

THE URBAN MORPHOLOGY OF CITIES IN THE FUTURE: ÉVORA AND SETÚBAL – PORTUGAL

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ABSTRACT: The way cities have organized and developed, since their first human settlements, show the marks of the idiosyncrasies of the populations that gave rise to them, whether in the cultural, socio-economic, religious, and functional spheres. A comparative appreciation of the cities of Évora and Setúbal has been done in their evolutions during a period comprehended between the Middle Ages and the present time, while cities contained in walled enclosures, in the Middle Ages, until the present urban expansion. In the name of progress, at the end of the 19th century and the beginning of the 20th century, there was a very significant expansion and

transformation of the urban fabric, creating the need to adapt to new circumstances brought about by the automobile, and the historic cities have seen many of their symbolic and identity elements disappear. The disproportionate urban growth and new trends, alerted to new organizational objectives, having returned to the previous model of the historic city with spaces for pedestrian circulation. In the future, it will be even harder to predict a morphological model to follow. Recent events, such as the pandemic, created a new paradigm of work, and if this trend continues, the movement of people will be drastically reduced. In a global society in constant and rapid transformation, with such mutable and unpredictable factors, it is sensible to consider flexible planning strategies regarding urban expansion, but relentless regarding its heritage essence, because unpredictability, everything will be open.

KEYWORDS: Urban fabric, evolution, future.

RESUMO: A forma como as cidades se organizaram e desenvolveram, desde os seus primeiros assentamentos humanos, mostram as marcas das idiossincrasias das populações que lhes deram origem, quer no âmbito cultural, sócio-económico, religioso e funcional. Uma apreciação comparativa das cidades de Évora e Setúbal foi feita nas suas evoluções durante um período compreendido entre a Idade Média e a atualidade, enquanto cidades contidas em recintos amuralhados, na Idade Média, até à atual expansão urbana. Em nome do progresso, no final do século XIX e início do século XX, assistiu-se a uma expansão e transformação muito significativa do tecido urbano, criando a necessidade de adaptação às novas circunstâncias trazidas pelo automóvel, tendo as cidades históricas visto desaparecer muitos dos seus elementos simbólicos e identitários. O crescimento urbano desmesurado e as novas tendências, alertaram para novos objetivos organizacionais, tendo-se regressado ao anterior modelo de cidade histórica com espaços de circulação pedonal. No futuro, será ainda mais difícil prever um modelo morfológico a seguir. Acontecimentos recentes, como a pandemia, criaram um paradigma de trabalho, e se esta tendência se mantiver, a circulação de pessoas será drasticamente reduzida. Numa sociedade global em constante e rápida transformação, com fatores tão mutáveis e imprevisíveis, é sensato considerar estratégias de planeamento flexíveis no que diz respeito à expansão urbana, mas implacáveis no que diz respeito à sua essência patrimonial, pois com a imprevisibilidade, tudo estará em aberto.

PALAVRAS-CHAVE: *Tecido urbano, evolução, futuro.*

INTRODUCTION

Human settlements, as embryos of cities, date back to very distant times. The way in which they were organized and developed diachronically, show the marks of the peculiarities of the populations that gave rise to them, whether in the cultural, socio-economic, religious, and functional spheres. Évora and Setúbal are cities with very distant origins, still preserving their historic centre, delimited by a set of walls whose construction dates to the Middle Ages. These walls are remarkable for the interpretation of the urban picture and can be seen in the design of the urban fabric, in the case of Évora, as a radio-concentric city, and in the case of Setúbal, as an elongated shape, generated by the orientation of urban axes parallel to the coastline.

Taking these cities as a case study, in a time span that covers from the Middle Ages until now, we compare their evolution as walled cities, as well as their expansion beyond the city walls.

To make this comparison, relevant bibliographical documents, cartography, iconography and photographic images of both cities were used. These elements were gathered and then analysed considering the era where they were produced.

Another factor, not least is the support of the decades of academic and work experience of the authors, as well as the profound knowledge that the authors have about both cities, either from their past times, and currently.

