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Chapter 5

Architecture and Urban Design: The Shaping of Rio 2016 Olympic Legacies

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Megaevents have become a significant driver of urban transformation and an integral part of “place marketing” strategies for host cities. Many cities have attempt to take these occasions as an opportunity to redevelop or regenerate degraded areas and consequently promote a new global image to attract international inward investment and tourism. Fundamental to securing these legacies is “good” architecture and urban design, which influences the smooth running and appearance of the event as well as the postevent utilization and image of the event sites and venues. Without the incorporation of legacy outcomes in the initial planning of the event, the potential for facilities to fail to integrate with the surrounding urban fabric, aggravate existing social problems and disparities, or become underutilized and expensive “white elephants” are considerable.

This chapter focuses on the architecture and urban design of the Rio 2016 Olympic Games and aims to assess the challenges involved in implementing the legacy master plan for Rio’s Olympic park. Architecture has an undeniable impact on society, as its spatial interventions may lead to profound economic and cultural transformations. It plays an important role in shaping the city through the relationship between urban transformations and people who are associated with the built environment as residents, businesses, and visitors. By taking into consideration the much-discussed context of the Olympic Games as an opportunity for urban regeneration, this chapter evaluates the architecture and urban design of three projects: the Olympic park, the athletes’ park, and the athletes’ village, which are all located in Barra da Tijuca. Landscape architecture and urban theories, as well as interviews undertaken with architects in Rio de Janeiro and personal visits to the projects, serve as the main sources for this discussion. Comparisons with some former Olympics cities provide interesting insights and lessons for the legacy of such projects.

Olympic Legacies

Hosting the Olympics has become an increasingly complex task over the years. As the event has grown in scale, with more participants (athletes, visitors, and others), competitions, sports, and sponsors, Olympics cities have had to incur the costs of much larger investments in works to prepare for the event, such as sports arenas, hotels, improvements in mobility, and general infrastructure. It is generally recognized that the growing scale of the Olympic Games from 1960 onward has required host cities to invest substantially in new urban infrastructure and facilities. Rome, host of the 1960 Games, developed a new municipal water system, built new airport facilities, and improved its public transport and street lighting, for example.¹ Barcelona, host of the 1992 Games, is regarded as a milestone in utilizing the “Olympic effect” to transform both the structure and image of the urban center. This turning point resulted from a moment when cultural and strategic planning became part of urban planning agendas so that cities might be better placed to become “global actors.” Since then the Olympics, which is also a cultural festival rather than just a sports event, have sought to foster development or regeneration to create a new global image for aspiring cities. Architecture and urban design have, as a consequence, become much more fundamental and integral to the success of the Olympic Games so that the new urban spaces fulfill their function both during and after the event.

According to Andrew Zimbalist, who has written about the economic impacts of hosting a sports megaevent, the only way the Olympic Games can prove cost-effective for their host cities is to adopt a long-term legacy perspective.² A host city and country is left with only a modest portion of the revenue from the Games, so it must justify the expenditure through legacy benefits. The situation is aggravated in developing countries, such as the BRICS (Brazil, Russia, India, China, and South Africa), where most of the infrastructure needed for hosting a megaevent has to be built for the Games themselves and therefore requires a much greater investment. For Zimbalist, “any justification for the investment would have to lie in a transformative long-run impact—or ‘legacy,’ in the PR vernacular of the IOC.”³

One of the problems of staging a megaevent related to architecture and urban design is that of establishing the appropriate level of investment for the new facilities and infrastructure. Ever since megaevents have become

part of a cultural and strategic planning agenda, politicians have sought monumental, “starchitecture” masterpieces to act as signatures for the event itself, as well as to promote a city’s global image. Previous host cities like Barcelona, Beijing, and London have featured buildings by international architects, such as Arata Isozaki, Richard Meier, Santiago Calatrava, Norman Foster, Jacques Herzog and Pierre de Meuron, and Zaha Hadid. New architectural techniques and practices have also contributed to the growing extravagance of Olympics architecture: CAD/BIM (Building Information Modeling) software and “parametricism,” for instance, have allowed architects to create shapes that in the past have only been possible in their minds. Peter Buchanan has argued that this turn has encouraged more complex and expensive artistic architectural forms that do not pose any lasting relevance for the urban fabric or help in facing its increasingly pressing issues.⁴ This trend has not only detached architecture from real problems involved in a city but also deflected it from one of its main purposes as an art: to attend to human needs. According to the Vitruvius triad, architecture is the art that combines *utilitas* (utility), *firmitas* (strength), and *venustas* (beauty). Megaevents-related designs can sometimes neglect future utility and therefore compromise the role of architecture in shaping urban spaces and the potential role of megaevents in creating a worthwhile legacy. Santiago Calatrava, for instance, known for his nature-inspired and highly technological buildings, was responsible for renovating Athens’s Olympics Sports Complex for the 2004 Games, which has often been pointed to as a quintessential “white elephant.”

