“La Cage aux Folies” [1] / The Return of the Cage

The Folly as a Pedagogy and Awareness Raising Strategy.

reabilitação urbana
crítica
pedagogia
incorporar
tomada de consciência
urban rehabilitation
critique
pedagogy
embodiment
awareness raising

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265 anos após o tremendo sismo que destruiu a cidade medieval de Lisboa, deparamo-nos de novo com uma cidade destruída. Somente nos últimos dez anos, o sistema Neoliberalista – com a sua desastrosa política de reabilitação urbana – conseguiu destruir praticamente todos os interiores de edifícios patrimoniais, incluindo as Gaiolas Pombalinas nesses edifícios (um inovador sistema estrutural desenvolvido no século XVIII para resistir a futuros sismos). Somente permaneceram as fachadas históricas que agora alojam banais interiores contemporâneos. Este texto apresenta uma estratégia para estimular uma reavaliação deste sistema – sensibilizando para a importância cultural da conservação dos interiores dos edifícios patrimoniais – através da presença de Follies no espaço urbano. Estas Follies – as Gaiolas – serão estruturas abertas de madeira em forma de torre, com dois pisos de altura, com pavimentos e tectos de madeira, reproduzindo fielmente os pormenores das velhas Gaiolas desaparecidas. Estudantes e professores de arquitectura bem como amadores irão construir colectivamente cada Gaiola, facto que exigirá previamente uma mudança pedagógica no ensino de Arquitectura, que encorajará os estudantes a experimentar o trabalho em carpintaria.

O outro foco desta estratégia irá concentrar-se no público em geral, sensibilizando-o para este assunto. O Teatro Épico será uma ferramenta utilizada para este efeito, quando as novas Gaiolas se apresentarem no espaço público. Na madrugada de 1 de Novembro de 2025 – 270 anos após o sismo de 1755 – As Gaiolas regressarão à Cidade para confrontar a ordem estabelecida. Tal irá ocorrer em duas fases que tomam por modelo dois confrontos da história de 3000 anos de Lisboa: O Cerco de 1147 e a Revolução do 25 de Abril de 1974.

Com este objectivo, estas novas Gaiolas móveis serão erguidas e estacionadas no lugar das Torres de Assalto de 1147 – Lisboa estará de novo sitiada – depois, ao longo de 2026, estas estruturas serão movidas, “invadindo” o espaço público da cidade histórica, tal como os tanques o fizeram em 1974. O Povo irá de novo apanhar boleia.

265 years after the tremendous earthquake that destroyed the medieval city of Lisbon, we deal again with a destroyed city. In the last ten years, only, Neoliberalism – with its disastrous take on built heritage - managed to wipe out almost every interior from old heritage buildings, including the innovative 18th Century *Gaiola Pombalina* structural system (a freestanding cage-like wood frame structure devised to withstand future earthquakes). Only the historic street façades remained, embracing common contemporary looking interiors. This paper describes a strategy to stimulate a general reassessment of this system - helping to raise awareness to the cultural importance of interiors’ conservation in heritage buildings - through the presence of Follies in urban space. These Follies – the *Gaiolas* – will be wood frame tower-like structures with no exterior cladding; two storeys high, with wood plank floors and ceilings, faithfully reproducing the details of the original demolished *Gaiolas.* Architecture students, teachers and enthusiasts will collectively build each *Gaiola.* This will require a previous engagement in a pedagogical shift in Architecture Schools where students will be encouraged to experiment in carpentry. Embodied Knowledge will be the goal.

The other goal of this strategy will focus on the general public, raising its awareness for this matter, through the tool of Epic Theatre - when these new Gaiolas reach urban space.In the dawn of November 1st 2025 – 270 years after the Great Earthquake - the *Gaiolas* will return to the city to confront the established order. This will happen in two stages, recalling two confrontations from Lisbon’s 3000 years old history: the 1147 Lisbon´s Siege and the 1974 April 25th Revolution.

With that in mind, these new movable will be erected and stationed where the Assault Towers from 1147 were placed – Lisbon will again be “under siege” – then, throughout 2026, these same structures will be moved and “invade” the historical city centre public space, like the armoured tanks did in 1974. The People will again jump on board.

TWENTIES

This is the Twenties. For most of the present-day readers of this text, the word "Twenties" will still resonate "1920s", which is to say the period after World War I, and the Spanish Flu pandemic. The English term "Roaring Twenties" and The French expression "Années Folles" trigger imagery associated with high ceilinged Ballrooms with orchestras booming Jazz to a carefree sophisticated audience stomping to the Charleston, the Black Bottom or the Fox-Trot.

We are again in the Twenties. Like one century ago, we have to come to terms with the effects of a new pandemic which, at the present time, is not yet over. Despite claiming thousands of human lives, this new pandemic, however, has the virtue of exposing most of the ills related to our present society. One facet of those ills is the degradation of conditions of life in cities, specifically in those cities, which - like Lisbon - have an historic centre; this lies at the core of the motivation behind the project presented in this paper.

In these new Twenties, the effects of Global Gentrification became flagrantly evident in Lisbon. On the one hand, the changes made throughout the last decade in the urban lease act, enabled the unashamed removal of local, less privileged sections of the population who lived for decades in the old historic districts of the town.

On the other hand, over the same period, swift changes in urban licensing lowered the standards in urban rehabilitation of those heritage areas of the city. This gradual lowering of standards in urban rehabilitation of heritage areas reached the point where a new standard for intervention in old anonymous civil buildings became the implicit norm, distorting the very meaning of the word "rehabilitation".

This was characterized by the demolition of the interiors of such old buildings - leaving only the old street facades standing - with the subsequent construction of banal contemporary interiors, employing construction systems alien to the original ones.

The present project aims to set up a critique of this state of affairs, from the standpoint of architectural practice.

A Folly for the new Twenties: The Gaiola – A critique

The project "The Return of the Cage: The Folly as a Pedagogy and Awareness Raising strategy" will revolve around a Folly (several Follies, actually) that will embody the aforementioned critique.

This project is divided in two phases. The first will deal with the building of the Follies themselves, acknowledging that through the process of building – as a collective collaborative endeavour – most of the positive values ingrained in the critique will emerge. The second phase will be related to the Follies in urban space and the impact they may have on the general public, helping raise public awareness on the issues concerning Heritage, thus stimulating a general reassessment of the present system.

Each Folly - named *Gaiola* (the Portuguese word for "Cage") - will be reminiscent of the innovative 18th Century *Gaiola Pombalina* structural system: a freestanding cage-like wood frame structure devised, in the outcome of the 1755 Lisbon Earthquake, to withstand future Earthquakes (Fig. 1). In these new twenties, because of the present-day disastrous approach to built heritage, almost all *Gaiola Pombalina* structures have, regrettably, been demolished.

These new *Gaiolas* (Fig. 2) will be wood frame tower-like structures with no exterior cladding; two storeys high, with wood plank floors and ceilings, faithfully

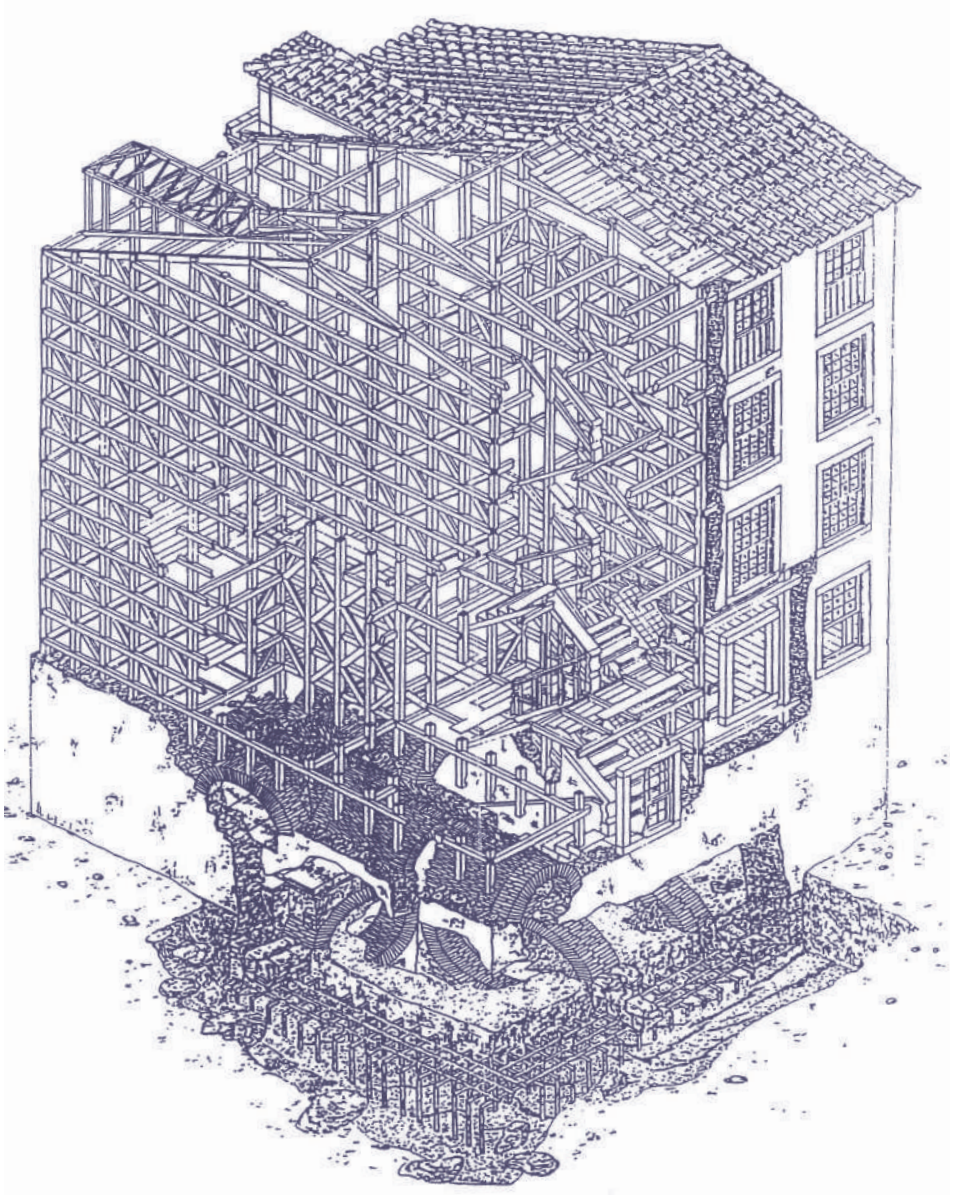

Fig. 1 - An écorché-style depiction of an original Gaiola Pombalina structural system in its context.

reproducing the old demolished *Gaiolas*' details. Each one, however, will be fitted with a set of wheels (with the second phase of this project in mind) enabling the *Gaiolas* to be moved around town.

