INTERNATIONAL EXHIBITIONS AND URBANISM PRODUCTION: 
COMPARATIVE STUDY OF LISBON AND SEVILLE

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ARCHITECTURE

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* All the translations were made by the author
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ABSTRACT | ENGLISH
The current thesis aims to understand how the Expos were constructed until today, identify what happens to an Expo site and facilities after the event ends plus, what is the Expo’s role on the city plan and life. This analysis also intends to study whether there is a successful model for an Expo to follow and what is the future for this type of event. Besides a brief comprehension of all the past Expos, two were chosen as case studies: the 1992 Expo of Seville and the 1998 Expo of Lisbon.

Initially, this thesis analyses the context of this type of events through its relation with the urbanism’s history, the impact Expos produced worldwide, the different kind of experiments existed and the relevance of urban indicators.

The second moment is the result of gathering plenty of data, mostly images, of a wide sample of the past Expos and its comparison. The idea was to fully understand the concept of an Expo and the consequences on a city.

The last chapter is the analysis of the two case studies based on all the Expo characteristics relevant in terms of urbanism, learned from the previous chapter.

This dissertation allows the comprehension of the different ways to approach hosting an expo and its consequences towards the city. Besides, it identifies which are the Expo’s characteristics most likely to have a positive urban impact.

Keywords:
Expo
City’s Integration
Expo Seville 1992
Expo Lisbon 1998
Esta tese tem como objetivo compreender como foram construídas as Expos até aos dias de hoje, identificando o que aconteceu depois do evento ao local e às infraestruturas utilizadas, e ainda perceber qual é o papel de uma Expo no urbanismo e na vida de uma cidade. Pretende-se também analisar se existe um modelo de sucesso que as Expos devem seguir e qual o futuro para este tipo de eventos. Para além de uma breve análise a Expos passadas, foram escolhidas duas como casos de estudo: a Expo de Sevilha em 1992 e a Expo de Lisboa em 1998.
Inicialmente, esta tese analisa o contexto deste tipo de eventos através da sua relação com a história do urbanismo, o impacto que as Expos tiveram mundialmente, os diferentes tipos de experiências que foram feitas e a relevância de indicadores urbanísticos.

De seguida é mostrado o resultado da recolha dos dados, sobretudo em formato de imagens, de um vasto leque de Expos passadas e a sua comparação. O objetivo é que se compreenda o conceito de uma Expo e as suas consequências para a cidade.

No último capítulo são analisados os dois casos de estudo, tendo por base todas as características relevantes de uma Expo em termos de urbanismo, vistas no capítulo anterior.

Esta tese permite compreender as diferentes abordagens na organização de uma Expo e as consequências que isso tem numa cidade. Para além disso, são identificadas quais as características de uma Expo que provavelmente têm um impacto urbano positivo.
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LIST OF ABBREVIATIONS

BIE Bureau International des Expositions

CIAM Congrès Internationaux d'Architecture Moderne

US United States

PCT Parque Científico y Tecnológico

Fig Figure
0. INTRODUCTION
0.1 STUDY JUSTIFICATION

Throughout my architecture studies, the interest and comprehension of the city started to be stimulated. Usually, the topic of urbanism is more explored in the final year of the course but since I experienced an Erasmus program on the fifth year, I studied other subjects. Therefore, the thirst and curiosity for the theme remained unanswered. The desire to understand deeper the concept of the city and the practice of urbanism was also emphasised by living in a city with great potential and observe its recent works of requalification.

Besides, I was interested in studying the city nowadays and understand the way urbanism is projected after centuries of experiences, theories and studies. The approach chosen for this study was the Expos, being an international event happening since the middle of the 19th century. The aim was not to focus on the event but to see it as a production of urbanism and understand its process and consequences on a city.

The Expos rely on the productions of original and/or innovative urbanistic solutions in a coherent and (almost) perfectly controlled system. How do these "instantaneous" productions are articulated with the temporalities of classic urbanity and with the diversity of urban's development both actors and "normal" process? Looking back 20 or 25 years, how do they participate in the city's production and how are they included (or not) in the urban fabric? Considering these operations, precisely due to their innovative character, spectacular or controlled, are they the catalysts or the inhibitors of urbanistic development?

This study will be based on the analysis of two archetypal figures (Seville and Lisbon), comparable since they were created almost simultaneously (1992 and 1998) and they belong to a homogeneous socio-cultural context.

0.2 STUDY PURPOSE

Up until now, fifty-seven Expos (recognised by the BIE) happened and several more are being planned for the next years. This study aims to understand how the Expos were constructed until today, identify what happens to an Expo site and facilities after the event ends plus, what is the Expo’s role on the city plan and life - originally and now. This analysis also intends to analyse whether there is a successful model for an Expo to follow and what is the future for this type of event.

Since the scarce bibliography on this topic, this dissertation can contribute to gather and synthesis of data. Besides adding a new angle on this Expos through the analysis of the case studies Expo 1992 of Seville and Expo 1998 of Lisbon.
This dissertation has indeed a personal purpose, to enrich the knowledge about my hometown and an occurrence that happened in the year of my birth. Moreover, to understand how a city can develop and transform itself (or partially) during a quarter of a century, approximately.

0.3 STUDY OBJECT

As referred, this study is based on two case studies: Expo Seville 1992 and Expo Lisbon 1998. Despite having similar realities and time vicinity, the approaches and results were different besides being in obviously different cities. Nevertheless, more Expos are analysed through this work to achieve a complete perception of this type of urban interaction.

0.4 STATE OF THE ART

This dissertation focuses on the reality of International Exhibitions as a way of producing urbanism. However, very few works were written on the urban impact of Expos, rather analysis on the subjects of the economy, visitors and social experience or architecture (of the pavilions). Almost only specific works regarding a single Expo and its urban design were created, considering it as a unique event. This thesis demanded a global analysis of the past Expos and not only the chosen case studies. To study this theme several literary works were consulted in order to build a wide base of information on the topic.

First, it was necessary to know the history of urbanism contemporary to the Expos to understand how cities have developed and been theorised outside the context of Expos. To that intend the books Metodologia Urbana e Desenho da Cidade and Breve Historia del Urbanismo were consulted. On the second book, Goita explains the different cities through time and different locations, especially describing the cases of Spain. On the first book, Lamas also writes about the same topic but his work is more extensive and emphasises the different theories and experiences done all over the world, even if on a smaller scale.

In parallel, it was necessary to understand the concept of International Exhibitions as a big event. The author Vítor Matias Ferreira in A Cidade Da Expo’98 clarifies when an event is considered a big event: “The first consideration is, therefore, that a great event is considered as such if it produces effects of transformation (construction) in the place where it takes place.” (Ferreira, 1999, p. 133). To this terminology, it is not relevant the importance or the number of people attending the event but the amount and scale of construction done. Ferreira understands the opportunity of big events if a city takes advantage of it even though this is not a constant reality. Also in this book, the author identifies three types of big events: sportive events (the Olympic Games or the World Cup), expositions (Expos) and religious events. Contrasting to Expos, Olympic Games have been a target of the urban study
several times. This implies a global neglect of Expos as an urban occurrence or the simple oblivion of this type of events.

The purpose of International Exhibitions has changed over the years. Ferreira explains the initial purpose of Expos, that was to “show the scientific and technological innovations of countries and specific companies and mainly, the “new” products, in an attempt to transfer them (sell) to others.” (Ferreira, 1999, p. 135)

One of the rare studies of the Expo’s urban impact was made by Javier Monclús in *International Exhibitions and Urbanism: The Zaragoza Expo 2008 Project*. In this work, the different periods of Expos are explained, a few Expos are briefly analysed and the Expo of Zaragoza is presented in detail as the chosen case study. In his analysis, Monclús identifies a second era of the Expos that he claims to have started on the 1930s after the Second World War “when general objectives were changed to give greater importance to recreational and educational aspects, which was also a time when more pragmatic ideas were being imposed, with the use of events for urban development purposes.” (Monclús, 2016, p. 7) Although several Expos are presented in this work, the state and consequence of the Expos are only properly presented in the case of Zaragoza. This dissertation hopes to identify as well the present state of all the Expos’ sites.

Referring to the case of Zaragoza, Monclús notices the positive impact Expos can produce: “The most generalised objectives were those of extending the advantages of hosting the Exposition to the whole city and its metropolitan area, serving as a catalyst for various urban development plans and projects that were either already in progress or that were reinvented because of this event.” (Monclús, 2016, p. 152)

In collaboration with Manuel Guardiá, Javier Monclús wrote a book called *Culture, Urbanism and Planning* 1 presenting several urban strategies, being International Exhibitions one of them. Sharing a non-one-sided view, the disadvantages concerning costs and risks are also stressed “from the ‘investment overdose’, that is to say, the excessive concentration of resources in a limited space, to the physical risk of the formation of enclaves or precincts poorly integrated to the urban structure or at the danger of an excessive standardisation, theming or banalisation of the projected spaces.” (Monclús & Guardiá, 2016, p. 238)

As B. Secchi stated in 1999 “To build the future is to work within the characteristics of the contemporary city and modify them.” (cit. in Monclús, 2016, p. 171) Consequently, it is necessary to

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1 Available in https://books.google.pt/books?hl=pt-PT&lr=&id=p8QpDAAAQBAJ&oi=fnd&pg=PR5&dq=m.+guardi%C3%A1+culture,+urbanism+and+planning&ots=ee_E_NT0nPC&sig=icBeS3kLJoQrEYX_4q19xUZ06w&redir_esc=y#v=onepage&q&f=false
research and acknowledge the characteristics of a city, before acting on it – permanently or temporarily.

0.5 METHODOLOGY
The process of this work started with a study of the history of urbanism to understand the base of the topic chosen to analyse.

The second phase consisted of collecting the maximum data as possible on Expos about urbanism. Followed by gathering information on the Expos’ history and its importance over the years. Due to the lack of information available on the urban perspective of Expos, it was necessary to collect plenty of photos and maps of their sites plus, analyse and compare them with their present situation. This allowed the comprehension of the different type of relation an Expo can have with the surroundings and which cases were worth mentioning in this thesis. Afterwards, it was elaborated a table with the gathered information on a wide sample of Expos, comparing the previous state of the site with the characteristics of the event and the present condition and facilities of the site.

After all the knowledge acquired on the Expos, it was possible to make a deeper analysis and comparison of the case studies and later, the final conclusions.

0.6 STRUCTURE
The work is divided into three main chapters, besides the Introduction and the Conclusions.

On the first chapter “Contextualisation”, the first subchapter presents the history and theories of urbanism, since the period Expos first appeared and its influence on the events. The second subchapter highlights some of the Expo’s creations that had an impact worldwide. As for the third subchapter, it explains the factors that may influence the post-Expo successful use. The last subchapter, stresses the relevance of urban indicators for this type of events and the role of Expos has a catalyst for the city hosting the event.

As for the second chapter “Development and Differences Through Time”, it consists of an analysis of the differences of Expos through the years in terms of purpose, urban plan and the integration of the site in the city (both during and after the event). For the topics of urban plan and site’s integration, several case studies were briefly categorised and analysed.

About the third subchapter “Case Studies: Seville vs Lisbon”, first, there is an analysis of each case study, followed by a comparison of the examples of Seville and Lisbon. This analysis is based on the examples previously analysed.
All the analyses made was necessary to elaborate conclusions, suitable to both Expos’ and cities’ reality.
1. CONTEXTUALISATION
1.1 THEORIES AND EVOLUTIONS

Through the history we know, men experienced various different ways of making a city. Differences coming from a multitude of locations and time which resulted in various materials, technics and shapes.

1.1.1 INDUSTRIAL CITY

On the second half of the XVIII century, the Industrial Revolution occurred and its innovations had also urban consequences. The population growth led to a rural exodus based on the search for work which was also stimulated by the transport’s improvements. With the Industrial Revolution “Company Towns” were born. Cities only formed by housings for the workers of the closest factory, with maximum use of the ground and minimal conditions. These cities had an unplanned growth starting with the factories in the centre and the working-class neighbourhoods next to them. Later, the outskirts grew. Some of the new industrial centres were located on the big baroque cities where the population’s surplus was likely to work under bad conditions. The industrial city was polluted, had buildings too crowded, lack of hygiene, homes with no conditions and serious social issues. These harsh conditions were real in both new cities and previous baroque cities.

The consequent unhealthy urban conditions created by the Industrial Revolution led to a desire for a new city, healthier and fairer to every social class. During the end of XVIII and the XIX centuries, a few social utopias were written regarding architectural and urban issues. They consisted of theoretical city plans trying to solve social issues the authors recognised existing. Nevertheless, these utopias had an impact on what would happen in the city. The belief behind it was that to obtain an ideal society it was necessary to build the perfect the city.

Charles Fourier (1788-1856) idealised a palace, the Phalanstère, with a maximal area of 25ha where no more than 1600 people should live on and where there would be included public services. The idea was to create several of these palaces and assure they would be self-sustaining since they had agricultural lands and would trade goods with each other. However, the work would be volunteered. The palace was monumental with several patios and arcades which served as streets. The palace was organised in divided areas following age differences. In France, there were only a few trials of the Phalanstère, whether in the USA up to fifty examples were built but only three lasted more than two years.

Robert Owen (1771-1858) aimed to improve the workers’ labour conditions which he believed would lead to a greater productivity. With that in mind, he created an ideal factory as well as a city for the workers. The city was formed by a community between 500 and 2000 inhabitants, placed on around 50ha agricultural lands. Industrial activities were also incorporated. The housings were square shaped for 1200 people where there were apartments for everybody in the community (with divided areas for
different family sizes and children’s age) and in the centre were the public buildings, green areas and sportive fields. Outside the housings, were the industrial buildings, warehouses, barns and other services plus rural buildings. Owen believed in this city there would be no need for courts and prisons since the new society, this perfect city would create, would not need them. This approach experimented on New Lanark, where Owen lived and was also tried on other locations.

Jean Baptiste Godin (1817-1888) created the Familistère which was a social palace, obviously influenced by the work of Fourier and Owen. The project lasted from 1859 to 1968 and occupied around 18ha, being isolated in a park and surrounded by a creek. The palace was composed of the workers’ housings which included some patios covered with awnings that made them serve as interior streets. Moreover, the services were in other buildings nearby.

Voyage en Icarie (1840) described an imaginary island thought by Étienne Cabet (1778-1856). It consisted of a round shaped city, divided by the river into two equal parts. In the middle of the river, there was an island which was basically composed of a plaza with trees and a palace in the centre, surrounded by a great garden. The rest of the city had an urban grid of fifty large and straight streets that were either parallel or orthogonal to the river. Besides, the city was an ensemble of sixty neighbourhoods with the same dimensions and each one reproducing monuments of sixty ancient cities – in order to avoid tourism. Cabet worried about urban hygiene and sanitation thus he planned cemeteries, hospitals and industries to be outside the cities. Also regarding that concern, pedestrians, vehicles and horses would have separated circulations, to assure there was no dirt or dust. Moreover, pedestrians would be protected by the weather by putting glasses to protect them from the wind but maintaining visibility on every street plus, removable fabrics to protect from the heat. About the social part, the aim was to avoid addictions and bad habits and so, there would be no coffee shops, bars, gambling establishments, polices, prisons, spies, prostitutes or homeless people. Étienne Cabet tried to implement those ideas on communities for European immigrants in the USA.

Later, a few cities were changed, more or less intensely, in order to provide better and healthier conditions and to try to solve some of the social issues felt.

Haussmann rethinks the city of Paris as a whole and starts his plan in 1853. Although he was not afraid to demolish the existing cities to rebuilt them in a new and – what he considered – better way, he maintained the medieval symbolic monuments. His plan differentiated the housing areas per social classes. While lower classes were in the surroundings in new neighbourhoods, high classes were in the centre. This difference was not only based on location but also marked by differing the dimensions of buildings and streets. Unfortunately, while the city became more beautiful and healthy in the centre, in the suburbs there was not the same care and people still lived under difficult conditions. The new Paris had new basic services and infrastructures such as aqueduct, sewer, gas lighting installation and
a public transport network; as well as theatres, train stations and operas. The concern about sanitation and beauty was present so, green areas, plantation of trees and creation of woods were part of the plan. Straight large avenues were opened in a perspective way, connecting monuments on wide plazas, aimed for bigger visibility, contemplation and reference. This way, the city was easy to access, control and maintain safety. Contrarily to the unpleasant industrial cities, the street was aimed to be lived on. With that in mind, coffee shops were planned to have terraces all year, the sidewalks to be large enough for a four-people family walk side by side plus, lightning and beautiful fountains were present elements, too. Having the desire of a city with the same appearance, a regulation was created mainly regarding the building and the street – to control urban image and facades uniformity. Coherent to the era’s tendency, on his plan Haussmann uses elements from the classic city: regularity, monumental buildings forming the streets’ background and uniformity on architecture. (see Fig. 1.1).

Vienna’ Ring was another case where the new city demanded some demolishment of the old city. On 1857, the old walls were destroyed to construct the ring which was a circle large avenue that surrounded the medieval old city. The structure was the same as the boulevards of Paris, also separating the poor areas of the city. The city grew out of the ring through a network of streets defined by the ring. Besides, new infrastructures were created. The result of all these aspects was a magnificence felt in the city. (see Fig. 1.2).

Several years later, in 1959, Cerdá also had a plan for Barcelona. The aim was to enlarge the area of the city using a simple planning easy to repeat when the city grew. The plan was orthogonal with square regular blocks and a defined streets hierarchy. Small streets ended on bigger ones and the urban grid was cut by diagonal large streets (see Fig. 1.3). The octagonal blocks were originally thought as opened so people would easily cross them where there would be green spaces (see Fig. 1.4). Cerdá viewed the city functioning through movement and rest. Following that idea, big avenues and a network of infrastructures were made which should assure a more aerated city and a good union
between the old city and the new extension. In a search for a balanced urbanism, Cerdá built parks, industries, markets, well-distributed residencies and assured housing lightening.

American cities are more recent than Europeans thus there are no monuments ought to be preserved. It was easier to design a plan with fewer constraints, opened to innovation being perhaps a way to make history. Chicago was a very important trading and industrial city in North America. Originally, Chicago was built very fast, without planning, on small wood buildings. Naturally, the fire of 1871 destroyed the city, however, it also allowed the creation of a new big plan. This plan was very practical and rationally based on a geometric street’s grid that standardised the construction. This way, the accesses were easier and the efficiency of the construction was guaranteed. Another innovation was the iron appearance on construction as a new material, which also created new technics and enabled buildings to grow vastly in high. Not only skyscrapers were born but also a standardisation system with prefabricated elements. Besides, skyscrapers were encouraged by the growing value of the ground square meter. Due to the city’s trade needs, office buildings were created as a new typology and were located near places of mayfly stay. All these breakthroughs changed the city’s ambience, horizon, look and experience.