A similar point can be made about the urban design of Olympics-related developments, which often ignore the established principles of creating effective public space in urban areas espoused by architects and planners such as Jan Gehl. Since the 1960s, Gehl has been an advocate of “pedestrianization”, whereby quality spaces (such as squares and parks) are created to allow for gathering and leisure without the disturbance of motor traffic, “active façades,” to create vibrancy, and mixed-use urban environments, to create activity throughout the day. Against the modernist urbanism that prevailed throughout the 1920s until the 1950s, which segregated people and urban spaces, he severely condemns Brasília’s urban planning, for which he coined the expression “Brasília Syndrome.” Gehl says the Brazilian capital was planned for aerial views, not for its inhabitants, and lacks a human scale. Like Gehl, Buchanan criticizes functionalism: to him, it has proven over the years to bare devastating consequences for the urban environment, with architecture failing to relate physically, formally, and rhetorically to local history or its surroundings.⁵

The functional aspects of large-scale stadia and wide-open spaces to accommodate spectator movement in Olympic parks often oppose the creation of thriving, vibrant urban spaces in their legacy mode. Another contentious issue relates to the conversion of athletes' villages into residences. Pressures of economic viability can force developers to make related housing properties more exclusive, with higher prices and less inclusive urban design strategies. Unless the government subsidizes affordable housing schemes, there is a substantial risk of gentrification and social exclusion. This point emphasizes the importance of incorporating legacy issues into the initial planning and design of Olympics facilities. We turn now to consider Rio's Olympics and the architectural and urban design of Barra da Tijuca, with a focus on the issues related to starchitecture, gentrification, and poorly designed public spaces.

An Olympic Rio: plans and implementation

Brazil also tried to repeat the "Olympic urban regeneration formula" for the 2016 Games. In 2009, when Rio de Janeiro was officially announced as the 2016 Olympics city, the first host in South America in history, the whole country celebrated. The vision presented in Rio's bidding process emphasized the promotion of the city and Brazil as a safe place for investments, which suggested the building of different infrastructural works beyond those related to the staging of the Games per se. The management and sustainability plan of the 2016 Games recognized that while the legacy phase is initiated at the end of the event, "all the planning carried out in precedent phases have as reference the goal of creating positive, enduring transformations, maximizing the social, economic, sports and environmental benefit of the Games."⁶

The Games were perceived as an opportunity and catalyst for the country's economy by stimulating infrastructural, architectural, and urban planning works in the city. The world would know Rio not only as the home of Carnival but also as a global, competitive city. Along with this title, however, many promises were made, which demanded joint efforts between municipal, state, and federal governments in the seven years of preparation. The process was not always smooth, and the media released several articles pointing to delays and the prospect of imminent failure by the Brazilian host city.

Rio's Olympics investments were divided into three parts: the "Rio 2016 budget," the "Responsibility Matrix," and the "Public Policies Plan." The first involved investments directly related to the organization and delivery of the Games. The second encompassed publicly and privately financed projects exclusively related to the event, which would not have happened if Rio were not a host city (the Olympic park, for instance). The last referred to projects that anticipated or broadened government investments (municipal, state, and federal) in infrastructure and public policy, such as mobility, urban renovation, environmental, and social improvements. Among them were the Bus Rapid Transit (BRT) lines, the Light Rail Vehicle (VLT, in the Portuguese acronym) in the city center, a new subway line connecting the South Zone to Barra da Tijuca, and the regeneration of the harbor area.

A key decision about the construction of the Olympic park was that it was to be delivered through a public-private-partnership model: in the form of a fifteen-year administrative concession. The consortium created by Odebrecht Infraestrutura, Carvalho Hosken, and Andrade Gutierrez won the bidding process for the construction of the Olympic master plan. This consortium was divided into two private companies: Rio Mais, responsible for building all infrastructure (such as providing for water and sewage) and the building of some venues (Cariocas Arenas, International Broadcast Center, Main Press Center, and the media hotel), and Parque da Lagoa, responsible for the further real estate development of the area as a legacy. Ultimately, this decision has played a significant role in determining the extent and nature of the legacy outcomes, as will be demonstrated later in this paper.

The Olympic Games was staged in four areas of Rio: Deodoro, Copacabana, Maracanã, and Barra da Tijuca.⁷ In addition, some soccer games were held out of the city of Rio, in former World Cup stadia in Brazil. This strategy had been adopted in Barcelona 1992, which also divided competitions among four clusters in the city in order to utilize existing infrastructure and to spread the benefits of urban transformation areas across the city. Along with the sports venues construction, there were improvement works in public transportation (especially through the BRT's corridors), as well as the construction of supporting facilities to the Games, like the athletes' park (concluded in 2011) and the athletes' village, in Barra da Tijuca. The attention given to the city has encouraged private investors to carry out restoration works in historical buildings in the city center.⁸

The main event site was the Olympic park at Barra da Tijuca, which was based on an international design competition held in 2011. The analysis of this project is crucial in order to understand what the Olympic Games represent in terms of architecture and urban planning of the city.

