas de um sistema multissensorial que envolve também a memória e a imaginação.

Mesmo que se consiga desconstruir os vários tempos das fotografias que compõem este retrato, para chegar à realidade social que ela procura dar a ver, estaremos perante algo que é sempre outra coisa, distinta daquilo que «estava presente» no instante da tomada da fotografia. Importa aceitar que essa realidade não pode mais ser considerada real mas é antes uma realidade reconfigurada pelo tempo da fotografia, pelo olhar de quem fotografou e pela visualidade da sociedade. Através da fotografia, a sociedade vê mais e menos em simultâneo. Se por um lado a fotografia dota a sociedade e os seus membros de dispositivos tecnológicos que lhe permitem ver mais e melhor, por outro

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<sup>8</sup> CRARY *apud* FOSTER, 1998: 30.

<sup>9</sup> CRARY *apud* FOSTER, 1998: 32.

<sup>10</sup> FOSTER, 1988: ix.

<sup>11</sup> FLUSSER, 1998: 14-15. Existe também a versão brasileira.

lado causa cegueira ao interpor-se cada vez mais entre o ser humano e o mundo. Atualmente a visão que as pessoas têm do universo que as rodeia é uma visão mediada pela máquina, como refere Paul Virilio. Para este autor, a tecnologia dirige a percepção do ser humano através da visão mediada pela máquina. As pessoas «não acreditam mais nos seus olhos». O ser humano deixou de ter fé na percepção para passar a ser escravo «na fé na linha de visão da técnica», o que reduziu o «campo visual» à linha de um dispositivo de mira<sup>12</sup>. De acordo com Virilio, o homem confia mais na máquina do que na sua própria percepção e limitou o seu campo visual às margens ou enquadramento mostrado pelo dispositivo de visão. Tomando estas palavras como inspiração, poder-se-á afirmar que as «Paisagens Invisíveis» são mediadas pela máquina, o que irá limitar a compreensão daquele lugar ao que esta for capaz de mostrar. As máquinas criam uma espécie de ecrã através do qual se interpreta o mundo, tal como sustenta Norman Bryson ao dizer que entre «a retina e o mundo está inserido um ecrã de sinais, um ecrã que consiste em todos os múltiplos discursos sobre a visão construídos na arena social. O ecrã projeta uma sombra: algumas vezes Lacan chama-lhe um *scotoma*, algumas vezes uma mancha. Pois quando olhamos através do ecrã, o que vemos é apanhado numa rede que vem até nós do exterior: tesselas móveis de significação, um mosaico que se move»<sup>13</sup>.

Apresenta-se então a dúvida sobre qual das visões, a da máquina ou a do olho humano, será a melhor ou a mais real. Nas palavras de Virilio, «os limites sem precedentes impostos na visão subjetiva pela divisão instrumental de modos de percepção e representação»<sup>14</sup> fazem com que a visão deixe de ser algo realizado diretamente e na presença do assunto e passe a ser uma visão de outra visão, fabricada por uma máquina. Virilio concebe as máquinas de visão como os produtos acelerados do que ele chama «sightless vision» — visão sem olhar — que é em si apenas a reprodução de uma cegueira intensa que se vai tornar a mais recente e última forma da industrialização: a industrialização do não-olhar.

Apesar de as «Paisagens Invisíveis» proporcionarem uma visão da Estação «sem olhar», crê-se que não são cúmplices para um estado de «cegueira» em relação à mesma. Antes pelo contrário, proporcionam uma oportunidade para expandir e reconfigurar o olhar sobre a Estação. As imagens levantam questões relativamente à Estação e procuram explorar novos diálogos entre a fotografia e o espaço público. Numa época em que existem imagens de satélite do território urbano terrestre capazes de realizar *zooms* à escala de uma rua, oferecendo deste modo uma compreensão alternativa — no seu aspeto formal e dinâmica de interação —, revela-se pertinente explorar novos modos de ver e dar a ver a paisagem urbana. As imagens da Estação realizadas através da aplicação *Maps do Google* — que realiza pesquisa e visualização de mapas e imagens de satélite da Terra

<sup>12</sup> VIRILIO, 1994a: 13.

<sup>13</sup> BRYSON, 1998: 92.

<sup>14</sup> VIRILIO, 1994b: 49.

— devolvem uma visão da Estação que é impossível de obter para um ser humano que esteja *in situ* frente ao edifício. Do mesmo modo, uma pessoa que esteja junto à Estação com uma câmara equipada com uma lente macro poderá realizar imagens de pormenor — como a textura do granito do edifício —, revelando algo impercetível via satélite. Esta imagem de pormenor poderá também ser criada recorrendo a uma objetiva com um *zoom* longo (funcionando como uma teleobjetiva) caso se pretenda ampliar algo que esteja fisicamente longe. Corrobora-se assim que a tecnologia, através das técnicas visuais a ela associadas, é uma das formas possíveis de expandir a visão sobre o espaço da Estação e em geral sobre o mundo que rodeia o ser humano. Sobre estas questões, é incontornável referir o filósofo checo e também brasileiro Vilém Flusser, que na sua obra *Filosofia da caixa preta — ensaios para uma futura filosofia da fotografia* levanta algumas questões relacionadas com este mesmo tema. Este filósofo reflete sobre a questão da tecnologia, e as suas consequências na relação do ser humano com o mundo, através do tema da fotografia e do aparelho que a fabrica. O centro da sua reflexão é descrito no texto da contracapa, onde pode ler-se que a «intenção que move este ensaio é contribuir para um diálogo filosófico sobre o aparelho em função do qual vive a atualidade, tomando por pretexto o tema fotografia». Flusser envolve-se com a fotografia essencialmente pela sua característica de *caixa preta* mas, também, por atribuir-lhe o estatuto de primeiro e mais simples aparelho técnico, o que o torna uma espécie de paradigma para analisar a totalidade dos aparelhos pós-industriais. Flusser procura discernir de que forma os aparelhos condicionam e enformam a criação das imagens e por consequência o fabrico de uma visão. Também para a autora e geógrafa Gillian Rose, todas as representações visuais são feitas de uma forma ou de outra, e as circunstâncias da sua produção podem contribuir para o efeito que elas têm. Alguns autores discutem veementemente este assunto argumentando que as tecnologias utilizadas no fabrico de uma imagem determinam a sua forma, significado e efeito<sup>15</sup>.

Para Vilém Flusser, «o que vemos ao contemplar as imagens técnicas não é o “mundo”, mas determinados conceitos relativos ao mundo, a despeito da automaticidade da impressão do mundo sobre a superfície da imagem»<sup>16</sup>. As imagens fotográficas dão a ver o modo como o aparelho fotográfico está programado pelo seu fabricante para transformar teorias e algoritmos de carácter científico — do universo da ótica, da química, da eletrónica ou de outros diretamente ligados com as tecnologias associadas à fotografia — em imagens. As imagens técnicas nunca produzem uma imagem «pura» do mundo na medida em que elas são sempre resultado dos conceitos científicos inscritos no aparelho<sup>17</sup>.

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<sup>15</sup> ROSE, 2001: 17.

<sup>16</sup> FLUSSER, 1998: 14-15.

<sup>17</sup> FLUSSER, 1998: 33-38.

Na reflexão que Vilém Flusser realiza sobre este tema refere que as «novas situações tornar-se-ão reais quando aparecerem na fotografia. Antes não passam de virtualidades. O fotógrafo-e-o-aparelho é que as realiza. Inversão do vetor da significação: não é o significado, mas o significante que é a realidade. A fotografia é a realidade; não o que se passa lá fora, nem o que está inscrito no aparelho»<sup>18</sup>. Transpondo esta ideia para o contexto desta reflexão, será plausível dizer que a realidade da Estação não é a Estação como o observador a vê, mas o que estas imagens mostram acerca dela.

Nesta reflexão de Flusser a ideia central é o aparelho. Aliás, é mais a relação entre o fotógrafo e o aparelho. No momento em que o dispositivo técnico, transformado em «caixa negra»<sup>19</sup>, condiciona o ato voluntário de realizar uma imagem. O fotógrafo, com vista a realizar imagens, executa ações, que se traduzem em operações invisíveis dentro da «caixa negra», completamente involuntárias. Ao operar o aparelho, existe somente a consciência da função dos menus e respetivos comandos mas não há conhecimento, efetivo, sobre o que acontece dentro da máquina. A imaginação, na medida em que depende da tecnologia para fabricar imagens visíveis, está também condicionada por esta «caixa negra» que é operada de modo a devolver algo parecido com o imaginado. No fabrico das imagens que compõem esta reflexão foram vários os dispositivos utilizados. Mas, todos eles têm em comum esse aspeto de «caixa negra» no sentido que Vilém Flusser lhe atribui. Segundo o filósofo «o complexo “aparelho-operador” é demasiadamente complicado para que possa ser penetrado: é uma *caixa negra* e o que se vê é apenas o *input* e o *output*. Quem vê o *input* e o *output* vê o canal e não o processo codificador que se passa no interior da *caixa negra*»<sup>20</sup>. Pode então afirmar-se, de acordo com as ideias de Flusser, que ao utilizar-se os dispositivos para fabricar as imagens sabe-se o que a máquina capta e o que resulta dessa captação. Mas, desconhece-se toda a operação que decorre dentro da máquina. Flusser prossegue afirmando que «as imagens técnicas, longe de serem janelas, são imagens, superfícies que transcodificam processos em cenas», então pode dizer-se que estas «Paisagens Invisíveis» não são janelas para olhar a Estação mas sim planos visuais que resultam da combinação da máquina e da imaginação criadora. Tal como as demais imagens, a imagem técnica «é também mágica e o seu observador tende a projetar essa magia sobre o mundo»<sup>21</sup>. De modo muito semelhante às imagens artesanais, as imagens técnicas e mais concretamente a imagem fotográfica, considerada como a primeira e a matriz deste género de imagens, possuem do ponto de vista da história transformações relevantes e que demonstram o novo estatuto da imagem no contexto pós-industrial. E, para onde quer que se olhe,

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<sup>18</sup> FLUSSER, 2002: 52-53.

<sup>19</sup> Os termos «caixa negra» e «caixa preta» possuem o mesmo significado, sendo que o primeiro é utilizado na edição portuguesa, referenciada na bibliografia, e o segundo na edição brasileira, também referenciada na bibliografia.

<sup>20</sup> FLUSSER, 1998: 35.

<sup>21</sup> FLUSSER, 1998: 35.

«o fascínio mágico que emana das imagens técnicas é palpável, a qualquer instante, naquilo que nos envolve»<sup>22</sup>. Mas a «nova magia não precede, mas sucede à consciência *desmágica*. A nova magia não visa modificar o mundo lá fora, como o faz a pré-história, mas os nossos conceitos em relação ao mundo»<sup>23</sup>.

Depreende-se, com base no pensamento de Flusser, que o significado de uma imagem é condicionado pelo canal através do qual a mesma é transmitida. Logo, uma mudança no canal de transmissão provocará uma mudança de significado. Um dos propósitos desta reflexão é pensar a imagem fotográfica como sendo um elemento passível de circular de um modo informal. Pretende-se com esta ideia sugerir que a fotografia deve fazer parte do universo que lhe serve de tema. Em vez de ficar encerrada e separada do mundo — em álbuns, galerias ou arquivada na memória de um computador —, seria pertinente torná-la parte do espaço público e usá-la, no melhor dos sentidos, para expandir e reconfigurar os modos de olhar. Sustentada por estas ideias, propõe-se que as «Paisagens Invisíveis» sejam expostas na própria Estação de S. Bento, explorando dessa forma a sua inserção no próprio espaço público que é objeto do trabalho fotográfico.

Apesar de a fotografia estar continuamente dependente da parte tecnológica, que a torna possível, ela será sempre maioritariamente definida pela visão e pela imaginação da pessoa por detrás da máquina. A este respeito, o escritor e pesquisador do campo da imagem Philippe Dubois refere que «apesar de preordenada por uma máquina de visão, a imagem continua sendo produzida pelas mãos do homem e sendo vivida, portanto, como algo individual e subjetivo»<sup>24</sup>. Ainda que a imagem seja registada pela máquina, é a pessoa que fotografa que toma a decisão de «disparar», de enquadrar e compor a imagem. A criação de uma determinada imagem continua a ser uma escolha humana.

A imaginação, além de se relacionar diretamente com a visão, também se relaciona com o aparelho que produz a imagem. A escolha da câmara não deixa de ser uma escolha técnica, ela representa para a sociedade moderna um instrumento de criação de uma consciência visual particular e típica da modernidade. O aparelho confere algo de racional e tecnológico à produção da imagem expandindo, ao mesmo tempo, a capacidade de a consciência fantasiar e desse modo libertar-se do universo da razão e da técnica. Assim, dado que o aparelho possui automatismos para captar a imagem, quem está a fotografar pode dedicar-se a exprimir o que a imaginação projetou em vez de preocupar-se sobre como o aparelho funciona. Nas palavras de Flusser, quem «possui aparelho fotográfico de “último modelo”, pode fotografar “bem” sem saber o

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<sup>22</sup> FLUSSER, 1998: 35.

<sup>23</sup> FLUSSER, 1998: 36.

<sup>24</sup> DUBOIS, 2004: 37.

que se passa no interior do aparelho. Caixa negra»<sup>25</sup>. Por outro lado, a câmara fotográfica condiciona a imaginação porque aquilo que é imaginado irá tornar-se algo tangível mediante o modo de criar, próprio, desse aparelho. Nesta investigação procura abordar-se a fotografia de modo alternativo ao pensamento de Flusser, segundo o qual, o homem «não está face ao aparelho (como o artesão está frente ao instrumento), nem está a rodar em torno do aparelho (como o proletário em redor da sua máquina), está dentro do aparelho engolido pela sua gula. Passa a ser o prolongamento automático do seu gatilho»<sup>26</sup>. Por conseguinte, as imagens procuraram traduzir a minha visão do espaço e não a visão do aparelho sobre a Estação de S. Bento. Pode então afirmar-se que a tecnologia consegue, por um lado, ser uma ferramenta de expressão e de materializar as visões mas também é capaz, por outro lado, de constituir uma forma de cegueira em relação ao mundo. Fotografar pode tornar-se uma mania e atingir um ponto a partir do qual o homem desprovido de aparelho se sente cego. Pode alcançar-se um lugar a partir do qual já não se sabe olhar, a não ser através do aparelho<sup>27</sup>. Daí ser tão fundamental olhar o espaço a partir de outros pontos alternativos à câmara — que é tão usual na visão dos turistas — como a história, a memória e a imaginação.

Tal como descreve Kevin Robins, as novas tecnologias «não só estão a ampliar os poderes da visão, como estão também a modificar a sua natureza (para incluir o que anteriormente se classificava como invisível ou impossível de ver) e as suas funções (convertendo-as numa ferramenta para a representação visual de dados e conceitos abstratos). Os modelos de observação e as técnicas associadas transformaram-se em formas que os positivistas podiam apenas ter imaginado»<sup>28</sup>.

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<sup>25</sup> FLUSSER, 1998: 74.

<sup>26</sup> FLUSSER, 1998: 74.

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<sup>28</sup> ROBINS *apud* BARRO, 2003: 12.



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## ANEXO 1 — «PAISAGENS INVÍSIÍVEIS»