EVOLUTION OF THE URBAN MORPHOLOGY IN ÉVORA AND SETÚBAL

The medieval defensive system was reinforced since 1640, with the construction of modern bastioned fortifications that enclosed the consolidated urban areas.

With the creation of these new limits, there was a disruption of the old urban setup, with the loss of functionality of the old defensive structure and its opening to widen the walled city, creating better accesses and new neighbourhoods.

In the end of the 19th century and the beginning of the 20th century new paradigms of development and wholesomeness emerged giving rise to the creation of new principles of urban morphology.

The Modern Age

The restoration of national independence in 1640 and the political situation that the country was experiencing at that time, led to a higher concern with the protection of the villages, leading to the improvement of the defensive systems, either by reinforcement of existing structures or by building new ones, after 1640.

Several military engineers were dedicated to the construction of the new fortifications. In Évora, military engineers Charles Lassart, Jean Gillot and Nicolau de Langres worked here in the construction of the new fortifications. We consider Engineer Jean Gillot and Fr. Johannes Cosmander, who conceived the new defense structure, João Ruiz Mouro, and João Thomas Correa. Jean Gillot represented the studies with drawings of the outskirts of the village with great definition of details. As in Évora, Nicolau de Langres also worked in Setúbal, having made blueprints of this fortification, although with a more simplified layout.

In Évora, the initial urban center focused the urban evolution in a walled enclosure and determined the radial organization of the various types of urban design, with the roads radiating from the main doors (Figure 1).

In Setúbal, the centralization of the urban center and the coastline determined the urban organization, with the development of the main roads parallel to the course of the Sado River (Figure 1).

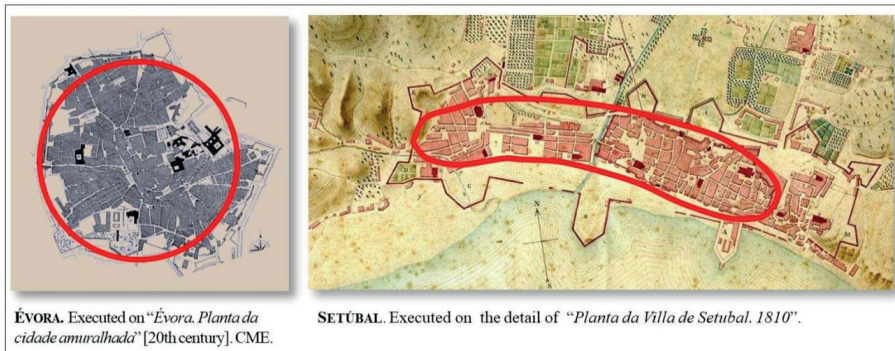


Figure 1. Évora and Setúbal: Urban morphology scheme of these cities.

The religious power, and influence of churches in the development and in the urban morphology, dates to the Christian Reconquest, in the 12th century. In Setúbal it was based in the churches of Santa Maria da Graça and São Julião, which became the first two parishes until the 16th century when the parishes of São Sebastião and Nossa Senhora da Anunciada were created, in 1553.

These four parish churches are mentioned in the voyage of Cosme de Medici and designed by Pier Maria Baldi (Figure 2), in the urban profile as landmarks of the city, which have remained until the present, with the exception of the Church of S. Sebastião which was demolished in the 19th century. However, the current Church of São Sebastião, in the Convent of São Domingos, is also a relevant mark in the city's image.