The Olympic Park

During the 1970s, the region of Barra da Tijuca was built as a growth axis in Rio de Janeiro, following a master plan designed by modernist master Lúcio Costa that was ordered by the municipal government in 1969. With eighty-two square kilometers of building lot, it represented 10 percent of the city's land area. During the 1980s, with the construction of many shopping malls and different high-rise building condominiums, it attracted a population that wanted to leave the high priced, already overwhelmed South Zone in search of a new, promising neighborhood. Many real estate companies invested in the region and the original 1969 master plan gradually experienced alterations in order to facilitate approvals for their new developments.

A 1981 decree increased the number of floors permitted for hotels and apartment hotels, allowing a maximum of fifteen floors, while other types of buildings had to comply with a maximum of around five. This measure led to a construction boom in the hotel and apartment-hotel sector. In 2005, another decree changed the maximum number of floors for other buildings, increasing the limit to twelve. After Rio was chosen as an Olympic city in 2009, urban laws were altered further. Through a complementary law in 2013, residential buildings could rise to eighteen floors. This increase was perfectly aligned with investors' interests for future developments in the Olympic park and surrounding areas and illustrates how the Rio Olympic Games were part of a political and economic strategy for urban renovation led by the private sector.⁹

In this sense, when Brazil bid for the Olympics in Rio de Janeiro, the most plausible place to locate the megaevent—and therefore, the main investments—was Barra da Tijuca. The region had staged the 2007 Pan American Games, so there were some sports venues that could be refurbished for the Olympics. A large open area in Barra—the former Jacarepaguá Autodrome—was chosen to accommodate most of the venues and

become the new Olympic park. Nearby, an extensive privately owned area would become the athletes' village and another one, between these two, would become the athletes' park (**Error! Reference source not found.**).

An international design competition, held by the Municipal Olympic Company (EOM, in the Portuguese acronym) and the Brazilian Architects Institute (IAB, in the Portuguese Acronym) in Rio de Janeiro, determined the master plan for the Olympic park. The Brazilian architect, Daniel Gusmão, in a partnership with the British branch of American consulting company AECOM, won the competition. Their proposal was different from the others, particularly regarding its legacy,¹⁰ which envisioned the area's conversion into a high-density neighborhood. The competition demanded a three-phase project, following the model adopted previously in London 2012: Games (2016), transition period (starting in 2018), and legacy (2030) modes. The winning proposal conceived of an "urban park" (in opposition to more natural environments observed in Munich's 1972 or London's 2012 Olympic parks), outlined by a long, sinuous pedestrian path that crossed the whole site, called "Olympic Way," whose design alluded to the famous Copacabana sidewalks. Besides its aesthetic value, "the Way" facilitated logistics by strictly separating flows (visitors, staff, athletes, and others). In addition, the original proposal aimed to use some existing facilities from the 2007 Pan American Games: the Maria Lenk Aquatics Center and the HSBC Arena. A contentious issue was the dismantling of the Pan velodrome, which was not adequate for the Olympics because it did not meet the most recent technical criteria for the sport. A new velodrome had to be built and was later designated for high-performance training.

As a result of high costs and political/economic interests for legacy development, the original master plan proposal underwent several modifications during the execution of the project, including the location of some venues, their status as temporary or permanent venues, and the use of materials. Some of these modifications arguably compromised several of the intended legacy outcomes. A relevant example was the relocation of the Olympics aquatics stadium, designed by GMP Architects. This facility had originally been planned as a temporary arena at the northern main entrance to the park but was relocated to the south of the park to enable permanent arenas, such as the largest tennis arena and the new velodrome, to be relocated to this more visible position. The change also freed more valuable development sites near the lagoon shore for future real estate residential developments.

The conversion of large arenas and facilities into more ordinary uses is usually a challenge for host cities (Figure 5-2). In Rio, the mayor called the strategy of temporary arenas “nomadic architecture.”¹¹ Besides the aquatics stadium, the “Future Arena” (home for handball competitions) was to be dismantled and rebuilt as four different schools after the Games. Moreover, the International Broadcast Center (IBC), which has a floor space of 80,000 square meters (equivalent to four blocks of Rio’s Ipanema neighborhood), was intended to become a business and educational campus after the Games, although this function has not yet been achieved. The metallic structure attached to the main building (the “Energy Center”) was to be disassembled and used by the municipality to build other facilities after the Games.¹² The Olympic Way will undergo transformation in order to reduce its void spaces and to include more trees for legacy uses (Figure 5-2).

