

RECONSIDERATION OF THE ARCHITECTURAL PROGRAM OF
THE OLYMPIC GAMES

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THE OLYMPIC GAMES**

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ABSTRACT

RECONSIDERATION OF THE ARCHITECTURAL PROGRAM OF THE OLYMPIC GAMES

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The role of ‘architectural program’ in the design phase of the Olympic structures becomes prominent with regard to the processes of development, transformation, and deformation that the cities have undergone by hosting the Olympic Games. Considering the previous examples, especially, the transition from the pre-determined program for the event phase to the indetermined program for the post event phase appears to be the main problem, since it is, generally, not well defined in the beginning of the whole process and then it turns into an ambiguous transition. This ambiguous transition process results in the problems related with the integration and re-adaptation of the Olympic structures into the local context in the post-event phase. This thesis argues for the fact that the main issue behind these problems is the architectural programming of the Olympic Games. Then, it aims at reconsidering the architectural program of the Olympic Games in order to address existing programmatic issues that give way to the integration and re-adaptation problems. In doing so, ‘programmatic layering’, which encourages the coexistence of various activities emerging from the interaction among the various program layers, is discussed as a design tool to define the programmatic transition in the design phase. This thesis claims that the Olympic structures should be designed with a certain level of programmatic flexibility and temporality through a proposed scenario for the long-term development in order to accommodate

various programmatic layers in the structures, which are shaped with a certain level of permanency by pre-determined program. It is shown that the architecture of the Olympic structures has hardly evolved their form and spatio-functional schema despite of the several changes and updates in the program of the Olympic Games. The significant conclusion of this thesis is that the narration of the host cities has gained power to manage the program through the Olympic processes, yet the host cities underestimate the influence of the narration on the long-term development by focusing on only the issue of staging the Games.

Keywords: Olympic Games, Olympic cities, architectural program, programmatic layering, programmatic flexibility and temporality.

ÖZ

OLİMPİYAT OYUNLARININ MİMARİ PROGRAMININ İRDELENMESİ

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Olimpiyat Oyunlarına ev sahipliđi yapan kentlerin bu süreç boyunca geçirdiđi gelişim, dönüşüm ve bozulmalar düşünüldüğünde, Olimpiyat yapılarının tasarım sürecinde ‘mimari programın’ rolü ön plana çıkmaktadır. Geçmiş örneklere bakıldığında, özellikle oyunlar süresince tanımlı olan mimari programın, oyunlar sonrasında tanımsız bir mimari programa dönüşmesi esas sorun olarak ortaya çıkmaktadır. Sürecin başında mimari program iyi tanımlanmadığı için süreç içinde programın dönüşümü muğlaklaşmaktadır. Mimari programın dönüşümünün muğlaklığı, Olimpiyat yapılarının Oyunlar sonrasında yerel bağlama entegrasyonunu ve yeniden adaptasyonunu güçleştiren sorunlara sebep olmaktadır. Tez, bu sorunları doğuran mevcut program meselelerini incelemek için Olimpiyat Oyunlarının mimari programını irdelemeyi amaçlar. Bunu yaparken, mimari program geçişinin süreç başında tasarlanabilmesi için ‘programatik katmanlanma’ bir tasarım aracı olarak tartışılır. Programatik katmanlanma, program katmanlarının etkileşimi sonucu ortaya çıkan çeşitli aktivitelerin biraradalığını destekleyen bir tasarım aracı olarak görülür. Bu tez, çeşitli program katmanlarının Olimpik yapılarda barındırabilmesi için yapıların çeşitli senaryolar üzerinden geliştirilmiş programatik esneklik ve geçicilik ile tasarlanması gerektiğini savunur. Yapılan araştırma sonucunda, Olimpiyat Oyunlarının tarih boyunca geçirdiđi deđişim ve gelişmelere rağmen Olimpiyat yapılarının mimarisinin gelişiminin kısır kaldığı görülmüştür. Bu tezin önemli bir

diđer çıkarımı ise ev sahibi kentlerin Olimpiyat Oyunları üzerine kurdukları söylevlerin Oyunların düzenlenmesi sürecinde önemli bir role sahip olamsına rağmen bu söylevlerin uzun süreli planlara olan etkisinin azımsandıđıdır.

Anahtar Kelimeler: Olimpiyat Oyunları, Olimpik şehirler, mimari program, programatik katmanlama, programatik esneklik ve geçicilik.

To My Beloved Family

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PREFACE

I have participated in various international sport organizations as a volunteer; including FIBA World Championships for Men Basketball 2010, FISU Winter Universiade 2011, IAAF World Indoor Championships, FIBA Olympic Qualification Tournament for Women Basketball 2012, FISU Summer Universiade 2013 and FIBA World Championships for Women Basketball 2014, and I have had chance to visit several previous Olympic cities; including Tokyo, London, Rome, Berlin, Amsterdam and Antwerp, before and during my research. My experiences in the sport organizations and observations in the previous host cities became my main motivations for focusing on the Olympic Games in this thesis. While my volunteering jobs in the sport organizations help me to experience, at first hand, the organization structure and spatial organization of the international sport events, my observations in the host cities made me understand how the Olympics have affected these cities in the post-event period. Consequently, this research is based on mainly my experiences and observations as well as analytical studies on the architectural program of the Olympic Games.

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LIST OF ABBREVIATIONS

IF's:	International Federations
IOC:	International Olympic Committee
NOC:	National Olympic Committee
OCOG:	Organizing Committee of the Olympic Games
ODA:	Olympic Delivery Authority
OGGI:	Olympic Games Global Impact Project

CHAPTER 1

INTRODUCTION

“Olympism is a philosophy of life which places sport at the service of humanity. This philosophy is based on the interaction of the qualities of the body, will and mind. Olympism is expressed through actions, which link sport to culture and education.

This philosophy is an essential element of the Olympic Movement and the celebration of the Games. It is also what makes them unique.”¹

Since the revival of the Modern Olympic Games² at the end of the nineteenth century, the Olympics have grown into a mega event. Throughout the Olympic history, the scale and significance of the Games, which have been enormously expanded [Figure 1.1], create opportunities and challenges for the host cities where the Games are organized. The Olympic Games are considered as a catalyst for rapid urban developments, improvement in economy and infrastructures of the host cities, and for enhancing global recognition and prestige.³ In the contemporary situation, consequences of the Olympic Games necessitate the reconsideration of the extreme expansion in its scale and significance regarding the opportunities and challenges of the organization for the cities. The host cities pass through serious processes in order to be prepared to host the Olympics successfully and to provide benefits from the developments in the long term. The great scale of the Olympic Games requires large investments in infrastructure, facilities and accommodation throughout these processes.

¹ *Olympism and the Olympic Movement*, the IOC, The Olympic Museum, Lausanne 3rd edition, 2013.

² “Olympic Games” stand for the Summer Olympic Games throughout this research. Winter Olympic Games require different spatial organization due to the large number of outdoor activities; therefore they must be investigated by a different perspective, which is not in the content of this research.

³ Brian Chalkley & Stephen Essex, ‘Urban development through hosting international events: a history of the Olympic Games’, *Planning Perspectives*, 1999, vol.14:4, pp. 375.

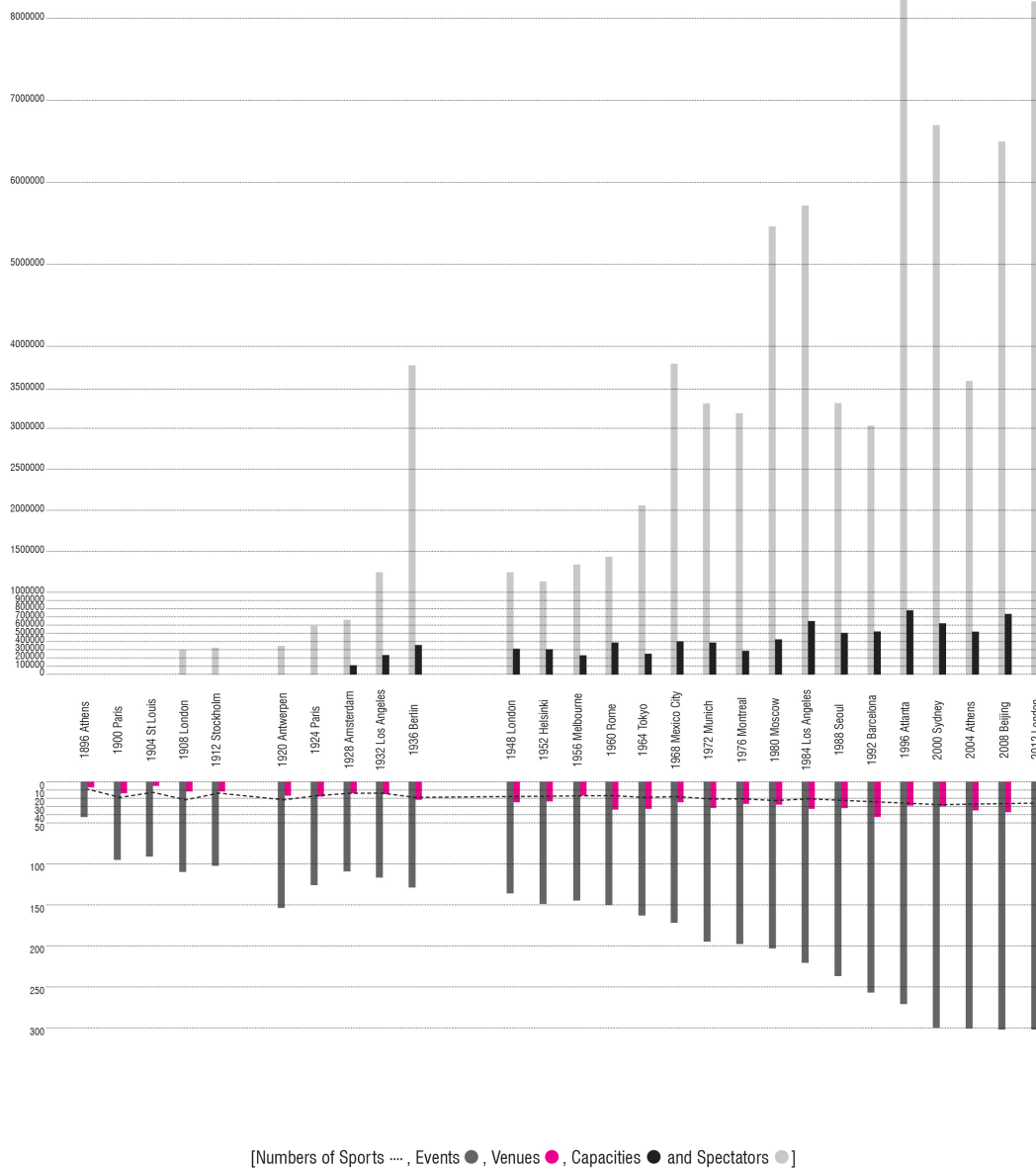


Figure 1.1 Comparing the number of sports, events, venues, capacities and spectators through the Olympic Games. Source: Produced by the author.

The return of the investments to the host city as a positive legacy of the Games is important for the development of the city, reclamation of the event infrastructure and the continuity of public support for the Olympic Games. The former president of the International Olympic Committee, Jacques Rogge emphasizes sustainable legacy expectations regarding their positive impacts:

“Creating sustainable legacies is a fundamental commitment of the Olympic Movement. Every city that hosts the Olympic Games becomes a temporary steward of the Olympic Movement. It is a great responsibility. It is also a great opportunity. Host cities capture worldwide attention. Each has a once-in-a-lifetime chance to showcase the celebration of the human spirit. And each creates a unique set of environmental, social and economic legacies that can change a community, a region, and a nation forever.”⁴

Unlike Rogge’s positive expectations, the host cities have faced serious problems during the event and post-event phase in order to achieve the expected legacy, which is introduced at the planning phase. The problems are mainly related with re-utilization of the structures, such as infrastructure, Olympic zones and facilities. When the Olympic Games are terminated, the structures are left as a burden for the former host city. The infrastructures and facilities remain idle with excessive capacities. Especially, the large-scale Olympic venues stand as ‘white elephants’⁵ disconnected from the city. These problems of the host cities are revealed by the studies, which mainly focus on the contingencies of the Olympic Games.

When the Games are over, it is the host city and its inhabitants that stay to deal with the built stock left behind. In some cases, since the host cities require such a built stock capacity to improve their infrastructures and sport facilities, they efficiently transform the Olympic structures with their proposed function and capacity into local use. Especially, after the First and Second World Wars, the host cities used the building capacity of the Olympic Games in order to

⁴ Jacques Rogge, Former IOC President, states in the brochure of *Olympic Legacy*, the IOC, 2013, p.1.

⁵ ‘White elephants’ is a widely used term used to refer a facility, which remains idle yet burden with maintenance.

rehabilitate the cities and inhabitants that suffered from the war. During this period more permanent structures started to be constructed and Olympic villages converted into permanent housing for the locals [Appendix A]. However, with the influence of the 1960 Rome Games, host cities started to perceive the Olympics as a tool to increase the prestige of the cities as much as an opportunity for rapid urban development. This change in the perception of the Games results in increase in the number and scale of the constructions. In the current situation, it is obvious that the Games leave behind much greater building stock that the host cities can use in the post-event phase. In most of the cases like Athens 2004 and Beijing 2008, these structures remain idle in the post-event period or become a financial burden for the cities. This thesis asserts that the host cities have been struggling to integrate and re-adapt the structures into local context for public use due to the very specialized facility demands of the Games.

As the scale of urban development has been increasing, sustainability of the Olympic structures has appeared to be a more significant problem in the post-period. There are several studies⁶ focusing on the economic, social and urban impact of the Games by associating the sustainability problems with urban planning approaches of the host cities. Although, the problems, such as the sustainability, integration and re-adaptation of the structures into the city context, are predominantly associated with urban planning issues by considering the vast scaled urban impact of the Games, this thesis asserts that the main issue causing these problems is the ‘**architectural program**’⁷ of the Olympic Games as much as urban planning approaches. The role of ‘architectural program’ in the design phase of the Olympic structures becomes prominent with regard to the processes of development, transformation, and deformation of the cities that have undergone by hosting the Olympic Games. Especially when the critical consequences of the

⁶ Among these studies are the technical reports of the International Olympic Committee [IOC], which provide assessments of the former Olympic Games and recommendations for the future candidates. Moreover there are several researchers surveying on Olympic Games concerning the urban planning, mainly Brian Chalkley and Stephen Essex [1999], John R. Gold and Margaret M. Gold [2010].

⁷ How this thesis approaches to the term ‘architectural program’ will be defined in the following pages in order to clarify the further discussions.

Olympic Games in the long-term, which emerged from the re-utilization of Olympic sites and facilities, are analyzed, the consideration of architectural programming as a design parameter in the early stages of the design process becomes crucial.

Concerning the current spatial model, the programmatic relations within the facilities and sites, which will be seen as **the ‘internal’ aspects** of the spatial model in this study, are strictly determined by the standards and demands of the IOC. However, the conditions of the host city, which will be seen as **the ‘external’ aspects** of the spatial model, vary depending on the location and the city itself. External aspects depend on social, political, geographical, historical and spatial context of the host cities. Especially when we consider the scale, speed and cost of the constructions, socio-political and economic issues become important in regard to the political structure of the host nation. The local decision mechanism; such as municipalities and ministries have a limited control over the realization of the large-scale constructions in a short time period; their interventions to the process are limited. Due to this reason, as Eva Kassens-Noor cites from the interview of Lluís Millet, staging mega-events provide necessary conditions for the politicians to come true their secret agendas. Yet staging the Games is a technical process rather than political one.⁸

According to the report of the UN-funded Centre for Housing Rights and Evictions (COHRE) the Olympic games, having evicted more than two million people in the past twenty years between 1988 and 2008, are one of the top causes of displacement and real-estate inflation in the world.⁹ Ashok Kumar reports that although hosting the Olympics is often presented as an ideologically neutral ground, “ [t]he Olympics have always been utilized as a means to pursue what David Harvey calls ‘accumulation by dispossession,’ from visible policies of forced evictions to veiled ones such as gentrification. This violent process is

⁸ Eva Kassens-Noor, *Planning Olympic Legacies: Transport Dreams and Urban Realities*, Routledge, London, 2012, p.26.

⁹ ‘The Olympic Games have displaced more than two million people in the last 20 years’, COHRE. Retrieved September 10, 2014, from http://tenant.net/alerts/mega-events/Olympics_Media_Release.pdf

intimately connected to reconfiguring the landscape for capital accumulation and, indeed, is a prime motivation for the very purpose of the Olympics itself.”¹⁰ Regarding the Olympic processes, the socio-political and economic aspects gain controversial and broad impact domains. Although, I am fully conscious of the impacts and results of the socio-political and economic issues in the Olympic processes, while investigating the external aspects of the Olympic Games, these issues are not included in the study in order not to broaden the topic of this thesis.

The internal aspects display an autonomous character independent from the external aspects, which are constantly changing according to the host city. Regarding the uncanny correspondence between the internal and external aspects of the architectural programming of the Olympic Games, the spatial configuration model of the IOC remains insufficient to solve the prospective problems that the host cities would confront in the post-Olympic period. In other words, “architectural programming” that is supposed to ease and regulate the processes of planning and performing the Olympic Games becomes the origin of the problems itself. After the Olympic Games, the ‘pre-determined’ architectural program of the permanent structures, which are designed according to the specificities of the sports activity, the standards and demands of the IOC, becomes ‘indeterminate’ for the post-Olympic use. The permanent form and location of the structures allow limited changes within the structure and limited forms of relations between the structures and the site. When the permanent impact of the is reconsidered, it is possible to benefit from the decrease in the indeterminacy level of how these structures would be used after the events or increase in the flexibility of the structure at the beginning of the design phase in order to better integrate and re-adapt the structures into the local context.

Therefore, the aim of this thesis is to reconsider architectural programs of the Olympic Games, in order to address the existing programmatic issues that give way to the problems related with the integration and re-adaptation of Olympic structures into the local context of the host city. Then, in conjunction with this

¹⁰ Ashok Kumar, ‘Want to cleanse your city of its poor? Host the Olympics’, 2012. Retrieved September 10, 2014, from <http://ceasefiremagazine.co.uk/olympics-opportunity-cleanse-city/>

aim, a discussion within the frame of **‘programmatically layering’** with reference to the works of Rem Koolhaas will be done. Programmatic layering is considered as a proper strategic tool based upon its potential to reveal possible programmatic relations and to adapt to the conditions in micro and macro scales. Programmatic layering would reveal possible programmatic relations by providing necessary environment for the interactions between the pre-determined Olympic functions and further proposed functions. Moreover, programmatic layering as a design strategy can be used in both micro – architectural – scale and macro – urban – scale in order to establish various programmatic relations within the facilities and between the Olympic zones and the host cities. The discussion will cover **‘programmatically flexibility and temporality’** as design agents to overcome the problem created with transition from the determined program in the pre-event and event phases to the indetermined program in the post-event phase of the Games, and to integrate and readapt the Olympic structures to the everyday life of the local context. Here, it should be emphasized that any predetermined physical and spatial organization scheme or diagram regarding the Olympic Games is out of the scope of this thesis, rather, it discusses generic programmatic relations that can be accommodated in any type of spatial and physical organization for the future Olympic Games.

Since this thesis argues that the integration and re-adaptation problems emerge as the consequences of the architectural programming of the Olympic Games, a set of analysis is conducted to reveal the emergence of the problem with regard to the factors that compose the architectural program. The analysis embraces a wide range of scales from micro that is architectural scale revealing the programmatic relations within the facilities, to macro that is urban scale covering the relation between Olympic zones and host cities. This thesis argues that the integration and re-adaptation problems have been emerged throughout the Olympic history, however the current approaches to the architectural programming of the Olympic Games have made the problem more visible and serious since 2000. Therefore, these problems regarding architectural program of the Olympic Games will be discussed and redefined by analyzing the past Games throughout the Olympic

history, yet the main focus will be the last four Games; namely Sydney 2000, Athens 2004, Beijing 2008 and London 2012. The development of the Olympic Games in terms of architectural features, spatial configurations, urban transformations, and their legacies will be analyzed in their historical context. Different approaches to the programmatic components will be studied with the comparative analysis regarding the integration and re-adaptation problem in order to mark the significant shifts and milestones throughout the Olympic history [Appendix A]. The sources of these analyses will be mainly the documents prepared by the IOC and the Organizing Committees, such as Olympic Charter, Official Reports, Technical Manuals, Candidature Files, and Fact Sheets.¹¹ In parallel to the aim of this thesis, a possible framework for the architectural program of the Games that will redefine the spatial and programmatic relations between the Olympic structures and the host cities will be discussed. To do so the current programmatic approaches to the Olympic Games will be analyzed in relevance to the contemporary studies on ‘programmatic layering’, mainly the works of Koolhaas¹², in order to develop a basis for the discussion.

The structure of the thesis is composed of four main sections. Firstly, the emergence of the integration and re-adaptation problem will be traced through an overview of the Olympic Games. Secondly, on the basis of this overview, the problem of integration and re-adaptation will be redefined with a focus on the architectural program of the Olympic Games. Then, thirdly, the scope and the content of the architectural program of the Games will be investigated, and the design issues that lead to the integration and re-adaptation problem in respect to current programmatic approaches will be revealed. Finally, after a comprehensive analysis of the problem, a framework for the architectural programming of the

¹¹ See the ‘Appendix D’ for the full reference list of the sources that build up the base for the analysis.

¹² The main sources of the discussion are based on the selected texts and projects of Rem Koolhaas. The texts include *Delirious New York* [1994], and *S,M,L,XL* [1998]. The projects include the competition Project for Parc de la Villette [1982] and Master plan of Yokohama [1992].

Olympic Games will be discussed regarding ‘programmatically layering’,¹³ as a design tool and ‘programmatically flexibility and temporality’ as a design agent.

Concerning the structure of this thesis, in the second chapter, the organization structure of the Games will be presented to give a necessary background in order to understand the factors behind the integration and re-adaptation problems. Later on, each Olympic Games will be analyzed in relation to its previous and following Games. Breaking points in the Olympic history that has brought significant changes to the organization of the Games will be revealed throughout the Olympic history in order to trace the emergence of the integration and re-adaptation problems of Olympic structures in the post-event period.

In the third chapter, the integration and re-adaptation problem will be reconsidered by focusing on the architectural program. How this thesis approaches to architectural program specifically for the Olympic Games will be clarified as an amalgamation of both the ‘internal’ forces that are the requirements of the IOC, and the ‘external forces’, that are the local, national and international context of the host cities, acting both in the micro and macro scales. The conditions of ‘determinate’ program for short-term use and ‘indeterminate’ program for long-term use will be discussed in order to better redefine the integration and re-adaptation problems.

In the fourth chapter, interaction between the internal and the external forces will be investigated regarding the design issues, namely **scale**, **boundary** and **field**, which give way to these problems. The design issues will be raised as part of the problem due to the current programmatic approaches to the Games. Then, this chapter will focus on design issues, which will be identified and investigated in relation with the problems of integration and re-adaptation. The comparative analysis among the past Olympic Games will be the main tool of this investigation.

¹³ ‘Programmatically layering’ will be discussed in detail with reference to Rem Koolhaas in the following chapters.

The fifth chapter aims at revealing the potentials of the design issues and the possible ways to use these potentials to integrate and re-adapt the structures into the local use. In accordance with this aim, ‘programmatic layering’ will be discussed as a framework, which covers ‘programmatic flexibility and temporality’ to overcome the problems emerging with the transition from the determined program in the pre-event and event phase to the indetermined program in the post-event phase of the Games. Here, it should be emphasized that this discussion will not rely on any predetermined physical and spatial organization scheme or diagram regarding the Olympic Games. Since each host city has its own characteristics and context, the discussion will focus on generic programmatic relations that can be accommodated in any type of spatial and physical organization for the future Olympic Games.

Finally, in the sixth chapter, the conclusive evaluations will be presented as the result of the critical reading of the architectural program of the Olympic Games. Firstly, even though the architectural program of the Games has been undergone several changes due to the updates in the Games and different host city context, the form and spatio-functional schema of the sports facilities have hardly been evolved throughout the Olympic history. Secondly, despite the determined and predominate program of the Games, the narrations of the host cities have gained importance over all the internal and external forces, and explicitly influence the Olympic processes.

CHAPTER 2

THE OVERVIEW OF THE OLYMPIC GAMES

Integration and re-adaptation of Olympic structures into the local context in the post-event period is not a recent problem that the host cities have faced. Transforming the newly built Olympic structures into positive legacy of the Games has always been a critical issue for the host cities. The vast scale of the Games and the large amount of built legacy remained in the host cities have made the problem more visible and serious in the last quarter of the Olympic history in parallel with the emergence of the sustainability issues. Tracing the emergence of the problem in relation to architectural program of the Games necessitates analytical and historical overview of the Olympic Games. Therefore, in this chapter, the organization structure of the Games will be presented to give a necessary background in order to understand the factors behind the problem. Later on, each Olympic Games will be analyzed in relation to its previous and following Games. Breaking points in the Olympic history that have brought significant changes to the organization of the Games will be revealed in order to trace the emergence of the integration and re-adaptation problem of Olympic structures in the post-event period.

2.1. Structure of the Organization

When the first Modern Olympic Games were held in Athens, in 1896, it was organized in a very ‘modest’ way. Since the modest revival of the Olympic Games at the end of the 19th century, the Games have evolved into mega cultural and mainly sports events. The Olympic Games take place in every four years for duration of utmost 16 days in a pre-selected host city. Although it lasts for a very short time period, the preparation of the games takes seven years after the selection of host city and post event period is an open-ended process. While

importance and scale of the Games have increased throughout the Olympic history, impacts of the Games on host cities have been scaled up, as well [Figure 2.1]. In the current situation, during the Games, thousands of athletes are hosted, hundreds of events are taken place and millions of audiences witness the celebration of the Olympiads within the host city and via television.

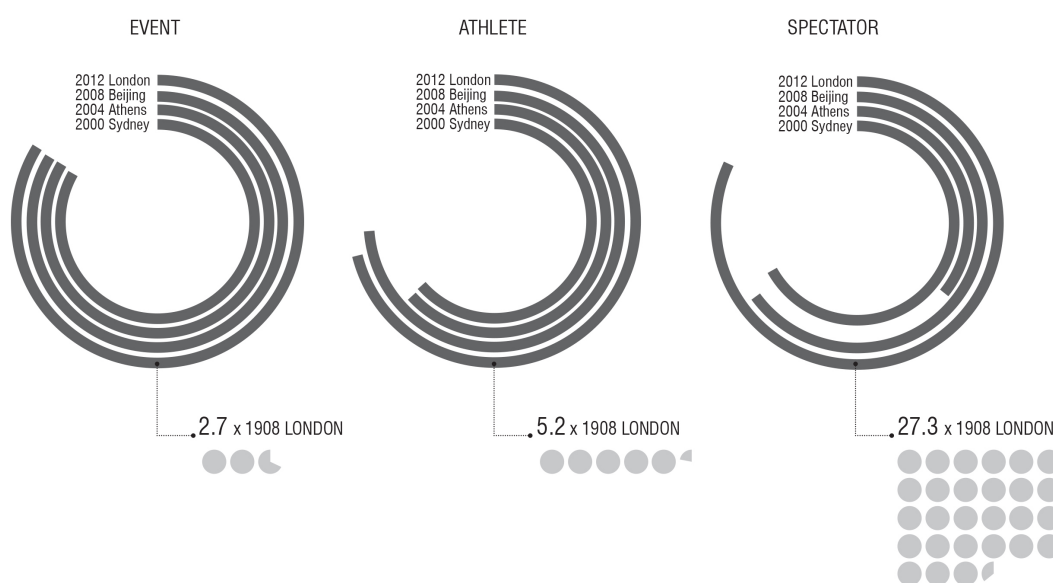


Figure 2.1 Comparison of the number of event, athlete and spectator in the last four Olympic Games [2000-2012]. Source: Produced by the author.

The increased scale of the Games creates a challenge for the host cities to meet the need of extra capacity brought by the Games. Provision of not only facilities and organization of sports and cultural events, but also other infrastructure, such as transportation, accommodation and services, is required to host the Games successfully [Figure 2.2]. Since the existing facilities and infrastructures are just enough to meet the local needs and even less than the local needs as in the most cases, new facilities and infrastructures are to be built for responding to demands of the Games. All these improvements in facilities and infrastructure necessitate a large-scale urban planning and a dense process to carry out these plans within a limited seven years time until the Games begin.