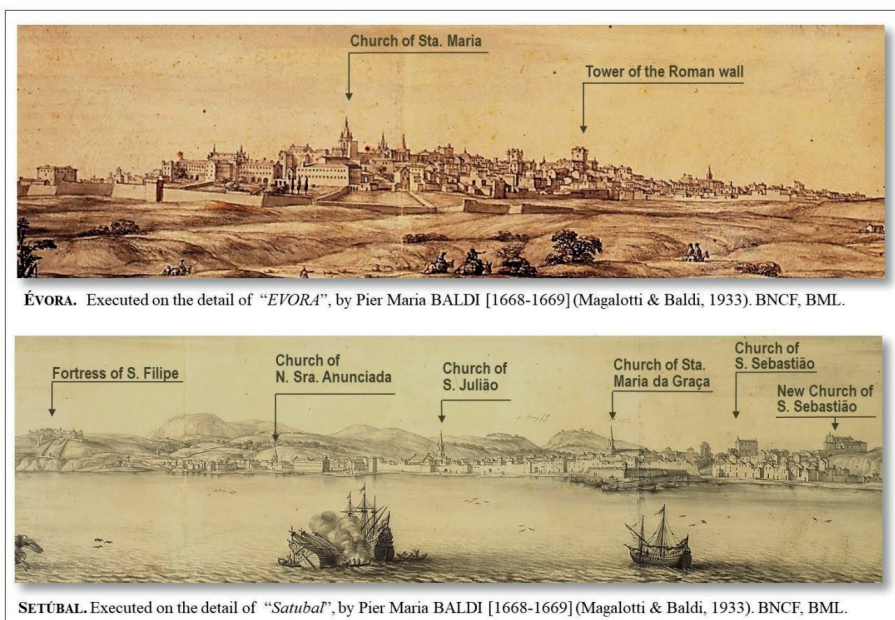


Figure 2. Évora and Setúbal: View of the cities (17th century).

The present

With the introduction of the canning industry in the 19th century, Setúbal enjoyed a big economic development and started a process of big urban transformations that would happen during the following century.

In the name of progress, at the end of the 19th century and the beginning of the 20th, there was a very expressive expansion and transformation of the urban fabric, creating the need to adapt to the new circumstances brought by the car, and the new social aspirations and their insertion in the city.

In the name of progress, at the end of the 19th century and the beginning of the 20th, there was a very expressive expansion and transformation of the urban fabric, creating the need to adapt to the new circumstances brought by the vehicle, and the new social aspirations and their insertion in the city. The historic cities saw the disappearance of many of their symbolic and identity elements.

Until the middle of the 20th century the cities remained confined to the walled space, having then emerged new urban dynamics influenced by European movements. With the changes recommended for the cities, an environmental quality would result that surpassed the limits of the “historic medieval city”. A new cycle of economy based on industry was also beginning. The adaptation of cities to new realities began with the implementation of public facilities, infrastructure, public walks, creation of new public spaces and the organization and regulation of buildings.

The development of these cities can be understood through the photographic images that constitute fundamental testimonies for their knowledge from the mid-19th century onwards. Of Setúbal stands out the first known photograph, which contributes to the understanding of its urban and architectural history, by Anthero Seabra. For Évora we must refer José Pedro Passaporte.

Portugal was going through a period of new policies, called “Estado Novo”, during which new interventions in the historic urban fabrics were planned. In Évora, Étienne de Gröer designed the creation of new squares, opening different streets and realigning others, through the demolition of existing buildings. In Setúbal, João Aguiar designed the General Urbanization Plan. Of this Plan, the devaluation of monuments (fortifications) and the existing urban structure stands out, with demolitions that advocated a great expansion, zoned on a structure of main roads that traversed the city, ripping perpendicularly through the existing main streets. New ways were pointed towards the already created Av. Luísa Todi, whose relevance was reinforced with the construction of landmark buildings, to the detriment of the old town facing Sado, with the current Av. Dr. António Rodrigues Manito becoming a major road axis.

In Évora, the urban space defined by the successive urbanization plans was structured through the construction of a set of roads, some radial and others circular, which

allowed the interconnection of the various neighbourhoods scattered around the historic centre surroundings. The constitution of circulation axes, inside the walled space, together with the constructive reinforcement along the paths, would create, according to Gröer, a more intense urban image adapted to the demands of the new times.

The preliminary urbanization plan for Évora, designed by the urbanist architect Étienne de Gröer, began in 1942, proposing different types of interventions for different socio-urban scenarios. Outside of the entire walled space, Gröer proposed the construction of a new urban area with the characteristics of a “garden city” that, surrounding the old nucleus, constituted a “lung” that would allow for a better environmental quality.