1.1.2 GARDEN CITY

On 1919, the first charter of urbanism – Cordunet Law – was made which consisted of a plan for all the cities of more than 10 000 inhabitants. On the same year, one of the first university of urbanism - École Pratique d’Études Urbaines et d’Administration Municipales and later on 1924 named Institut d’Urbanisme de l’Université de Paris – was born, becoming famous rapidly and teaching students from all over the world. The French Academy had a great influence on the Garden Cities since it formed plenty of notable architects. There, studies were based on a classical approach based on squares, perspectives and orthogonal grids, giving a major importance to the study of the city before acting on it. These principles were mainly implemented in colonies and cities’ plans or extensions.

Ebenezer Howard (1850-1928) created a new concept when he came up with the Town-Country. Instead of idealising a perfect city or the perfect rural urbanisation to live in, he understood the quality
and benefits from both worlds and comes to the conclusion that the ideal place to live would be a blend of both. The plan would be radial with six boulevards (36m large) crossing the city from the centre to the periphery, dividing it into six different areas. He defined the city’s total area around 2400 hectares, of which 400 hectares were for the city and the rest for the agricultural areas. The city centre would have a public garden with cultural buildings and a hospital surrounding it. Since there were large boulevards, it would be easy to access the park. Summing up, Howard was the first to think about the Garden City concept (see Fig. 1.5).

Tony Garnier (1869-1948) studied at the French Academy and became famous for the Industrial City (1919), which consisted of a book that described a Garden City. This city was zoned according to the topography. On the highest part were the residences and the leisure area, whereas the industrial area was on a flat land, far from the city but with good communication ways. These three areas should be separated from each other to allow the city to grow with order. Most public equipment is placed on a big central park which would be surrounded by residences, industry and in the periphery, by more green areas. In other words, the city would be organised in a radio-centric manner. Residences would have unity and only one typology was planned to be repeated on an easy and fast way. Furthermore, Garnier founded important to limit the city to 3,500 habitants. Tony Garnier aspired for a healthy city with organisation and good locations. In his plan, there was an approximation to the Modernism though as a utopia of unity and equality. As an example, housing neighbourhoods resulted in identical and fragmented blocks which contained green spaces within and had small gardens between the building and the street. The blocks were shaped by an orthogonal grid. Besides, his plan did not only concern about urbanism but also society. The idealist thought about a safe city where the man was loyal and honest, a new man (see Fig. 1.6).

Clarence Stein (1882-1975) designed a city (Radburn, New Jersey) where pedestrian paths would cross the streets on different levels, making an absolute separation between them and vehicles. However, buildings had to be directly accessible by cars. There was a green belt in all the city and a public space or park within every block. Moreover, there were no private gardens rather public gardens towards which the houses’ most important spaces were orientated. To reduce the traffic, he created dead ends and superblocks (a much bigger block than the traditional, including several buildings, dead ends, pedestrian paths and green spaces) (see Fig. 1.7).
The first era of Expos was clearly influenced by the Industrial Revolution’s consequent desire of having healthy urban spaces. From all the experiments and theories elaborated, three elements stood out that seemed to assure that ambition: functional zoning, green areas and agricultural lands (to guarantee it would be sustainable). Being a one-time event that lasted only a few months, sustainability was not a concern for this type of event. However, designing an exposition in a healthy environment was taken into consideration, not only since it was a concern of that time but also to turn it more appealing for visitors. Thus, the first Expos were placed on green areas such as parks and forests and usually with water presence (either through artificial or natural lakes or by facing a river or a bay). The first Expos were organised using functional zoning not only on different nations like today but also on different subjects – machinery, agricultural, horticultural, transportation, arts, electricity, mines and several others. A few examples of the initial Expos under these conditions are London 1851, Paris 1900 and 1904 Saint Louis.²

1.1.3 MODERN CITY

After the two World Wars, it was necessary to reconstruct plenty of cities as well as extend them. The constructions ought to be swift, as economic as possible and in large quantity. People needed to have a home again, meaning not only a residence but also a pleasant ambience and space outside their accommodation. Therefore, the city was re-thought as was the quality of life which included services and infrastructures, their relations and impact in the city. Young architects started to have a voice and to implement the modern concepts they discussed on the CIAM. Basically, the Modern Movement rejected the traditional idea of the city and took advantage of the new materials and constructive technics to design new shapes, typologies and implemented new colours. The young architects valued the public space and green areas and played them to reach new urban shapes. The diversity of plots and buildings’ shapes was possible by a non-existence of rules for the implantation of the buildings which allowed to orientate the buildings regarding sun exposure and to separate pedestrian paths

² See Figures 2.1 – 2.3 in the subchapter 1.2
from cars accesses. On this period, due to both technics and the idea of maximising the ground, buildings got higher and monumental. Finally, urbanism and architecture suffered a separation and it was taken into serious consideration the importance of urbanism in the economy and social life. Moreover, urbanism had flexible plans since it could be changed afterwards and did not have a fixed design.

The principles of the Modern Movement were basically defined on CIAM. CIAM stood for Congrès Internationaux d’Architecture Moderne and consisted on several congresses (1928-1959) that reunited plenty remarkable architects to discuss the Modern Movement towards architecture and included urban planning. Besides, the CIAM contacted with the world through the Athens Charter (1943), written by Le Corbusier and based on the fourth event.

On the Modern Movement, it appeared the urge to assure and built houses for everybody since not everyone could afford it. So, it emerged the concept of basic needs (and the search for their definition) and of constructing only the minimal elements in order to have social justice. This era worried about hygiene, salubriousness and social issues which were reflected in both architecture and urbanism. Moreover, it was given more importance to public space than private space and so, certain regulations were implemented to protect that principle. Cities’ plans were based on an allotment between public or private areas. The modern city should have high buildings spaced from each other and placed in a public space with green areas plus, with common services and accesses. About historical centres, CIAM accepted to destroy the poor old neighbourhoods (or in bad conditions) surrounding the monuments and replace them with green spaces. The idea behind was that the modern look and environment was better and more beautiful since it was clean instead of insalubrious like the old constructions. Nevertheless, some monuments may have lost their urban or historical context in this procedure. Overall, the city changed and the main cause is the fact that the starting point became the housing instead of being the consequence of the city shape. On the CIAM, it was discussed that buildings’ shape would be independent of blocks’ shape. Moreover, on those congresses, it was also debated the maximum dimension of cities although no answer was given (the closest definition was rather based on the relation between the number of people and services).

Clarence Arthur Perry (1872-1944) after studying the relation between the residents and the equipment, developed the topic of the Neighbourhood Unit. The idea was to give the possibility of having a sense of neighbourhood life, then extinct on big cities. Main equipment should be close to residences as well as diverse services. Arthur also cared about car circulation and concluded it should not disturb community life and the accesses to services. The Neighbourhood Unit was applied in two distinct manners, either by adding gardens and equipment inside the blocks or by having the services
incorporated in the building. Both trends consisted on a deconstruction of the established concept of the block. The second case was illustrated by Le Corbusier on Unité d’Habitation.

However, these approaches failed since “social relations in the cities tend to be wider and more complex matrixes than closeness inside the neighbourhood” and “the inadequacy of the used urban shapes which disabled the evolution, integrating new functions” (Lamas, 2014, p. 322).

Le Corbusier had a big role in the Modern Movement. Corbusier criticised the traditional city (formed by blocks and corridor streets) aiming for new urban shapes and became famous for monumental constructions. Besides his numerous projects, he wrote three important theoretical plans: Ville Contemporaine, Plan Voisin and Cité Radieuse. On Ville Contemporaine, the city centre was occupied by public buildings, residences and offices, surrounded by a green area where there were town-countries. This plan assured a hierarchy of communication ways (see Fig. 1.8). The next plan was Plan Voisin which purpose was to demolish the existing city except the historic buildings surrounded by green areas (see Fig. 1.9). Finally, Cité Radieuse would be a city formed by big constructions spread on a vast green area and connected by roads (see Fig. 1.10). Buildings would consist of housing units with equipment and would be supported by pilotis, leaving the ground floor free. On its housing units, pilotis were a way of enlarging the public space and the green area. There was a different relation with equipment or services when they were included in the building. Moreover, buildings’ orientation instead of being dependent on urban morphology or structure, was related to solar orientation. Corbusier saw the city as the city of the machine, of technology. Consequently, he projected high buildings. His practice towards urbanism consisted more on the monumental architecture that naturally changed the city than on specific urbanistic plans.

Being Expos a product of its time and ideas, they were also influenced by the Modern Movement. Resembling the theoretical orientation to assure that buildings have a free plant and also are surrounded by pedestrian and green areas. The plans were less rigid and pavilions were less determined by the shape of their block. Instead, the plans begun to have more fluid shapes and
pavilions had independent shapes and orientation from the block, sometimes not even occupying the whole space with constructions. These characteristics were a mirror of the importance public exterior spaces gained during the Modern Movement. Two examples of these changes were the Expos of Chicago1933 and Brussels1958.3

1.1.4 NEW URBANISM

Around 1960, the modern city got severe critics from social problems to landscape changes, caused by the high constructions, for example. The modern city was described as too simple with poor spaces and bad use of spaces. This made plenty of critics to reach the conclusion it was necessary to draw and think about urban detail. In that sense, historical cities were a good case where the spaces had details and a proper ambience which had promoted a social life. Thus, the historical city regained its value and some traditional elements were again implemented such as streets, blocks, squares, arches, columns and pediments. There was a search for a new urban design which culminated on the Post-Modernism on the seventies. The Post-Modernism or New Urbanism basically meant denial of the modern city and resulted on different approaches. Unfortunately, the reused classical elements and forms were swiftly trivialised and sometimes over-used only with a formal purpose. It was a period when the symmetry, colour and complexity from the ancient and historical world were re-implemented. In other words, the Post-Modernism consisted of a period of revival architecture and urbanism. It was understood the importance of not forgetting the past (even if recent), culture and history plus, of learning from them and not building from scratch. Therefore, the monuments and historical neighbourhoods were reintegrated and restored.

Aldo Rossi was one the critics of the modern city and shared his views on The Architecture Of The City (1966), a theoretical book. Rossi criticised the modern functionalism believing function and shape have a more complex relation, instead. Moreover, in his work, he also referred the importance of morphology on constructions, the fact that it can result in a multitude of relations. He explained as the locus is more than just the place itself but rather what it may come from it. On his book, he emphasised the bilateral relation between urban shape and typology and the architecture’s role in the city. Adversely to the Modernist Movement, Rossi re-valued geometry, the traditional layout and shapes plus, the street, the block, the square and the monument. Therefore, the urban shape should not be abstract but come from architecture.

Perhaps the New Urbanism did not have a significant impact on Expos since it was a recall of the past and this type of event always aimed for the future and for innovative creations. However, although

3 See Figures 2.8 and 2.15 in the subchapter 2.2
pavilions were not limited by their blocks, in some Expos the streets and the blocks were clearly marked having partial orthogonal organisations. For example, in Montreal 1967 (in the Notre Dame Island) and in Osaka 1970 (north-west area of the site).  

Since then, Expos have had diversified shapes, depending more on the site limits and environment or other formatting structures.

1.2 THE IMPACT OF BIG EVENTS

Evidentially, there are several identical factors and elements within the Expos as it will be later analysed on this work. Furthermore, some Expo’s creations were not only innovative for the Expos’ reality or location but had also an impact worldwide.

Firstly, the Crystal Palace was created for the 1851 London’s Fair by Joseph Paxton. The building was a breakthrough in architecture as it was made of cast iron and glass. The building was 564m long, 41m high and had 84,000m² of glass which meant it was the greatest area of glass ever built. The cast plate glass method was a very recent invention (1848) so, it was not yet very common to use such big glass panes. However, Paxton was already acquainted with the glasshouse construction and its technical innovations. The event required a cheap temporary building, able to be built in less than a year (time left since the submission invitations until the fair opening). The Crystal Palace met those requirements, besides being a strong structure. Nonetheless, the building remained in its original location for eighty years until it was moved from Hyde Park and later destroyed by a fire in 1936.

The form, dimension and size of the building were a direct consequence of the glass panes size. The building was based on a grid of repeatable glass panes, supported by an iron structure. Basically, Crystal Palace was made from identical prefabricated modules, quick and easy to assemble thereby it was a building fast and cheap to build (see Fig. 1.11).

This iron and glass building had a rectangular shape with the roof mainly flat, except on the central transept where it was vaulted. Under the flat roof area, there was a second floor which highly increased the area of the exhibition. The structure was all in the facades without any structural walls inside (see Fig. 1.12). Paxton also thought about the weight of the water from rains on the glass roof. He created a gutter, nowadays known as the "Paxton gutter" that not only served as a gutter but also as structure. However, during the exhibit, several leaks were letting water into the building.

Long before air-conditioning or electric ventilation, the Crystal Palace had already previewed a way of interposing on the greenhouse effect. In order to maintain a comfortable temperature in the interior, Paxton installed external canvas shade-cloths and a ventilation system. This way, there was a reduction

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4 See Figure 2.43 in subchapter 2.3
of the solar heat transmission, no artificial lighting needed during the day, lighting control and air circulation.

The second considerable innovation was the **Eiffel Tower**, constructed from 1887 to 1889 aiming to be the entrance of the Paris 1889 World’s Fair. The tower was a very controversial yet innovative project. The drawing of the tower became polemic since it was doubted if it was achievable or due to aesthetic disapprovals. Firstly, it contained lifts which were a very recent creation so, still rare. Secondly, it was the highest man-made structure worldwide, achievement which would be maintained for more 41 years. The construction was 324 metres tall and a square base of 125 metres on each side (see Fig. 1.13).

The structure contained four platforms, restaurants, and an apartment for Gustave Eiffel. Acknowledging the possible negative effects of strong winds on high structures, Gustave Eiffel made an effort to incorporate wind resistance on the tower design. Contrary to the original purpose, after the fair ended the tower was not destructed and remained until today. The Eiffel Tower became an important icon to the study of architecture and to Paris itself. Even if once doubted, the tower was considered so remarkable by some that it inspired other towers and had several smaller replicas throughout the world. Besides becoming a famous monument, it also served for radio transmissions since the beginning of the 20th century.

Not exactly a building, but a very familiar structure now present in every amusement park or fair was originally created for the 1893 Chicago World’s Fair. **The Ferris Wheel** was designed by George Washington Gale Ferris Jr. who aimed to create a landmark for the fair, competing with the Eiffel Tower. Despite being considerably smaller than the French structure (324m tall) measuring 80,4m high, the Ferris Wheel was a huge success considering it is still repeated nowadays with a few technical improvements. Needless to mention the case of the London Eye which became a famous icon of London. In this case, it consists of a permanent structure although frequently, and as in the Chicago’s case, it is removable and possibly stored until the next event. About the structure, it consisted of two
76m diameter cast-iron wheels, supporting 36 wooden cars and had a full capacity of 2160 passengers (see Fig. 1.14).

Another notable structure was the Sky Ride, built for the 1933 World's Fair in Chicago and demolished at the end of the fair. The construction consisted of a transporter bridge which was something very rare in the USA. The bridge design was a span of 564m, measuring 66m from the ground and 191m high each tower. In 1933, every building in Chicago was lower than the towers and the Expo’s span was one of the longest in the world. Each tower had two observation platforms and four lifts that reached the top of the tower. Moreover, the transport between the pair of towers was made by 12 rocket-shaped cars suspended from wires, crossing the lagoon. One of the main goals of designing the Sky Ride was to construct a building that would be as iconic as the Eiffel Tower or the Ferris Wheel. Although it did not remain until the today it served the fair successfully, riding a total of 4.5 million passengers (see Fig. 1.15) and was most likely the inspiration for the presence of funiculars on current Expos.

The last chosen example is the Atomium, built for the Brussel’s Expo 1958 and also intended to be temporary. The idea was to create a building in shape of an iron crystal’s unit cell. The engineer André Waterkeyn joined the architects André and Jean Polak and together they designed nine spheres interconnected by 3m diameter tubes, reaching the high of 102m. Despite the sculptural look, inside the spheres, there are spaces accessible by stairs, escalators and a lift (all within the tubes). The building was original an Expo pavilion and it was later adapted to a museum as it is today. Nowadays, five spheres are accessible and besides the museum, there is a restaurant on the top level with a panoramic view over Brussels. Soon it became a key landmark of Brussels and indirectly of Europe, as Brussels represents its capital. Nevertheless, years after the Expo, to assure wind resistance it was added to the structure support columns and the aluminium was changed for stainless steel (see Fig. 1.16).

All these five Expo symbolic creations had a specific purpose related to the era they were designed and were, even if more or less conscious, a demonstration of the technical and engineer progress of their nation. The first two cases were a consequence of the Industrial Revolution when the iron began
to appear in construction and of mass production standardised products which speeded their implementation and lowered the costs. As for the last one, at that time, there was a desire for peace and faith in progress all over the world. With that in mind, it was chosen to demonstrate it through science, appealing to the peaceful use of atomic energy.

1.3 EXPERIMENTS OF INTERVENTION
As any other city intervention, Expos can maintain a positive impact on the urban fabric and life or simply leave behind a great memory of what it once was – in this case, during the event. Fortunately, several Expos became an upgrade of the previous site and are now used places with urban life.

Naturally, whether an Expo improved or not the plot it occupied is directly related to its previous state. Most sites are either chosen due to its dimension and closeness (as much as possible) to a city or due to its need for being redeveloped, a consequence of its degrading state. The second case sees the Expo as an opportunity for rethinking and redesigning the site, and possibly its surroundings, aiming to leave a footprint better than the current state. However, an area may be desired to be developed not necessary because it is in poor conditions but rather to gain international or national popularity and importance, trying to increase its value (economic, touristic or other). The reason why the site is less known may be the scarce accesses and the Expo serves as a stimulus to build them. On the other hand, when a site is chosen for its available wide dimensions, usually consists of a vacant plot, although it may also suffer from abandoned uses. Only very rarely, it was chosen a site that already had active functions, forced to be moved. This happened in the 2010 Expo of Shanghai, where the site was previously occupied by residences and factories that were obliged to move. Fact that became a controversial issue and strong critic to the Expo.

Nevertheless, considering the plan of space, the state of the site and its facilities, accessibility, mobility, occupations and the amount of people’s usage, it is possible to understand the success or failure of the post-Expo action, in a manner more distant to the site previous state.

