

Mega sporting events and their impact on the built environment: Lessons learned from the past

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Abstract

In recent decades, mega sports events, like the Olympics or FIFA World Cups, have been more and more used as urban policy tools to renew and transform entire neighbourhoods of cities. Many scholars have investigated contemporary case studies; however, only a little attention has been given to historical precedents and the way they were leveraged as successful tools of experimentation to develop and renew strategic areas of cities. This research reviewed selected past examples from the Western and the Eastern world and derived four best practices for contemporary hosting cities and event governing bodies. Results show that practices as the use of temporary facilities, the leverage of events for experimenting new urban templates and patterns, the attention to local needs and the use of local resources, the full integration of sports venues within the surrounding areas and the awareness of the interrelation between political power and events can lead to beneficial legacies.

Keywords

Mega sports events, Legacy planning, Sustainable legacies, Sports venues, Events impact.



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1. Mega sports events and their impact on the built environment

Today, mega sports events are considered attractive tools for the urban development of cities for several reasons: they can confirm or create regional or global status of a city; they can be an opportunity for the construction of new buildings and parks; they can attract visitors and tourists; and they can legitimate a rapid program of infrastructure development. Mega-events have driven the urban transformation of cities such as Barcelona, London, Rio, Beijing, and Shanghai, but while the prospect of economic growth and urban development are the driving forces for staging a major event, the legacies that follow their hosting have been difficult to design and quantify (Preuss 2007). The real effectiveness of such a program to rebuild a city through the hosting of an event requires a strong plan and legacy strategy. Although cities compete more and more to bid and host mega-events, past experiences show that outcomes from staging them are mostly harmful, and their legacies planned to last only a short time (Azzali 2017a). This trend is even stronger if one considers how sports facilities and their surroundings are utilized after the event is over. Usually, sports venues become white elephants, and their neighbourhoods become underutilized and abandoned pieces of the city. Indeed, recent examples include the Green Point Stadium, built for the 2010 South Africa World Cup and almost never used after it, many of the sports complexes of the 2004 Games in Athens (i.e. the beach volley arena, completed abandoned), and examples of the 2002 Turin Winter Olympics infrastructure.

Many scholars have investigated contemporary events and their impact on the built environment. With a specific focus on Summer Games, for example, Pitts and Liao (2009) identified four different phases of Olympic urbanization, emphasizing the growing impact of this event on hosting cities throughout the last century. Other researchers have tried to classify the evolution of the Summer Olympic Games through

the century (e.g., Essex and Chalkey 1999; Preuss 2000; Varela 2002; Smith 2012). Other studies have focused on a classification of the Olympic Villages (Muñoz 1997; Muñoz 2006), or on the evolution of the concept of legacy in the Games (Leopkey 2013), while only in recent years there are attempts to categorize FIFA World Cups' venues (Street, Frawley, and Cobourn 2014). Other scholars have investigated the economic impact of contemporary events (Burgan and Mules 1992; Crompton 1995; Preuss 2005; Allmers and Maennig 2009; Gratton, Shibli, and Coleman 2009), the image-related side on hosting cities, or the social outcomes (Waite 2003; Raco 2004; Smith 2009). Other studies have also researched other types of legacy as the environmental issues (Chappelet 2008; Levett 2004; Collins, Jones, and Munday 2009), or the impact on urban development (Liao and Pitts 2006; Pillay and Bass 2008; Pillay, Tomlinson, and Bass 2009). Smith (2009) defined guidelines for hosting cities that wish to maximize the sustainable legacies from the stage of mega sport events; Frey, Irardo, and Melis (2008) focused their research on the impacts on local development, while Essex and Chalkley (2015) explored how to leverage sports events for urban regeneration and renewal purposes.