In Setúbal, wide avenues were created featuring new typologies, with two lanes separated by a tree-lined central space, and drawn perpendicularly and parallel to Av. Luísa Todi, projecting the city to the North and East with the construction of new districts. This transversal profile of the streets has been changing and there is currently only Av. 22 de Dezembro.

The current Évora Urbanization Plan, maintaining much of the road structure proposed by Gröer in 1944, continues to preserve the spirit of a radial city with the respective circulars, densifying the housing areas, which fill the previously existing urban voids.

The urban consolidation of Setúbal remained within the limits of the 17th century fortification until the end of the 19th century, when the earthworks carried out on the Sado River allowed the acquisition of new areas for construction and the transformation of Rua da Praia and the beach into the new avenue, changing the urban morphology, making this avenue the main structuring axis of the city.

The city expanded to the South (Sado River), with the creation of equipment and large lots for housing, to the North and East, with the creation of housing districts, with great emphasis on social housing.

The morphological structuring lines of these medieval cities have changed with the new roads, but they have kept their urban center, which dominates all the morphological space (Figure 3).

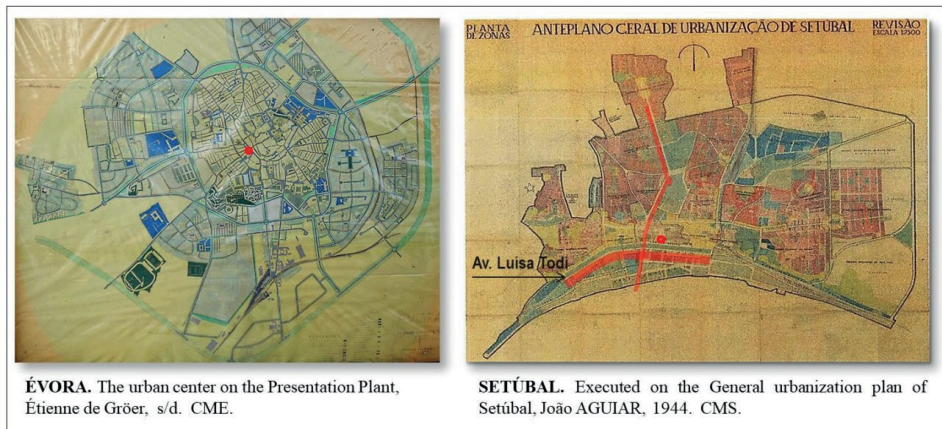


Figure 3. Évora and Setúbal: Urbanization Plans (20th century).

CAUSES OF URBAN MORPHOLOGY TRANSFORMATION, DIFFERENT MORPHOLOGICAL TREATMENT SCENARIOS

Cities have undergone morphological changes over time for very different reasons, with Évora being an example of destruction by the same culture, during the Islamic period.

The factors of progress, such as industrialization, also completely altered the image and morphology of cities, with the excessive influx of populations to cities, creating factories and housing and travel needs. The rampant growth of cities and their ever-increasing size has made the use of the motor vehicle essential. This factor that has contributed in a very relevant way to the alteration of the urban morphology configuration, as well as to the loss of heritage values of reference, to allow the automobile circulation.

The current pandemic (COVID-19) has changed the paradigm of the ways of working, demonstrating that work can be done from the home, may also have consequences for the use of means of transportation and the use of urban spaces.

Another factor that contributes to changes in people's lives are armed conflicts, determinant in the maintenance or alteration of references in correlation with the morphology of cities and the consequent emergence of new morphological dynamics.

We try to give some examples of the situations mentioned above.

Automobile occupation

In the old walled enclosures, due to the growing need for automobile traffic, several old gates (19th and 20th centuries) were demolished, as well as other relevant sections of the walls.

In Setúbal, several adaptations were made, with reference being made to the total connection between Praça do Sopal and the surrounding urban areas, with the demolition

of Porta Nova for a better connection to Bairro do Troino, and other doors and sections of the medieval wall to the opening of the same. The urban centre, with all its valences, has also become the center of the city's road network. The new urban models determined the expansion of the urban space with the Sado River landfill to create large lots of housing, equipment, and industry.