If compared to former Olympics cities, Rio traced a rather modest path into “starchitecture,” although it also comprised new architectural masterpieces built by important names in the field, like GMP and SBP’s aquatics stadium and tennis arenas, a Danish House in Ipanema by Henning Larsen (one of the twenty-five national hospitality houses open for the general public), and the Deodoro Complex by Vigliecca and Associates. The arenas and cultural facilities in the city, however, seem to have kept a more modest character in view of the usual spectacle derived from the Olympics. The exception is the Museum of Tomorrow, by Santiago Calatrava, on the renovated harbor, the only major work by a “starchitect,” which in fact was not even part of Olympics works (**Error! Reference source not found.**). The renovation of the harbor is part of the urban operation named Porto Maravilha (Marvelous Harbor), financed by a public-private partnership, which involves works in urban and traffic infrastructure and historical preservation. With the scale of Olympic facilities being so different from daily needs, and uncertainties regarding their maintenance, there is a fear they will be underused in the future.

The gentrification of the Olympics-related developments in Rio appears likely because the post-event transformation of the Olympic park is in the hands of the private sector. There are serious concerns about the social inclusion and diversity of the legacy use of the Olympic park. A related controversial matter regards the Vila Autódromo community, an old irregular occupation in the Olympic park area, which had been a beneficiary of land concessions during the 1990s by the State of Rio. In preparation for the Games, the

government expropriated these properties and moved people to other housing complexes. However, twenty families refused to move and, after a long resistance, were accommodated in new houses within the Olympic park of questionable architectural quality. The result was a segregated community within the Olympic park, with its buildings differing completely in style and scale from the large arenas and luxury hotels nearby (**Error! Reference source not found.** and 5-5). Along with several other cases of forced evictions and displacements across the city, the decimation of Vila Autódromo represents one of the negative social legacies of the Games.

The influence of private-sector concerns about economic viability is also evident in the post-Games adaptation of the Olympic park. The consortium in charge of delivering future developments is able to modify the urban design strategies of the original proposal since it is not obliged to follow the design competitions' guidelines. The original plan was aligned with contemporary, worldwide trends in architecture and urban design, such as "polycentrism" and "compact cities" (**Error! Reference source not found.**). The first entailed the creation of multiple centers within the city to assist traffic and mobility, while the second favored high-density, mixed-use urban spaces. The Alignment Plan, which was approved in 2012 for the urban planning of the area, outlines much larger blocks with a slightly more rigid separation between residential areas, venues, and green areas, which are likely to be detrimental to the creation of a vibrant, mixed-use neighborhood envisaged in the bid.

The Athletes' Village: Ilha Pura

Another development compromised by private-sector-led urban design ideas is the athletes' village, which was built as the residential complex called Ilha Pura by contractors Carvalho Hosken and Odebrecht. Ilha Pura is composed of 3,604 high-profile apartment units distributed among thirty-one towers that are seventeen stories tall. The units vary from seventy-seven square meters to 230 square meters, spread across more than ten kinds of buildings, with eleven different apartment plans. Until August 2016, 600 units had been offered for sale, from which 40 percent were sold.¹³ The other units will be available from 2017 onward. According to the developers, the 820,000-square-meter area follows a mixed-use concept of urban planning. As a new

neighborhood, Ilha Pura was intended to include all commercial and service facilities in one place, as well as a public park and leisure areas. Nonetheless, a visit to the site reveals a different reality: instead of mixing residential buildings with commercial activities on the street level, a big shopping mall is intended to occupy a plot near the prominent high-rise residential towers, excluding the possibility of a real mixed-use urban environment. Moreover, the towers are arranged as a concrete belt around the park that, despite advertised as a public one, has gated access. As informed during a visit to the sales stand, developers intend to build a business campus close to Ilha Pura's plot. No schools, clinics, or day cares are part of the project. It is estimated that contractors Carvalho Hosken and Odebrecht assumed a R\$2.9 billion debt to build the entire area, R\$2.3 billion of which came from a state bank at subsidized interest rates (the Caixa Econômica Federal).¹⁴ With sales trailing badly behind plans, many wonder whether the loan will ever be repaid.¹⁵

From the 820,000-square-meter total area, approximately 206,000 square meters was used by the athletes' village, lodging around 18,000 people during the Games, including 11,000 athletes. The Olympic village should have been completed by the end of February 2016, but, as in other Olympics works in Rio, delays occurred and the apartments were finally delivered in July, weeks before the start of the Games.¹⁶

Nonetheless, several media articles pointed to the infrastructural problems encountered by athletes in the complex, such as poor gas and electricity installations.

The development has been the first one in Latin America to receive the Leadership in Energy and Environmental Design (LEED) Neighborhood Development certification. However, the character of the Ilha Pura development appears more as that of a condominium rather than as a neighborhood. Despite being promoted as incorporating a public park and as a sustainable community, the complex is completely gated and lacks a dynamic urban environment. Ilha Pura is the complete opposite of the traditional, gradually consolidated types of neighborhoods (like Copacabana or Ipanema in Rio's South Zone) that include different typologies, active façades, lively public spaces, and diversity of people and social backgrounds. Its model of high-rise, isolated towers reiterates the ongoing model of development in Barra da Tijuca, which focuses on cars instead of pedestrians and on individualism instead of the community. Moreover, this model is part of a

process that has exemplified altered zoning laws, changed buildings heights, and implemented plot utilization coefficients favored by private developers.