However, important events such as the Olympic Games have a long tradition, and their first edition can be traced back to 776 B.C. An analysis of influential historical precedents can offer useful insights on events' political and social meaning and their interrelation with hosting cities. Studying, for example, the way ancient Romans built their sports venues, or the relationship between the hippodrome and the royal palace in the Byzantine Istanbul offers useful insights for host cities. Within this background, the aim of this article is to investigate relevant cases of the past, highlights the influence of sports and mega-events on urban form through different periods, and tries to connect the discussion to contemporary events, by deriving four best practices for cities that intend leveraging sports events to improve their built environment, to maximize

Table 1. *The selected case studies.*

Historical Period	West World	East World
From VIII century B.C to IV century	Ancient Greece, Olympia, Delphi, Athens	
From I century B.C to V century	Rome, Naples during the Roman Empire	Byzantine period, Istanbul
IX century	Rome, Florence, Venice during the Middle Ages	Abbasid period, Samarra and Baghdad
XII century		Saladin's period, Cairo
		Esfahan under the Safavid rulers; Fatehpur Sikri
XVI and XVII centuries	Rome, Florence, Pistoia, Venice during the Renaissance and Baroque	walled city in the Mughal period, and the Red Fort in Delhi

the benefit of post-event legacies, and transform event sites and venues into liveable public open spaces. Practices include the use of mega-events as tools for experimenting new solutions and patterns; the ephemeral component of events and the use of temporary facilities; the necessity of physical and social integration of sports venues within surrounding areas; and the strong relationship between political power and sports events needs to be taken into account in the planning of events. Each of these principles is described presenting explanatory past examples, but also including contemporary cases.

2. Methodology

Looking at history is a useful tool for understanding the origin of a problem. Analysing past experiences and precedents not only provide a big picture and lead to a better understanding of a problem but may also suggest potential solutions. Sports, events, and cities have had a controversial relationship since ancient times, and a critical analysis of some main historical periods can allow the deepest understanding of this relation and the dynamics involved. In particular, an investigation into the ancient Greek world, the Roman Empire, and major Western and Eastern cities represent a useful starting point for a research on mega sports events and their impact on the built environment.

This retrospective study analysed relevant legacies, practices, and trends of past sports events, with

a focus on specific cities and time periods: the ancient Greek world, the Roman Empire, and the main Renaissance and Baroque Italian cities for the West World, along with an analysis of Istanbul in the Byzantine time, Samarra, Cairo, Esfahan, and Delhi, for the Eastern world (Table 1). Those cases were selected as they represent moments in which cities faced important transformations, and the relationship between urban centres, public spaces, and events are particularly meaningful.

The cases were firstly investigated in a chronological order and mapped into a table according to the type of events, recurrence, main venue typologies, reasons for hosting them, political and social context, the significance of sport.

Secondly, overlapping elements and repetitions were cancelled in order to obtain the lowest common denominator for each column. This process allowed identifying the driving forces of these past events, and, also, tracing the evolution of the mutual relationship between mega sports events and open spaces, highlighting major dynamics in terms of actors involved, processes, best practices, main pitfalls, and achievements. This first part of the research was carried out mainly through the literature review on the selected cities and events, and, also through the photographic and mapping analysis. Findings consisted in the identification of some recurrent and successful trends and practices in the use of sport events to enhance or promote liveability of public spaces within hosting cities.

These practices were subsequently discussed with scholars and experts in the field to confirm their validity. Twelve semi-structured interviews were performed within a time-lapse of six months. The interviewees were selected among practitioners, academics, officials, event-bodies representatives, based on their knowledge on and role held in recent cases (i.e. 2012 London Games, 2014 Sochi Winter Olympics, 2014 Brazil World Cup, 2016 Games in Rio de Janeiro). All the interviews followed the same structure and had the same length. The interviewees were asked to

describe the role held for the event and their experience. Then, they were asked to outline the main achievements and pitfalls, best and worst practices with reference to the use of event sites and sport venues in the long run (legacy mode). Also, they described any plan to transform those sites into open public spaces available to citizens. Finally, they commented the results from the analysis of the precedents and the practices that emerged from the coding. The interviews were recorded, transcribed, and divided and categorised into similar themes and subthemes.

The result of the methodology is a set of four recurrent practices that are described in the next section of the article, along with their application in past examples and contemporary cases.