At the end of the 20th century, we witnessed the proliferation of a new design of renewal in the road network, to solve the flow of traffic at intersections, by building traffic circles, which invaded our cities.

This new system of intersecting roads reached a diffusion that sometimes exceeded the rationality of environmental and cultural management, causing in Setúbal the destruction of sections of the aqueduct, whose construction dates to 1487 and earned the classification of Public Interest Property in 1971 (Figure 4).

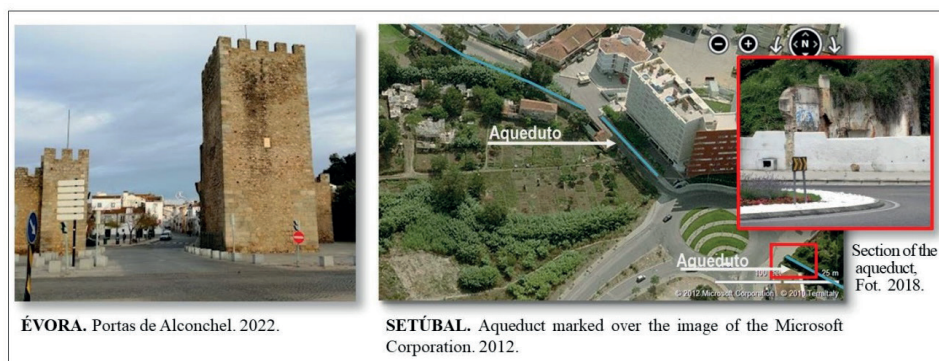


Figure 4. Évora and Setúbal: Examples of cultural heritage demolitions due to cities' adaptations to car traffic.

Economic and industrial development. The transformation of the landscape

The historic center of Évora has a fully consolidated urban structure, and the buildings are progressively being restored by their owners. Following the classification of the historic center by UNESCO, in 1986, tourism has played an important role in the city's experience.

The urban design has been maintained, but the dynamics of morphology has changed with the changes of use of the building for tourism.

Setúbal had a strong connection to the river, either by the factor of economic sustainability or by the length of beach along the coast, which combined with the natural environment, the favourable climate, and the quality of its waters, made it a beach holiday destination, to which the city has adapted with the construction of support equipment necessary for this use.

Industrial development dictated a more profitable urban occupation of the beach area with the need to build canneries there.

The city expanded along the river to create new blocks of construction dedicated to the canning industry, which also no longer exist. (Figure 5).