The most successful cases share some characteristics among them. Usually, they offer a variety of functions – even if one type is more prominent than the others – between leisure, work, commercial or residential. For sure that residential occupation is the most certain way to maintain life and usage of space in a wider range of hours. A lot of Expos’ sites are now occupied by parks or green areas and different public facilities either as attractions, services, sportive or cultural establishments. It seems that every time Expo facilities are destroyed or dismantled leaving green areas in its place, it always consists of a positive gain for the city and community.

Despite a great plan and multitude of functions or uses, a space will never have its maximum attendance if it does not have easy accesses, both pedestrian and other kinds of transports. The site
ought to be integrated into the city fabric, ideally, having direct contact with the surroundings. If a site is not connected with the surroundings, measurements should be put in action to open it towards them, to not be forgotten due to lack of visibility or of easy and rapid accesses.

In contrast, when there is no plan for the post-Expo nor even any proactive attitude to the re-use of the space, the site may become degrading and worse than its initial origin. The lack of plan, often results on abandoned pavilions or spaces left to degradation, eternally waiting for someone to re-occupy them. Sometimes, the pavilions were indeed re-occupied but the exterior spaces were not rethought, simply left on bad terms and the spaces suffer from lack of exploitation. This is the case of the site of both 1981, 1985 and 1991 Plodiv’s Expos for example, where the wide spaces between the buildings are simply paved with very few green areas. Other times, to avoid these situations, the pavilions were destroyed but since there was no plan, the spaces just became vacant plots. Obviously, when sites are under the referred improper conditions and in addition, do not have good connections with the surroundings – being blocked from it or with the lack of pedestrian accesses – have a reduced use. The Hannover Expo of 2000 is an unfortunate example of a site with both vacant plots and lack of integration into the city as seen in chapter 2.

Overall, occupying the Expo site with public spaces or facilities that respond to the people’s needs or interests is more likely to become a used area, appreciated by the city inhabitants.

1.4 URBAN INDICATORS AND THE CATALYST SIDE OF EXPOS

When planning an urban development and growth project there are several indicators that should be taken into consideration. The elements chosen to study may depend on the objective of the plan thus, it is always prudent to elaborate an analysis to determine such values. Nowadays, a vast variety of indicators can be analysed before implementing an urban project as for example the urban population growth, the city growth, the unemployment and employment, household income, accessibilities, housing and land price, access to safe water and its price and consumption, access to services, economic performance and local government revenue, health status, travel time, transport modes, environmental and other social issues. These indicators are analysed in a specific area and time, pretending to enable an understanding of its reality towards the people that live there, the kind of life they live, the urban situation, the infrastructures needed and the ones already provided as well as the economic situation. From all the data gathered it is possible to determine the effectiveness and efficiency of a project (approximately).

From an Expo perspective, doing this kind of analysis is highly recommended not only to understand the success chances of the event and whether there will be a positive economic outcome but also to explore the legacy project for the following years and determine the best solution. Despite the fact
that usually a target can be relative or specific, on the Expo’s case it should be specific in order to avoid ambiguous spaces after the event and spending large monetary incomes for a limited period of time without reaching its goals. An Expo should be treated as any other investment or business but with the determinant difference that it has a closure date and consists of a one-time only event. Logically, there is less tolerance for mistakes as there is a few time to learn from them and to counterbalance them. With that in mind, as referred in The Expo Book (2014), it is highly recommended, if not necessary, to do a feasibility study before the Expo, even before applying to host an Expo. Especially, if the Expo is supposed to be an urban catalyst. On the feasibility analysis, it will outcome information and questions about the market, the overall concept, the relevance to the community, location and site, the physical plant, the cost, operations and income plus, management.

From the initial indicators, candidates to host Expos can understand whether a site is good to invest, what lacks are listed and if it is a transformation strategy an Expo plan can provide (possibly becoming a lure after the event). All this use of indicators helps to show if what the Expo offers is suitable for the population, economic activities and environment of all the region. Expos may have several elements and approaches in common which make each one unique due to the characteristics of the site, culture, society, economic situation, among others. So, each plan should adapt the Expo format to the reality where it will happen. This adaptation may go from the price ticket to the plan of the site and futures improvement provided to the city.

Numerous times, cities choose to host an Expo in order to regenerate a certain area or to build certain infrastructures needed and this kind of big event serves as a catalyst to those changes. However, it is unrealistic to expect to be the only catalyst for the development of a city or part of it by simply plan the Expo and ignore the legacy it will leave. As important as planning the Expo, the posterior state of the site should also be properly planned. After all, the Expo only lasts between three to six months and its legacy may last forever.

In what terms can a few months event be an urban catalyst? Well, by producing a wide space that after the event may become a new successful area of the city and by answering to the city needs. An Expo can either regenerate brownfield areas, build new accessibilities and infrastructures, improve connections within the city, position or reposition “the image of a community, region and/or country”, create “jobs and economic opportunities”. “Accelerating the implementation of infrastructure and other improvements which, under ordinary circumstances, may take many years”. (Linden & Creighton, 2014)

As seen before, Expos have answered to several urban needs such as transports,
accessibility, public or private services, leisure attractions, public exterior spaces, green areas, waterfront integration, lack of urban life, unemployment, or other aspects. Moreover, an Expo may have a direct impact not only on its site but through the city by also creating elements in other places of the city. Besides, naturally, the indirect impact its relevant functional legacy may have.

Over the years, Expos have left several kinds of legacy, from bridges and roads to monuments, parks, residential areas, business areas, shopping centres, conventions centres, public spaces, multi-use arenas and many others. 7 The legacy left from the Expo 2008 through the city of Zaragoza may be one of the most effective cases and with a greater direct impact on the whole city. Instead of limiting the Expo to the site it occupied, this Expo had works all over the city. Zaragoza had several riverbanks under degrading conditions that were regenerated with the Expo project. Not only the water was cleaned but also, the areas around the riverbanks were improved which included the creation of routes and paths for pedestrians and cyclists. These areas consisted of several open spaces creating green corridors along the rivers which articulated the four water courses. Besides, two new residential areas were projected as well as new transport systems and network, new bridges, public artwork and cultural facilities were enlarged or rebuilt. Not only the new transport systems and accesses improved the arrival to the Expo site, it also enhanced the city mobility. As for the art and cultural elements, it “contributed towards defining a cultural itinerary that (...) would also create a powerful axis that had been lacking in the city until now”. (Monclús, 2016, p. 165)

Nevertheless, implementing an Expo, like any other business, has risks. The Expo Book (2014) points out the risks related to the theme, timing, political and economic conditions and finance. The theme of the Expo should be clear and internationally consensual in order to provoke interest in as many people as possible. The problem about the timing is related to the eventuality of occurring an equal attractive big event in the same region, country or countries nearby. Events like the Olympic Games, for example. If this happens fewer people are likely the visit the Expo has their attention is divided with a contestant event. Logically, it is impossible to control the political and economic conditions, though they may have a major impact on the Expo by disabling countries to participating or visitors to afford their presence, among other consequences. About the finance issue, it concerns the fact that most of the revenue 8 comes from the attendance which partially relies on the quality offered by the organisers, other participants and on the post-Expo situation. Once again, this emphasises the importance of the after-Expo reality and its planning.

As emphasised on The Expo Book (2014), when planning an Expo its limited duration cannot be ignored. It is less likely to expect a positive financial income from an Expo if it is only considered the

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7 See attachment 2
8 For more information see attachment 6
three to six month event. Expos are a one-time event so if the project only includes the duration of the event, then huge investments made on land, buildings, equipment and infrastructures should be avoided as they would most probably consist of financial losses. Fact that also would happen for a post-event plan of total dismantling of the Expo structures and site’s redevelopment. In these cases, “an all-out effort should be made to minimise any costs that cannot be fully amortised over the exhibition period.” (Linden & Creighton, 2014) The ideal plan would be a long-term plan that projects the future of the site through the Expo. Being the Expo a mean to an end – new area in the city – and not the end itself. This way, the investors would have years to amortise their expenses. “In cases where the Expo and all of the infrastructure, buildings and services have a good match with the long-term plan, then even if the Expo loses money on an operating basis, the longterm project will have benefited substantially from the Expo investment.” (Linden & Creighton, 2014)
2. DEVELOPMENT AND DIFFERENCES THROUGH TIME
Evidently, International exhibitions went through several changes since they first started until today. These differences or improvements are visible not only on the site and plan of the Expo but also on its concept and purpose. Certainly, the first world fair was completely different from the last Expo. This chapter aims to analyse the differences through time until now and the identity of an Expo.

2.1 PURPOSE
First, the Expo’s organisers aimed to show the world their development towards industry, agriculture or technology. Through the architecture chosen (in the buildings), they imposed their power, greatness and development to all visitors. In a way, it was a competition between nations to see who had been the more advanced, who had made more progress and whose Expo would be more memorable. To the outside world, the most visible aspect of an Expo were its pavilions or other infrastructures, shown in the press. Therefore, architecture played a huge role on the first Expos, encompassing urbanism on public spaces. The first international fair was in London in 1851, almost 100 years after the Industrial Revolution started. In other words, it was the perfect time to show the world what had been developed and successfully used after a period of initial discovery and later, consolidation and development consequent of a new era of mass production. The beginners of Expos had themes meeting those purposes such as “The Great Exhibition of the Works of Industry of All Nations” (London 1851). Besides being a display of technological progress, it was also a place for colonial nations to show the exotic cultures they had discovered. Frequently, organisers chose the years of the events according to memorable dates. Thus, Expos served also as a celebration of an important memory which increased the importance to be a remarkable event.

As seen in chapter 1.2, Expos were a display of remarkable architectural and technical achievements such as the famous Crystal Palace and the Eiffel Tower. Nonetheless, beyond architecture novelties, Expos were also a place to show or create another kind of breakthroughs. Here, a few notable yet not well-known examples are worth mentioning. The first example was the gas engine that made an appearance at Expo 1867 in Paris. Nikolaus August Otto and Eugen Langen developed the previous creation of Étienne Lenoir and gave the world a new method of powering machines and transportation. Its presence on the Expo was very important since it made the engine popular and gave the two engineers the chance to improve it, even more, the following years. Probably the most exciting scientific achievement happening at the site of an Expo was the one made by Zénobe Gramme and his partner Hippolyte Fontaine in 1873 in Vienna. There, Gramme Exposed his great discovery: a dynamo that transformed mechanical energy in electric energy with enough power and stability to work in machinery. To Gramme’s big surprise, his dynamo also proved possible to use energy in a different location from its generator when Hippolyte by chance connected two dynamos with a copper
cable during the fair. Until then, the industry was based on steam engines. Later, in 1878, again in Paris, the world’s largest parabolic solar collector was displayed. It converted solar energy into steam, which then made a refrigeration device operating. This innovation appeared on a time it had started to be realised that non-renewable resources were limited.

In 1928, it was realised the need to regulate the fairs so, in the Paris Convention the BIE was formed (which implemented a regulation on the frequency and on the rights and responsibilities of organisers and participants). From them on, World Fairs were baptised as World Expos and as the BIE explains, the purpose of world’s Expos was no longer to show a country’s power or technological innovations but to find a solution for a better and peaceful future together with the different countries. “They have become discussion platforms aimed at finding solutions to universal challenges of our time (...)”. Thus, themes were evident in that search: “The World of Tomorrow” (1939-40, New York), “Peace Through Understanding” (1964-65 New York) and “Progress and Harmony for All Mankind” (1970 Osaka). It is important to notice that the 1928 Paris Convention was in between the two World Wars (1914-1918 and 1939-1945) and the post-wars consisted of a period of tension provoked by the Cold War (1947-1991 approximately). Such realities were the main factors that contributed to the desire and hope for a worldwide peaceful international communication. Nonetheless, technology was still present on Expos topics although more as a tool for the mankind and not as the most crucial element. Some themes reflected that interest, such as “Progress and Mankind” (Brussels 1958) and “Man in the Space Age” (Seattle 1962). Moreover, it was an era of decolonisation which allowed more and more new participants on the event. Obviously, during the years of the two World Wars, very few world fairs occurred and only after 1945 Expos had their great comeback with all the subjects referred. Two decades after, between the years of 1965 and 1972, the 1928 Paris Convention was revised with the aim to adapt the BIE first regulation to the economy and life of that era.

Moreover, on 1988, the BIE defined a new kind of Expos: the Specialised Expos. These Expos have the purpose of discussing solutions for certain world’s issues and have more specific themes than World Expos. Assuring there are never two consecutive Expos, Specialised Expos take place between World Expos. Plus, the size was limited by the BIE at 25ha and the buildings are built by the organisers. On the other hand, the World Expos have no size constraint and the biggest one up to date had 532ha in Shanghai 2010. Besides, in the biggest Expos, the pavilions are made by the corresponding participant. Nowadays, World Expos take place every five years and in years ending in “0” or “5” but after the Paris Convention, the dates were not yet defined. Evidently, regarding the size differences, World Expos attract more visitors (average of 22 million) than Specialised Expos (average of 7 million).

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10 See attachment 1
Naturally, the division in two sizes was a helpful way for smaller cities to host an Expo and to help countries to participate since they tend to be cheaper. When the BIE distinguished two Expos’ format, it was identified as well which past Expos fit within those parameters.

Aware of the international concerns, after the Agenda 21\(^{11}\), the BIE in 1994 decided that Expos ought to deal with the attempt for environmental protection. Since then, all themes emerged concerning the environment, being two examples “The Oceans: A Heritage for the Future” (Lisbon 1998) and “Nature's Wisdom” (Aichi 2005).

Despite the ideology intended by the BIE, since ever, international fairs have been a touristic publicity of nations and today that approach may be even more present. Due to the plateau in terms of technological improvements we are reaching, it is a logical consequence. Plus, the fact that information nowadays spreads swiftly worldwide via the internet, not needing an Expo to reach the other side of the world. Besides, there are several more events on specific topics like technological conventions or even the Horticultural Expos and The Triennale di Milano, both also oriented by the BIE. When visiting an Expo, great pavilions immediately stand out plus the crowds and the ludic events going on. It became an international display of spectacular architecture, whether in materials, shapes, size or technics. Unfortunately, being more important the shell (pavilion exterior look) than the interior (substance exhibited) since most visitors do not enter every pavilion. All these may put into question the role of Expos nowadays since some participants (or most) by neglecting the theme do not seem to obey the BIE intentions.

2.2 PLAN

Throughout the years, a multitude of plans was tried by the organisers and experienced by the visitors, leaving in some cases present traces. This subchapter presents the various different solutions in the history of the Expos in terms of the plan and a few other elements present on these events.

The initial international exhibitions were formed by a huge garden and with one or more main big buildings. The fair’s buildings either occupied most of the area or a great percentage of it, and all the exhibitions happened within them. Unlike today, nature had a major role in the fair’s public spaces since basically, all were green spaces. There was a significant rupture between being inside – seeing the exhibitions – or outside, in a tremendous garden or sometimes almost like a forest.

The first fair was exactly like mentioned, a huge park complemented with a few lakes and fountains plus with a very big building (see Fig. 2.1). As for the 1889 world’s fair occurred in Paris, the main pavilion took almost half of the site, being the rest fulfilled with green spaces and several small paths

\(^{11}\) The Agenda 21 is an action plan of the United Nations with regard to sustainable development. It is a consequence of the United Nations Conference on Environment and Development held in Rio de Janeiro, in 1992.
between them, as well as other smaller buildings (see Fig. 2.2). In the case of Saint Louis in 1904, the site was completed with several big buildings and a lot of green elements and spaces, including a forest (see Fig. 2.3).

Admitting green elements had an important presence on the first Expo’s site, it is important to understand that they did not always have the same treatment. They were either conceived as pure gardens with some spread buildings and paths or as arranged gardens. The first kind was hardly ever used alone rather on great areas of the site (like in the 1904 Saint Louis fair) except for some cases like on the Philadelphia fair in 1876 (see Fig. 2.4). On the other hand, there are the clear examples of 1915 San Francisco’s fair (see Fig. 2.5) and 1901 Buffalo’s fair (see Fig. 2.6). There it is clear the appearance of well-defined gardens, resembling the Renaissance gardens of palaces. They did not transmit the feeling of a natural garden or forest, neither of a street. The ambience was the same of a garden of a palace, more private and a consequence of a defined combination of green spaces and pavement.

Related to the purpose of these first fairs—tell the world the great achievements of each country but especially, the one rich enough to host such a great exhibition—the buildings were constructed by the organiser.

Already on the first fair, water was present via lakes and fountains. Other fairs were simply located near a river or lake, having the shoreline as one of its limits. Examples of this are the 1889 and 1900 fairs, both located on the same site in Paris where the river Seine was only felt or seen in one of the fair’s side. The blockage with the river was made by aligning buildings with it, nevertheless, the river had a presence on the event. Although the Chicago’s fair in 1893 (see Fig. 2.7) started an intention of mixing the Expo water (artificial lakes) with the natural water (from Lake Michigan), only in 1933 the blend was done with audacity. In Chicago’s second world fair, the Expo lakes actually belonged to the
city’s lake and were widely open to it. Accurately, part of the Expo was on an island on the lake, while the other part of the fair was on the shore (see Fig. 2.8). Besides being true that in the fair of 1893 the plan was already slightly more organic, its wide pavilions still had a heavy presence on both plan and site, ending up blocking and dominating most of the space.

There was an important turning point on Expos plan and architecture: the 1933 Chicago World’s Fair. First, the plan was more organic, on his limits as well as its public spaces. The site was along the shore of the Michigan Lake which by its configuration suggested a less rigid plan. The Expo outdoors space was no longer a direct consequence of the interior spaces, the space between or adjacent to the buildings. On Chicago, public space started to have a more considerable role on Expos. They were drawn as space generator. On the photo of the site, it is visible the winding large path resembling a large pedestrian street. Along with that path, there were on both sides what seems to be uncountable pavilions. Each pavilion was unique, detached from one another, surrounded by opened accessible space and some of them had a more modern architecture. The private ambience of a traditional palace’s garden was abandoned for a public modern urban experience. In other words, Expo’s urbanism was born and consistent to the current ideas, modern. However, the natural elements did not completely disappear as water had a major role on this fair and there were also some punctual green spaces. Essentially, this case was an approach to the Expo we know today.

After the 1933 event, some fairs had more organic plans while others more regular, some with a strong presence of green elements, others with almost only pavement (and water possibly). Nevertheless, all tended to the same kind of ambience or space, coming from public open space dominating the plan, very wide exterior spaces, independent and detached buildings plus, freedom to circulate wherever in the Expo area. Examples of each kind of plan – radial, orthogonal or mixed – is presented on the following pages.
Until 1933 most Expos had a plan based on the orthogonal design even if with some variations. Usually, the parts that were not orthogonal were demanded by the shape of the plot or architectural desires. Two clear examples of this plan were the 1904 fair in Saint Louis and the San Francisco’s 1939 fair. The first case is defined by the main axis which makes an oblique angle on the angle, following the plot shape. Perpendicular to this axis are other smaller axis and the main pavilions are within all these axes. However, other smaller buildings are implanted on the forest with less order (see Fig. 2.9). The second example has even a more faithful approach to the orthogonal plan. Here, almost every building is perpendicular and parallel to the rest of the axes and pavilions. The main pavilions even have the two directions, emphasising the space’s orthogonality (see Fig. 2.10).