Fig. 1. «Paisagem invisível» 1

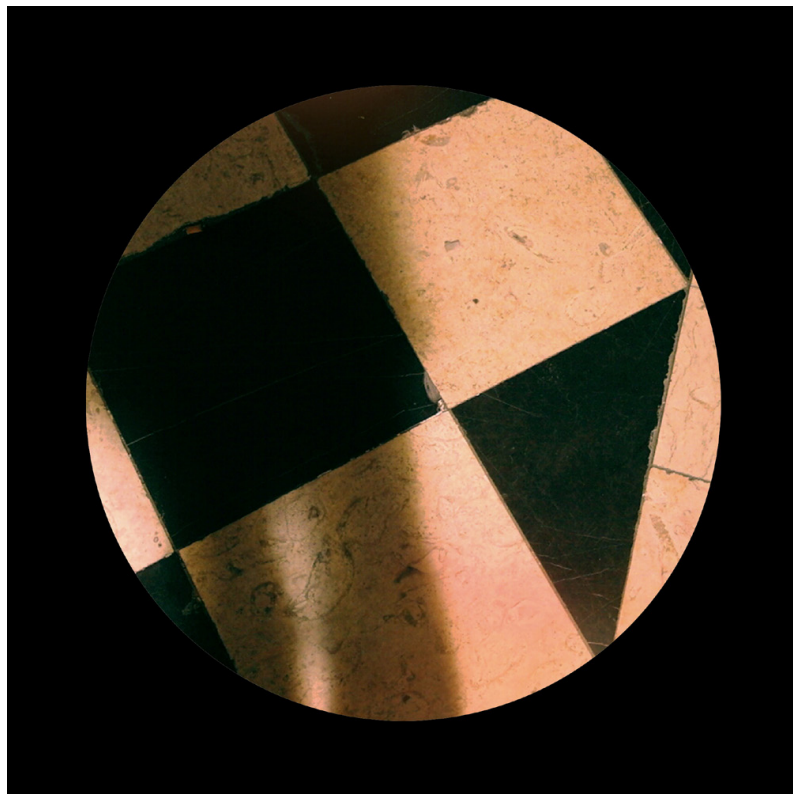


Fig. 2. «Paisagem invisível» 2

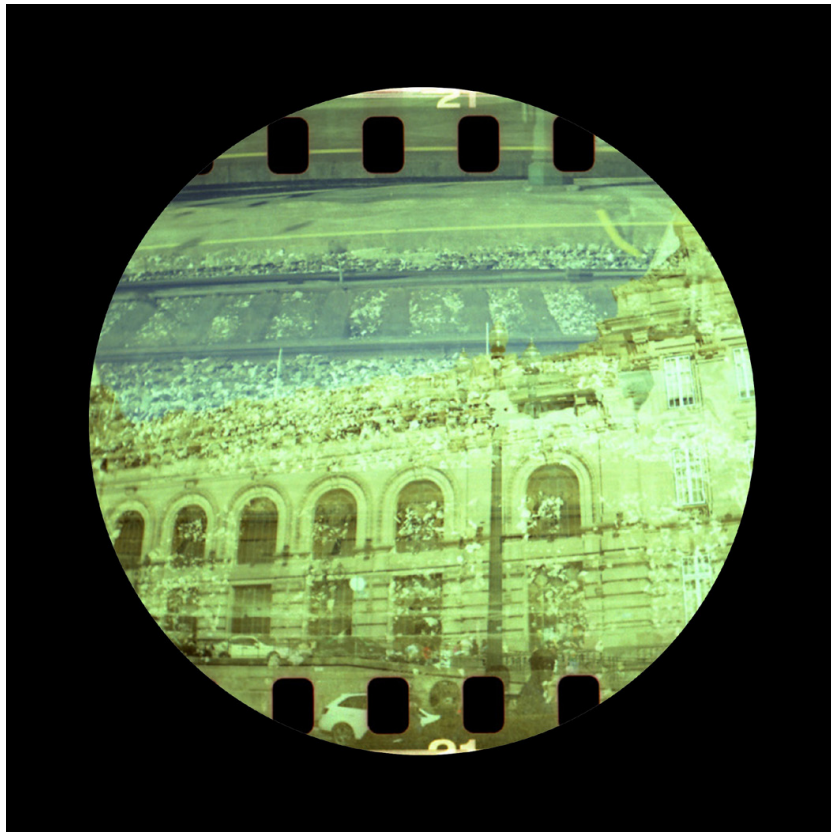


Fig. 3. «Paisagem invisível» 3



Fig. 4. «Paisagem invisível» 4

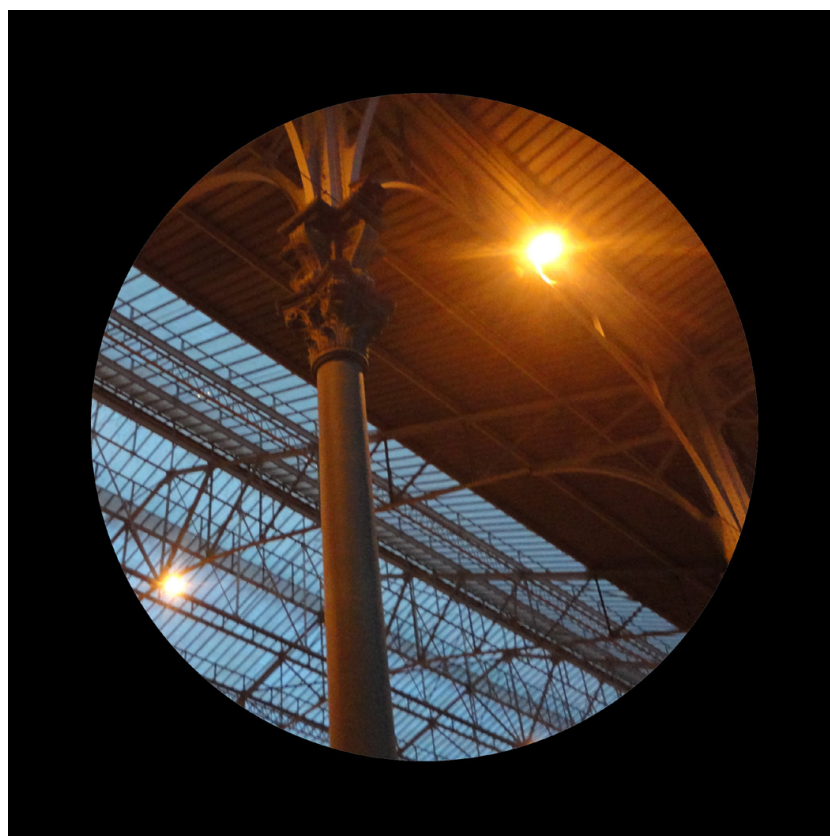


Fig. 5. «Paisagem invisível» 5



Fig. 6. «Paisagem invisível» 6

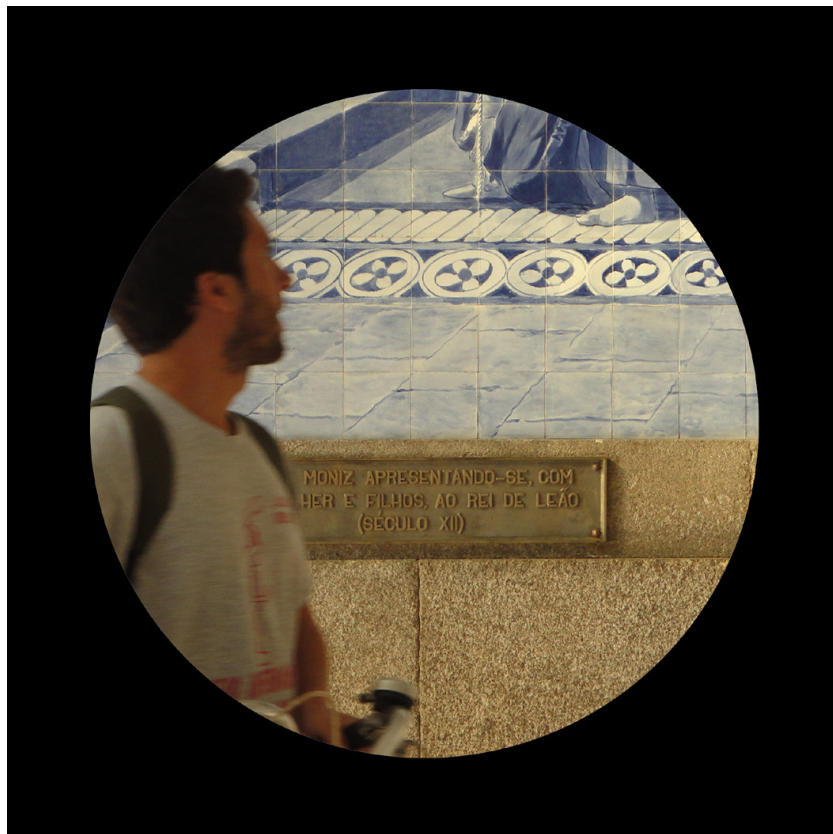


Fig. 7. «Paisagem invisível» 7



Fig. 8. «Paisagem invisível» 8



Fig. 9. «Paisagem invisível» 9



Fig. 10. «Paisagem invisível» 10



Fig. 11. «Paisagem invisível» 11

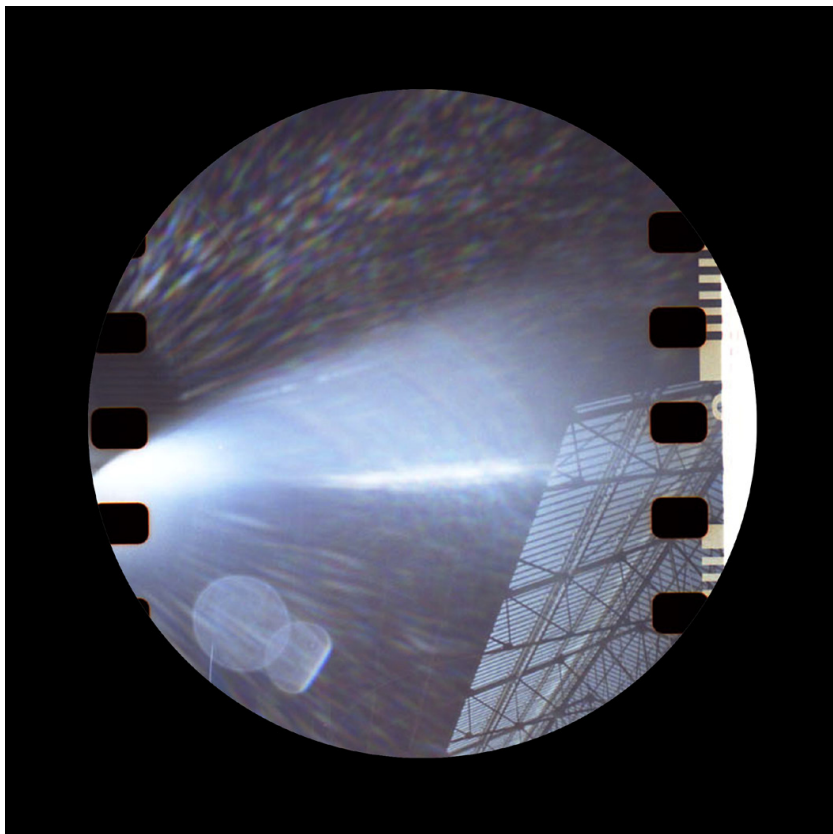


Fig. 12. «Paisagem invisível» 12



Fig. 13. «Paisagem invisível» 13



Fig. 14. «Paisagem invisível» 14





# THE VIRTUAL MUSEUM AS THE ACTIVATION AND REWRITING OF THE URBAN LANDSCAPE

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## INTRODUCTION: URBAN LANDSCAPES

Urban landscapes contain a complex web of narratives created by territories' different actors. They belong to local or translocal communities and are to a great deal dependent on people's experiences, narratives and sense of ownership. Through these means they perpetuate themselves in our memories and become part of a collective heritage.

Those narratives or those different ways of interpreting and perceiving landscapes coexist in a more or less harmonious way depending on various focal articulation levels or territorial tensions not only with regard to environmental issues, but also with regard to economic, social and cultural dimensions.

So, when we set out to investigate populations' perceptions of an urban landscape, partly constructed by people's multiple narratives and gazes, we are mainly investigating how it is possible to reach a sustainable space of cultural activity and public reflexivity expression. Furthermore, we are engaging a whole community to evaluate those spaces or cooperate with needed changes to enhance their intrinsic potential.

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Under these circumstances, putting information and communication technologies at the service of social and cultural sustainability of landscapes (either natural landscapes, organically evolved landscapes, or simply man-made landscapes) requires people's involvement and creativity to come to terms with problems stemming from mismanagement or other forms of neglect.

Bearing in mind that in landscapes, Nature, identity, one's history and lived culture are enmeshed, we very much advocate a dialogical approach to deal with urban landscapes based on a digital «participatory architecture» oriented towards collective intelligence, creative processes and emotional memories.

## **PUBLIC VERSUS PRIVATE, COLLECTIVE VERSUS INDIVIDUAL, COMMON VERSUS PARTICULAR**

Let us now for the time being, since we are investigating urban landscapes and we want to provide collaborative answers to specific challenges, placemaking or heritage preservation, draw a distinction between the terms «public» *versus* «private», «collective» *versus* «individual» and «common» *versus* «particular».

It used to be relatively easy to separate the concept of «public» from the concept of «private». Public was associated with the State and citizenship as a whole. It was opposed to private, which referred to single individuals or a group of individuals organized in businesses and households. The contrast oscillated between what was accessible, open, revealed and, on the other hand, what was hidden; between what was collective or affecting the interests of a collectivity of individuals and what was personal or belonged only to an individual (where private meant particular).

*The basis for using the term «public» to describe the actions and agents of the state (so that public/private = state/nonstate) lies in the state's claim to be responsible for the general interests and affairs of a politically organized collectivity [...] as opposed to «private» — that is, merely particular — interests<sup>1</sup>.*

Nowadays, the concept of «public» reemerges in different forms. These new forms involve public practice<sup>2</sup>. We cannot assume that the activities associated with the State and citizens are themselves public, instead it is important to ascertain to what extent these actions express matters of common interest. Social actors are driven by collective ideas, i.e., individual action is conceived as being driven by collective ideas.

The emergence of the public is enshrined in the assumption that all human actions have necessarily an element that is public. «The essential point is that “public” in this

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<sup>1</sup> WEINTRAUB, 1997: 5.

<sup>2</sup> PORTER, 2014.

sense has nothing to do, necessarily, with collective decision making. [...] The key to it is not solidarity or obligation, but sociability»<sup>3</sup>.

The analysis of sociability is central to the debate on public life and the spatial organization of participative citizenry. «Its character and possibilities are influenced by the ways that the configurations of physical space facilitate, channel and block the flow of everyday movement and activity»<sup>4</sup>. However, the public space of sociability stems from a complex set of issues of spatial and social order.

It is from this dynamics that a sense of common ownership emerges, and so landscapes — the topic we are dealing with in this paper — can be seen as a place of cultural exchange and advanced sociability. Therefore the success or failure of societies to enhance the importance of landscapes requires a set of actions that combine both public and private realms. Public space by itself does not generate or maintain a community capable of actions and collective decisions. If it is true that the public implies that some kind of authority must be exercised to ensure the vitality of the public world as a form of acknowledged legitimacy and uncontested terrain, it is no less true that the public must partake of the insights of the private to gain a larger approval and commitment on the part of citizenry.

## HEALTHY LANDSCAPES AND SUSTAINABILITY

Drawing upon modernist theoretical thinking, urban landscapes are environments mostly woven by architectural forms, echoing different layers of time: past, present and the anticipation of future needs. It brings together «navigation» movements and experiences in an interesting web of private and public living spaces within a changing digital urban mediation culture.

Yet, according to Prinz<sup>5</sup>, the intensification of intermetropolitan urban flows (i.e., intensive daily commuting and suburban dwelling) may drive away from cities the «fullness of life», endangering the sustainability of urban landscape. Thus the concept of landscape can also be analysed through a new perspective: healthy versus sick landscapes.

A healthy landscape should be understood as something alive and balanced, a body bustling with life, with regard to the interaction between human beings and territory, all globally evolving in a positive and sustainable way. By contrast, a sick landscape is one that is doomed to become inert and lifeless, either by neglect or exhaustion as a result of abandonment or careless use.

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<sup>3</sup> WEINTRAUB, 1997: 18.

<sup>4</sup> WEINTRAUB, 1997: 23.

<sup>5</sup> PRINZ, 1980.

«A country where its landscape dies is a country where culture disappears», argues the architect Ribeiro Teles. From his point of view, the aesthetic and biological degradation of landscape is the accurate diagnosis of the malaise of its community<sup>6</sup>.

Therefore the acknowledgement of landscape as a natural and cultural heritage asset requires societies' increasing awareness of the intrinsic value of landscape, as well as of the potentialities of associative dynamism, namely the intervention of various social actors, willing to provide answers to the problems related to landscape's health issues.

Both the identification of landscapes' material diversity and the analysis of the pressures they are subjected to contribute to the creation of a promising context to conduct research and develop tools oriented towards sustainability and populations' wellbeing.

It is in this sense that a virtual museum dedicated to landscape proposes itself to revitalize the public world, the «Lifeworld», the concept advanced by Edmund Husserl, with which he sought to account for «the immediately familiar ground» and «unquestionably right»<sup>7</sup>. If «the territory has always been a place for individual and collective enquiry and reflection»<sup>8</sup>, a virtual museum dedicated to landscape will promote the experience of the territory and will underscore a generalized sense of common ownership and participatory citizenship.

Devising a virtual landscape museum seeks therefore to encourage civic engagement towards deep mapping as «the product of interrelationships, coexistence and process, always changing and always in the state of becoming»<sup>9</sup>. In other words, it is an alternative museum, reflecting a participatory culture favoring shared individual experiences.

It is worth quoting Sara Barriga's words on the dialectics of the public: «Public are communities, ephemeral and contingent, formed by a discourse call and a reflexive appropriation of sense. Communities, however, despite fluid, are based on the possibility of adding worlds to the Lifeworld»<sup>10</sup>.

In a nutshell, this is the vision that should inform a virtual museum: to add worlds and creative insights, to publicize and promote a shared experience of patrimony.

## THE MEDIATION OF URBAN LANDSCAPE

When considering different forms of mediation, we should start by highlighting cultural and artistic practices based on digital platforms.

The concept of «landscape» is crucial in contemporary artistic practices and perceptions. It is increasingly understood as a form of experiencing places, a form of lived

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<sup>6</sup> TELES, 1997: 38.

<sup>7</sup> HABERMAS, 2002.

<sup>8</sup> FARIA, 2016: 16.

<sup>9</sup> BODENHAMER, 2015: 22.

<sup>10</sup> BARRIGA & SILVA, 2007: 5.

cultural expression and representation made by individuals. Landscape is in this sense produced by people's gazes and interactions with the observed reality.

The art historian Catarina Rosendo, in her text about the work of the sculptor Alberto Carneiro, entitled *Uma Ideia de Paisagem através da Obra de Alberto Carneiro*, proposes the concepts of «médiante» and «trajectif», drawing from the notion of landscape presented in *Les Raisons du Paysage* (1995) written by the geographer Augustin Berque. Thus, in her own words, «médiante» describes the «reciprocity between a society and its physical environment, an elaborate reciprocity on the physical, phenomenal, ecological, factual, or sensitive levels, and the landscape is one of its manifestations»<sup>11</sup>. In turn, «trajectif» relates to how the landscape «is defined by a process that, in historical time and in geographical space, simultaneously conditions and participates in the interaction between society and its environment»<sup>12</sup>. This interaction entails a multilayered network of experiences and memories, which is developed when subjects perceive and recognize landscape as something of which they are part of.

The mediation of urban landscapes by digital platforms that allow overlapping and multidirectional modes of place making — e.g., visualising and narrating places from different perspectives — has been on the rise. In fact, with the development of systems such as Geographic Information Systems (GIS) as well as the proliferation of cell phones and wireless technologies, the artistic and activist practices associated with locative media have become more prominent within the contemporary cultural and artistic scene thus giving rise to what is known as «locational humanism»<sup>13</sup> and «spatial humanities».

The activation and «allegorization» of the urban landscape brought about by artistic practices associated with locative media creates a «hybrid space»<sup>14</sup>. Strikingly its hybridity is marked by a conflation of presence and distance and the emergence of blurred boundaries between intimacy and publicness, contributing to reimagine our experience in the contemporary networked spatiality.

On the other hand, the experience of urban landscapes, increasingly mediated by digital platforms, activates the regimes of tactile and optical perceptions. It is worth noting that at the beginning of the 20th century, Walter Benjamin<sup>15</sup> had already identified in artistic movements, such as Dadaism, as well as in the development of photography and film, a predominance of the tactile («haptic») regime and modes of expression that valued a much closer relationship with the object. For Benjamin, the «haptic» perception mobilized the various senses into a distracted reception, characterized by the

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<sup>11</sup> ROSENDO, 2006.

<sup>12</sup> ROSENDO, 2006.

<sup>13</sup> HOLMES, 2003.

<sup>14</sup> KLUITENBERG, 2010.

<sup>15</sup> BENJAMIM, 1936.

engagement of the body with the art work in the perspective of its use, placing the object more «at hand», thus depriving it of its auratic distance<sup>16</sup>.

In *Web Aesthetics: How Digital Media Affect Culture and Society* (2010), Vito Campanelli notes that, in digital media, optical and haptic features are parts of a dialectical logic. Seen in this light, digital media are meta-optic and meta-haptic. Campanelli advances the concept of «tactile experiences» stressing those in which the user touches the interface. Sight has an ancillary function providing the information necessary for touching and further tactile explorations. As he observes, «regardless of whether one is touching an interface such as a mouse or a keyboard, the defining feature of this form of experience is that tactility is the mode of exploration, rather than simply being used to provide feedback»<sup>17</sup>.

By comparison, «optical experiences» are those in which sight is the predominant sense involved and the eye leads the experience while the hand plays the role of a tool that enables the succession of images<sup>18</sup>.

The experience of the Web and digital media switches permanently between these perceptive modes and it has become so pervasive that this perceptive attitude also characterizes contemporary society as a whole<sup>19</sup>. As Campanelli puts it: «the present age is characterized by a perceptive style capable of going beyond the optical/haptic antinomy»<sup>20</sup>.

## DIGITAL MEDIATION PLATFORM

The creation of a digital mediation platform between urban landscapes and the people of a territory represents an innovative project in the reconfiguration of contemporary spatiality. This platform will be a dialogical aggregator tool, presenting multiple ways of seeing and living in contemporary cities. As a relational platform, it contributes to enhance citizens' multifarious experiences bestowing upon them an educational edge which helps raise social actors' responsibility and foster landscapes' sustainability.

Landscape ends up mirroring the way a territory has been used over the years. In some places, territorial natural resources' misuse have brought about serious problems related to the preservation of raw materials, the maintenance of biodiversity and existing ecosystems.

Creating the interface between a population and the observed landscape is a process of reflection on the experience of place. Therefore raising individuals' awareness about the impact of human action on territories should be seen as a decisive factor to

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<sup>16</sup> CARVALHO, 2014: 145.

<sup>17</sup> CAMPANELLI, 2010: 135.

<sup>18</sup> CARVALHO, 2014: 145-146.

<sup>19</sup> CARVALHO, 2014: 146.

<sup>20</sup> CAMPANELLI, 2010: 141.

make people more responsible and hold them accountable for their actions regarding the protection and sustainable management of natural resources.