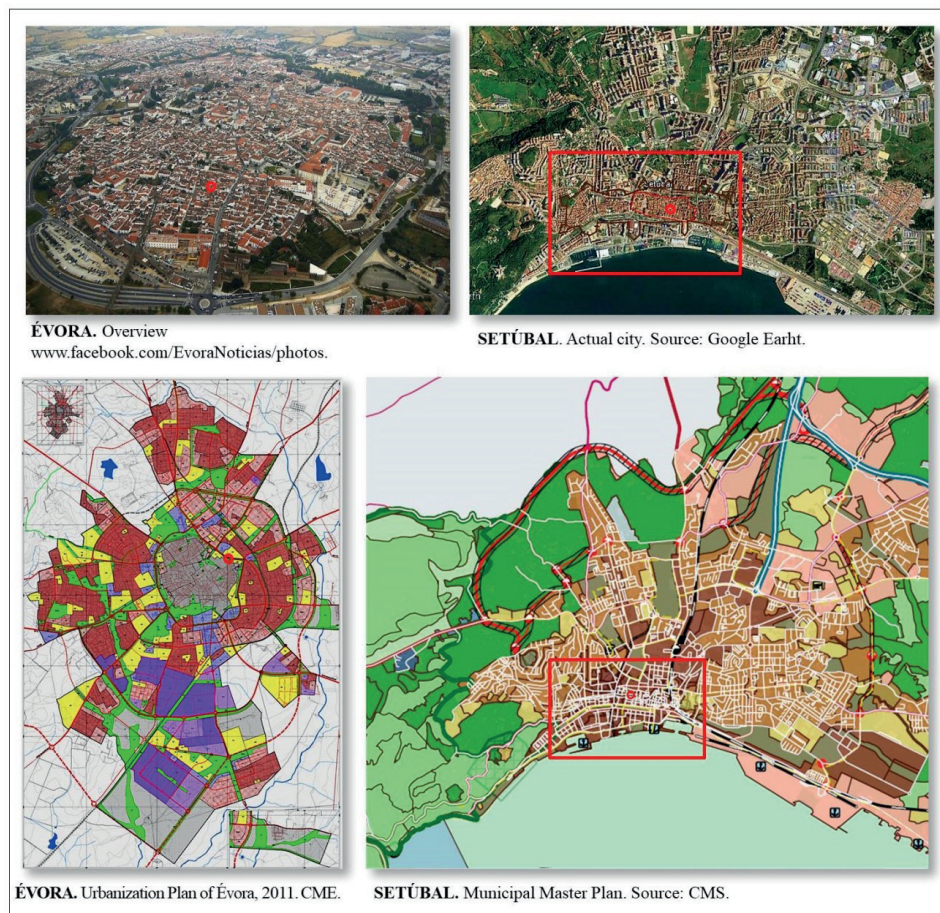


Figure 5. Évora and Setúbal: Nowadays.

MOTIVATION FOR THE MORPHOLOGICAL CHANGES. OTHER PARADIGMS

The causes of destruction and reconstruction can be quite varied, from natural catastrophes which can submerge cities and make ancestral cultures disappear, as is the case of Alexandria, to earthquakes, or volcanic eruptions, among others as in the example of Palmira, whose existence benefited from the presence of an oasis in the desert.

Through the studied cities we verified the alteration of their urban morphologies, throughout several centuries, for several reasons that refer to new forms of technological, hygienic and health, economic, sociological, and political life.

However, nowadays these dynamics arise at a faster pace and, for the most part, unexpectedly, of which we give some examples, and for which a satisfactory solution has not always been found for the respective communities.

Technical development

The construction of the Alqueva Dam (1975/2010) on the Guadiana River in Portugal, allowed a major agro-industrial development in the surrounding area and a major transformation of the landscape.

For this construction it was necessary to relocate (1998 / 2002) the old village Aldeia da Luz, which would be completely submerged in the largest artificial lake in Europe.

A new village was built in the image of the previous one, without, however, having reached the goal of total acceptance by the population, who live with the memory of the previous village.

Natural disasters

Setúbal has a location that makes it vulnerable to accidents caused by nature and its destruction. With the prospect of rising sea waters, it will be one of the cities with the lowest part at risk, and the Sado River may come to reclaim what was taken away from it. It has already suffered several earthquakes that almost destroyed it, namely in 1531, 1755 and 1858. The streets were destroyed, the buildings were damaged from the second floor onwards and there was a great loss of historical heritage. This destruction forced repair work to be carried out over a number of years. However, the urban morphology of the city was maintained with the reconstruction on the foundations of the existing buildings.

The same did not happen in Lisbon, that when the destruction occurred with the 1755 tsunami, the managers appointed by King D. José I, for this purpose, opted to make *tabula rasa*, of the territory, ignoring all the existences, including the cadastral ones, they planned a new urban area with a new morphology in which only the main references were maintained, namely the churches, with the Church of Carmo still in ruins that are still preserved. It continued to be the city's urban center.

Pandemics (COVID-19)

The COVID-19 pandemic, with the restrictions imposed for public health reasons, has given cities an image never seen before: completely deserted cities. There has been no morphological change, only the image and experience of city life has changed.

This situation brought about new habits that, in many cases, will remain and reveal to us the existence of cities that are less lived out, where the use of the car for daily commuting is more reduced and the streets, once again, are less crowded.

Destruction by armed conflict

The current geopolitical situation in Ukraine demonstrates that urban morphologies and consolidated cities can be destroyed in seconds by the power of current military weaponry, leaving the question of which way to go when the situation ends.