Recently, on the last two decades, a few Expos appeared again with plans more or less similar to an orthogonal grid. The first was the Lisbon’s Expo of 1998 which will be studied in the next chapter. The Hannover Expo followed completely orthogonal plan even though it was formed by two separated areas. The site was an ensemble of a nearly perfect orthogonal grid either forming a square or a rectangle in each area (see Fig. 2.13). A decade later, the Expo in Shanghai had the intention of designing a similar plan despite the axes not being straight, rather winding to repeat the shore’s form (see Fig. 2.11). As for the last fair, Milan 2015, it was composed of a main axis crossed by various perpendicular axes which encompassed the pavilions (see Fig. 2.12).
A radial plan was chosen for the New York's fairs of 1939 and 1964 (both on the same site). The plan was formed by the main plaza from which five main streets started. Connecting those streets were two to three radial streets. Both Expos had also another big plaza and a multitude of radial and diagonal streets (see Fig. 2.14).

In the Brussels Expo of 1958, the plan seemed more organic although it was a sum of many different approaches. The main streets were parallel, diagonal or sinuous being filled with several paths or smaller streets, winding, parallel or perpendicular. It resembled a real city as if each type came from a different era resulting in a diversified urbanism. Moreover, there were a substantial number of pavilions, all modern, detached from one another and interspersed with several green spaces (see Fig. 2.15).

Despite the fact that more and more is harder to find vast green natural areas untouched by humankind and since 1933 Chicago's fair, Expos have had a mostly urban ambience, the Expo of 1993 was exactly the opposite. In 1993 in Daejeon, the fair encompassed once again wider green spaces. The site was just next to a mountain and the wide size of green areas on the Expo served as a continuation of nature. This time the green spaces surpassed the lines of trees in pavements or small grass areas (see Fig. 2.16).
Besides the plan configuration, a few elements were common among some Expos from which some may already belong to the Expos’ identity. These elements consist of train railways elevated from the ground, funiculars, pedestrian bridges or different levels and cooling systems. To illustrate the ambience given by these structures, a few examples are explained below.

For the trains, the case of the 1967 Montreal fair for example, where there were quite a few rail circuits crossing the site in different areas. This served as both transport and tour since it surrounded some pavilions (see Fig. 2.17). About the other mean of transport and Expo tourism, the funiculars, following up the Expo of 1933 in Chicago (as explained in chapter 1.2) were used in most Expos like in 1958 on the Brussels Exposition. In contrast to the American first trial, this time (as on the further Expos) the lines were closer to the ground, being possible to see the space and “visit” from above. The purpose was not to make an impressive structure but rather to offer the visitors another different amusement or experience (see Fig. 2.18).

From the beginning, the Expos were meant for pedestrians thus there was always the concern about offering easy accesses. Seeing Expos were a success that became crowded, so possibly more difficult to cross, some hosting countries started to provide pedestrian bridges. These aerial paths connected far places within the Expo and created alternative and more direct pathways. Plus, they gave the visitors another perspective and understanding of the Expo. The case of 2010 in Shanghai consisted on a big centred avenue along the Expo and accessible from various places. Being obviously, elevated (see Fig. 2.19). Adversely, in Aichi 2005 the pathway did not cross but rather surrounded most of the Expo major facilities. This wide aerial ring was also accessible from different spots and allowed a close look to the pavilions (see Fig. 2.20).
Pushing this idea further, only one Expo has yet offered a space developed in different levels. Not only a new level of access or strolling along the Expo. In a small area of the Zaragoza 2008 Expo, the pavilions were connected at their different levels. On the second floor, the paths were indeed only a bridge. However, on the first floor, the platforms connecting the buildings were wide enough to be felt as an Expo outdoors space, equivalent to the ground level. The relation created between the levels was interesting since they were visible from one another, being the first and second levels almost as balconies facing the lowest floor (see Fig. 2.21).

Another interesting element, present in warmer host countries on the last few decades were cooling systems. Usually, the most common case are shadows which were used on the 2008 Expo of Zaragoza and on the 2012 Expo of Yeosu for example (see Fig. 2.22 and Fig. 2.23). Nonetheless, on some Expos, this worry was taken deeply into consideration and more complex or efficient systems were applied. This topic will be properly in chapter 3, in the cases studies analysis.
2.3 INTEGRATION IN THE CITY DURING THE EXPO

When international fairs first appeared, cities haven’t yet grown to their full potential thus, there was a lot of space available for an exhibition. Even if they may have been located outside the city or on the periphery, its distance to the city centre was much smaller comparing to that distance in modern cities. Nowadays, finding several hectares free within a city is in most cases, if not always, merely impossible. Therefore, this subchapter analyses different types of locations chosen for Expo sites as well as their relations with the surroundings during the event. The analysis uses fourteen examples for a deeper comprehension of the various possible ways of dialogue between an Expo and a city. This subchapter is rather a statement of past facts, while the next one will focus more on the present situation and on its corresponding analysis, using the same examples.

The first kind of location to analyse is when an Expo is located in the middle of nature or green lands, likely just outside a city or in its periphery. Choosing a site with these characteristics commonly is due to the lack of space within the city. However, being embedded in the middle of nature may improve an Expo standards and experience.

Buffalo was an example of this approach from the very beginning of the 20th century, more precisely in 1901. The fair was surrounded by green in all sides although not exactly natural forest on every side. The site was limited by the Elmwood Avenue on the west side, the Delaware Avenue on the east and a railroad and terminal station on the north side. However, it is important to understand that at the beginning of the XX century, railroads were much less marked than today and roads were not yet asphalted. The fair’s pavilions were placed on a property north of the North Bay and the Hoyt Lake, which belonged to the Delaware Park and were incorporated in the fair as public space (see Fig. 2.24). The Delaware Park had just been arranged with lakes, hills, forests, and winding roads thus, it was easy and proper to integrate into the fair. The park continued at south-east and east of the fair but not directly connected. Moreover, adjacent to the fair lake’s area and the Delaware Park, south-east to the fair, there was the forest lawn of a cemetery. At south-west of the event’s plot, there was the Buffalo State Hospital which was composed by a few buildings in an immense green area, most likely gardens and forest. At the west, north and east sides, after the avenues, the site was surrounded by divided properties which were basically or empty green lands or agricultural lands with a house. Therefore, the Expo had a very pleasant natural environment, surrounded only by vegetation and natural elements. Even though the fair was not in the city centre it was accessible by train and the distance was only about 4km (see Fig. 2.25).
The site chosen for the **Seattle 1909 Exposition** was the university campus. When chosen, the campus was only formed by less than 6 buildings and a forest. Thus, the site was mainly a forest facing a narrow canal which connected the Union Lake on the east side with the Portage Bay at the west side (see Fig. 2.26). However, just outside the fair’s site, on the west, there were already several residential blocks. More than a century ago, the Washington campus was considered significantly far from the city centre. The magnificent landscaping of the exhibition represented a breakthrough on the fairs’ history. From the fair, not only it was visible the huge Mount Rainier and several Seattle hills as the major axis of the fair were designed towards the mount direction (see Fig. 2.27). Moreover, the access was assured by trolley rides from downtown. As for Seattle, it was a standing out opportunity to host such an event and not a city from California like on previous events.

A hundred years later, in 2005 another Expo decided for the same kind of implantation, the Expo of **Aichi**. Being held in a forested area in the suburbs of Nagakute (around 4km far) and Seto (less than
6km distance), in the east hills of Nagoya (see Fig. 2.28). This Expo was indeed surrounded by mostly nature although it was adjacent to a rail line (Tobu Kyuryo Line) on the north side which passed by the Expo on the Ai-Chikyuhaku-Kinen-Koen Station (named Expo Venue Station during the Expo) and some punctual buildings in the forest. The parking lots were placed on the north-west side of the Expo on both sides of the rail line. On the other side of the railway, the constructions were also few and mingled with forested and agricultural areas. Adjacent to the railway was also a road which consisted on the other way of arriving at the site (see Fig. 2.29).

Secondly, an Expo can be in the middle of the city fabric, surrounded by defined blocks either residential or with other functions. The initials world’s fairs were exactly as described since they were located within a pre-existing garden and usually, those gardens were already well integrated into the cities. Therefore, the relation with the city was dependent on the relation between the garden and the city. It was a way of assuring easy accesses to the fair (since the means of transport were hardly any) and its closeness to the city centre.

The first Expo which illustrated this type of city approach was the London’s 1851 fair in Hyde Park. Back then, the site was already bordered by constructions on most sides (see Fig. 2.30). Choosing such a park for the Expo as more to it, though. Hyde Park was in a wealthy neighbourhood who by that time already had their routines and leisure activities in the park. As expected, the fair was a lure to every kind of people, low-class included. Therefore, the fair was probably one of the first trials of mingling different social classes. Nevertheless, the site choice was not approved by the surrounding residents, since they did not appreciate mingling with lower classes.
Every international fair hosted in Paris was in the garden called Champ de Mars. By the time Paris held its first fair in 1867, the Haussmann’s plan was near to be concluded. The garden had the long sides facing the new blocks, the north side facing the river Seine and the south side facing a palace constructed a century before, by Louis XIV. The differences between the several Expos held on that park may rely on the variations of the plan. In 1867 there was a huge building in the centre, surrounded by green areas and quieter buildings. Thus, the Expo site was visible from the surrounding streets and the plot was felt as a continuation of the city, as part of it (see Fig. 2.31). Contrarily, in 1889 the plan was totally different. The huge main buildings were on the borders of the plot and the centre was free. (see Fig. 2.32). This way, from the streets only the pavilions were visible. Except on the corners next to the river, where there was a green area on each side and some smaller buildings. Therefore, the interior of the site was visible from the other shore of the river. Later, on 1900 the plan was very identical to the one in 1889 thus, the visibility and relation with the surroundings were the same. Nevertheless, the lack of visibility within the city was reversed with the majestic Eiffel Tower, visible from a lot of places in the city.
Nonetheless, gardens are not the only way an Expo can take part of a city’s fabric. A few Expos occurred in the middle of the city, surrounded by blocks, and possibly water, occupying the equivalent of several blocks. To better understand what does it mean to have an Expo incorporated in a city and its later role in it, three cases will be analysed.

The first case is the international fair of San Francisco in 1915. The plot was facing San Francisco’s Bay on the north side and on the other sides was bordered by blocks, a prison’s military reservation and the Fort Mason (a US Army’s port) (see Fig. 2.33). The blocks were mostly residential and low. Either small buildings or houses, they did not have more than three or four stories, in general. The plot was flat whether the blocks in both south and east were in increasing hills. In other words, it is safe to say that the fair was visible at least from those two hills and from the highest hills in the city. Especially, since the fair’s buildings were higher and more monumental than the residential buildings or houses. Actually, the building’s size and architecture may have allowed the fair to be seen even from the flat blocks nearby.

Both New York fair’s 1939 and 1964 were in the same plot and had a very similar plan, as explained in subchapter 2.2. Nevertheless, they both had different relations with the surroundings. The fair of 1939 can also be considered in this category since it is integrated into the city urban fabric on the west and east sides (see Fig. 2.34). Although there were a few streets or roads confining the space and shape of the site, there were also blocks on the other side of roads. On the west side, the road Grand Central Parkway was not exactly confining the plot as the Expo site continued on the other side of the road. So, the Expo was in direct contact with the city’s fabric and the pedestrian access with the rest of the fair was made by two bridges. There, the buildings were low and residential. About the Long Island Expressway on the south side, was neither the end of the Expo site since the Expos had also a part
after it, ending on the lands surrounding the lakes (see Fig. 2.35). The lands surrounding the lake were bordered directly with a pavilion’s area and a few parking lots and then by green and forested spaces outside the Expo. Entering the site from the northeast corner was water coming from the Flushing Bay and going to the Liberty Lake. On its way, the creek was geared to pass by the big fountain in the Lagoon of Nations. As for the north, it was limited by a rail and the Long Island Railroad Station. Being more precise, perhaps this site would seem more like a compound of integration and separation with the surroundings. The site was in contact with the city’s urban grid in both west and east sides whether on the other sides, a railway, two lakes and the roads were likely to break its integration towards the city. However, in the southern area, there was not yet many urbanised areas. Thus, the fair was integrated as far as possible in the surroundings. Although the site was not in the city centre, it had several accesses connecting both parts of the city.
Another kind of surroundings is when the surroundings are composed of technical facilities or agricultural lands. Normally, this may only happen when the Expo is on a city’s periphery, suburbs or outside the city. It is not such a common panorama since Expos usually are in an urban area.

The **Hannover’s fair of 2000** was a good example of this type of location. It was situated in the south of the city, more precisely adjacent to the small city of Laatzen on its west. As a result, the east of the site was directly facing wide agricultural fields which extended to north-east and south-east (see Fig. 2.39). About the north and south sides, the north was bordered by a mingled area of housing and forest and the south by a forested area. Both opposite sides were connected to the agricultural fields on the east. The south-west space created between the Hannover Messe and the new Expo East area was also occupied by a dense forest (see Fig. 2.38). Moreover, the roadway Hannover-Frankfurt crossed the Expo and for this reason, the site was divided in two – the west and east. The connection between those two areas was made by two pedestrian bridges. This fair integrated a great area of the existing plot and did not have to construct everything like in previous fairs (around 100ha reused out of 160ha), which was an impressive breakthrough. Logically, reusing spaces already functional reduced vastly the costs as well as the environmental impact on the site. Basically, all the re-utilised area was on the west of the highway and the new area at east. The reused buildings the fair encompassed (after renovations or replacements) belonged to the Hannover Messe which was the world’s biggest industrial fair. Planning the Expo also involved creating the Kronsberg district on the north-east of the Expo (plan to be completed one year after the fair). Thus, there was an urban plan bigger than just the event. This plan was for several housings in multiple typologies, parks, schools, shops, kindergartens, medical centres, bars, among others. Nevertheless, the Hannover fair was definitely not incorporated in an urban fabric as the agricultural presence was highly marked and vast.
Finally, the last type of surroundings analysed on this work is when there are one or more fixed elements that break (or seem to break) the connection between the Expo and the city. Elements like roads, highways, rails or even water. It is accurate that some of the surroundings already analysed contained some of these elements on one side of the plot. However, these last three examples are Expos when all the sides were embedded by these cuts with the city and which had a significant role in their interaction.

First, the New York’s fair of 1964 that proceeded a better case of urban inclusion (1939 New York’s fair). Despite the site being the same, the surroundings were already partly different and the approach of the plan did not seem to search for closeness with them. On 1964, there was already a road exactly limiting the site on the east curved side (see Fig. 2.41). The fact that this road was lifted from the ground did not help a lot the connection with the city since on the other side of the road there were some parking lots of the fair. Besides, the rest of the fair’s parking lots were occupying the lands surrounding the lakes (on the east and west sides of the lakes) which at that time were facing residential blocks (and a cemetery) (see Fig. 2.40). Plus, of course, the rail lines on the north side. Leaving only the west side in direct contact with blocks though.

Second, the Osaka Expo of 1970 was bordered by a road (called the Outer Loop during the Expo) and had the Chugoku Expressway, the Osaka Central Loop Road and a train station dividing a smaller southern part of the site from the rest (see Fig. 2.42). Coincident to the two roads was also the Osaka Monorail. Since the rail line was lifted from the ground, if there were no roads there, probably the rail
would not separate the Expo in two. As the two roads formed a large ensemble of ten car lanes, it is safe to say that they had a huge impact on the Expo site, being the ones breaking the site in two (see Fig. 2.43). The main part of the Expo was connected to the southern part by three pedestrian bridges, one of which attached to the Expo main gate train station. Moreover, the northern part of the site was composed by a garden with a few lakes. Osaka’s Expo site was in the suburbs of Osaka, in Suita. Evidently, the roads and their multiple intersections played an important role in the lack of relation with the city and the surroundings. However, placing the parking lots surrounding the site in almost every limit had a major impact, too. In reality, there were many residential areas after the parking lots but not directly touching them, rather with some empty spaces and green forests in between.

The last case presented here is the Zaragoza Expo 2008. Due to the clearly marked sinuosity of river Ebro, this Expo site was on a peninsula and it did not continue to the other side of the river. In other words, the peninsula was almost completely limited by water which separated it from the rest of the city’s fabric (see Fig. 2.44). However, the main Expo plot only occupied less than half of that peninsula. Actually, only the south limit of the Expo main area was the river Ebro. The others sides were bordered by roads (see Fig. 2.45). On the east side, the Expo plot was limited by an ensemble of large avenues and roundabouts from which started another road that surrounded the north and west sides. Moreover, this road was linked to the south shore by a bridge (The Third Millennium Bridge). On the other side of the avenues on the east, there was a residential neighbourhood as well as on the south (Almozara neighbourhood), on the other shore. Also on the south shore, south-west to the Expo was where there were created its parking lots which had behind a train station. On the west shore, facing the peninsula, first there were several roads, then an empty space and behind it some residential areas and agricultural lands. Besides the mentioned bridge, there were also two other bridges likewise between the Expo site and the shore on south – the Bridge Pavilion and the Footbridge Pasarela del Voluntariado. Previously to the Expo, the site was an agricultural land and for the international event the rest of the peninsula was also properly arranged, forming plenty green spaces – most accessible
from the fair. On the north side, the area on the other shore of the river was still composed of agricultural lands. Nonetheless, the site was close to the historical centre (3km) and the city centre (5km) which may consist in the exceptional case of the XXIst century. Besides, this Expo did not only change the city on the area around the site. Throughout the city, several bridges were created, a new green belt by the river was implemented to both pedestrians and cyclists, there was a new plan for transports and mobility, a high-speed train was added to the railway and a new airport terminal was added. Zaragoza took the Expo as an opportunity to re-think the whole city and tried to be a good example of the theme – Water and Sustainable Development. Moreover, two sustainable residential neighbourhoods were planned for the south-west limit of the city – although only one (Valdespartera) had some progress by the time the Expo occurred –, three centres of tertiary activities, one recycling centre and a logistics platform. In other words, Zaragoza’s connections, accesses and some of the urban design were improved plus, new facilities were created.