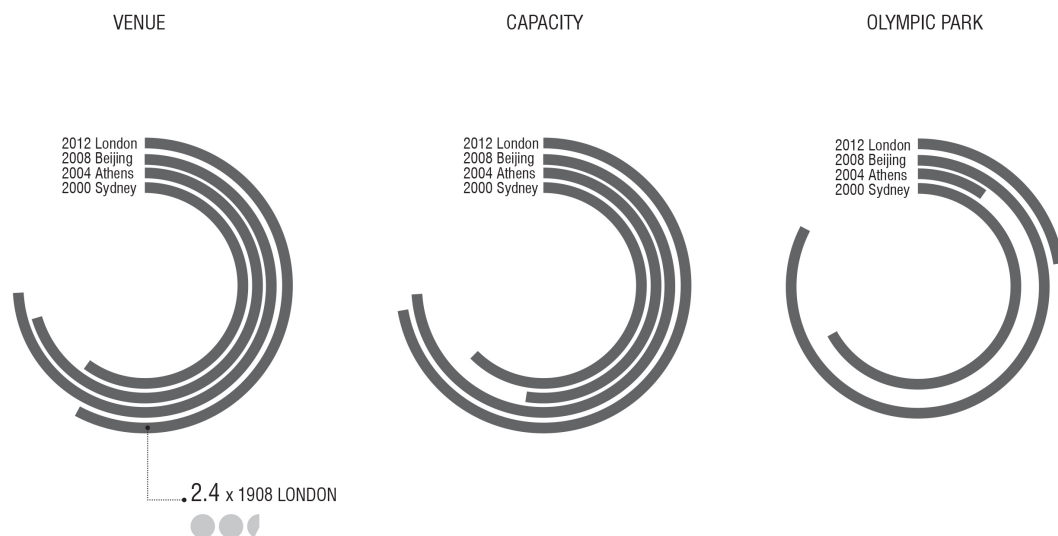


Figure 2.2 Comparison of the number of facilities, their capacities and size of the Olympic Parks in the last four Olympic Games [2000-2012]. Source: Produced by the author.

Although, the Olympic Games put a heavy burden on cities to pass through several transformations regarding their urban planning and development, selection of host city witnesses a contentious competition among candidate cities. The International Olympic Committee (IOC), as the main stakeholder of the Olympic Games, defines the principal mechanism to select the host city and control the overall conduct of the Olympic movement. After the selection of the host city, the IOC develops a strict management and control system with the help of the other components of the Olympic Games, which aim an effective operation of the Games. The responsibilities of the components and their relations among each other are determined in the Olympic Charter¹⁴. These components are, International Federations (IFs), National Olympic Committees (NOCs), and Organizing Committees of the Olympic Games (OCOGs).¹⁵ These components play active role in the different phases of the Olympic processes that the host city passes through, such as pre-bidding, bidding and candidature, preparation, event, and post-event phases [Figure 2.3].

¹⁴ Olympic Charter regulates the organization, action and operation of the Olympic Movement and sets forth the conditions for the celebration of the Olympic Games. It is the principal document that defines the reciprocal right and obligations of the main Olympic components.

¹⁵ Olympic Charter, International Olympic Committee, 2013, p.13. Retrieved June 22, 2014, from http://www.olympic.org/Documents/olympic_charter_en.pdf

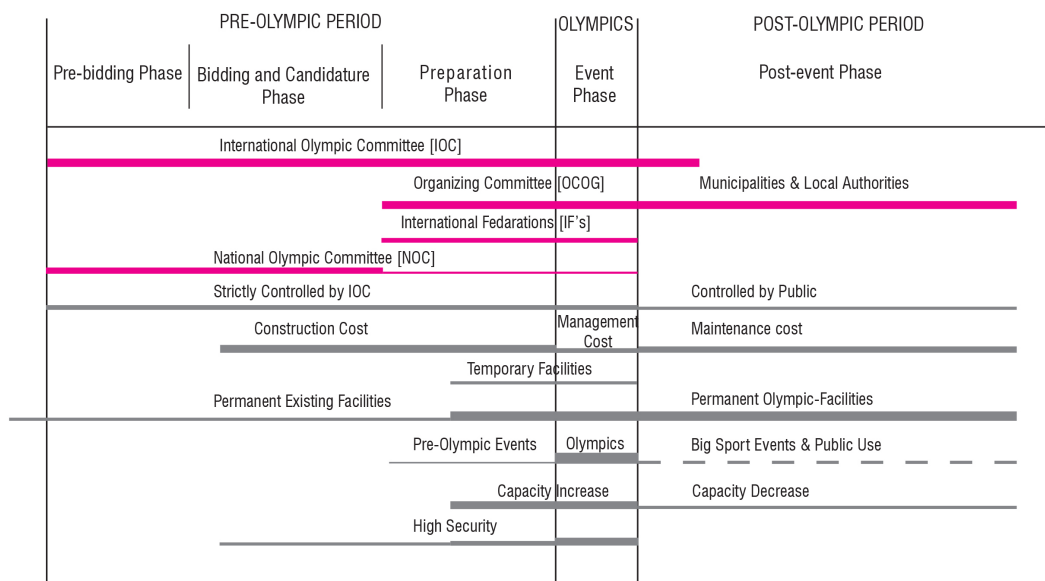


Figure 2.3 The Olympic components and the forces acting upon the Olympic Processes. Source: Produced by the Author.

Pre-Bidding Phase begins with the preparation of the bid file for the oncoming Olympic host city selection. While preparing the bid files, host cities define their narration by analyzing the previous Games, demands of the IOC, technological and scientific improvements, and potentials of the cities. Narration of the bid files gains importance throughout the whole Olympic processes, because it affects the selection process and if the city is awarded with the Olympic Games, the city becomes responsible to keep their promises while making the Games happen.

The next step, **Bidding and Candidature Phase**, begins with the official declaration of bidding to the IOC. After the investigation of the bid files, the IOC selects candidate cities to run for the final selection process. In this stage, host cities get a chance to revise and improve their bid files in accordance with the reviews of the IOC commissions. As the final stage of the candidature phase, IOC selects the host city and makes a binding agreement with the host city to guarantee the success of the Games.

Preparation Phase comprises the most dense and complex pre-event processes to make the host city ready for the Olympic Games. At this stage all the components of the Olympics play active roles to operate organization efficiently. While the

IOC works as the principal control mechanism, International Federations [IFs] takes action to prepare the regulations and standards of events and construction of venues for each individual sports. National Olympic Committees [NOCs] are responsible for the organization of their Olympic teams. In addition to that NOC of the host city is also responsible for establishing an Organizing Committee [OCOG], whose responsibility is staging the Games and providing of necessary facilities and infrastructures. There are several publications, such as Technical Manuals, Olympic Reviews, and Official Reports, released by the IOC and OCOGs to control and lead the Games.¹⁶ These publications are also the main sources of this thesis research to define the scope of the architectural program of the Games. Every stage of the preparations should be approved and controlled by the IOC. Jerome Frost, the Head of Design and Regeneration for the Olympic Delivery Authority (ODA) of London 2012, tells that the ODA was not able to make the IOC accept to decrease the capacity of the Aquatics Center from 21000 spectators to the optimum capacity for the World Swimming Championships.¹⁷ Although the Games will use the facility only for once and for a short period, the IOC demanded much higher capacity than the requirements of possible next big events that will be held in the same venue.

Although **Event Phase** is the shortest process that the host city passes through, the IOC and the host city give main importance on this phase. The IOC as the main stakeholder focuses on a successful event in order to maintain the prestige of the Games. The host city aims at displaying “beautified” images of the city to international audiences by making the Games happen with the best conditions. It would be true to state that most of the efforts on the phase of facility planning are given to carry a successful event rather than sustainability of facilities in the post event phase by considering the ambitions of the IOC and the host city.

¹⁶ Technical Manuals, Olympic Reviews and the periodical publications of the IOC can be accessed via <http://www.olympic.org/documents-reports-studies-publications>. The digital archive of the Official Olympic Reports in the Amateur Athletic Foundation of Los Angeles can be accessed via <http://www.la84.org/sports-library-digital-collection>.

¹⁷ From the seminar of Jerome Frost on “Designing the London Olympic Park” at the Social Sciences Graduate School of Kadir Has University, in April 2013.

Post-event Phase is an open-ended process for the host cities. When the Olympic Games leave the city, physical impact of the Games stays in the city as its legacy. Sustainability of the positive legacy is a critical issue for the host cities. In the recent cases, such as Athens 2004 and Beijing 2008, building stock that remained idle in the post-event phase became a serious problem for the Olympic Cities. Consideration of the post-event situation in the early stages of the planning phase; as in the case of London 2012, provides a structured basis to sustain the building stock and urban regeneration.

2.2. Defining Breaking Points throughout the Olympic History

Olympic Games have taken the final form of a mega-event - as we know today - by passing through several transformations in which important milestones and breaking points are to be defined regarding the problem of sustainability and adaptation of Olympic structures. The Ancient Olympic Games, which took place in Olympia from the 8th century BC to the 4th century AD, were a series of sports competitions for the athletes from the city-states of ancient Greece.¹⁸ There were several trials to revive the Olympic Games in the 19th century Europe, yet they were not successful to continue the Games regularly.¹⁹ Another attempt to revive the Olympic Games, which turned into the world's biggest event, was done with the foundation of the International Olympic Committee [IOC] in 1894.

The first Modern Olympic Games, which were held in Athens in 1896, were celebrated with a very **modest start**. Three new facilities, namely Athens Lawn Tennis Club, Neo Phaliron Veleddrome, and Zappeion, were built and the ancient Panathinaiko Stadium was restored in order to provide adequate conditions for the Games. Physical contribution of the Olympic Games on Athens was in small scale. The following three Games, which were the Paris 1900, the St. Louis 1904

¹⁸ 'The Olympic Games in Antiquity', *Factsheet*, The International Olympic Committee, 2012, p.1. Retrieved June 22, 2014, from: http://www.olympic.org/Documents/Reference_documents/Factsheets/The_Olympic_Games_of_the_Antiquity.pdf

¹⁹ John R. Gold & Margaret M. Gold, 'From A to B: The Summer Olympics, 1896-2008', *Olympic Cities: City Agendas, Planning, and the World's Games, 1896-2016*, J. R. Gold & M. M. Gold (ed.), Routledge, 2011, pp. 21-24.

and the London 1908, were organized as **sideshows of the World Fairs and Exhibitions**, which were more powerful organizations at that time. Spatial organizations of these Games were dependent on the program of the World Fairs and exhibitions. There were no new spatial interventions until the White City Stadium that was built for the London 1908.

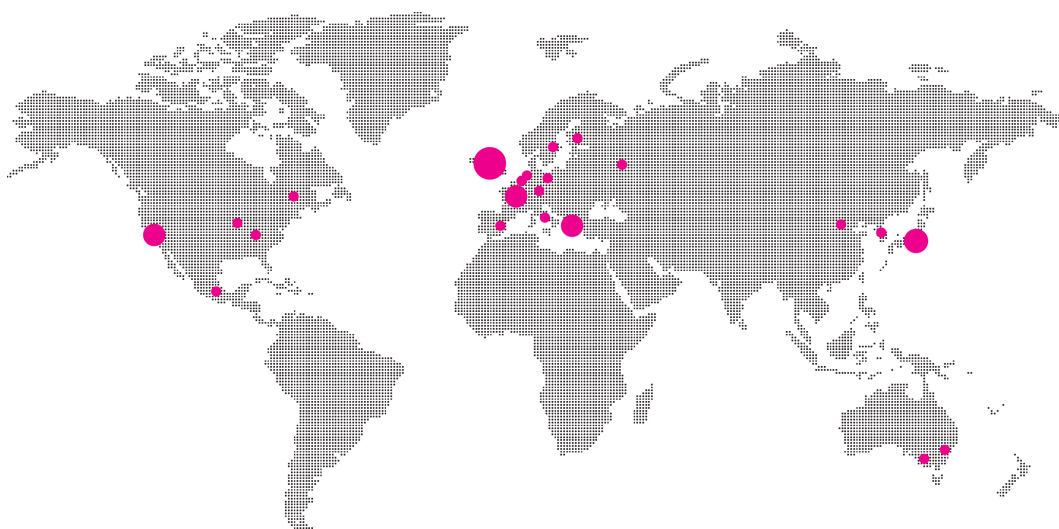


Figure 2.4 The distribution of the cities that hosted the Olympic Games since 1896. Source: Produced by the Author.

After the Athens 1896, the Games were organized as an independent event again in the Stockholm 1912. The Games gained its autonomy and the IOC has started to put more impact on the Games especially on the spatial organization. Since, there was **limited provision of new facilities** due to economic difficulties after the World War I, the facilities including the White City Stadium, were loaded with multiple Sports events.²⁰ The IOC criticized the **loaded program of facilities** not providing adequate conditions for separate sports competitions.²¹

²⁰ The White City Stadium hosted several competition events for 13 different sports including archery, athletics, cycling, diving, field hockey, football, gymnastics, lacrosse, rugby, swimming, tug of war, water polo, and wrestling. See the Appendix C for the full list of the facilities and their properties.

²¹ Brian Chalkley & Stephen Essex, 'Urban development through hosting international events: a history of the Olympic Games', *Planning Perspectives*, 1999, vol.14:4, pp. 375.

Specific facilities for separate sports were built in accordance with the critics of the IOC; consequently, the number of facilities was increased. In the Amsterdam 1928, facilities were gathered in clusters in order to define spatial relationships among multiple facilities. The IOC promotes the idea of **spatial clustering** as well, when the urban impact of the Games expands in the mid 20th century. The scale of the Olympic Games was gradually increased with the inclusion of different functions in the program of the Olympic Games, such as accommodation and media. The first Olympic Village was built in the form of prefabricated temporary barracks with serving facilities, such as post office, library and cafeteria, in the Los Angeles 1932.

The architecture of the Berlin 1936 –with impressive stadium, facilities and Olympic Village- became a propaganda tool for Hitler’s Third Reich. The Olympic Games turned into a **show stage** and were partially broadcasted for the first time on television. The number of the new facilities and their scale and capacities were obviously increased. Berlin 1936 held the new record with 11 new permanent facilities until the Tokyo 1964. Following two Olympic Games were canceled due to the World War II.

London, in 1948 and following two host cities used the Games to promote the reconstruction of the cities after the World War II. The program of the Games was manipulated for the benefits of the cities considering their poor conditions. Instead of new facilities, **permanent Olympic Villages** were constructed in order to meet the need of housing.

The increased scale of the Olympics was firmed up with the Games in Rome in 1960. The complex program of the Games was established with **large scale urban planning** in the form of two main venue clusters, namely Foro Italico and Foro Romano, and also infrastructures combining these venue clusters. Besides venue clusters and infrastructure improvements, another spatial contribution of the Rome 1960 was **use of temporary structures**. Temporary structures have been a common approach to solve increased demand of seating capacity and facilities after the 1960 Games. Tokyo as the host of 1964 Games followed Rome

to realize large-scale urban improvements considering long-term impacts of the Games. Tokyo put the Olympic planning into its ten-year development plan in order to provide the necessary improvements for the locals.

The raise of the Olympic Games was under shadowed with the attack to the Olympic village in Munich Games, 1972. Although, the Organization Committee claimed that all the necessary precautions were taken²², **security of the Olympic Games** raised as an important issue for the following Games.

In 1992, Barcelona extended the role of the Olympic Games as **a catalyst for rapid urban generation**. Barcelona came up with a master plan for the realization of the big projects. Transformation of Olympic facilities and zones into a sport complex was a common practice before the Olympic Games in Barcelona, where the local facilities were integrated with the Olympic zones so as to create **a mix use development**. The successful urban transformation of Barcelona attracted attention of other cities to be host for the Games.

Unlike Barcelona, Atlanta can be evaluated as an unsuccessful host for the Games. Although Atlanta was one of the largest Games considering the capacity, spectator and facility numbers, weakness in transportation and security resulted in serious problems during the event. Spatial organization in the Atlanta 1996 was realized by bringing the most of the Olympic venues and the Olympic village together in the form of **a concentrated zone** in the city center. Eva Kassens-Noor reports the weakness of Atlanta's transportation as that although transportation network among the venues in the city center was heavily relying on public transport and pedestrian movements, heavy congestion in the inner city due to Atlanta's large share of private transport resulted in serious **transportation problems** during the Games.²³ The problems that the IOC faced during the Games have forced it to take necessary precautions and to give more importance to the transportation plans of the candidate cities.

²² *The Official Report of the Organizing Committee for the Games of the XXth Olympiad Munich 1972*, ProSport GmbH & Co. KG. München Ed. Herbert Kunze, Vol.1, pp. 340-348.

²³ Eva Kassens-Noor, *Planning Olympic Legacies: Transport Dreams and Urban Realities*, Routledge, London, 2012, p.44.

While dealing with the transportation problem, Atlanta was shocked with the Centennial Olympic Park bombing. Security of the Olympic Games started to be questioned for the second time in its history. Moreover, after the September 11 terrorist attack in 2001, security became one of the biggest issues for not only nations but also mega-events. Just one year before the 9/11 attacks, Sydney hosted the Games; regarding the security of the Games, it was considered as an advantageous location because of its isolated positioning, particularly in geographical, political and historical sense, from the World's major trouble spots.²⁴ After the 9/11 attacks, the Games were organized in Athens and Greece reserved the biggest portion of its budget for the security of the Games [Figure 2.6].²⁵ **The problems of transportation and security** that the Olympic Games suffered from during the Games caused the IOC to intervene more to the spatial organization and planning process of the Games.

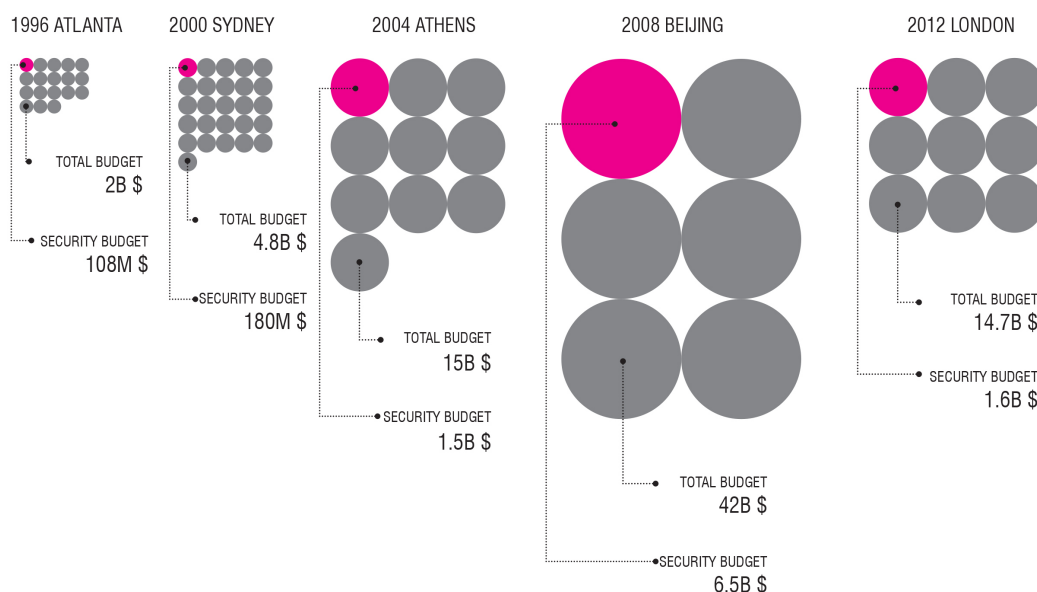


Figure 2.5 Security expenses are compared to the overall expenses of the Olympic Games between 1996 and 2012. Source: Produced by the Author based on the numbers in <http://www.cbc.ca/news/canada/winner-s-curse-the-economics-of-hosting-the-olympic-games-1.1186962> [Accesses on June 22, 2014].

²⁴ *Official Report of the XXVII Olympiad Sydney 2000*, Sydney Organising Committee for the Olympic Games, 2001, v.1, p.191.

²⁵ Jon Coaffee & Peter Fussey, 'Olympic Security', *Olympic Cities: City Agendas, Planning, and the World's Games, 1896-2016*, J. R. Gold & M. M. Gold (ed.), Routledge, 2011, p.170.

It is evident that the host cities started to state their **'narration'** explicitly in line with their agenda. Environmental issues have been the shared ground of all the Games after 2000; Sydney put most of its effort on staging the Games in an environmentally sensitive manner. The narration of this particular Game was aimed to be in consistent with "Environmental Guidelines"²⁶ in any proposed development for the Olympic Games. Besides ecological approaches, **sustainability of the Olympic structures** in the post event period has included in the Olympic documents in 2003.²⁷ On the other hand, Beijing constructed its narration around being a global actor. Beijing took the Games into a different scale with large-scale developments and impressive facilities, such as National Stadium [Bird Nest] and National Aquatics Center [Water Cube], to show its power to the international audiences.

The increase in the scale of the Games has also expanded the scale and scope of possible urban developments offered by the Games. As the scale of urban development is increasing, the sustainability appears to be more significant problem in the post-period. While the scale and scope of the urban development comes as a result of the enormous scale of the Games, host cities bring their **individual approaches to urban planning process**. Sydney's approach was to organize the majority of the facilities in a concentrated zone where similar uses and operational bodies were compartmentalized with their associated operational bodies. Hiromasa Shirai points out that the compartmentalization of facilities brought about the problem of the sustainability of the Olympic zone, since it reduced the potential interactions between different activities, and left the facilities and the areas around them empty in the post-event period.²⁸ Sydney has been dealing with the promising master plans to sustain the urban development in the Olympic zone. Unlike Sydney, Athens and Beijing have already crushed under

²⁶ 'Environmental Guidelines' of the Sydney 2000 Games are listed in the *Official Report of the XXVII Olympiad Sydney 2000*, Sydney Organising Committee for the Olympic Games, 2001, v.1, p. 39.

²⁷ Hiromasa Shirai, *From Global Field to Local Neighbourhood: Sustainable Transformation of the Olympic Park for the City*, unpublished master thesis in London School of Economics and Political Science, 2009, p.10.

²⁸ *Ibid.*, p.1.

the heavy burden of sustaining the Olympic structures when the Games were over. After witnessing the bad experiences of previous host cities on sustainability of the Olympic structures, London began its Olympic processes with simultaneously conducting two promising master plans; one for the Games and the other for the post-Games. Even though London's planning approach becomes prominent with its narration that puts forth sustainability of the structures in long-term, it is too early to evaluate the results.

2.3. Emergence of the Problem

The transformation of Olympic zones from international competition fields for the Games into a place satisfying the local needs has been a critical issue for the IOC as much as the host city. After the Games are over, host cities get into transformation processes, which are underestimated during the planning phase of the Games by the IOC and host cities. They focus on mainly the success of the event phase due to the very pragmatic reasons; while the IOC wants to maintain its prestige, host cities want to display their best to international audiences. Kassens-Noor states:

“Even though all case cities are intrinsically different with unique histories, political institutions, urban forms and transport networks, they approached the Olympic planning process with the same goal: to stage successful Games.”²⁹

In addition to what Kassens-Noor points out about the fact that despite the contextual differences among the host cities, their goals are same, how these cities try to achieve their aims is very much the same and strictly controlled by the IOC. Requirements of the IOC on capacity and number of facilities, spatial organization, security, transportation and etc. lead the cities to follow similar paths to host the Games. These requirements demanded by the IOC will be referred in this thesis as **‘internal forces’** of the Games, which act upon the planning of the Olympic processes of host cities. When the Games are over, the built legacies are left behind to the city and its inhabitants. Therefore, internal

²⁹ Eva Kassens-Noor, *Planning Olympic Legacies: Transport Dreams and Urban Realities*, Routledge, London, 2012, p.7.

forces of the Games should work in cooperation with the political, social, geographical and historical context in which the host cities take place, in order to generate a successful transformation from the event phase to post-event phase. In this thesis, political, social, geographical and historical context of the host cities are evaluated as '**external forces**'. The developments and significant changing points throughout the Olympic history brought the internal forces of the Games into a very dominant position that they hardly let the penetration of external forces into the planning phase. Ambiguous relation between the internal forces of the Games and the external forces has an important role in the emergence of the problem.

Starting from the first modern Olympic Games, demands of the IOC has established the internal forces of the Games. Although, in the beginning of the 20th century the Games were influenced too much from the external forces and turned into a sideshow of bigger organizations, the Games gained its autonomy with the 1912 Stockholm Games. Since internal forces of the Games were on the stage to be established and host cities were struggling to survive after the World War I, external forces were much more influential on the planning process of the Games.

Starting from the mid of the 20th century, there have been changes in scale and scope of the Games in respect to the increase in the influences of the internal forces on organizations and host cities. Functions of facilities got specialized for individual sports. In order to facilitate each sport in adequate conditions, the number of facilities built for specific sports was increased. Then, placement of facilities in the city turned into an urban planning issue. Cities like Rome, Tokyo and Barcelona used the internal forces of the Games in cooperation with the external forces to create a positive legacy of the Olympics.

As a result of the irrepressible increase in the scale and significance of the Olympic Games in 2000s, the internal forces got magnified to overbalance external forces as well. Meeting the requirements of the Games becomes the primary concern of host cities. In order to achieve effective operations regarding

event management, transportation and security, the IOC has promoted a ‘compact spatial model’³⁰ for Olympic facilities, which results in highly specialized and controlled spatial organizations of the Olympic zones. Especially the Olympic Parks as the main zones where the Olympic stadiums and main sports facilities are gathered suffer from disintegration with the surrounding environment in macro scale. Moreover, transformation of facilities from highly specialized structures into places meeting more local needs becomes a critical issue in micro scale as well.

In conclusion, the emergence of the integration and re-adaptation problem of the Olympic structures is investigated throughout the organization structure and historical overview of the Games. The historical overview shows that this problem has emerged in micro scales and gradually evolved in macro scale throughout the Olympic Games history. Therefore the cause of the problem occurs not only in urban scale but in architectural scale as well. In the next chapter, the problem will be redefined regarding the architectural program of the Olympic Games.

³⁰ ‘Requirements’, *Olympic Cities: The Netherlands as Game Changer*, ed. by XML architects, published by the government of the Netherlands, 2012, p.104.

CHAPTER 3

RECONSIDERATION OF THE PROBLEM IN THE LIGHT OF THE ARCHITECTURAL PROGRAM

In the previous chapter, the integration and re-adaptation problem of the Olympic structures at the post-event period was investigated in its historical context. Emergence of the problem was traced through the organization structure and historical overview of the Olympic Games. The analysis of the organization structure has revealed the internal forces acting behind the problem that are the administrative components of the IOC and their obligatory requirements concerning the spatial organization of facilities and events. This thesis has also put emphasis on the external forces that are mainly defined by the social, political, economic and historical issues pertaining to the host city. The historical overview of the Games has shown the significant breaking points that brought changes in the process of the organization. This overview presented how the integration and re-adaptation problem has evolved regarding these internal and external forces. It is claimed that the long lasting problem of the host cities has been caused by imbalanced relationship between the internal and external forces of the Games acting upon the design process of the structures in macro and micro scales.

Throughout this chapter, the integration and re-adaptation problem will be reconsidered by regarding the architectural program as the main focus. How this thesis approaches to architectural program specifically for the Olympic Games will be clarified as an amalgamation of the internal and external forces, acting both in the micro and macro scales. The conditions of ‘determinate’ program for short-term use and ‘indeterminate’ program for long-term use will be discussed in order to better redefine the integration and re-adaptation problem.

3.1. Reconsideration of the Problem

From the beginning of the 21st century the impact of the Games on the host cities has increased in scale and the problems that the Games left behind in the host cities became more and more visible. Sustainability of vast amount of built stock spread out in different parts of the city turns into a problem at the post-event period. Since the Games have a wider impact, sustainability problem of structures arises more visibly in the urban scale as well. The requirements of the Games -the impact of the internal forces- lead the design process to produce highly specialized structures. Sustaining the highly specialized function of the buildings at the post-event phase raises the problem of re-adaptation of the facility for local use and integration of the facility with the surrounding. Firstly, the problem emerges in the scale of a single facility. Then, the same problem broadens gradually in scale that is to say that, it is observed in the relation between facility and facility, and then between facilities and Olympic zones, and finally between Olympic zones and host cities. Therefore, since the problem perceived in a wide range of scales –from micro to macro- it becomes an architectural issue as well as an urban issue.

What I would like to emphasize here is that urban legacy planning is essential to draw the way for the development of the Olympic zones within the city, despite of the fact that it is not enough by itself to re-adapt the structures to their further possible uses and to integrate the Olympic structures in the surrounding environment. A certain level of determinacy and permanency of the structures, which is gained during the design phase, creates the main challenge for the integration and re-adaptation of structures to the city. What defines the level of determinacy and permanency of structures is the architectural program of the Olympic Games.

Architectural program as “the most underestimated and less articulated term”³¹ should be defined within the context of this research in order to crystalize the statement of the thesis.