The structure of this paper

Divided in two parts, related to each of the above-mentioned phases, this paper will begin by briefly framing the topic of urban rehabilitation in Lisbon, questioning how it began as an inspiring example and then became a lost opportunity. A reflection on the notion of value of heritage buildings will then follow. Finally, technical challenges and opportunities related with building the *Gaiolas*, namely the ones related with traditional techniques and also the ones dealing with in-site or remote cooperation, will be discussed.

The second part will delve into the Gaiola as a Folly, i.e., will explore the structure to be set in urban space and perceived by the general public. Contributions from fields outside architecture and construction, such as literature, theatre and philosophy will be considered to help frame two main characteristics of a Folly: its oddity and uselessness. We will see how these two characteristics are intertwined and will eventually help citizens achieve the necessary frame of mind to promote social change.

PART I: IN THE WORKSHOP

This first part of the text describes the first phase of this Project, associated with building the new *Gaiolas*.

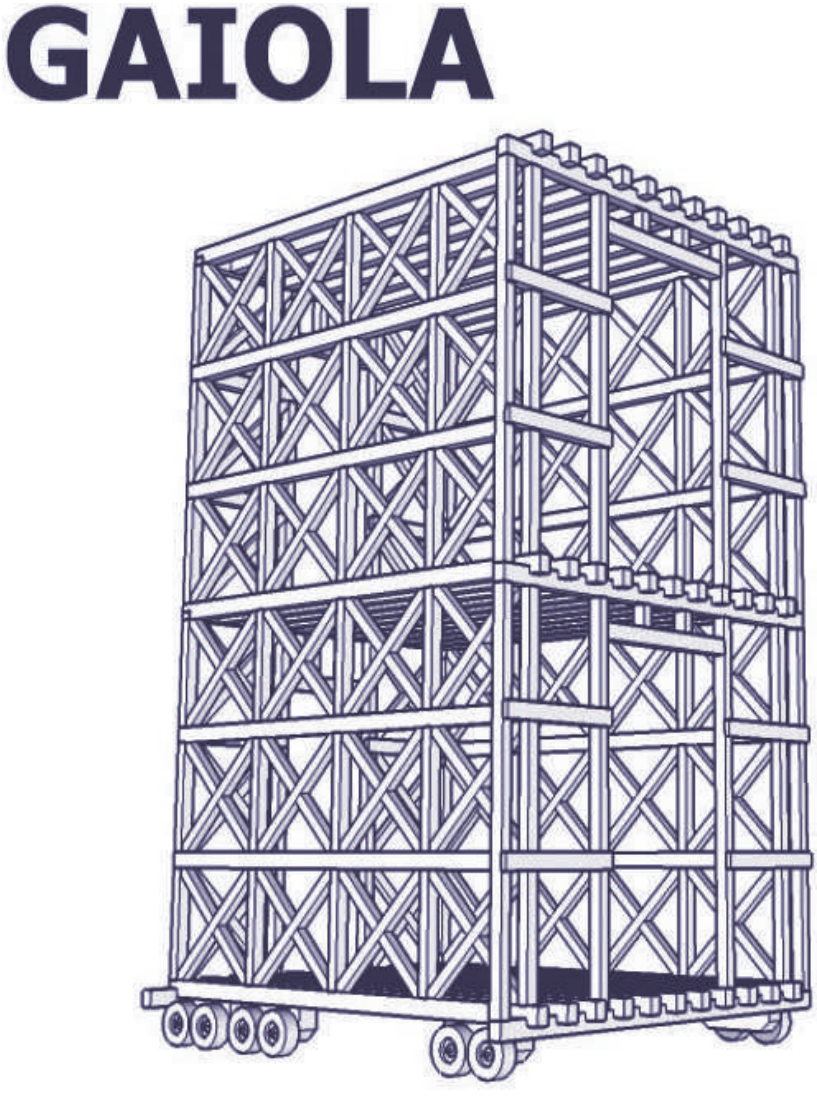

Fig. 2 - The Gaiola Folly.

This phase will deal with how to raise awareness for the importance of built heritage on those eventually involved in future rehabilitation of anonymous civil heritage buildings. This is a true educational challenge that requires a previous engagement in a pedagogical shift in Architecture Schools, where students will be encouraged to experiment in carpentry and hands-on-learning. The action will take place in the Workshop, be it one single main space or several spaces near each other or even in different countries.

Before describing the actual activities related to building the *Gaiolas* and their truly positive outcomes, it is significant to state why it is central for the purposes of this project to shift our attention to the process of building.

Lisbon's urban rehabilitation through the looking glass

In the morning of November 1st 1775, a tremendous earthquake followed by a tidal wave and a succession of fires, destroyed the medieval city of Lisbon. An urban plan was promptly devised taking into account themes of regularity, modularity and pre-fabrication.

Previous experiences in Portuguese military construction in North Africa, (namely wood fortresses with pre-fabricated wood and masonry elements), and the recognition (after the Great Earthquake) that mixed timber-masonry buildings had had a better seismic performance than strictly masonry ones, may have paved the way to the development of the *Gaiola Pombalina* structural system.[2]

This innovative 18th Century structural system (the inspiration for our *Gaiola* Folly) consisted in a freestanding cage-like timber structure devised to withstand future earthquakes. This three storeys high timber structure, with interlocking medium-sized elements, was built atop the first floor of the future building (built in masonry) and subsequently filled with stone and mortar.

This would prevent the building from crumbling in its entirety, in the event of an earthquake.

Fortunately, no major earthquake happened since then to challenge these structures, nor were Portuguese cities bombed during World War II[3], leaving, until fairly recently, an extensive number of historic buildings which still displayed original features.

Despite no natural or man-imposed destruction, buildings were nevertheless in urgent need of repair, much demanded through the people's struggle in the years directly after the 1974 Revolution. These demands marked the beginning and type of approach to an exciting phase in the urban rehabilitation of historic districts in Lisbon. This approach gave priority to the social dimension and involved a high degree of participation, focusing on small scale interventions of repair so as to prevent excessive rises in housing rents.[4]

In fact, in 1997, a commission of technical experts from the Council of Europe - requested by Lisbon's City Council to review this experience - were truly impressed with the originality of that approach, considering that it should be replicated in other European cities with historic centres. Therefore, between 1998 and 2000, a group of experts known as the "Lisbon Debate" laid down the basis of a new European urban rehabilitation strategy.[5]

Twenty ye ars later, witnessing the present trends in urban rehabilitation we notice that the strategy based on the "Lisbon Debate" was turned on its head. As stated earlier in this text, it became an implicit norm in the historic centre to expel residents and demolish interiors of old buildings to replace them with aseptic contemporary interiors.

One gets the feeling of being inside the domain of Lewis Carrol's novel "Alice through the looking-glass". Like Alice we notice that, just like a reflection, everything is reversed, including logic.

The value of old buildings

The inversion of values described in the previous section - which led to a total disregard of the human aspect of these rehabilitation operations and enabled the destruction of heritage buildings interiors – calls for a digression on what lies at the core of this present-day approach to urban rehabilitation of historic city centres.

Why is the way of life of residents and the formal integrity of old buildings in historic centres no longer valued? How did they lose their value in the present state of things? To answer these questions, it may be appropriate to inquire about the very notion of value for both realities: that of human life and that of old buildings.

Due to the scope of this text, it would be daring to engage in an investigation on the nature of the value of human life and its respective activities. However, it may be feasible to investigate on the notion of the value of old buildings.

In the previous section, which briefly traces the history of urban rehabilitation in Lisbon, we travelled back in time to the day of the Great Earthquake of Lisbon in 1755. In this section, to investigate what defines the value of old buildings, we will return to those times, when these old buildings were new.

Twenty years after the Great Earthquake, in 1776, Adam Smith's "Wealth of Nations" book was published. In Volume 1, Book 1, Chapter 5, Smith states that the value (and price) of goods is determined by the amount of labour that went into their production.[6]

One century later, in the 1870s, however, the theoretical framework considered to define Value reversed the previous ideas. Through the works of William Stanley Jevons, Leon Walras and Carl Menger, Value became understood as the subjective assessments by individuals of the usefulness of specific goods and services for satisfying their wants.

This later theoretical framework - which became the basis of modern economics - implies that the value of a building is placed outside the building itself and therefore that the labour involved in its construction will only be valued when there is a need for that building and not the other way around. Such frame of mind is particularly troubling when one considers heritage buildings, where the focus should be turned to the material aspects of the building, those which embody history, culture, identity and also, of course, the labour required to bring all these aspects together.