3. Events, sport, and hosting cities through history: Best practices

The critical reviews of past events and their legacies, along with the interviews with experts led to a set of useful findings for future hosting cities. Particularly, four recurrent practices were derived:

- (1) The role of events as tools for experimenting new solutions, patterns, and templates;
- (2) The importance of using both temporary and permanent facilities;
- (3) The issue of physical and social integration of venues and event sites within the surrounding areas and cities;
- (4) The strong relationship between ruling power and events.

3.1. Practice 1 – Events as tools to experiment new solutions, patterns, and templates

As suggested by Palestini, Sacchi, and Mezzetti (2008), between the sixteenth and the eighteenth century, in Italy, many spectacular machines and temporary devices were largely used. Cities underwent a wide metamorphosis and acquired a new aspect, thanks to the addition of temporary architectural elements, that, when welcomed by citizens, were often transformed into permanent elements within cities. Examples include the work by the architect Gian Lorenzo

Bernini in the seventeenth century. As many other architects at that time, Bernini was both a creator and director of festivals and a designer of the city of Rome. To illustrate, to design the famous Fountain of the Four Rivers in Piazza Navona, Bernini employed the same patterns of his previous temporary version. Another example is given by the device prepared on the occasion of the birth of the future king of France. The device was commissioned by Cardinal Antonio Barberini in 1661 in Trinità dei Monti. The device leverages all the way down to the mountain. Thanks to the success of this realization, subsequently, this idea would be exploited to realize the famous stairs of the Spanish Steps (Palestini, Sacchi, and Mezzetti 2008). Another example is represented by the Ancient Romans, that used to build first temporary structures, in wood, to accommodate the spectators of their public shows. Only after a trial and error experimentation, they fixed a standard template that they replicated throughout the empire. Indeed, the famous Coliseum is the result of the juxtaposing of two separate theatres of hemicycle form. In their first attempts, amphitheatres were temporary facilities in wood, only subsequently they were made by stone and replicated throughout the Roman Provinces (Carcopino 1939; Facchini 1990).

These three examples show that events were the occasion for experimenting life-size, low-cost solutions that could then become permanent, by involving different scales, from the single architectural element to the scale of urban design. In this sense, the use of events as experimentation, for testing new planning templates, design solutions, and new technologies can be a successful strategy for host cities. Events can be leveraged to test new solutions on a smaller scale, and, once the experimentation is successful, extend them to other parts of the city. Events can be used as inspirations for developing new ideas. In this way, events can lead to new forms of urbanism to be applied at different spatial scales. Additionally, the ephemeral component of event planning projects makes event

hosting an effective tool to divide long-term planning strategies into smaller experimental modules, especially in cities that intend to stage multiple mega-events. Prototypes and innovative urban models can be firstly tested, experimented, adjusted, and finally replicated and applied to different neighbourhoods.

The host of Summer Games in Barcelona in 1992 is a milestone in the history of the Olympics and well represents this first practice. As many researchers underlined (e.g., Pitts and Liao 2009; Smith 2012), the Games were the occasion for revitalizing declining parts of the city and regenerating entire brownfield areas. Since then, the Games have been more and more utilised to test and experiment sustainable and environmentally friendly solutions. Indeed, the 1994 Winter Olympic Games of Lillehammer is considered the first international sports event to take up the sustainability challenge and to host sustainable games (DEAT 2010). The programs initiated by Lillehammer in 1994 set new environmental standards for major sporting events, ensuring that future organisers would be required to include sustainability measures into their plans (IOC 2016), although results are not always positive.

3.2. Practice 2 – Temporary vs. permanent facilities

Using both temporary and permanent facilities can be a winning strategy to plan mega-events, as recent stories confirm. Indeed, public spaces and other parts of the city can be easily,

and temporarily, transformed thanks to the use of transient elements. The combination of existing structures with temporary venues can also contribute to avoiding the spread of white elephants and placelessness (Relph 1976) that so often characterises contemporary mega sports events.