Sometimes, most populations, when faced with commoner or non-classified landscapes, which are part of their daily routines, don't realize their cultural value. That is why it is so important to raise a collective awareness about the intrinsic value of landscapes.

All landscape layers frame important identity, integration and interaction relations and signal cultural flows. The perception of the relationship between urban, rural and transition landscapes and their respective actors is essential to construct a sense of collective belonging, without which it is difficult to build inclusive and reflective societies.

Developing a digital mediation platform will awaken people's perceptions to the meanings and historicity of multilayered landscapes and the role of their manifold actors in shaping, managing and transforming them. At the same time, it will further contribute to the dissemination of memories and the experiences of place through storytelling and other digital forms of experience sharing.

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# GAMEFUL PLACES: EXPANDING THE SPACE OF CITY MUSEUMS THROUGH PLAY

SOFIA ROMUALDO\*

## INTRODUCTION

The creation of digital experiences in museums is now an accepted practice. Many of these experiences build upon more traditional outreach and interpretation strategies that museums have been offering since their missions have evolved from focusing on collection, documentation and preservation, to bringing the audience to the centre of their activities. Engagement, interpretation and participation have become key concepts in museums as they strive to fulfil their missions and meet the demands of twenty-first century audiences<sup>1</sup>. Digital technologies have proven essential to this transformation, which has seen visitors become more actively involved in the co-creation of meaning within cultural institutions, and visits to museums evolve into multilayered, often personalised experiences that build upon more traditional gallery tours. In this paper, using a case study from Exeter's Royal Albert Memorial Museum & Art Gallery (RAMM), I explore how gameful design can be used to expand the space of museums, by making the experience of the museum tour — the journey that visitors take around the museum — more gameful. Many of the digital experiences that exist in museums are built with the aim of enhancing the visitor's journey throughout the museum and, increasingly, outside the museum, by incorporating the institution's surroundings into the experience. These

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<sup>1</sup> BLACK, 2005; BLACK, 2012; SIMON, 2010.

journeys are often built around narratives, as museums are increasingly seen as places for multimedia storytelling practices created around objects<sup>2</sup>, but can also be organised around a particular theme, topic or event.

Digital technologies can be used to augment the visitor's journey in the form of mobile applications, websites that encourage personalized exploration, and self-guided tours built in the form of trails, audio guides, or multimedia guides. Several museums, including RAMM, use different digital technologies to make the museum tour more interactive, personalized and engaging for visitors, and these technologies can be built upon through the practice of gameful design. Gameful design is the addition of game elements to non-game experiences<sup>3</sup>. This can be achieved by looking at the structure of games in search of patterns that fit the characteristics of existing non-game experiences, which is the focus of the next section. Then we will detail the development process of the case study for this paper, *The Great Exeter Garden Quest*, a gameful trail inspired by and linked to the exhibition International Garden Photographer of the Year 9, which opened at RAMM in April 2016. The intention was to use an existing digital platform, Exeter Time Trail, to create a gamelike experience that would allow players to rediscover the city and its connections to the museum's collection, and also encourage players to engage with the exhibition's theme in a creative way. After explaining the methodology used to evaluate this experience, we discuss the results in terms of how effective it was in enhancing the way visitors experienced the exhibition.

## MUSEUM TOURS, TRAILS, AND GAMES

Over the years, museums have devised various strategies to help guide visitors through their collections. The most visible way that museums structure visits is through the physical arrangement of their galleries and the objects displayed therein, which follow an internal logic devised by the curatorial staff. Galleries can incorporate cues such as directions, numbered rooms or displays, corridors, and lighting, that give visitors pointers in possible directions for their visit, without restricting their movements or hampering their ability to choose where to go next. The act of physically moving through gallery space involves creating a connection to that environment<sup>4</sup>. As visitors explore the museum, they are presented with content that invites them to some form of interaction, from simple visual inspection to physical manipulation, to discussion with other visitors. They may find and create connections between objects, memories, and ideas through their visit, but they tend to be guided more by serendipity than any existing arrangement. The simplest way to visit the museum is, therefore, an informally structured walk.

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<sup>2</sup> WYMAN *et al.*, 2011.

<sup>3</sup> DETERDING *et al.*, 2011.

<sup>4</sup> ODDEY, 2009: 133.

Trails are formed when structure is added to these unguided walks. They do not necessarily involve the use of digital technologies, but these are often used to enhance and guide the experience. In museums, trails build upon the idea of the tour and seek to structure it through the creation of a physical journey that follows a specific theme. They can be confined to inside the museum, or take people outside to the spaces surrounding the institution, and the themes they follow are generally grounded in the collection or architecture of the museum. Besides giving visitors a more structured way of exploring the museum, trails also add a degree of personalisation, as they allow visitors to choose to go to certain places or see certain things according to their personal interests and preferences. As part of the Exeter Time Trails project, trails have been extensively studied by Giannachi *et al.* as tools for creating presence and producing knowledge, supported by theoretical work grounded in Anthropology, as well as concepts of mapping, cartography and personalisation<sup>5</sup>. Trails can be an effective way of structuring a museum visit since they are cheap to create and do not require any resources from museum staff, in addition to creativity, imagination and lateral thinking<sup>6</sup>. They can also be tailored to visitors with different characteristics and needs. Trails for children, for example, generally involve activities such as drawing, touching, and finding, which engage them with the content, promoting learning while also fostering their creativity<sup>7</sup>.

Trails share characteristics with games, most visibly by creating journeys. Journeys feature heavily in certain types of videogames, particularly narrative-driven games that put the player in the central role of the hero, such as roleplaying games<sup>8</sup>. The game element that can be most closely associated with the journey is the player's quest, or mission, which can be present in a myriad of forms in different genres of games. Quests in games usually have an end goal, that is, a quantifiable outcome and winning condition<sup>9</sup>, while possibly also incorporating several incremental sub-goals. They are often an important vehicle for the game's storytelling, enabling roleplay by giving players an action-driven context for the story. Quests utilise the space in the game world as background to create a physical as well as an intellectual and emotional journey, involving some kind of challenge that requires skill to be conquered. It is possible to identify parallels between the quest and the museum tour. While the museum tour cannot be said to have quantifiable outcomes or even winning conditions, it does have a goal, which is for visitors to visit and travel through the museum in a way that fulfils their expectations. Like quests, the museum tour implies movement through space. The context created by both quests and tours is one of storytelling, in which narrative evolves in a multimodal way, one

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<sup>5</sup> GIANNACHI *et al.*, 2014: 110-111.

<sup>6</sup> BLACK, 2012: 179.

<sup>7</sup> BLACK, 2012: 179.

<sup>8</sup> WHITTON, 2010: 57.

<sup>9</sup> SALEN & ZIMMERMAN, 2003: 258.

that involves the players, other people, the space and objects that surround them, and activities to be conducted in that space. Like quests, tours can be self-guided or guided by others, can involve free choice or take people on a constricted, predetermined path.

Quests have been part of dramatic stories for millennia, often in recurring patterns of storytelling mechanisms, plot structure, and character development, as evidenced by Joseph Campbell's classic work *The Hero With a Thousand Faces*<sup>10</sup>. However, unlike in literature, where readers follow the hero along on his or her journey, in games players are put in the role of the protagonist, and they are the ones responsible for answering the call for adventure, going on the journey of transformation and challenges, and returning as victors. In short, in books, one reads about quests, while in games, one performs them<sup>11</sup>. Quests in games are often used as tools for narrative and spatial progression, giving the player goals and actions to carry out, while at the same time providing context and meaning for those actions. In short, they are a way to structure both content and context in games. In the context of gameful design in museums, they can be used to structure the museum tour in new ways, which is what we did at RAMM with *The Great Exeter Garden Quest*.

## THE GREAT EXETER GARDEN QUEST: BACKGROUND AND DEVELOPMENT

In creating a quest-based museum visit, the first step was to consider how it would work in tandem with the rest of the museum's programme. We decided the experience would be closely linked to a specific temporary exhibition, the International Garden Photographer of the Year 2016. The International Garden Photographer of the Year (IGPOTY) is a photography competition focused on the theme of gardens, plants and natural environments, run by Garden World Images Ltd. in association with the Royal Botanic Gardens, Kew, United Kingdom. Now in its ninth year, it is open to photographers of all ages, of all skill levels, from amateurs to professionals, from all over the world. The aim for our quest-based experience was to encourage players to engage with the exhibition's theme in a creative, participatory and fun way, and see if, and how, that would change the way they visited and experienced the exhibition. Since it would be organised in conjunction with a temporary event, it was decided that the experience would be available to the public for only a limited time, coinciding with the months that the exhibition was at RAMM, from April to August 2016. Furthermore, due to its outdoors theme, the quest would not be limited to the museum's building, but would also make use of Exeter's local public parks. This was also regarded as an opportunity to highlight the connections between the museum's collection and its surrounding

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<sup>10</sup> CAMPBELL, 2008 [1949].

<sup>11</sup> TAVINOR, 2009: 5.

physical urban environment, and to expand the galleries outwards into the city around them. Finally, in order to encourage players to engage with the exhibition's theme, it was decided that the quest challenges would be based on developing photographic skills. Taking advantage of the fact that the quest would be accessed through players' smartphones or tablets, which include built-in cameras, the quest challenges players to create and share photographs responding to a particular action related to the theme of the quest.

After deciding upon the theme, the associated event, and the objective of the quest-based experience, we analysed the various digital platforms and experiences offered by RAMM. The decision was made to adapt Exeter Time Trail, an online tool that allows the museum and users to create and share multimedia trails, to create the quest. This decision was informed by the fact that, as mentioned earlier, like quests, trails are based around the concept of going on a journey, and so can be seamlessly transformed through the application of gameful design. Moreover, the application, a collaboration between RAMM, the Centre for Intermedia at the University of Exeter, 1010 Media, and Exeter City Football Club Supporters Trust, funded by Research and Enterprise in Arts and Creative Technology — Higher Education Innovation Funding (REACT-HEIF)<sup>12</sup>, is versatile enough to allow users to go beyond the creation of simple trails, supporting ways to enrich trails with various components, including a map with icons showing each stop, images, videos, audio, text and web links. Users also have the option of allowing trail goers to contribute their own responses to the trail, in the form of photographs, audio recording, and text comments, which can in turn be shared on various social media.

We used an iterative, user-centred gameful design process to create the quest-based experience. The first step was to identify the goal of the experience: to encourage visitors to the IGPTY exhibition to engage with the exhibition's theme as creators, not just viewers, with the aim of improving their experience of the exhibition. The second step was to define the audience, which included visitors to the museum who were interested in photography, and narrowed to the subset of that group that regularly used their smartphones as facilitators or platforms to engage with their surroundings.

After listing all of Exeter's public gardens and parks, a preliminary list of ten locations was chosen. The next step was to visit those locations on foot, the way that players themselves travelled during the quest, to assess accessibility conditions and measure how much time and physical effort it would take to travel from one location to another. The next step was to look at the remaining locations and investigate their history and characteristics, in order to find possible connections with objects in RAMM's collection. These connections could be historical (a park with a Roman wall, or other traces of Exeter's Roman past, could be connected to the many Roman artefacts on display in the museum), thematic (a location that serves as living environment for animals which

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<sup>12</sup> GIANNACHI *et al.*, 2014: 97.

can also be found in RAMM's extensive taxidermy collection), or artistic (for example, sculptures by Barbara Hepworth can be found both in RAMM's collection and in the grounds of the University of Exeter, which are open to the public). After identifying these connections, an object from RAMM's collection was chosen to illustrate each of the stops in the quest. Finally, the photographic challenges were planned. Taking into account that players of all skill levels should be accommodated, as well as the limits of the technology, the challenges suggested certain actions and themes to players, but left them enough space to create their own interpretation of the rules, thus acting as a frame that restricts their options, while giving them a degree of freedom to decide what to create and share.

The first version of the quest included the locations, the order in which they should be visited, photographic challenges, and a list of objects from the museum collection, to which were added the introductory text, the directions, and the descriptions of the locations. In order to direct players from one location to another, beyond the default inclusion of a map with the locations indicated as icons, a short paragraph was included that referenced physical landmarks to help players navigate the city. The quest text was fleshed out with a simple storyline, with a call to action that let players know they would take on the role of a nature photographer, explore the city, learn about its history and RAMM's collection, and develop their photographic skills along the way.



**Fig. 1.** The last challenge of the quest, which involved engaging with the sculpture *Figure for Landscape* (1960), by Barbara Hepworth, was deemed too far away and hard to reach during early testing, so it was transformed into a bonus, optional level

## **The Great Exeter Garden Quest: the Experience**

The quest opened with a welcome screen that greeted players as photographers and explorers, whose aim was to explore Exeter and look at their surroundings with a photographer's eye. The language used was purposefully playful, simple, and clear, addressing the player directly to give a sense of personalised interaction. Like the story, the roleplay was action-driven, emphasising spatial exploration and photography-based challenges.

The quest took players on a physical journey that started at RAMM's aptly named Garden Reception, travelled around the Exeter city centre, and ended back at RAMM, at the IGPTY exhibition. Along the way, players visited and explored five public parks: the Cathedral Green, Rougemont Gardens, Northernhay Gardens, Bury Meadow Park, and the University of Exeter's Streatham campus (the optional level), in this order. The various locations were indicated on a map, available for players to consult at any time during the quest. The experience was one of progression, since the quest asked players to find locations in a specific order. Even though the experience was temporarily available, it was possible to see the physical settings of the parks change in appearance according to season, as different plants and flowers are in bloom during spring and summer. Whenever players reached a new location, the quests showed them an image of an artefact from the museum's collection thematically or historically related to that location. Thus, beyond the questing experience, the platform created a virtual exhibition by taking the museum's collection out the building and into the city.

The quest's photographic challenges were created in response to the specific setting of each location. For example, in the Cathedral Green, players were challenged to create a photograph in which the cathedral's building appears, but not as the central focus of the image, while in Rougemont Gardens, they were tasked with finding and photographing a squirrel, or, alternatively, selecting and photographing the tree where they thought was most likely that a squirrel might live in. While the challenges gave players specific directions, they were still open enough to allow them to create their own interpretations, within the rules given by the quest. As players responded to the challenge, their photographs were immediately shared on the platform, allowing them to see the results of their efforts, and also how other players responded to each challenge.

## **The Great Exeter Garden Quest: Results**

In order to study this gameful tour experience and how players reacted to the quest structure in a museum environment, an interdisciplinary qualitative research methodology was needed that could be applied both to game studies and museum studies, with a focus on the journey that visitors go on when visiting the museum. A framework that connects the idea of trails with digital experiences and ethn methodology is the mixed



reality trajectories<sup>13</sup>, which served as a basis for the methodology. Specific methods included studying the photographs that players shared online, and organising a game-play test day with a group of six volunteer players from the community of museum visitors, with direct observation and documentation of those players' behaviours, as well as a semi-structured focus group discussion that gave insights into players' motivations and experiences while playing and visiting the exhibition after the gameplay experience. To establish a comparison between the experience of visiting the exhibition for players and non-players, a group of six visitors to the IGPTY exhibition who had chosen to visit the museum but had not gone on the quest were also interviewed. The group of players, an equal number of females and males in their late twenties or early thirties, responded to an open call detailing the quest event, while the non-player visitors, two males and four females with ages from 19 to 70, were approached randomly during the museum's normal visiting times.

The feedback from quest players during and after the experience was generally positive, with players reporting how much they had enjoyed the journey and how they had learned new things during gameplay. Several players reported that, although they were local to Exeter or had visited the city before, they had never visited all the locations featured in the quest. The experience thus served as a reason to visit places that they would otherwise «never have bothered going to», in the words of Player 11. The ones who had visited before reported that the facts incorporated into the quest text, which gave historical contextualisation to the locations, as well as connections with objects in the museum's collection, helped them learn new facts about familiar places. This learning was not forced upon players, and instead occurred organically as they were engaged in the quest, reading the story and interpreting the challenges: «[...] you go through the activity, which is fun, and you enjoy it [...] but at the same time you learn something exciting and new about the city» (Player 12). This type of learning that occurs during gameplay, sometimes denominated «stealth learning»<sup>14</sup>, is common in the experience of playing videogames. While not specifically focused on education, the quest still promoted learning about the museum's collection as part of the experience.

The creation of an experience that involved physical locations beyond the museum building, in a way that made sense within the theme of the exhibition, had the effect of expanding and augmenting the space of the museum, both physically and virtually, by letting players learn about the collection beyond the galleries. Player 9 described this connection: «It does extend the museum experience. [...] it's nice to have [the inside and outside] connected so that your museum experience isn't isolated from the city». Besides building connections between the museum and its surrounding city context, the quest

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<sup>13</sup> BENFORD & GIANNACHI, 2011.

<sup>14</sup> MACCALLUM-STEWART, 2011.

gave players an engaging experience on an intellectual, creative, and also physical level, since following directions demands physical movement, and the challenges implied a degree of physical, as well as intellectual, involvement with the player's surroundings.



Fig. 2. A selection of player-contributed photographs for the fourth challenge in the quest, in the Northernhay Gardens. From left to right: Player 8, Players 12 and 13, Player 9, and Player 11

According to players, the photographic challenges were the most engaging part of the experience. During the focus group discussion, players said that one of the benefits of the quest structure was that, beyond taking them on a tour of locations, as a trail would, the quest gave them tasks to complete upon arrival on each location, turning a passive experience to an active one. One player admitted that he was «surprised by how much [he] enjoyed it», as he had thought the quest would entail just «walking around», and appreciated the fact that it was instead an experience where he was asked to be creative and contribute content. This suggests that, more than making the player part of a story within the quest, it is the action-based roleplaying experience, that is, the opportunity to be creative and productive while embodying a role, which is more attractive about the experience.

Feedback about the exhibition was unanimously positive among both players and non-players. Participants in both groups discussed the photographic techniques on show with each other while wandering the gallery, and praised the exhibition in terms of the talent of the authors and the quality of the photographs, mentioning their sensorial qualities, such as the expert use of colour, light, and texture. In this, there was no discernible distinction between the comments from players and non-players. The differences became visible when both groups were asked if they identified with the authors in the exhibition. Most non-players referred to themselves as interested in nature and photography, but not photographers, showing reluctance in attempting to create photographs like the ones on show. Many players reported feelings of inadequacy regarding their photographic abilities, with Player 9, for example, admitting, «I tend to not take pictures because I know I'm not very good at it». However, they also reported feeling closer to the creative process, as they had attempted to create something similar shortly before, which enhanced their awareness of the work that had gone into each photograph. When asked

about the impact of the quest on their experience in the exhibition, players described how being put in the same role as the artists on exhibition, that of amateur nature photographers, helped them connect more deeply with the images on view:

*Player 10: I think it probably gives you a bit of context on how hard it might be to get such great photos. [...] You've just shortly before tried yourself to take a photo. So I think it's interesting to go from trying yourself to seeing some really great examples of people doing that.*

*Player 9: Yeah, I think I also feel like I wouldn't necessarily be very connected to... I'd look and think that they were all experts, but actually having tried it first did for me, make me feel like I was more linked into it. So, yeah... Closed the distance.*

*Player 8: Yes, because it sets up your minds to... To see that way as well.*

These results suggest that the challenge-based roleplaying that the quest afforded players was successful in promoting a deeper engagement with the exhibition's theme, namely, to promote and celebrate nature through the eyes of all creative people, no matter their age, nationality, or professional level. This seems to confirm our initial assessment that, through a combination of story, action-based roleplay, challenges that give players goals and sub-goals, which require a certain amount of skill to complete, and which turn players into content creators, while they are being taken on a narrative and physical journey, it is possible to create an experience that successfully engages players and allows them to develop a deeper understanding of and connection with the exhibition on show at the museum.