In contrast, Adam Smith's Labour Theory of Value is particularly suited to heritage buildings where hardly any mechanization was involved in their construction. This focus on the amount of Labour involved in these buildings, implicitly values human endeavour and toil. Observing old buildings through this lens is not only an exercise in economics but also an exercise in empathy.

The neoliberal system blatantly applies the modern economic theory of value thus not regarding a heritage building in itself (and all it embodies), but only considering the degree of its usefulness.

The *Gaiola* Project, however, clearly focuses on Adam Smith's notion of value, curiously developed in the beginning of the theorizing of Capitalism itself.

Embodied Labour

As stated in the previous section, to value a building through Adam Smith's notion of value – based on the amount of Labour involved in the construction of that building – is to value human effort. However, to engage in this kind of appreciation, one must first understand what it takes to build a building, such as the techniques and procedures involved, as well as the overall human effort employed.

In the years around the Lisbon Earthquake, two outstanding works were developed and published in France where one could understand the technical aspects behind the production of goods. Diderot's *Encyclopédie* and Duhamel du Monceau's Description des *Arts et Métiers*, explained through imagery and text, the specifics behind an incredible amount of human activities. Most of the engravings on the plates associated with professions were divided in two parts: the superior, presented the workers inside the workshop engaged in the respective activity; the inferior (like through a magnifying glass), showed in detail the necessary tools or the finished work (Figs. 3 and 4).

Browsing through those beautiful engravings, the reader could understand the amount of labour, its organization, and also the creativity and technology involved in the production of almost anything built by human hands. The image served to value technique and manual work.[7]

Yet, we can still find another, somewhat deeper, take on the theme of the value of human work related to building. The 19th century Italian writer and philosopher Carlo Cattaneo while referring to the rural landscape in Lombardy in his article *Agricoltura* e Morale, describes it as "*un immenso deposito di fatiche*" (an immense repository of fatigues)[8]. Cattaneo's words trigger in us a feeling of empathy towards the unknown workers who throughout centuries painstakingly shaped the Lombardian Landscape for the purpose of agriculture.

Walking through an old district in an historic town, looking at its buildings, visiting their interiors and carefully observing its details, one can also acknowledge the same feeling Cattaneo prompted in us to feel in a rural landscape: an old urban neighbourhood is also an impressive repository of fatigues.

Dealing with old buildings, in the *L'Encyclopédie* and Description des *Artes et Métiers*, we become aware of the kind of work involved in the construction of a building, and through Carlo Cattaneo's words we realize that human effort is indeed ingrained in the building.

This idea of Embodied Labour in a building will be essential for the pedagogical strategy involved in building the *Gaiolas*.

The Gaiola as a Pedagogic Tool

In the previous three sections, the text addressed the importance of the human side in urban rehabilitation processes, namely the local population of old neighbourhoods and the anonymous workers of the past whose hard labour is embodied in old buildings.

Building a *Gaiola Pombalina* reproduction is a pedagogical strategy that will also focus on the human factor. It will blend the notions of Embodied Labour and Embodied Knowledge, blurring the lines between manual and intellectual work.

The new *Gaiolas* will be built following traditional details and techniques. The experience of hands-on learning while reproducing an old *Gaiola* in this manner will provide those involved with a precious

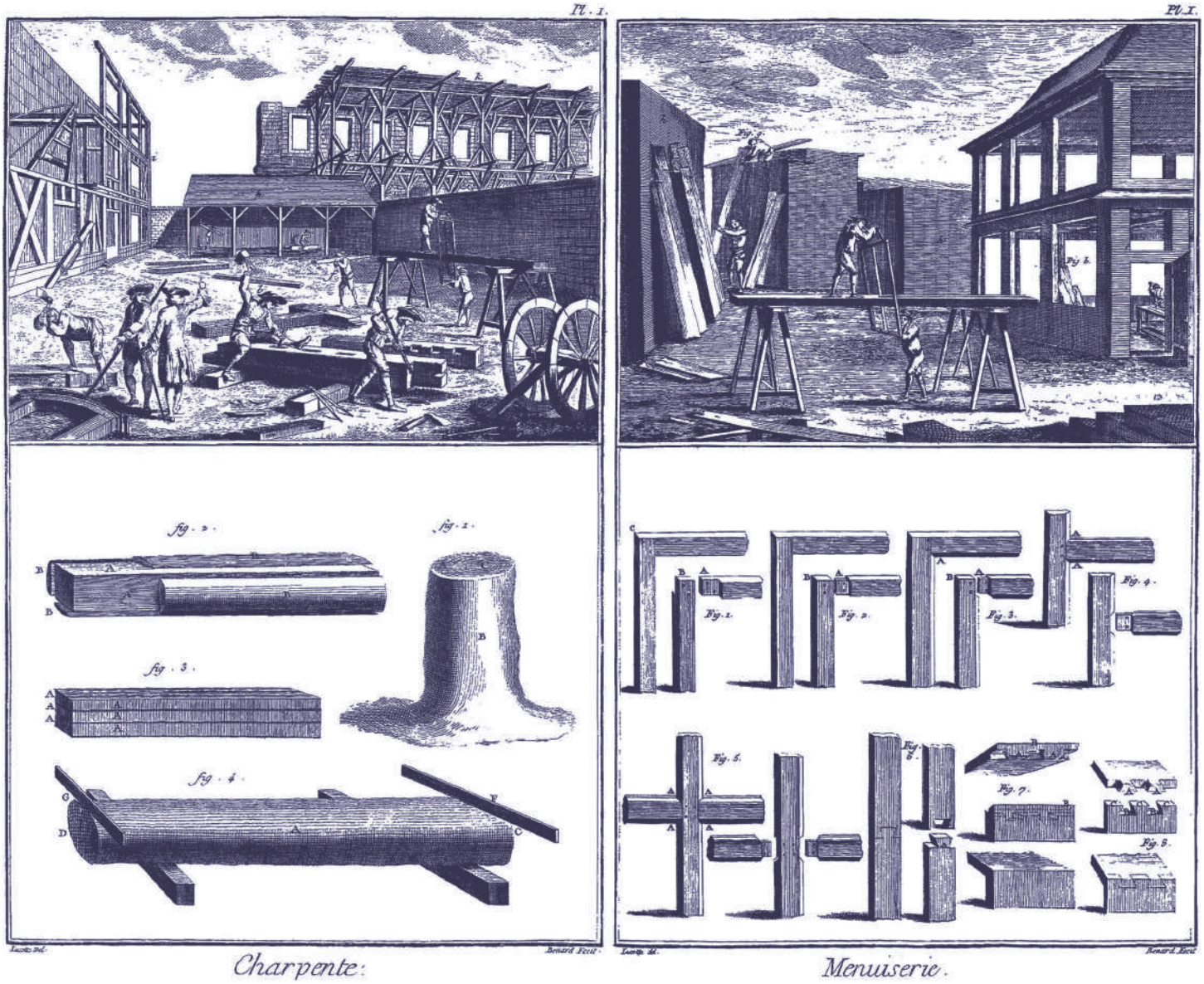

Fig. 3 and 4

opportunity to develop a kind of empathy that extends through centuries to ancient builders, nurtured in the understanding of the amount of effort, time and skill needed to perform the tasks needed.

Through this experience, participants will also acquire knowledge of Traditional Building, which, in the long run, will enable them to devise more appropriate design solutions when working with built heritage[9].

Besides raising awareness for the importance of built heritage and developing know-how on the specifics of traditional building, the process of building a *Gaiola Pombalina* replica will also provide participants food for thought on current building techniques and issues concerning Sustainability.

Finally, as with the original *Gaiolas*, the new ones will be the result of a collective endeavour; teachers, students, architects, engineers and enthusiasts will simultaneously experience the same processes, learning together and engaging in cooperation.

Therefore, building the new *Gaiolas* will be, simultaneously, a physical, intellectual, and moral enterprise. The immersion on the tasks required to build them will foster development on diverse interconnected subjects:

- The notion of Value of Heritage Buildings;

- History of Architecture;

- Building technology;

- Present / Future Architecture (Sustainability);

- Collaborative work.

Before advancing to the issues involved with building the new *Gaiolas*, and their positive outcomes, let us first understand the context of the original *Gaiolas*.

A brief introduction to Arquitectura Pombalina[10]

In November 1st 1755, as mentioned earlier, an earthquake, followed by a tidal wave and a succession of fires, destroyed the medieval city of Lisbon. After a prompt thorough meditation on the issues of reconstruction, the Prime Minister the Marquis of Pombal decided that the new city would be built on the same site. The urgency of this enterprise called for the application of several precepts of Enlightenment urbanism, such as regularity and a strong sense of composition and hierarchy.

The new urban form should prepare the new city for future earthquakes and fires, enabling safe and quick exit routes as well as easy accessibility to provide help. This plan should also face the difficult exercise of adapting the old medieval properties to the new regular layout. This was tackled by designing a building based on an overall regularity, modularity and repetition of elements that would allow for properties of different dimensions to fit neatly in an overall unified image of an urban block[11] (Fig. 5).

These considerations on the qualities of the future buildings were prior to the plan itself, and were paramount to the implementation of the final plan that displays an impressive overall sense of modularity. The concerns around the necessary ease of construction and security of buildings (and consequently of blocks and the whole neighbourhood) regarding future fires and earthquakes, were, naturally, thought out beforehand.

Due to shortage of available materials, overall economic constraints and the urgency to rebuild, *Arquitectura Pombalina* became a true testimony of an early pre-fabrication system, by conceiving all its components - either wood, stone, metal or ceramics - in the most elementary form possible to allow swift fabrication in different workshops, according to pre-set dimensions that enabled future combination.