“In his [Summerson’s] term, a program “is the description of the spatial dimensions, spatial relationships, and other physical conditions required for the convenient performance of specific functions,” all of which involve a “process in time” a rhythmically repetitive pattern that sanctions different relationships than those sanctified by the static, classical tradition.”³²

As Anthony Vidler cites from Summerson, architectural program is not about the static being of buildings, yet it is about how buildings perform. Architectural program as a specific yet flexible and changeable tool operating in the design phase of buildings has a potential of generating relationships and interactions between various activities, which defines the performance of the building. Architectural program can be defined as the amalgamation of forces acting upon buildings starting from early design processes to life-long performance. If we translate this definition into the case of the Olympic Games, they are the internal and external forces that compose the architectural program of the Games.

The internal forces that get involve in architectural program of the Olympic structures consist of various factors, mainly codes and standards inherited from sports branches, and requirements brought by the IOC. Firstly, inherited codes and standards in the architectural program of the Games have a great influence on the overall form and spatial organization of the venues. Each sport branches has specific codes and standards to perform competitions. Although the codes have been changed in parallel to the evolvments in the sports technologies and competition rules, they are still the main factors that regulate the spatial

³¹ In her dissertation, Bahar Beşlioğlu explains architectural program as that “Although several terms, such as ‘function’, ‘use’, ‘occupation’, ‘activity’, and ‘event’ fulfil some aspects, none of them suggest an exact definition of the term ‘program’ in architecture. Neither does the introduction of [...] the terms ‘temporary activities’, ‘spontaneity’, ‘coincidence’, ‘hybridization’, and ‘interface spaces’, which consider the emergence of ‘temporality’ as a more considerable variable in contemporary architecture, provides an adequate definition for the term.” Bahar Beşlioğlu, *The “Programmatic Experimentation” In The Work Of Gordon Matta-Clark*, unpublished PhD dissertation in METU, 2008.

³² Vidler quotes from Summerson in his article: ‘Towards a Theory of the Architectural Program’, *October*, The MIT Press, Fall 2003, p.63.

organization of venues. For example, the running track had a linear form in the center of the Panathenaic Stadium in Athens where the athletics competitions were held during the ancient Olympic Games and the first modern Olympic Games in 1896. The improvements in the sports technologies and competition rules in athletics transformed the running track from a linear form into continuous elliptical loop yet still in the center of venues. These kind of changes in the code of the sport facilities affect the whole form of the structures.

The very specific user groups of sports venues; such as athletes, officials, organizers and spectators, creates a hierarchical structure in the spatial organizations. Peter Kulka and Ulrich Königs tell how this hierarchical structure and inherited codes influence the spatial organization of stadium architecture as follows:

“Another major discourse projected onto the stadium is that of social control. Hardly any other building typology [...] governs the behavioral conditioning of masses. It is a well-cast play: actor on the one side, observer on the other. The hierarchy of the event determines the hierarchical organization of the architecture: the athletic ground as center with the stands as its dependent periphery. As a consequence, the architecture is nothing but an extrusion of the sports ground's geometry, which rules over the totality of space.”³³

Therefore, the inherited codes of sports, which define a significant part of the architectural program of the Olympic Games, form very specialized structures. What differentiates Olympic venues from any other regular sports venues is the contribution of the architectural program of the Olympic Games. It has been mostly formed by the requirements of the IOC aiming at staging the Games successfully. The requirements of the IOC cover the regulations on a wide range of areas, such as communication, transportation, security, accommodation, Olympic village, and design standards for competition venues.³⁴ The IOC prepares several ‘Technical Manuals’ in order to “provide a functional tool to be used as a resource basis throughout the planning and development process for all

³³ Peter Kulka and Ulrich Königs, “Chemnitz Athletic Stadium”, *Assemblage*, The MIT Press, Vol: 33, 1997, p.38.

³⁴ There are technical manuals on 21 particular topics that governs the overall organization of the Games. The technical manuals can be accessed on <http://www.gamesmonitor.org.uk/node/935>.

Olympic Sport Venues.”³⁵ These ‘Technical Manuals’, which are attached to the host city contract, involve the information on ‘detailed technical obligations’, ‘planning information’, ‘procedures and processes’, and ‘proven practices’.³⁶

The control mechanism of the Games strictly works starting from the early design and planning phases. Decision-making mechanism during these phases works in cooperation between the IOC, sponsors, IF’s, OCOG, venue operator/owner, government and other Olympic components. The IOC generally leaves the final decisions on all the design and planning issues to the OCOG, yet the final decisions on legacy functions to be carried out in the venues are taken by the venue operator/owner.³⁷ Although the Olympic processes seem to be conducted by the decisions of the OCOGs, the standards and regulations, which are put forth by the inherited codes of sports and the IOC, are the main tools to control the Olympic processes.

The architectural program of the Games during the design and planning phases of the Olympic structures is overloaded with codes and regulations, which are conducted by the interaction of all the internal and external forces. This overloaded program determines the overall design and construction of the structures. In the post-event phase, legacy functions of the structures are obliged to fit into the conditions of already built structures. While, highly specialized and pre-determined structures work agreeably in compliance with the architectural program of the Games in the event phase, the inherited Olympic specifications, remained after the event, cause a conflict between the structure and architectural program in the post-event phase.

There is a dilemma between the ‘pre-determined’ architectural program of the Olympic Games for the short-term use and ‘undetermined’ program for the long-term use. The structures for the Olympic Games are constructed mainly to be used for short-term use; what is noticeable here is the fact that the ‘temporary’ use of

³⁵ Technical Manual on Venues - Design Standards for Competition Venues, The International Olympic Committee, 2005, p.19.

³⁶ Ibid., p.12.

³⁷ Ibid., pp.96-97.

the structures attains a certain ‘determinacy’ due to the highly specialized requirements of the Games. Then ‘determined’ Olympic program also forms the structures with a certain level of ‘permanency’. The permanent form and location of the structures allow limited changes within the structure and limited forms of relations between the structures and the site. However, after the Olympic Games, the ‘permanent’ architectural program of the pre-determined structure is no more as static as it is during the Games and it remains ‘indeterminate’ for the post-Olympic use [Figure 3.1]. The overall processes that contain the transition from the pre-determined program for the event phase to the indetermined program for the post event phase are not well defined. Consequently, the ambiguity in the process results in conflict between the determined and indetermined program.

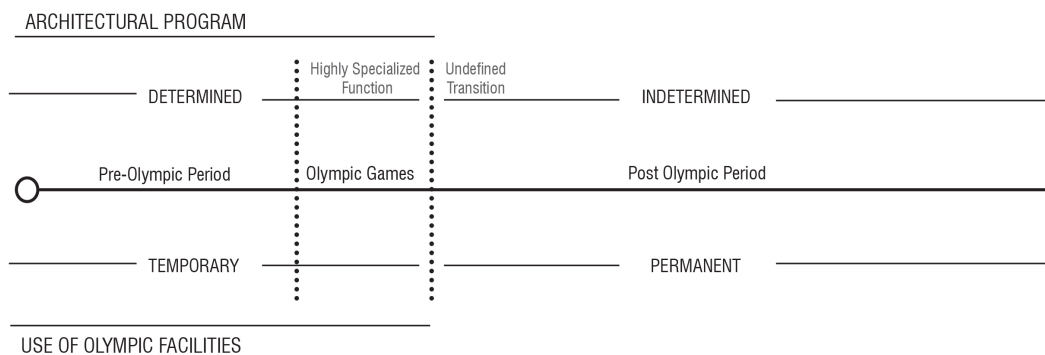


Figure 3.1 Diagram that reveals the relation between the determined and indetermined architectural program. Source: Produced by the Author.

3.2. Definition of the Architectural Program of the Olympic Games

The architectural program of the Olympic Games is evolved as the amalgamation of the ‘**internal**’ and the ‘**external forces**’. It is inevitable to have changes in scope of these forces throughout different Olympic processes, such as pre-event, event and post-event. The key change happens when the Games are over. The internal forces of the Games get diminished and the external forces of the Games gain dominancy over the government of the processes. The internal and external forces never lose their presences throughout the whole processes, yet their

dominances over impact areas shift according to power of the control mechanisms like the IOC and the municipalities of the host cities. Even though the IOC has no force over the structures when the Games are over, the determined architectural program of the Games maintains the influences of the internal forces within the highly specialized structures throughout the post-event processes.

The functional and organizational requirements [i.e. internal forces] of the Games are static and determined, yet the context of the host cities [i.e. external forces] that the structures would perform in, is ever changing. Consideration of the external forces in the early design phase of the structures plays a crucial role in the integration and re-adaptation processes of the structures for their post-event performances. Wendel Greene states:

“Program can only be as important as the environment (architecturally, culturally, economically, politically, physically, and socially) that contains it. With this thought in mind, it is extremely important to always consider the possibility for more and future use when designing for the full life expectancy of any structure.”³⁸

The architectural program of the Olympic Games should ideally be evolved from the beginning by considering how the architectural program and also structures adapt themselves into the post-event situations. The external forces should take part in the pre-event phases more influentially to allow ‘flexibility’³⁹ to the structures to facilitate dynamic form of architectural program. However, in the current situation, interactions between the internal and external forces form the structures with a certain level of determinacy which conflicts with the architectural program that changes during the post-event process.

The internal forces form the architectural program of the Games mainly regarding the functions of structures, capacities of venues, security of venues and events, and transportation among venues. Unlike determined and hardly dynamic

³⁸ Wendel Greene, *FLUX: Adaptable Architecture for a Dynamic Society*, unpublished master thesis in MIT, 2004, p.40.

³⁹ Throughout this thesis the term ‘flexibility’ is used to correspond the programmatic capability of structures that encourage the coexistence dynamic activities. A detailed discussion will be made in the chapter V by considering ‘flexibility’ as an issue that provides the transition from the determined to indetermined program.

presence of the internal forces, the external forces of the Games construct itself over and over again according to the host cities' international, national and local contexts. Understanding the scope and results of the interactions between the internal and external forces of the Games necessitates framing these forces.

3.3. Internal forces

Organization of the Olympic Games is a complex process that the IOC and the host cities pass through together. Both authorities conduct their own agenda during the Olympic processes. At the phases of the pre-event and event, the IOC as the main authority on the Games regulates the processes by putting forth layouts and requirements regarding management of the organization, construction of the Olympic structures and operations during the event. These layouts and requirements as the internal forces play active role in the architectural program of the Games. The internal forces involve the issues like '**function**' of structures, building '**capacity**', '**security**' and '**transportation**', which are the main component of the architectural program of the Games. These programmatic issues will be analyzed one by one in order to reveal their impact areas on the integration and re-adaptation problem of the Olympic structures.

3.3.1. Function

The Olympic Games as mega cultural and sports events accommodate various functions, such as sports training and competition, cultural events, media, administration, accommodation, entertainment, and services. These functions necessitate specialized structures to serve during the Games. Especially, after promotion of distributing separate sports branches into multiple venues in the Amsterdam 1942, the number of specialized Olympic venue increased. Since there is a need of high amount of buildings for various functions and different sports necessitates different spatial conditions, Olympic structures are spread out all over the city. Spatial organization of Olympic structures becomes a critical issue considering provision of efficient infrastructure, security and transportation among structures.

Host cities accommodate most of the Olympic functions temporarily. Functions like some sports events, media, administration and accommodation for athletes serve only for the event for a short time period. Host cities decide to facilitate these functions whether in temporary or permanent structures. The IOC promotes temporary solutions unless there is a legacy need.⁴⁰ The temporary structures are removed to be re-used with a similar function in a different location or to be recycled. Unlike temporary structures, permanent ones continue to maintain their physical impacts on cities yet with an indetermined program, in the case of when they start not to accommodate the Olympic functions. Host cities struggle to use the permanent structures efficiently during the post-event period. In some cases they keep permanent structures with the Olympic functions if they are needed; in some other cases host cities transform the function of the structures into a different function as long as the determinacy of the structures allows. However, when the host cities do not produce long-term plans for the future uses of the facilities, they fail to maintain the structures and they turn into idle structures due to the high maintenance cost and lack of interest.

3.3.2. Capacity

The Games have turned into a mega event, which takes place in all over the city and attracts huge masses. Depending upon the developments in the Games, building capacities and spectator capacities have increased. Building capacity has increased in proportion to the number of functions accommodated by the Games. In addition to that, the number of sports facilities that are specialized in specific sports has increased. In the current situation, sports facilities for training and competition reserve the majority of the built stocks for the Olympics. Facility numbers have changed in a wide range starting from 5 venues for the St. Louis 1904 to 43 venues for the Barcelona 1992. The venue numbers are depending on mostly the scale of the Games –sport, event, athlete, and spectator numbers- and facility demand of the host country [Figure 3.2].

⁴⁰ Technical Manual on Venues - Design Standards for Competition Venues, The International Olympic Committee, 2005, p.19.

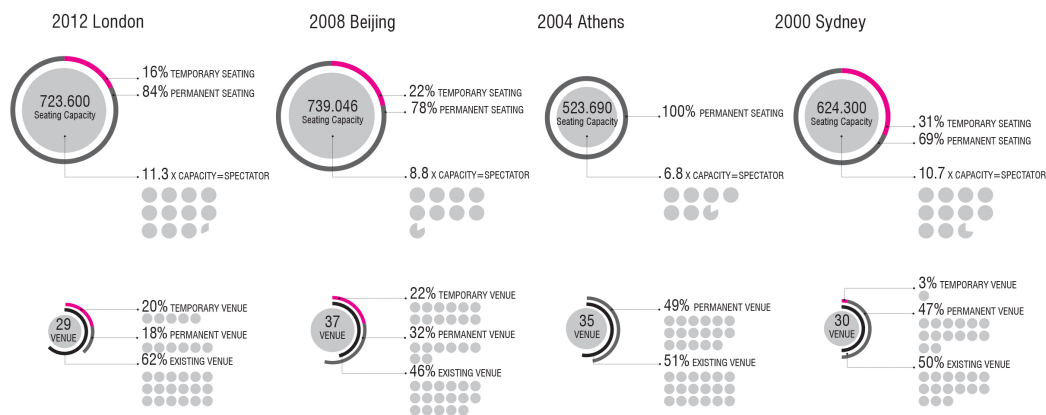


Figure 3.2 Comparison of number of buildings, their capacities and events in the last four Olympic Games [2000-2012]. Source: Produced by the author.

Although the number of spectators that follow the Games at first hand has been dramatically increased in the last two decades, the numbers show fluctuation depending on the attributes of the host cities, regarding its population, its location, and its attractiveness. The seating capacity of the venues has been determined in compliance to demands of the IOC and calculation of expected visitor number. Even though, the IOC specifies the optimum seating capacity for each sport competition in the Technical Manuals⁴¹, the total seating capacity of the Games in the last two decades is much higher than the IOC's expectations.

The increase in the seating capacity affects the spatial organization and expands the scale of the venues. The physical impacts of the extra capacity become a burden on the host cities during the post-event period. The host cities try to solve the problem by maximizing temporary installations over permanent construction to gain space for extra capacity during the event. As in one of the recent examples, London Aquatics Center [2012] was designed with extra seating in the temporary wings that will be removed in the post-event phase and the capacity of the venue will be decreased from 17.500 to 2.500 seats [Figure 3.3].

⁴¹ The IOC determines the total number of optimum seating capacity in the competition venues as 441000 in Technical Manual on Venues - Design Standards for Competition Venues, The International Olympic Committee, 2005, pp.104-107

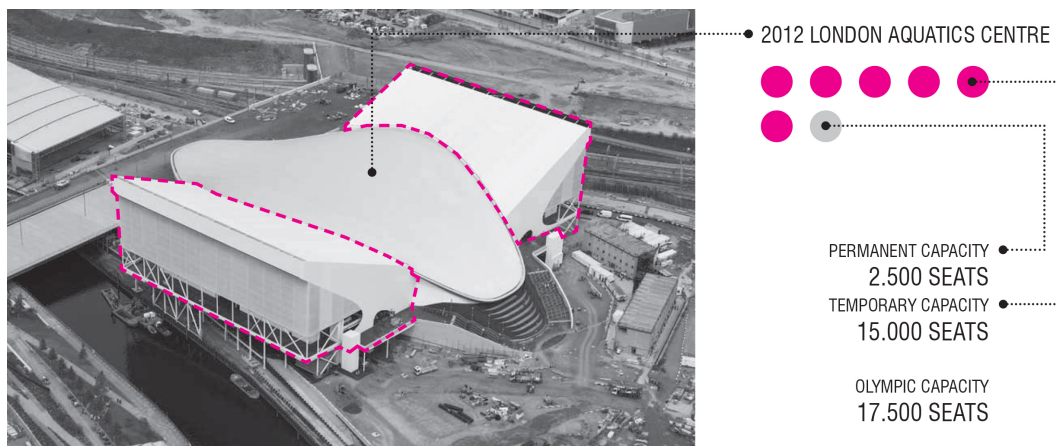


Figure 3.3 Comparison of temporary and permanent capacity of London Aquatics Center. Source: Produced by the author.

3.3.3. Security

The Olympic Games have become high-risk targets for the attacks, which impose burden of security on host cities. Securing the participants and visitors of the Games and protecting Olympics against the attacks are serious concerns for the IOC and the Organizing Committee. Provision of a safe environment for the participants and visitors is a critical issue during the planning processes. It necessitates effective security measures covering the whole sites in micro to macro scales, i.e. starting from the facilities to the whole host city, even the country are taken into security perimeter.

Millions of people visit the Olympic parks during the Games. Security and control of the masses necessitate taking physical and spatial precautions. The IOC suggests a spatial division within every facility – concerning the building together with its site – in order to respond to different user profiles, to establish necessary levels of security and to support the management. In compliance with this idea, the IOC introduces the concepts of “front of house” and “back of house” for each Olympic venue and zone [Figure 3.4].⁴² The front of house component is reserved for the spectators, their activities and the field of play during the competitions.

⁴² Technical Manual on Venues - Design Standards for Competition Venues, The International Olympic Committee, 2005, pp. 41-64.

Back of house component of the facility consists of those areas designed to support the operations. Although this kind of a zoning within the facility is quite reasonable considering the security and management issues, both the front of house component and the back of house component are subjected to a vast expansion in/around facilities especially during the Games. Besides, they occupy large areas, which are redundant in the post-event phase, separation of the front of house and the back of house generates physical boundaries, which obstruct the integration and re-adaptation of facilities and zones into the surrounding environment in the post-event processes.

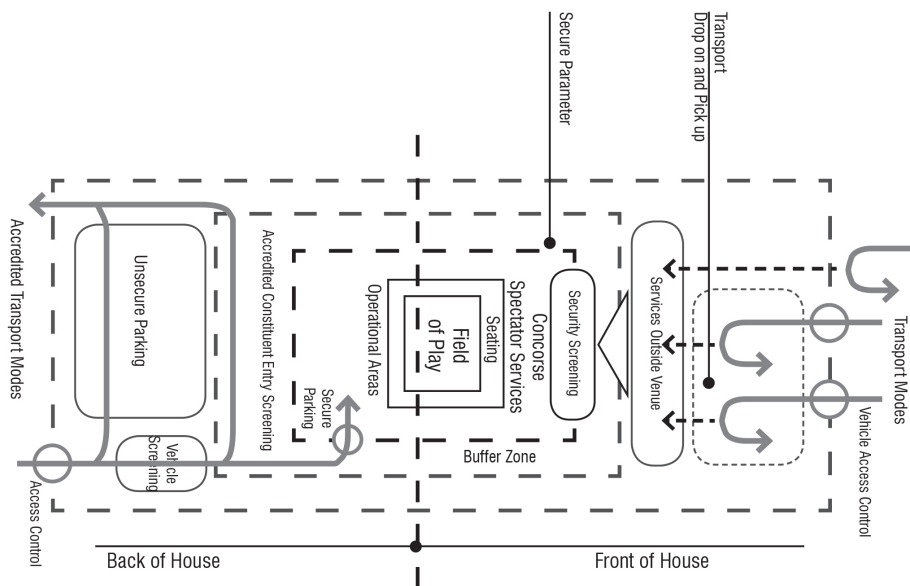


Figure 3.4 Diagram of the front of house component and the back of house component. Source: Technical Manual on Venues - Design Standards for Competition Venues, The International Olympic Committee, 2005, pp. 41-64.

3.3.4. Transportation

Olympic venues and especially Olympic Park receive millions of visitors and thousands of athletes, officials and volunteers during the Games. The population in the Olympic Parks and their surrounding dramatically increases and becomes a heavy burden on the transportation infrastructure of the host cities. Although the

increase in the transportation demand during the Games is temporary, host cities generally put emphasis on transportation network not only to function efficiently during the Games but also to improve the network for the post-event phase for the inhabitants of the city.

Transport systems heavily rely on pedestrian movement and public transportation in order to avoid traffic congestion caused by private transportation. Linking main Olympic venues to high performance transportation networks is a critical issue to minimize traffic congestion and travel time especially for the athletes and Olympic families. The IOC puts forth a spatial organization layout to minimize the burden on the transportation network. In compliance with this layout, the IOC promotes compact spatial organization and location of the Olympic structures within a maximum radius of 50 kilometers or less than sixty minutes travel time from the Olympic Village [Figure 3.5].⁴³

3.4. External Forces

External forces are redefined for each Olympics according to international and national context of the host city. Since the external forces and their magnitudes in the Olympic processes have varied, it is hard to make specific definitions of these forces. This indetermined and fluctuant presence of the external forces enables internal forces, which are pre-determined and strict, to overbalance during the planning phases of the Games. External forces get involved in the processes as much as possible depending upon their magnitude and importance. External forces can be classified as **‘national and local forces’**, **‘international forces’**, **‘media’** and **‘narration’**.

⁴³ ‘Requirements’, Olympic Cities: The Netherlands as game changer, ed. by XML architects, published by the government of the Netherlands, 2012, p. 104.

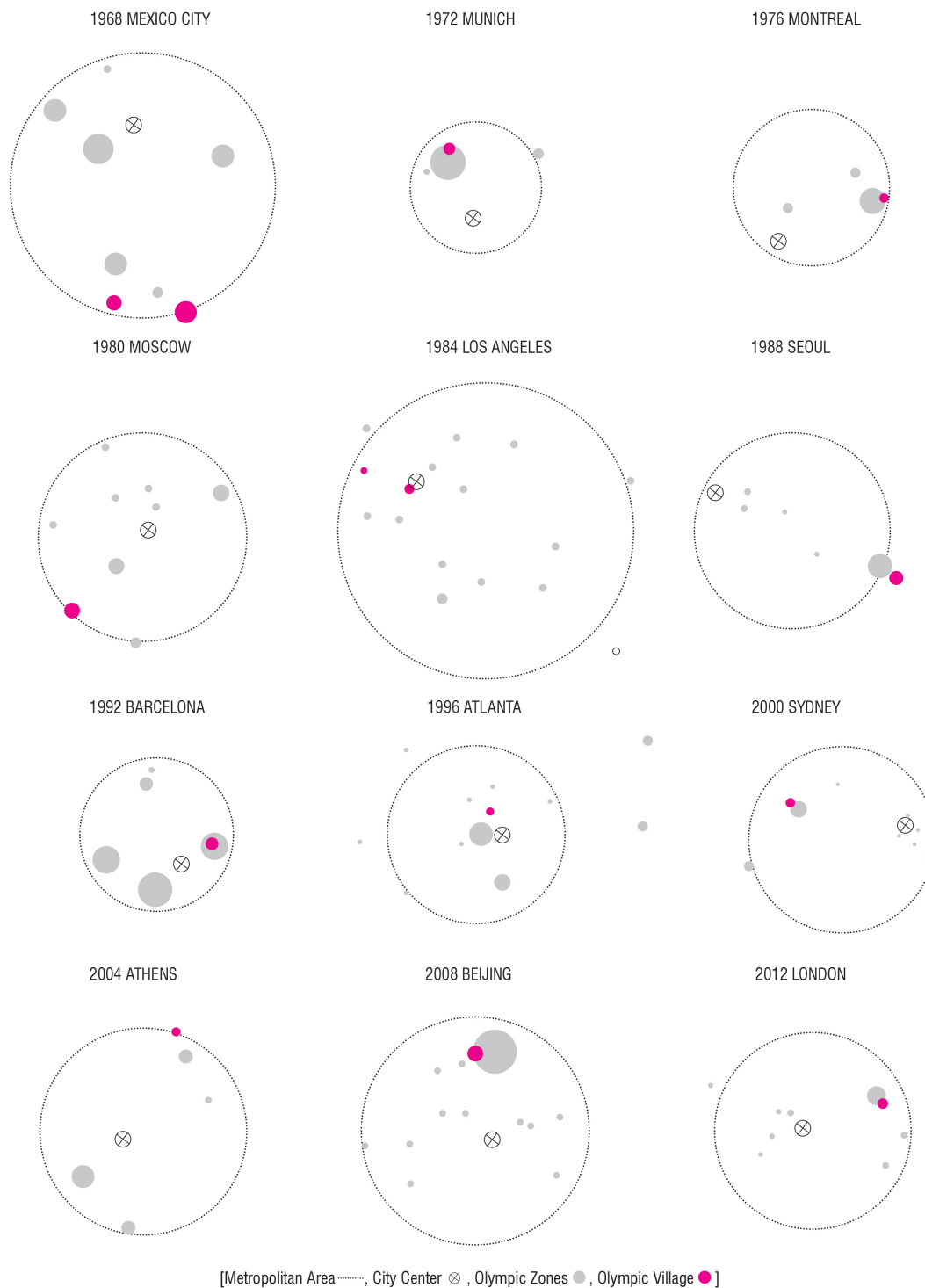


Figure 3.5 Spatial organization of the Olympic structures. Source: Produced by the author based on the maps in George X. Lin, *Design for Reuse: Post Occupancy of Olympic Stadiums*, Unpublished Master Thesis in U.C. Berkeley, 2007, p. 29.

3.4.1. National and Local Forces

Since the Olympic Games require a physical environment –a host city- to be realized, the context of the host cities is very much influential on the organization. National forces are defined with the context of the countries [in which the host city is located] and local forces are defined with the context of the host cities throughout the Olympic processes. Although not the countries but the cities hold the Games, the national forces affect the Games as much as the local forces. The IOC states that the Olympic Games Global Impact [OGGI] project “takes into account the specificities of each Games and related host city context, and covers economic, social and environmental dimensions.”⁴⁴ The local authorities decide on the number of the facilities that will remain as legacy and their legacy functions. Planning of legacies is very much related with the local demands; extra built stock more than the needs of the locals stays as idle structures after the Games.

Although the IOC’s requirements and demands, which are covering the post-event processes, are very open to external interventions, they are very strict and determined for the preparations and event processes. The IOC demands to control the whole processes until the event ends, even if some issues, such as security and transportation, are very much related with the local context. The IOC has internalized these issues, which play key role during the event, by putting forth layouts and requirements regarding the efficient operations during the Games. The local factors that would act upon the facilities on the process of integration and re-adaptation are disregarded for the sake of the event.

3.4.2. International Forces

Since the Olympic Games as international mega events accommodate various international actors, they are very much open to be influenced by the international forces. Especially political narrations of the Olympic Games have always been influential tools to impress global audiences. The Olympic Games witnessed the

⁴⁴ Technical Manual on Communications, The International Olympic Committee, 2005, p. 13.

first and the second World Wars, Nazi propagandas of Hitler in 1936 [Berlin], the terrorist attack by Palestine group demanding the release of Palestinian prisoners in 1972 [Munich], boycott of the USA and the Soviet Union respectively in 1980 [Moscow] and 1984 [Los Angeles], and exaggerated show of China to confirm its position as global player in 2008 [Beijing]. General organization of the Games has been so much influenced by the international forces throughout the Olympic history. As in the case of the 2008 Games, Beijing put most of its effort on the impressive architecture of large-scale structures and urban regeneration projects as well as beautifying the city's image.

3.4.3. Media

Media is a powerful actor, which acts upon international and national forces, and has power even over the IOC to control the Games. Since the media is the main actor presenting the Games to the international audiences and the main income source of the Games, the IOC and the host cities spend most of their efforts to please the media. Prestige maintenance for the IOC and beautified image construction for the host city are the important agendas of the Games, which are carried through via media. The Olympic Games have increased its importance in the international context and its scale has been expanded since the first international broadcasting of the Games. Although media has a direct influence on the importance and scale of the Games, it has an indirect influence on the spatial organization of the Games.

3.4.4. Narration

Each host city establishes its narration around the agendas in respect to what the city wants to achieve and what kind of an image the city wants to display to the rest of the world by hosting the Games. Host cities are very much under the influence of the local, national and international context while constructing their narrations. Narrations particular to each Games gains importance throughout every Olympic process; it is the narration that defines the concept of the Games, and controls how the whole process would be organized. For example, just after

the World War II, the London 1948 so called ‘austerity Games’ did not put any effort on new constructions due to the post-war economic depression, rather London put forth its narration on overcoming the post-war trauma of society. Unlike lack of tangible outcomes, John R. Gold and Margaret M. Gold assert that in terms of intangible outcomes, London successfully hosted the Games with one of the highest attendance figures and the Games affected the British society through sports development.⁴⁵

The following host city, Helsinki also established its narration on reconstruction of the city. Unlike London, Helsinki supported the reconstruction of the city with provision of limited facility constructions that the society needed. The first time in the Olympic history, Olympic village was constructed permanently and converted into public housing after the Games. Permanent Olympic village construction, which is put forward by the narration of Helsinki, turned into a model for the following Games [Figure 3.6].