## CONCLUSION

This paper was dedicated to the expansion of the museum space outwards and making the museum visit more gameful, namely by transforming it through the use of a structure commonly found in games, the quest. This gameful design process is useful to gamify digital experiences and platforms that are already offered by museums to enhance the visit experience, including mobile applications and self-guided tours in the form of trails or audio guides. The case study, *The Great Exeter Garden Quest*, made use of story, action-based roleplay, a physical journey that included facts and images for historical contextualisation, and location-specific challenges that sparked the players' creativity and asked them to create and share content, using the existing capabilities of players' own mobile devices. It also extended the space of the museum outwards, into the city, by taking objects in the museum's collection and inserting them into new contexts, and brought the players back to the museum through the connection with a specific exhibition, the International Garden Photographer of the Year.

The results suggest that a quest structure, with its story, action-driven roleplay, and creative challenges, is more engaging than existing trail tours, as it encourages players to experience the museum and related environments on physical, emotional and intellectual levels. The challenges encouraged players to employ creativity in their responses to the directions, while also giving them space to create their own interpretations. In the end, the results suggest that the quest was successful in increasing players' engagement with the exhibition's theme, which was the main objective for this gameful experience.

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# A DRAMA IN TIME: THE LIFE OF A CITY

KIT DEVINE\*

## INTRODUCTION

Cities are dynamic and can be likened to living entities, but ones with lifespans that can measure hundreds or thousands of years. All aspects of human culture, both tangible and intangible, are dynamic. The built environment of a city is constantly changing along with the behaviours and activities of the inhabitants and their clothing, hairstyles, mannerisms, language(s) and much more besides. Even a dead city, empty and abandoned for whatever reason, goes on changing. The material remains suffer the ravages of time and, as was the case with Troy, once they recede from living memory the cultural memories of a city can morph into fable and myth. Aside from short-lived cities such as Amarna in Egypt, which was built for the Pharaoh Akhenaten and then abandoned after his death, cities exist for many human generations making it impossible for a single individual to directly experience the whole life of a city in its entirety. The plethora of museums devoted to the history of particular cities, and their popularity with both locals and tourists, indicate a deep and abiding interest in the histories of cities among the general public.

Museums devoted to the history of a particular city commonly use illustrations and dioramas to help audiences visualise how the city may have looked in earlier times. The Edo-Tokyo Museum in Japan offers visitors a journey through the 400-year history

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of Edo-Tokyo and encourages them to reflect on the history and culture of Edo-Tokyo. The museum has several extensive dioramas showing Edo-Tokyo at various stages in its transformation from the simple fishing village of Edo to the megacity of present day Tokyo. In addition to illustrations and dioramas, museums are increasingly using 3D computer graphics to create visualisations for public edification. Seminal New Media theorist Lev Manovich has identified virtual space, which he terms «navigable space», as possibly the key cultural form of the twenty-first century — essentially what cinema was to the twentieth century<sup>1</sup>. The mainstream popularity of online virtual game worlds such as World of Warcraft, with their many millions of subscribers (most of whom are not teenaged boys), supports this proposition. Navigable space allows users to interactively explore three-dimensional virtual worlds viewed from a first-person perspective so has many practical uses. 3D computer graphics are regularly used in an ever-expanding list of fields including entertainment (film and games), medicine, engineering, architecture, design, scientific visualisation and heritage.

Many people who experience virtual environments report a feeling of presence or «being there» where «there» refers to the virtual world. Research has revealed a large number of factors that influence presence in virtual environments and these can be grouped into the three main categories of experiential realism, social interaction and individual user characteristics. With regard to realism, the video needs to be recognisable, the audio understandable and the interactivity responsive for presence to be evoked but complete realism is not necessary. Some computer games aspire to be photo-real, while other games, equally popular and financially successful, opt for highly stylised looks. So while visual realism may get noticed and appreciated by users, it is not key to their engagement<sup>2</sup>. Social interaction is an extremely strong, but not critical, contributor to presence. Consider the strong sense of a shared «space» experienced by two people having a phone conversation who, despite being geographically distant from each other, feel a very strong sense of physical proximity with the other person. The huge success of massively multiplayer online games (MMOGs) attests to the attraction of playing with real people in virtual worlds. However individual users of virtual worlds also experience presence so, while social interaction is a strong multiplier, it is not a critical factor. Presence has been found to depend to a large extent on personal factors, with researchers noting that «differences among individual users often account for more variability in performance than system design factors»<sup>3</sup>.

Common to all the explanations for presence is the concept of engagement or immersion, where the immersion is not only of the senses but also of the mind. No matter how convincing the virtual environment, presence is diminished or lost completely if the

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<sup>1</sup> MANOVICH, 2001.

<sup>2</sup> NUNEZ, 2006.

<sup>3</sup> KABER *et al.*, 2002: 379.

user becomes bored and their mind wanders. This should not be a surprise to anyone who has ever been «lost in thought». If reality itself cannot hold your attention reliably, then there is no reason that a digital approximation of reality, no matter how photo-real, will be any different. The level of conscious engagement of the user with the virtual world would appear to be a critical factor of presence. To put it simply, you are present wherever your attention is and, regardless of the factors of presence, in and of itself presence presumes a place to be present in.

Yi-Fu Tuan, founder of humanist geography, writes in his seminal work *Space and Place: The Perspective of Experience*<sup>4</sup> that places are unique and determined by the webs of individual memories, cultural meanings and connections that overlay the architecture and topography of homes, environs, regions and countries. For Tuan time and place are deeply intertwined. He argues that the act of spending time in a location is critical to creating the experience of place, declaring that «What begins as undifferentiated space becomes place as we get to know it better and endow it with value»<sup>5</sup>. Places are ongoing and dynamic with lifespans that are often many times that of a human<sup>6</sup>. The Scottish sociologist, geographer and pioneering town planner Sir Patrick Geddes describes a city as «more than a place in space, it is a drama in time»<sup>7</sup>.

The experience of place is a *mélange* of the phenomenological, the cultural and the personal. It is a gestalt made up of direct sensory impressions and the web of individual meanings, memories and connections (both cultural and personal) that overlay the topography of homes, environs, regions and countries. The phenomenological affect of a place, the sensory impression it makes on an individual, is highly variable. The sights, sounds and smells of a place are determined in part by the weather, in part by floral and faunal behaviours, and in part by human activities. Being in a graveyard at midnight during a thunderstorm is different from being in the same location in the middle of the afternoon on a sunny day. These phenomenological contributors are all influenced, to varying degrees, by time. The seasons of the year, the hour of the day and the phases of the moon drive behaviours in the natural world, while the historical moment determines the cultural context, including the built environment, the inhabitants and their activities. Finally, the experience of a place is also shaped by the unique personality, identity and history of the individual concerned.

Certain places are widely recognised as having cultural significance. In 1972 the general conference of the United Nations Educational, Scientific and Cultural Organization (UNESCO) adopted a recommendation concerning the protection, at national

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<sup>4</sup> TUAN, 1977.

<sup>5</sup> TUAN, 1977: 6.

<sup>6</sup> CASEY 1997; SMITH, 2006.

<sup>7</sup> GEDDES, 1904: 108.



level, of cultural and natural heritage<sup>8</sup>. A World Heritage Site is a place that is listed by UNESCO as being of outstanding universal value from the point of view of history, art or science. Australia in turn defines its national heritage as comprising «exceptional natural and cultural places that contribute to Australia's national identity»<sup>9</sup>. Laurajane Smith proposes that heritage is not limited to material culture with associated age and aesthetically related social values<sup>10</sup>. She defines heritage as a multilayered performance that constructs a sense of place, belonging and understanding in the present through acts of remembrance and commemoration. She uses place to mean not only location in space but also metaphorically to mean cultural immersion. She defines heritage as a cultural practice that constructs and regulates a range of understandings and values. Furthermore she argues that heritage is not decided by institutions or experts but comes from the meanings people construct for it in their daily lives. Tuan notes that place makes time visible, acting as a memorial to the past<sup>11</sup>. This is particularly true for heritage places. Heritage places are not just the places themselves but also the cultural meanings associated with them and the activities that take place within them. Just as the material fabric of a heritage place changes over time so too do its associated meanings. These are not frozen but change as wider societal changes affect attitudes about heritage in general and those places in particular. Heritage places are dynamic and they are experienced in the context of the present from the perspective of the individual.

Virtual worlds, despite their immateriality, are also places. Virtual game worlds provide important practical examples of virtual place-making and the author agrees with Richard Bartle that «others may debate whether or not virtual spaces are actual places, but for players and designers there is no conception that they might not be. The five million people who enjoy World of Warcraft certainly look upon it as a world, and in the face of this any argument to the contrary is pretty well moot»<sup>12</sup>. Virtual heritage worlds are likewise real, though virtual, places in their own right, but what is the nature and purpose of virtual heritage places, and what is their relationship with their real world counterparts?

A virtual model of a heritage place is clearly not the same as the actual place but it is nonetheless a real, though virtual, place. It is useful at this point to consider the difference between the virtual reconstructions of heritage sites for archaeologists (often termed virtual archaeology) and virtual reconstructions of heritage sites intended for public edification in museums. The audience for a virtual archaeology reconstruction is assumed to be expert while virtual heritage in a museum context is intended for a

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<sup>8</sup> UNESCO, 1972.

<sup>9</sup> COMMONWEALTH OF AUSTRALIA. Department of the Environment, 1999.

<sup>10</sup> SMITH, 2006.

<sup>11</sup> TUAN, 1977.

<sup>12</sup> BARTLE, 2007: 2.

general audience. Virtual archaeology is therefore an exploration tool for specialists while museum-based virtual heritage is an educational tool for the general public. There is an inherent and central pedagogical dimension to museum-based virtual heritage that is absent in Virtual Archaeology.

Despite time being an inherent capability of virtual technologies, and a critical factor to place, time is curiously lacking from much virtual heritage where it always seems to be around noon on a sunny day. The author argues that time-based virtual heritage is uniquely able to show cultural activity, support the creation of phenomenologically immersive places and create affective experiences. Additionally, by using time-lapses, it can deliver a more cognitively affective experience. Just as a time-lapsed video showing a glacier brings an immediate understanding to the description of a glacier as «a river of ice», so a time-lapse of a heritage place makes plain the change that occurs in the built environment of that place over timespans that are impossible to experience directly. Time-based virtual heritage supports what the author terms navigable time, which gives users the ability to move as freely in time as they do in space<sup>13</sup>. This may have its downside as jumping to specific, but temporally scattered dates, results in an experience that is deeply at odds with the temporal narrative of heritage. Time gives us a way to order our thoughts, to follow a tune, to tell a story and, fundamentally, to make sense of the world<sup>14</sup>. So, when used in a time-lapse fashion, navigable time re-imposes the temporal order and restores the traditional time-based narrative of heritage<sup>15</sup>.

## THE VIRTUAL SYDNEY ROCKS

To explore the educational potential of time-based virtual heritage the author has created a time-based virtual model of the historic Rocks district of Sydney, Australia, from settlement to the present day. On the 26th of January 1788, the First Fleet anchored in Sydney Cove and established a penal colony that was the first European settlement in Australia. The eastern headland of Sydney Cove is currently the site of the Sydney Opera House and the sandy beach at the head of the cove is hidden under a busy ferry terminal and railway station, but in 1788 the shore was thickly wooded with a small stream flowing into the cove at the western end of the beach and with high sandstone cliffs rising in steps to the west. The majority of the convict tents were set up on the western side of the stream while the tents of the Governor and his staff were on the eastern side. Within months the convicts were constructing wattle-and-daub huts on the sandstone ledges of what was already known as «the Rocks»<sup>16</sup>. In 1994 a combined historical and archaeological project, known as «the Big Dig», excavated a large site in the historic

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<sup>13</sup> DEVINE, 2014.

<sup>14</sup> HOFFMAN, 2009; OZEKI, 2013.

<sup>15</sup> DEVINE, 2014.

<sup>16</sup> KELLY, 1997.

Rocks district on the western shore of Sydney Cove uncovering over two hundred years of history<sup>17</sup>. The excavations revealed traces of some of the early huts overlaid with 200 years of urban development. The dig uncovered over three quarters of a million artefacts and evidence of 42 separate dwellings while the historical research produced a host of documentary evidence. This led to the identification of specific individuals, the houses they lived in and, in some cases, a direct connection with artefacts recovered during the dig<sup>18</sup>. Among the people identified was George Cribb, a colourful character, who had at one time owned much of the Big Dig site. His rags-to-riches-to-rags story included multiple marriages (one of which was bigamous) and repeated brushes with the law.

The Big Dig site was an ideal subject for the author's research to investigate the user experience of navigable time and to discover what navigable time can offer museum audiences. The dataset was exemplary, the site was of historic significance, the time range of just over two hundred years was both small enough to be manageable and large enough to show great change. The models were created using Autodesk Maya (an industry standard 3D package) and then imported into 3DVIA Virtools which was the development environment being used by the author while she was based at the iCinema Centre for Interactive Cinema Research. High resolution models were built of the individual dwellings identified for the Big Dig site. Several objects including two china bowls, a butcher's knife and an alcohol still were created. These objects had been uncovered in a midden in an old well during the Big Dig and dated to 1813-1824, the period when George Cribb owned much of the site. Lower resolution buildings were created for the area surrounding Sydney Cove and visible from the Big Dig site.

Given the limited resources available to the author, especially when compared with the million dollar budgets used to create state-of-the-art game worlds inhabited by numerous software controlled non-player characters, it was not possible to populate the VSR at this stage. In any case, populating a virtual heritage world can be deeply problematic. For many ancient cultures there is no surviving evidence of clothing or hairstyles so any depiction of them is purely speculative. Likewise, all social behaviour prior to the invention of writing is completely lost to time. Did Neolithic peoples kiss hello? On the mouth or on the cheek? How many kisses? However, in the case of Sydney, there is sufficient data with respect to the varying habits, dress, speech and behaviours of Indigenous Australians and the British colonists and their descendants from 1788 to the present day that, given funding, it should be possible to create a populated virtual world that would have a sufficient level of historical validity to satisfy the expectations of both museum staff and audiences. Future development of the VSR will explore the addition of inhabitants to the VSR as the social immersion should be a significant contributor to cultural

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<sup>17</sup> KARSKENS, 1999.

<sup>18</sup> KARSKENS, 1999; CROOK *et al.*, 2005.

presence. In addition, it is easy to imagine role-playing games that would allow players to learn more about life in Sydney at different times. In the early years of settlement players could choose to be a male or female convict or an Aborigine, a soldier, a sailor or the wife or child of a soldier or sailor with each particular role revealing the impact of status and gender on life at that time. In later years players could experience important incidents in the history of Sydney such as the Rum Rebellion from the perspective of a soldier, the burning of the Garden Palace from the perspective of a fireman, the outbreak of bubonic plague from the perspective of a rat catcher, explore crime from the viewpoint of a member of the Razor Gangs of the 1930s and explore politics from the perspective of a union member during the Green Bans of the 1970s.

The author, cognisant of the need for cultural immersion in an unpopulated world, took great pains to provide a wealth of related information supporting prolonged engagement for users, encouraging their active participation with the making of meaning. A dedicated website, *The Virtual Sydney Guidebook* (<http://virtualsydneyrocks.com/>), was created with individual webpages for each building, the vessels of the First Fleet, and several of the people identified by the archival research as being closely associated with the Big Dig site. Selecting a building, or boat, caused the associated webpage to open on a second screen. Each webpage has a short summary of pertinent information and a collection of links to directly related material that was available at authoritative sites such as the Dictionary of Sydney, the Heritage and Conservation Register of NSW, the State Library of New South Wales and the Australian Dictionary of Biography. The combination of the virtual model with the database could be compared to an iceberg where the bit above the surface is the virtual model and the much larger bulk of the iceberg below the surface is the database of related material. The world itself acts as the interface to the (database of) information about it. A city has many stories to tell. A story for each of its inhabitants, each of its buildings and many stories about the city itself. Visitors to a real heritage city can engage with it in a variety of ways. They can take tours, wander freely and attend cultural events. The author believed that a virtual heritage city should likewise offer users a variety of ways to engage with it. So, once the VSR was sufficiently developed for users to be able to explore freely in space and time, and access the content in the Guidebook, a game and a tour based on the life of George Cribb were developed as examples of what would, in a more developed version, be a range of tours and games.

## TESTING

The VSR was tested at the Rocks Discovery Museum, a small museum dedicated to local history that is located in a heritage-listed building in the historic Rocks district of Sydney. The museum attracts a wide range of visitors of all ages and nationalities, including international, interstate and local tourists, school parties and individuals with

a specific interest in the Rocks<sup>19</sup>. During the week of testing museum staff at the entrance to the museum made a point of informing visitors of the presence on-site of the prototype Virtual Sydney Rocks and encouraged them to try it out.

Users had the choice of playing the game, watching the pre-recorded video tour or exploring at will in time and space. In both the Game and the Explore modes users could set the time, the date and the speed of time. The Game was a treasure-hunt styled game where players had to explore in time and space to find a boning knife, some china bowls and an alcohol still. These objects had all been uncovered during the Big Dig in a filled-in well at the back of George Cribb's house and were associated with different periods of the Cribb's occupancy. The Tour consisted of a pre-recorded video that described the life of George Cribb while showing his house and properties. The Tour concluded by showing a time-lapsed aerial view of the Sydney Rocks from 1788 to 2010.

The computer running the VSR was set up in the same room as a glass cabinet that contained items recovered from the Cribb's well and among them were the china bowls, the alcohol still and the butcher's knife that were featured in the George Cribb game. After testers had played the game the objects were pointed out to them by the author so as to connect the virtual content of the VSR with real tangible objects that were physically present. Passively recording people using the prototype and assessing the resulting video was not going to give the depth of feedback that the author wanted and, as the author would be acting as a docent during testing, it would not be possible to conduct interviews at the same time. Additionally, follow up in-depth interviews would be extremely difficult as over three quarters of the visitors to the Rocks Discovery Museum are from interstate or overseas<sup>20</sup>. The author decided therefore to use a mixed methods single questionnaire which would, at the very least, give some quantitative data and, at best, would elucidate some interesting, highly relevant and informative qualitative data<sup>21</sup>. A key concern was not to impose too great a time burden on testers. The Tour ran for four minutes, the Game took between three and five minutes to play and the author assumed that people would spend at least three to five minutes in self-directed exploring. This meant that a tester who tried all three would already have spent at least fifteen minutes engaged with the VSR. The questionnaire was designed so that someone could answer the multiple choice questions in less than five minutes but there was ample space for respondents to elaborate on their responses in depth if they wanted to. This resulted in a rough estimate of about 25 minutes in total for testers who used all three modes and who also gave answers to the open response qualitative questions as well as to the multiple choice quantitative questions. Research into museum visitors indicates

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<sup>19</sup> SHFA, 2011.

<sup>20</sup> SHFA, 2011

<sup>21</sup> DRISCOLL *et al.*, 2007.

that 30-40 minutes is an average time for them to engage with museum content<sup>22</sup>. The author decided that 25 minutes was towards the upper range of time commitment to ask of testers but would still be acceptable to many.