All elements produced in various

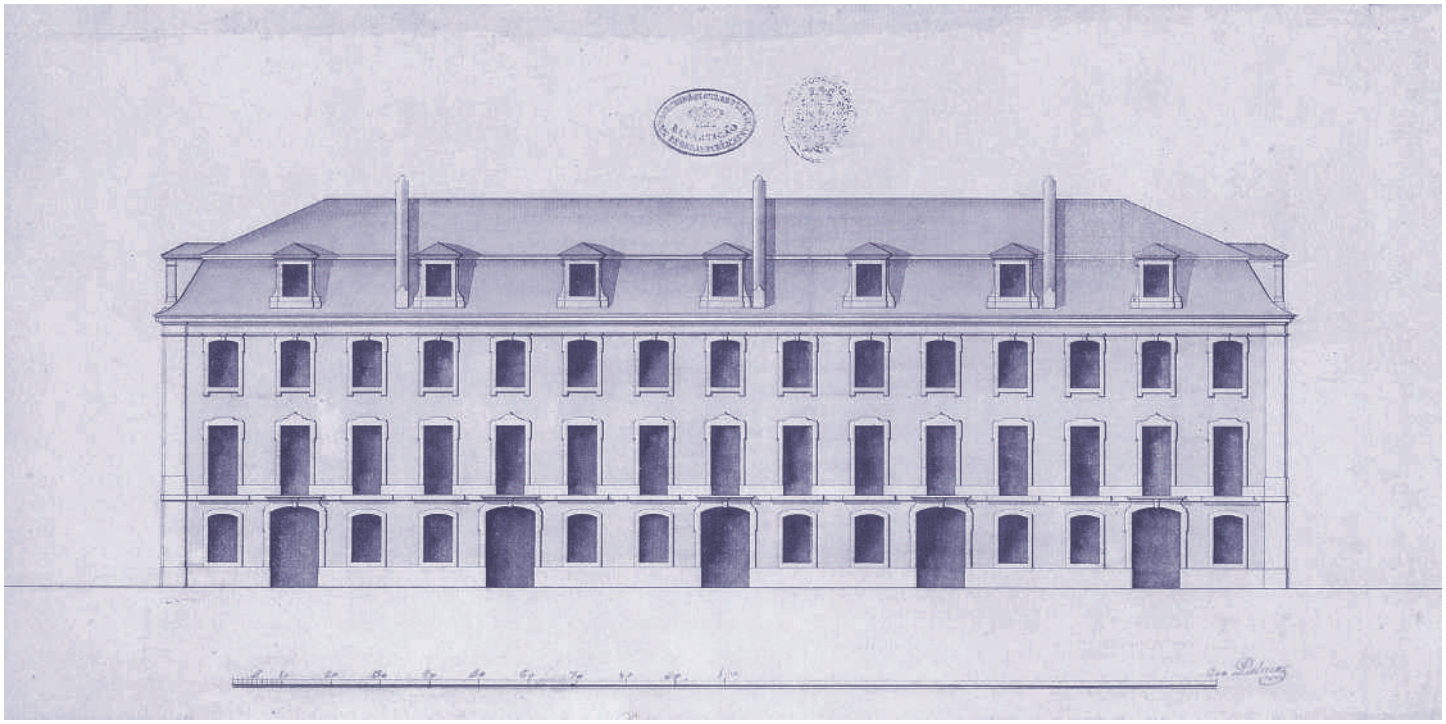

Fig. 5 - A typical urban block from the Pombaline masterplan.

workshops were then sent to a central depot near the building site, so that every builder could buy the necessary pieces at a controlled price, to avoid speculation.

To prevent future fires passing between contiguous buildings, the walls between two adjacent buildings were raised above the roof.

Finally, *Arquitectura Pombalina* buildings addressed the issue of security against the event of earthquakes through the development of the innovative *Gaiola Pombalina* structural system.

The original *Gaiola Pombalina* structure comprised the roof structure and the three floors above the ground floor. Its flexible nature contrasted with the sturdiness of the ground floor built in stone masonry with ceiling groin vaults built with ceramic bricks. This freestanding cage-like timber structure displayed an impressive rationality in its conception. The modularity and repetition of its simple interlocking components was evident and followed the above-mentioned pre-fabrication principles. This wooden cage intertwined the timber structures of floors, roof and walls. The interior walls of this structure, called Paredes de Frontal, were specially composed by a set of horizontal and vertical timber elements combined with medium-size diagonal timber beams of a smaller section, forming a beautiful and efficient regular pattern of square modules with their respective diagonals. The triangular voids in these wall structures would later be filled with rubble obtained from the destroyed buildings, previously mixed with lime mortar. Lastly, the stone masonry of the front and back facades, and the stonework of their windows and doors frames would be fixed to the *Gaiola*, enabling that in the event of an earthquake the exterior walls would crumble in a controlled manner, allowing the interior compartments to remain preserved (Fig. 6).

A joint virtue: Wood and the importance of Assemblies[12]

This project of building a *Gaiola Pombalina* reproduction involves working with just one material – Wood. This fact will enhance recognition of the permanence of wood construction

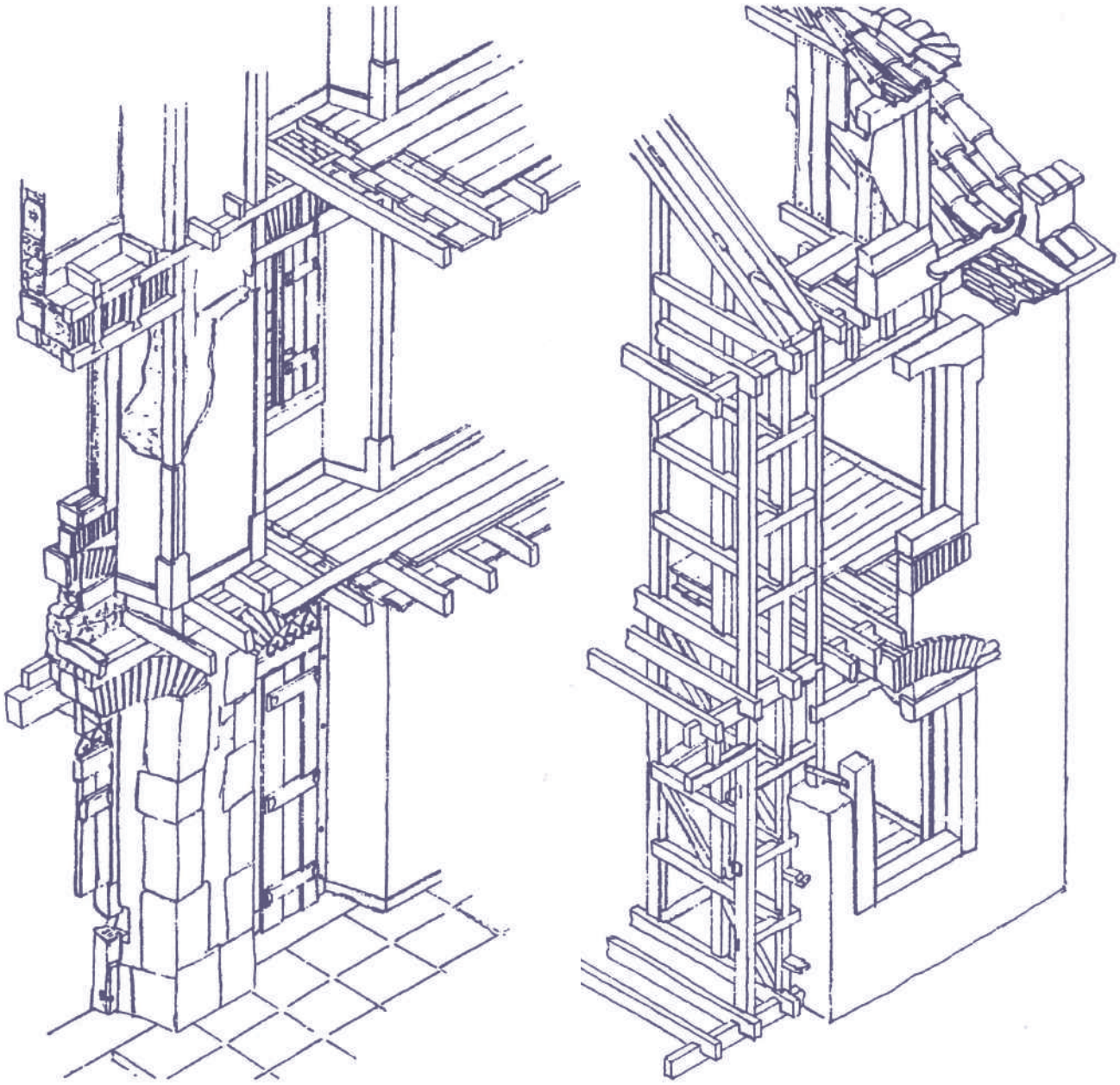

Fig. 6 - Articulation of the Gaiola Pombalina's wood structure with the exterior wall's stone masonry.

techniques in architectural thinking throughout history. Classical Greek architecture - as Vitruvius stated[13]- set in stone the carpentry details of older timber construction, establishing a link of a genealogy between wood and stone. In fact, Count Algarotti, an Italian intellectual from the 18th century, considered Wood as a "*materia matrice*"[14], a kind of mother material that leaves an imprint of this sort on other materials.

The poetics of Classical Architecture - that considers a building as a whole composed of different interconnected parts[15]- acknowledges this kind of presence of Wood in Stone, by setting the different components in stone following the logic of the setting of wooden beams, their details and expression (Fig.7).