- Rebuild in a manner similar to previous presences? It will mean devising a false history.
- To build by *tabula rasa* of the existing? It will mean erasing the morphological and cognitive references.
- Maintaining the morphology of cities with the reconstruction of the buildings that are part of the cognitive memory of the citizens and that constitute the material and immobile heritage that embodies the immaterial heritage? It will mean an approach to the sociological balance of the community.

THE APPEAL TO COGNITIVE MEMORY AFTER THE DESTRUCTION OF HERITAGE REFERENCES

The feeling of loss of identity, which can cause the disintegration of citizens, or the sociological instability associated with nostalgia, makes us feel the desire to relive the past, revisiting images from those times or recreating artificial scenarios, when the renovations carried out have caused irreversible changes. Sometimes the nostalgia of the communities demands the recreation of this destroyed heritage, arising the need to revive the memories with the construction of replicas, museums, photographic and other exhibitions.

In the case of Setúbal, in 2005, a replica was built of one of the oldest wells in Setúbal, the Poço do Concelho, which was demolished in the mid-20th century, when it was no longer used by the population. Also, the recent urban rehabilitation carried out in the riverside area restored the Praia da Saúde in this space, eliminating the old boat construction site that existed there.

Museums are a relevant example of heritage loss showcases, in all cities. Part of this heritage is still present, but decontextualized. Furthermore, we refer to the example of the Museu Nacional Frei Manuel do Cenáculo in Evora, which contains a collection of architectural elements taken from buildings of various urban periods of the city.

WHAT SCENARIOS FOR THE FUTURE OF THE CITIES?

The disproportionate urban growth and new trends, alerted to new organizational objectives, have returned to the previous model of the historic city, in which pedestrian circulation spaces are privileged.

Considering recent factors such as the pandemic, which has created a new paradigm for work, it will be more difficult to predict a morphological model to follow in the future. If this trend continues, the movement of people in cities will be drastically reduced.

In the face of climate change, it would be desirable that they influence behavioral practices, more appropriate to the permanence of the urban space and the persistence of the cognitive memory of the population of the historic city, in which pedestrian circulation spaces are privileged, in a less polluted city.

All these factors, whose future is unknown, may appear to us in an unknown way and in a very quick time, influencing the ways in which cities and their respective morphologies will develop, as well as the decisions to be taken.

CONCLUSION

In a global society in constant and rapid transformation, with such mutable and unpredictable factors, it is sensible to think of flexible planning strategies regarding urban expansion, but implacable regarding its heritage essence, because in the unpredictability, everything will be open, except the feeling of life and collective memory of communities.

It would be desirable that there be no changes in the historic urban morphologies, for these remain very incisive in the identity of the communities. Likewise, special care should be taken with the destruction of the architectural heritage of cities, as they constitute fundamental references of collective memory.

Whatever the future and the results in the territory, it will be correct to plan the territory to be occupied, using multidisciplinary work teams, and always with the perspective that changes may occur outside any planning, and in these cases, it will be necessary to restart the process in view of the new premises (Figure 6).



Figure 6. What will the future be?

The idea of ideal planning is not recent, and already in the 16th century, the genius Leonardo da Vinci projected the ideal city as an organism structured as a whole, however this organism has its own life and external influences always in constant mutation and an image that is always unfinished, because today is no longer tomorrow. “*We understand*

that the intervention actions in this[these] old city[ies], should follow judicious solutions, in the understanding that its working stage is a city that has consolidated social and memory values, which should be associated with the new working objectives, increasing its potential and improvement of practical results of the actions.” (Tomé, 2017).

We can only hope that, in the future, the gods will enlighten the minds of the designers and managers of the territory in the most appropriate decisions for the daily and future life of communities, always keeping in mind that there is a heritage that, under any circumstances, as a collective good should be maintained (Figure 6).

Our objective should be the continuity of a society sustained by forces of physical-functional, organizational-intellectual, and practical-emotional balance, for a desirable sociological balance.

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