The questionnaire began with a page of demographic questions that requested age, sex and occupation data followed by three questions about computer and computer game usage. These were followed by 21 numbered questions specifically to do with the VSR and Guidebook. There were six questions under the heading on the questionnaire of Interaction Questions. Questions 1, 2 and 3 ask in turn «Did you take the virtual Tour?», «Did you play the Game?» and «Did you Explore?» These questions were followed by subsidiary questions asking testers if they had tried more than one interaction mode and, if they had, in what order. Users then had the opportunity to elaborate on which mode of interaction they liked best and why. There were twelve questions under the heading on the questionnaire of Place, Presence, History and Culture Questions. These sought to find out about the influence of the three different interaction modes of Tour, Game and Explore on the temporal, spatial and cultural immersion experienced by the user, their experience of change over time and the associated opportunities for insight and understanding. Finally testers were asked to nominate most liked and least liked features of the VSR and suggest improvements.

## RESULTS, FINDINGS AND CONCLUSIONS

A total number of fifty-six questionnaires were returned, one of which contained data for three individuals (a woman and her two sons) giving a total of fifty-eight individuals. Thirty-one of the respondents tried all three interaction modes of game, tour and explore. The respondents represented a wide range of ages and professions and an almost even number of each sex. The museum audience in general is equally wide-ranging in size and background<sup>23</sup> so the author argues that the sample size, though on the small side, is representative. The respondents were overwhelmingly familiar with computers and nearly two thirds (62%) were currently, though to differing degrees, players of electronic games.

For users who tried all three modes, nearly 60% of users nominated the Explore mode as the best at showing change over time. This may be because in the Explore mode the time-lapse is under the user's control. The Tour mode was nominated as the most effective by just over a quarter of users. It is unsurprising that the Game was only nominated by one user as the best mode for showing change over time as players only had to travel 15 years in time and there was little obvious change. A game that featured time travel to a greater degree might produce quite different results.

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<sup>22</sup> HEIN, 1998.

<sup>23</sup> FALK & DIERKING, 2000.

Users found the VSR useful for learning some of the history of the Rocks with 39% preferring to take the tour, 32% preferring to explore and 10% preferring to play the game. This is an interesting finding given the current enthusiasm for Serious Games which use game-style interaction for teaching and learning. A significant minority of testers, despite trying both the tour and explore options and also completing the questionnaire, chose not to play the game. This group was 14 in number with four of them in their 20s, two in their 30s, five in their 40s, two in their 50s, while one supplied no age data. Nine of this group were female and five were male. All of them reported using computers daily while seven played games at least once a month and seven did not play games. This lack of interest in the game option in such a range of users is an interesting finding and indicates that game-focused virtual heritage may not appeal to a large minority of museum audiences. However, given the small sample size, and the positive feedback from respondents who did play the Game, further research is clearly indicated.

With regard to learning some of the history of the Rocks, respondents gave considered reasons for their choices. One person preferred the Explore mode because it «covers more of the area from first person perspective and gives more information about each specific part of the Rocks. Also lets me play with different time periods and observe the changes». Another preferred the Game because «it was fun & interactive & informative» and a third person preferred the Tour because she «enjoyed the guidance and the added information about Mr Cribb — made it more personal and engaging». The responses reveal that museum visitors have strong individual preferences for different interaction modes when they engage with virtual heritage and that there was no single interaction mode that worked best with all users.

As has been noted, museums have a long history of using illustrations and dioramas to help audiences engage more deeply with heritage and foster historical understanding, insight and learning. Virtual heritage is part of this pedagogical tradition and, while virtual heritage places cannot match the physical and cultural immersion and affect of real heritage places, they like illustrations and dioramas, can engender insight, understanding and learning in museum audiences. The ability of virtual environments to engender a sense of «being there» makes them particularly well suited to heritage pertaining to the built environment. Place is of course much more than just a geographical setting, it is a social construct, with multiple layers of human meanings and activities underlying and overlaying geography and architecture. The author argues that time-based virtual heritage enables a richer phenomenological and cultural re-creation of place. Additionally, time-lapsed virtual heritage, by showing changes in the built environment over timescales outside of normal human experience, allows heritage audiences to gain insight and understanding of historical processes, opening up a dialogic engagement with heritage itself.

Cities are particularly well suited to the potential of time-based virtual heritage as they usually exist for many hundreds, and sometimes thousands, of years. The story of each individual inhabitant of a city is limited to a single lifetime but the story of the city itself takes place over longer timescales than it is possible to experience directly. Time-lapsed virtual heritage enables users to literally see this longer history unfold. This is phenomenologically powerful, creating affective and memorable experiences rich with opportunities for insight, understanding and learning. Many cities have museums dedicated to their history and, as the costs of virtual heritage continue to fall, projects like the Virtual Sydney Rocks will become increasingly viable. Additionally, the data combined with GPS supports the development of AR versions which would allow users in the Rocks to layer the past directly onto the present and so encouraging deeper connections with, and understanding of, heritage places.

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### III

# THE CONTEMPORARY CITY AND DIGITAL CITIZENSHIP/ A CIDADE CONTEMPORÂNEA E A CIDADANIA DIGITAL



# AUGMENTED REALITY IN THE URBAN CONTEXT: A BLURRED FRONTIER

DANIELA SILVA\*

## INTRODUCTION

One of the most significant and momentous features of architectural avant-garde of the last 20 years is the proliferation of representational media.

Digital technologies — computer and computer-controlled machines — have pervaded all aspects of life, delivering sustained and accelerated rates of societal and economic evolution. Digital technologies will incontrovertibly be one of the key drivers of innovation of architecture and consequently the built environment in the 21st century.

Human-machine combinations routinely outperform supercomputers and super-humans. Computer and robots are making humans better. In the long term future it seems entirely plausible that an Artificial Intelligence will dominate and more pragmatically, in the near future there is an exhilaratingly vast amount of symbiotic work with which to engage. In other words, we are in the Intelligence Augmentation phase of human evolution.

In the past, architecture was historically concerned with religion. In more recent times, architecture has been about sustainability and technology. And will the future be about the digital technologies?

There's a lot of talk about the smart cities of the future. It's important to see in a realistic city setting how some of these technologies could become part of the way we operate with and within information-enriched urban environments.

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Explosive innovation as well as the adoption of new technologies and rich sources of data are changing the cities in which we live, work, and play.

Cities are always in transformation, since they are living systems. In a sense that they are open self-organizing that interact with their surroundings. These systems are maintained by flows of information, energy and matter.

Augmented Reality and Virtual Reality technologies have existed for some decades now. Although they have only definitely been on the market in recent years, they have already dictated new ways of living and relating to one another. As the world will never have less technology and will change faster and faster thanks to it, certainly the architectural profession will also undergo major changes, gaining new horizons and challenges. Therefore, it is necessary to understand the scope of these changes and challenges in the city. With this goal, this paper examines the influence of the augmented reality in the urban context. To do so, it selects and analyses case studies, in order to support a critical analysis and comparison. This study leads to reflections about the implications of these technologies on the nature of the city in the future.

## WHAT IS THE IMPORTANCE OF PHYSICAL SPACE FOR A POPULATION THAT IS INCREASINGLY MOBILE?

Our cities have always evolved towards the necessity of mobility.

In a time of increasing digitalization, it will become increasingly common in the future that we will not have to leave the house anymore to do everyday life activities like work, leisure or shopping. Through increasingly intelligent computer technology, we will be able to conduct everything from our private home, letting the virtual world define our social interaction and perception. Of course the question is: what happens to actual physical space and the concept of the public?

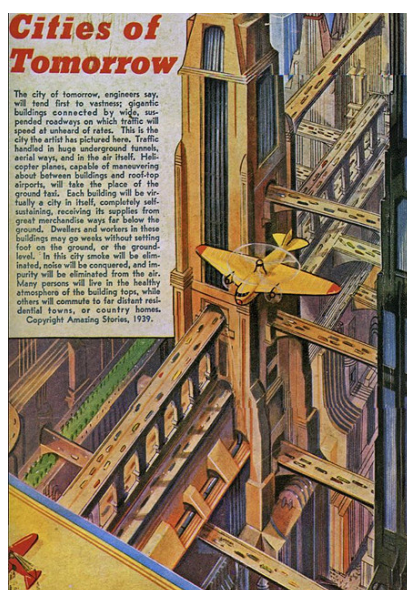


Fig. 1. Amazing Stories by Julian Krupa, 1939

*The city of tomorrow, engineers say, will tend first to vastness; gigantic buildings connected by wide, suspended roadways on which traffic will speed at unheard of rates<sup>1</sup>.*

In 1939, the artist Julian Krupa shared his vision of the «Cities of Tomorrow», published in «Amazing Stories», one of the first science-fiction magazines. «The city of tomorrow, Amazing Stories prophesied, would consist of an idyllic, vertically stratified urbanscape in which dwellers and workers [...] may go weeks without setting foot on the ground, or the ground level»<sup>2</sup>.

This image appeared on the back cover of the August 1939 issue of «Amazing Stories». According to the caption, tomorrow's city would be characterized by vastness, by traffic that would move «at unheard of rates», and by salubrity: «smoke will be eliminated, noise will be conquered, and impurity eliminated from the air. Many persons will live in the healthy atmosphere of the building tops, while others will commute to far distant residential towns, or country homes». The description and the rendering betray close acquaintance with the exhibits presented at the New York World's Fair in the same year.

What is «mobility» and what is it for? This figurative meaning is related to the more literal sense of mobility as freedom for movement across physical space.

There is a new meaning to mobility, since mobile technologies are having a huge impact on our society.

If before being mobile meant a physical act to move from point A to point B, today we only need internet access to be connected to the world. Smartphones may be changing how people interact with each other and changing their expectations for social interaction. The social interaction is not in the real world, but in the virtual world.

Today, when we speak of being «mobile», we refer to the myriad technologies that allow us to remain in constant contact with each other regardless of where we are. For today's mobile citizens, place matters very little; it is an obstacle that technology painlessly overcomes, with our ever-present smartphones telling us always where we are, what's around us, and, thanks to GPS, how to get where we are going.

Our lives are increasingly mobile. In the last ten years we have been part of a phenomenal evolution that's changed the way we engage not just with each other, but also with our surroundings. Mobile is ingrained within our lives, though device penetration and data usage are still on the up.

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<sup>1</sup> UPTON, 1998: 176.

<sup>2</sup> UPTON, 1998: 176.

## HOW DOES VISUAL REPRESENTATION AFFECT OUR EXPERIENCE OF THE CITY?

We have been expanding the human consciousness by integrating robotic consciousness into the social fabric.

To begin, it is important to define a few terms: Augmented Reality is interactive and occurs in real time, conceived in three dimensions, its processing combines virtual elements with the physical environment. Virtual Reality is a means of sensory experience that occurs through an operational system in which the user gets very close to the sense of truthfulness of some environment or situation.

Both technologies provide a close connection with the architecture and the built environment at large, bringing new tools that expand the spatial sensations of those who experience them.

More and more, Augmented Reality is being used as a tool that allows, among many other uses, a multifaceted intervention and artistic manifestation in urban space. The lack of a specific legal framework on the use of Augmented Reality (AR) in public-private spaces makes unlimited the potential for interventions.

The ability to overlay different realities makes it possible to create georeferenced comments, metaphors, political messages and create dialogues in public spaces between different types of actors. AR is a relatively recent phenomenon and as such, its development and democratization are dependent on the one side on technological evolution and on the other side on what is produced, develops and distributes the different types of software that is creating AR content. As of 2009 there has been a growing interest in AR associated with the mass adoption of smartphones. This new situation has made RA an emerging medium of communication of major relevance. The ubiquity of smartphones and the growing public familiarity with the AR application is having a tangible impact on how content is created and presented. Also in its expansion to different cultural contexts has produced social phenomena with the development of games based on the use of AR such as the Pokémon Go produced by Niantic. For the urban space the AR has been affirmed not only as a consistent means of communication, but also as a means of interpretation as in the case of access to invisible memories or the discovery of possibly georeferenced architectural passages, and/or sociabilities in contexts differentiated from urbanistic layers, that make up the contemporaneity of the city.

According to Biermann AR is the «first step in the evolution of better tools of expression that democratizes the tools of public media production. If successful, this and other types of digital takeovers can ultimately yield the traditional modes of public commercial advertising obsolete, equalize the power structure of representation, and allow the citizen to define his own media consumption»<sup>3</sup>.

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<sup>3</sup> BIERMANN & SEILER, 2011: 3.

In practice, these concepts and understandings have produced a very wide range of experimentation and development of projects that can mark us the much that there is to do in the field of RA.

Central to these developments are questions of the relationship between technological resources and their use, both from the point of view of the ethical dimension and their practical use. The cases described briefly below and which have urban space as the scenario and object of interaction account for the complexity of the issues at hand.

Virtual reality, on the other hand, has not yet reached a full mainstream. However it already covers several fields that also come to influence our lives. Here it is worth mentioning Keiichi Matsuda's film, a designer who is experiencing the use of virtual reality in his projects, which gives us a fascinating example of how this technology contributes to our experience of the city.

Keiichi Matsuda through his *Hyper-Reality* project demonstrates a «new, provocative and kaleidoscopic vision of the future, where physical and virtual realities have merged, and the city is saturated with media»<sup>4</sup>. Here we forget the futuristic idea of flying cars polluting our vision and what we see are various virtual devices that are not only present in our vision but also interfere with our daily life — guiding us all the time and practically training the human being. A bit scary, but not so far away from what we've experienced with smartphones and other technology systems.



Fig. 2. Hyper-Reality by Keiichi Matsuda, 2016

<sup>4</sup> WINSTON, 2016.



*Hyper-Reality* is a concept film by Keiichi Matsuda. It presents a provocative and kaleidoscopic new vision of the future, where physical and virtual realities have merged, and the city is saturated in media. It is the latest work in an ongoing research-by-design project by Keiichi Matsuda.

«Our physical and virtual realities are becoming increasingly intertwined. Technologies such as VR, augmented reality, wearables, and the internet of things are pointing to a world where technology will envelop every aspect of our lives», states Matsuda<sup>5</sup>.

Raymond Kurzweil (inventor and futurist of the United States) states that by 2040 people will spend more time immersed in virtual reality than actually said<sup>6</sup>. What looks like a scary sentence can also mean an era in which all people can live the way they want through technology. While this reality crawls, it is possible to imagine future conflicts and benefits that it will bring us and it is up to the architect to join other disciplines to know how to position to ensure once again the quality of space, whether real or virtual, that we live.

Through these examples it is possible to have a small sample of what the future holds for us. New ways of relating to urban space and socially, instant travel to other realities and cultures. How are architects prepared to deal with this? Think of physical spaces that can house a virtual life, buildings that can have completely different functions in the same volume, cities that can house different realities instantly in the same space. How do you design places that can address real and virtual lives?

Since architecture will no longer depend on a specific construction, design freedom may reach levels previously unimaginable, limited only by the potential of programmers and technology of the time. Since the projected environments will be virtual, the material resources will no longer be exploited and even floating buildings will be possible, creativity will guarantee everything. The future is just beginning, one more time.

## **HOW DO WE EXPERIENCE PUBLIC SPACE AND EACH OTHER, IN THE AGE OF DIGITAL COMMUNICATIONS MEDIA?**

The augmented reality is already beginning to capture the physical reality and the biggest proof of this is in the recent wave of people going on long walks, creating new friends and sharing new memories as they seek together for pokémons in the city. This is the phenomenon Pokémon Go, which has the impressive number of approximately 9.5 million daily users in the United States alone, and it's expanding worldwide.

Through the increased reality of the game, it is now possible for people to search for pokémons by breaking into the public space and knowing the architectural landmarks of each city that would never be seen in a video game or could even go unnoticed by the

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<sup>5</sup> WINSTON, 2016.

<sup>6</sup> KURZWEIL, 2017: BR13.

daily rush. The game encourages and creates opportunities for the «pokémon trainers» to leave their homes for new experiences.

The CEO of Nintendo responsible for the success of the application suggests that when launching the game they had three ideas in mind for their users: exercises (the game is designed to get you up and moving to find new pokémons), look at the world with new eyes (since urban landmarks and historic places turn into gyms or pokémon centers) and social «breaking» (since people now organize group tours and other collective activities around the theme).

Within these topics it is worth noting especially how important buildings and public parks are being redefined and gaining new functions according to this new virtual world. An example would be a museum that was designed as an exhibition space, but which now also plays the role of a pokémon center in the imaginary of the people.

Pokémon Go is a world-wide phenomenon of mass use of RA and in this sense some problems have started to stand out, such as the trespassing of private property or the inadequacy of playing in certain public spaces. Such as the Holocaust Museum in Washington, DC, that asked players not to play inside the museum. In Sydney in the suburbs of Rhodes there is a confluence of PokéStops which causes hundreds of players to focus around a certain space and according to one of the residents the space is «in complete chaos with crowds of well over 1,000 per night. There is a massive level of noise after midnight, uncontrollable traffic, excessive rubbish, smokers, drunk people, people who are ‘camping’ on the site, and even people peddling mobile phone chargers»<sup>7</sup>.

The concepts referred above, as well as applications geared towards urban spaces, however, correspond to what we might consider as a first period of AR, which had in common the fact that the initiatives are not subject to or are framed by evaluation processes with regard to its real usability. In other words, the relationship between the technological resources (equipment and applications themselves) and the experience lived by the users was not properly considered at both the design and the use stages.

Regardless of the field of application of AR, whether in the city, in museums, education, or other fields of application, your conceptual and software development process should follow very similar standards. The process of developing mobile applications in AR must be distinctively different from traditional mobile applications. Applications in AR have to take into account the surrounding physical space, as digital content appears superimposed and registered three-dimensional, given the illusion that these elements are part of our surrounding environment. In this sense, the conventional process of developing applications based on the design of wireframes, creating paper prototypes and testing clickable prototypes with users, cannot be applied in the same way. It is necessary to recreate a context similar to that of the final product that is to simulate the

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<sup>7</sup> MCLAUGHLIN & HILL, 2016.

expanded content, but the actual video capture. The need to create robust prototypes causes them to increase or shorten development time and often this process is eliminated. As a consequence problems that could be identified earlier, only at the end of the process appear, when it is too late to make significant changes.

We are living in the era of smartphones, communication has never been so easy, with social media we're always connected to our friends and millions of other people, no matter where we are, at a very low cost we can easily exchange messages, get all sorts of notifications and share information like texts, pictures and videos, all we need is a smartphone with internet connection.

Mobile technologies also have a huge impact in people's social lives, people are getting more disconnected from the real world, they put their phones ahead of human interaction, it's getting harder to see people talking to each other in public places, they're always too busy with their mobile devices, checking notifications, sending messages or just sharing a new video. It's like an addiction, and it is kind of turning people into zombies.

## CONCLUSION

The presented case studies were tested and applied in the urban context, proving what could and did change in our daily lives that allow augmented reality to have a new role in our urban context. They show us new ways of living, playing and working in our cities but releasing the idea that this technology is an utopia.

It is important not only to acknowledge the role that the AR has been progressively occupying as a communication resource in different social contexts, but also to take into account that its development implies at every moment the recomposition of the processes, with a view to intention with effective usability.

We are living in exciting times. This era has witnessed the birth of the intelligent machine and has placed it within an environment that once was the stuff of science fiction.