Evidently, due to urban richness and complexity, some Expos had mixed surroundings. Even the ones segmented in these five type of surroundings may not have totally just one kind of surrounding, as described. Nonetheless, it was necessary to categorise them as fair as possible and using cases where one type overlapped the other, to allow clear conclusions towards the urban success of Expos in the next subchapter. Although there is no doubt in the uniqueness of each Expo, it is not realist to assume that a fair success can only be analysed within its situation or that is not somehow related to any previous Expo. Especially, after more than one century of their existence.

2.4 INTEGRATION IN THE CITY AFTER THE EXPO AND ITS CHANGES

Nowadays, the site of most initial Expos probably is already integrated into the city while in more recent cases, it may still remain on the periphery or even without a well-defined function and proper use of the space. On this chapter, it will be briefly analysed the success or fail post-event of the cases mentioned in the previous subchapter, and if they have similar determinant aspects. Success in terms of whether the Expo site is integrated on the city’s urban fabric or life, or even better, both. This
analysis focuses more on the urbanistic point of view and not so much on the architectural aspects of the pavilions.

First, it was presented the Buffalo, Seattle and Aichi implantation to illustrate the Expositions surrounded by green lands.

As for the Buffalo’s 1901 fair case, it already belongs to the urban fabric and not to a green area anymore (see Fig. 2.46). Nonetheless, the lakes are still slightly surrounded by green lands which are linked with the Forest Lawn Cemetery and the Delaware Park as before. However, now the Delaware Park is also composed of a golf park and the Buffalo Zoo and the east corner of the cemetery has now the cemetery facilities, two colleges, student residences and housings. Where before the pavilions were, there are several residential blocks and a few northern blocks of storages and companies, behind which there are only residential blocks. West to the fair’s site is now the same variation of occupation, being the housings more dominant. Moreover, the State Hospital still remains although with a much smaller area. Now, on the previous green area next to the hospital, is where the State University of New York is placed. Therefore, the site is totally absorbed by the city. Plus, there is the Scajaquada Expressway which is a road that crosses that area from west to east, close to the creek and lakes, making a separation between the south and the north area of the water line and the Delaware Park. The fact that the road passes south of the smaller lake and north of the Hoyt Lake allows them both to have a green reachable space from either north or south.

![Aerial view of the site of Buffalo’s 1901 fair site](image)

2.46 Aerial view of the site of Buffalo’s 1901 fair site

About the Seattle’s 1909 fair, nowadays the whole site belongs to the Washington University as before, though much more constructed (see Fig. 2.47). The plan of the campus is a result of the Expo’s plan and the heritage of plenty of the fair’s buildings, although today only two remain (see Fig. 2.48). The campus is embedded in the University District which is already well-integrated on the city’s fabric. In other words, from west to north the district is composed of mostly orthogonal residential blocks limited by the road 1-5 Express (north-south direction). Just outside the University District, in the north direction, there are two parks surrounded by housings – Cowen Park and Ravenna Park. On the south-
west shore of the Portage Bay, there are several university offices facilities as well as student’s residences. Moreover, the university campus grew to the east side, formed now by plenty of sports fields, the Husky stadium, a few parking lots and the Union Bay Natural Area. Just at the north of the sports area, there are several storages, shops and restaurants – like an ensemble of shopping malls, filled with plenty various parking lots.

Last, on what once was the Expo of Aichi, the surroundings overall do not seem to have changed (see Fig. 2.49 and Fig. 2.50). Except for a few more constructions – like a Research Foundation north-east to the site – the surroundings are quite the same. What changed was the Expo site which was intentionally constructed so that it could return to the original park once the Expo was over. Twelve years after, almost every pavilion was already deconstructed or dismantled. Today, other facilities run in what was baptised as the Expo 2005 Aichi Commemorative Park. On the north-west the Expo parking lots now are agricultural fields, extending the ones adjacent. The inner of the park was occupied by an amusement park, two restaurants, a centre of activities for kids, parking lots, museums, an ice-skating ring, a futsal field, athletic field, baseball field and the Kanaregawasabo Park.

The south half and east of the park remained a forest as it naturally was. Basically, the idea was to give back to the site the natural qualities it had and complement them with spaces and attractions for everyone. The accesses to the site remained identical, a train station or roads since it is surrounded by a forest with few establishments nearby.
Second, as mentioned, an Expo can be in the middle of a city’s fabric whether because it is inserted inside a garden or not.

The first fair was in the Hyde Park, exactly in the **Crystal Palace** which, as mentioned, was dismantled to another location and then, destroyed in a fire. Nevertheless, the Hyde Park still exists and its limits are considerably the same (see Fig. 2.51). The park is surrounded by blocks from several wealthy residential neighbourhoods also composed with public gardens and parks. The biggest ones are the Green Park and Saint James’s Park of the Buckingham Palace – south-east to Hyde Park and connected to it through a plaza –, the Holland Park – behind a few western blocks – and The Regent’s Park, 1km to north-east. Besides, around the park are several other public facilities such as theatres, hospitals, monuments, museums, concert halls and several metro exits. There is one concert hall, the Royal Albert Hall, facing a square and statue of the park just from across the street. The river Thames is pretty close, too – only 2km south. As for the park, on the place of the Crystal Palace, there are several tennis courts near to the Serpentine. The gardens do not have change a lot, though some new structures and facilities were added like cafes, restaurants, a gallery, a playground, some rental lodges, a greenhouse, a swimming club, a horse riding arena and a look out educational centre. Plus, the park closes at the latest hours so it is surrounded by walls that, on the west side, end on the Kensington Palace and gardens. Just next to the back of those gardens are two blocks of enclosed embassies. Despite having surrounding walls as they are small, contain several accesses and have a line of trees adjacent to them from the inside, the park starts to be sensed from the outside. Thus, the walls of the park are not a blockage with the surroundings. On the contrary, the Hyde Park is very well absorbed by the city centre.
Since the Paris fair of 1900, the surroundings of the site have not changed significantly (see Fig. 2.52). There is still the same Palace on the south of the site, where today is the École Militaire de Paris, the surroundings are residential blocks maintaining Haussmann’s architecture and on the north, the Eiffel Tower remains in its original place, facing the Seine. What once was a controversial structure – the Eiffel Tower – nowadays consists on the main Parisian touristic lure and has become an icon famous worldwide. Obviously, attracted to see the symbolic tower, many people also walk by Champs de Mars, where the fairs of 1867, 1889 and 1900 took place. However, the relation between the site and the city has indeed changed from when it was a fair bearing in mind that the Champs de Mars changed. Now, there two lakes next to the Eiffel Tower, three smaller lakes in the southern part of the park, a centred grass axis along the park and the rest is filled with organic paths between trees. Nevertheless, the garden shrank in area and on the long sides, wherein 1889 or 1900 were the pavilions, today we have blocks. Adversely to the continuous fair buildings, since the actual buildings are divided into blocks, there isn’t a break with the park. The park’s limits are rather opened and connected with the city. Today the park is extended until the blocks where there are pedestrian paths surrounding the park. Connected to those paths, there are transversal streets where is already visible the green nature of Champs de Mars. Two of the transversal streets actually cross the park allowing it to be even more embedded in the city’s urban fabric and life.
The San Francisco's fair of 1915 was bordered by residential blocks, a military reservation of a prison and a US Army port. Meanwhile, the city developed and now the site of the fair is a residential neighbourhood, the Marina District (see Fig. 2.53). Nowadays, besides residential buildings, there is also a sports centre, schools, a park and two marines, among other facilities. Moreover, the Fort Mason became a site of several cultural facilities and the prison’s site is now a park with plenty different services and establishments – a museum, a cemetery, a campsite, a golf camp, the Golden Gate Bridge and other historical landmarks from the prison. During the fair, on the north shore adjacent to the military reservation area, there were some pavilions. Now on that site, there are a few storages, some green areas, a beach and The Palace of Fine Arts from the fair. Naturally, the topography of the area has not changed so the visibility of the site should be the same – seen from the hills – however, now the buildings on the plot are identical to the surroundings instead of standing out like before.
Completely merged with the urban fabric, the plot of the Seattle’s 1962 fair, today remains in the same situation (see Fig. 2.54). Although there are still low houses mainly on the hills, the direct surroundings of the site are commercial, offices or residential buildings. The site stands just outside the limit of the downtown neighbourhood and it is considered to be in the city centre, so naturally, it has a lot of attractions and events happening near. The majority of the fair northern pavilions remained and in which (or in other new infrastructures) the site comprises two theatres, a concert hall, a stadium, an arena for sports or concerts, four museums, restaurants, a cinema, the Seattle Center Monorail, the Space Needle and a few green spaces. About the visibility of the site, it has not changed since the fair due to the fact that the Space Needle is higher than any building in the surroundings, even if most buildings are higher than before. Probably this fair only got the chance to be in mingled in the urban fabric due to its small area.

The fourth type of relation with the surroundings presented in the previous chapter was when the site is bordered by technical facilities or agricultural lands. The Hannover Expo of 2000 was a very clear example of this kind of approach (see Fig. 2.55).

The site was predicted to attract 3 million visitors per year through major events such as Expositions, concerts and sports games. The idea was to create a business park on a quality site that would lure due to its green spaces on the surroundings. Basically, to obtain a space with both education and entertaining. The surroundings do not seem to have changed significantly. Thus, the site is still very close to some towns on the outskirts of Hannover although separated with forests on some sides. The blocks are mainly formed by small houses with gardens or by warehouses on the west side next to the railroad. Nevertheless, those towns are quite small and face on its limits either agricultural fields or natural green lands. In other words, the site is not in an urban fabric, rather in the suburbs of a city. On this case, the suburbs do not seem to have a very defined plan or any attractions. On the contrary, being on that site gives the sensation of being in a quiet area and in contact with forests or agricultural
fields. The creation of the new neighbourhood Kronsberg consists on a success since it has become an area with houses of high environmental standards habited by around 15 thousand people. However, Kronsberg is not exactly on the Expo site and did not solve the reuse of the site. The Expo plot became a mix of reused pavilions, a lot of empty spaces (since plenty of pavilions went down, were relocated or rebuilt in other places with different functions), parking lots, some new buildings for the companies there installed and finally, abandoned pavilions. Besides companies’ offices or bases, the site also has a restaurant, a hotel, a big store, an arena for concerts or sport games, the Hannover Messe (the largest trade fair operator in Germany), the Expo Plaza (sometimes used to open air concerts), the University of Applied Sciences and the Department of Design and Media of the Hannover’s University.

Is true that the Hannover Messe is a successful event attracting thousands of people, likely to the sports games and concerts in the arena or Expo Plaza. Nonetheless, these events are quite punctual and do not fill the fair site on the daily basis. Despite not being entirely occupied, the site has its qualities: the green surroundings, quiet environment, plenty of parking spots, means of public transport and as Tim Rademacher (a software entrepreneur with a company on the German pavilion) points out, a low rent price per square meter. On 2013, the city councillor Uwe Bodemann suggested creating a student residence for the universities. However, nothing seems to have happened yet on its behalf. Although the plot may have some life during the day, at night and on most days, nothing happens on the site. This means that the site did not add anything to the surroundings, except on some events. Seventeen years later, it is still a place with no strong concept, plan or use.

Having on its borders one or more fixed elements breaking the interaction with the city is a hard reality to overcome. These elements are generally immutable since they would be very expensive and hard to alter (in the cases it is possible) and participate in the basic structure or shape of the site.
The analysis of the site of both 1939 and 1964 New York fairs is the same since they happened on the same plot. There were a few changes in the site between those years as mentioned in 2.3. Here, the analysis is between the last fair and the present. The main area of the site, today became a park made for different people from different generations. The western area is still separated from the rest of the site by the road Grand Central Parkway and has the same accesses as before – two pedestrian bridges. This area is now mainly dedicated to kids and so, there it can be found a mini golf park, a zoo, a playground, a science museum, an amusement park for kids and a restaurant which reuses a pavilion from 1964. Besides, in that area is where a popular event, The Queens International Night, occurs around 5 months every year. Naturally, this part of the park is still bordered by residential blocks. The rest of the park has the same limits since the fair, too – roads and a railroad (see Fig. 2.56).

The surroundings are almost the same, the roads and railroads have not changed, either as the creeks. However, next to the northeast creek, today there is a messy area of car workshops and shops. On the east of the site, where there were the 1964 a parking lot, today there is another park as if it was the same park continuing under the lifted road, entering the residential neighbourhoods. Adjacent to this post-fair park and eastern to the creek, there is a storage area that spreads to north and east, merging with the residential areas. About the two southern lakes (now called Meadow Lake and Willow Lake), where during the 1964 fair there were parking lots, now there are mainly green lands equipped with two baseball fields, a restaurant and an infrastructural train centre. East to the Meadow Lake first there is the same cemetery as in 1964, facing the lake on one side and on the other adjacent the Queens College which is bigger than in 1964. The rest of the area close to the lakes is still formed by housings. Moreover, the Expo main site is a park composed of a big area dedicated to tennis courts and stadiums plus some football fields, a golf centre, an aquatic centre, a skate park, the Queens Botanical Garden, a museum and a theatre. The fact that the site is not linked with the city in most sides makes it hard to access except by train and car. However, now the site profits from the lifted east road which allows reaching the park from underneath.
The site of the **1970 Expo in Osaka** has still the same shape since the roads and railway shaping it are the same (see Fig. 2.57). Despite the changes of the site occupation and in the closest surroundings, there is still a hard relation with the areas nearby. In general, the main changes around the plot are that the previously empty spaces or forested areas are less in number and size as the constructed space grew. For example, in the north, where before there was a forested area between the road limiting the Expo and the residential area, now there are only a few trees next to the road and there are many more houses. As seen in the subchapter 2.3, the Expo parking lots were also disturbing the Expo’s integration within the city. At the east of the site (and north of the rail line) replacing the previous parking lots, today that area is composed of one parking lot, a football stadium, an athletic park, a water purification facility, a recycling centre, a green area and a high school.

Although there are housings adjacent to those facilities, they are again limited by roads. Also on the east side but south of the railway, the whole parking area is now a sports zone with different fields plus some houses filling the space left within the limiting roads. All the surroundings suffer from the multitude of roads that isolates them in several small residential areas, blocked from each other. Whatever new functions were given to the surrounding empty spaces or to the site itself, they will always be disconnected from each other if the design of the roads is not altered. Besides, those areas do not even seem to have a defined plan that fits the limits since in most cases there are always some empty spaces left, though smaller than in 1970. Actually, in a close-up, some small areas may have a defined fabric but not integrated with each other. Overall, it seems like a chaos of neighbourhoods, infinite roads intersections, a few green spaces and other facilities. As for the Expo site, most of the pavilions went down and there are green spaces, gardens and lakes instead. Moreover, the symbolic Tower of the Sun remains, the Japanese Garden as well and there are also a school, a few museums, restaurants, the Osaka Monorail Transport Department, a hotel, a shopping mall, an aquarium, the festival plaza (where markets and some events take place) and few other facilities. Even if the
ensemble of functions attracts several people to the site nowadays, it does not alter the fact that in terms of urbanism it is not properly integrated with the surroundings, although they express the same problem. For a pedestrian, it seems hard to cross all those areas or even enter the Expo site from nearby as the accesses are made by car or train.

Likely to 2008, the Zaragoza’s Expo site has a very small distance to the city centre and to the historical centre. The planners of this event had as well an intention for the site usage after the Expo, as a new extension of the city. The Expo’s plot and facilities were aimed to become the main business park in Zaragoza with recreational establishments and restaurants. The idea was that the Expo buildings would be rented or transferred to several institutions plus, the aquarium would be open for a few more years. About the surroundings, as it has only passed less than nine years since the Expo closure, they did not suffer any significant alteration.

Around the peninsula most of the spaces are either occupied by roads, housings or agriculture, leaving almost no empty spaces left (see Fig. 2.58). As for the sustainable neighbourhoods mentioned in 2.2, Valdesperta was not finished yet and Arcosur just has very few buildings while most plots are empty. Concerning the Expo site, most of the Expo pavilions remained and now contain plenty of official departments (of Education, Culture and Sports for example), the new City of Justice (with several courts and other facilities) and some other civil government facilities. Plus, there are a few private businesses, a hotel, some restaurants, a congress centre, an open-air amphitheatre, an aquarium, the Bridge Pavilion (serves as both access, exhibition and punctual events) and two pavilions that remain with no use. The rest of the peninsula, it now consists of vast green spaces and gardens, a few lakes or water lines, the Water Tower (from the Expo), an artificial beach, some restaurants, a parking lot, a supermarket, a spa, a golf park, a few tennis courts and football fields, among other establishments. Although the new site gave the city a vast green area, has a lot of functional activities and created new
accesses (several bridges and the green belt for cyclists and pedestrians), since there are no residences or establishments opened at night, it becomes quite empty during dark hours.

Choosing a site for an Expo may be based on the accesses and transports, the proximity to a city or on the site qualifications. Taking, of course, in consideration the fact the area demanded is very big and usually, the options are highly limited. Unfortunately, only very few times the reuse and reintegration of the site post-event were taken into proper consideration. Naturally, the cases that are today better absorbed by the city’s fabric were the fairs that already occurred in the middle of the urban grid. Cities, tend to grow in size, facilities and population as it has happened since the beginning of international fairs until today (reaching evidentially a plateau). So, it would be very unlikely for an area of a city to stop being part of it. However, in cities where the growth has already ended, it is even harder to find a huge place available for a fair except, probably in a park like in the London or Paris cases. Perhaps, it could be an available approach for the Expos of the present generation. Nevertheless, having in mind the city’s tendency to spread through the empty lands nearby, opting for an empty area on the periphery may result on a site well integrated years later. At least, in theory, it is a possible scenario though it demands a planned growth of the area. This happened in both Buffalo 1901 and Seattle 1909 fair’s site and demanded an organised plan for both surroundings development and plot’s reuse. The Aichi’s fair was also on the outskirts of a city where there were almost only green lands but had a different approach for the site. Here it was planned to restore the site as it was before – a forest. Although it has merely past twelve years since this fair comparing with the centennial Americans fairs just referred. The Hannover Expo was indeed created on the limits of the city but the lack of a defined plan for the reuse of the fair did neither allow it to be properly integrated with the surroundings nor with the city. Although this site is mainly surrounded by agricultural lands and not urban fabric which makes it harder to dialogue, this could have been overcome if the site itself had become a lure to the citizens either from Hannover or from the towns around it. The last type of implantation is probably
the hardest to merge with the surroundings, the Expos limited by fixed elements. The difficulty does not depend much on the function of the site but on the fact that it has strong limits which separate it from everything. Zaragoza overcame this problem by creating new accesses that cross its limits – more bridges and more important, pedestrian ones plus pedestrian paths. While in Osaka the accesses and plot limits were not overcome or changed in any way and in New York (after the fair of 1964) only on one side the connections were improved – through the implementation of a park, as explained. Obviously, the 2008 Expo had a greater chance to overcome this problem to the extent that it is close to the city centre and that a river easily offers pleasant views and ambience, contrary to a wide road. The last few Expos were not mentioned since it is very early to conclude their success, some may still be in the process of changing and evidentially a city takes a slow process to be built or transformed.
3. CASE STUDIES: SEVILLE VS LISBON
After the analysis of chapter 2, it was necessary a deeper analysis and comparison based on all the information learned about the Expos. For this reason, two specific examples were picked, Seville and Lisbon. Logically, the ease to access information and visit both places were determinant aspects on the moment of choosing the case studies.