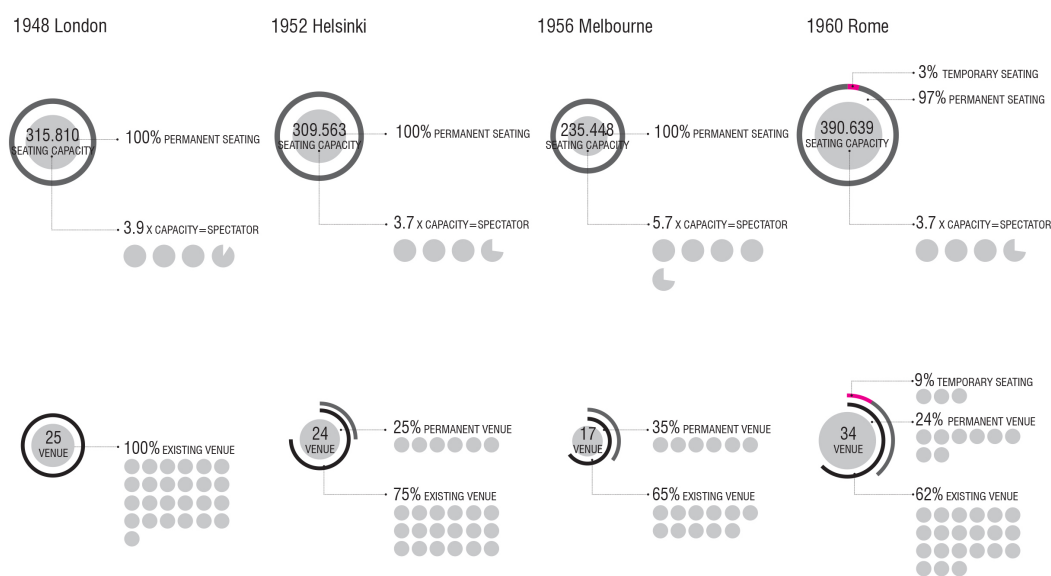


Figure 3.6 Comparison of number of buildings, their capacities and events in the four Olympic Games just after the World War II. Narrations influenced the physical legacy of the Games regarding especially the number of permanent building capacity. Source: Produced by the author.

⁴⁵ John R. Gold & Margaret M. Gold, ‘From A to B: The Summer Olympics, 1896-2008’, *Olympic Cities: City Agendas, Planning, and the World’s Games, 1896-2016*, J. R. Gold & M. M. Gold (ed.), Routledge, 2011, p. 35.

With regard to increase in the scale and significance of the Olympic Games, host cities have made their narrations focus of their Olympic campaigns. The narrations of the host cities have turned into an important aspect that guides the spatial planning process of the Games. The impact of the Games on host cities regarding its 'narration', urban planning and sustainability of spatial developments has been increased. As in the case of London 2012 Games, whose narration was established on sustainability of the Olympic structures and positive legacy of the Games.

3.5. The Interaction Between the Internal and External Forces of the Games

In conclusion, provision of adequate physical conditions for the Olympic Games ensures efficient operations during the event. The architectural program of the Games governs the whole procedure and the way that the Olympic structures and spatial organization are formed. The pre-determined and strictly controlled architectural program gives certain level of determinacy to the Olympic structures whose architectural program after the Games remain indetermined and dependent to already built physical conditions of the structures. Especially the internal forces, such as function, capacity, security and transportation, play a significative role for the Games during the planning and design processes. The external forces, such as national and local forces, international forces and media, get involved in the planning and design processes as long as the internal forces allow the external interventions to the processes. Even as in the case of the security and transportation issues, which should be specific to the host cities, are internalized and controlled by the IOC.

The architectural program of the Games leads design of the Olympic structures and the spatial organization, whose sustainability suffers from the integration and re-adaptation issues in the post-event phase. The issues behind these problems are raised in the design processes as 'scale', 'boundary', and 'field'. The following chapter will focus on these issues and they will be identified and investigated in relation with the problem. The comparative analysis among the past Olympic Games will be the main tool of this investigation.

CHAPTER 4

DESIGN ISSUES EMERGED FROM THE INTERACTION OF THE FORCES

Up to this point, the architectural program of the Olympic Games has been defined as the amalgamation of the internal and external forces that act upon the planning and design processes of the Games. The programmatic issues that give way to the integration and re-adaptation problem of the Olympic structures in the post-event phase have been addressed. The role of the architectural program in the design phase of the Olympic structures becomes prominent with regard to the processes of development, transformation, and deformation that the host cities have undergone. The programmatic issues focus on the dilemma between the ‘determined’ architectural program of the Olympic Games for the short-term use during the events and ‘indetermined’ architectural program of the structures for the post-Olympic use. It is discussed that the dilemma between ‘determined’ yet “temporary” architectural program and ‘undetermined’ yet “permanent” architectural program results in conflict throughout the processes that the host cities pass through. Especially when the critical results of the Olympic Games in the long-term, which emerged from the re-utilization of Olympic structures, are analyzed, the consideration of architectural programming as a design phase in the early stages of the design process becomes crucial.

The internal and external forces have an impact on different components of the Games. The internal forces get involved effectively in the decision mechanism regarding the planning of the components, which play a crucial role during the operation of the Games. Functions of the structures and their spatio-functional schema, building capacities, security and transportation of masses during the Games gain importance as programmatic ‘internal forces’ during the planning and

design processes. The ‘external forces’ situate the Games in the host cities’ local, national and international context. External forces redefine over and over again physical, political, economic, social and cultural environment of the Games, according to the characteristics of the each host city. Neither internal nor external forces of the Games dissolve in the architectural program and they continue to affect the structures throughout their life span.



Figure 4.1 Design issues emerged from the interaction of the internal and external forces. Source: Produced by the author.

External forces are in the state of flux throughout the performances of the Olympic structures after the Games. The fluctuation in the external forces and diminishment in the internal forces impose changes in the initial programs of the structures assigned by the Games. Performances of the structures depend on their capabilities of both adaptation to the future programs and integration to the surrounding context. Ever-changing and unpredictable nature of the external forces becomes a challenge in line with the adaptation and integration capabilities of the structures, which are formed with a very determined program according to the specificities of the sport events.

Staging the Games has always been the focus of the International Olympic Committee [IOC] and the host cities. Starting from the early preparation phase, plans and constructions, which are shaped in accordance with the architectural program of the Games, aim at effective operation of the events; therefore the internal forces become the main dominator of the design and planning processes. The structures, which are designed in a certain determinacy without taking the post-event phase into consideration, face the problems of integration and re-

adaptation into the local context in the post-event phase. This thesis argues that the interaction between the internal and external forces generates the design issues, namely **scale**, **boundary** and **field**, which give way to these problems. Emergence of scale, boundary and field issues will be investigated in relation to the architectural program of the Games. These issues will be analyzed in a range of the micro and macro scales of contact, composed of ‘small’, ‘medium’, ‘large’ and ‘extra large’ scales as introduced by Koolhaas and Mau.⁴⁶ Throughout this chapter, ‘small’ scale focuses on single facilities and their internal organizations. ‘Medium’ corresponds to a scale in which relations between facilities will be explored. By the expansion in the focus area, ‘large’ scale covers the Olympic zones and ‘extra large’ scale covers the host cities. The analysis of the scale, boundary and field issues will define their role in the integration and re-adaptation problem of the Olympic structures in the post-event phase.

4.1. Scale

The numbers in the London 2012 clearly show the current vast scale of the Games. The Games were broadcasted to 4.8 billion potential global audiences. 10568 Athletes from 26 different sports competed in 29 Olympic venues through 302 events.⁴⁷ London Olympic Park, which accommodates 8 venues, Olympic village, and media center, is settled in 226 hectares.⁴⁸ 7.4 million people visited the competition venues and 2.5 million people visited the Olympic park during the Games.⁴⁹ These numbers mainly represent the ‘frontstage’ components of the Olympic Games, which are visible to the audiences during 16 days. These components require services like construction, maintenance, media, security, and transportation not only during the Games but before and after the Games as well.

⁴⁶ Rem Koolhaas and Bruce Mau. *S,M,L,XL*, New York: The Monacelli Press, 1998.

⁴⁷ ‘London 2012 Facts & Figures’, *Factsheet*, The IOC, 2012, pp. 1-8. Retrieved June 22, 2014, from:
http://www.olympic.org/Documents/Reference_documents_Factsheets/London_2012_Facts_and_Figures-eng.pdf

⁴⁸ ‘London 2012 Legacy Plans Unveiled’, 2012. Retrieved June 22, 2014, from:
<http://www.dezeen.com/2012/08/10/legacy/>

⁴⁹ ‘London 2012 Olympics: The Wonderful and Weird’, 2012. Retrieved June 22, 2014, from:
<http://www.bbc.com/news/uk-19166071>

The services and preparations at the ‘backstage’ of the Games expand the scale of the Games and its impact on the host cities.

The Games do not belong to any city and it moves from one city to another by leaving its physical existence in the previous host cities. The Olympic Games creates a fictional environment within the host cities where the fiction surpasses the reality and leaves its physical impacts permanently. The fictional bigness that the Games bring to the host cities ends up with transformations and interventions in the whole city scale. Construction of specialized facilities for the Games and infrastructures that serve to these facilities becomes a common application to meet the requirements of the Games. As the scale of the Games gets larger, the scale of the constructions and intervention areas gets larger as well. The impact of the Games comes to such a large-scale that the host cities struggle to manage the physical legacy of the Games in the post-event phase. The Games require much greater space and venues than the host cities may use in the post-Olympic phase. The bigness, starting from the architectural scale to urban scale, becomes a critical issue during the transformation phase that the host cities pass through.

In the first stage, the host cities face the integration and re-adaptation problem in single structures. Especially the large scale of sport facilities, which are equipped with the specifications according to their Olympic functions, turns out to be the main challenges in the post-event period. What enlarges the Olympic facilities is the application of the specifications and requirements of the Games. Sport facilities have a hierarchical schema in which competition areas as the attraction points are in the center of the structures and surrounded by the seating areas and service spaces. Additional specifications to functions and services enlarge the facilities circle by circle around the competition areas, which come with a predetermined certain dimensions by the inherited codes of the sports. An immense number of spectator expectation and strict security precautions of the IOC expand the scale of the facilities. The increase in the seating capacity enlarge the mass of the facilities both directly and indirectly by requiring extra areas, such as large circulations, additional entrances, services, and security checkpoints.

Furthermore, the security precautions of the IOC require having secure perimeters and buffer zones within and around the facility. The exaggerated areas, which are generated to meet the requirements of the IOC, turn into redundant spaces in the post-event period [Figure 4.2]. These redundant areas cause the integration and re-adaptation problem in various ways according to the host cities' planning approaches, as I shall explain.



Figure 4.2 The service areas, which are generated to meet the requirements of the IOC in the London Olympic Park, 2012. Source: Produced by the author.

There are various approaches to overcome the integration and re-adaptation problems caused by the expanded scale of the structures. These approaches are mainly: maintaining the Olympic performance of the facilities by ignoring the scale problem, keeping the large-scaled structure by assigning post-functions and minimizing the scale of the structure at the post event period by having temporary installations. Firstly, as in the examples of Seoul [1988] and Athens [2004], they keep the large-scale structures with the Olympic functions by expecting a local interest and future big-scale events. However, there is risk for facilities to remain idle due to both the lack of public and global interest, and high maintenance costs. Moreover, specialized functions with a large-scale mass isolate the facilities from

its surrounding environment. Secondly, in some cases host cities prefer to keep the large-scaled facilities with their original architectural features by assigning post-functions to the structures. By this way, they expect to increase the use of the structures and integrate them into the daily life of the locals. For example, since there was not enough interest to the Beijing National Aquatics Center [2008] as a competition and training venue, it has been converted into an aqua park after three years from the Games. Finally, as the IOC also favors, most of the host cities prefer to use temporary installations in order to meet the requirement of the Games during the events. Application of temporary installations minimizes the scale of the facilities when the temporary installations are removed. This approach necessitates considering future use and conditions of the facilities in the design phase.

Since the IOC is conscious of the problems that the vast scale of the Games causes, it claims that:

“Bigger does not necessarily mean better and higher expenditure does not necessarily guarantee the quality of the Games. The IOC made clear that excessive or unjustified costs and infrastructure could even be counterproductive.”⁵⁰

Although the IOC asserts and demands that the Games can be hosted in smaller scales with lower cost, it is obvious that the host cities are under the pressure of the vast scale of the Games, international media attention and being better than the previous host cities. At this point, in addition to the guidance of the IOC, narrations of the host cities are also the key factors that determine the scale of the Games. The last two Games [Beijing 2008 and London 2012] clearly indicate how the narration differences come up with different interpretations regarding the formation of the Games. The differences in the narrations resulted in staging the Games in different scales regarding the overall cost, bigness of the Olympic zones, facility construction and sustainability plans of the built legacies. Although, both host cities practiced similar approaches like using temporary

⁵⁰ Technical Manual on Venues - Design Standards for Competition Venues, The International Olympic Committee, 2005, p.16.

installations [considering the possibility of the situation in which there would be no need for the extra capacity and facility] in order to scale down the Games, they followed quite different paths in the design and planning phases. Beijing constructed impressive mega structures, which have been published in many important architecture magazines and books, to confirm China's position as a global player. Since Beijing focused on transmitting the narration during the games, the post-event conditions and need of these structures were not projected. Unlike Beijing, London established its narration on sustainability of Olympic structures. London constructed the new facilities in a modest way considering their future performances starting from the early stages of the design processes. There is a major scale differences comparing the facilities built for Beijing 2008 and London 2012 Games [Figure 4.3].

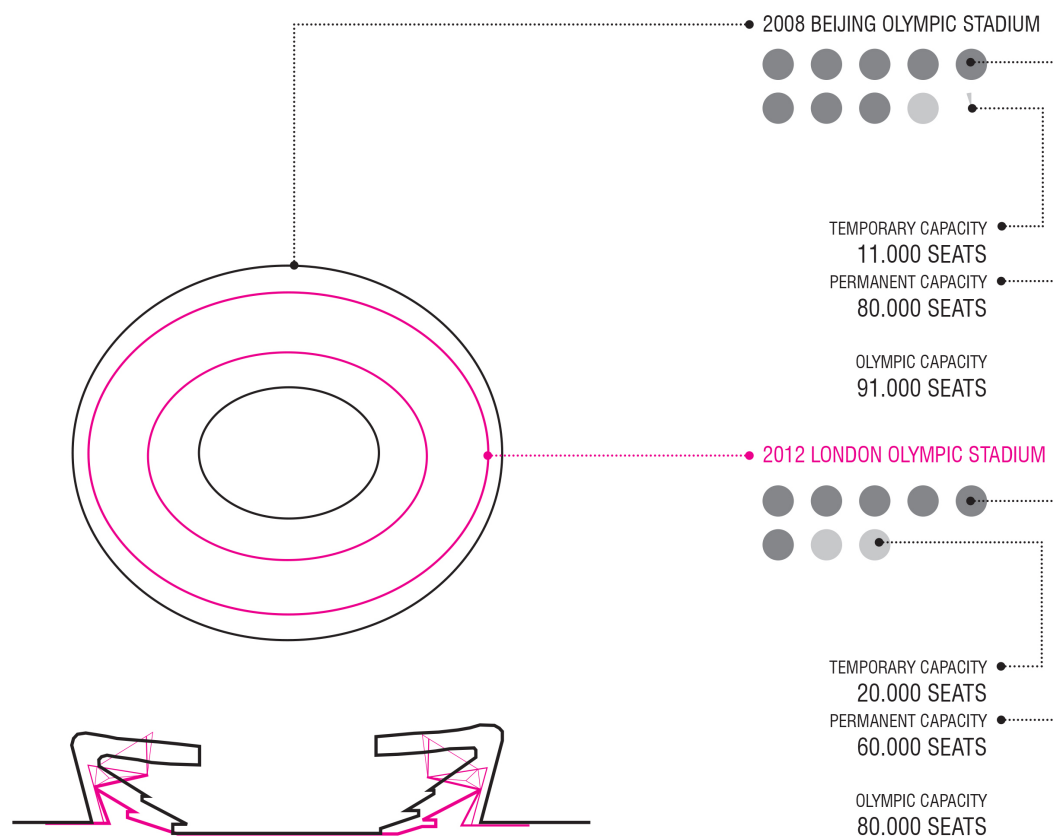


Figure 4.3 Scale comparison between the Olympic Stadiums in Beijing 2008 and London 2012 Games. Source: Reproduced by the author by basing on the drawing of Populous in Hattie Hartman, 'London 2012: Delivering a Sustainable Stadium', 2012.

The spatial requirements of the IOC not only expand the scale of the structures but also occupy large areas around the structures. Separation of the front and back of house components [i.e. separation of spectators and operational areas] results in the duplication of spaces for transportation and security services. In addition to large areas for transportation and circulation for masses that are reserved in the front of house component, transportation hubs and services for the operational bodies also cover large areas in the back of house component. Besides the areas that the front and back of house components occupy, an area outside the venue is surrounded by a secure perimeter as a buffer zone to operate the venues successfully. All these reserved areas, which the vast scale of the Games brings forth, turn into large empty areas around the venues. In the post-event phase, Olympic venues as large structures standing alone on empty sites encounter difficulties to integrate into urban patterns of the host cities.

Developing Olympic zones by clustering venues is a common application in the spatial organization of the Games, which is favored by the IOC as well. Olympic Parks as the main zones of the Games, where the major competition venues, Olympic villages and administrative buildings are gathered, cover enormous areas within the city. The factors that expand the scale of the facilities and their surroundings play an active role in the spatial organization of the Olympic zones as well. The physical relations among the facilities are determined by the transportation and circulation for the masses outside the buffer zones of each facility. Besides the operational areas and buffer zones of each venue, the larger operational areas and buffer zones surround the venue clusters. Especially the secure perimeters are multiplied by increasing the security levels starting from the inside of the venues to the boundaries of the Olympic zones and even the host cities. While all these factors inevitably enlarge the boundaries, the host cities draw the final boundaries of the Olympic zones.

Most of the host cities consider the extra-large scale of the Olympic zones as an opportunity to use these zones as reserved areas for urban regenerations. Therefore, boundaries of the urban regeneration proposed by the host cities

determine the size of the Olympic zones in addition to the venue numbers, and size of the Olympic villages and operational areas. Host cities usually do not satisfy with the minimum dimensions brought by the requirements and spatial organization of the Games and they tend to expand the boundaries of the Olympic zones in order to increase the urban development impact of the Games. However, expansion in the boundaries of the Olympic zones increases the integration and re-adaptation problems in the urban scale [Figure 4.4].

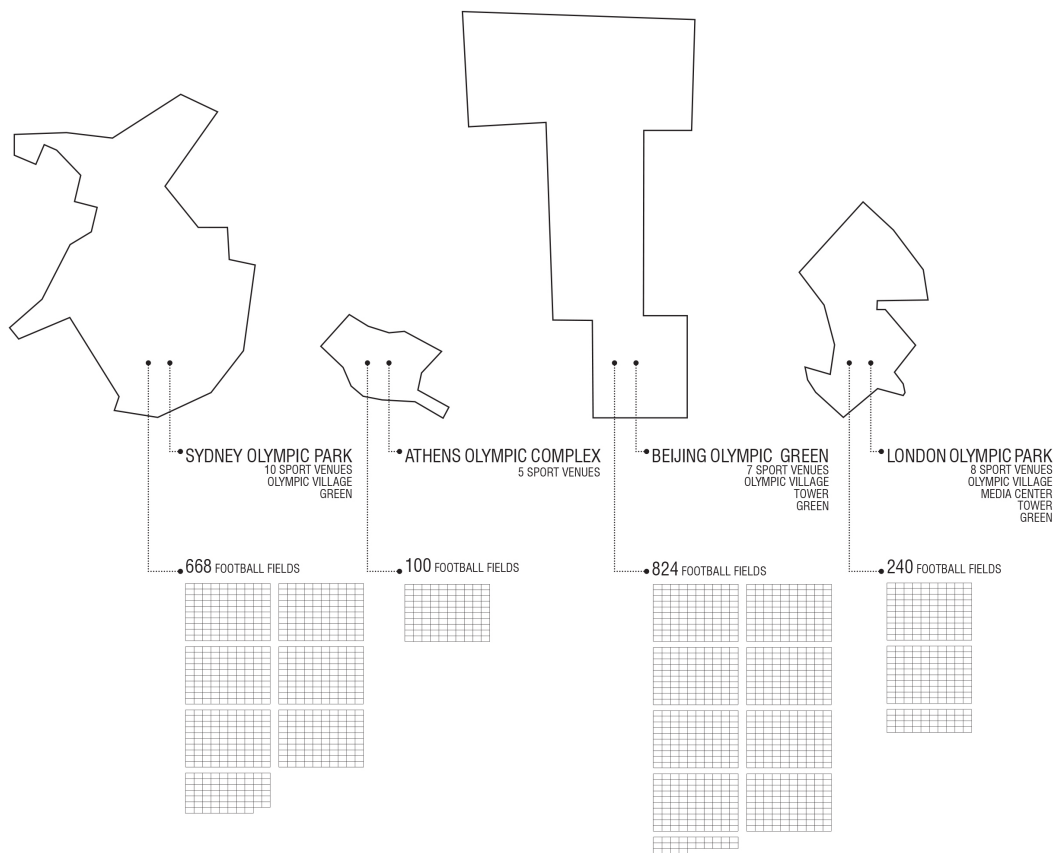


Figure 4.4 Comparison of size and contents of the Olympic Parks in the last four Olympic Games [2000-2012]. Source: Produced by the author.

Despite the vast scale of the Games, implementations for the Olympic Games, such as facilities, Olympic Village, Olympic Park and improvements in infrastructure, should be undertaken in a much shorter time like seven years compared to a regular urban development process. The enormous scale of the implementations creates challenges against integration into the urban context.

Since the host cities have limited time to internalize the extra-large scale implementations, conflicts emerge between the sudden implementations and cities after the Games are over. Transformation of these implementations in the post-event phase revolves as another extra-large scale projects for the host cities. Besides the conflict between the vast scale implementations and urban context, the integration and re-adaptation problems that emerge in the small scales magnify the severity in extra-large scales by multiplying itself over and over again in different scales.

4.2. Boundary⁵¹

The IOC develops a strategy of separating organizational bodies in order to control and manage the Games. This strategy is reflected on the programmatic and spatial organization of the Games as well. The IOC promotes drawing clear lines between different functions, events, user groups, security and transportation. Separation of internal and external components of the Games during the event plays a crucial role in order for the IOC not to face any unexpected incidents, such as traffic, security vulnerability, and demonstrations, which are caused by the external factors. These separations regarding the architectural program of the Games create physical boundaries, which are mainly built with temporary structures during the event. However, removal of these temporary structures in the post-event phase brings out spatial boundaries. These boundaries that emerge in each scale from small to extra-large scale cause the integration and re-adaptation problem.

Separation of the operational areas as front and back of house components draws boundaries within the facilities and their surrounding environment in the small scales. While the spatial organization of dividing the area into two operational areas, which is done by considering a specific function and large number of the

⁵¹ The term ‘boundary’ is intentionally preferred to the term ‘border’ by considering the explanation of urban sociologist, Richard Sennett (cited in Hiromasa Shirai, 2009) the difference between ‘boundary’ and ‘border’ regarding program is that “the boundary is an edge where things end; the border is an edge where difference groups interact.” A detailed discussion on the transition from boundary to border in the Olympic structures will be done in the chapter V.

visitors, serves efficiently during the Games, it raises issues against the re-adaptation of the structures in the post-event phase. The main issue, here, is that the boundaries have a physical permanent impact on the spatial organization of the facilities. The structures formed with highly determined separations hardly allow any latter programmatic interventions.

The current programmatic model of the IOC suggests a ‘compact spatial design’ of Olympic sites, which emphasizes the ‘centralization and unification’. This model leads to zoning within Olympic sites and facilities according to function, user profiles of the buildings, security and operational areas of the organization. This approach results in the isolation of the particular facilities by drawing boundaries around the facility clusters. In this phase, isolation of the Olympic Village from the external factors during the Games gains importance regarding the security and control of the athletes’ houses. The permeability of the boundaries around the Olympic village is highly filtered that creates a top secured gated community during the Games. Like Olympic village, other venues and zones share the same properties in terms of the surrounding boundaries. However, in the post-event phase, the significance of these physical boundaries diminishes as the security becomes not the main concern, and they turn into a programmatic problem creating spatio-functional bounds against the integration and re-adaptation of the facilities.

Sydney has applied one of the most compact spatial planning for the Olympic Park, which has accommodated 10 sport venues, Olympic village and green parks for the 2000 Games. Similar functions were gathered within the clusters of the venues in the Olympic Park for an efficient operation of all the venues and the village during the Games. However, the zoning approach, which has emerged so as to simplify the Olympic venues and zones as event places, has brought forth functional and spatial compartmentalization within the Olympic Park [Figure 4.5]. During the transition from the event phase to the post-event phase, the use of the Olympic Park has been dependent mainly on the frequency and the program of the events. In the post event phase, this kind of compartmentalization has weakened

the programmatic and physical relations between the Olympic venue clusters and has created successive boundaries within the Olympic site.



Figure 4.5 Functional and spatial compartmentalization in the Sydney Olympic Park, 2000. Source: Produced by the author.

In the large scale [i.e. in the scale of the Olympic zones] compact spatial design approach establishes an isolated building cluster within the Olympic zones, which are secluded from the city by being surrounded with buffer zones and secure perimeters. The boundaries, which are drawn within the facility scales at the first place, are multiplied over and over again in the larger scales. These successive

boundaries weaken the programmatic relation of the facilities and create fragmented land use in the Olympic zones [Figure 4.6]. While this fragmented structure of the Olympic zones works for the organization during the Games, the zones remain fragmented and disconnected from the host city during the transformation of the facilities for the public use at the post-Olympic phase.

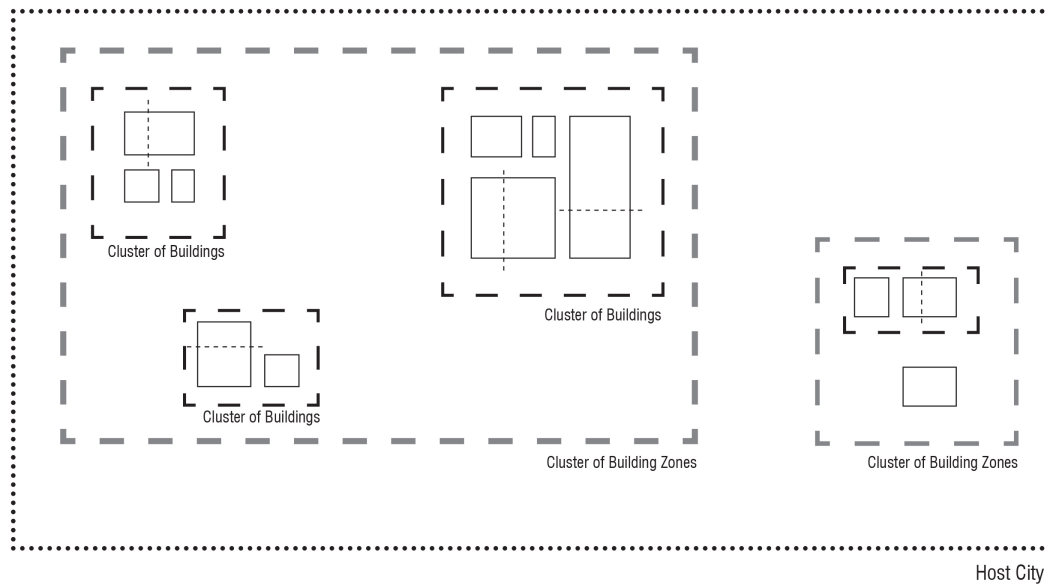


Figure 4.6 Emergence of the boundaries ranging from the small scales to the extra-large scales. Source: Produced by the author.

The reservation of the infrastructures serving for the Games, such as energy, communication and transportation, influences the city in the extra-large scale. The vast scale of the Games necessitates increasing the capacity of the infrastructures to provide effective services during the events. Besides the boundaries around the Olympic zones, the IOC promotes drawing boundaries on the infrastructure reserved for the Games in order to control the additional capacity by separating the public and operational uses. Although these divisions on the city infrastructure emerge in the extra-large scales, diminishing the boundaries between the Olympic and public uses easily compensates their impacts. By this way, the existing city infrastructure can be improved by integrating and re-adapting the additional capacity into to the public use.