Following many thinkers before us we have dismantled the artificially constructed division between mind and body. Our selves remain, but as a complex set of relations between sensing, thinking, action and object; and a virtual world is as successful as a real world in providing the interplay and content we need to make these relations possible. What we think of as our selves turn out to be nothing more than artifacts of these integrated experiences; they are, after all, very simply creations of the interplay between mind and world; they are prostheses.

The question of how mind and world relate is ultimately a metaphysical one that may never be definitively resolved. But it is a question that nevertheless remains central to all epistemological and ontological debates, and upon which all solutions will finally depend.

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# FRANKFURT HERE, NOW AND DIGITAL: PARTICIPATION AND CITIZENSHIP AT THE HISTORICAL MUSEUM OF FRANKFURT

KATHARINA BÖTTGER\*

ÉRICA DE ABREU GONÇALVES\*\*

## INTRODUCTION



**Fig. 1.** New Frankfurt Jetzt! exhibition space opened in 2017, at the Historisches Museum Frankfurt  
©Historisches Museum Frankfurt

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The museum has a rather relevant role to play in a modern urbanized life, highly influenced by digital related aspects and new technologies. In the perspective of urban space, the use of digital objects, the creation of digital expressions, the sometimes establishment of digital bonds is already a reality. At the Historisches Museum Frankfurt (HMF), the *Frankfurt Now!* space is a permanent exhibition which opened in 2017, that researches the city of Frankfurt trying to collect and display the many perspectives of its inhabitants. Within this new framework, the HMF is undergoing a transformation from historical to city museum, in which it will enable the citizens to collaborate. One tool among many participative formats is the Stadtlabor Digital (Digital City Lab), a digital platform that enables people to create contents that intend to convey their own perspectives. By observing such museum experiences, some practical and theoretical questions emerge such as the challenge to integrate numerous and dense perspectives into the museum, produced by individuals with reduced academic, aesthetic or artistic capabilities in a formal context, and conceive how these multiple outside subjective views can be displayed in order to be interesting and comprehensible to other visitors.

On another level, the negative aspects are also taken into account when analyzing this new tool. By observing the museum and perceiving it as an ever going process, the institution will be defied to deal with disorientation of visitors and maybe with a negative connotation of a «work in progress» image and still bring people to feel, interpret and understand the city through the museum and other people's perspectives.

This text aims to try to initially tackle the participative process of integrating multiperspectives into the museum and its possible impacts on the visitors, on the museum itself and ultimately on the Frankfurter community. For that reason, an interdisciplinary approach will be used in the analysis by searching concepts that help understand why and how the launching of this new platform occurred recently will serve as an example to understand how museums can have deep effects in the core of societies by innovating its practices that overpass the borders of traditional museum notions. Concepts ranging from urban studies, digital citizenship, through associations with theater and emancipation, and culminating in a museological examination will help develop an initial lead to analyze the use and impact of the Stadtlabor Digital.

To begin analyzing such digital tool and its role, it's possible to notice that the very concept of museum is surrounded by interdisciplinary aspects which structure a museological methodology of analysis, and that transform it into an arena where one can observe the dynamics of society. In this sense, by taking a historical museum with characteristics of a city museum that turns to the present and into researching the contemporary city, through the example of the Stadtlabor Digital, it is possible to observe and generate some interesting insights on how to deal with participation, multiperspective, on how people nowadays deal with their own heritage by using a completely and abstract new social sphere: the digital sphere.

Since new digital technologies and the internet emerged and developed, many aspects came to transform life as we know it. Living in a digital era has generated many changes that imperceptibly immersed most of the citizens in an alternative reality with its own rules and dynamics. In the 1990s, for example, initial research identified the existence of «internet citizens», which also presupposes rights and duties, and that people are therefore responsible for the use and the shaping of the web. Some of the core issues of digital citizenship reside then in the right to anonymity, algorithmic transparency, and control over the distribution and ownership of personal data. Despite its growing social impact, not everyone is aware of these aspects and much less of the creative, communicative and community power of the internet, especially those who were born already in a highly digital world. Even though these most recent social and technological changes menace to disempower us, changing us all from digital citizens into technology consumers, it's greatly visible how digital tools have come to be a part of people's lives and the potential they bear to improve it<sup>1</sup>.

In the museum world, according to Simon<sup>2</sup> the impact of the social web, for example, is visible with the broad range of tools and design configurations that enable participation in an unprecedented way. The participatory approach states that museums are to become relevant institutions in contemporary life by connecting to the public, which is to be engaged as «cultural participants and not only passive consumers». These dynamics lead to people wanting more than just attending, they want to be taken seriously, they expect to discuss and share in an environment that has become fundamental in cultural and community life. It's a space where people can create, share and bond with others. And the museum collects and shares content co-produced with visitors and also it invites visitors to respond and help complement cultural articles, scientific knowledge, and historical evidences that reside on the museum.

The recent paradigm of participation in museums illustrated by Simon derives also from a museological turn that took place in the last decades of the 20th century and still influences museum work, which was led by innovative museum experiences, academic developments and international networks as well as encounters, originating a New Museology. Some of those experiences took place in the Americas such as the Anacostia Community Museum founded in 1967, and the Santiago Round Table that originated the *Santiago Declaration* in 1972 in Chile, and the international workshop on New Museology that took place in Quebec in 1984. In Africa the experience of the National Museum of Niamey in Nigeria active since 1958 is another example. In Europe it's interesting to bring the examples of the 1970s Ecomuseum developments in France, the Open-Air museums in Scandinavian countries as well as community museums in

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<sup>1</sup> DRAKOPOLOU *et al.*, 2016.

<sup>2</sup> SIMON, 2010.



Portugal along with the birth of the sociomuseological approach at the University Lusófona of Humanities and Technologies in the 1990s.

An extensive description of the New Museology is not possible in the scope of this article. Nevertheless, this brief and rather simplified overview of the many actions that took part in several parts of the world that helped shape a new museology can also be complemented by the development of participatory approaches in Germany. The Historical Museum of Frankfurt also in the 1970s promoted actions and a mentality that also contributed to set the ground for its today's innovative activities.

### ***FRANKFURT HERE!***



Fig. 2. City for all movement in Frankfurt (Germany). ©Historisches Museum Frankfurt. Photo: Meike Fischer

The Historical Museum of Frankfurt, founded in 1878, is the oldest museum owned and run by the city in Frankfurt. With the principles of «a place of learning, not a temple of the Muses»<sup>3</sup> and «Culture for all people», the museum decided in the 1970s to concentrate its «educational role» and to «open it up to all strata of society»<sup>4</sup>. Nowadays the institution is changing again as it heads to become a city museum for Frankfurt. The idea is to be more connected with its inhabitants and propose a place where this diversity

<sup>3</sup> SPICKERNAGEL & WALBE, 1976.

<sup>4</sup> JANNELLI & THIEL, 2014: 65.

of individuals can similarly have a voice. In times where we see many movements of citizens claiming for a right to the city and writing «city for all people» on the walls (arguing with the demand of Henri Lefèbvre 1969 «the right to the city»), it is getting more and more important to take the heterogeneous visions and meanings about cities seriously.

The basic idea for the permanent exhibition *Frankfurt Now!* is that the knowledge about the city is not only developed by the institution, but that everybody who lives in Frankfurt is an expert of the city and has his or her own relevant subjective knowledge about it. Therefore the museum strategically started in 2010 to become a participatory museum when the new building started to be constructed. By establishing that participative approaches would be one of the main aspects of its activity, even though without a physical headquarters, the institution started to conceive, design and mount exhibitions with the communities that would develop together with the museum. Throughout workshops about different themes and different aspects, and also throughout all the steps of each exhibition, the new participative exhibition format *Stadtlabor unterwegs* (City Lab) was therefore developed.



Fig. 3. Exhibition «OSTEND/OSTANFANG. Ein Stadtteil im Wandel», first *Stadtlabor Unterwegs* exhibition From April 30th until June 25th. ©Historisches Museum Frankfurt

Furthermore, in the new building inaugurated in 2017, the new permanent exhibition *Frankfurt Now!* space was conceived and it will be oriented towards the present time and based also on participative exhibitions, through collaborative research and representation. One aspect of the new museum project is the *Stadtlabor Digital*. It consists in an online platform based on a map that aims to capture the various and diverse knowledge and experiences of the lived city. It will include several tools to integrate the

perspective of the individuals. People will be able to upload a wide variety of contents — videos, photos, audios and texts — and place it into the map in order to express their perspectives, perceptions and interpretations of Frankfurt. This tool is as a part of the permanent exhibition that can be visualized in the museum in specific designed devices, and provides an opportunity to participate in the virtual urban space, create it and interpret it, but also connect to other people's perspectives and possibly impact on the dynamics of the city itself. Not every content about the city can be connected to a concrete place in the city, therefore the map is also limited to show content and discourses specifically about the territory, for every contribution must be linked to a place in the map. It brings us to the necessity to understand urban space which will be approached next.

## URBAN SPACE AND THE ROLE OF THE SPECTATOR

In an era when cities are central conglomerates of people with such distinctive characteristics and many different needs, a public institution such as a museum has a relevant part to play. A city is «a relatively big, densely populated and permanent settlement of socially heterogeneous individuals»<sup>5</sup>. Lewis Mumford also states that the city «is «a theater of social action», and everything else — art, politics, education, commerce — serves only to make the social drama [...] more richly significant, as a stage-set, well-designed, intensifies and underlines the gestures of the actors and the action of the play»<sup>6</sup>.

Consequently, concerning the role of museums in society, it's possible to suggest that such digital collaborative platforms, such as the Stadtlabor Digital, can operate as a new sphere where the citizens can actively participate, act and interact on the social theater of the city. In this sense the perspective and the situations it creates, the Jacques Rancière's idea of the «Emancipated Spectator»<sup>7</sup> helps to shine some lights and understand how to deal with such developments. Rancière's standpoint mentions firstly the spectator paradox, which states that when facing any types of spectacle, one is subjected to be «watching», therefore «not knowing» and by only observing the individual remains passive. In the modern interconnected urban space, it's more and more common for citizens to be spectators. To be facing an exhibition, a computer, a cellphone or tablet screen and to be passive. To be a spectator is to accept passively what is transmitted, and take no action towards it. The author proposes nonetheless that another kind of theater is needed. By turning the attention to the old conceptions of theater that considers it as a community area, a way of occupying collectively time and space, as well as a place where drama is produced. Drama, according to the author on the other hand, is synonym for action. The theater is therefore where the action is conceived and where the bodies are

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<sup>5</sup> WIRTH, 1938: 8.

<sup>6</sup> MUMFORD, 2011: 91.

<sup>7</sup> RANCIÈRE, 2008.

mobilized to act. He proposes thus that the distance between the stage and the spectator must be reduced and almost extinct.

Rancière also turns to his previous theories that state the master and the ignorant are not so different in terms of intelligence. When affirming that an «ignorant» person can teach another «ignorant» person something that the first does not even know, by opposing intellectual emancipation and people's instruction he proclaims the equality of intelligences. He mentions therefore that even when only observing, the act of interpreting is also an active way of dealing with reality and a learning process. That new theater perception blurs the borders between observation and passivity, exteriority and separation, mediation and simulation, collectivity and individuality, possession of one-self and alienation.

Furthermore, the theories of «*Conscientização*» (awareness) and «Autonomous Education», by the Brazilian pedagogue Paulo Freire, can also complement Rancière's perspectives. Freire, in many of his writings but also in his practical work as an educator, stated that education requires a way of thinking that implies individuals mediated by objects in shared communication processes by which both sides have relevant perspectives and not only occurs a transference of knowledge. It requires a «dialogical act» that challenges both the educator and the apprentice<sup>8</sup>.

Freire also states that the awareness facing reality is crucial for people to become actively responsible for their roles as human as well as historical beings. By affirming that if people are «unable to perceive critically the themes of their time and thus to intervene actively in reality, they are carried along in the wake of change»<sup>9</sup>. The ordinary people inhabiting the diverse societies are then «crushed, diminished, converted into a spectator, maneuvered by myths which powerful social forces have created»<sup>10</sup> that can later annihilate them. Only by acquiring a critical understanding of the reality, one is capable of implying actual changes and impacting on the themes that shape an epoch. «If he lacks the capacity to perceive the «mystery» of the changes, he will be a mere pawn at their mercy»<sup>11</sup>. Paulo Freire and Jacques Rancière provide us then with a perspective in which the citizens must be active and aware of their role in this social theater which is reality, and that by taking over the digital realm as a space it's possible to impact on society.

In this sense, all kinds of perspectives and intelligence can be conveyed when the spectator and the actor, the educator and the learner establish a dialog in a platform that allows such an interaction. Then transplanted to a social theater emulated by a digital platform, it then leads people to create and share their own perspectives and then to be in contact, in an indirect way, with other people that visualize it and interpret it. In an

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<sup>8</sup> FREIRE, 2011.

<sup>9</sup> FREIRE, 2005: 6.

<sup>10</sup> FREIRE, 2005: 5.

<sup>11</sup> FREIRE, 2005: 7.

abstract sense this tool allows individuals to learn from each other, enhancing the social and educational role of the museum.

In the social theater that also constitutes a city, the museum proposes then a platform where people can create and appropriate space, interpret it, experience it and share it so other people can have contact with their perspectives. The space, in the meanings of Lefebvre<sup>12</sup> is not physically given, it is constantly retreated and produced by society.

In order to analyze how to integrate a chaotic range of multiperspectives, make them meaningful and comprehensible to other people, it is interesting to consider then the city as theater of social practices, whereas the digital sphere can be considered another layer in which individuals play a role, interact with each other and exercise their citizenship. There will be also the question: Which city/cities and images about the city will be produced?

### ***FRANKFURT NOW!: THE STADTLABOR DIGITAL***

In conclusion to this initial analysis, we notice that the Historical Museum of Frankfurt and the concept of the Stadtlabor Digital are located within the digital sphere, that can simulate a community to wake up the dormant spectator of modern society by actively creating, interpreting and reinterpreting their cultural references. It encourages participation and extracts the spectator from simply passive receptor of a message and affirms that each and every one has his or her own capability to teach something, and creates space where people share their own expertise and knowledge.

When it comes to the museums, it's possible to analyze the impacts of these new ways of participation and digital tools on the main functions of such institutions. Collecting, preserving, researching and communicating are also implicated in the changes we expect to observe such transformation.

If we take the Stadtlabor Digital as a way of collecting perspectives, knowledge, claims, memories of experienced cities, the impacts on how we perceive the museum are visible. When exhibiting it to other people, it can also be considered part of a preservationist plan for which the museum is often responsible; allowing people to receive and retransmit heritage can be considered a preservation method. Besides that, the possibilities to use that collection in a meaningful way are numerous and it is up to the museum to evaluate, as time goes by, on how, why and when to use, as well as what to keep, what to discard and what to communicate. The collection is also available to several readings, interactions and interpretations of its content where concepts about a specific theme are constantly worked and reworked by the spectator. They are a way of enriching a wide and abstract new concept of community and lived city, thus preserving those views to future generations to interpret it and constantly change it.

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<sup>12</sup> LEFEBVRE, 1991.

The museum works not only with objects, monuments and archives. With this platform it's possible that it incorporates common heritage references and includes them through the eyes of the common citizens, whether those are cultural expressions, a historical monument or an aspect of the city that constitutes a problem yet to be solved or a potential to be developed. The producing and exhibiting of this shared city within a digital platform is also a process of giving new meanings to these elements extracted, in this case, from the present.

The aim of the Stadtlabor Digital can also be framed within a communication space that allows not only passive reception of knowledge, but the development of actions and concrete social change. The diversity of visitors and creators is also a fundamental aspect, for the variety of views and interpretations can enrich even further the knowledge about the city. Exhibiting may not be the final goal of the museum, but rather a constant process of communication by which people can interact not only with the museum but with each other. The museum becomes then a space for social development, elaboration and reaffirmation of identities and citizenship.

If we observe the museum as an arena and a theater where one can observe reality filtered by different regards and comprehension or incomprehension and their impacts on the social dynamics. In this sense, the platform can also become a source for research. Museology, among other functions, according to Brazilian museologist Waldisa Rússio, supposes the study of people and their interactions with objects in a specific scenario, being this one usually the museum itself, but not exclusively<sup>13</sup>. The digital space created provides a ground for analyzing finally how the Frankfurt society deals with its own heritage, whether it's people's own individual perspectives or those conveyed by other people and the museum itself.

Through Stadtlabor Digital and other tools and methods, the Historical Museum of Frankfurt tries to provide a space where people can appropriate the digital realm to make their subjectivity emerge but also as a tool to tackle contemporary questions of transforming cities and to play their roles as citizens. It's another way to explore the city and to connect with other people, corroborating in another way to interact with one's own heritage and identity, hence contributing to the transformation of the image and role of museums in contemporaneity.

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<sup>13</sup> BRUNO, 2010.

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# IV

## METHODOLOGICAL AND EPISTEMOLOGICAL CHALLENGES/ DESAFIOS METODOLÓGICOS E EPISTEMOLÓGICOS





# THE DISPLACEMENT OF ARCHITECTURE IN POSTDIGITAL HUMANITIES: NEOANALOGUE INDEXES, SYNTAXES AND CONFIGURATIONS

KONSTANTINOS IOANNIDIS\*

*the analysis becomes engaged in the path of transference —  
and for us it is the index that this has taken place<sup>1</sup>*

## RETHINKING THE INDEX

With the above words, forty years ago, the French psychoanalyst and literary theorist Jacques Lacan introduces the stylistic figure of the *Index* in his *Écrits*, a personal manifesto for a metonymic tool to structure and limit the psychoanalytic field. The *Index* as a rather common figure both in linguistics as in arts and humanities is often made of contextual traces suggestive of some metadata descriptions — the exponents of the referents in the lacanic perspective — to help us access and process the information. It thus tends to point towards something that is in fact absent. For example, visual similarities allow the inference of a category, a rectangular shape on the map of a site allows the existence of a building to be deduced, while the sorting of words along a numerical order is an index of a list.

Over the years that followed the *Écrits*, scholars have often argued that the condition of a «transmissive» idea of the indexical thought in the analysis of a complex topic is thus one of employing internally visualized images as opposed to the more possessive

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<sup>1</sup> LACAN, 2001.

character of approaching the topic as made of finite elements. For many years, it was believed that during the process of the analysis, people arrive to comprehension and conclusions with the help of internal cognitive maps operating as, more or less, physical maps by unfolding finitely arranged data. However, the explanation of this system seems to be inadequate. Approaching the issue rather psychoanalytically, Lacan asserts, it is more like a personal index filled with bits of knowledge, images, references (a link to a previously experienced image, a past setting, a memory of an event), and pathways of meanings. Today, it has become rather clear through the contemporary neurological and psychological approaches<sup>2</sup> to consciousness that when someone is faced with the task of analyzing group data, the brain attempts to assemble a network of relationships reflected from those elements. It's a task of producing a kind of internal «map» but through a more complex mechanism by which the brain provides continuity between traces and metadata descriptions<sup>3</sup>.

Lacan believed that, once we have mastered the Index as the secret of the task of analyzing a topic, we may be close to understanding how the disembodied experience of viewing the topic relates to mental and psychic engagement according to our subjective sensations. In the light of the above, if we want to determine the index of the word «façade», for instance, represented by its notational signifiers, we are referring to the idea of reshaping the value of the dialectic of our desire with the internally visualized categories of conception of what a façade is made of or stands for. In a way, the reflective<sup>4</sup> opinion one has for the image of a city, this imaginary constructed form that for Christine Boyer is also our sense of the real, is an intangible index of phenomenological parts (memories, desires and experiences). Yet if we want to develop an application illustrating galleries of «façades», most obviously, the visual will dominate, but in a very particular manner. One that displaces the linguistic and imaginary traces while projecting them in the operational framework of the act of designing a gallery. One cannot analyze the topic without the suggestive metadata descriptions of what a «façade» is, or at least one cannot avoid being engaged in a path of resurfacing the notational exponents of the referents for the word «façade».