Occurring only six years apart from each other and in an identical reality. Both cases belong to the south-west corner of Europe thus, have similar weather and culture. Besides, the two Expos were located in front of a river.

3.1 SEVILLE
The Expo of Seville was a World Expo which means it had no size limit, occupying an area of 215ha. This Expo had the high attendance of 41 815 000 visitors and 108 different participations. According to Jacinto Pellón (Rispa, et al., 1992, p. 15), on 1992 Seville had a population of fewer than 700 000 inhabitants, which evidently implies that visitors were not only local. In fact, Seville’s Expo was one of the most visited Expos. Initially, it was aimed to celebrate the 500th anniversary of the discovery of the Americas by Cristopher Columbus, but soon the theme was changed to “The Age of Discovery” focusing more in “new frontiers in science and in technology”. (Monclús, 2016, p. 89)

The post event was thought to become “Proyecto Cartuja’93”, an area of investigation and development but no defined plan was done, neither was decided the role of the administrations and companies.

3.1.1 PREVIOUS SITE AND SURROUNDINGS
The place selected for the event was Isla de La Cartuja, which now consists of the north part of an artificial peninsula. The water lines of Guadalquivir river changed a lot during centuries and before the works for the Expo had started the area of Isla de la Cartuja did not have any resemblance to an island, but the area at its south did (see Fig. 3.1 and 3.2). Isla de la Cartuja “remained practically unoccupied” and contained the monastery of Santa María de las Cuevas, a Carthusian monastery, dated from 1400 and reused later on 1842 for ceramics industry purposes. It was a region with serious problems of communications, services and urbanism and a great historic heritage. Nonetheless, it was close to the historical centre, being only separated by the river. The site was chosen due to its wide and free dimensions and due to the distinctive belief that Cristopher Columbus was there in between his travels. The goal was to rejuvenate “the historically depressed city and region”. There used to be a railway in the east shore, on the other side of the river. (Monclús, 2016, p. 89)

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12 For more information see attachment 1
The site itself, besides the monastery, was mainly agricultural so logically having accesses there was not a priority. Instead, the attention was spent on accesses to the historical city centre. Before the Expo, the site was limited by the river on the east, separating it from the rest of the city. South to the Expo’s site, there was the suburban neighbourhood Triana which was indeed an island before the changes of the water lines.

3.1 Seville aerial view from before 1982

3.1.2 CHANGES ON THE SURROUNDINGS

The general plans for the Expo started around 1982 when the site started to be arranged and Isla de La Cartuja was created by changing the water course. First, the new island was created and only later it was connected to the previous southern island, resulting on a longer island, with a marked sinuous shape. Since the shape of the site was redesigned intending for the still desired Expo, the accesses of the site were very important, especially when there was a river limiting the site from the rest of the city.

In that sense, six bridges were made: El Cachorro, La Cartuja, La Barqueta, Las Delicias – with pedestrian lanes –, Quinto Centenario and Puente del Alamillo – these two only for vehicles. A new road network was made which included a ring, circling most of Seville’s area (formed by SE-30 and Ronda Urbana Norte) and the A-92 highway. Moreover, one lane was added in each direction on the roads to Madrid and Malaga, and improvements were made on the A-49 Huelva.

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13 On 1986, there was a plan of an urban coordination of the metropolitan area of Seville and between 1985 and 1987 there was a plan for Isla de La Cartuja, made by the Public Constructions and Transports of Andalusia.
Besides, new bus stations were created to link Seville with Portugal, the neighbour areas Huelva and Extremadura plus, the north-west of the Iberic Peninsula. In addition, a high-speed train line connecting Seville to Madrid was inaugurated in the same year of the Expo as well as the new Santa Justa train station.\textsuperscript{14} (The previous railway on the east riverbank was demolished so that the site was easy to access and to design a proper space on the river bank.) The airport was increased with the new terminal San Pablo and the harbour was also enhanced by constructing new docks, improving its accesses and infrastructures. As Jacinto Pélhon stressed, with the Expo’s project came “the structuring of the territory through infrastructures of transport and communication between the island and its surroundings, restoring the historic channel of the river and recuperate the creek of San Jeronimo for the city”. (Rispa, et al., 1992, p. 16)

“The new bridges, opening of the plugged channel of the river, towards Torneo Street, converted into a river walk, was to link the city’s historic centre with the spaces created by Expo'92.” (Rispa, et al., 1992, p. 15) The Torneo street was at the east of the Expo site, along the bank on the other side of the river, and was arranged with paths for pedestrians or cyclists and green areas.\textsuperscript{15} These works obliged the demolition of the wall of Torneo and the beaches. The Ronda del Tamarguillo, a ring way inside the city, is another example of the urban influence the Expo had on the city. As is the recuperation of Teatro de la Maestranza, among other historical and cultural infrastructures.

Overall, the Expo stimulated several needed constructions and new infrastructures. The city was viewed as the pavilion of Seville of 1992 so, facades were painted and there were awnings on the streets protecting from the heat. It was understood that the event would attract many visitors to the city thus, the importance to prepare the city, too.

\textbf{3.1.3 THE EXPO}

Five years before the Expo, constructions on the site had to begin even without a plan yet. Therefore, accesses, roads and services were decided and implemented in an adaptable way that should not need to change when all the plans would be defined. The traffic ways of the plot were divided between pedestrians and services.

The Expo enclosure was accessible by six gates from all different sides, north, south, west and east. There was even one gate on the other side of the river, accessing the site by a bridge and then directly through the monastery area. The monastery was incorporated on the Expo site and was likely to have served as an entrance or exit to most visitors since it was surrounded by three gates, those closer to

\textsuperscript{14} Santa Justa station is 2km east to the city centre, embedded within the city's fabric

\textsuperscript{15} Along the banks of Torneo Street is where there used to be a railway
the city centre. The site was likewise reachable by water via the Port of the Indies that once more was in front of the monastery. The monastery was embedded in a park and had two pavilions in the area nearby – the Pavilion of Nature and the Pavilion of the XV century.

Most of the pavilions were organised in an orthogonal implantation (see Fig. 3.3), forming blocks perpendicular to two parallel wide streets. A big part of the international pavilions was in this area which was at the west side of the Expo. Between the blocks, there were four large avenues and a slimmer one.

Water was obviously a present element on this Expo. Not only on the river but there was an 870m long artificial channel, initiated on Guadalquivir that continued along the Expo site, enlarged into a wide lake and then continue a few meters further. All the regional pavilions were implemented towards the lake. The Pavilion of Spain was one of the biggest pavilions and was partially embedded in the lake though attached to land on the other part (see Fig. 3.4).

Seville’s Expo emphasised the natural elements “with the plantation of 25 000 trees and 300 000 bushes from seven hundred species”. (Rispa, et al., 1992, p. 19) (see Fig. 3.5) Besides all the green elements within the site, there were three gardens – La Cartuja Gardens, the Garden of the Americas and Guadalquivir Gardens.

La Cartuja Gardens and Guadalquivir Gardens were two big gardens, being the second a very diversified garden bordered by the channel and the river.

Circling the site, there was the Expo Ringroad towards which the service facilities were placed. This was the road aimed for the service routes that did not interfere with the visitors’ experience and had easy access to the majority of the pavilions. As for the visitors’ transportation inside the Expo, it was made by bus, funicular, monorail, catamaran (on the lake or on the biggest channel) or by the touristic tram (see Fig. 3.6). The funicular basically made the connection between the Cartuja Gate (on the other side of Guadalquivir) and the Expo, crossing the river and stopping first near the gardens of the monastery and last near the northern gate (Italica Gate). The funicular path passed along the Route of
the Discoveries, the Expo main avenue. About the monorail, its line crossed the site going around most of the international pavilions and the lake, also passing by the Route of the Discoveries.

Naturally, street equipment was also part of the Expo project and the ones who designed it (Gabriel Sabater, José Carlos Flórez, Javier Lagunilla, Daniel Nebot, Nacho Laverina, Perry A. King, Santiago Miranda, Pedro Miralles, Ginés Aparicio, Felix Escrig, Alberto Camarasa, Jesús de Vicente, Gemma Bernari and Ramón Isern) understood its role on the Expo’s image.

When planning the Expo, the weather was taken into consideration, especially since Seville has the highest average temperature of 36°C in July and August\(^16\), both are months the Expo would be open. Therefore, among the urban equipment was an evaporative cooling system applied on metallic structures of tubes that let fine drops of water falling vertically from above, making them evaporate. The evaporation moment cools the air close to the ambient wet bulb temperature\(^17\) and it is on that air that people would pass, underneath the green roofs. This system was present along the main avenues of the site, increasing the natural elements on the Expo and creating natural fresh shadows since it was filled with vegetation. (However, there were shades coming from some awnings, too.) The mentioned cooling system was applied as well on the Bioclimatic Sphere – a structure above a fountain on one of the Expo wide avenues –, on the funiculars – to cool down the interior air – and on the white Cold Towers\(^18\). Moreover, a cooling system for the pavement was applied on the site (running fresh water under its surface).\(^19\) The idea was to create a microclimate fresher than the natural heat of Seville. The results fulfilled the expectations. Dealing with an Expo that focuses on technology and


\(^{17}\) The wet bulb temperature is the temperature reachable only by the saturation of water under the ambient conditions.

\(^{18}\) The white Cold Towers Metallic structures with a cone shape, lifted from the ground, opened on top and bottom and with a fabric surface.

\(^{19}\) See more in detail in Givanini, B. (1994) Passive and Low Energy Cooling of Buildings, Available at https://books.google.pt/books?id=r1sVoTw1geoc&pg=PA257&lpg=PA257&dq=Expo+92+cooling+system&source=bl&ots=iArNuhYVVn&sig=cRWv5ks27MXss19-3Peo9IM254&hl=pt-PT&amp;sa=X&amp;ved=0ahUKEwiGl4fYyztAHXD1RoKKh9nCUMq6AEElajAM#v=onepage&q=Expo%2092%20&amp;f=false [14/05/2017]
science, it was only logical the technological effort to cool down the temperature which was the first trial of a natural cooling system on such large scale outdoors.

3.1.4 TODAY’S REALITY

Nowadays, the site contains PCT Cartuja, a very well-known scientific and technological park. PCT Cartuja is formed by “advanced technology companies, advanced services, research centres, business schools, public entities supporting the Innovation as well as business associations”21 plus, several business centres, most installed on Expo pavilions. However, the Expo site is filled with other types of facilities such as universities and schools (centres of the University of Seville of Engineering and Communication, infrastructures of the University of Pablo de Olavide and of the private University CEADE, the International University of Andalusia, the business campus ESIC and EOI-Campus PCT Cartuja, the private French School and a kindergarten), cultural (Monastery of Cartuja, a Theatre Hall, the Andalusian Centre of Contemporary Art, the Foundation of the Three Cultures Of the Mediterranean and the Municipal Auditorium Rocío Jurado), leisure (the gardens of the monastery, Guadalquivir Gardens and Alamillo Park) and sportive (the Olympic Stadium, the Athletic Club of Alamillo, some sports fields and a golf park). Moreover, there are also a few restaurants, a hotel and a (university) hospital. The main part of the PCT Cartuja facilities is installed on the Expo’s international area being encircled by fences.

A big part of these establishments use the Expo pavilions which consisted on a positive way of economising the Expo expenses and avoid the creation of new buildings. The result is a technological park with very diverse and creative architecture (see Fig. 3.7 and Fig. 3.9). All the active functions bring to the site around 25 000 people a day. Along the Expo avenues, it is visible the working life inside the buildings due to the number of cars parked (see Fig. 3.8). As it is mainly a working area, there are only a few people outside, mostly students on their breaks.

The area of the lake is now occupied by Isla Mágica, an amusement park. Even though it has been closed in the past, it is currently active despite some close facilities, rusty infrastructures and with no apparent innovations since its origin. Just adjacent to the theme park there is a hotel.

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20 See attachment 7 to complement the reading of this subchapter
21 http://www.pctcartuja.es/ [15/05/2017]
The northern area of PCT Cartuja did not belong to the Expo site and it is separated by a highway (SE-30) though pedestrians pass underneath it. The areas in front of the highway, both north and south sides, are parking lots and an area of cultivation (from the Park of Alamillo). North of the highway, attached to the parking lot is where the wide park of Alamillo is placed and the stressed above sports area plus, the facilities of a television channel. The Alamillo Park contrary to the green elements on the Expo site is in good conditions and contains lakes, wide grass, a golf park and some cultivation areas (see Fig. 3.10).

Unfortunately, not all the pavilions and Expo facilities were reused or properly maintained. Some buildings are abandoned, part since the Expo, while the other part after one non-successful occupation (see Fig. 3.16). The absence of maintenance is especially visible in the public spaces and urban equipment. It is very easy to find cracks, faults of paint or growing unplanned vegetation on the Expo site. Clearly, the urban facilities have not been treated since the Expo. Outside the buildings, there is vegetation growing on the pavement, cracks on the pavement and every street equipment has a pale colour (Fig. 3.14). This is evident on the previous channel linking the river and the Expo’s lake that now is dry and full of vegetation (see Fig. 3.12). What is more, six or more vacant plots and a lot of paved areas with no defined function becoming parking lots suffering the same decaying conditions (most parking lots are in this situation).

The Expo parking lots on the west of the Expo services area are still huge parking lots, now mostly not used. Most of the services facilities are used by companies besides one of the mentioned universities, a local police station and at least one of the buildings is decaying.

The cooling systems were also abandoned and are no longer active. Most of its vegetation it is gone or dry (see Fig. 3.13). About the monorail is neither functional thought its infrastructures are still present on the site (see Fig. 3.15).

As for the Monastery, it is well conserved and opened to the public, maintaining the gardens under good conditions.

The southern area has two big vacant plots (see Fig. 3.11), the Seville’s tower (occupied by offices and a hotel), a previous Expo building with now public departments (the Andalusia’s departments of
Education, Tourism and Sports and The Professional Qualifications Institute of Andalusia), a business centre, a school, two universities, the Tower Schindler on the water (which is a touristic attraction) and a museum (using a pavilion).

A few years ago, it was understood that the site had slipped into people’s oblivion. Consequently, on 2010, the Asociación Legado Expo was made which is an association aimed to disclose the Expo space through events. With that concern, on 2013 guided tours were organised to the most important areas of the Expo and to the Garden of Guadalquivir.

Summing up, it seems the Expo’s site is indeed a prominent place (PCT) being used by a lot of people, while the streets and most outdoor spaces are forgotten. It is like an ensemble of active buildings on a forgotten urban area.

The south of the site is limited by a road (A-49 now called Avenue Expo 92) which divides it from the neighbourhood Triana. On the Expo site and adjacent to this road, there is a big parking lot (abandoned or in degrading conditions), a big vacant plot, a small garden and on the eastern corner, a small parking lot. Although, after passing those spaces there are active facilities it surely does not lure people to the site. Instead, it increases the distance between the urban fabric of Triana and the site of the 1992 Expo.

Both east and west sides are as before, limited by water lines. On the other side of the west riverbank, the lands are still agricultural. As for the opposing east riverbank, naturally it is still the historic centre and the whole city has developed in that direction. Along the riverbank itself, the Torneo Street has the arrangements created for the Expo. Meaning, the low path for cyclists and pedestrians
accompanied by trees and some of other green elements that do not seem to be taken care of (see Fig. 3.17).

The Expo plot has the same northern limit (SE-30) however, as explained, PCT Cartuja extended its facilities further until where the east meander ends. Therefore, there the limits are a road (Ronda Supernorte) and a rail line. Northern to which is an aerodrome and more agricultural lands that spread to north and north-east. Across the river, there is the San Jeronimo park since 1995. The area of the park used to consist of the nurseries for the Expo plants and is now a green area, under very good conditions, that continues south along the Guadalquivir’s margin, linking with the Torneo Street paths.

Today the accesses are the same since the transport and infrastructure innovations were valuable to the city. In other words, the six bridges project for 1992 remained, as well as, the train station and high-speed line, the airport terminal, all the roads added or improved plus, there are two bus lines crossing the site.

3.2 LISBON

On 1998, the event consisted of a Specialised Expo with the theme “The Oceans: A Heritage for the Future”, a celebration of the 5th centenary of Vasco da Gama’s nautical trip to India. The size of the Expo was the double of the limited area for this kind of Expos, occupying 50ha. Within the pavilions, there were 143 participants displaying which all led to 10 128 000 visitors. Being the last Expo of the 20th century, it had plenty of examples to learn from and represented the culmination of the century. The idea was to create a new neighbourhood in the city which “was designed to become a new core service, business and residential land use (with homes for 25,000 people and corresponding service facilities)” plus leisure activities while assuring “the appropriate use of the maritime resources”. Consequently, the Intervention Zone was naturally wider than the Expo spot. Thus, the Urban Plan developed covered a global area of 340ha. (Monclús, 2016, p. 95), (Trigueiros, et al., 1998, pp. 13, 55)
3.2.1 PREVIOUS SITE AND SURROUNDINGS

The site selected for the international event was on the limits of Lisbon, on the east area, where existed years before the Expo occurred, a port which “had lost its importance” and became “fuel depots, storage of containers, the city’s slaughterhouse, a dump and a waste treatment plant”. (Monclús, 2016, p. 94), (Trigueiros, et al., 1998, p. 55) However, when the site was selected, those facilities were already abandoned. Basically, the place had a rectangular plot along the river that had become an environmental problem that promoted insalubrity and possibly, dangerous conditions in the area. The plot was limited on the west by a rail line that came from the north into the interior of the city. All the industrial equipment was demolished for the Expo except for the cracking tower and the dock’s water platform. (see Fig. 3.18).

Nonetheless, the surroundings were composed of residential neighbourhoods: at west Santa Maria dos Olivais, Olivais, at north-west Moscavide, Portela and Sacavém and at south Braço de Prata and Marvila. However, Braço de Prata had also some industrial infrastructures and a factory which was deactivated for the Expo. On the southern areas, there were also a few farms. However, some of these neighbourhoods have roads passing on their limits, disturbing easy communication.