This is a constant reminder of this specific way of imagining architecture: an Architecture of Parts that embraces the construction logic and expressivity of Wood Construction.

French architecture theorist Quatremère de Quincy declares in his *Dictionaire* de *l'Architecture* that among all the Trades associated with Architecture, Carpentry is the one that best exercises the spirit.

He further draws attention to the affinities between the craft of carpentry and the science of mechanics, a very important relationship in the case of the *Gaiola Pombalina.*

With wood, much more than with stone, one is lead to think about questions related to assemblies (Fig.8).

The very nature of this construction system brings forth the notion of articulation. Architecture students, teachers, architects, engineers, craftspeople and enthusiasts will experience, through this *Gaiola* project, the process of preparing, hand-planing and shaping every piece and every joint.

Learning how to make different joints in wood means taking History lessons a little deeper, thus understanding how an older culture dealt with the issue of durability in construction. In fact, different kinds of joints are needed for different kinds of stresses in a structure, which consequently enable the durability of the whole. This broadens the scope of the notion of Sustainability, embracing not only choice of materials but also choice of design solutions that prevent degradation and need of constant repair or, ultimately, demolition.

Understanding how a wooden structure is built and assembled, through combining several similar medium sized elements - as in the case of the *Gaiola Pombalina* - is also a fine way to imagine future architecture solutions, with some degree of prefabrication and rigour, where repairing and even substitution, due to its lightness and detachability is fairly straightforward.[16]

The lightness, spatial character and assemblies of these type of structures provide yet another insight: while one worker alone can accomplish the task of laying bricks in a masonry wall, the assembly of timber structures encourages them to be made by various workers, working at the same time.

The different joints previously carved in the various timber pieces, express the moment of the encounter between those different pieces. A mortise on the end of a piece must fit neatly with the tenon on the end of another piece.

The contemplation of the needed adjustment in the moment of the encounter between the timber pieces - where they must adapt each other - may, through the work practice, infuse participants to cherish the moments of

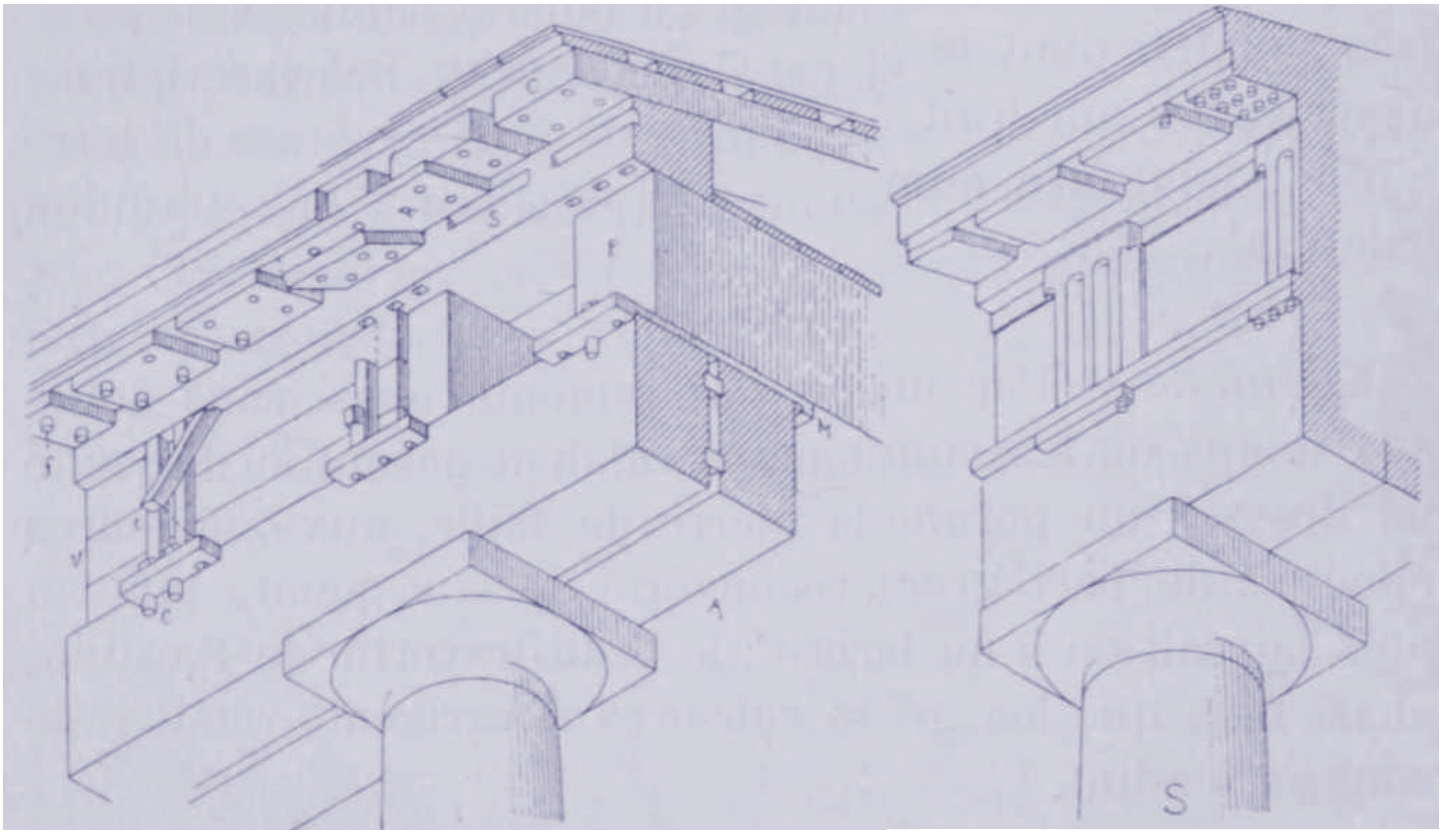

Fig. 7 - Setting in stone the carpentry details of older timber construction.

encounter between them while working - when they also must adapt each other.

A nice metaphor is thus activated: the same way the *Gaiola*'s structure is composed of different pieces that work together and balance each other, a similar feeling emerges in the building team, through cooperation in building and assembling the structure, creating an intricate community atmosphere, blurring individuality and competition, enhancing community and cooperation.

Brothers in Tools – The importance of non-architects

Danish architect and urban planner Steen Eiler Rasmussen (1898 - 1990) states in his book *Experiencing Architecture*[17]*:*

"The basis of competent professionalism is a sympathetic and knowledgeable group of amateurs, of non-professional art lovers."

It is indeed extremely important to promote a community of amateurs. The workshops, therefore, should also be opened to non-architects and non-students of architecture. The process of building the *Gaiolas* is a means for the creation of a community of people who value this kind of work and through it who value heritage.

Still, a very important factor beyond the creation of a community of amateurs is,

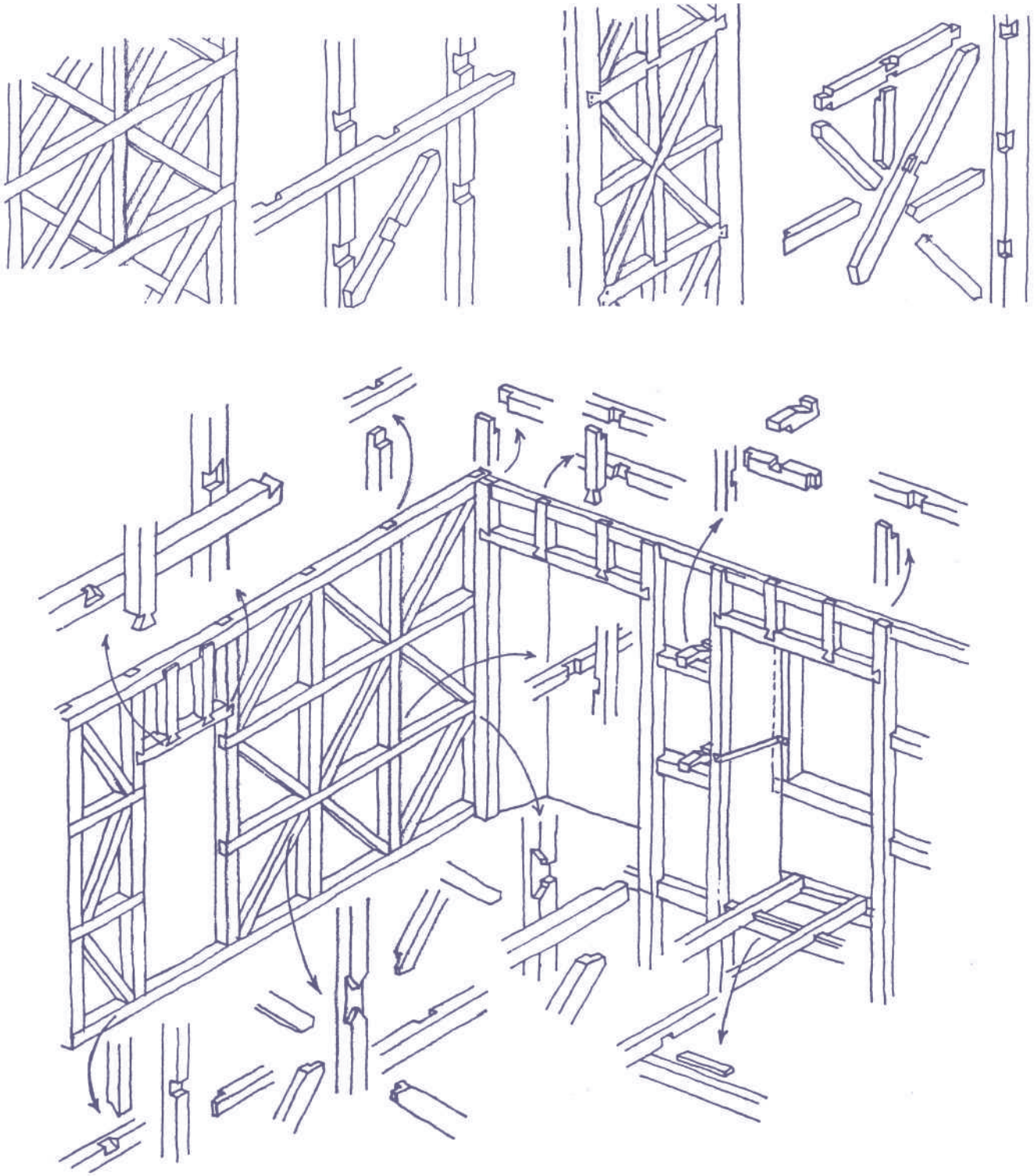

Fig. 8 - Several assemblies in the Gaiola Pombalina System.