Similarly, in a very perceptive text approaching the idea of presence in media archaeology, Vivian Sobchack has argued that the path is not simply a theoretical or interpretative discourse that used to be psychoanalysis' monopoly. Instead, it relates an operative practice and knowledge emerging from the symptoms of the visual inputs. She approaches transference as a «rely of metonymic and material fragments or traces of the past through time to the “here and now”» to pinpoint the «performative act of knowing

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<sup>2</sup> In this regard see EBERHARD, 2008.

<sup>3</sup> EBERHARD, 2008; HENDRIX, 2006.

<sup>4</sup> See in particular *The City of Collective Memory*. BOYER, 1996.

which focus on “what is done” rather than on what is represented<sup>5</sup>. Yet she tries to bridge the gap between re-presenting<sup>6</sup> the past within the humanities and the idea of an integration of thought transference by means of the digital. The focus on the «what is done» reflects her intention to investigate the operative practice of the underlying processes mentioned previously as an enhancement of human cognition and knowledge acquisition. The latter is the hybrid cognitive condition of the indexical function that is part human, part machine, whereby inspecting and challenging the order things are «re-presented», in realized, imagined or schematized cases, be a performative act of revealing and making present information. This condition, inspired from Sobchack’s essay, strikes me as particularly relevant to my effort of humanizing the postdigital<sup>7</sup> index, however disputed and uncanny for digital architectural research the initial psychoanalytic input might have been.

It is precisely this awareness of a hybrid character in the mode of knowing through the digital that depth to the path is added as a kind of identifying these influential concepts of the ordering able to produce meaning and thus, according to Sobchack, presence. Indeed, beyond the analytic techniques that the lacanic index revealed, information sorting and retrieval of the displaced materiality of an object is itself already a synthetic activity that emerges from the individual «readings» of its traces. Human interpretation of the indexical elements is a fundamental part of the picture but is nevertheless the half part of it. The underlying processes behind the indexical logic become even more complex when try to explain the two key technocultural phenomena of the postdigital era: the network and the visual aspects of a topic (Fig. 1). How can a list, a repertory, which is a structural tool of ordering the plethora of details of a complex topic, imply a network thinking that allows for the transference to occur? How can its visual character suggest the narrative patterning of its metadata descriptions after all?

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<sup>5</sup> HUHTAMO, 2011: 324.

<sup>6</sup> SOBCHACK *apud* HUHTAMO, 2011, attributes her conclusions to Eelco Runia’s idea of «presence» defined as «*the unrepresented way the past is present in the present*» and as being at least as important as «meaning» itself.

<sup>7</sup> On the term *postdigital*, see more at CRAMER, 2014.

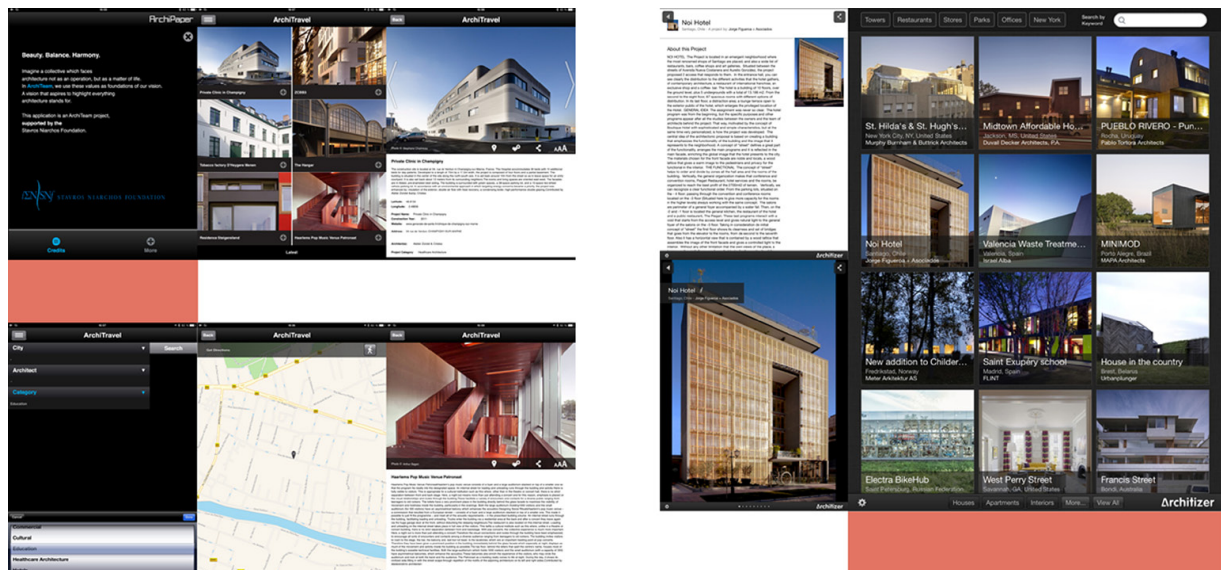


Fig. 1. ArchiPaper (left) and Architizer (right) are just two of the most visited online architecture indexes  
Source: archipaper.com, architizer.com

## ON CONFIGURATIONS

The answer that the laconic conception of the index proposes to such questions becomes foundational for the displacement of architecture in postdigital humanities: that in a humanistic approach to the subject of coded and displayed architecture and in a similar humanistic understanding of Web 3.0, digital indexes are in fact *configurations*. And indexing architecture is about re-configuring architecture. A useful way to consider the quality of this dimension is the study of the definition of the term as it is used by space syntax theory. According to Bill Hillier<sup>8</sup>, configuration is defined not simply as connections, but as relations that take into account other relations. In a sense, this means that positioning architecture in postdigital humanities is not about building the chronologically next infrastructure in the studying of projects through digital repositories. We cannot limit media technology to static snapshots of buildings and public spaces but should try to expand the notional frame of the archive to include the sets of interaction and interrelations produced by the medium specificity itself.

In what follows, I will explore a tentative path for the displacement to occur: by defining the idea of exhibiting architecture through the Web 3.0 not as a static repository but as a platform for interactive narratives, my intention is to bring forth those user/machine relations that need other relations in order to become communicative — I call this the configurational dimension of the index<sup>9</sup>. That is, I propose to expand its

<sup>8</sup> The term *configuration* is central to the syntactic conception of space as developed by Bill Hillier. It is used here in the same sense, considering the *Index* as adopting a similar complex system of relations as the physical space itself. For more, see HILLIER, 1998.

<sup>9</sup> This dimension has been discussed and developed further during a public conversation in the context of the DRS2014 Conference. The conversation was focused around the postdoctoral research on the Digital Index of Architecture

lacanic limits from something which simply allows us to arrange the individual parts that furnish the signifiers of a presentation to a tool for the translation of the parts into elements and features with interrelated meaning — being the latter a traditional concern of the humanities. This approach draws from a recent work in digital indexes of architecture in the light of their humanistic engagements with media technologies.

*DomesIndex*<sup>10</sup>, the first major effort to exhibit the contemporary Greek architecture in a narrative mode of tracing objects' fragmented connections with their interior knowledge and thought process, is reviewed as a tool for mapping controversies both within its exhibited projects and through their network of information. Once we recognize its «indexical» characteristics as forming underlying networks of meaning linking the displaced, but absent, objects with their sorted traces, a wide range of visual languages produced by digital tools that map patterns of information — from text mining to graph analysis — can be used to resurface the complex configurational logic behind the online exhibition of architecture. To outline some of the implications that the digital index receives from the humanistic engagements with media technologies, I will briefly describe the above-mentioned case study and explain the reasons it was selected at this stage to illustrate emerged aspects from the displacement of architecture.

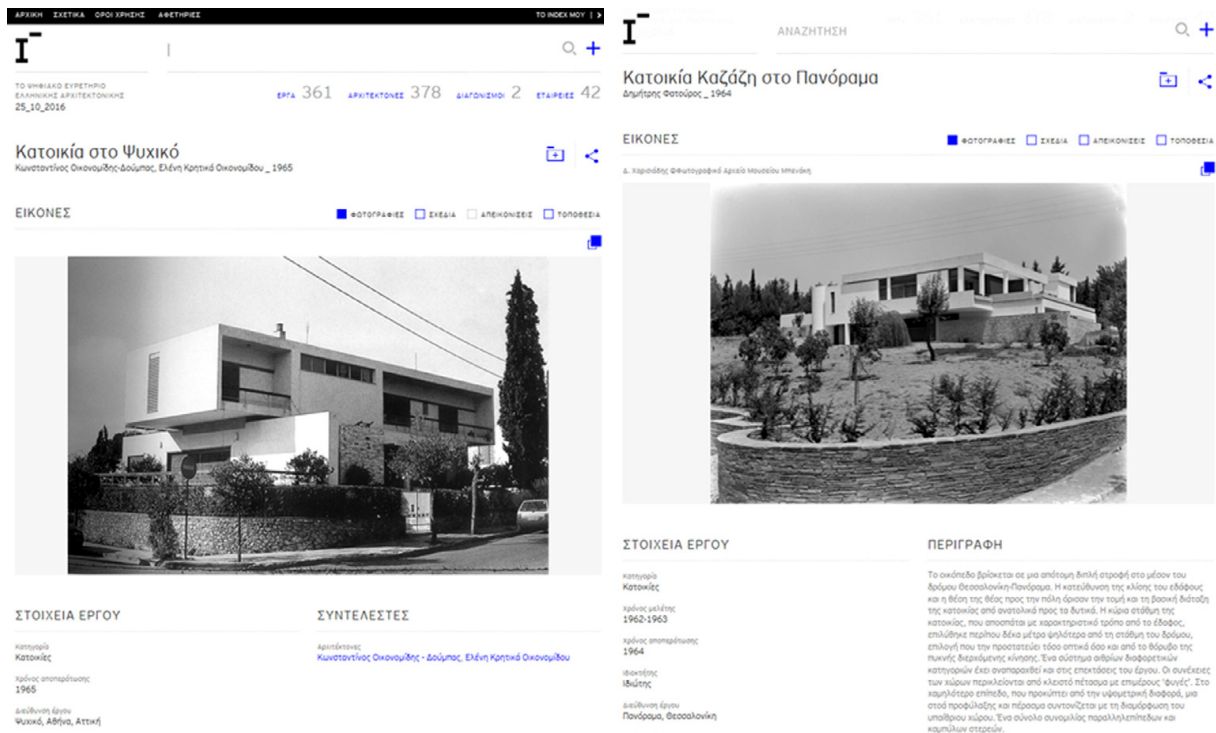


Fig. 2. *DomesIndex* is analyzed based on two key technocultural phenomena of the postdigital era: the network and the visual aspects of its index. Source: domesindex.com

with invited speakers. It was held on Monday, 16th of June 2014 at Umeå Arts Campus, UID, Östra Strandgatan 30, Umeå, Sweden. (Topic: *A Configurative Approach to Digital Imaginaries Design: Rethinking the Index*).

<sup>10</sup> MANIS et al., 2012.

## BACKGROUND OF THE CASE STUDY

*DomesIndex* is the largest online hosting platform for architecture in Greece, launched in 2012 to make Greek architecture digitally indexed, archived and accessible for everyone. It is a response to the rise of a specific kind of digital culture aiming at a time-critical understanding of architectural production. Looking at this issue, the platform proposes that the year of each project's completion is a central categorical characteristic for the indexical logic, along with the name of the architect(s). In this sense, the year, accompanying the thumbnail image in a titled form, somehow accompanies the principles each building era transmits. Starting from 1937, with the Ioanna Loverdou House by Georgios Kontoleon and Dimitris Pikionis' Experimental School at Thessaloniki, the sample of projects stored on the *DomesIndex* platform seems to index the insistence on the importance of the relation between the displaced object (building, complex or landscape) and the displaced context (time period, setting or school of thought) (Fig. 2). The browsing experience offers opportunities for the online user to retrieve updated information not only for contemporary projects but also from rather influential works of past periods. This way, the index attempts to establish the primacy of a background layer (context) in relation to a foreground one (image) but also to knowledge dissemination.

*DomesIndex* is not another showcase; it unfolds in digital space critical key projects from Greek architecture alongside of its communicative, storing, sorting and retrieving functioning and its meaning as a narrative collection in immaterial space. In its home page, the visual material is organized in a canonical grid-structured manner without significant variations over the sequence of its listed works. By clicking on the selected project, the user can generate its narrative plot in two axes: a chronical X-axis representing project's position on the timeline and a Y-axis enriched with visual (photos, plans, representations and maps) and textual material (description and individual data like metric information or related publications).

At this point, *DomesIndex* was selected for two reasons. First, it includes a wide variety of selected by a scientific committee projects and presented with the greatest possible integrity of data and visual material. Second, it employs a rather interesting methodological structure by using a navigation plot that is dynamically configured according to the designer or the chronological position of the project on the indexed timeline. The graphic layout, a timeline of key-projects, and the consistency on an equal visual representation (the projects are initially displayed in the exact same way) and the lack of other distracting elements since the registered annual subscriptions make possible for the platform to avoid any rolling commercial advertisements are related through the grid structure on a comprehensible plot in the shape of indexed time-relevant architectural positions.

The observation approach reviewed *DomesIndex* in two ways: graphically to understand the indexical visual elements as clusters of chronologically interlinked

architectural «styles» (nodes) and relationally to inquire the ordering of the underlying signs and meanings (network). Based on the information extracted from these approaches, the effort is focused on inquiring the linear nature of the foreground network — in the sense defined by Freeman and regarding the sequential centralities of each thumbnail image determined by reference to any of its structural attributes, like its degree, its betweenness or its closeness<sup>11</sup> — showing that its nature is not linear. These later characteristics of network's centrality can be identified by a simple navigation through the home page of the platform. Similar to Freeman's viewpoint, the home page of the index appears at first sight as linear and compact to the degree that the reading distances between sequential pairs of its listed thumbnails are strictly linear, short and fixed. Moreover, it is clear that a specific data (construction year) is more central than other data (design concepts, thoughts, notations and ideas) (Fig. 3). While *DomesIndex* uses the year distance as the basic relation between the indexical logic and a navigation encouragement strategy, the study postulates instead an integrated configuration of the immaterial museum based on the strength of projects' internal concepts that are textually documented and identified within the network. Applying this method of paying attention to those aspects of the displayed architecture especially relevant for humanities as well, like the formulative syntax and semantic reasoning, the study shows its ability to critically inquire the aforementioned displacement in postdigital humanities as a general method of preserving architecture's interiority in digital indexes.

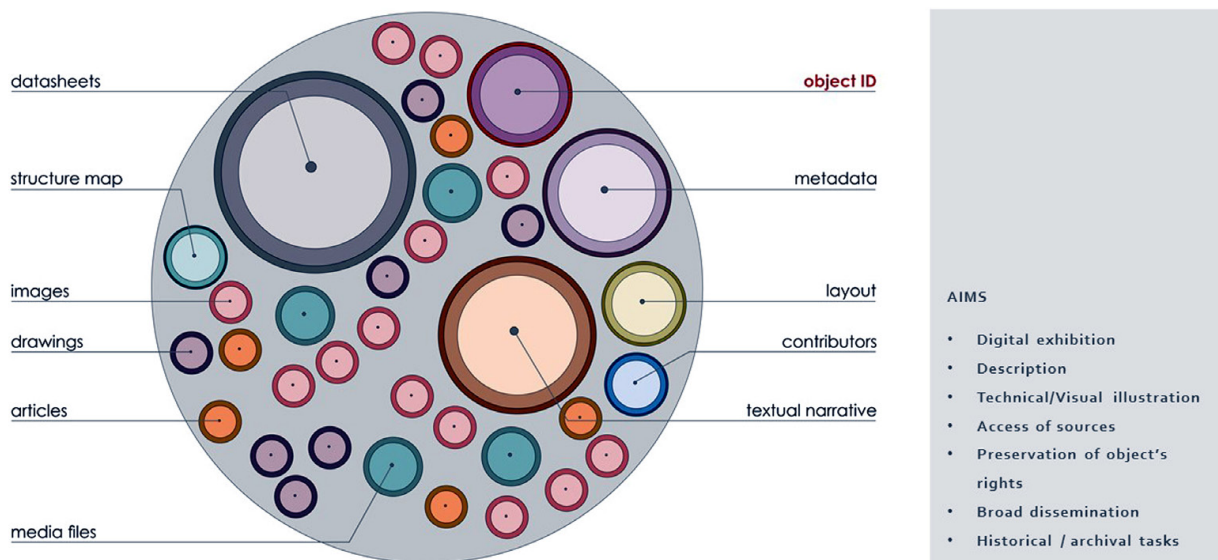


Fig. 3. The «architecture» of the digital exhibition object in *DomesIndex*: aims and its encapsulated characteristics after the digitization process

<sup>11</sup> See FREEMAN, 1978: 226.



## TRANSLATING DISPLAY DATA INTO NETWORKS

The last decades, we witness a deliberate shift from the traditional conception of architectural process as an analog handcraft premise to one in which its thinking can be digitally intellectualized by processing and configuring n-dimensional data, distributed and partitioned by a relatively new kind of semiotic system. This computational ubiquity influenced not only the information-seeking behavior by allowing the registered data to act as intermediaries between the analysis and understanding of the object, but also the cognitive dimension of performing such behavior. The theories of space which has grown out of this ubiquity, like Hillier and Hanson's space syntax evolution<sup>12</sup> of the 1980's and its related approaches of the last decade, propose that architecture and its affiliated fields studying the environment participate in the computational turn by collating or juxtaposing their underlying network forms.

Based on geospatial parameters digitally available and encoded into mathematical algorithms, space syntax keeps introducing until today methods for spatial and architectural network analysis that allow us to visualize readable graphs from — the previously — intangible dimensions, like space's interactive organizational cultures, behavioral and moving patterns, or significances and cognitive effects<sup>13</sup> of sets of concepts like centrality, connectivity, relatedness and aggregation of flow data. The idea behind these related approaches that overcome the strictly analytic nature of the orthodox space syntax theory is that except from the technical sense of drawing lines, storing spatial information, computing distances and surfaces that are always remaining analog actions demanding the intention and participation of the architect-user, the digitized connections to thinking, reading and writing about architecture are generating significant scripted semiotic systems.

The use of syntactic approaches to better understand digital landscapes and inquire their projected narrative backgrounds is not new. The fundamental space syntax concept that configuration is the driving force behind the operation of space didn't take long to find corresponding adaptations in uncovering the even more elusive idea of the virtual space. In *The Virtual Tate*<sup>14</sup>, for instance, we see that when users or expert designers appear as avatars entering virtual environments digitally encoded in conventional CAD form, they tend to render the incoming elements — such as geometrical and volumetric data — into syntactic structures that influence their movements and behavior. According

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<sup>12</sup> The identification of the configurational and network structural properties in our environment along with its geospatial quantitative metrics are fundamental propositions in space syntax theory. See HILLIER & HANSON, 1984.