Looking at history, the political stability, wealth, and scientific progress of the sixteenth and seventeenth centuries created the basis for radical changes in major Italian cities. The birth and spread of perspective shaped the form of urban centres and, little by little, the main piazza became the symbol of the city: squares were the representative space of urban centres. Cities became themselves theatres for celebrations and shows: events were held in central locations, outdoor. Events took place in main piazzas and through major streets, or in the courtyards and gardens of the main palace of the city (i.e.: Florence, Medici palace). On the occasion of the major tournaments and jousts, temporary wooden terraces were built, and cities became the temporary background for these events. Theatre is a good example of those outdoor events, as the representations took usually place in the main central square of the city. Theatre as a building type was introduced later, only at the end of the sixteenth century (Zorzi 1977; Quartiere di Porta Rossa 2015). Processions and parades were another way in which cities were used as event venues. Founded in the sixteenth century, the race of the Barbs (Palio dei Barberi) represents a famous example of these moments of festivity. It was a horse race and a festival held in various Italian cities, including Rome, Florence (Figure 1), Padua, Chieti, Pistoia.

These horse races were not performed in a hippodrome or a specific venue but through the main streets and square of city centres. In Florence, the race had many horses, but no jockeys. The Palio took place every year on June 24 for St. John's day. For the race, it was used a special breed of horses, the Barb, which gave the name to the competition (Carpini 2015). Piazza Farnese in Rome represents another important example



Figure 1. *The race of the Berberian horses, in Florence, in 1694 by Jacques Callot.*

of the use of cities as a background for celebrations and events. For years, the square was the seat for many tournaments, bullfights, and popular festivals in Rome. In addition, the spectacular summer flooding that later on made Piazza Navona so famous took place here for the first time.

Coming to recent years, the 1984 Olympics in Los Angeles and the 2012 London Games offer examples of this practice. London utilised many temporary facilities for its Games. Indeed, all the sports venues that were not considered necessary for the city, in the long run, were dismantled after the event (i.e. the beach volley venue in Horse Guards Parade, shown in Figure 2A, and the basketball arena in the Olympic Park. See also Figure 2B that highlights the urban transformation of the Olympic Park before and after the Summer Olympics). Los Angeles, on the contrary, focused on utilising already existing sport facilities. Also, university residences were temporarily converted into accommodations for the athletes, to avoid the construction of new hotels. Thanks also to the re-use of existing infrastructure, that allowed reducing costs, this edition was an unprecedented economic success that led to the establishment of the LA84, a private foundation with aim of managing the surplus of the Games (Leopkey 2013). Albeit with less success, other recent good examples include city marathons (i.e. the New York City marathon), and the Formula 1 circuit of Monte Carlo, which twists through the streets of the principality.

3.3. Practice 3- Physical and social integration of sport venues within cities

Stadiums are the dominant facility in all mega sports events but also the most problematic venues in the post-event use because they alternate short period of extreme congestion on matches' days with a long period in which they are totally empty or under-utilised. Often peripheral to city centres, they are surrounded by vast parking areas. Large out-of-town stadiums were a major trend during the 60s and 70s, especially in Germany and the U.S. Indeed, it was believed



Figure 2A. The temporary venue for the beach volley during London 2012 (Photo by Adam Care, under CC by 2.0).

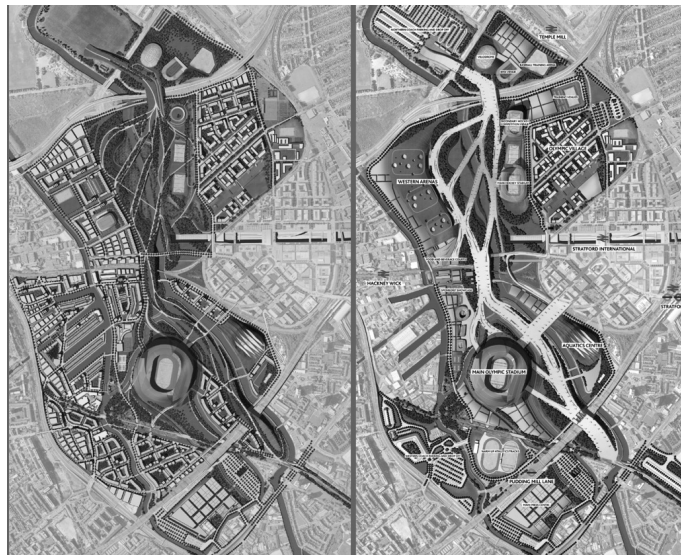


Figure 2B. Right: London 2012 Olympic Park designed for the Olympic Games; Left: the Park transformed after the Games (Image: London Legacy Development Corporation).