4.3. Field

Field as a design issue emerged from the interaction between the internal and external forces of the Games; at the same time it also accommodates these forces starting from the small scale to extra-large scale. Field corresponds to a land, ground as well as it defines the relationships between structures. Within the scope of this thesis, field is considered as a design issue rendering the site relations, spatial and programmatic organization of the Games. Field covers the relations in the internal organization of facilities in ‘small’ scale and the relations between the facilities and their surroundings in ‘medium’ scale. The sports venues have a hierarchical spatial arrangement that comes from the inherited codes of the sports. The hierarchical relation among the athletes, spectators and officials determines the architecture of the venues. The sport ground as the focus is in the center, and the spectator areas and services surround the periphery of this sport ground. This inherent approach creates introverted venues, which look like a close ‘bandboxes’ with a very specialized function. The introverted structures accommodate all the events inside of the venues and leave the surrounding of the venues indetermined in terms of architectural program. Therefore, they do not offer an active façade that establishes mutual programmatic relations between inside and outside of the venues.

Field sets not only the relationships of single facilities but also the relationships of the Olympic complexes within the urban context. In the transition from ‘large’ scale to ‘extra-large’ scale, the architectural program of the Games creates conflicts with the surrounding urban pattern of the Olympic zones regarding, functional and spatial organization. Although, the areas that the Olympic zones occupy have been vastly expanded depending on the increase in the scale of the Games, the variety of architectural program in the Olympic zones has remained limited with sport, administrative and residential functions within the building clusters. Sport focused architectural program of the Olympic Games and fragmented spatial organization of the Olympic zones do not offer enough variety of functions and spatial qualities in order to integrate and re-adapt the enormous

zones into the surrounding urban context [Figure 4.7]. Since these zones remain isolated areas within the city as long as additional functions are injected to the zones, conversion of the Olympic zones from sport districts to mixed-use urban quarters has become a common approach of the host cities since the 2000 Games [Sydney]. However, sport focus planning of the zones without considering the transformation that the zones undergo in the post-event phase creates difficulties for the host cities regarding the injection of new functions to the highly specialized and determined structures of the Olympic zones. London as the last host of the Olympic Games in 2012 prepared two master plans simultaneously for the event phase and the post-event phase by taking account of the fact that any transformation act for the post-event use should be considered in the early stages of the design phase in order to establish strong relations between the existing structures and new interventions.

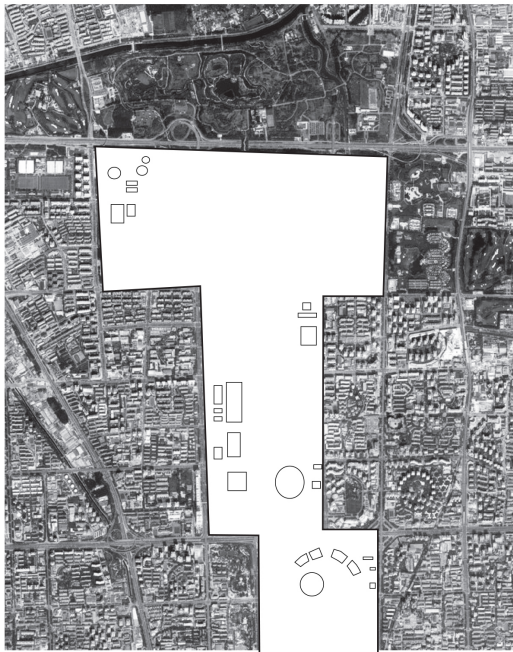
In conclusion, since the current programmatic approach promotes the internal forces not to face any unexpected external interventions during the Games, the design issues turn into a part of the integration and re-adaptation problem. The scale of the structures is expanded with the Olympic components that will move and leave the occupied spaces unoccupied when the Games are over. These large unoccupied spaces turn into unprogrammed areas within and around the Olympic structures in the post-event phase. In addition to these unprogrammed areas, the spatio-functional compartmentalization of the Olympic structures creates boundaries and limits the physical and programmatic interactions among the structures. These boundaries result in fragmentation in the field. The fragmented field provides a limited permeability among different functions and weakens the programmatic relations between the structures and between the Olympic zones and the city. When the serious consequences of the design issues that emerge from the conflict in the transition from the determined program in the event phase to the indetermined program in the post-event phase are considered, consideration of the design issues in the early stages of the design process becomes crucial to convert the negative aspects into potential to create appropriate environment for the integration and re-adaptation of the structures into the local context.



ATHENS OLYMPIC COMPLEX



SYDNEY OLYMPIC PARK



BEIJING OLYMPIC PARK



LONDON OLYMPIC PARK

Figure 4.7 The Olympic parks of the Olympic Games between 2000 and 2012 with their surrounding urban tissue. Source: Produced by the author.

CHAPTER 5

DISCUSSION OF A FRAMEWORK FOR THE ARCHITECTURAL PROGRAMMING OF THE OLYMPIC GAMES

Previously in this thesis, it has been stated that transformation of the sport venues and districts more into local use faces problems in integration and re-adaptation of structures into local context in the post-event phase. The architectural program shapes the physical environment of the Games, and determines the spatial and functional relations between the venues and the city ranging from micro to macro scales. The interaction of the internal forces - standard and time bounded - and the external forces - ever changing and sustained - creates the main design issues of the Olympic structures, namely **scale, border and field**.

Since the internal forces gain more importance concerning the main focus on staging the Games, the design issues take form predominantly with the influence of the internal forces. During the transition from the event phase to the post-event phase when the external forces are more influential, scale, boundary and field issues turn into a challenge to be overcome with the interventions in the post-event phase. Although these design issues have potential to better integrate the Olympic structures into the context of the host city rather than being a part of the problem, the current programmatic approach of the Games suppresses these potentials. Scale, boundary and field issues come along with the problems. In the post-event phase, the Games leave behind several large scaled and highly specialized structures in the host city. When the components of the Games move out, large areas in and around the structures and Olympic zones remain empty and unprogrammed. Beside these unprogrammed and empty areas, the functional compartmentalization within the Olympic zones creates boundaries and isolates structures from the local context. Since the spatial and programmatic organization

of the field are done by focusing on the requirements of the Games, the spatial and programmatic relations not only between the structures, the Olympic zones and the host city weaken when the Games are over. Then, scale, boundary and field issues turn into a challenge to be overcome in the post-event phase.

This thesis states that the role of architectural program, which considers the processes of the Olympic Games in totality, becomes prominent starting from the very early phases of organization of the Games in order to render the spatial and programmatic relations within the Olympic structures and sites adaptable to the host cities' conditions. This chapter aims at revealing the potentials of the design issues and the possible ways to use these potentials to integrate and re-adapt the structures into the local use. In accordance with this aim, a programmatic framework will be discussed, which covers a set of issues and tools in order to overcome the problems emerging with the transition from the determined program in the pre-event and event phase to the indetermined program in the post-event phase of the Games, and also to integrate and readapt the Olympic structures to the everyday life of the local context. Here, it should be re-emphasized that this discussion does not rely on any predetermined physical and spatial organization scheme or diagram regarding the Olympic Games. Since each city hosts the Games within its own historic, political, social, and physical context, the host cities' preferences on spatial and physical organization of the Games vary. Then, the framework discusses programmatic relations that can be accommodated in any type of spatial and physical organization for the future Olympic Games.

5.1. Determined – Indetermined Program

As it has been emphasized that while the objectives of the Games are very determined and focused on staging the Games, the architectural program of the Olympic structures, which are designed with a certain determinacy, gets into an indeterminate condition without any proposal to generate new programs in the post-event phase. The program in the post-event phase should allow structures to accommodate different activity combinations, which enhance the programmatic relations with the local context. However, since the transition from the determined

program with single purpose in the event phase to the indetermined program with potential to accommodate various functions in the post-event phase is not well defined, the single purpose and sport focus Olympic program produces rigid and controlled physical environment that does not encourage coexistence of various activities. Based upon the current approaches to the program of the Games, the design issues; scale, border and field, which produce large unprogrammed areas, boundaries and poor spatial relations with the local context, obstruct the interaction of activities within the Olympic zones. These consequences of the design issues do not support the programmatic transition, which embraces possible future activities and program changes.

Since the focus is always on staging the Games, in this thesis, how the programmatic transition will be achieved has been considered as a problem to be dealt with during the post-event processes. However, since the structures generally are not designed with a vision to provide necessary physical and programmatic conditions for the transition, they struggle to accommodate possible activity combinations without serious architectural interventions in the post-event phase. This situation decelerates the process of integration and re-adaptation and costs more and more for the host cities. Consequently, systematic integration and re-adaptation of the Olympic structures necessitates a well-defined transition, which provides necessary programmatic relations to integrate and re-adapt these Olympic structures into local context in the post event phase. In order to define the transition in the design phase, this thesis suggest that 'programmatic layering'⁵² can be used as a design tool, which generates constructive programmatic relations by manipulating different functions as programmatic components over the pre-determined sport function. Programmatic layering encourages the coexistence of various activities and brings forth new expected

⁵² The philosophical background of layering was based on Deleuzian concept of 'strata'. Layering as a concept has various adaptations in architecture. Colin Rowe used the layering as a concept in perception of space in his seminal essay 'Transparency: Literal and Phenomenal' in 1970s. Peter Eisenman used layering as both a concept and method to understand and produce architecture. 'Programmatic layering' as the extension of the concept of layering is revealed by Rem Koolhaas as a design 'tactic' in his urban scale projects for the competition of *Parc De La Villette* and *Yokohama Master Plan*. Rem Koolhaas and Bruce Mau. *S, M, L, XL*, New York: The Monacelli Press, 1998.

and unexpected possible activities that emerge from the interaction of various programmatic layers. In the further steps, potentials of programmatic layering and the possible ways to apply programmatic layers during the transition will be discussed in respect to the design issues of scale, boundary and field.

5.2. Programmatic Layering

In this thesis, ‘programmatic layering’ is discussed as a design tool to be applied in the early design stages of the Olympic structures, which remain isolated from urban environment and the daily use of inhabitants in the post-event phase due to the single pre-determined function. Integration and re-adaptation of the structures into the local context necessitates construction of programmatic relations with surrounding environment by accommodating diverse functions other than a focused sport purpose. In accordance with this aim, programmatic layering can be the tool to inject various functions and redefine architectural program that the urban life demands.

5.2.1. Programmatic Layering and the works of Rem Koolhaas

Programmatic layering as a design tool is adapted from the works of Rem Koolhaas. He used ‘programmatic layering’ in his ‘extra-large’ scale projects such as *Parc De La Villette*⁵³ and Yokohama master plan⁵⁴. Within the scope of this thesis, the meaning and the potentials of programmatic layering are investigated by focusing on mainly these two projects. In his thesis Özay Özkan cites Koolhaas definition of the program and programmatic layering, which states that “programmatic layering upon vacant terrain to encourage dynamic coexistence of activities and to generate through their interference, unprecedented events”.⁵⁵ Manipulation of various functions as programmatic components over the pre-determined sport focused purpose generates an environment that provides constructive programmatic relations within the architectural scale. Then, the

⁵³ Rem Koolhaas and Bruce Mau. *S,M,L,XL*, New York: The Monacelli Press, 1998.

⁵⁴ Ibid.

⁵⁵ Özay Özkan, *Strategic Way Of Design: In Rem Koolhaas' Parc De La Villette Project*, Unpublished Masters Thesis, 2008, p. 68.

programmatic layering method can be used to enhance the programmatic relations among the structures as well as the Olympic zone and the city in urban scale. As a design tool it would contribute to the spatial solutions in ranging scales from micro to macro where the impacts of the Games are reflected.

Koolhaas explains the motivation behind introducing superimposition of programs in the project of Parc de la Villette as “[...] the site of La Villette is too small and the program too large to create a park in the recognizable sense of the world.”⁵⁶ He applies multiple layers of programmatic components successively as strips⁵⁷, point grids or confetti [i.e. small scale elements that occur the site with certain frequency], access and circulation, and major big scale elements as the final layers [Figure 5.1]. His strategy works in both superimposition and juxtaposition of layers. While he aims at creating borders between maximum programmatic elements where maximum number of programmatic mutations are generated by juxtaposing programmatic layers, he applies superimposition of various programmatic elements on top of each other in order to support the interaction among the activities.

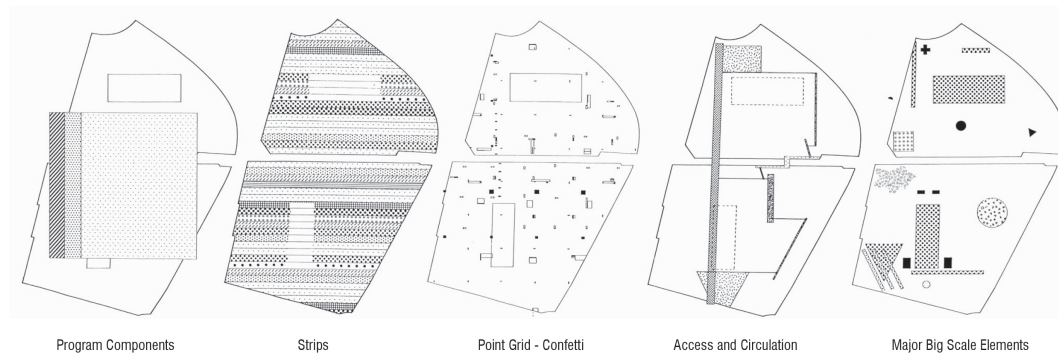


Figure 5.1 Diagrams of Koolhaas showing the layers of programmatic components of Parc de la Villette. Source: Rem Koolhaas and Bruce Mau. *S,M,L,XL*, New York: The Monacelli Press, 1998.

⁵⁶ Rem Koolhaas and Bruce Mau. *S,M,L,XL*, New York: The Monacelli Press, 1998, p. 921.

⁵⁷ For the theoretical basis of the strips, Koolhaas refers to his studies on program schemas of skyscrapers in his book “Delirious New York”. The vertical programmatic layering in the skyscrapers is redefined on horizontal planes in the Project Parc de la Villette.

In his book *S,M,L,XL*, Koolhaas describes the master plan for Yokohama as a project engulfing the site like ‘programmatic lave’.⁵⁸ The site is described as that “Yokohama is a port city south of Tokyo, and as in most port cities, the harbor activities is pulling away toward the sea, leaving vast abandoned territories.”⁵⁹ Koolhaas proposes injection of new programs into the abandoned sites and superimposition of programmatic layers in order to “define a situation with almost unlimited potential for triggering and supporting public life.”⁶⁰ A significant aspect of his proposal was that the largest number of possible events is aimed with the minimum amount of permanency by manipulating various layers of activities [Figure 5.2].

“Compositionally it was simply an opportunistic infiltration of the island residual space; into every gap and every slit and every available space we pushed programs with minimal containment, minimal cover, minimal articulation of mass to generate the greatest possible density with the least possible permanence.”⁶¹

Besides the superimposition and the juxtaposition of the programmatic layers, ‘temporality’ of the programs becomes a part of his proposals to provide flexibility for maximum number of possible activities.

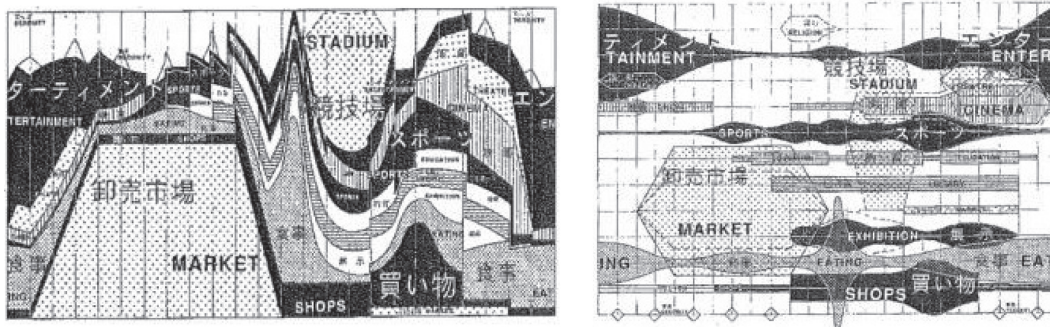


Figure 5.2 Diagrams of Rem Koolhaas showing the programmatic layers of Yokohama Master Plan. Source: Rem Koolhaas and Bruce Mau. *S,M,L,XL*, New York: The Monacelli Press, 1998.

⁵⁸ Rem Koolhaas and Bruce Mau. *S,M,L,XL*, New York: The Monacelli Press, 1998, p. 1211.

⁵⁹ *Ibid.*, p. 1213.

⁶⁰ *Ibid.*, p. 1225.

⁶¹ *Ibid.*, p. 1225.

5.2.2. Discussion of the Programmatic Layering for the Olympic Games

Architectural program of the Olympic Games bears resemblance to the programmatic density of the project Parc de la Villette and the programmatic temporality of the project Yokohama master plan. Based upon Koolhaas' proposals for the selected projects, programmatic layering will be studied as a design tool to generate possible programmatic and spatial relationships and interactions between the Olympic sites and the local context that would trigger and support public life. Although the programmatic layering would respond to the problem of inadequate functions to construct programmatic relations with the surrounding, how the transition from the determined to an indetermined program allows the structure to accommodate various programmatic layers becomes a crucial point. It is obvious that programmatic layering requires appropriate spatial, functional and relational conditions. This thesis asserts that the provision of a certain level of programmatic flexibility and temporality in the design of the structures would help to create adequate conditions to accommodate dynamic coexistence of activities. It should be noted that the provision of flexibility and temporality is a design problem that each project has its own particular approach to it. Thereupon this thesis studies the potentials of the design issues that can arise programmatic flexibility and temporality. Provision of certain level of flexibility and temporality eliminates the negative consequences of the design issues and reveals the possible ways to achieve programmatic layering. In compliance with this assertion, programmatic flexibility and temporality, regarding its spatial, functional and relational issues, will be investigated in relation to the design issues; namely scale, boundary and field.

5.3. Programmatic Flexibility and Temporality

Olympic structures with large scale and high capacity can hardly find a chance to facilitate another mega-event, and most of these structures can be used with proper purpose only for a limited period of time throughout their life span. As

Koolhaas states, “the program will undergo constant change and adjustment”⁶², the structures need programmatic flexibility and temporality to avoid conflicts emerging in the transition from the determined to an indetermined program. Under the effect of current programmatic approaches, although the design issues bring forth unprogrammed large areas, boundaries within Olympic zones and weak programmatic and spatial relations between the zones and city, they actually have a capability to provide programmatic flexibility and temporality. Here, I would like to emphasize that the introduced flexibility and temporality should be considered as an agent to be designed in accordance with a proposed scenario in order to facilitate maximum number of programmatic layers. The ‘neutral’ flexibility and temporality, which does not offer any spatial quality except empty – tabula rasa - spaces, hardly responds to unfolding events. Adaptation of the permanent specialized structures to the possible future programmatic chances is better achieved by providing **designed flexibility and temporality**.

Programmatic flexibility and temporality involve three issues; namely spatial, functional and relational. Spatial flexibility and temporality prepare the physical environment for future adaptations. Functional flexibility and temporality provide an opportunity for the coexistence of various activities to enhance the relations between the structures and their surroundings. Relational flexibility and temporality are generic acts that encourage interactions among functions. How this flexibility and temporality can be achieved by the help of the design issues and what it provides in the transition from the determined to an indetermined program will be investigated through programmatic components in the design processes: ‘**spatial**’, ‘**functional**’ and most importantly ‘**relational flexibility and temporality**’. Throughout this investigation, these conceptual programmatic components will be studied according to their architectural correspondences, respectively scale, field and boundary [Figure 5.3].

⁶² Rem Koolhaas and Bruce Mau. *S, M, L, XL*, New York: The Monacelli Press, 1998, p.921.

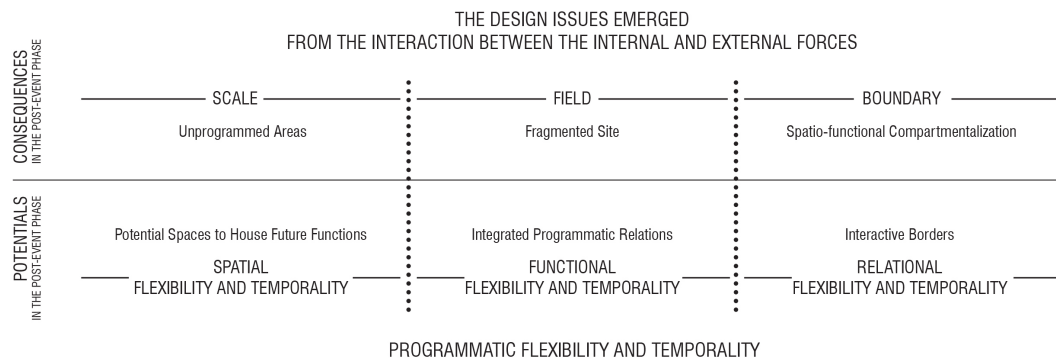


Figure 5.3 Transformation of the consequences of the design issues by the help of the 'programmatic flexibility and temporality'. Source: Produced by the author.

5.3.1. Spatial Flexibility and Temporality

Spatial flexibility and temporality allow structures to accommodate various activities permanently, temporarily or simultaneously. It is essential that the structures should have necessary flexibility and temporality to respond to the spatial needs of different activities. Spatial flexibility should be produced through design processes by considering the possible combination of activities in order to reveal the full potential of spaces. Since every sports activity has its own requirements to perform, large, empty and neutral spaces do not offer appropriate flexibility and temporality for future functions. Defined possible programmatic scenarios are necessary to produce flexible and temporary spaces in order to provide adequate spatial qualities for the potential future functions. Architects and designers of the Olympic structures deal with the conflict between the specialized rigid spatial organization that comes up with the determined program of the Games and the provision of the necessary flexible spatial qualities for the future activities. Although the determined program of the Games shapes the structures for specialized purposes, when the Games leave and the Olympic components are removed from the structures, large empty areas without any functions remain within and around the structures. These areas turn into unprogrammed spaces that have the capability to accommodate new functions. Whereas these unprogrammed areas should be considered as a parameter to be designed with a certain level of

spatial flexibility and temporality to support programmatic layering in the early design stages, they can be converted into potential spaces ready to accommodate various functions after the Games as well.

5.3.2. Functional Flexibility and Temporality

Functional flexibility and temporality is a crucial factor that influences the future performances of buildings. Functions of the buildings can be changed as long as the future proposals fit into the physical environments. Moreover, while keeping the original functions, buildings can accommodate additional functions simultaneously. Richard Rogers claims that the institutions can no longer sustain their particular functions over against changing force of the dynamic society. He tells the functional motion in today's urban life such as:

“The impact of accelerating change on the physical form of the city is radical. Institutions have shorter and shorter lives - railway stations are converted into museums, power plants into art galleries, churches into night-clubs, warehouses into homes – and it is now common place to anticipate that a building will outlive the purpose for which it is built in a matter of a few years. Modern life can no longer be defined in the long term and consequently cannot be contained within a static order of symbolic buildings and spaces. [...] Buildings no longer symbolize a static hierarchical order; instead, they have become flexible containers for use by a dynamic society.”⁶³

Olympic structures as other institutions in the cities should embrace the changing force of the dynamic societies in order to integrate and re-adapt themselves into the local context. Facilitating various functions rather than a single predetermined purpose necessitates a designed programmatic transition from a determined to a flexible state.

An approach to the functional flexibility and temporality requires an understanding of the field as the ultimate source of functional relations between the Olympic zone and the city. The field as the host of activities regulates the

⁶³ Richard Rogers. *Cities for a small planet*, Ed. by Philip Gumuchdjian, Boulder, CO: Westview Press, 1998, pp. 163-164.

programmatic layout by defining the functional relations within. Therefore, the field can be considered as the structural reference to generate various programmatic layers over the determined functional formation of the Olympic structures. By discovering the possible programmatic relations both during the event and the post-event phases, the discussion of the programmatic framework can be enhanced with the study of programmatic layering in functional flexibility and temporality.

5.3.3. Relational Flexibility and Temporality

Relational flexibility and temporality, which create potentials for considerable interaction and permeability between activities, play a reciprocal role with spatial and functional flexibility and temporality. While the designed relation may impose a spatial and functional organization, the flexibility and temporality in spatial and functional organization may create expected and unexpected relations between possible activities as well. Flexibility and temporality in programmatic relations aim at revealing possible ways for interactions between various activities, which can also produce new activities within the interaction zone. Building and sustaining various relationships between functions enhance the programmatic flexibility of buildings in order to accommodate more activities.

The program of the Olympic structures, consequently, should be designed to have a certain level of flexibility and temporality regarding the relations between the functions during and after the Games. The mode of programmatic relations may vary between the main sport function and proposed functions in the post-event phase. These modes are established among the functions by complementing, conflicting and being neutral to each other [Figure 5.4]. Programmatic relations among complementing functions, such as sport competition and watching the competition, which are dependent to one another, have potential to generate new activities, which continue to generate new relationships with the existing functions. Unlike complementing functions, the relations among the conflicting functions, such as functions in front of house and back of house need to have mediator activities. Even though mediator activities emerge expectedly or

unexpectedly, they play crucial role to link the conflicting functions. Complementing and conflicting functions generate constructive relationships among each other, the neutral relations among different functions, such as sport and entertainment, however, are not fruitful in regard to generate new activities. There is so little association among neutral functions. Building different programmatic relationships, which create constructive interactions among activities, is the way of increasing the potential to accommodate various functions demanded by the urban life.

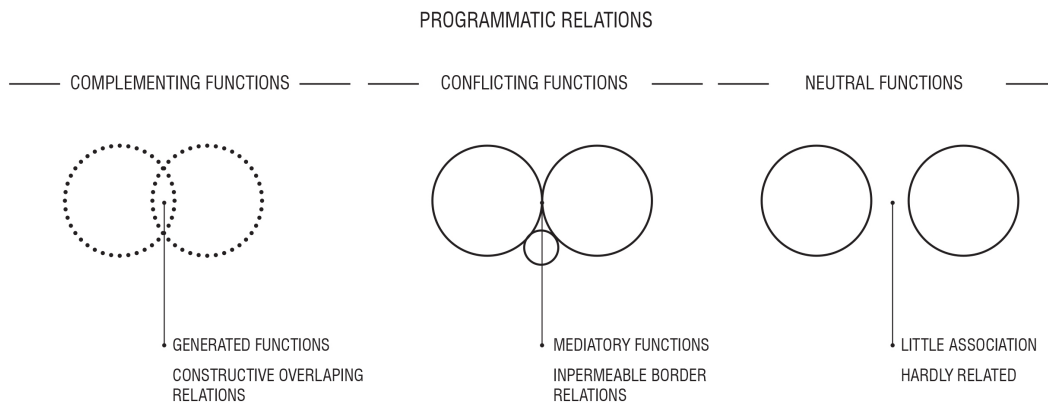


Figure 5.4 The modes of programmatic relations that are established among the functions by complementing, conflicting and being neutral to each other. Source: Produced by the author.

Olympic structures with different strict programs create isolated compartments that decrease functional and relational interaction both within Olympic zones and with the city. To achieve an interaction within different programmatic areas, the boundaries of these compartments should be reconsidered rather as **interactive borders**. The destruction of the relations between the emptied Olympic structures and their surroundings could be reformed by transforming their boundaries into interaction zones, or in other words, into **permeable borders** supported by alternating programmatic relationships that can be accommodated within the structures. Richard Sennett emphasizes the potential of creating borders to construct and enhance the social interactions within the cities. He continues:

“In natural ecologies, borders are the places where organisms become more inter-active, due to the meeting of different species or physical conditions. [...] In the realm of human culture, territories consist similarly of boundaries and borders - in cities, most simply, there is a contrast between gated communities and complex, open streets. But the distinction cuts deeper in urban planning.”⁶⁴

Transformation of physical and programmatic boundaries into borders where maximum interaction among activities is aimed becomes critical in the post-event phase. In compliance with this aim, juxtaposition of various programmatic layers on top of segregated areas constructs spatio-functional and programmatic relations among these areas. Like Sennett, Koolhaas, too, emphasizes the crucial point of creating borders in his *Parc De La Villette* project. He states that:

“The tactic of layering creates the maximum length of ‘borders’ between the maximum number of programmatic components, and will thereby guarantee the maximum permeability of each programmatic band, and -through this interference- the maximum number of programmatic mutations”.⁶⁵

Although the unprogrammed areas and spatio-functional divisions produce the boundaries within the Olympic structures and zones, they also carry the potential to convert the boundaries into borders by considering occupation of the structures and sites by various programmatic layers in the post-event phase.

In conclusion, the transition process from the determined program in the pre-event and the event phases to an indetermined program in the post-event phase is not well incorporated within the Olympic processes. Therefore, the uncertain conditions in transition makes the design issues a part of the integration and re-adaptation problems. This thesis has discussed the programmatic layering with reference to the works of Koolhaas as a tool to overcome the uncertainty in the transition. To do so, juxtaposing various programmatic layers on the field that is designed for a single purpose [i.e. sports activity] would allow the structures to accommodate various activities that the local context requires. In order to provide adequate environment for accommodation of the programmatic layers,

⁶⁴ Sennett, R. (2004) “The City as an Open System”, *Leverhulme International Symposium 2004*, The Resurgent City London, UK.