Former Olympics villages have presented approaches that are far more interesting in terms of urban and architectural design. For the 1972 Games in Munich, two kinds of lodging were built: high-rise buildings designed by world-known Heinle, Wischer und Partner, and the students' "bungalows," built in 1971 by the organization Studentenwerk and used during the Games to lodge women athletes. Heinle, Wischer und Partner's project foresaw separated paths for automobiles, leaving the surface free for people to walk and cycle in a safer environment. The complex represents around 255,000 square meters of floor space within nine twelve-story buildings containing 3,100 units. At the beginning, the project was much criticized, since landscaping was not yet completed (trees were not fully grown, for instance), making the whole scenario rather arid and grey. However, as landscape evolved, the area eventually became a very valuable asset, based upon its privileged location and the sense of "community" that formed there. After the Games, in 1972, the bungalows were utilized to lodge students, who reinvented the sober architectural style by drawing graffiti on their walls. After a big renovation held between 2007 and 2010, the colorful, customized architecture was again turned into grey concrete blocks but were soon repainted by students, continuing the tradition with diverse drawings and pop art. Nowadays, these bungalows represent a much-sought-after and fashionable location: it has become a "place" in the sense of being appropriated by its inhabitants.

London also presented an interesting model of housing legacy for the 2012 Games, although many of the developments intended for the Olympic park were still not ready in early 2017. The adaptation of the athletes' village as a residential legacy created the East Village, the first neighborhood within the park, which mixes private and social housing. According London's Olympic Delivery Authority (ODA) annual report 2013–14, the adaptation of the village included the construction of a health center, a day care for eighty children, a school for 2,000 students (opened in 2013), and new public infrastructure, such as new parking areas, twenty-five acres of green areas, new bus stops, bicycle stands, hundreds of benches, and a new road system.

Regarding the urban layout chosen for the London athletes' village project, its buildings follow a "perimeter block" development principle, which is a traditional urban form in many European cities, including London.

In contrast to the Brazilian's athletes' village for Rio 2016, East Village preserves a closer relation between environment and building through lower heights and the exploration of the inner courts of a block formed by this perimeter block occupation. Recent openings of retail and commercial activities on the ground floor of buildings have helped the area to become livelier, with the concept of "active façades" by Jan Gehl beginning to take shape. By increasing urban density, the model encourages a more dynamic urban life. Different architects have designed each complex, which has contributed to a broader range of styles and approaches while at the same time not losing sight of the whole.

The Athletes' Park

Confirming a "pedestrian-unfriendly" character of Barra da Tijuca's projects is the athletes' park, which lies next to the Olympic park and the athletes' village in Rio. The park was laid out in 2011 and covers 150,000 square meters. It was claimed as the first legacy of the Olympics 2016 and was used for training and leisure by athletes during the Games. It is a large events venue, but it is more of a concrete urban square than a park. Designed to host the music festival Rock in Rio, which attracts millions of people, the space is very distant from a more humane concept of a park.

For landscape architects such as Samuel Parsons or the more contemporary, Olympics-commissioned Günther Grzimek, it is of utmost importance to create park landscapes that relate deeply to human affections and feelings. This effect can be achieved in a park through a good design, which includes an interesting set of masses of trees, lawns, water, paths, and banks,¹⁷ as well as offers different reliefs, fauna, climate zones, and activities.¹⁸ Grzimek, who designed Munich's Olympic park in 1972, also defended a democratization of open public spaces and a more human-centered architectural/landscape design. Munich's Olympic park has been widely recognized for the legacy of public space that it created.

Rio's athletes' park, on the contrary, seems to have been designed without any landscape architecture concerns, and the absence of trees contradicts the first requirement of a landscape. For Parsons, a tree should be a holy thing and a crucial element in determining a good relation between man and nature.¹⁹ At the

pedestrian level, the public space of the athletes' park seems empty and alien, which is worsened by the absence of trees. In such a warm city as Rio, this absence of vegetation might dissuade people from using this public space. Sculptural elements have replaced trees (Figure) and almost half of the park area is covered by geometrically laid synthetic grass beds, punctuated by paved paths that converge into a focal point as a semicircle. The complex seems to be a good example of what Gehl has described as the 'Brasília Syndrome,' as it only makes sense when viewed as a pictorial element from above. The park disregards existing urban fabric and flows, and approaches nature only by its proximity to the shore of Jacarepagua's lagoon.

Two personal visits to the "park" in May 2014 and December 2015 revealed a strange urban area, disconnected from its surroundings. On the first visit, there were some children riding their bicycles around, although there were already signs that the space was underused as a public leisure area. In December 2015, the place was closed, with many metal pieces stacked and synthetic grass tiles damaged or removed—probably awaiting transformations for the Games. During the Olympics, large temporary structures were built there, eliminating any possibility of an open, enjoyable space for athletes. In November 2016, Rock in Rio organizers announced the relocation of the music festival to the Olympic park in 2017,²⁰ which means the athletes' park will lose one of its main temporary activities.