Figure 3. Dodgers Stadium in Los Angeles, a gigantic 'hole' within the urban fabric.

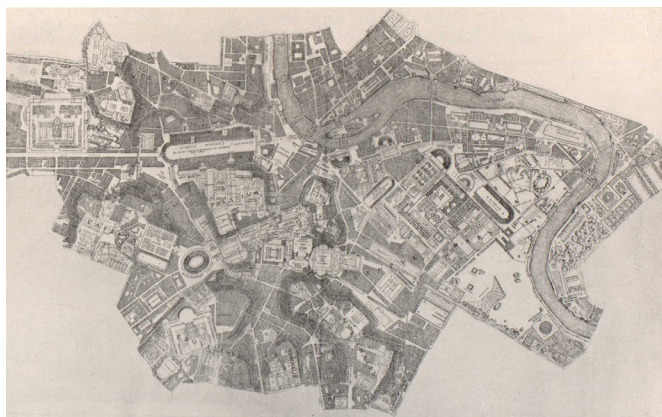


Figure 4A. Imperial Rome and sport and event infrastructures.

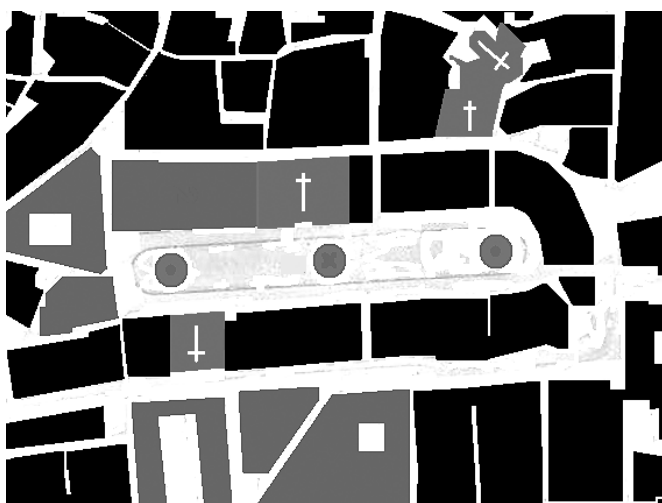


Figure 4B. A detail of Piazza Navona, former stadium.

they would create fewer disturbances, reduce land cost, and increase ease of access by private cars (Geraint, Sherard, and Vickery, 2013). Often, stadiums tend to be gigantic holes in the urban fabric, forming detached islands within the neighbourhoods in which they are located (Figure 3).

Looking at the past, stadiums have a very ancient history. The first prototypes are the stadiums of ancient Greece. They were usually hillside and used natural materials. The choice of the location for a stadium was the first design operation: great importance was given to the relationship with the natural environment, using natural slopes to derive the tiers for the spectators. The stadium and the natural environment, in this way, were strongly organic and unified. Stadiums were built far from urban centres, often in the vicinity of the holy places. While during the Greek time stadiums were

peripheral to the city, the Romans built them in a more central position, as they were intended to be totally part of the social life of the time. They had, and still have, a great impact on the city, being special buildings with enormous capacity and scale (Figure 4). Indeed, stadiums struggled to integrate themselves into the urban fabric. In addition, exactly as today, these facilities were standardised and a-topological: stadiums and amphitheatres were exactly the same throughout the Empire and replicated in different cities. As objects without time and space, they were not subject to local influence or affected by local culture. This standardisation was helpful to build various venues rapidly and also to disseminate the Roman construction ability throughout the various territories. However, local materials, specificity, and needs were not taken into account, which is one of the main elements in building a structure in a sustainable and resilient way. The importance of designing for a specific site, taking into account local needs, but also local culture, materials, and traditions, is a lesson that should be always remembered and applied.