⁶⁵ Rem Koolhaas and Bruce Mau, *S, M, L, XL*, New York: The Monacelli Press, 1998, p.923.

programmatic flexibility and temporary can be the agents, which have capability to use the design issues with their potentials. Spatial, functional and relational flexibility and temporality have been discussed as programmatic components, which are designed through a proposed scenario. Spatial flexibility and temporality organize the unprogrammed areas that are emerged as the left over spaces due to the Olympic program, to accommodate programmatic layers. Functional flexibility and temporality can provide connections with assigned programs in the segregated field, which creates weak programmatic relations. The relational flexibility and temporality can convert the boundaries into borders, which create constructive relations and encourage programmatic interactions within the facilities and Olympic zones. Therefore the provision of certain level of spatial, functional and relational flexibility and temporality in the structures and Olympic zones produces suitable environment to accommodate various activities and relations among them. Here, it should be emphasized that the transition from the determined program in the event phase to the indetermined program in the post event phase is to be defined well in the early design processes considering proposed scenarios.

CHAPTER 6

CONCLUSION

Considering the serious transformations that the host cities pass through and the problems that the host cities face in regard to the integration and re-adaptation of the structures into the local context in the post-event phase, this thesis has aimed at redefining the problems in respect to the architectural program of the Games. The requirements of the International Olympic Committee [IOC] bring about single purpose, a highly specialized program and a certain level of permanency in the structures. The indetermined program in the post-event phase conflicts with the determined program in the event phase. The transition from the determined program to the indetermined program brings about ambiguity in the Olympic processes. This thesis has stated that the integration and re-adaptation problems emerge as the consequences of the ‘architectural program’ of the Olympic Games. Since the Games have a great impact in the urban scale, these problems have been mainly perceived as contingency of the urban planning issues. However, this thesis asserts that the integration and re-adaptation problems are related with the architectural program of the Games as much as urban planning issues.

The architectural program in respect to the context of the Olympic Games, has been approached as the amalgamation of forces that shapes the overall organization and spatial planning. The ‘internal’ and the ‘external’ forces of the Games predominantly generate the architectural program. The internal forces are mainly shaped by the demands of the IOC. These forces, namely ‘**function**’, ‘**capacity**’, ‘**security**’ and ‘**transportation**’, are fixed and standard. On the other hand, the external forces are ever changing and sustained according to the physical, political, economic, social and cultural context of the host cities. The external forces, namely ‘**local**’, ‘**national**’ and ‘**international context**’, ‘**media**’,

and **'narration'**, are changing for each Games according to the context of the host cities. Throughout the Olympic processes, the internal forces dominate the pre-event and event processes in order to avoid unexpected external interventions.

Neither the internal nor the external forces of the Games dissolve in the architectural program and they continue to affect the structures throughout their life span. The interaction of the internal and external forces brings about the design issues, which are **'scale'**, **'boundary'** and **'field'**. Since the internal forces gain more importance concerning their main focus on staging the Games, the design issues take form predominantly with the influence of the internal forces. During the transition from the event phase to the post-event phase when the external forces are more influential, scale, boundary and field issues turn into a challenge to be overcome in the post-event phase. Although these design issues have potential to better integrate the Olympic structures into the context and urban life of the host city rather than being a part of the problem, the current programmatic approach of the Games suppresses these potentials.

The inquiry into the architectural program of the Games has led the thesis to the discussion of the 'programmatic layering' as a tool to overcome the conflict between the determined and indetermined program that emerge in the transition from the event phase to the post-event phase. Programmatic layering has been discussed with reference to the works of Rem Koolhaas, mainly his texts on program, the Parc de la Villette project and the master plan for Yokohama. Both juxtaposition and superimposition of various programmatic layers respond to the programmatic variety that helps to integrate and re-adapt the Olympic structures into the local context. At this point, the thesis has approached to the 'programmatic flexibility and temporality' as design agents, which provide adequate environment to accommodate various programmatic layers within the Olympic structures and zones. The programmatic components, namely 'spatial', 'functional' and 'relational' flexibility and temporality have been discussed in relation to the design issues; respectively 'scale', 'field' and 'boundary'. Since flexibility and temporality concepts are design problems that need to be

approached specific to each project, the discussion has not involved any spatial or functional schema for the program of the Games.

The designed programmatic flexibility and temporality have the capability to convert the consequences of the design issues into potentials. Provision of a certain level of spatial flexibility and temporality in the design process supports the programmatic layering in the structures, where the unprogrammed areas can be converted into potential spaces ready to accommodate various functions after the Games as well. Functional flexibility and temporality encourage the interactions among the assigned functions within the field, which regulates the programmatic layout by defining the functional relations within the Olympic structures and zones. Relational flexibility and temporality reveal the potential interactions among the activities as the result of the transformation of physical and programmatic boundaries into borders where the maximum programmatic relations can be constructed. When the consequences of the design issues, which emerge from the current approaches to the architectural program of the Games, are analyzed, the consideration of the programmatic flexibility and temporality as a crucial factor that brings about the design issues in favor of application of the programmatic layering presents an alternative to the current approaches.

This thesis has derived its own conclusions depending on the critical analysis of the architectural program of the Games and the discussions on the programmatic framework. These conclusions, which focus on the fixed essence of the architecture of the sports facilities and the scope of the narration regarding the organization of the Olympic Games, may lead to the further studies on the architectural program of the Games.

6.1. The Architecture of the Olympic Structures

Although, the program of the Games has been undergone several changes as a result of the updates in the Games and the different contexts of the host cities, architectural features of the sports facilities, which are the form and spatio-functional schema, have hardly been evolved throughout the Olympic history. Especially when we consider the contemporary stadiums, there is an obvious

resemblance with their precedents like the Coliseum. The constant inherited codes of the sports branches and the hierarchical organization of the facilities end up with stereotype schemas. The Central Lenin Stadium for the 1980 Moscow Games, which was designed as a sport venue with additional functions, such as hotel, cinema, restaurants and cafes, displayed a creative approach to the architectural program of the sport venues. However, this approach to the program did not affect the architecture of the Stadium, which was still sharing the similar stylistic approaches and plan schemas with its precedents. This orthodox approach has hardly influenced the urban tissue around the Stadium to generate programmatic variety.

The inherited codes of the sport branches predominantly shape the form of the structures by requesting certain dimensions, form of the sport areas and size of the architectural interventions. Besides the influence of the inherited codes, the hierarchical organization defines the form of the structures and the spatio-functional relations within the structures as well. These two factors have fixed the form and programmatic relations despite all the improvements in the standards and technology. Further investigations on the architectural features of the sports facilities case by case would help to develop the discussion on the programmatic layering and programmatic flexibility and temporality.

6.2. The Narration of the Host Cities

Despite the strict control mechanism of the IOC, the narration of the host cities has gained a power over the internal and the external forces of the Games to regulate the Olympic processes. Although the narration has had the influence on the organization, it has increased its influence visibly in accordance with the expansion in the scale and the significance of the Games. Especially, while the determined program of the Games defines the physical features of the structures, such as capacity, dimensions, spatial organization, it is the narration that makes the management and organization plans of the structures in the event and the post-event phases. The diagrams in the appendix A clearly displays that throughout the Olympic history, the host cities have had different approaches regarding the

spatial planning, location and scale of the Olympic sites and architectural features of the venues.

For example, although the seating capacities of the last two Olympic Games [Beijing 2008 and London 2012] are very close to each other, the ratio between the temporary and permanent seating, and the number of the spectators show a big difference [Appendix A]. On the contrary to the narration of the Beijing that focused on displaying the ‘beautified global image’ of the city and China, the narration of London that focused on the issues of ‘sustainability’ supported the positive legacy planning. In accordance with this aim, London produced more temporary structures and seats in order to decrease the building number and capacity that the city has to deal with in the post-event phase. Furthermore, the efficient management plan of the 2012 Games provided London to host more spectator within the less number of facilities than Beijing 2008 [Appendix A]. Than it is obvious that the narration as an external force plays an active role above all other forces. Therefore, the internal and external forces should be considered while forming the narration in order to overcome the problems that emerge from the determined program of the Games. In order to further this conclusion, the analytical studies of the narrations of each host city can be conducted in respect to their influences on the architectural program and spatial planning of the Olympic Games. The relationship between the context of the host cities, and the problems regarding the sustainability of the Olympic structures can be further investigated through the narrations.

Consequently, in addition to the existing studies on the urban planning approaches of the Olympic Games, this thesis puts its own contribution on the architectural program of the Olympic Games concerning the sustainability problems that the host cities have faced in the post-event phase. The critical analysis of the architectural program of the Games has led the study to discuss the programmatic layering as a tool to overcome the conflict between the determined and the indetermined program. To further this study, the analyses of the bid files of the present and future candidates would demonstrate the tendencies of the host cities

in spatial planning and development under the influences of the intentions related with the prospective positive legacy of the Olympics. Consideration of the future tendencies on the architectural program of the Olympic Games would provide a background in developing various scenarios to propose possible redefinition of the programmatic flexibility and temporality.

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APPENDIX A

ANALYSIS POSTER

The analytical studies, which are done within the scope of this thesis, are represented in the following page.

linked to world fairs resurrection after wars large scale urban developments introduction of legacy concept by IOC transformation into mix-use urban quarters

1896 Athens: Modest Games: The first Modern Olympic Games. Limited provision of new facilities.

1900 Paris: Side Show of the World Exhibition: Lack of interest. No money to play. Spatial organization was dependent to the World Exhibition.

1904 St. Louis: The Games lasted for several months adjacent to the Fair. Original host city: Chicago gave up due to the financial difficulties.

1908 London: White City Stadium: First to provide substantial new venues for the Olympics. Theatrical Olympic Stadium accommodates multiple events.

1912 Stockholm: Olympic Stadium: Athletic stadium turned into the main architectural and ceremonial arena. Architecture of the facilities began to take on a grander style and to become a symbol of the host cities.

1920 Antwerpen: THE WORLD WAR I: The Games were canceled due to the eruption of the Mount Vesuvius.

1924 Paris: Growth in spatial program including temporary housing for athletes.

1928 Amsterdam: Centripetal role of the athletic stadium. Facilities are gathered in clusters in order to provide spatial network among multiple facilities.

1932 Los Angeles: First Olympic Village: Development of the more substantial facilities. Stadium used for the 1984 games again. More private investments.

1936 Berlin: Propaganda Tool: High standards and quality of the facilities showcased German's cultural accomplishment and facilities. Impressive stadium, facilities and Olympic Village. Much wider impacts on urban infrastructure and facilities than any previous games in order to impress the foreign visitors. Olympic stadium was reused for the World Cup 2006.

1948 London: THE WORLD WAR II: The Games were canceled due to the World War II. Little impact on urban structure. Games were forced to use existing facilities due to the World War II. The program of the Games was manipulated for the benefits of the cities considering their poor conditions.

1952 Helsinki: Olympic village designed to become a permanent residential quarter after the Games. Olympic village was converted into housing for the locals. More impact on urban infrastructure and facilities than any previous games in order to impress the foreign visitors.

1956 Melbourne: Several new Olympic facilities were constructed. Olympic Village was converted into a public sector project. Equestrian sports were held in Stockholm due to quarantine conditions of the Australia.

1960 Rome: Large-Scale Urban Plan: Both new facilities and improvements in urban infrastructure: new water supply system, airport, public transport etc. Two facility clusters linked with transportation infrastructure.

1964 Tokyo: Widest preparations and investments. Improvements in both short term demands and long-term for city's continued population and traffic increase. First international broadcast.

1968 Mexico City: Due to financial constraints, less ambitious approach was taken. Existing facilities were used. The main investment was in the Olympic village, 24 multi purpose, multi storey buildings. Decrease in the number of candidate cities for the 1976 Games.

1972 Munich: Architectural Competition: Olympic site design was selected with a competition. Games were used as catalyst for urban renewal on abandoned Second World War airstrip. Encapsulated Olympics away from metropolitan region. Security of the Olympic Games raised as an important issue for the following Games.

1976 Montreal: Attempts to increase the interest of cities to host the Games. The IOC wanted to show that small cities can host as well. High risk strategy, global inflation. Official report emphasizes long-term community benefits.

1980 Moscow: Built only the essential structures. Little Olympic interference to the future urban development. Under the boycott of the USA.

1984 Los Angeles: Private Investments: Modest investments in new facilities. Existing facilities and university accommodations were used. Los Angeles was the only candidate for 1984 Games under the boycott of USSR.

1988 Seoul: Reviving the power of the Olympics in restructuring urban areas. Improvements in health and hygiene standards. Private cars are restricted during the games. Cultural aspects of the Games were emphasized.

1992 Barcelona: 'Barcelona Model': Extended the role of the Games as a catalyst for urban development. Very successful applications for city's future development. Local facilities were integrated with the Olympic zones so as to create a mix-use development. The successful urban transformation of Barcelona attracted attention of other cities to be host for the Games.

1996 Atlanta: Transportation Issues: Focus on sport facilities, less focus on urban improvements results in transportation problems. Transportation network was heavily relied on public transport and pedestrian movements. Terrorist Attack: Bombing in the centennial park. Security of the Olympic Games started to be questioned for the second time in its history.

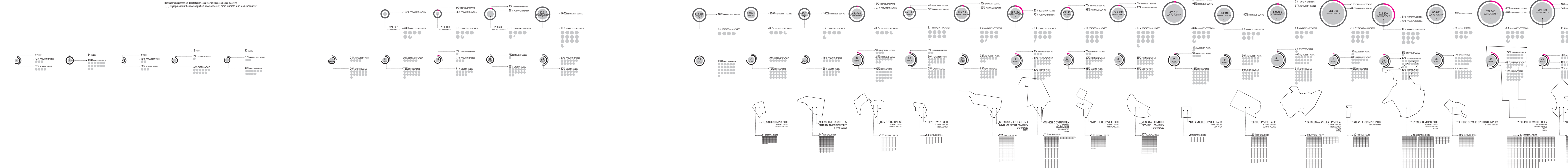
2000 Sydney: Sustainability: Ecologically sensitive design, large cluster of many Olympic facilities. Many Olympic facilities within walking distance. Legacy planning after the Games are over regarding the multi-use urban development. Gave importance to the Games and later on made efforts to transform the Olympic infrastructure into positive legacy.

2004 Athens: Greece reserved the biggest portion of its budget for the security of the Games. Crushed under the heavy burden of sustainability of the Olympic structures. Several life facilities remained. The Olympic Games seriously influence the Greek economy.

2008 Beijing: Architectural master-pieces: Balance in the promotional and regenerative interests of both host nation and city. Beijing took the Games into a different scale with large-scale developments and impressive facilities to show its power to the international audiences. Many large scale structures remained idle after the Games.

2012 London: Legacy Planning: Legacy master plans were developed simultaneously with Olympic master plans. London put forth sustainability of the structures in long-term.

De Coubertin expresses his dissatisfaction about the 1908 London Games by saying "[...] Olympics must be more dignified, more discreet, more intimate, and less expensive."



APPENDIX B

LIST OF THE FACILITIES IN THE OLYMPIC GAMES

I 1896 Athens

1	Athens Lawn Tennis Club	New Venue	Permanent	Tennis	NA
2	Bay of Zea	Existing Venue	Permanent	Swimming	NA
3	Kallithea	Existing Venue	Permanent	Shooting	NA
4	Marathon	Existing Venue	Permanent	Athletics (Marathon), Cycling (Road Race)	NA
5	Neo Phaliron Velodrome	New Venue	Permanent	Cycling (Track)	NA
6	Panathinaiko Stadium	Existing Venue	Permanent	Athletics, Gymnastics, Weightlifting, Wrestling	80000
7	Zappeion	New Venue	Permanent	Fencing	NA
	Total				80000

II 1900 Paris

1	Bois de Boulogne	Existing Venue	Permanent	Croquet, Polo, Tug of war	NA
2	Bois de Vincennes	Existing Venue	Permanent	Archery	NA
3	Boulogne-Billancourt	Existing Venue	Permanent	Shooting	NA
4	Compiègne	Existing Venue	Permanent	Golf	NA
5	Croix-Catelan Stadium	Existing Venue	Permanent	Athletics	NA
6	Le Havre	Existing Venue	Permanent	Sailing	NA
7	Meulan-en-Yvelines	Existing Venue	Permanent	Sailing	NA
8	Neuilly-sur-Seine	Existing Venue	Permanent	Basque pelota	NA
9	Puteaux	Existing Venue	Permanent	Tennis	NA
10	Satory	Existing Venue	Permanent	Shooting	NA
11	Seine	Existing Venue	Permanent	Rowing, Swimming, Water polo	NA
12	Seventh Arrondissement of Paris	Existing Venue	Permanent	Equestrian	NA
13	Tuileries Garden	Existing Venue	Permanent	Fencing	NA
14	Vélodrome de Vincennes	Existing Venue	Permanent	Cricket, Cycling, Football, Gymnastics, Rugby union	NA
	Total				NA

III 1904 St Louis

1	Creve Coeur Lake	Existing Venue	Permanent	Rowing	NA
2	Forest Park	Existing Venue	Permanent	Diving, Swimming, Water Polo	NA
3	Francis Field	New Venue	Permanent	Archery, Athletics, Cycling, Football, Gymnastics, Lacrosse, Roque, Tennis, Tug of war, Weightlifting, Wrestling	19000
4	Francis Gymnasium	New Venue	Permanent	Boxing, Fencing,	NA
5	Glen Echo Country Club	Existing Venue	Permanent	Golf	NA
	Total				19000

IV 1908 London

1	All England Lawn Tennis and Croquet Club	Existing Venue	Permanent	Tennis	NA
2	Bisley Ranges	Existing Venue	Permanent	Shooting	NA
3	Franco-British Exhibition Fencing Grounds	Existing Venue	Permanent	Fencing	NA
4	Henley Royal Regatta	Existing Venue	Permanent	Rowing	NA
5	Hurlingham Club	Existing Venue	Permanent	Polo	NA
6	Northampton Institute	Existing Venue	Permanent	Boxing	NA
7	Prince's Skating Club	Existing Venue	Permanent	Figure skating	NA
8	Queen's Club	Existing Venue	Permanent	Jeu de paume, Rackets	NA
9	Solent	Existing Venue	Permanent	Sailing	NA
10	Southampton Water	Existing Venue	Permanent	Sailing, Water motorsports	NA
11	Uxendon Shooting School Club	Existing Venue	Permanent	Shooting	NA
12	White City Stadium	New Venue	Permanent	Archery, Athletics, Cycling, Diving, Hockey, Football, Gymnastics, Lacrosse, Rugby, Swimming, Tug of war, Water polo, Wrestling	97000
	Total				97000

V 1912 Stockholms

1	Barkarby	Existing Venue	Permanent	Modern Pentathlon (riding)	NA
2	Djurgårdsbrunnsviken	New Venue	Permanent	Diving, Modern Pentathlon (swimming), Rowing, Swimming, Water polo	NA
3	Fältrittklubben	Existing Venue	Permanent	Equestrian (eventing endurance)	NA
4	Kaknäs	Existing Venue	Permanent	Modern Pentathlon (shooting)	NA
5	Liljeholmen	Existing Venue	Permanent	Cycling, Equestrian	NA
6	Lindarängen	Existing Venue	Permanent	Equestrian (eventing steeplechase)	NA
7	Mälaren	Existing Venue	Permanent	Cycling	NA
8	Nynäshamn	Existing Venue	Permanent	Sailing	NA
9	Östermalm Athletic Grounds	Existing Venue	Permanent	Equestrian, Fencing, Modern Pentathlon (fencing), Tennis	NA
10	Råsunda Stadium	Existing Venue	Permanent	Football, Shooting	NA
11	Stockholm Olympic Stadium	New Venue	Permanent	Athletics, Equestrian, Football (football), Gymnastics, Modern pentathlon (running), Tug of war, Wrestling	33000
12	Traneberg	Existing Venue	Permanent	Football	NA
	Total				33000

VII 1920 Antwerp

1	Antwerp	Existing Venue	Permanent	Cycling (road)	NA
2	Antwerp Zoo	Existing Venue	Permanent	Boxing, Wrestling	NA
3	Beerschot Tennis Club	Existing Venue	Permanent	Tennis	NA
4	Beverloo Camp	Existing Venue	Permanent	Shooting (pistol/rifle)	NA
5	Brussels–Schedt Maritime Canal	Existing Venue	Permanent	Rowing	NA
6	Buiten Y (Amsterdam)	Existing Venue	Permanent	Sailing (12 foot dinghy)	NA
7	Gardens of the Egmont Palace (Brussels)	Existing Venue	Permanent	Fencing	NA
8	Hoogboom Military Camp	Existing Venue	Permanent	Shooting (trap shooting, running target)	NA
9	Jules Ottenstadion (Ghent)	New Venue	Permanent	Football (Italy-Egypt match).	NA
10	Nachtegalen Park	Existing Venue	Permanent	Archery	NA
11	Olympisch Stadion	New Venue	Permanent	Athletics, Equestrian, Field Hockey, Football (final), Gymnastics, Modern Pentathlon, Rugby Union, Tug of war, Weightlifting	30000
12	Ostend	Existing Venue	Permanent	Polo, Sailing	NA
13	Palais de Glace d'Anvers	Existing Venue	Permanent	Figure skating, Ice Hockey	NA
14	Stade Joseph Marien (Brussels)	New Venue	Permanent	Football	NA
15	Stade Nautique d'Antwerp	New Venue	Permanent	Diving, Swimming, Water Polo	NA
16	Stadion Broodstraat	Existing Venue	Permanent	Football	NA
17	Vélodrome d'Anvers Zuremborg	Existing Venue	Permanent	Cycling (track)	NA
	Total				30000

VIII 1924 Paris

1	Bagatelle	Existing Venue	Permanent	Polo	598
2	Bassin d'Argenteuil	Existing Venue	Permanent	Rowing	2216
3	Camp de Châlons	New Venue	Permanent	Shooting (600 m free rifle individual and team)	395
4	Fontainebleau	Existing Venue	Permanent	Modern Pentathlon (riding)	NA
5	Hippodrome d'Auteuil	Existing Venue	Permanent	Equestrian	8922
6	Issy-les-Moulineaux	New Venue	Permanent	Shooting (trap shooting, including team event)	41
7	Le Havre	Existing Venue	Permanent	Sailing	541
8	Le Stade Olympique Reims	New Venue	Permanent	Shooting (trap shooting, running target)	420
9	Le Stand de Tir de Versailles	Existing Venue	Permanent	Modern Pentathlon (shooting), Shooting (25 m rapid fire pistol, running deer)	82
10	Meulan-en-Yvelines	Existing Venue	Permanent	Sailing	389
11	Piscine des Tourelles	New Venue	Permanent	Diving, Modern Pentathlon (swimming), Swimming, Water polo	8023
12	Saint-Cloud	Existing Venue	Permanent	Polo	7836
13	Stade Bergeyre	Existing Venue	Permanent	Football	10455
14	Stade de Colombes	New Venue	Permanent	Athletics, Cycling (road), Equestrian, Fencing, Football, Gymnastics, Modern Pentathlon, Rugby Union, Tennis	45000
15	Stade de Paris	Existing Venue	Permanent	Football	5145
16	Stade Pershing	Existing Venue	Permanent	Football	8110
17	Vélodrome d'hiver	Existing Venue	Permanent	Boxing, Fencing, Weightlifting, Wrestling	10884
18	Vélodrome de Vincennes	Existing Venue	Permanent	Cycling (track)	12750
	Total				121807

IX 1928 Amsterdam

1	Amersfoort	Existing Venue	Permanent	Modern pentathlon (riding)	NA
2	Amsterdam	Existing Venue	Permanent	Cycling (road)	NA
3	Buiten Y	Existing Venue	Permanent	Sailing	2263
4	Hiiversum	Existing Venue	Permanent	Equestrian (non-jumping), Modern pentathlon (running)	4763
5	Krachtsportgebouw	New Venue	Permanent	Boxing, Weightlifting, Wrestling	4634
6	Monnikenhuis (Arnhem)	Existing Venue	Permanent	Football	7500
7	Old Stadion	Existing Venue	Permanent	Field hockey, Football	29787
8	Olympic Sports Park Swim Stadium	New Venue	Temporary	Diving, Modern pentathlon (swimming), Swimming, Water polo	6000

9	Olympic Stadium	New Venue	Permanent	Athletics, Cycling (track), Equestrian (jumping), Football, Gymnastics, Korfball	33025
10	Schermsaal	New Venue	Permanent	Fencing, Modern pentathlon (fencing)	559
11	Sloten	Existing Venue	Permanent	Rowing	2230
12	Sparta Stadion Het Kasteel (Rotterdam)	Existing Venue	Permanent	Football	11026
13	Zeeburg Shooting Grounds	Existing Venue	Permanent	Modern pentathlon (shooting)	10455
14	Zuiderzee	Existing Venue	Permanent	Sailing	2263
	Total				114505

X 1932 Los Angeles

1	160th Regiment State Armory	Existing Venue	Permanent	Fencing, Modern pentathlon (fencing)	1800
2	Los Angeles Harbor	Existing Venue	Permanent	Sailing	NA
3	Los Angeles Police Pistol Range	Existing Venue	Permanent	Modern pentathlon (shooting) Shooting	NA
4	Long Beach Marine Stadium	Existing Venue	Permanent	Rowing	17000
5	Los Angeles Avenue	Existing Venue	Permanent	Cycling (road)	NA
6	Olympic Auditorium	Existing Venue	Permanent	Boxing, Weightlifting, Wrestling	10000
7	Olympic Stadium	Existing Venue	Permanent	Athletics, Equestrian (eventing, jumping), Field hockey, Gymnastics	105000
8	Pacific Coast Highway	Existing Venue	Permanent	Cycling (road)	NA
9	Riverside Drive at Griffith Park	Existing Venue	Permanent	Athletics (50 km walk)	NA
10	Riviera Country Club	Existing Venue	Permanent	Equestrian (dressage, eventing), Modern pentathlon (riding)	9500
11	Rose Bowl in Pasadena	Existing Venue	Permanent	Cycling (track)	85000
12	Sunset Fields Golf Club	Existing Venue	Permanent	Modern pentathlon (running)	NA
13	Swimming Stadium	New Venue	Temporary	Diving, Modern pentathlon (swimming), Swimming, Water polo	10000
14	Vineyard Avenue	Existing Venue	Permanent	Cycling (road)	NA
15	Westchester	Existing Venue	Permanent	Equestrian (cross-country riding)	NA
	Total				238300

XI 1936 Berlin

1	Avus Motor Road	Existing Venue	Permanent	Athletics (marathon, 50 km walk), Cycling (road)	NA
2	BSV 92 Field & Stadium	Existing Venue	Permanent	Cycling (track), Handball	1000
3	Dietrich Eckert Open-Air Theatre	New Venue	Permanent	Gymnastics	20000
4	Döberitz	Existing Venue	Permanent	Equestrian (eventing), Modern pentathlon (riding)	NA
5	Deutschlandhalle	New Venue	Permanent	Boxing, Weightlifting, Wrestling	9000
6	Grünau Regatta Course	New Venue	Permanent	Canoeing, Rowing	19000
7	Haus des Deutschen Sports	New Venue	Permanent	Fencing, Modern pentathlon (fencing)	1200
8	Hertha-BSC Field	Existing Venue	Permanent	Football	35000
9	Hockey Stadion	New Venue	Permanent	Field hockey	18000
10	Hockey Stadion #2	New Venue	Permanent	Field hockey	1600
11	Kiel Bay	Existing Venue	Permanent	Sailing	NA
12	Mayfield	New Venue	Permanent	Equestrian (dressage), Polo	75000
13	Mommensstadion	New Venue	Permanent	Football	15005
14	Olympic Stadium	New Venue	Permanent	Athletics, Equestrian (jumping), Football (final), Handball (final)	100000
15	Olympic Swimming Stadium	New Venue	Permanent	Diving, Modern pentathlon (swimming), Swimming, Water polo	20000
16	Police Stadium	Existing Venue	Permanent	Handball	NA
17	Poststadion	Existing Venue	Permanent	Football	45000
18	Ruhleben	Existing Venue	Permanent	Modern pentathlon (shooting)	NA
19	Tennis Courts	New Venue	Permanent	Basketball, Fencing (épée)	832
20	Tennis Stadium	New Venue	Permanent	Basketball	NA
21	Wannsee Golf Course	Existing Venue	Permanent	Modern pentathlon (running)	NA
22	Wannsee Shooting Range	Existing Venue	Permanent	Shooting	NA
	Total				360637