Conclusions

All the projects presented, although just a part of Rio Olympics infrastructure, have one characteristic in common: the distance between them and the city's inhabitants. Although architects and urban planners, like Gehl, have pointed to the importance of lively urban spaces, the urban planning model adopted in the Rio Olympic park and village in Barra da Tijuca continues to reproduce the same modernist design criticized in several other cities around the world. Although world-acclaimed architectural offices were involved in the design of Rio's Olympics works, the projects seem to neglect their users. The legacy of the built environment created by the Rio Olympics appears to be counter to the creation of a sustainable, mixed-use community, and the area is poorly connected and integrated with the rest of the city. The infrastructural transportation works have proven themselves to be insufficient on a short-term basis, with completely full BRTs from day one and

a new subway line awaited for more than three decades with only one stop in Barra da Tijuca. For the Games, the experience might have been mitigated because the government declared school holidays for the whole period of competitions as well as holidays on specific days, and the new subway line could be used only by those holding a ticket for the event.

The renovated harbor is often presented as a real legacy from the Olympics, as it was included in the Olympic Public Policy Plan. However, the site did not host any sporting venues and many parts were only façade decorations for the period of the event itself (**Error! Reference source not found.** and **Error! Reference source not found.**). The future of the linear warehouses that hosted the U.S. National Basketball Association (NBA) house and the Coca-Cola stop during the megaevent, for instance, is still uncertain. A good quality landscape architecture is, nevertheless, observed throughout the promenade, along with the provision of public transport in the form of the VLT (whose functionality is still in doubt). However, since this project is not strictly an Olympics one, the true legacy of the 2016 Games in architecture and urban planning is still questionable, especially in the main cluster—Barra da Tijuca.

It is clear that for the Games to be more sustainable not only must changes related to the environment be taken (less fossil fuels, LEED certifications, and so on) but changes related to the way in which cities are shaped by these events must be made. Large arenas, if not planned concurrently with the development of their surroundings and their future uses, will become white elephants. Unilateral processes of planning will always result in painful evictions and removals, negating any social legacy. More participatory design processes and open debates, although time consuming, offer more benefits in the long term. These public engagement exercises should be part of a new agenda for Brazilian architecture and urban planning as in other parts of the world. It would avoid criticisms of social exclusion as one of the main negative legacies of megaprojects, as appears to have been the case in the redevelopment of the Vila Autódromo favela in the Olympic park.

Olympics parks must be planned with their legacy uses in mind from the outset—rather than as an afterthought. A better balance between investors' interests and those of the local community and residents

must be found through state regulation and intervention. When Rio assigned the building of the athletes' village to private investors, it might have imposed rules that guaranteed that the new neighborhood would present favorable conditions for all segments of society, such as requiring a certain percentage of social housing. Moreover, when approving the alignment plan for the future development of the Olympic park, the municipality might have followed the outlines drawn by the original winning proposal, which foresaw smaller blocks to encourage a more mixed environment. To have the Olympic park legacy designed by the same private investors that have shaped Barra da Tijuca over the past decades represents a retreat in urban design and architectural terms. A change in federal legislation and in the Brazilian bidding law is necessary in order to secure compliance of design competition proposals by the consortia in charge of their implementation. Yet, economic conditions over the seven to ten years between the initial bid plans and the eventual legacy transformation can be volatile and change considerably. The ability of developers to be able to respond flexibly to these changing external pressures acts to ensure the economic viability of Olympics-related developments in their postevent mode. Strict regulation to ensure compliance with the original urban design and planning visions of bid documents might actually be counterproductive and create many more negative and wasteful legacies. Nevertheless, modifications to Olympics master plans should not be allowed to completely alter the original conception of Olympics infrastructures. This issue of changing economic viability over the course of an Olympiad encapsulates one of the main planning dilemmas for securing legacy outcomes from Olympics-related regeneration, which cannot be easily regulated.

Finally, it must be said that Rio has still much to reveal in terms of the legacy of the Olympic Games of 2016, which might only be observable in fifty years' time. Nonetheless, architecture and urban design must work together in the process to ensure that "spaces" will become "places" and that the city will not only be attractive to tourists but will become an inclusive, renovated urbanity for its inhabitants.