of course the creation of a community of professionals who are not architects – a community of highly skilled carpenters. In this respect, a great deal could be learned from two experiences involving hands-on-learning in a community environment which then foster the creation of future communities. These experiences are *El Sistema* in Venezuela and Le *Compagnonnage* in France. Both these experiences aim for youth education, acknowledging the importance of learning through the use of tools. *El Sistema* deals with learning the craft of playing a musical instrument in an orchestra, Le *Compagnonnage* deals with learning a trade within a network of craftsmen.

If you have ever watched a classical orchestra conducted by Maestro Gustavo *Dudamel*, you may have already heard about *El Sistema*. Globetrotting Maestro *Dudamel* is the most famous outcome of El Sistema. His natural joy and communication skills make him the perfect ambassador for this educational system.

El Sistema is the brainchild of José Antonio Abreu (1939 – 2018), a Venezuelan maestro, composer and economist, who in 1975 founded this social and cultural work, that aims to systematize the instruction and musical practice, through symphonic orchestras and choirs, as instruments for social organization and humanistic development. One of the first concerns of *El Sistema* was the training of future maestros, who would later spread across the country to begin the future education of children through small classical orchestras, mainly in economically depressed communities.

The next experience concerning hands-on-learning in a community environment, is closer to the aims of this *Gaiola* Project, because it deals directly with the world of construction. In all fairness, one can hardly call *Le Compagnonnage* an experience, but more accurately a tradition[18]. In fact, in 2010 *Le Compagnonnage* was inscribed in the Representative List of the Intangible Cultural Heritage of Humanity[19]:

"The French Compagnonnage system is a unique way of conveying knowledge and know-how linked to the trades that work with stone, wood, metal, leather, textiles and food. (…) Training lasts on average five years, during which apprentices regularly move from town to town, both in France and internationally, to discover types of knowledge and ways of passing them on. (…) Compagnonnage is popularly perceived as the last movement to practice and teach certain ancient craft techniques, to deliver true excellence in craft training, to closely integrate the development of the person and the training of the worker."

A learning experience that is inspired by these two models will enable future and present architects, future and present carpenters and amateurs to be trained in an environment that stimulates collaboration and mutual awareness, creating bonds between them, which will be decisive in creating a future critical mass indispensable for Heritage preservation.

The Burning Forest – The Pandemic creates the Pan-Academic

The scenario of a big team working together in a workshop, benefiting from an atmosphere of clear cooperation and exchange can, however, be compromised due to pandemic restrictions. Travelling abroad to learn, following the *Compagnonnage* example may also be a problem.

Nevertheless, recent events inspire us towards other alternatives, related to long-distance cooperation.

In August 15th 2019, an enormous fire destroyed the roof of Notre-Dame Cathedral in Paris. The entire wooden roof structure was made up of some 1300 oak trees, which granted it the name "*La Fôret*" (The Forest).

Very recently, in August 3rd 2021, almost two years after that tragic event, a curious public event occurred on the lawn of the mall at the Catholic University of America in Washington. A team of students, carpenters, architects and crafts people slowly and gently pulled on rope lines to raise a painstakingly crafted roof truss into its vertical position.

The School of Architecture and Planning of the Catholic University of America hosted "The Notre-Dame de Paris Truss Project", a summer workshop organized by Handshouse Studio and *Les Charpentiers sans Frontières*, among other institutions. This project intended to build one of the roof structure trusses of Notre-Dame Cathedral in Paris – Truss number 6 – following ancient techniques, thus providing a pedagogy experience of learning through doing. This Truss Project served as a gesture of goodwill and global solidarity with the French. The historically accurate reproduction will be offered as a gift to France, with the intention that it is installed in Notre Dame de Paris.

The previous year, the French organization *Les Charpentiers sans Frontières* (Carpenters without Borders) had already set the tone by building Truss number 7 of the same roof structure, also employing ancient techniques and manual tools. Their goal was to prove the possibility to rebuild the 25 triangular trusses of *La Fôret* entirely by hand. The Truss number 7 beams were thus squared using reproductions of medieval axes, which gave its surfaces an overall special character.

These two examples provide clear evidence of the possibility of long distance cooperation. In fact, the Washington experience set a fund-raising campaign to support the travel and lodging of 30 skilled Carpenters as well as volunteers from across the United States; the transportation of 20 carefully selected and harvested white oak logs and the sending of medieval style axes from France, generously offered by several French Foundries. The technical expertise from French Master Carpenters from *Les Charpentiers sans Frontières*, sharing knowledge and sending technical drawings was also instrumental for this noble enterprise.[20]

This clearly demonstrates that competent work on built heritage truly benefits from international knowledge exchange and cooperation.

As the Notre Dame 2019 fire originated a wave of solidarity that crossed national borders, so the present covid 19 pandemic

seems to have brought people together from around the globe, despite lockdowns. Indeed, the internet enabled new forms of exchanging and developing knowledge, which foster networks of international cooperation inside and outside academia.

Coming back to the *Gaiolas*, due to the fairly medium size of most of its timber components, one can easily consider the scenario of preparation of single timber elements on small workshops far away from each other, followed by further dispatch to a central assembly site. In fact, some of the smaller timber components can easily fit inside a student's backpack when he or she travels to the assembly event in, for example, a Summer Workshop in Lisbon.

The state of the "Pan-Academic" reinforces the idea of global cooperation: A universal, inclusive workshop where people work shoulder to shoulder, only they will be kilometres away.

Conclusion of Part I

Up until now, this text presented the *Gaiola* as a pedagogical tool that embodies several values considered useful to deepen knowledge about heritage buildings, in order to turn the present situation of lack of care for heritage to a more conscientious one.

A meditation on the value of old buildings was presented, focusing on the amount of labour embodied in them. This notion of embodied labour is crucial to the pedagogical experience that this project aims to develop, where participants will learn through doing.

Some positive side effects were also referred to when one deals with a cooperative frame of mind. Cooperative work may create new models of thinking, mitigating individual authorship.

The importance of non-architects in these processes was then expressed, namely amateurs and craftspeople. The basis of competent work in architecture related with heritage buildings is a sympathetic group of amateurs and a solid group of highly skilled craftspeople.

Finally, examples of international cooperation were presented where learning is mixed with global solidarity. The scale of global cooperation might be a good solution for financing this *Gaiola* Project.

All these values related with building the *Gaiola*, expressed in the first part of this text, may enable some amount of social change, blurring individualism and reinforcing community spirit, with the additional benefits of Sustainability.

The second part of this text will describe the second phase of this project related to the *Gaiola*'s return to the city, entering the urban space and becoming a Folly.

PART II – IN URBAN SPACE

This second part of the text describes the second phase of this project when the new movable *Gaiolas* reach Urban Space.

As stated earlier, the overall goal of this entire project is to raise awareness for the importance of preserving anonymous civil heritage buildings, namely their interiors. The first phase dealt with raising awareness of students, architects, engineers, craftspeople and enthusiasts – The *Gaiola* as a pedagogical tool. The second phase aims to take this objective to a broader audience, thus getting out of the workshop and entering urban space. – The *Gaiola* as a Folly.

Follies have frequently been considered playful enchanting oddities with an underlying sense of uselessness, which contributed to accentuate their aesthetic and artistic freedom.

With that in mind, can the amount of usefulness described previously in this text compromise the *Gaiola*'s Folly nature when it reaches urban space? On the other hand, if at all considered a Folly, will it loose its previous values associated with the building phase?

To better frame the role of these new movable *Gaiolas* as Follies in Urban Space, this phase of the project will focus on those two characteristics present in any Folly: Their Oddity and Uselessness. The methodology applied in this second phase will overlap the worlds of Literature, History, Philosophy and Theatre.

Let us start looking for some answers in Victor Hugo's novel *"Les Misérables"*.

"O utilité inattendue de l'inutile!"

In Victor Hugo's celebrated novel *"Les Misérables"*, one can find a striking passage that sheds light on how the Gaiola may affect public space and public opinion, maintaining the pedagogical and critical sides that this project puts forward, without losing the main characteristics of a Folly.

This passage depicts a bizarre forty feet tall Elephant Sculpture placed on a corner of Place de *la Bastille* in Paris. This was in fact a timber and plaster model for a future monument to be raised in this public square which was never built.

This plaster Elephant stood in that site for decades, gradually decaying and becoming a sorry sight to be seen, mainly – as Hugo states – for the bourgeoisie in their Sunday clothes who when passing before it asked: – "What's the good of that?"

While describing the poor condition of the plaster Elephant in a marvellous poetic manner, Hugo sets little Gavroche, a street child and one of the main characters of the novel, to climbing one of the Elephant's legs and sneak inside the beast's belly. The monumental Elephant had become the impoverished infant's home. The author subsequently declares emotively: - "Oh, unforeseen utility of the useless!"