XIV 1948 London

1	Aldershot Command Central Sports Ground- Hampshire	Existing Venue	Permanent	Equestrian (dressage, eventing, individual jumping), modern pentathlon (riding, fencing, swimming)	NA
2	Arsenal Stadium	Existing Venue	Permanent	Football	73000
3	Bisley National Rifle Association Ranges - Bisley, Surrey	Existing Venue	Permanent	Modern pentathlon (shooting), shooting	NA
4	Champion Hill	Existing Venue	Permanent	Football	3000
5	Craven Cottage	Existing Venue	Permanent	Football	25700
6	Cricklefield Stadium	Existing Venue	Permanent	Football	3500
7	Empire Pool	Existing Venue	Permanent	Boxing, diving, swimming, water polo	12500
8	Empire Stadium	Existing Venue	Permanent	Athletics, equestrian (team jumping), field hockey (medal matches), football (medal matches)	82000
9	Empress Hall, Earl's Court	Existing Venue	Permanent	Boxing, gymnastics, weightlifting, wrestling	19000
10	Finchley Lido	Existing Venue	Permanent	Water polo	NA
11	Green Pond Road Stadium	Existing Venue	Permanent	Football	21710
12	Griffin Park	Existing Venue	Permanent	Football	12760
13	Guinness Sports Club	Existing Venue	Permanent	Field hockey	NA
14	Harringay Arena	Existing Venue	Permanent	Basketball, wrestling	NA
15	Henley Royal Regatta - Henley-on-Thames	Existing Venue	Permanent	Canoeing, rowing	NA

16	Herne Hill Velodrome	Existing Venue	Permanent	Cycling (track)	NA
17	Lyons' Sports Club	Existing Venue	Permanent	Field hockey	NA
18	Polytechnic Sports Ground	Existing Venue	Permanent	Field hockey	NA
19	Royal Military Academy	Existing Venue	Permanent	Modern pentathlon (running)	NA
20	Selhurst Park	Existing Venue	Permanent	Football	26330
21	Torbay - Devon	Existing Venue	Permanent	Sailing	NA
22	Tweseldown Racecourse - Fleet, Hampshire	Existing Venue	Permanent	Equestrian (eventing)	NA
23	Wembley Palace of Engineering	Existing Venue	Permanent	Fencing	3630
24	White Hart Lane	Existing Venue	Permanent	Football	36310
25	Windsor Great Park - Windsor, Berkshire	Existing Venue	Permanent	Cycling (road)	NA
	Total				315810

XV 1952 Helsinki

1	Arto Tolsa Arena (Kotka)	Existing Venue	Permanent	Football	3500
2	Hämeenlinna	New Venue	Permanent	Modern pentathlon	NA
3	Harmaja	Existing Venue	Permanent	Sailing	NA
4	Helsinki Football Grounds	Existing Venue	Permanent	Football	10770
5	Huopalahti	Existing Venue	Permanent	Shooting (shotgun)	NA
6	Käpylä	Existing Venue	Permanent	Cycling (road)	25700
7	Laakso	Existing Venue	Permanent	Equestrian (eventing - riding)	12500
8	Lahti	Existing Venue	Permanent	Football	82000
9	Liuskasaari	Existing Venue	Permanent	Sailing	19000
10	Malmi Rifle Range	Existing Venue	Permanent	Shooting (pistol/ rifle)	NA
11	Maunula	Existing Venue	Permanent	Cycling (road)	21710
12	Meilahti	Existing Venue	Permanent	Rowing	12763
13	Messuhalli	Existing Venue	Permanent	Basketball (final), Boxing, Gymnastics, Weightlifting, Wrestling	5500
14	Olympic Stadium *	New Venue	Permanent	Athletics, Equestrian (jumping), Football (final)	70000
15	Pakila	Existing Venue	Permanent	Cycling (road)	NA
16	Ruskeasu Equestrian Hall	Existing Venue	Permanent	Equestrian (dressage, eventing)	NA
17	Swimming Stadium *	New Venue	Permanent	Diving, Swimming, Water polo	12500
18	Taivallahti *	New Venue	Permanent	Canoeing	NA
19	Tali Race Track	Existing Venue	Permanent	Equestrian (eventing - steeplechase)	NA
20	Tampere	Existing Venue	Permanent	Football	17000
21	Tennis Palace *	New Venue	Permanent	Basketball	1250
22	Veritas Stadion (Turku)	Existing Venue	Permanent	Football	9370
23	Velodrome *	New Venue	Permanent	Cycling (track), Field hockey	6000
24	Westend Tennis Hall	Existing Venue	Permanent	Fencing	NA
	Total				309563

* Construction of the venues was begun for the cancelled 1094 Olympic Games

XVI 1956 Melbourne

1	Broadmeadows	New Venue	Permanent	Cycling (road)	NA
2	Hockey Field	New Venue	Permanent	Field hockey	21048
3	Lake Wendouree	Existing Venue	Permanent	Canoeing, Rowing	14300
4	Lill-Jansskogen - Stockholm	Existing Venue	Permanent	Equestrian (eventing)	NA
5	Melbourne Cricket Ground	Existing Venue	Permanent	Athletics, Field hockey (final), Football (final)	104000
6	Oaklands Hunt Club	Existing Venue	Permanent	Modern pentathlon (riding, running)	25700
7	Olympic Park Stadium	New Venue	Permanent	Football	40000
8	Olympic Stadium - Stockholm*	Existing Venue	Permanent	Equestrian (dressage, eventing, jumping)	6000
9	Port Phillip	Existing Venue	Permanent	Sailing	NA
10	Royal Australian Air Force, Laverton Air Base	Existing Venue	Permanent	Shooting (shotgun)	NA
11	Royal Exhibition Building	Existing Venue	Permanent	Basketball (final), Modern pentathlon (fencing), Weightlifting, Wrestling	3500
12	St Kilda Town Hall	Existing Venue	Permanent	Fencing	NA
13	Swimming/Diving Stadium	New Venue	Permanent	Diving, Modern pentathlon (swimming), Swimming, Water polo	6000
14	Ulriksdal - Stockholm	Existing Venue	Permanent	Equestrian (eventing)	NA
15	Velodrome	New Venue	Permanent	Cycling (track)	7900
16	West Melbourne Stadium	New Venue	Permanent	Basketball, Boxing, Gymnastics	7000
17	Williamstown	Existing Venue	Permanent	Modern pentathlon (shooting), Shooting (pistol, rifle)	NA
	Total				235448

XVII 1960 Rome

1	Acqua Santa Golf Club Course	Existing Venue	Permanent	Modern pentathlon (running)	NA
2	Arch of Constantine	Existing Venue	Permanent	Athletics (marathon - finish line)	NA
3	Basilica of Maxentius	Existing Venue	Temporary Seating	Wrestling	5402
4	Baths of Caracalla	Existing Venue	Temporary Seating	Gymnastics	5402
5	Campo Tre Fontane	Existing Venue	Permanent	Field hockey	5000
6	Cesano Infantry School Range	New Venue	Temporary	Shooting (300 m free rifle)	NA
7	Gulf of Naples	Existing Venue	Permanent	Sailing	NA
8	Lake Albano	Existing Venue	Permanent	Canoeing, Rowing	10000

9	Lazio Pigeon Shooting Stand	New Venue	Temporary	Shooting (shotgun trap)	2000
10	Livorno Ardenza Stadium	Existing Venue	Permanent	Football	19240
11	Olympic Velodrome	New Venue	Permanent	Cycling (track), Field hockey	20000
12	Palazzetto dello sport	New Venue	Temporary	Basketball, Weightlifting	NA
13	Palazzo dei Congressi	New Venue	Temporary	Fencing, Modern pentathlon (fencing)	NA
14	Palazzo dello Sport	New Venue	Permanent	Basketball, Boxing	15000
15	Passo Corese	Existing Venue	Permanent	Modern pentathlon (riding)	NA
16	Piazza di Siena	Existing Venue	Permanent	Equestrian (dressage, eventing dressage/ jumping, jumping individual)	15000
17	Piscina delle Rose	Existing Venue	Permanent	Water polo	1850
18	Pratoni del Vivaro	Existing Venue	Permanent	Equestrian (eventing)	NA
19	Raccordo Anulare	Existing Venue	Permanent	Athletics (marathon)	NA
20	Stadio Adriatico (Pescara)	Existing Venue	Permanent	Football	24400
21	Stadio Artemio Franchi (Florence)	Existing Venue	Permanent	Football	47920
22	Stadio dei Marmi	Existing Venue	Permanent	Field hockey	15000
23	Stadio Flaminio	New Venue	Permanent	Football (final)	32000
24	Stadio Olimpico	New Venue	Permanent	Athletics	72700
25	Stadio Olimpico Carlo Zecchini (Grosseto)	New Venue	Permanent	Football	10200
26	Stadio Olimpico del Nuoto	New Venue	Permanent	Diving, Modern pentathlon (swimming), Swimming, Water polo	20000
27	Stadio San Paolo (Naples)	New Venue	Permanent	Football	60240
28	Stadio Tommaso Fattori (L'Aquila)	Existing Venue	Permanent	Football	9285
29	Umberto I Shooting Range	Existing Venue	Permanent	Modern pentathlon (shooting), Shooting (pistol/ rifle)	NA
30	Via Appia Antica	Existing Venue	Permanent	Athletics (marathon)	NA
31	Via Cassia	Existing Venue	Permanent	Cycling (individual road race)	NA
32	Via Cristoforo Colombo	Existing Venue	Permanent	Athletics (marathon), cycling (road team time trial)	NA
33	Via di Grottarossa	Existing Venue	Permanent	Cycling (individual road race)	NA
34	Via Flaminia	Existing Venue	Permanent	Cycling (individual road race)	NA
Total					390639

XVIII 1964 Tokyo

1	Asaka Nezu Park	Existing Venue	Temporary	Modern pentathlon (riding)	1300
2	Asaka Shooting Range	New Venue	Permanent	Modern pentathlon (shooting), Shooting (pistol/ rifle)	1200
3	Chofu City	Existing Venue	Temporary	Athletics (marathon, 50 km walk)	NA
4	Enoshima	New Venue	Permanent	Sailing	NA
5	Fuchu City	Existing Venue	Temporary	Athletics (marathon, 50 km walk)	NA
6	Hachioji City	Existing Venue	Temporary	Cycling (road)	3000
7	Hachioji Velodrome	New Venue	Temporary	Cycling (track)	4100
8	Karasuyama-machi	Existing Venue	Temporary	Athletics (marathon, 50 km walk)	NA
9	Karuizawa	Existing Venue	Temporary	Equestrian	1500
10	Kemigawa	Existing Venue	Temporary	Modern pentathlon (running)	1500
11	Komazawa Gymnasium	New Venue	Permanent	Wrestling	3900
12	Komazawa Hockey Field	New Venue	Permanent	Field hockey	7700
13	Komazawa Stadium	New Venue	Permanent	Football (preliminaries)	20800
14	Komazawa Volleyball Courts	New Venue	Permanent	Volleyball (preliminaries)	3900
15	Korakuen Ice Palace	Existing Venue	Permanent	Boxing	4500
16	Lake Sagami	New Venue	Permanent	Canoeing	1500
17	Mitsuzawa Football Field (Yokohama)	New Venue	Permanent	Football (preliminaries)	10100
18	Nagai Stadium (Osaka)	New Venue	Permanent	Football (preliminaries)	20000
19	National Gymnasium	New Venue	Permanent	Basketball, Diving, Modern pentathlon (swimming), Swimming	15300
20	National Stadium	Existing Venue	Permanent	Athletics, Equestrian (team jumping), Football (final)	71600
21	Nippon Budokan Hall	New Venue	Permanent	Judo	14100
22	Nishikyogoku Athletic Stadium (Kyoto)	Existing Venue	Permanent	Football (preliminaries)	10000
23	Ōmiya Football Field (Saitama)	New Venue	Permanent	Football (preliminaries)	14400
24	Prince Chichiba Memorial Football Field	Existing Venue	Permanent	Football (preliminaries)	17600
25	Sasazuka-machi	Existing Venue	Temporary	Athletics (marathon, 50 km walk)	NA
26	Shibuya Public Hall	New Venue	Permanent	Weightlifting	2200
27	Shinjuku	Existing Venue	Temporary	Athletics (marathon, 50 km walk)	NA
28	Toda Rowing Course	Existing Venue	Permanent	Rowing	8300
29	Tokorozawa Shooting Range	New Venue	Permanent	Shooting (trap)	1300
30	Tokyo Metropolitan Gymnasium	Existing Venue	Permanent	Gymnastics	6500
31	Tokyo Metropolitan Indoor Swimming Pool	Existing Venue	Permanent	Water polo	3000
32	Waseda Memorial Hall	Existing Venue	Permanent	Fencing, Modern pentathlon (fencing)	2200
33	Yokohama Cultural Gymnasium	Existing Venue	Permanent	Volleyball	3800
Total					255300

XIX 1968 Mexico City

1	Agustín Melgar Olympic Velodrome	New Venue	Permanent	Cycling (track)	6400
2	Arena Insurgentes	Existing Venue	Permanent	Wrestling	3390
3	Arena México	Existing Venue	Permanent	Boxing	16236
4	Arena Revolución	Existing Venue	Permanent	Volleyball	1500
5	Avándaro Golf Club	Existing Venue	Permanent	Equestrian (eventing)	NA

6	Campo Marte	Existing Venue	Permanent	Equestrian (dressage, jumping individual)	12875
7	Campo Militar 1	Existing Venue	Permanent	Modern pentathlon (riding, running)	NA
8	Club de Yates (Acapulco)	Existing Venue	Permanent	Sailing	NA
9	Estadio Azteca	Existing Venue	Permanent	Football (final)	100000
10	Estadio Cuauhtémoc (Puebla)	New Venue	Permanent	Football preliminaries	35563
11	Estadio Jalisco (Guadalajara)	Existing Venue	Permanent	Football preliminaries	31891
12	Estadio Nou Camp (León)	Existing Venue	Permanent	Football preliminaries	23609
13	Estadio Olímpico Universitario	Existing Venue	Permanent	Athletics (includes 20 km and 50 km walks), Ceremonies (opening/ closing), Equestrian (jumping team)	83700
14	Fernando Montes de Oca Fencing Hall	New Venue	Permanent	Fencing, Modern pentathlon (fencing)	3000
15	Francisco Márquez Olympic Pool	New Venue	Temporary Seating-5000	Diving, Modern pentathlon (swimming), Swimming, Water polo	15000
16	Insurgentes Theatre	Existing Venue	Permanent	Weightlifting	1100
17	Juan de la Barrera Olympic Gymnasium	New Venue	Permanent	Volleyball	5243
18	Juan Escutia Sports Palace	New Venue	Temporary Seating-7370	Basketball, Volleyball	22370
19	Municipal Stadium	Existing Venue	Temporary Seating-1200	Field hockey	7360
20	National Auditorium	Existing Venue	Temporary Seating-3000	Gymnastics	12450
21	Satellite Circuit	Existing Venue	Permanent	Cycling (road)	NA
22	University City Swimming Pool	Existing Venue	Permanent	Water polo	4993
23	Vicente Suárez Shooting Range	New Venue	Temporary Seating-2000	Modern pentathlon (shooting), Shooting	2000
24	Virgilio Uribe Rowing and Canoeing Course	New Venue	Permanent	Canoeing, Rowing	17600
25	Zócalo	Existing Venue	Permanent	Athletics (marathon start)	NA
	Total				406280

XX 1972 Munich

1	Basketballhalle	New Venue	Permanent	Basketball, Judo	6356
2	Bay of Kiel	New Venue	Permanent	Sailing	8000
3	Bogenschießanlage	New Venue	Temporary	Archery	1100
4	Boxhalle	New Venue	Permanent	Boxing, Judo (final)	7360
5	Bundesautobahn 96	Existing Venue	Permanent	Cycling (road team time trial)	NA
6	Dantebad	Existing Venue	Permanent	Water polo	3200
7	Donauhalle (Ulm)	Existing Venue	Permanent	Handball	2300
8	Drei Flüsse Stadion (Passau)	Existing Venue	Permanent	Football	20000
9	Dressage Facility Nymphenburg	New Venue	Temporary	Equestrian (dressage)	8000
10	Eiskanal (Augsburg)	New Venue	Permanent	Canoeing (slalom)	25000
11	ESV-Stadion (Ingolstadt)	Existing Venue	Permanent	Football	11418
12	Grünwald	Existing Venue	Permanent	Cycling (individual road race)	NA
13	Hockeyanlage	New Venue	Permanent	Field hockey	21900
14	Hohenstaufenhalle (Göppingen)	Existing Venue	Permanent	Handball	5599
15	Jahnstadion (Regensburg)	Existing Venue	Permanent	Football	11200
16	Messegelände Fechtthalle 2	Existing Venue	Temporary Seating-978	Fencing, Modern pentathlon (fencing)	978
17	Messegelände, Fechtthalle 1	Existing Venue	Temporary Seating-978	Fencing (final)	978
18	Messegelände, Gewichtheberhalle	Existing Venue	Temporary Seating-3300	Weightlifting	3300
19	Messegelände, Judo- und Ringerhalle	Existing Venue	Temporary Seating-5750	Judo, Wrestling	5750
20	Olympiahalle	New Venue	Temporary Seating-1800	Gymnastics, Handball (final)	10563
21	Olympiastadion	New Venue	Permanent	Athletics, Ceremonies (opening/ closing), Equestrian (jumping team), Football (final), Modern pentathlon (running)	77000
22	Olympisches Dorf	New Venue	Permanent	Competitor housing	NA
23	Radstadion	New Venue	Permanent	Cycling (track)	4157
24	Regattastrecke Oberschleißheim	New Venue	Temporary Seating-41000	Canoeing (sprint), Rowing	41000
25	Riding Facility, Riem	New Venue	Temporary	Equestrian (jumping individual, eventing cross-country), Modern pentathlon (riding)	23000
26	Rosenaustadion (Augsburg)	Existing Venue	Permanent	Football	28000
27	Schießanlage	New Venue	Permanent	Modern pentathlon (shooting), Shooting	4500
28	Schwimmhalle	New Venue	Temporary Seating-4825	Diving, Modern pentathlon (swimming), Swimming, Water polo (final)	9182
29	Sporthalle (Augsburg)	Existing Venue	Permanent	Handball	3093
30	Sporthalle (Böblingen)	Existing Venue	Permanent	Handball	NA
31	Urban Stadium (Nuremberg)	Existing Venue	Permanent	Football	45548
32	Volleyballhalle	New Venue	Permanent	Volleyball	3680
	Total				392162

XXI 1976 Montreal

1	Centre Étienne Desmarteau	New Venue	Temporary Seating-3000	Basketball preliminaries	5000
2	Centre Pierre Charbonneau	Existing Venue	Permanent	Wrestling	2700
3	Complexe sportif Claude-Robillard	New Venue	Permanent	Handball, Water polo	7476
4	Île Notre-Dame	New Venue	Temporary Seating-7000	Canoeing, Rowing	29000
5	Lansdowne Park	Existing Venue	Permanent	Football	30000
6	Maurice Richard Arena	Existing Venue	Permanent	Boxing, Wrestling	4750
7	Molson Stadium, McGill University	Existing Venue	Permanent	Field hockey	19500
8	Montreal Botanical Garden	Existing Venue	Permanent	Athletics (20 km walk), Modern pentathlon (running)	NA
9	Montreal Forum	Existing Venue	Permanent	Basketball (final), Boxing (final), Gymnastics, Handball (final), Volleyball (final)	18000

10	Mount Royal Park	Existing Venue	Temporary	Cycling (individual road race)	4400
11	Olympic Archery Field	New Venue	Temporary	Archery	2000
12	Olympic Equestrian Centre	Existing Venue	Permanent	Equestrian (all events but jumping team final), Modern pentathlon (riding)	35000
13	Olympic Pool	New Venue	Permanent	Diving, Modern pentathlon (swimming), Swimming, Water polo (final)	10000
14	Olympic Shooting Range	New Venue	Temporary	Modern pentathlon (shooting), Shooting	1000
15	Olympic Stadium	New Venue	Permanent	Athletics, Ceremonies (opening/ closing), Equestrian (jumping team final), Football (final)	70000
16	Olympic Velodrome	New Venue	Permanent	Cycling (track), Judo	2600
17	Olympic Village	New Venue	Permanent	Competitor housing	NA
18	Paul Sauvé Centre	Existing Venue	Permanent	Volleyball preliminaries	4000
19	Pavilion de l'éducation physique	Existing Venue	Temporary Seating-3234	Handball	3732
20	Portsmouth Olympic Harbour	New Venue	Permanent	Sailing	NA
21	Quebec Autoroute 40	Existing Venue	Permanent	Cycling (road team time trial)	NA
22	Sherbrooke Sports Palace	Existing Venue	Permanent	Handball	4400
23	Sherbrooke Stadium	Existing Venue	Permanent	Football	10000
24	St. Michel Arena	Existing Venue	Permanent	Weightlifting	2700
25	Streets of Montreal	Existing Venue	Permanent	Athletics (marathon)	NA
26	Varsity Stadium	Existing Venue	Permanent	Football	21739
27	Winter Stadium, Université de Montréal	Existing Venue	Permanent	Fencing, Modern pentathlon (fencing)	2460
	Total				290457

XXII 1980 Moscow

1	CSCA Athletics Fieldhouse	New Venue	Temporary Seating-2500	Wrestling	8500
2	CSCA Football Fieldhouse	New Venue	Temporary Seating-2500	Fencing, Modern pentathlon (fencing)	8500
3	CSCA Palace of Sports	New Venue	Permanent	Basketball	5500
4	Druzhba Multipurpose Arena	New Venue	Permanent	Volleyball	3900
5	Dynamo Stadium (Minsk)	Existing Venue	Permanent	Football	42000
6	Dynamo Central Stadium, Grand Arena	Existing Venue	Temporary Seating-5000	Football	55000
7	Dynamo Central Stadium, Minor Arena	Existing Venue	Temporary Seating-2000	Field hockey	5000
8	Dynamo Palace of Sports	Existing Venue	Permanent	Handball	5000
9	Dynamo Shooting Range	Existing Venue	Permanent	Modern pentathlon (shooting), Shooting	2300
10	Grand Arena	Existing Venue	Permanent	Athletics, Equestrian (jumping individual), Football (final), Opening/closing ceremonies	78360
11	Indoor Stadium	New Venue	Permanent	Basketball (final), Boxing	17000
12	Izmailovo Sports Palace	New Venue	Permanent	Weightlifting	5000
13	Kirov Stadium (Leningrad)	Existing Venue	Permanent	Football	72000
14	Krylatskoye Sports Complex Archery Field	New Venue	Permanent	Archery	3000
15	Krylatskoye Sports Complex Canoeing and Rowing Basin	Existing Venue	Permanent	Canoeing, Rowing	21600
16	Krylatskoye Sports Complex Cycling Circuit	New Venue	Permanent	Cycling (individual road race)	4000
17	Krylatskoye Sports Complex Velodrome	New Venue	Permanent	Cycling (track)	6000
18	Minor Arena	Existing Venue	Permanent	Volleyball (final)	8700
19	Moscow-Minsk Highway	Existing Venue	Permanent	Cycling (road team time trial)	1800
20	Olympic Regatta in Tallinn	New Venue	Permanent	Sailing	NA
21	Republican Stadium (Kiev)	Existing Venue	Permanent	Football	10000
22	Sokolniki Sports Palace	Existing Venue	Permanent	Handball (final)	6800
23	Sports Palace	Existing Venue	Permanent	Gymnastics, Judo	13700
24	Streets of Moscow	Existing Venue	Permanent	Athletics (20 km/ 50 km walk, marathon)	NA
25	Swimming Pool	Existing Venue	Permanent	Water polo	10500
26	Swimming Pool	New Venue	Permanent	Diving, Modern pentathlon (swimming), Swimming, Water polo (final)	13000
27	Trade Unions' Equestrian Complex	New Venue	Permanent	Equestrian (all but jumping individual), Modern pentathlon (riding, running)	17400
28	Young Pioneers Stadium	Existing Venue	Permanent	Field hockey (final)	5000
	Total				429560

XXIII 1984 Los Angeles

1	Albert Gersten Pavilion	Existing Venue	Permanent	Weightlifting	4156
2	Anaheim Convention Center	Existing Venue	Permanent	Wrestling	7200
3	Artesia Freeway	Existing Venue	Permanent	Cycling (road team time trial)	NA
4	Coto de Caza	Existing Venue	Permanent	Modern pentathlon (fencing, riding, running, shooting)	8000
5	Dodger Stadium	Existing Venue	Permanent	Baseball	56000
6	Eagle's Nest Arena	Existing Venue	Permanent	Judo	4200
7	El Dorado Park	New Venue	Temporary	Archery	4000
8	Fairbanks Ranch Country Club	Existing Venue	Permanent	Equestrian (eventing endurance)	50000
9	Harvard Stadium - Boston, Massachusetts	Existing Venue	Permanent	Football	30323
10	Heritage Park Aquatic Center	Existing Venue	Permanent	Modern pentathlon (swimming)	4500
11	Lake Casitas	Existing Venue	Permanent	Canoeing, Rowing	4680
12	Long Beach Arena	Existing Venue	Permanent	Volleyball	12000
13	Long Beach Convention Center	Existing Venue	Permanent	Fencing	2500
14	Long Beach Shoreline Marina	Existing Venue	Permanent	Sailing	NA

15	Los Angeles Memorial Coliseum	Existing Venue	Permanent	Athletics, Ceremonies (opening/ closing)	92516
16	Los Angeles Memorial Sports Arena	Existing Venue	Permanent	Boxing	15700
17	Los Angeles Tennis Center	Existing Venue	Permanent	Tennis	10000
18	Navy – Marine Corps Memorial Stadium - Annapolis, Mar	Existing Venue	Permanent	Football	34000
19	Olympic Swim Stadium	New Venue	Permanent	Diving, Swimming, Synchronized swimming	17105
20	Olympic Velodrome	New Venue	Temporary Seating-6400	Cycling (track)	8400
21	Pauley Pavilion	Existing Venue	Permanent	Gymnastics	12829
22	Prado Regional Park	New Venue	Permanent	Shooting	5000
23	Raleigh Runnels Memorial Pool	Existing Venue	Temporary Seating-5000	Water polo	5000
24	Rose Bowl	Existing Venue	Permanent	Football (final)	103300
25	Santa Anita Park	Existing Venue	Permanent	Equestrian	33500
26	Santa Monica College	Existing Venue	Permanent	Athletics (marathon start)	NA
27	Stanford Stadium - California	Existing Venue	Permanent	Football	85500
28	Streets of Los Angeles	Existing Venue	Permanent	Athletics (20 km/ 50 km walk, marathon)	NA
29	Streets of Mission Viejo	Existing Venue	Permanent	Cycling (individual road race)	NA
30	Streets of Santa Monica	Existing Venue	Permanent	Athletics (marathon)	NA
31	The Forum	Existing Venue	Permanent	Basketball	17505
32	Titan Gymnasium	Existing Venue	Permanent	Handball	3300
33	Weingart Stadium	Existing Venue	Permanent	Field hockey	22000
Total					653214

XXIV 1988 Seoul

1	Chamshil Baseball Stadium	Existing Venue	Permanent	Baseball (demonstration)	30306
2	Chamshil Gymnasium	Existing Venue	Permanent	Basketball, Volleyball (final)	20000
3	Chamshil Indoor Swimming Pool	New Venue	Permanent	Diving, Modern pentathlon (swimming), Swimming, Synchronized swimming, Water polo	8000
4	Chamshil Students' Gymnasium	Existing Venue	Permanent	Boxing	12000
5	Changchung Gymnasium	Existing Venue	Permanent	Judo, Taekwondo (demonstration)	7000
6	Han River Regatta Course/Canoeing Site	New Venue	Permanent	Canoeing, Rowing	25000
7	Hanyang University Gymnasium	New Venue	Permanent	Volleyball preliminaries	8000
8	Hwarang Archery Field	Existing Venue	Permanent	Archery	1200
9	Kwangju Stadium	Existing Venue	Permanent	Football preliminaries	30000
10	Mongchon Tosong	Existing Venue	Permanent	Modern pentathlon (running)	10000
11	Olympic Fencing Gymnasium	New Venue	Permanent	Fencing, Modern pentathlon (fencing)	7000
12	Olympic Gymnastics Hall	New Venue	Permanent	Gymnastics	14730
13	Olympic Indoor Swimming Pool	New Venue	Permanent	Swimming	10000
14	Olympic Stadium	New Venue	Permanent	Athletics, Equestrian (jumping individual final), Football (final)	100000
15	Olympic Tennis Center	New Venue	Permanent	Tennis	15000
16	Olympic Velodrome	New Venue	Permanent	Cycling (track)	6000
17	Olympic Weightlifting Gymnasium	New Venue	Permanent	Weightlifting	4000
18	Pusan Stadium	Existing Venue	Permanent	Football preliminaries	30000
19	Pusan Yachting Center	New Venue	Permanent	Sailing	2100
20	Royal Bowling Center	Existing Venue	Permanent	Bowling (demonstration)	NA
21	Saemaul Sports Hall	New Venue	Permanent	Volleyball preliminaries	4500
22	Sangmu Gymnasium	New Venue	Permanent	Wrestling	5000
23	Seongnam Stadium	Existing Venue	Permanent	Field hockey	27000
24	Seoul Equestrian Park	New Venue	Permanent	Equestrian (all but jumping individual final), Modern pentathlon (riding)	30000
25	Seoul National University Gymnasium	New Venue	Permanent	Badminton (demonstration), table tennis	5000
26	Streets of Seoul	Existing Venue	Permanent	Athletics (20 km/ 50 km walk, marathon)	NA
27	Suwon Gymnasium	New Venue	Permanent	Handball	6000
28	Taeju Stadium	Existing Venue	Permanent	Football preliminaries	30000
29	Taejeon Stadium	Existing Venue	Permanent	Football preliminaries	30000
30	Taenung International Shooting Range	Existing Venue	Permanent	Modern pentathlon (shooting), Shooting	3000
31	Tongdaemun Stadium	Existing Venue	Permanent	Football preliminaries	27274
32	Tongillo Road Course	Existing Venue	Permanent	Cycling (individual road race, road team time trial)	800
Total					508910