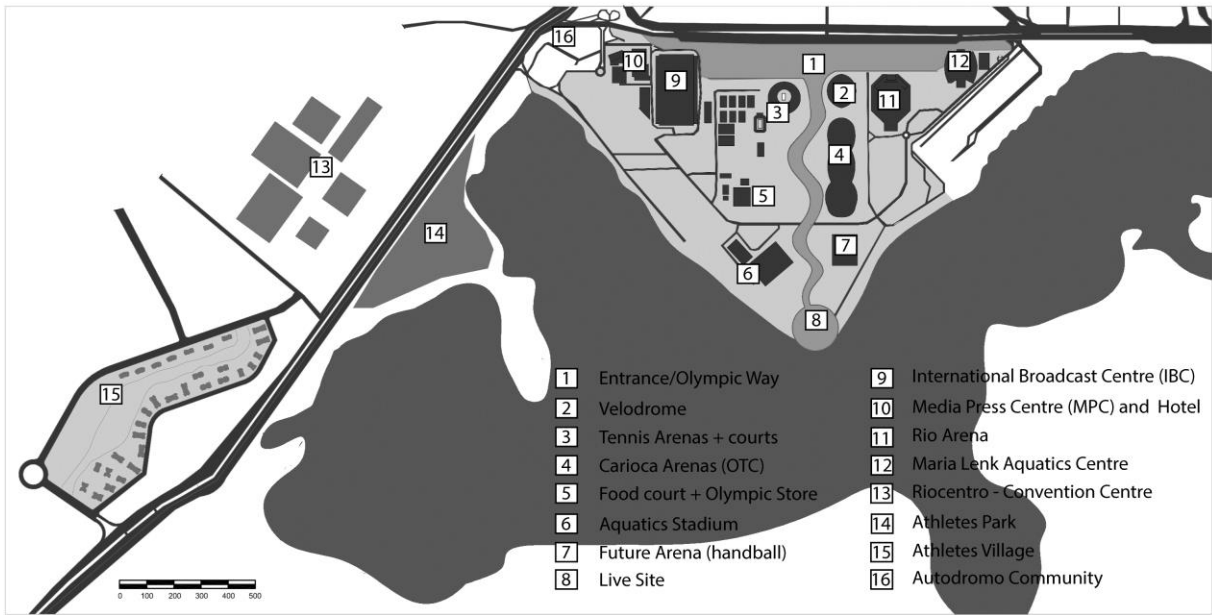


Figure 5-1. Map of Barra da Tijuca Cluster as in Games mode. Some of the locations of temporary venues were changed to benefit future real estate developments along the shore of the lagoon, like the Aquatics Stadium (6) and the Handball Arena (7) (Renata Sanchez, 2017).



Figure 5-2. The Olympic Park during the Rio Olympic Games. The large, open spaces will need substantial investments in landscaping to integrate existing and future development areas in its legacy use, August 2016 (Renata Sanchez).



Figure 5-3. Panorama of the Museum of Tomorrow, designed by Santiago Calatrava, on the renovated harbor, October 2016 (Renata Sanchez).



Figure 5-4. The rebuilt Vila Autódromo community—the low-rise residential properties in the foreground—with the towering Media Press Center and Hotel in the background, October 2016 (Renata Sanchez).



Figure 5-5. In order for the Vila Autódromo community (right middle ground) to gain some long-term coherence, the huge supporting areas needed during the Games, such as the parking lots shown here, will need to be transformed into embracing urban units that dialogue both with large-scale venues and the simpler typologies observed in the village, August 2016 (Renata Sanchez).

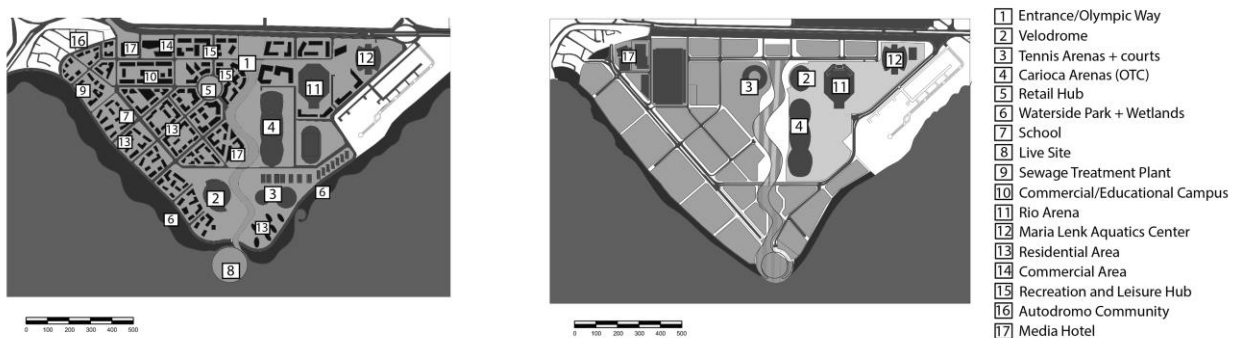


Figure 5-6. Winning proposal on the left (redrawn from original Legacy Master Plan for 2016 Olympics) and the actual Alignment Plan approved by the Municipality of Rio de Janeiro in November 2012 (redrawn from original). The new neighborhood will have bigger, straighter blocks (Renata Sanchez, 2017).



Figure 5-7. The arid athletes' park and the sculptural white elements along its entrance, May 2014 (Renata Sanchez).