A different approach is offered by *thermae* (spas). Even if they were not utilized as events venues, they give interesting ideas about how a sustainable and integrated public space and venue should be. *Thermae* are a typological space invented by Romans and extremely popular at the time. Famous examples include *thermae* of Caracalla, *thermae* of Agrippa, and *thermae* of Diocleziano; derived from public bathrooms, they included hot and cold baths, gyms, massage rooms, restrooms, but also libraries, museums, and outdoor porches with shops and places where to walk (Carcopino 1939). 'From stadiums to *thermae*' could be used a contemporary motto when dealing with the design of sports venues and public spaces, as characteristics of functionality and pleasantness marked every single detail of these buildings. Also, from a social point of view, all the strata of the population attended these public spaces: men, women, children, soldiers, poor and rich, including emperors. The *thermae* were the social

gathering place for excellence, useful for any type of meeting and event. People went to *thermae* to attend musical performances or readings of poems, or just to listen to public lectures. Fully integrated into the urban fabric, Roman citizens went there to discuss, meet people, to work. *Thermae* also hosted libraries and museums; they were places dedicated to outdoor games and the care of the body, making them very similar to the places where today we practice sports and recreational activities.

Looking at contemporary events, negative examples seem to dominate. A recent case of poor integration with surrounding areas is the stadium of Green Point in Cape Town, built for the 2010 World Cup. Before the tournament, local Government intended to upgrade the existing stadium in Athlone, a working-class mixed-race neighbourhood. They believed the investments in transport, security and economic infrastructure that would come from hosting World Cup matches in Athlone would reduce inequality and increase integration and convergence. However, FIFA's concern about showing worldwide Athlone's low-cost housing and other signs of poverty led to the construction of a new facility in the area of Green Point, which was considered more media-friendly and suitable for a television audience, with its stunning view over the mountains and nearer to the major tourist destinations. Cape Town's stadium symbolizes the worst of FIFA's legacy in South Africa. It is a superfluous mega structure unwanted by the wealthier, and it is far away from the areas where football fans live (Molefe 2014). Also, it ruins the view of the surrounding mountains.

The coastal cluster of the 2014 Winter Games in Sochi is another example of poor physical and social integration (Figure 5 and 6). The Olympic Park is peripheral to the city, with poor public transportation options and surrounded by a major road that makes difficult to access it (Azzali 2017b). In addition, the majority of the facilities built for the Games are closed and inaccessible, and the track for the Formula 1 race, located inside the area, divide the Park



Figure 5. *The coastal cluster in Sochi: the Formula 1 track divides the park making difficult to move from one side to another (Source: Author).*

into two separate halves (Figure 5).

This example should be a warning to contemporary designers: social and physical integration and liveable public spaces cannot be achieved by building iconic and state-of-the-art structures, but by understanding local needs, working with local resources, involving citizens to the planning process.

Finally, another issue relates to the disposal of these huge structures. Usually, after a certain period of time, due to new procedures or technical requirements, stadiums need to be renovated, but sometimes they are simply abandoned and replaced by new facilities. An example is the stadium Flaminio in Rome. This iconic landmark built by Antonio Nervi for the Olympics of 1960 stands now completely abandoned in the heart of the Olympic Village. However, some positive examples of disposal exist. In London, the former Arsenal Stadium was converted into an apartment complex, known as Highbury Square. The Bush Stadium in Indianapolis, built originally as a baseball arena, followed the same strategy. The Pyramid Arena in Memphis was originally constructed to host basketball games, and it has been reconverted to a megastore with a hotel, restaurants, and shops.