![Aerial view of the Expo site in 1993](image)

3.2.2 CHANGES ON THE SURROUNDINGS

The Expo planners used the event as an impetus to improve the state and accesses of the area. Several plans were executed with different scales and for different areas of the Intervention Zone. The plans concerned about urbanism and architecture. New roads and streets were made such as the extension of EN 10 to connect with the new bridge, the extension of the CRIL highway (that was still under construction), works in the North-South axis of roads (that were also under construction) and an extension of IC2. Plus, the remodelling of roads nearby – Avenue Marechal Gomes da Costa, Avenue
Moreover, the second city’s bridge crossing the river Tagus was created, just north to the Expo. Besides being the longest bridge in Europe, it improved the city accesses and traffic. Furthermore, it was created a new multi-transports station, the Oriente Station. This station was simultaneously a train station and a metro station, plus being a stop or terminal of long distance buses. Its metro line was added to the underground network.

The area demolished for the future neighbourhood was not entirely taken up by the Expo site or parking lots. The rest of the space was constructed right way as new parts of the neighbourhood from private initiatives. These actions resulted on the Shopping Centre Vasco da Gama that served as an access from the station to the west gate (the shopping centre was not yet active), two hotels and one office building in front of the new station, three blocks of apartment buildings and three blocks of row houses south of the event limits and several blocks of housings between the north Expo’s limit and the bridge. When demolishments started, there was a serious worry about a possible reuse of the materials (bricks, concrete and granite).

3.2.3 THE EXPO

The Expo was planned following a Plan of Detail of its site, made by Manuel Salgado, with the objective of serving the Expo future neighbourhood, assuring the water presence. From the beginning, some structures were planned to be permanent while others, to be only temporary.

The plan of the Expo was created from an orthogonal grid (see Fig. 3.20), based on a module of 7m. It was formed by a long avenue on the north-south direction (Alameda dos Oceanos) and smaller
perpendicular streets on its east side. The main avenue, was above all designed for pedestrians although there were lanes for vehicles, too. Since there was a limitation in high, this Expo was visually horizontal. The Expo had four gates, one in each direction (north, south, east and west), being the east gate reachable only by boat. The other three gates directed the visitors to the main avenue, Alameda dos Oceanos.

3.20 Map of the Expo 1998

There were two areas of international pavilions, one south to the water area and the other, close to the north gate. As it was a Specialised Expo, most of the countries occupied an area on a shared pavilion. This Expo had a lot of pavilions apart from the international ones (most were thematic pavilions). One of them was a big multipurpose arena that hosted several shows during the event. Its building was the only round shaped building on the Expo, contrasting with the orthogonal plan, though it was aligned to fit the grid. There was a 140m high tower, Tower Vasco da Gama, at the north-east corner of the enclosure, adjacent to the riverbank. There was also the restored cracking tower, close to the south gate. Besides, there was a theatre building, projected to be permanent. As for the services area, it was on the north-west corner of the Expo. The parking lots were west to the site, on the following blocks along its length. Furthermore, parallel to the main avenue, and in front of the international big buildings on the north of the site, there was a line of restaurants all under the same structure.

Not only a great area of the Expo was occupied by water, but water was present on the Expo through several lakes and water lines. Along the main avenue, there was a low narrow water line interrupted by fountains (see Fig. 3.21). Apart from that, there was also a lake with vegetation on the south area and another lake between the river and the multipurpose arena. The arena was again sided by a water line, on its south side. Moreover, on the south-east area of the river, there was a marine.

Furthermore, the site could be visited on a funicular which line was along the riverbank. Plus, an extra path was made as a bridge close to the water connecting the marine to the riverbank, on the other side of the water area (see Fig. 3.22).
As in Seville, the street furniture was designed specially for the Expo following a modern design. On the exterior, there were as well several elements of urban art, such as the sculpture Sol Humano by Jorge Vieira. Already during the event, all the streets were finished the way they were supposed to be when the site would become full of residential or business blocks, instead of pavilions and parking lots. This was made in order to integrate from the beginning the blocks that were built and occupied in time of the Expo.

About the green areas, there were gardens on the north half of the site, parallel to the river (Garcia de Orta Gardens) and on the south half (the Gardens of Water and a few other green elements). All conformed to the orthogonal grid. Besides, there were also trees along the streets (see Fig. 3.23-25).

In the plans of the 1998 Expo there as well a concern to overcome the summer heat. Here, the cooling system had the same base – fine drops of water falling in the air and cooling down its temperature by reaching evaporation – but this time the drops were projected from fountains that worked as Vulcans of water. These fountains were the ones mentioned to be aligned with the narrow line of water in the main avenue. The pavement surrounding the line of water was wood which is a material that helped to maintain the fresh air of the fountains. This area was surrounded by trees since they are able to cool down the air and offer fresh shadows. In the Gardens of Water, there was also an artificial cascade intentioned to cool down the air. All the water presence and green elements within the site had a role on the site’s cooling. Moreover, the site was planned according to the winds, in an attempt have fresher air circulating the site.
“Thus, a structure of streets and squares brings closer the Expository model of our cities’ scheme moving away (definitely?) from the experimental spirit, which characterized previous Expos, and paradoxically indicating its progressive loss of autonomy that, in the future, may be compensated by their integration in the city’s daily spaces, or even in the limitless extensions of our planet.” (Trigueiros, et al., 1998, p. 15)

3.2.4 TODAY’S REALITY

Today, the Expo may have ended but it surely left behind a vast legacy, as intended. For example, the outdoor spaces are quite the same, including the urban equipment. Although the grid was planned as orthogonal with some diagonals and subtle variations (see Fig. 3.26), most buildings were not projected to occupy the blocks until its limits. Several buildings have a diversified implantation in the block, depending on the solar orientation or on the relation with the streets, or contain a garden or a public terrace in the rest of the block. Some buildings were planned to be implanted on a higher base, creating new views and diversity in the neighbourhood, while other were supported on arcades or pilotis (a method invented by Le Corbusier and with very few examples in Portugal). All these characteristics were a combination of the architecture theories and experiments done in the 20th century.

3.2.6 Aerial view of the Expo site

About the previous plot of the Expo, it has been maintained its original (or identical) function on the multifunctional arena (see Fig. 3.28), the Oceanarium, the funiculars, the Camões Theatre, the Pavilion of Knowledge, the Portugal’s Pavilion, the restaurants’ structure and the marine. The green areas and water lines or lakes are still the same, too (see Fig. 3.36). Tower Vasco da Gama it was obviously maintained as was the cracking tower (see Fig. 3.31). The new city infrastructures, such as the bridge,

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22 See attachment 8 to complement the reading of this subchapter
Oriente Station and the roads have become essential to the city (see Fig. 3.32-3.33 and Fig. 3.35). Reusing the same buildings of the north international area, there now take place several themed markets, Expositions, or congresses with an average of more than one monthly event (see Fig. 3.34). According to plan, some of the Expo facilities were demolished and replaced with other functions. Replacing part of the Expo facilities, the Expo parking lots and few more blocks adjacent, there is a new neighbourhood. Thus, the limits of the neighbourhood are the bridge Vasco da Gama on the north, the rail line on the west, the avenue Marechal Gomes da Costa on the south and of course, the river on the east side. The plan of the area consists mainly of an orthogonal grid though there are some diagonals on the south and north areas (see Fig. 3.26). These blocks are mostly residential, containing also several restaurants, shops, services, offices, a few hotels and a few gardens. Moreover, there is one university, where there used to be Expo parking lots, plus a few private schools, kindergartens and gardens. On the Expo north-west corner, today there is the Lisbon’s Justice Campus, the Department of Finances, a court, a registry office and the Institute for Registration and Notary Affairs (see Fig. 3.27). Apart from all those facilities, there is a hospital in the south area facing the railway and a gas station.

When most of these blocks were occupied with Expo parking lots, the streets were already properly arranged with trees on both sides. Most of the streets created after the Expo were made under the same conditions.

On the waterfront, there is a wide pavement in front of the marine (see Fig. 3.30), after which it is accompanied with a line of trees until the funicular establishment which is still an active touristic attraction. The bridge-path links the marine with the waterfront next to the multipurpose arena. From there until the Vasco da Gama Tower (now a hotel) the large pavement continues with trees next to the Gardens Garcia de Orta (see Fig. 3.29). North to which there is a path continuing on the Garden Passeio dos Heróis do Mar.

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23 Organised by FIL, a centre of congresses and expositions.
Some of the southern Expo parking lots remained with the same function for some years, serving the users of certain facilities such as the hospital (CUF Descobertas) and two private schools (Escola Básica Parque das Nações and Externato João XXI). Now the situation is not exactly the same. There is one block that is functioning as a parking lot for the hospital users, there are two closed blocks, one block is under construction, another is partially occupied by a supermarket leaving the rest as a vacant plot and finally, the Escola Básica Parque das Nações (and its planned extension) uses only a part of a paved block.

Just north of the bridge, there is a wastewater treatment plant, a few offices buildings and housings. The Garden Passeio dos Heróis do Mar continues under the bridge, having a skate area near the riverbank. Plus, this area until Trancão river is occupied by a big vacant plot and a private school.

Furthermore, there is a narrow line of vacant plots just north of the rail from the Oriente Station (plus an abandoned square used as a parking lot) until Braço de Prata that emphasises the separation made by the railway. Immediately south of the new neighbourhood, there is a wide abandoned area that used to have industrial infrastructures where now are just vacant plots with very few old industrial infrastructures.
3.3 COMPARATIVE ANALYSES OF THE CASE STUDIES

Both case studies were placed in an area in the external limit of the city yet near the city centre since there is a river (that faced the Expo site) shaping the city that influenced the direction of the urban growth. With these conditions, they could have become urban places of high quality but instead, they were not completely integrated into the city – concerning the reality previous to both Expos. Being the Seville’s case a wide area of agricultural lands with barely any accesses and the Lisbon’s case, an abandoned area of industrial activities that had become deactivated and without good accessibility.

On the one hand, an Expo can manipulate a territory into creating something the city needs by regeneration and improvement. On the other hand, an Expo may not enhance the previous state of the site if there is no plan or action on the site after the event and it is left to natural degradation.

Seville thought about occupying the Expo facilities after the event with a technological park, while Lisbon thought about constructing a new part of the city. Perhaps, the main difference was not the future purpose of each post-Expo but rather its level of planning and effort to make it real. No plan was made or even sketched about the technological park. In fact, when the Expo streets and pavements started to be constructed there was not even the plan for the Expo. Therefore, the plan chosen was not considering the best solution for the future use or the best solution to serve both post-Expo and Expo. It was a solution to assure a possible Expo to fit in, with less necessary changes as possible. So, the orientation was to make a simple and practical plan that would result in easy mobility within the site. As for Lisbon, there was a defined plan for the day after. The future of the site was taken into serious consideration. Actually, that was the objective of the Expo, to create a new area of the city. Thus, the project had to be a plan for the future neighbourhood that could also support an Expo. In order words, the streets of the Expo were the same of the new neighbourhood. Consequently, there were very few changes on the blocks limits, once the event was finished.

About the design of Expos, they both resulted in an orthogonal design, though with some variations. In the Expo of 1998, the variations were not on the Expo site rather in its surroundings and consisted of diagonal streets. As for the 1992 Expo, the variations were the lake and the area surrounding it plus the fact the site did not have a rectangular shape.

The two Expos profited from the proximity to the river by using its water to contain a wide area of water and several other presences in the site. These were combined with gardens and plenty of green elements all over the site. Facing the river, in Lisbon, there are several pleasant wide areas and in Seville, there are gardens with paths next to the bank. The fact that both 1992 Expo and 1998 Expo had cooling systems could have been a great asset for the after use. In Seville, it was not maintained as it was in Lisbon for some years, though it was recently restored.
The Lisbon’s new neighbourhood emerged in time for the Expo since some blocks were erected to accommodate Expo participants or staff members. After the event, the rest of the plan started to be built. First, more buildings appeared which brought new inhabitants. People were attracted by the river’s closeness that resulted in nice views and spaces, besides its good accesses that brought the city centre “closer”. Once people lived there, their needs had to be fulfilled so it was the perfect place for services and commerce to appear. Plus, several companies choose to set their offices or facilities on the new neighbourhood. This meant there were at least the workers’ needs or interests to be fulfilled during the day, besides the residents’ needs at night or weekends. All these characteristics made the neighbourhood to grow more and more over the years. Now, the site has plenty of life and use with a huge diversity of services, activities and spaces.

On the other hand, in Seville, after the event companies and universities started to occupy the Expo pavilions instituting the PCT Cartuja. Having so many people working there attracted a few services, mainly restaurants. The site presented good conditions for workers such as vast space for parking, closeness to the river, wide gardens, proximity to the city centre and good accesses. Nevertheless, as there was no plan whatsoever, public spaces and not used spaces started to decay. Most Expo gardens, structures, streets, pavements and urban equipment are now in very poor conditions. Even though the site has a high potential and on the northern added area, there are sports facilities and a big park in good conditions. The in-between spaces are not defined, giving visitors a sense of being lost even if perhaps there is an active facility in the next corner. As a result, despite being a very important technological and scientific park, its place become a forgotten area in the city.

Seville and Lisbon Expos had mainly public but also private funding. The difference strategy on the plan may have been due to the fact that in 1992 there was no economic crisis to have in mind. On the contrary, usually, businesses developed fast thus, a preventive attitude did not seem necessary. Six years later, in Lisbon, it was already taken into consideration the expenses of the Expo and how to minimise them by implementing a project reusable as much possible for the future purposes.

The Lisbon case is a clear successful example on how an Expo can be a catalyst of an injured area within a city and transform it into part of the city. One determinant element this case has more than the Seville’s case is the residential occupation. Residences are an added value as they first, assure the use of the site including on not working hours or days and second, lure several different services and commerce, which again may even attract people that are not inhabitants of the site. Although Seville’s Expo site is now a major technological park in Spain, there are almost no more significant uses besides it, on a regular basis. On the other hand, the 1998 Expo’s site was able to achieve a lot of activity on account of its high multifunctionality. Being hard to point out a service or function not present in the area plus, almost all the spaces have defined functions and are in good conditions.
Looking back to all the past Expos and their sites present reality, a few elements seem to have a significant impact on the post-Expo success.

One element that can make a difference in the post use of an Expo site, considering it has active establishments, is the public transport services. Obviously, for the public transports network to access the site, it must have good accesses. Besides, the more integrated the site is within the surroundings and pedestrian accesses it has, the more it will be used. It is highly significant its integration within the city, otherwise, it may become a forgotten place.

Evidently, as understood on the comparison between Seville and Lisbon extensive planning play also a huge role on the Expos future, though it may not be completely decisive. In case there was no defined plan for the day after the Expo, a new plan can be made and implemented. The problem is that in some cases, instead of searching for an appropriate use of the site and plan, some Expo facilities started to be reused, randomly. Most likely, the reuse came from private initiatives without a public control which means the rest of the facilities that no one cared for, was left to abandonment or were at some point demolished or dismantled. Having within a city, a huge plot with some used buildings, others abandoned and several vacant plots or undefined spaces, consists of a neglected attitude towards the site and the city’s value. Besides, being a rejection of all the city’s theories, trials, experiences and studies executed in both past and present. After the Expo, the site should never become worse than it was. When applying for an Expo, it is lacking an intention for the post-Expo, perhaps the best solution is to return the site to its original state. If this principle is assumed during the Expo plan, structures can be designed to be temporary, being dismantled after. Probably, expenses would be a lower plus, the site would be spared of great damage. A great example of this approach is the Expo of Aichi 2005 where, as referred, the initial forest maintains its original condition. The majority of Expo previous sites are now occupied by several public facilities of distinct uses. Various Expos transformed their site on a huge park which is always a good gain for the city and for the environment. Lacking from information, it is hard to whether these green areas were planned ahead of the event nevertheless it can be a solution for most the unplanned post-Expos. Especially, being a type of structure easily changeable and adaptable to the city’s future needs.
4. CONCLUSIONS
An Expo is an international big scale event that uses a lot of resources and has a vast amount of costs. Aiming to avoid all the efforts and expenses stop having returned income the day the Expo closes, it is mandatory to have a long-term objective. Otherwise, the work and costs will be very difficult to overcome through only the event and the site most likely will become a loss for the city. This type of event can be an urban catalyst when there is a well-structured plan.

If the target is a project for the future of the site, to understand and chose which is the best suitable one, it is necessary an analysis concerning social, topographic, political, economic, environmental, cultural and transportation aspects, as well as other specific issues relevant to the site.

After identifying which are the conditions of the site and the corresponding environment, plus choosing the aim of the Expo and the future site, the planning phase may start. Considering the Expo as the mean for the desired end. Of course, the answer cannot prejudice the Expo quality to serve the future aim, rather the plan should also analyse the Expo concept and how to create the best Expo possible. In other words, the plan of the Expo and of the post-Expo should communicate and compromise with each other. This way, a great reduction of resources and costs can be achieved plus, avoiding creating structures that could undermine the execution of the after plan. The plan should be able to predict potential problems, avoid them and solve or mitigate existing problems. Planning an Expo should include different scale plans so that the maximum of distinct issues and details can be treated.

With or without a previous detailed plan, from past experiences, an Expo site will always serve the community as long as it is replaced by public facilities, spaces or parks, especially if it meets its needs. Having the last one, a positive impact on the environment, it usually leaves no undefined spaces and can be adaptable to future requirements. Regardless of the function chosen for the site, it is very important to assure maintenance for not only the closed facilities but also the exterior spaces. Otherwise, the site will not be appealing and can soon fall into people’s oblivion. One way to guarantee the site use is to include housings in its occupation. Residences are a benefit not only since they bring people daily to the site but also, they attract other activities and ease the site’s integration within the city. Multifunctionality and integration in the city are two characteristics the site ought to have to become a new or regenerated area of the city. As for the integration in the urban fabric, it can be assured by creating several different types of accesses to the site including pedestrian plus, opening the site to the surroundings.

An Expo can be sustainable and good for the environment, if it integrates and profits from the natural resources of the site, increases green spaces and if the Expo construction does not waste resources or materials. Previously to the event, it should be decided which structures and facilities will only be temporary and which will be permanent. If a pavilion is meant to be temporary, its materials can be
reused after the Expo or rebuilt in another location, avoiding producing more waste. Building temporary structures can also reduce the costs and works of their constructions. Besides, participants should be oriented to use ecological materials in their pavilions.