Figure 5-8. One of the artistic interventions on the façades of otherwise derelict buildings along the new harbor promenade during the Olympics in August 2016. The intention of this treatment was to create a sense of animation and vitality in what otherwise might have appeared a derelict and deprived scene and was likely to detract from a festival atmosphere (Renata Sanchez).



Figure 5-9. The same façades (on the left) after the Olympics in October 2016. The promenade has a good landscape architecture project but needs time for vegetation to grow (Renata Sanchez).

Notes

1. Brian Chalkley and Stephen Essex, “Urban Development through Hosting International Events: A History of the Olympic Games,” *Planning Perspectives* 14 (1999), pp. 369–94.
2. Andrew Zimbalist, *Circus Maximus: The Economic Gamble behind Hosting the Olympics and the World Cup* (Brookings Institution Press, 2015).
3. *Ibid.*, p. 24.
4. Peter Buchanan, “Empty Gestures: Starchitecture’s Swan Song,” *Architectural Review*, February 27, 2015 (www.architectural-review.com/archive/viewpoints/empty-gestures-starchitectures-swan-song/8679010.article).
5. Peter Buchanan, “Monumente für eine klassizistisch-konstruktivistische Stadt [Monument for a classicist, constructivist city],” in *Barcelona Architektur und Städtebau zur Olympiade 1992* [Barcelona Architecture and Urban Planning for the 1992 Olympics] (Stuttgart, Ger.: Karl Krämer Verlag, 1991), pp. 20–25.
6. *Plano de Gestão da Sustentabilidade dos Jogos Rio 2016*, March 2013, version 1, p. 9.
7. Although Copacabana is actually one neighborhood of Rio’s South Zone, in the Olympics the nomenclature embraced all of the South Zone, reaching close to the city center, with sports being held on Copacabana Beach, the Rodrigo de Freitas Lagoon, Guanabara Bay, Flamengo Park, and Marina da Glória. The same applied to the “Maracanã” cluster, which had competitions at Engenhão Stadium (Olympic Stadium) and the Sambódromo in addition to the Maracanã Stadium itself.

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8. One example is the Moinho Fluminense, a historical building complex (mill) from the end of the nineteenth century, located in the recently regenerated harbor area that is being renovated and converted into a multipurpose conglomerate with a hotel, retail and commercial spaces, residences, a corporate tower, and a medical center.
9. Developments planned included, for instance, the luxurious high-rise development near the Olympics golf course by real estate company Cyrela.
10. According to the competition's public notice, the ratio between sports venues and urban legacy should be forty to sixty. The winning project accomplished a thirty to seventy ratio.
11. Eduardo Paes and Washington Fajardo, "Arquitetura nômade" *PMDB*, April 20, 2012 (<http://pmdb.org.br/artigos/arquitetura-nomade/>).
12. Information obtained during a visit to the Olympic park construction site in December 2015 with an architect from AECOM.
13. Marcela Sorosini and Nelson Lima Neto, "Vila dos atletas da Rio-2016 tem apenas 7% dos imóveis vendidos; preço mínimo supera R\$ 800 mil" *Extra Globo*, August 28, 2016 (<http://extra.globo.com/noticias/economia/vila-dos-atletas-da-rio-2016-tem-apenas-7-dos-imoveis-vendidos-preco-minimo-supera-800-mil-20003067.html>).
14. See "Transparência–Rio 2016," *Portal do Governo Brasileiro* (www.portaldatransparencia.gov.br/rio2016/barra/viladosatletas/index.asp).
15. Samantha Lima, "Carlos Carvalho, o dono da Barra da Tijuca [Carlos Carvalho, the owner of Barra da Tijuca]", *Exame*, June 15, 2012 (<http://exame.abril.com.br/revista-exame/carlos-carvalho-o-dono-da-barra-da-tijuca/>).
16. Lucas Altino, "A um ano de prazo para entrega, Vila Olímpica está 70% pronta [One year before delivery, Olympic Village is 70% ready]", *Jornal O Globo*, February 19, 2015 (<http://oglobo.globo.com/rio/bairros/a-um-ano-de-prazo-para-entrega-vila-olimpica-esta-70-pronta-15334840>).
17. Samuel Parsons Jr., *The Art of Landscape Architecture* (1915; repr., New York: The Knickerbocker Press, 2009).
18. Günther Grzimek, „Gedanken zur Stadt- und Landschaftsarchitektur seit Friedrich Ludwig von Schell“ (1973), In: Stefanie Hennecke, Regine Keller, Juliane Schneegans (orgs.) *Demokratisches Grün Olympiapark München*, Jovis, 2013, pp.118–119.
19. Parsons, *The Art of Landscape Architecture*, p. 200.
20. "Rock in Rio anuncia que Cidade do Rock será no Parque Olímpico [Rock in Rio announces that City of Rock will be in the Olympic Park]" *GI Rio*, April 11, 2016 (<http://g1.globo.com/musica/rock-in-rio/2017/noticia/2016/11/rock-rio-anuncia-que-cidade-do-rock-sera-no-parque-olimpico.html>).