What was useless and a nuisance in the eyes of bourgeois society was unexpectedly infused with the noble use of a haven for a homeless child.

In *"Les Misérables"*, the crooked Elephant is set between the condition of a useless oddity in urban space, and the unexpected condition of becoming useful.

The Elephant of the Bastille as a working model bears some resemblance with the *Gaiolas* coming from the Workshop: Odd full-scale working models of something that may never be built in their original situation. This somewhat

tragic condition as a starting point for the *Gaiolas* in urban space may allow, however, through its uselessness, unexpected uses opening up unforeseen possibilities for social change.

As stated earlier, the *Gaiola*s as Follies will navigate between the notions of Oddity and Uselessness, which we will next delve into.

First, we will work with the idea of Oddity, through the concept of the Estrangement Effect, borrowed from Epic Theatre.

"War. What is it good for?": Epic Theatre as a tool

The project of the new movable *Gaiolas* as Follies in urban space, will happen in two stages, emulating two confrontations from Lisbon's 3000 years old history: The 1147 Lisbon´s Siege and the 1974 April 25th Revolution.

The first stage will happen between November 1st 2025 – to mark the 270 years of the Great Earthquake – and the end of that year. The second stage will extend throughout 2026.

Both these stages of the Return of the Gaiola to the City employ the tool of Theatre, associating the Gaiolas to Machines of War to allude to a confrontation with the state of affairs this project aims to criticise.

In the first stage, the Gaiolas will act as Assault Towers, the ones used in Lisbon's 1147 Siege, creating the feeling of imminent attack. An attack indeed happened in 1147, originating the change from a Moorish kingdom to a Christian one. The goal of this brief stage (only two months) is to enact this feeling of an imminent confrontation, the will to change regimes (Fig.9).

Although still military in nature, the image used in the second stage is, however, different in scope. Here, throughout 2026, the *Gaiolas* will be moved and stationed around town, triggering memories of the April 25th 1974 Revolution. This choice is quite intentional due to the nature of the events of that day in April, where armoured tanks invaded public space without any tank shell being shot. In fact, since the early hours of that morning, the People rushed to the streets and partied among the soldiers who barely kept military composure. Citizens climbed atop the tanks, offered red carnations to the soldiers and shut up the barrels of machine guns and the tanks' cannons with these flowers. The "Carnation Revolution" brought Democracy back after 41 years of a Fascist Regime (Fig.10).

The War Machines outside the city walls (1147) or in the city centre (1974) were, of course, unusual events far from the normal day-to-day affairs of the city. Such machines were, in a way, some sort of Oddities.

Epic Theatre, and the theory behind it, seems the ideal framework to work with this feeling associated with the presence

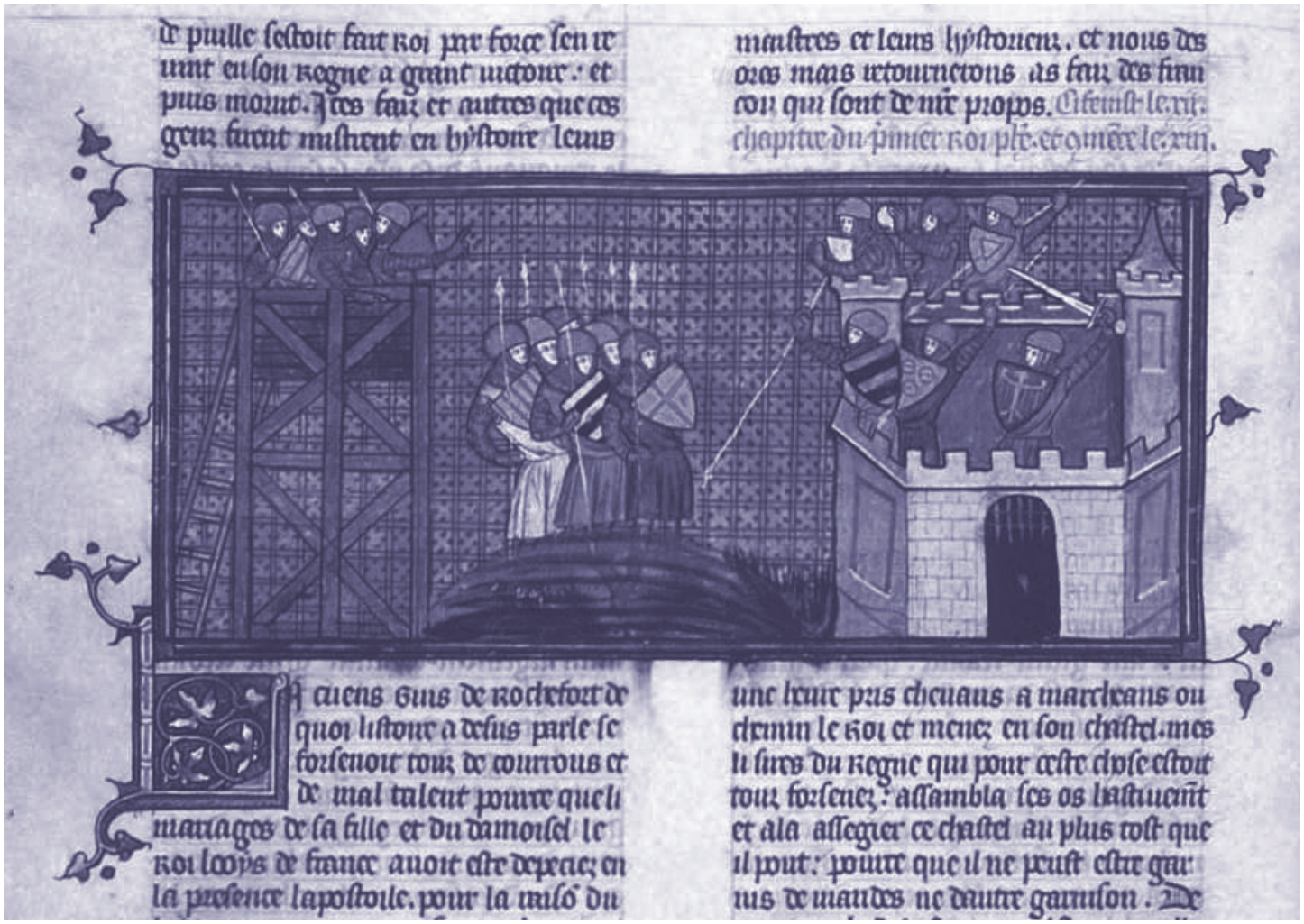

Fig. 9 - Excerpt of an illuminated manuscript depicting an Assault Tower.

of Oddities, in other words, with the presence of what seems strange or out of place.

The main concept behind Epic Theatre is the Estrangement Effect, a performing arts concept coined by German playwright Bertolt Brecht, which aims, through a variety of techniques, to draw the public into an attitude of critical judgment.

This theoretical framework, developed a century ago in Berlin during the Weimar Republic, also aims to highlight the existence of an additional inspiring universe to “The Roaring Twenties” and “Les Annés Folles”, one where wild playfulness and social criticism were close-knit.

“L’utilità dell’inutile: Manifesto”[21]

This section borrows its title from a curious book by the Italian philosopher and professor of Italian Literature Nuccio Ordine, which works along the same lines of insight as Victor Hugo previously described.

Ordine displays abundant evidence, referring to the work of great philosophers and writers throughout history, on the importance of uselessness.

He focuses on those disciplines and ways of looking at research and culture that don’t seem to immediately and explicitly relate to any kind of usefulness of an economic or productive sort. Indeed, there is, in mercantile democracies, knowledge, which is deemed to be "useless" that instead proves to be of an extraordinary utility .

The very sense of uselessness of the *Gaiolas* when in urban space - revisiting the aforementioned Elephant de la Bastille and the reflections in Nuccio Ordine’s book – will eventually call for a different set of priorities, questioning the present society’s overall focus on utilitarianism. Shifting the look away from usefulness, we may (as previously outlined in the section The value of old buildings) travel back to Adam Smith’s notion of value, where attention lies in substance, not in usefulness.

These odd cages may trigger an “unforeseen utility of the useless”. The *Gaiolas* will be literally open structures that may welcome all sort of unpredictable uses by the public.

CONCLUSION OF PART II

This second Part of the text presented a possible theoretical framework to work on, where the notions of Oddity and Uselessness are the main guidelines to this public phase of the “*Gaiola* Project”, at the end of 2025 and throughout 2026. With this in mind, we must encourage an engagement with domains like the Visual Arts, Theatre, Philosophy, Anthropology, Sociology, Science, among other domains of the Human Spirit, stirring up practitioners from these areas to perhaps curate several activities with the public, inside and around the *Gaiolas*.

Fig. 10 - Hitch-hiking and celebrating.

CONCLUSION

The original Gaiolas Pombalinas have vanished almost in their entirety. They were, as previously stated, evidence of an innovative structural system created in the 18th Century, on the eve of seismic science, and a testimony to building practice excellence.

A new disastrous way of rehabilitating old heritage buildings is destroying their interiors and these structures, and applying current building techniques totally alien to the buildings original ones. The manual effort and expertise in wood and masonry construction, applied in the past by hundreds of construction workers is being unabashedly erased to be replaced by poured concrete or welded iron. Consequently, the value based on the incredible amount of labour and toil embodied in those buildings is lost: it was replaced by less labour and an incredible expenditure of energy and non-renewable resources, which are totally against the best practises in Sustainability.

On one hand, this *Gaiola* Project aims to spur enthusiasm about heritage related issues in the student, the professional and the amateur community, and, on the other hand, help to develop awareness of those same issues among the general public.