3.4. Practice 4 – City branding, and the interrelation between political power and events

Events and political power are strongly related. Recent examples include the 1936 Games in Berlin, with



Figure 6. The coastal cluster in Sochi: transformation and impact on the territory.

their enormous political dimension, and the international boycott of the Games in Moscow (1980) and Los Angeles (1984). Today, the interrelation between the ruling power and events often takes the form of city branding, and Olympics and World Cups are considered as a showcase to promote the hosting country (i.e. the 2008 Olympics in Beijing or the 2014 Winter Games of Sochi). However, throughout the history, events were utilised with different meanings. Starting from the sixteenth century, with the Renaissance first and Baroque after, major Italian cities flourished and expanded. Thanks to the vision of the leading local princes, urban centres as Florence and Rome faced important urban transformations and became more functional and beautiful. In the second

half of 1500, the interest on the urban landscape rose in the collectivistic culture. Perspective was the most effective tool used to transform the urban scenario (Benevolo 1993). Alongside the physical transformations of cities, social changes occurred. City life was enriched by a number of collective experiences, particularly religious and festive. All citizens participated in events such as ordinary or extraordinary processions, but they also attended events in the private or semi-public spheres, such as funerals and weddings. The latter was also part of secular parties, prepared collectively, and in which they invested large amounts of money. Races as the Palio dei Berberi, described previously, were examples of the social aspect of events: they were moments of legitimation of the population and appropriation of the city and its territory. They were an occasion of leisure but also used to unify local inhabitants and their sense of belonging to the city.

In a different way, another example is offered by Istanbul, which became the capital city of the Byzantine Empire in 324 AD, when Constantine decided to move the seat of government from Rome. The Emperor started a series of works for renewing and enlarging the city, including the renovation of its hippodrome. Located in square Sultanahmet Meydanı, near Hagia Sophia, it was an impressive structure, probably 450 m long and 130 m wide, with a capacity up to 100,000 people, and it was the centre of the social and sporting life in the city. The track was U-shaped, and, in the eastern end, there was the Emperor's loge, which was directly connected with the Imperial Palace through a passage that was used by the Emperor and other members of the royal family (Vespignani 2001). The competitions taking place at the hippodrome were not only mere sports events but also, as during the Roman Empire, they were occasions in which common people and the emperor could meet in the same venue. The Hippodrome was also the seat for many political discussions, thanks to the direct access of the emperor to the venue through the loge at the eastern tribune. Different political parties

within the Byzantine Senate funded teams taking part in the races, and huge amounts of money were bet on chariot races. Often, the rivalry among the teams was the trigger for religious or political riots that in some occasions resulted in civil wars with injuries, deaths, and destruction (Dagron 2012).

Polo is by far the best-known Oriental equestrian sport. The exact origins of polo are unclear; however, the Iranian world at the time of the Achaemenids (i.e. during the Persian Empire from the 7th to the 4th century BC) is usually deemed to be the original source (QOSM 2012). Particularly, Ali Qapu palace and Naqsh-e Jahan square in Esfahan (Figure 7A,B and C) offers an example of the interest in polo and of the integration between the leader's palace and the place where the games were held. The building marks the entrance into the residential district of the Safavid rulers, which extends beyond the square. It was built in the early seventeenth century under the order of Shah Abbas the Great and was used for diplomatic meetings with visitors from other countries. The building has a rectangular plan, spread over six floors, and has a large terrace at the front, from where the Safavid ruler watched polo matches, parades, and horse races that took place in Naqsh-e-Jahan. The square is a wide public space surrounded by buildings built in the early seventeenth century by Shah Abbas I.

Finally, many lessons that can be learned by the way mega-events were planned and managed in the Roman time. First, the sacredness of the sporting events, a common character of the sport in Greece and in very ancient Rome, was replaced in the Roman Empire by the idea of spectacle and the desire for group entertainment, leading events to be exploited as political instruments. At the time of Augustus, the number of public holidays was at least twice of the number of workdays to allow Roman emperors to use events as safety valves, or tools of domestic politics: they were utilised for satisfying the unemployed and lazy masses by occupying the time of around 150,000 people who were not working. Also, the events ensured the public order of



Figure 7A. Naqsh-e Jahan square in Esfahan from Ali Qapu palace's terrace on (Source: Author).