All the stressed aspects came from the observation of the past experiences. However, since there is an official entity of such international events, why there are not several rules assuring the Expos prosperity or sustainability? The BIE should establish rules to prevent post-Expo failures or the waste of resources. It is the role of the BIE to certify that an Expo does not worsen the state of the site and the relation with the city. After more than one and a half century of Expos, the BIE should oblige a detailed plan for the day after the Expo, whether the Expo is taking place in a developed or in an undeveloped country. Expos take between 25ha to 500ha and it seems very irresponsible to promote such a big scale event, without assuring leaving a positive footprint in a city. The BIE organises a few meetings with the hosting city’s, giving them some orientation. Nevertheless, the 2007 creation of an unofficial guideline book24 emphasises the lack of information and monitoring by the BIE.

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SEVILLE


LISBON

6. ATTACHMENTS
<table>
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<tr>
<th>WORLD EXPOS</th>
<th>AREA (ha)</th>
<th>VISITORS (1000)</th>
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<td>1947 Paris</td>
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<td>1949 Lyon</td>
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<tr>
<td>1953 Rome</td>
<td>12.0</td>
<td>1.700</td>
<td>--</td>
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<tr>
<td>1953 Jerusalem</td>
<td>4.6</td>
<td>600</td>
<td>13</td>
</tr>
<tr>
<td>1954 Naples</td>
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<td>1955 Turin</td>
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<td>1955 Helsingborg</td>
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<td>1956 Beit Dagon</td>
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<td>1965 Munich</td>
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<td>1968 San Antonio</td>
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<td>1970 Osaka</td>
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<tr>
<td>1971 Budapest</td>
<td>35.0</td>
<td>1.900</td>
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<tr>
<td>1974 Spokane</td>
<td>40.0</td>
<td>5.600</td>
<td>10</td>
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<tr>
<td>1975 Okinawa</td>
<td>100.0</td>
<td>3.486</td>
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<tr>
<td>1981 Plovdiv</td>
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<td>1982 Knoxville</td>
<td>29.0</td>
<td>11.128</td>
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<td>1984 New Orleans</td>
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<td>1985 Tsukuba</td>
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<td>1988 Brisbane</td>
<td>40.0</td>
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<td>36</td>
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### ATTACHMENT 2 | Expos site through time

<table>
<thead>
<tr>
<th>Year</th>
<th>Site</th>
<th>Pre-Expo</th>
<th>Expo</th>
<th>Post-Expo</th>
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</thead>
<tbody>
<tr>
<td>1851</td>
<td>London</td>
<td>Hyde Park</td>
<td>Crystal Palace</td>
<td>Hyde Park</td>
</tr>
<tr>
<td>1867, 1889, 1900</td>
<td>Paris</td>
<td>Champs de Mars</td>
<td>Eiffel Tower, big pavilions, grass</td>
<td>Champs de Mars, Eiffel Tower</td>
</tr>
<tr>
<td>1876</td>
<td>Philadelphia</td>
<td>Fairmount Park (big park)</td>
<td>huge park, one big pavilion</td>
<td>Fairmount Park (sport fields, museums, golf park, but mostly green area)</td>
</tr>
<tr>
<td>1893</td>
<td>Chicago</td>
<td>Jackson park</td>
<td>on the shore, a lot of lakes and water lines, several detached pavilions</td>
<td>Jackson park composed of a museum (building from the fair) a hospital, harbours, golf parks, sports fields, beaches, lakes and green areas</td>
</tr>
<tr>
<td>1901</td>
<td>Buffalo</td>
<td>_______________</td>
<td>pavilions, lakes and fountains, small defined green areas</td>
<td>urban fabric - several residential blocks and a few storages and companies</td>
</tr>
<tr>
<td>1904</td>
<td>Saint Louis</td>
<td>Forest Park</td>
<td>big buildings, Forest Park</td>
<td>Forest Park and residential area</td>
</tr>
<tr>
<td>1909</td>
<td>Seattle</td>
<td>Washington University campus (6 buildings) and forest</td>
<td>riverside, forested area, great view</td>
<td>Washington University campus a residential neighbourhood, a few storages, some green areas, a beach and The Palace of Fine Arts (from the fair)</td>
</tr>
<tr>
<td>1915</td>
<td>San Francisco</td>
<td>_______________</td>
<td>several big pavilions, defined green areas, on the shore</td>
<td>football stadium, aquarium, several parks (Grant Park remained now with, The Art Institute of Chicago, art galleries, ice skating area, sports fields, open-air concert hall), museums, big gardens, boat club, a beach, Bird Sanctuary, a theatre, harbours/marines, convention centre, several parking lots. (mostly green)</td>
</tr>
<tr>
<td>1933</td>
<td>Chicago</td>
<td>adjacent to Grant Park, museum and a soldiers field, vacant plots</td>
<td>on the shore of the lake and a part on an island, windy large path, detached and unique pavilions</td>
<td>a restaurant (re-used pavilion), a park (tennis courts and stadiums, some football fields, a golf centre, an aquatic centre, a skate park, the Queens Botanical Garden, a museum, a theatre, a mini golf park, a zoo, a playground, a science museum, an amusement park for kids)</td>
</tr>
<tr>
<td>1939, 1964</td>
<td>New York</td>
<td>_______________</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1958</td>
<td>Brussels International Exposition of 1935</td>
<td>buildings from the Brussels International Exposition of 1935</td>
<td>the Atomium</td>
<td>the Atomium, green area for events</td>
</tr>
</tbody>
</table>

Note: The Expos in black are the World Expos and in grey are the Specialised Expos; the data missing in the table correspond to inconclusive or lack of information regarding those Expos.
<table>
<thead>
<tr>
<th>Year</th>
<th>City</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>Seattle</td>
<td>Adjacent to the downtown (slumping at that time), old houses, apartments, commercial buildings, a school (destroyed for the fair) and an auditorium, an ice arena, and a stadium (reused for the fair). Area already aimed for a civic centre. The Space Needle, an aerial monorail, several sports venues, performing arts buildings. Northern pavilions and the Space Needle remained, two theatres, a concert hall, a stadium, an arena for sports or concerts, four museums, restaurants, a cinema, the Seattle Center Monorail, and a few green spaces.</td>
</tr>
<tr>
<td>1967</td>
<td>Montreal</td>
<td>Two small islands (public park and an old fort) in 2 islands (one island was made from connecting two previous islands and the other was created) and a peninsula. Amusement park, parking lots, marine, casino (expo buildings), beach, gardens, building (remaining), swimming pools (remaining from the expo), a museum, open-air art gallery of sculptures.</td>
</tr>
<tr>
<td>1970</td>
<td>Osaka</td>
<td>Symbol Zone: covered area. The Tower of the Sun and the Japanese Garden remained, a school, a few museums, restaurants, the Osaka Monorail Transport Department, a hotel, a shopping mall, an aquarium, the festival plaza, sports fields, housings, parking lot, a football stadium, an athletic park, a water purification facility, a recycling centre, a green area and a high school.</td>
</tr>
<tr>
<td>1974</td>
<td>Spokane</td>
<td>Previously occupied by the railroad depot, adjacent to the city’s downtown district. Clearing away decaying industrial buildings, small area. Tropical and Subtropical Arboretum (from the expo), museums (from the expo), aquarium (from the expo), infrastructure improved, the construction of motorways, water supply systems, hotels, restaurants, pool, shops, dolphin lagoon/theatre, parks (some from the expo), parking lots, tennis courts, Ocean Expo Park, planetarium, Native Okinawan Village (from the expo), botanical garden, butterfly garden, beaches, marine. Overall, a green park.</td>
</tr>
<tr>
<td>1981</td>
<td>Plovdiv</td>
<td>Museum (expo pavilion), an amphitheatre (from the expo), the Sunsphere Tower (became city’s symbol), school, restaurants, hotels, lake, parking lots, university, two lawns for several events, a few companies, a sports arena just next to the site.</td>
</tr>
<tr>
<td>1982</td>
<td>Knoxville</td>
<td>Deteriorating railroad yard and depot (later a restaurant). The Sunsphere Tower; city chosen due to the theme:Tsukuba Science City was an important centre of research &quot;Dwellings and Surroundings – Science and Technology for Man at Home&quot;. Museum (expo pavilion), an amphitheatre (from the expo). The Sunsphere Tower (became city’s symbol), school, restaurants, hotels, lake, parking lots, university, two lawns for several events, a few companies, a sports arena just next to the site.</td>
</tr>
<tr>
<td>1984</td>
<td>New Orleans</td>
<td>The Warehouse District with degrading warehouses. Residential areas, art galleries (popular art district), convention centre (expo pavilion), shopping centre, park, several restaurants and hotels, live music bars, big parking lot, textile factory, cruise terminal, several stores and outlets, rail along the river bank.</td>
</tr>
<tr>
<td>1985</td>
<td>Tsukuba</td>
<td>Museum (expo pavilion), an amphitheatre (from the expo). The Sunsphere Tower (became city’s symbol), school, restaurants, hotels, lake, parking lots, university, two lawns for several events, a few companies, a sports arena just next to the site.</td>
</tr>
<tr>
<td>Year</td>
<td>Location</td>
<td>Previous Use</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1985</td>
<td>Plovdiv</td>
<td>site of the 1981 Plovdiv fair</td>
</tr>
<tr>
<td>1986</td>
<td>Vancouver</td>
<td>former rail yard industrial wasteland, no use</td>
</tr>
<tr>
<td>1988</td>
<td>Brisbane</td>
<td>run-down industrial zone near the city’s port</td>
</tr>
<tr>
<td>1992</td>
<td>Genoa</td>
<td>industrial port (needing revitalisation)</td>
</tr>
<tr>
<td>1992</td>
<td>Seville</td>
<td>agricultural lands</td>
</tr>
<tr>
<td>1993</td>
<td>Daejeon</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>Lisbon</td>
<td>deactivated industrial area</td>
</tr>
<tr>
<td>2000</td>
<td>Hannover</td>
<td>the Hannover Messe, agricultural lands</td>
</tr>
<tr>
<td>2005</td>
<td>Aichi</td>
<td>forest in the suburbs</td>
</tr>
<tr>
<td>Year</td>
<td>Location</td>
<td>Site Usage</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2008 Zaragoza</td>
<td>agricultural lands (private, then purchased by the City Council)</td>
<td>3 bridges in the expo area plus, throughout the city: several bridges, a new green belt by the river to pedestrians and cyclists, a new plan for transports and mobility, a high-speed train added to the railway and a new airport terminal</td>
</tr>
<tr>
<td>2010 Shanghai</td>
<td>residences, factories</td>
<td>on both sides of a river, aerial platform along the site, 6 new subway lines, Lupu Bridge (2003)</td>
</tr>
<tr>
<td>2012 Yeosu</td>
<td>port, marine, green area, industrial facilities</td>
<td>new train station, Sky Tower, aquarium, big garden, rail line changed</td>
</tr>
<tr>
<td>2015 Milan</td>
<td>agricultural lands</td>
<td>along a straight avenue with pavilions on both sides, two added metro lines, new residential blocks</td>
</tr>
</tbody>
</table>

Note: the data missing in the table correspond to inconclusive or lack of information regarding those Expo sites

| SPACE USAGE | Most of the site or nearly half has no function; no one or very few people use it | More than half of the site has a function although some areas are abandoned or with no proper use; some people use the space | Most of the site is used and has active functions; a lot of people use the site | Inconclusive or not enough information to conclude the site usage and state; expos considered too recent to make conclusions |


 ATTACHMENT 3 | The Six Stages of Expo Organization (Linden & Creighton, 2014)

<table>
<thead>
<tr>
<th>Characteristic Stage</th>
<th>Time (years)</th>
<th>Personnel</th>
<th>Decision Process</th>
<th>Form of Organization</th>
<th>Modus Operandi</th>
<th>Management Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formative</td>
<td>-3 to -5</td>
<td>&lt;10</td>
<td>total consensus</td>
<td>none</td>
<td>creative thought</td>
<td>none</td>
</tr>
<tr>
<td>Organizational</td>
<td>-5</td>
<td>&lt;50</td>
<td>key personnel consensus</td>
<td>skeleton, functional</td>
<td>group thought, functional</td>
<td>none</td>
</tr>
<tr>
<td>Planning</td>
<td>-5 to -3</td>
<td>50-100</td>
<td>group thought/consensus</td>
<td>full functional</td>
<td>committees, task groups, thinkers</td>
<td>minimal milestones</td>
</tr>
<tr>
<td>Execution</td>
<td>-3 to 0</td>
<td>100-1000</td>
<td>hierarchical with formal approvals</td>
<td>project matrix</td>
<td>doors, action oriented</td>
<td>formal and accountable (results)</td>
</tr>
<tr>
<td>Operation</td>
<td>0</td>
<td>1000-2000</td>
<td>decentralized formal approvals</td>
<td>minimum central, maximum distributed</td>
<td>problem solving, keep it running</td>
<td>exception reporting</td>
</tr>
<tr>
<td>Demobilization</td>
<td>+1</td>
<td>&lt;50</td>
<td>dictatorial</td>
<td>project matrix</td>
<td>get finished, get out</td>
<td>formal and driving</td>
</tr>
</tbody>
</table>

 ATTACHMENT 4 | Paul Creighton’s 164 Key Tasks of a World Expo (Linden & Creighton, 2014)
ATTACHMENT 5 | Expo Construction Costs (Linden & Creighton, 2014)

<table>
<thead>
<tr>
<th>Item</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Preparation</td>
<td>Site clearing, demolition of existing structures/infrastructure, etc.</td>
</tr>
<tr>
<td>Site Restoration</td>
<td>Cost of restoring the site for permanent use after the Expo including demolition of any temporary buildings, etc.</td>
</tr>
<tr>
<td>Site Work &amp;</td>
<td>Grading, paving and surfacing (roads, walkways, parking, etc.)</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Outdoor Lighting</td>
</tr>
<tr>
<td></td>
<td>Site and Street Furnishings</td>
</tr>
<tr>
<td></td>
<td>Fountains</td>
</tr>
<tr>
<td></td>
<td>Perimeter Fences</td>
</tr>
<tr>
<td></td>
<td>Landscaping and Irrigation System</td>
</tr>
<tr>
<td></td>
<td>Civil Structures</td>
</tr>
<tr>
<td></td>
<td>Transportation Facilities</td>
</tr>
<tr>
<td></td>
<td>Utilities</td>
</tr>
<tr>
<td></td>
<td>Sewerage and Drainage Buildings</td>
</tr>
<tr>
<td></td>
<td>Administration</td>
</tr>
<tr>
<td></td>
<td>Entrance Areas, Gates</td>
</tr>
<tr>
<td></td>
<td>Pavilions</td>
</tr>
<tr>
<td></td>
<td>Food &amp; Beverage Facilities</td>
</tr>
<tr>
<td></td>
<td>Souvenir/Merchandise Facilities</td>
</tr>
<tr>
<td></td>
<td>Visitor Service Facilities</td>
</tr>
<tr>
<td></td>
<td>Warehouse and Distribution</td>
</tr>
<tr>
<td></td>
<td>Security and Emergency Facility</td>
</tr>
<tr>
<td></td>
<td>Fire Department</td>
</tr>
<tr>
<td></td>
<td>Solid Waste Removal Facilities</td>
</tr>
<tr>
<td></td>
<td>Employee Areas</td>
</tr>
<tr>
<td></td>
<td>Amusement &amp; Children's Play Area</td>
</tr>
<tr>
<td></td>
<td>Entertainment Facilities Services</td>
</tr>
<tr>
<td></td>
<td>Architecture/Engineering</td>
</tr>
<tr>
<td></td>
<td>Project Management</td>
</tr>
</tbody>
</table>

ATTACHMENT 6 | Expo Revenues Sources and Percentages (Linden & Creighton, 2014)

<table>
<thead>
<tr>
<th>Expo Revenues Sources</th>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admissions</td>
<td>25.5%</td>
<td>Season Passes, Three Day Tickets, One Day Tickets, Group Sales, Advance Sales, Preview Center</td>
</tr>
<tr>
<td>Food and Beverage</td>
<td>8.2%</td>
<td></td>
</tr>
<tr>
<td>Merchandise</td>
<td>7.1%</td>
<td></td>
</tr>
<tr>
<td>Souvenirs and Novelties</td>
<td>2.5%</td>
<td></td>
</tr>
<tr>
<td>Participant Space Rentals</td>
<td>2.2%</td>
<td>International, National, Province/State, Local</td>
</tr>
<tr>
<td>Licensing</td>
<td>1.9%</td>
<td>Logo Licensing, Product Licensing, Other</td>
</tr>
<tr>
<td>Amusement Areas</td>
<td>1.6%</td>
<td></td>
</tr>
<tr>
<td>Concessionaires</td>
<td>1.4%</td>
<td></td>
</tr>
<tr>
<td>Children’s Play Areas</td>
<td>1.3%</td>
<td></td>
</tr>
<tr>
<td>Games</td>
<td>1.3%</td>
<td></td>
</tr>
<tr>
<td>Internal Transportation</td>
<td>1.3%</td>
<td>Motorcar, Others</td>
</tr>
<tr>
<td>Entertainment</td>
<td>1.3%</td>
<td>Ticket Sales, On-Site Venues, Off-Site Venues, Entertainment Program Sales, Other</td>
</tr>
<tr>
<td>Parking Fees</td>
<td>0.8%</td>
<td>Expo Staff, Tour Buses, Participants</td>
</tr>
<tr>
<td>Guide Book and Videos Sales</td>
<td>0.5%</td>
<td></td>
</tr>
<tr>
<td>Participant Employee Recruitment &amp; Training Program</td>
<td>0.3%</td>
<td></td>
</tr>
<tr>
<td>Orientation and V.I.P. Tours</td>
<td>0.3%</td>
<td></td>
</tr>
<tr>
<td>Corporate Sponsors</td>
<td>0.3%</td>
<td>Local, Province/State, National, International</td>
</tr>
<tr>
<td>V.I.P. Club Memberships</td>
<td>0.2%</td>
<td></td>
</tr>
<tr>
<td>Residual Sales Values</td>
<td>0.1%</td>
<td>Equipment, Buildings, Landscaping</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>0.1%</td>
<td></td>
</tr>
</tbody>
</table>

Expo Revenues Chart

- Admissions: 25.5%
- V.I.P. Tours: 2.5%
- Participant Employee Recruitment and Training: 2.5%
- V.I.P. Club Memberships: 2.5%
- Licensing: 2.5%
- Entertainment Ticket Sales: 2.5%
- Corporate Sponsorship: 2.2%
- Goldbook Sales: 2.0%
- Merchandising: 2.0%
- Residual Sales Values: 3.5%
- Participant Space Rent: 3.5%
- Souvenirs and Novelties: 4.7%
- Amusement Area: 6.5%
- Food and Beverage: 7.7%
Buildings and roads built for the Expo and remained until today
Previous to the Expo (and inside its area of intervention) and remained until today
Expo limit
Limit of the Expo’s area of intervention