This project points out that the goal of attaining this enthusiasm and awareness is best achieved in a communal atmosphere, developing interaction and cooperation with others. This can happen in the workshop and in urban space, both locally and globally.

In the same way the *Gaiola Pombalina* structure was a support for domestic life in buildings throughout two and a half centuries, so the new movable *Gaiolas* will become a support for public life: an inclusive, community oriented one.

At the end of this text, we come full circle to its beginning. We return to the Twenties - to the 1920s, actually.

In the 1920s, James Weldon Johnson - the African-American writer and civil rights activist associated with the *Haarlem Renaissance* - and his brother the composer J. Rosamond Johnson composed the spiritual song called "Dem Bones" . This song depicts the Old Testament tale of Ezekiel (Ezekiel 37: 1-14), named "The Vision of the Valley of Dry Bones" that describes a prophecy in the form of a dream, where Ezekiel stands before a valley overflowing with dry human bones. The prophet witnesses those bones starting connecting each other, forming skeletons that eventually stand up and walk again.

This song became a powerful anthem for a social movement that was itself just beginning to come together, at a time when spirituals were a powerful binding force among black Americans. "Dem Bones" may also inspire us to come together and connect those dry wooden beams and bring the *Gaiolas*, like "skeletons", back to life:

"Dem Bones"[25]

Ezekiel connected dem dry bones,
Ezekiel connected dem dry bones,
Ezekiel in the Valley of Dry Bones,
Now hear the word of the Lord.
Toe bone connected to the foot bone
Foot bone connected to the heel b one
Heel bone connected to the ankle bone
Ankle bone connected to the shin bone
Shin bone connected to the knee bone
Knee bone connected to the thigh bone
Thigh bone connected to the hip bone
Hip bone connected to the back bone
Back bone connected to the shoulder bone
Shoulder bone connected to the neck bone
Neck bone connected to the head bone
Now hear the word of the Lord.
Dem bones, dem bones gonna walk around.
Dem bones, dem bones gonna walk around.
Dem bones, dem bones gonna walk around.
Now hear the word of the Lord.

IMAGES

Fig. 1 – An *Écorché-style* depiction of a Pombaline Architecture building (see note 10) where one can appreciate the "*Gaiola Pombalina*" structural system in its context. – Jorge MASCARENHAS, Jorge. Sistemas de Construção – V. Lisboa: Livros Horizonte, 2004. ISBN 972-24-1338-4.

Fig. 2 – The Gaiola Folly. - SOL, Pedro. 2021.

Fig. 3 – "*Charpente*" plate from Diderot's *Encyclopédie*, (http://planches.eu/)

Fig. 4 - "*Menuiserie*" plate from Diderot's *Encyclopédie*, (http://planches.eu/)

Fig. 5 – A typical urban block from the Pombaline masterplan. This image displays different property dimensions encompassed in a regular looking façade and block (digitized image from *Cartulário Pombalino* – see note 11)

Fig. 6 – Articulation of the Gaiola Pombalina's wood structure with the exterior wall's stone masonry. View from inside on the left; view from outside on the right. (MASCARENHAS)

Fig. 7- Setting in stone the carpentry details of older timber construction. Stone on the right, Wood on the left. (Image from CHOISY, Auguste, Histoire de *l'Architecture*, 1899, Tome1, p.288 - https://gallica.bnf.fr/ark:/12148/bpt6k6417116t/f625.item)

Fig. 8 – Several assemblies in the Gaiola Pombalina System. (MASCARENHAS)

Fig. 9 – Excerpt of an illuminated manuscript depicting an Assault Tower on the siege to Gournay-sur-Marne (France). (http://www.bl.uk/catalogues/illuminatedmanuscripts/ILLUMIN.ASP?Size=mid&IllID=43894), from: COSTA, Bárbara Patrícia Leite. "Engenhos, armas e técnicas de cerco na Idade Média portuguesa (séculos XII-XIV)"

Fig. 10 – Hitch-hiking and celebrating, ascending Rua do Carmo on the way to the Chiado quartier. – Unknown photographer – (https://escsmagazine.escs.ipl.pt/das-ruas-para-o-grande-ecra-tres-filmes-sobre-a-revolucao-dos-cravos/) retrieved on October 19th 2021.

NOTES

1. The title of this article plays with the title of the italo-french 1978 movie directed by Édouard Molinaro, "Le Cage aux folles". In the title of this article, instead of "folles" (crazy people), we shall have "Folies" (Follies). The use of French words in an English title and the intention to

inscribe an English word in the French part of this title, aims to set an odd and playful atmosphere in the text and, in a somewhat twisted way, to introduce the Folly presented in this article, which is also a Cage.

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4. LOPES, Filipe Mário - "A Reabilitação dos Bairros Antigos: O "Modelo" de Lisboa", *Estruturas de Madeira Reabilitação e Inovação*. Lisboa, GECoRPA, 2000.

5. ROTH, Catherine (ed.). *Guidance on Urban Rehabilitation: document prepared within the framework of the Technical Co-operation and Consultancy Programme*. Strasbourg: Council of Europe Publ. Cultural heritage, 2004. ISBN 978-92-871-5528-3.

6. HORWITZ, Steven – "Adam Smith on the Labor Theory of Value", (https://www.adamsmithworks.org/documents/steven-horwitz-adam-smith-on-the-labor-theory-of-value) retrieved on August 29th 2021.

7. Estelle M, Zoe B, Marina F – "L'Image comme savoir", (https://imageetinformation.wordpress.com/2014/09/12/planche-de-lencyclopedie/) retrieved on September 13th 2021.

8. CATTANEO, Carlo. "Agricoltura e Morale". In: *Atti della Società d'incoraggiamento d'Arti e Mestieri*. Milan: 1845.

9. DJABAROUTI, Johnathan, Christopher O'FLAHERTY. "Experiential learning with building craft in the architectural design studio: A pilot study exploring its implications for built heritage in the UK", (https://www.sciencedirect.com/science/article/abs/pii/S1871187118303900) retrieved on August 4th 2021.

10. Pombaline Architecture. The portuguese architecture style developed during the tenure of office of Prime Minister the Marquis of Pombal, to face the enormous rebuilding task after the 1755 Earthquake.

11. The only remaining drawing document of the time concerning architecture is the *Cartulário Pombalino*, a collection of watercolour facades that provides information on the principle of unity and regularity of the urban block comprising various buildings with different dimensions. - *Cartulário Pombalino*, Lisboa: Câmara Municipal de Lisboa, Direcção Municipal de Cultura, Divisão de Gestão de Arquivos, Arquivo Histórico.1999. ISBN 978-972-8517-08-3

12. In this section, the word "assembly" appears in its dual meaning: "the process of putting together the parts of a machine or structure" and "a group of people, especially one gathered together regularly for a particular purpose." https://dictionary.cambridge.org/pt/dicionario/ingles/assembly , retrieved on September 28th 2021.

13. The Ten Books on Architecture, Book IV, chapter II.

14. "*Saggio sopra l'Architettura*" in Opere Varie del Comte Francesco Algarotti, Venezia, Giambatista Pasquali, 1757.

15. TZONIS, Alexander, Liane LEFAIVRE. Cambridge: MIT Press, 1986. ISBN 978-0-262-70031-3.

16. RIEGLER-FLOORS, Petra, Annette HILLEBRANDT. "Detachable Connections and Constructions". In: HILLEBRANDT, Annette, Petra RIEGLER-FLOORS and Anja ROSEN. Manual of Recycling: Buildings as sources of materials. Munich: Detail Business Information GmbH. Detail Construction Manuals, 2019, pp. 42-57. ISBN 978-3-95553-492-9.

17. RASMUSSEN, Steen Eiler. Experiencing Architecture. Second edition. Cambridge: MIT Press, 1964. ISBN 978-0-262-68002-8

18. "Compagnonnage, network for on-the-job transmission of knowledge and identities", (https://ich.unesco.org/en/RL/compagnonnage-network-for-on-the-job-transmission-of-knowledge-and-identities-00441) retrieved on August 5th 2021.

19. "Decision of the Intergovernmental Committee: 5.COM 6.12", (https://ich.unesco.org/en/decisions/5.COM/6.12) retrieved on August 5th 2021.

20. One should further note that even the French mastery of these medieval axe techniques is quite recent. Before the 1990s, no one in France mastered these techniques anymore. The fall of the Berlin Wall was the event that allowed French anthropologist and founder of Les Charpentiers sans Frontières François Calame to promote in 1992 in Romania the first international workshop of ancient wood construction techniques, where French Carpenters learned from Romanian Carpenters that still retained that Craft.

21. ORDINE, Nuccio. The usefulness of the useless. Philadelphia: Paul Dry Books, 2017. ISBN 978-1-58988-116-7.

22. "Quanto è utile l'utilità dell'inutile? A proposito del libro di Nuccio Ordine", Francesco Coniglione. (https://www.roars.it/online/quanto-e-utile-lutilita-dellinutile-a-proposito-del-libro-di-nuccio-ordine/) retrieved in September 30th 2021.

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24. "The Life of a Song: 'Dem Bones'". Helen Brown in Financial Times (https://www.ft.com/content/6d2c8b58-d1b0-11e5-831d-09f7778e7377) retrieved in September 30th 2021.

25. The spiritual song "Dem Bones" (also called "Dry Bones", or "Dem Dry Bones") was first recorded in 1928 by The Fisk Jubilee Singers with the title "Dry Bones", here's a link to listen to it: https://www.youtube.com/watch?v=dKt74dqBLLk. The lyrics presented in the text are an excerpt corresponding to the first part of the song that sings about the bones being connected. The second part of the song describes the bones being disconnected. We don't want that, do we?