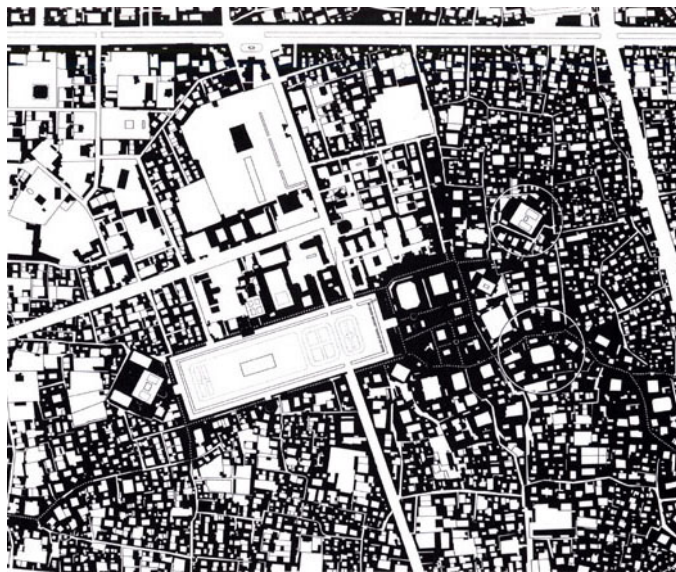


Figure 7B. Map of Naqsh-e Jahan square in Esfahan.

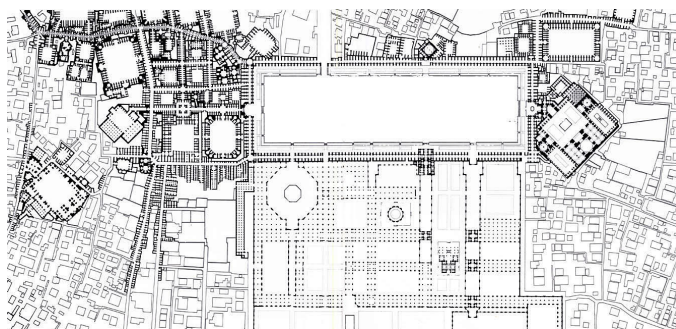


Figure 7C. Map of Naqsh-e Jahan square in Esfahan.

an overcrowded city (Rome had more than 1,000,000 people at that time of the empire). For example, the munera sine missione were games in which nobody had to survive, and they were used as public executions disguised in shows during which prisoners and convicted were sentenced to death

(Carcopino 1939). Roman people had a real passion for these games, and this excitement was exploited to buy votes and political favours and to tame the spectators and avert riots, but also to glorify emperors and their victories. This passion for sports events and the popular participation to games had a strong psychological impact on both the crowd and the athletes, linked to the physical presence on the site of the event, and had a catalytic function in releasing passions, positive or negative.

4. Conclusions: Towards liveable public open spaces as legacies of mega sports events?

While the first Olympics had a limited budget and used mainly temporary and existing facilities, starting from the 60s, and in particular from the Olympic Games held in Rome, mega-events have been more and more used as the occasion for the overall development of urban centres. However, results of this strategy are often negative, and sports venues and event sites too frequently turn into white elephants, non-places, over-capacity buildings, and abandoned pieces of cities. In particular, high maintenance costs, peripheral locations, and lack of integration within the urban fabric are some of the main issues of stadiums and major sports facilities. This study investigated relevant past precedents (major cities in the West and East from the eighth century B.C. to the seventeenth century) with the aim of deriving and mapping the main practices and relevant habits that characterised sports facilities and major events throughout the history. The research showed four main habits that are still recurrent: the role of events as tools for experimenting new solutions, patterns and templates; the alternation of temporary and permanent structures; the problem of physical and social integration of main venues within the urban fabric; and the strong relationship between ruling power and events. Solutions as downscale, the use of temporary, modular, or existing facilities, and the reconversion of venues to other purposes can be winning strategies in event planning. Using existing

facilities is a winning choice because it avoids the creation of white elephants and reducing costs. Temporary facilities along with repurposed venues or modular stadiums that can be disassembled and combined to create other structure somewhere else. Downscale could be also a winning strategy. Also, the physical integration with surrounding areas, easy connection by public transportation, and mixed-use facilities can improve the liveability of these venues and sites.

However, with few exceptions, the majority of contemporary events sites and sports facilities provide very limited benefits and exorbitant costs. The four practices described and additional actions need to be taken into account to maximize the beneficial potential effects provided by those events.

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