<sup>13</sup> Space syntax literature has responded to the cognitive factors identified by the neuroscience research community and proposed strategies for integrating multidisciplinary components. Alternative pathways beyond the hermeneutic readings of the 1980's have been questioned by several researchers, including Hillier himself. See HILLIER & LIDA, 2005; PEONIS *et al.*, 2008.

<sup>14</sup> Space syntax studies from late 90's argue for similar methods of simulating the form of buildings using virtual reality as a tool to link ways in which people navigate and respond to their geometric layout. See BATTY *et al.*, 1998.

to Batty, Conroy and Hillier<sup>15</sup>, the effects of the digital content can — to an extent — be transferred to the real while the way agents behave in simulated environments reflect syntactic values of virtual relations and configurations. In another case, in *Instrumenting the City*, O'Neill *et al.* draw again on established space syntax methods to understand the city as a «system encompassing physical and digital forms and their relationships with people's behaviors»<sup>16</sup>. Digital interaction spaces, which are created by devices, computer features or wireless networks, they argue, are integral parts of a contemporary augmented urban form and we can study them by inquiring the configurational description of the data-transmission position of each digital node in relation to others. In this sense, the dual form of the physical space already proposed by Hillier, that of a foreground network of linked nodes, and a background network of spatial relations — considered as edges of this network — in which the foreground network is embedded<sup>17</sup>, appears to be a common characteristic of the digital landscape as well (Fig. 4).

In this effort so far, the study of the digital Index of Architecture which grows out of the perspective of the postdigital humanities can argue for a number of common strategies with Hillier's duality. The study of the city as a physical index of topological and geometric factors interacting with user's situated position and bodily presence inside the urban fabric to generate the necessary for the spatial experience information related, for example, to navigation or memory-formulation, sustain this duality traced in Hillier's view. It preserves this dual characteristic while it collapses the traditional metric approaches and releases urban space from its function as a mere container, a stereotyped view of its Euclidean tradition. A second common trait that this effort identifies is the tendency of the syntactic properties of the dual pattern to preserve the foreground/background relation; while in urban space they preserve the possibility of an interiority in the interaction of the foreground network of linked centers as nodes and a background network into which the former is inserted, similarly the digital indexical approach attempts to incorporate both. The third trait we can identify relates the intellectual development of both space syntax and digital humanities theory.

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<sup>15</sup> BATTY *et al.*, 1998.

<sup>16</sup> See O'NEILL *et al.*, 2006: 315.

<sup>17</sup> See HILLIER, 2002.



Fig. 4. The «architecture» of navigation networks in *DomesIndex*: visual illustration of the interaction of relationships of an object with another object that generate its dynamic network

In our effort to explore the semantic structure of the foreground and background networks of the case study, *DomesIndex* was analyzed based on the organization of its layouts (visual and textual) and the taxonomy of the concepts they communicate within their structure. Such aspects tend to affect the cognitive skills they cultivate to the user. We can say that the higher the number of concepts to which the central categorical concept of each project is related, the more complex the cognitive processes through which the influences of the postdigital humanities operate are to be cultivated. In such an analysis, there are syntactic correlates in the networks that connect the user with the machine, fostering a level of interaction between images, navigation acts, experiences and the coded text. Although the abovementioned Greek example dominates throughout this chapter as a major case study, and mostly for methodological purposes, the

proposed postdigital humanistic approach is rather generic and can find application in similar syntactic studies of other digital indexes as well.

## LAYOUT ORGANIZATION

In order to inquire the relationships between nodes of the foreground network, both quantitatively and qualitatively, we start by identifying within *DomesIndex* a typical indexical dataset in which the listed projects can be defined taxonomically in terms of the concepts they communicate. This can be described by considering a snapshot of the main page illustrating the chronological list of works as presented to each visitor of the webpage. With reference to the position of the main concept they communicate (in this example we will use the concept «use») in the network, we can identify aspects like dominant navigation paths, degrees of centralities in the layout and relatedness of other concepts amongst the listed projects. One observable aspect of this dataset is that the historical ordering — as well as other categorical listings mentioned so far — is essentially linear with an equal visual presentation of each displayed object. With a dominant 222x120 pixels image and a laconic associative textual structure of key-data reference for each project, a logical foreground network is developed. However, below the fixed visual argumentation, there is more to be said (Fig. 5).

The need to scroll down in order for the user to gain access to more works reveals a pattern. The recognition of its geometric logic, significant for the cognitive dimension of every indexical experience, unfolds towards visual communication in three stages — dimensionally, in continuity and mono-directionally. The visual dominant aspect of the equal dimensioning and distances kept inside the grid-like indexing system enables us to glimpse how the user consigns the gestalt experience to a predetermined computational navigation. This has the effect that it is rather unlikely for the observer to explore the index in a «significant visual impact» or «specific feature-driven» pathway. Understanding the static grid layout to be the guiding mechanism between the navigation and the choice-making possibilities of the observer who stops and chooses to access the linked executable code that will introduce him/her further with the project, we can see that *DomesIndex's* dimensional aspect lacks this variation in the centrality of the projected thumbnail material that can cultivate alternative readings. Probabilistically, we can say that the dimensionality of the layout can enhance interpretive weight based on the way dimensions reflect different degrees of centrality for the visual nodes-thumbnails.

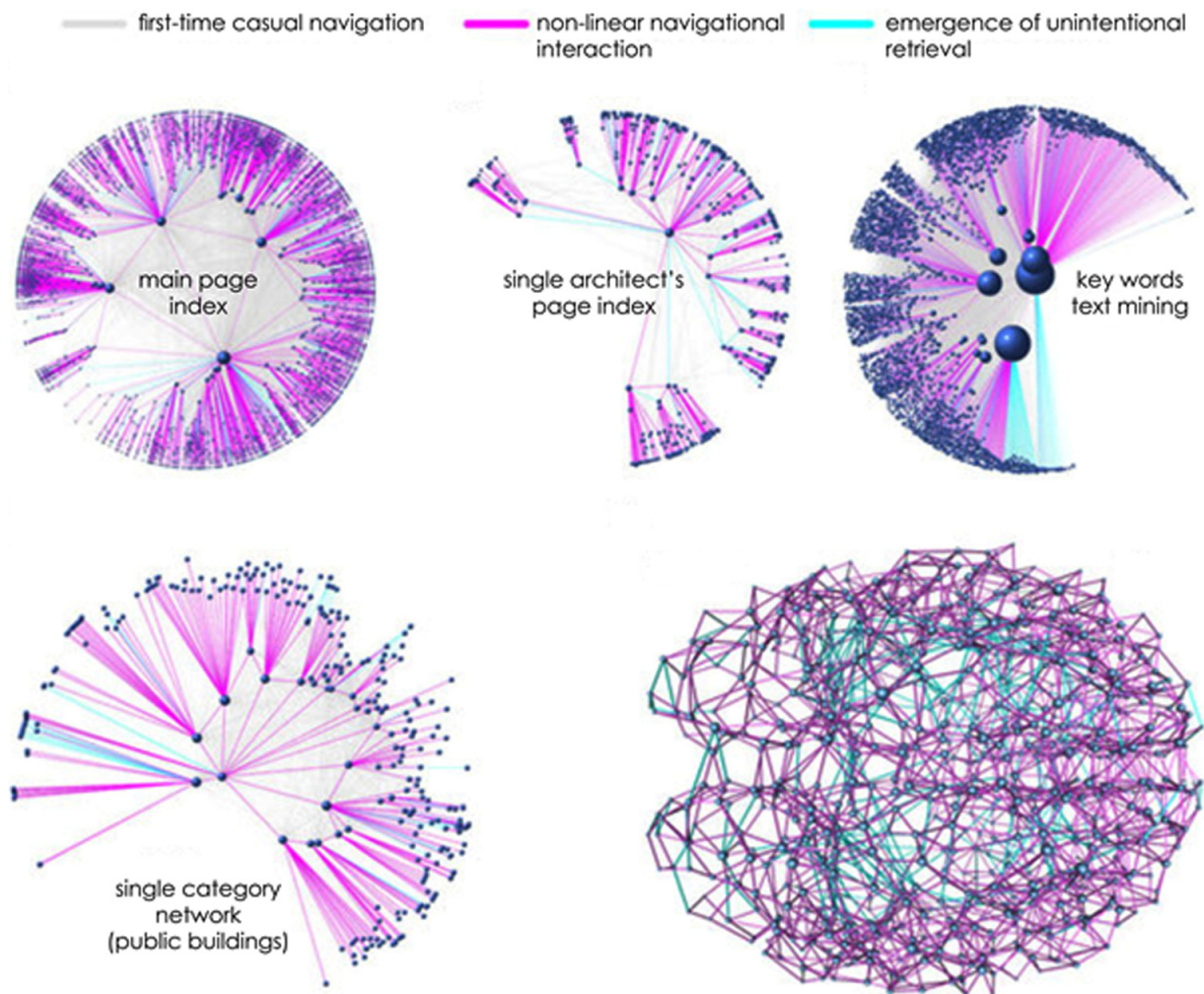
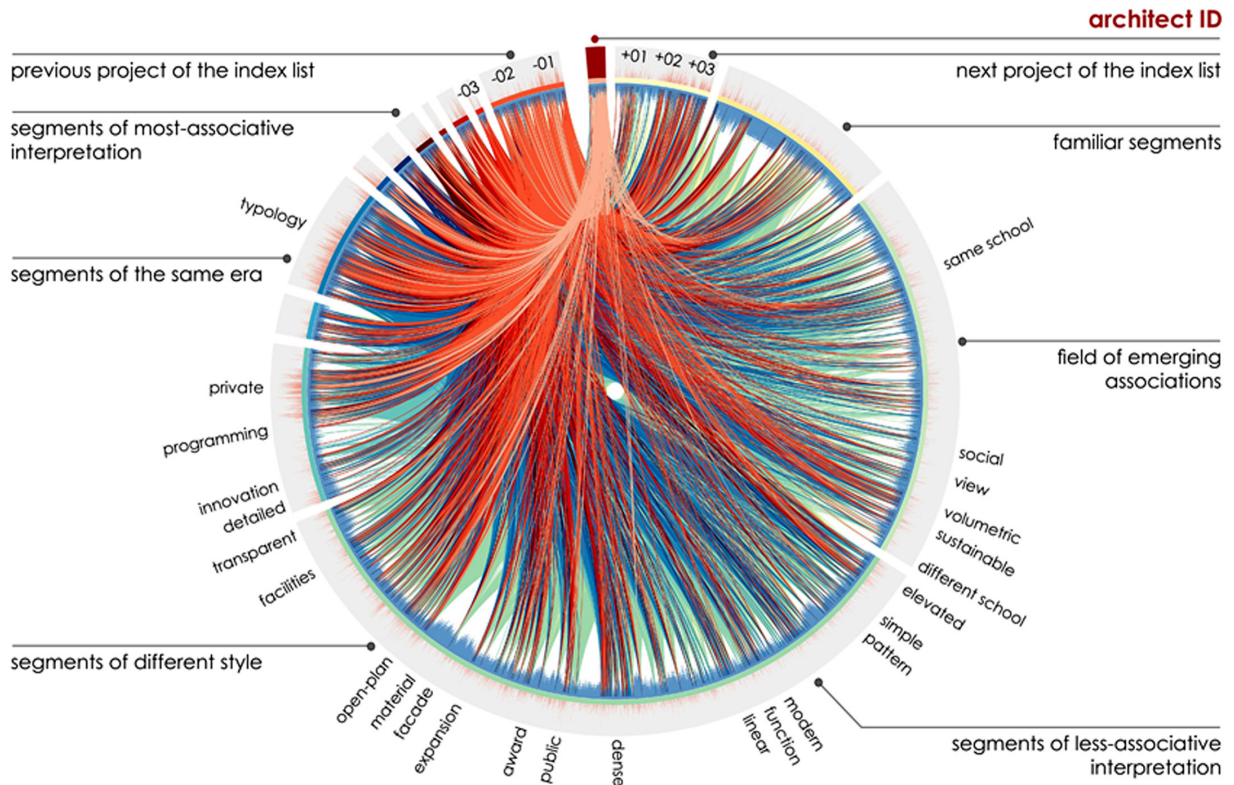


Fig. 5. Artistic representation of cognitive information development based on route finding in *DomesIndex*

The visual might also contain and present an affirmative or constructible digital narrative — an indexed story made out of linear chapters to be accessed in a continuum or in a dynamic way in which the user constructs his/her own version. The observation approach of the *DomesIndex* example showed that the navigation experience could reflect both cases. First, when the shorting enables the historically evolved architectural objects to tell their story, the navigation path tends to coincide with a long continuous line transcending one project after the other. We can say then that the story of the historically indexed objects can hardly support individually inlaid points that can encourage shorter «imperfect» navigation lines based on user's preferences. And it does not permit, as well, the fragmentation of such interpretative moves as the insertion along the timeline, for example, of projects with similar conceptual initiatives but from different historic context. The canonical exhibition grids unfolding the story along timelines tend to form subsequent clusters of architectural styles and «isms» identified by a number of stylistic agents or morphological characteristics. These patterns are unlikely to occur by chance. Based on the assessment of the dominant navigation paths followed while the

user browses *DomesIndex*, it becomes apparent that a probabilistic geometry resurfaces. With these visually dominant patterns, the personalization and adaptivity aspects of the postdigital index collapse into graphically defined «logical orderings». This is rather problematic in what we have called *studia humanitatis* of the index, one that characterizes the displacement of internal aspects of the objects to be adapted by personal constructs and according to identified significances and meanings (Fig. 6).



**Fig. 6.** Artistic representation of segmental bridging amongst project navigation in *DomesIndex*. Segmentally relevant projects of the index are displayed by connecting lines among the most and less associative interpretations made during the navigation process

## TOWARDS A NEOANALOGUE INDEXICAL LOGIC

From the analysis of the *DomesIndex* case study, we came to understand that post-digital online indexes are projected networks that have directions, nodes and pathways. Their graphic layouts are not meant to have a mono-directional reading. Just as spatial networks can each time be visited differently regarding their approaching direction, the foreground computational one can be viewed in different directions and with a varying degree of predetermined order and pre-structured information sequence. Their generative interaction with the user shifts their characteristics from postdigital to rather neo-analogue ones. As Roel Popping<sup>18</sup> notes, drawing from Freeman's conception of network centrality, the user of such *neoanalogue* landscapes can learn by navigation through the

<sup>18</sup> See POPPING, 2000.

dispersion of centralities of the distinct objects without direct reference to a central fixed, linear and predetermined strategy (Fig. 7).

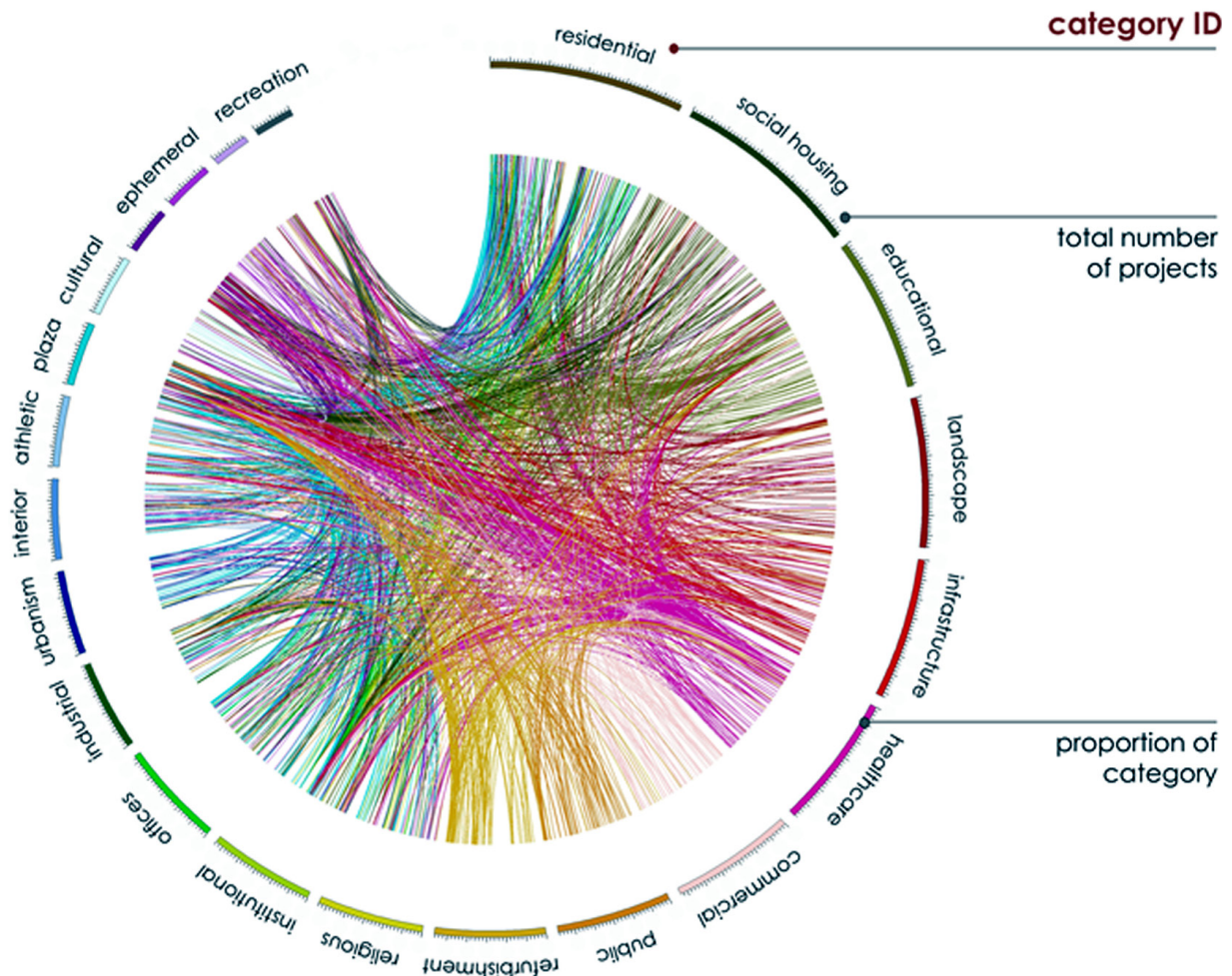


Fig. 7. Artistic representation of the best sequence similarities among categories of projects in *DomesIndex* displayed by connecting lines between sequentially accessed objects

Exploring the neanalogue indexical logic while resorting on Carley's taxonomy of concepts<sup>19</sup> in networks as «a classification scheme by simultaneously 'typing' concepts and providing a framework within which the evolution of concepts, and hence knowledge, relative to a specific task can be analyzed»<sup>20</sup>, we can say more in terms of the *DomesIndex* showcase. Its foreground organization was found to be further complicated by the links created between the concepts of the background textual support and the ability of architecture to communicate its formulative narrative, learned ideas and design intentions. Its indexical layout is framed by notes of transmitted knowledge provided either by the editor of the page or the architect him/herself. Thus, by selecting the

<sup>19</sup> See CARLEY, 1997.

<sup>20</sup> See CARLEY, 1997: 87.

desired thumbnail, an executable code visually illustrates the textual version of object's architectural and spatial background displaced within the underlying organizational network. Finally, despite of the highly variable contextual information of the accompanying texts of the dataset, we traced a common, in other indexes as well, principle: that the cybernetic text is concerned with patterns of information beyond the descriptive and the literal; in fact, the graphic layout was found to be heavily based on its patterned projected information, as opposed to random textual support or under-image labeling of the archival indexes of the past.

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