XXV 1992 Barcelona

1	Banyoles Lake	New Venue	Temporary Seating-4500	Rowing	4500
2	Camp Olímpic de Tir amb Arc	New Venue	Temporary	Archery	NA
3	Castelldefels Olympic Canal	Existing Venue	Permanent	Canoeing (sprint)	500
4	Cross-country course	Existing Venue	Permanent	Modern pentathlon (running)	1200
5	El Montanyà Equestrian Centre	New Venue	Temporary Seating-3800	Equestrian (dressage, eventing endurance)	3800
6	Estació del Nord Sports Hall	New Venue	Permanent	Table tennis	5500
7	Estadi Olímpic de Monjuïc	Existing Venue	Permanent	Athletics, Ceremonies (opening/closing)	60000
8	Estadi Olímpic de Terrassa	New Venue	Permanent	Field hockey	10200
9	Estadio Luis Casanova (Valencia)	Existing Venue	Permanent	Football	50000
10	Institut Nacional d'Educació Física de Catalunya	Existing Venue	Permanent	Wrestling	400
11	L'Hospitalet de Llobreht Baseball Stadium	New Venue	Permanent	Baseball (final)	10000
12	La Romareda Stadium (Zaragoza)	Existing Venue	Permanent	Football	43000

13	Marathon course	Existing Venue	Permanent	Athletics (marathon)	NA
14	Mataró	Existing Venue	Permanent	Athletics (marathon start)	NA
15	Mollet del Vallès Shooting Range	New Venue	Permanent	Modern pentathlon (shooting), Shooting	1400
16	Olympic Harbour	New Venue	Permanent	Sailing	NA
17	Palau Blaugrana	Existing Venue	Permanent	Judo, Roller hockey (demonstration final), Taekwondo (demonstration)	6400
18	Palau D'Esports de Granollers	New Venue	Permanent	Handball	5500
19	Palau de la Metal·lúrgia	Existing Venue	Permanent	Fencing, Modern pentathlon (fencing)	NA
20	Palau dels Esports de Barcelona	Existing Venue	Permanent	Gymnastics (rhythmic), Volleyball	6500
21	Palau Sant Jordi	New Venue	Permanent	Gymnastics (artistic), Handball (final), Volleyball (final)	15000
22	Pavelló Club Joventut Badalona	Existing Venue	Permanent	Boxing	5500
23	Pavelló d'Esports de Reus	New Venue	Permanent	Roller hockey (demonstration)	3000
24	Pavelló de l'Ateneu de Sant Sadurní	Existing Venue	Permanent	Roller hockey (demonstration)	1300
25	Pavelló de l'Espanya Industrial	Existing Venue	Permanent	Weightlifting	NA
26	Pavelló de la Mar Bella	New Venue	Permanent	Badminton	4000
27	Pavelló de la Vall d'Hebron	New Venue	Permanent	Basque pelota (demonstration), Volleyball	3300
28	Pavelló del Club Pati Vic	Existing Venue	Permanent	Roller hockey (demonstration)	1700
29	Pavelló Olímpic de Badalona	Existing Venue	Permanent	Basketball	12500
30	Piscina Municipal de Montjuic	Existing Venue	Permanent	Diving, Water polo	6500
31	Piscines Bernat Picornell	New Venue	Permanent	Modern pentathlon (swimming), Swimming, Synchronized swimming, Water polo (final)	10000
32	Pronto Colom	New Venue	Permanent	Front tennis	1000
33	RCD Espanyol Stadium	Existing Venue	Permanent	Football	42000
34	Real Club de Polo de Barcelona	Existing Venue	Temporary Seating-9600	Equestrian (dressage, jumping, eventing final), Modern pentathlon (riding)	9600
35	Tennis de la Vall d'Hebron	New Venue	Permanent	Tennis	8000
36	The A-17 cycling circuit	New Venue	Permanent	Cycling (road team time trial)	2000
37	The Nova Creu Alta Stadium (Sabadell)	Existing Venue	Permanent	Football	16000
38	The Parc del Segre in La Seu d'Urgell	Existing Venue	Permanent	Canoeing (slalom)	2500
39	The Sant Sadurní Cycling Circuit	Existing Venue	Permanent	Cycling (individual road race)	45000
40	Velòdrom d'Horta	New Venue	Permanent	Cycling (track)	3800
41	Viladecans Baseball Stadium	Existing Venue	Permanent	Baseball	4000
42	Walking course	Existing Venue	Permanent	Athletics (walks)	NA
Total					405600

XXVI 1996 Atlanta

1	Alexander Memorial Coliseum	Existing Venue	Permanent	Boxing	10000
2	Atlanta Beach	Existing Venue	Permanent	Volleyball (beach)	12600
3	Atlanta-Fulton County Stadium	Existing Venue	Permanent	Baseball	54000
4	Clark Atlanta University Stadium	New Venue	Permanent	Field hockey	5000
5	Cycling road course	Existing Venue	Permanent	Cycling (road)	NA
6	Florida Citrus Bowl	Existing Venue	Permanent	Football	65000
7	Georgia Dome	Existing Venue	Permanent	Basketball (final), Gymnastics (artistic), Handball (men's final)	72000
8	Georgia International Horse Park	New Venue	Temporary Seating-2400	Cycling (mountain bike), Equestrian, Modern pentathlon (riding, running)	32000
9	Georgia State University Gymnasium	Existing Venue	Permanent	Badminton	3500
10	Georgia Tech Aquatic Center	New Venue	Temporary Seating-17000	Diving, Modern pentathlon (swimming), Swimming, Synchronized swimming, Water polo	17000
11	Georgia World Congress Center	Existing Venue	Permanent	Fencing, Handball, Judo, Modern pentathlon (fencing, shooting), Table tennis, Weightlifting, Wrestling	12300
12	Golden Park	Existing Venue	Permanent	Softball	8700
13	Lake Lanier	New Venue	Temporary Seating-17300	Canoeing (sprint), Rowing	17300
14	Legion Field	Existing Venue	Permanent	Football	81700
15	Marathon course	Existing Venue	Permanent	Athletics (marathon)	NA
16	Morehouse College Gymnasium	New Venue	Permanent	Basketball	6500
17	Morris Brown College Stadium	Existing Venue	Permanent	Field hockey (final)	15000
18	Ocoee Whitewater Center	Existing Venue	Temporary Seating-14400	Canoeing (slalom)	14400
19	Olympic Stadium	New Venue	Permanent	Athletics, Ceremonies (opening/ closing)	85000
20	Omni Coliseum	Existing Venue	Permanent	Volleyball (indoor final)	16500
21	Orange Bowl	Existing Venue	Permanent	Football	72700
22	Robert F. Kennedy Memorial Stadium	Existing Venue	Permanent	Football	56500
23	Sanford Stadium	Existing Venue	Permanent	Football (final)	86100
24	Stegeman Coliseum	Existing Venue	Permanent	Gymnastics (rhythmic), Volleyball (indoor)	10000
25	Stone Mountain Park Archery Center and Velodrome	New Venue	Temporary	Archery, Cycling (track)	10200
26	Stone Mountain Tennis Center	New Venue	Permanent	Tennis	12000
27	Walking course	Existing Venue	Permanent	Athletics (walks)	NA
28	Wassaw Sound	New Venue	Permanent	Sailing	1000
29	Wolf Creek Shooting Complex	New Venue	Permanent	Shooting	7500
Total					784500

XXVII 2000 Sydney

1	Blacktown Olympic Park	New Venue	Temporary Seating-7000	Baseball, Softball	8000
2	Bondi Beach	New Venue	Temporary	Volleyball (beach)	10400
3	Brisbane Cricket Ground	Existing Venue	Permanent	Football	37000
4	Bruce Stadium	Existing Venue	Temporary Seating-15000	Football	40000
5	Centennial Parklands	Existing Venue	Permanent	Cycling (road)	NA
6	Dunc Gray Velodrome	New Venue	Temporary Seating-3000	Cycling (track)	6000
7	Hindmarsh Stadium	Existing Venue	Temporary Seating-5000	Football	20000
8	Marathon course	Existing Venue	Permanent	Athletics (marathon)	NA
9	Melbourne Cricket Ground	Existing Venue	Permanent	Football	98000
10	North Sydney	Existing Venue	Permanent	Athletics (marathon start)	NA
11	NSW Tennis Centre	New Venue	Temporary Seating-7400	Tennis	17400
12	Olympic Sailing Shore Base	New Venue	Temporary Seating-10000	Sailing	10000
13	Olympic Stadium	New Venue	Temporary Seating-30000	Ceremonies (opening/closing), Athletics, Football (final)	115600
14	Penrith Whitewater Stadium	New Venue	Temporary Seating-3500	Canoeing (slalom)	8500
15	Ryde Aquatic Leisure Centre	Existing Venue	Temporary Seating-3000	Water polo (women's final)	3900
16	State Hockey Centre	New Venue	Temporary Seating-10000	Field hockey	15000
17	State Sports Centre	Existing Venue	Temporary Seating-1200	Table tennis, Taekwondo	5000
18	Sydney Baseball Stadium	Existing Venue	Temporary Seating-2000	Baseball (final), Modern pentathlon (riding, running)	14000
19	Sydney Convention and Exhibition Centre	Existing Venue	Temporary Seating-34500	Boxing, Fencing, Judo, Weightlifting, Wrestling	37500
20	Sydney Entertainment Centre	Existing Venue	Temporary Seating-1000	Volleyball (indoor final)	11000
21	Sydney Football Stadium	Existing Venue	Temporary Seating-1000	Football (women's final)	42000
22	Sydney International Aquatic Centre	New Venue	Temporary Seating-9000	Diving, Modern pentathlon (swimming), Swimming, Synchronized swimming, Water polo (men's final)	17500
23	Sydney International Archery Park	New Venue	Temporary Seating-4500	Archery	4500
24	Sydney International Equestrian Centre	New Venue	Temporary Seating-20000	Equestrian	22000
25	Sydney International Regatta Centre	New Venue	Temporary Seating-15000	Canoeing (sprint), Rowing	16000
26	Sydney International Shooting Centre	New Venue	Temporary Seating-5750	Shooting	7000
27	Sydney Opera House	Existing Venue	Permanent	Triathlon	NA
28	Sydney SuperDome	New Venue	Permanent	Basketball (final), Gymnastics (artistic/ trampoline)	20000
29	The Dome and Exhibition Complex	Existing Venue	Permanent	Badminton, Basketball, Gymnastics (rhythmic), Handball, Modern pentathlon (fencing, shooting), Volleyball (indoor)	18000
30	Western Sydney Parklands	New Venue	Permanent	Cycling (mountain biking)	20000
	Total				624300

XXVIII 2004 Athens

1	Agios Kosmas Olympic Sailing Centre	New Venue	Permanent	Sailing	1600
2	Ano Liosia Olympic Hall	Existing Venue	Permanent	Judo, Wrestling	90000
3	Athens Olympic Aquatic Centre	Existing Venue	Permanent	Diving, Swimming, Synchronized swimming, Water polo	23000
4	Athens Olympic Tennis Centre	Existing Venue	Permanent	Tennis	14800
5	Athens Olympic Velodrome	Existing Venue	Permanent	Cycling (track)	5250
6	Faliro Olympic Beach Volleyball Centre	New Venue	Permanent	Volleyball (beach)	9600
7	Faliro Sports Pavilion Arena	New Venue	Permanent	Handball, Taekwondo	10000
8	Fencing Hall	New Venue	Permanent	Fencing	8800
9	Galatsi Olympic Hall	New Venue	Permanent	Gymnastics (rhythmic), Table tennis	6500
10	Goudi Olympic Hall	New Venue	Permanent	Badminton	5000
11	Helliniko Indoor Arena	New Venue	Permanent	Basketball, Handball (final)	15000
12	Kaftanzoglio Stadium (Thessaloniki)	Existing Venue	Permanent	Football	22700
13	Karaiskakis Stadium (Athens)	Existing Venue	Permanent	Football	33000
14	Kotzia Square	Existing Venue	Permanent	Cycling (individual road race)	NA
15	Marathon (city)	Existing Venue	Permanent	Athletics (marathon start)	NA
16	Markopoulo Olympic Equestrian Centre	New Venue	Permanent	Equestrian	15000
17	Markopoulo Olympic Shooting Centre	New Venue	Permanent	Shooting	4000
18	Nikaia Olympic Weightlifting Hall	New Venue	Permanent	Weightlifting	3500
19	Olympic Baseball Centre	New Venue	Permanent	Baseball	13000
20	Olympic Canoe/Kayak Slalom Centre	New Venue	Permanent	Canoeing (slalom)	8000
21	Olympic Hockey Centre	New Venue	Permanent	Field hockey	9400
22	Olympic Indoor Hall	Existing Venue	Permanent	Basketball (final), Gymnastics (artistic, trampolining)	19250
23	Olympic Modern Pentathlon Centre	New Venue	Permanent	Modern pentathlon	10500
24	Olympic Softball Stadium	New Venue	Permanent	Softball	4800
25	Olympic Stadium	Existing Venue	Permanent	Ceremonies (opening/ closing), Athletics, Football (final)	72000
26	Pampeloponnisiako Stadium (Patras)	Existing Venue	Permanent	Football	23590
27	Panathinaiko Stadium	Existing Venue	Permanent	Archery, Athletics (marathon finish)	7500
28	Pankritio Stadium (Heraklion)	Existing Venue	Permanent	Football	26400
29	Panthesaliko Stadium (Volos)	Existing Venue	Permanent	Football	22700
30	Parnitha Olympic Mountain Bike Venue	Existing Venue	Permanent	Cycling (mountain biking)	NA
31	Peace and Friendship Stadium	Existing Venue	Permanent	Volleyball (indoor)	13200
32	Peristeri Olympic Boxing Hall	New Venue	Permanent	Boxing	8000
33	Schinias Olympic Rowing and Canoeing Centre	New Venue	Permanent	Canoeing (sprint), Rowing	14000
34	Stadium at Olympia	Existing Venue	Permanent	Athletics (shot put)	NA
35	Vouliagmeni Olympic Centre	Existing Venue	Permanent	Cycling (individual time trial), Triathlon	3600
	Total				523690

XXIX 2008 Beijing

1	Beach Volleyball Ground	Existing Venue	Permanent	Volleyball (beach)	12000
2	Beijing Institute of Technology Gymnasium	Existing Venue	Permanent	Volleyball	3680
3	Beijing National Aquatic Center	New Venue	Temporary Seating-13000	Swimming, Diving and Synchronized Swimming	17000
4	Beijing National Indoor Stadium	New Venue	Temporary Seating-2000	Gymnastics (artistic, trampoline), Handball (final)	15000
5	Beijing National Stadium	New Venue	Temporary Seating-11000	Athletics, Football (final)	91000
6	Beijing Science and Technology University Gymnasium	New Venue	Temporary Seating-4000	Judo, Taekwondo	8000
7	Beijing Shooting Range Clay Target Field	Existing Venue	Permanent	Shooting (shotgun)	5000
8	Beijing Shooting Range Hall	New Venue	Temporary Seating-6000	Shooting (pistol, rifle)	8000
9	Beijing University of Aeronautics and Astronautics Gymnasium	Existing Venue	Permanent	Weightlifting	5040
10	Beijing University of Technology Gymnasium	New Venue	Temporary Seating-1700	Badminton, Gymnastics (rhythmic)	7500
11	BMX Field	Existing Venue	Permanent	Cycling (BMX)	4000
12	Capital Indoor Stadium	Existing Venue	Permanent	Volleyball (final)	17000
13	China Agricultural University Gymnasium	New Venue	Temporary Seating-2500	Wrestling	8500
14	Fengtai Softball Field	Existing Venue	Permanent	Softball	10000
15	Hong Kong Equestrian Venues	Existing Venue	Permanent	Equestrian	18000
16	Laoshan Mountain Bike Course	Existing Venue	Permanent	Cycling (Mountain Bike)	15000
17	Laoshan Velodrome	New Venue	Temporary Seating-3000	Cycling (track)	6000
18	Olympic Green Archery Field	Existing Venue	Permanent	Archery	5300
19	Olympic Green Convention Center	Existing Venue	Permanent	Fencing, Modern Pentathlon (fencing, shooting)	9900
20	Olympic Green Hockey Field	Existing Venue	Permanent	Field hockey	17000
21	Olympic Green Tennis Center	New Venue	Permanent	Tennis	14000
22	Olympic Sports Center Gymnasium	Existing Venue	Permanent	Handball	6000
23	Olympic Sports Centre	Existing Venue	Permanent	Football, Modern Pentathlon (riding, running)	36000
24	Peking University Gymnasium	New Venue	Temporary Seating-2000	Table tennis	8000
25	Qingdao International Sailing Center	Existing Venue	Permanent	Sailing	NA
26	Qinhuangdao Olympic Sports Center Stadium	Existing Venue	Permanent	Football	33572
27	Shanghai Stadium	Existing Venue	Permanent	Football	80000
28	Shenyang Olympic Sports Center Stadium	Existing Venue	Permanent	Football	60000
29	Shunyi Olympic Rowing-Canoeing Park	New Venue	Temporary Seating-25800	Rowing, Canoeing, and Swimming (marathon)	37000
30	Tianjin Olympic Center Stadium	Existing Venue	Permanent	Football	60000
31	Triathlon Venue	Existing Venue	Permanent	Triathlon	10032
32	Urban Road Cycling Course	Existing Venue	Permanent	Cycling (road race)	NA
33	Workers Indoor Arena	Existing Venue	Temporary Seating-1000	Boxing	13000
34	Workers Stadium	Existing Venue	Permanent	Football	60000
35	Wukesong Baseball Field	Existing Venue	Permanent	Baseball	15000
36	Wukesong Indoor Stadium	New Venue	Temporary Seating-4000	Basketball	18000
37	Ying Tung Natatorium	Existing Venue	Permanent	Water Polo, Modern Pentathlon (swimming)	5522
Total					739046

XXX 2012 London

1	Aquatics Centre	New Venue	Temporary Seating-15000	Diving, Modern Pentathlon (swimming), Swimming, Synchronized Swimming	17500
2	Basketball Arena	New Venue	Temporary	Basketball, Handball (medal round)	12000
3	BMX Track	New Venue	Temporary Seating-6000	Cycling (BMX)	6000
4	City of Coventry Stadium	Existing Venue	Permanent	Football	32000
5	Copper Box	New Venue	Permanent	Handball, Modern Pentathlon (fencing)	6500
6	Earls Court Exhibition Centre	Existing Venue	Permanent-1948 Olympics	Volleyball (indoor)	15000
7	Eton Dorney	Existing Venue	Permanent	Canoeing, Rowing	30000
8	ExCeL	Existing Venue	Permanent	Boxing, Fencing, Judo, Table Tennis, Taekwondo, Weightlifting, Wrestling	10000
9	Greenwich Park	New Venue	Temporary	Equestrian, Modern Pentathlon (riding, running, shooting)	23000
10	Hadleigh Farm	Existing Venue	Permanent	Cycling	20000
11	Hampden Park	Existing Venue	Permanent	Football	52000
12	Horse Guards Parade	New Venue	Temporary	Volleyball (beach)	15000
13	Hyde Park	Existing Venue	Temporary	Swimming (marathon), Triathlon	3000
14	Lee Valley White Water Centre	Existing Venue	Permanent	Canoeing	12000
15	Lord's Cricket Ground	Existing Venue	Permanent	Archery	6500
16	Marathon Course	Existing Venue	Permanent	Athletics (marathon and race walk)	NA
17	Millennium Stadium	Existing Venue	Permanent	Football	74600
18	North Greenwich Arena	Existing Venue	Permanent	Basketball (final), Gymnastics (artistic, trampolining)	20000
19	Old Trafford	Existing Venue	Permanent	Football	76000
20	Olympic Stadium	New Venue	Temporary Seating-20000	Athletics, Ceremonies (opening/closing)	80000
21	Riverbank Arena	New Venue	Temporary Seating-16000	Field Hockey	16000
22	Royal Artillery Barracks	New Venue	Temporary	Shooting	7500
23	St James' Park	Existing Venue	Permanent	Football	52000
24	Velodrome	New Venue	Permanent	Cycling (track)	6000
25	Water Polo Arena	New Venue	Temporary	Water polo	5000
26	Wembley Arena	Existing Venue	Permanent-1948 Olympics	Badminton, Gymnastics (rhythmic)	6000
27	Wembley Stadium	Existing Venue	Permanent	Football (final)	90000
28	Weymouth and Portland National Sailing Academy	Existing Venue	Permanent	Sailing	NA
29	Wimbledon	Existing Venue	Permanent-1908 Olympics	Tennis	30000
Total					723600

APPENDIX C

LIST OF THE OLYMPIC GAMES WITH NUMBERS

1896 Athens				
Venue	New	Permanent	3	7
		Temporary	0	
	Existing		4	
Capacity	Permanent		-	NA
	Temporary		-	
Spectators [Box Office]				700000
Sport				9
Event				43
Athlete				241

1900 Paris				
Venue	New	Permanent	0	14
		Temporary	0	
	Existing		14	
Capacity	Permanent		-	NA
	Temporary		-	
Spectators [Box Office]				NA
Sport				19
Event				95
Athlete				997

1904 St. Louis				
Venue	New	Permanent	2	5
		Temporary	0	
	Existing		3	
Capacity	Permanent		-	NA
	Temporary		-	
Spectators [Box Office]				NA
Sport				13
Event				91
Athlete				651

1908 London				
Venue	New	Permanent	1	12
		Temporary		
	Existing		11	
Capacity	Permanent			
	Temporary			
Spectators [Box Office]				300000
Sport				22
Event				110
Athlete				2008

1912 Stockholm				
Venue	New	Permanent	2	12
		Temporary	0	
	Existing		10	
Capacity	Permanent		-	NA
	Temporary		-	
Spectators [Box Office]				327288
Sport				14
Event				102
Athlete				2407

1920 Antwerp				
Venue	New	Permanent	4	17
		Temporary	0	
	Existing		13	
Capacity	Permanent		-	NA
	Temporary		-	
Spectators [Box Office]				349689
Sport				22
Event				154
Athlete				2626

1924 Paris				
Venue	New	Permanent	5	18
		Temporary	0	
	Existing		13	
Capacity	Permanent		121807	121807
	Temporary		0	
Spectators [Box Office]				588444
Sport				17
Event				126
Athlete				3089

1928 Amsterdam				
Venue	New	Permanent	3	14
		Temporary	1	
	Existing		10	
Capacity	Permanent		108505	114505
	Temporary		6000	
Spectators [Box Office]				665549
Sport				14
Event				109
Athlete				2883

1932 Los Angeles				
Venue	New	Permanent	0	15
		Temporary	1	
	Existing	14		
Capacity	Permanent	228300	238300	
	Temporary	10000		
Spectators [Box Office]			1247580	
Sport			14	
Event			117	
Athlete			1332	
1948 London				
Venue	New	Permanent	0	25
		Temporary	0	
	Existing	25		
Capacity	Permanent	315810	315810	
	Temporary	0		
Spectators [Box Office]			1247300	
Sport			17	
Event			136	
Athlete			4104	

1936 Berlin				
Venue	New	Permanent	11	22
		Temporary	0	
	Existing	11		
Capacity	Permanent	360637	360637	
	Temporary	0		
Spectators [Box Office]			3769892	
Sport			19	
Event			129	
Athlete			3963	
1952 Helsinki				
Venue	New	Permanent	6	24
		Temporary	0	
	Existing	18		
Capacity	Permanent	309563	309563	
	Temporary	0		
Spectators [Box Office]			1136166	
Sport			17	
Event			149	
Athlete			4955	

1956 Melbourne				
Venue	New	Permanent	6	17
		Temporary	0	
	Existing	11		
Capacity	Permanent	235448	235448	
	Temporary	0		
Spectators [Box Office]			1341483	
Sport			17	
Event			145	
Athlete			3314	
Olympic Park [ha]			147	

1960 Rome				
Venue	New	Permanent	8	34
		Temporary	3	
	Existing	21		
Capacity	Permanent	377835	390639	
	Temporary	12804		
Spectators [Box Office]			1436091	
Sport			17	
Event			150	
Athlete			5338	
Olympic Park [ha]			128	

1964 Tokyo				
Venue	New	Permanent	13	33
		Temporary	2	
	Existing	18		
Capacity	Permanent	243900	255300	
	Temporary	11400		
Spectators [Box Office]			2061183	
Sport			19	
Event			163	
Athlete			5151	
Olympic Park [ha]			65	

1968 Mexico				
Venue	New	Permanent	8	25
		Temporary	0	
	Existing	17		
Capacity	Permanent	387710	406280	
	Temporary	18570		
Spectators [Box Office]			3792350	
Sport			18	
Event			172	
Athlete			5516	
Olympic Park [ha]			221	

1972 Munich				
Venue	New	Permanent	13	32
		Temporary	3	
	Existing	16		
Capacity	Permanent	301431	392162	
	Temporary	90731		
Spectators [Box Office]			3307100	
Sport			21	
Event			195	
Athlete			7134	
Olympic Park [ha]			319	

1976 Montreal				
Venue	New	Permanent	8	27
		Temporary	2	
	Existing	17		
Capacity	Permanent	269823	290457	
	Temporary	20634		
Spectators [Box Office]			3187173	
Sport			21	
Event			198	
Athlete			6084	
Olympic Park [ha]			103	

1980 Moscow				
Venue	New	Permanent	12	28
		Temporary	0	
	Existing	16		
Capacity	Permanent	417560		429560
	Temporary	12000		
Spectators (Box Office)				5466321
Sport				21
Event				203
Athlete				5179
Olympic Park (ha)				159

1984 Los Angeles				
Venue	New	Permanent	3	33
		Temporary	1	
	Existing	29		
Capacity	Permanent	637814		653214
	Temporary	15400		
Spectators (Box Office)				5720000
Sport				21
Event				221
Athlete				6829
Olympic Park (ha)				50

1988 Seoul				
Venue	New	Permanent	16	32
		Temporary	0	
	Existing	16		
Capacity	Permanent	508910		508910
	Temporary	0		
Spectators (Box Office)				3305944
Sport				23
Event				237
Athlete				8391
Olympic Park (ha)				234

1992 Barcelona				
Venue	New	Permanent	17	43
		Temporary	1	
	Existing	25		
Capacity	Permanent	507700		525600
	Temporary	17900		
Spectators (Box Office)				3033050
Sport				25
Event				257
Athlete				9356
Olympic Park (ha)				366

1996 Atlanta				
Venue	New	Permanent	9	29
		Temporary	1	
	Existing	19		
Capacity	Permanent	667800		784500
	Temporary	116700		
Spectators (Box Office)				8384300
Sport				26
Event				271
Athlete				10318
Olympic Park (ha)				30

2000 Sydney				
Venue	New	Permanent	14	30
		Temporary	1	
	Existing	15		
Capacity	Permanent	429050		624300
	Temporary	195250		
Spectators (Box Office)				6700000
Sport				28
Event				300
Athlete				10651
Olympic Park (ha)				668

2004 Athens				
Venue	New	Permanent	17	35
		Temporary	0	
	Existing	18		
Capacity	Permanent	523690		523690
	Temporary	0		
Spectators (Box Office)				3581000
Sport				28
Event				301
Athlete				10625
Olympic Park (ha)				100

2008 Beijing				
Venue	New	Permanent	12	37
		Temporary	8	
	Existing	17		
Capacity	Permanent	579814		739046
	Temporary	159232		
Spectators (Box Office)				6500000
Sport				28
Event				302
Athlete				10942
Olympic Park (ha)				824

2012 London				
Venue	New	Permanent	5	29
		Temporary	6	
	Existing	18		
Capacity	Permanent	601100		723600
	Temporary	122500		
Spectators (Box Office)				8210000
Sport				26
Event				302
Athlete				10568
Olympic Park (ha)				226

APPENDIX D

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