



# Global city patterns in the wake of World Expos: A typology and framework for equitable urban development post mega-event

Jennifer S. Minner<sup>\*,1</sup>, Grace Yixian Zhou, Brian Toy

Department of City and Regional Planning, Cornell University, Ithaca, USA

## ARTICLE INFO

### Keywords:

Mega-events  
World Expos  
Urban development  
Land use change  
Equitable urban development

## ABSTRACT

International exhibitions, also known as world's fairs or international expos, are important examples of large-scale mega-events. Regulated and promoted by the Bureau of International Expositions, world and specialized expos are purported to aid in the achievement of urban development goals for host cities and nations. Scholars have focused analyses on the social and economic impacts of staging mega-events and in the immediate years after events. In this article, the authors consider the spatial and land use aspects of expo sites, developing a post-expo typology to aid in in-depth and comparative analysis of spatial patterns across sites and years after the mega-event. The authors then present a framework for equitable urban development, to consider the equity dimension of sustainability at former mega-event sites. The urban development typology is then considered with the equitable urban development framework, to propose interventions that are specific to particular expo types. The article links consideration of spatial land use patterns and expo legacies long after the first wave of urban development associated with staging an expo has passed.

## 1. Introduction

Mega-events such as World Expos and the Olympic Games have been employed by a host of actors to reshape cities around the world (Monclús, 2009; Roche, 2017). Through time and space these events have left substantial urban footprints in host cities (Mataruna-dos-Santos and Pena, 2017). National, state and local governments, and civic and business leaders have used mega-events to achieve intangible goals such as the reshaping of urban imaginaries through “urban image construction” (Abbott and Minner, 2022; Broudehoux, 2007, 2017). The Bureau of International Expositions (BIE), which regulates World Expos among member states, has promoted these intangible aspects, such as “country branding at World Expos” (Bureau International des Expositions, 2019), but also their potential to leave tangible legacies in the form of urban development of parks, commercial development, infrastructure, landmarks, and public spaces (Bureau International des Expositions, 2018). In other words, expos are used to accelerate urban redevelopment aimed at resurfacing city imaginaries and remaking new urban districts in a bid to re-position global cities (Broudehoux, 2004; Monclús, 2009; Roche, 2017). Mega-events have materialized as “roll out” neoliberal style urban redevelopment that channels public resources toward private

investment and to reshape the economic geography of cities. Gruneau and Horne (2016, p. 9) write of the context for global mega-events:

The spatial rationalization of many of the world's most prominent cities has involved numerous programs of “creative destruction,” for example through massive population displacements and disposessions, the destruction of older communities and the natural environment, the replacement of low-rise communities by high-rise buildings, and the broad-scale redesign of urban space to facilitate the easier movement of people and commerce.

Local hosts of mega-events restructure urban land in this way, transforming uses and users of the land. The civic and business actors involved in organizing expos use these events to shape the nature of public and private investments to achieve urban development goals (Poynter et al., 2016). These goals are often proposed for attainment immediately after an expo, however change at former expo sites may be uneven and the actual uses and social and spatial impacts of expos can differ substantially from the urban development dreams of mega-event organizers. Therefore, what remains largely unanswered is what happens to these sites over the very long term and how scholars and practitioners concerned with the loss of communities and urban fabric

\* Correspondence to: Cornell University, 106W. Sibley Hall, Ithaca, NY 14853, USA.

E-mail address: [j.minner@cornell.edu](mailto:j.minner@cornell.edu) (J.S. Minner).

<sup>1</sup> ORCID: 0000-0002-0403-6890

conceptualize and work towards change at sites where mega-events have long since run their course.

Müller (2015b, p. 634) defines mega-events as “ambulatory occasions of a fixed duration that attract (1) a large number of visitors, (2) have a large mediated reach, (3) come with large costs, and (4) have large impacts on the *built environment* and the population.” (Emphasis added by authors.) While scholarship has focused on the history of mega-events and their cultural impacts, as well as measuring their economic impacts, less has been systematically studied about the land uses and development at and around these sites over larger time scales. This is especially true of expo sites, compared to the former sites of the Summer Olympic Games.

The International Exhibition, known under a variety of names as “expo,” “world’s fair,” and “international exposition,” is a type of large-scale global mega-event, whose official history recognizes as its origin the Great Exhibition of the Works of Industry of All Nations held in 1851 in London. Mostly held in Europe and North America in the early history of these events, the geography of expos has shifted especially since the 1970s with more events held outside this sphere of influence, including larger “World Expos” held in China, Japan, and most recently in the United Arab Emirates and “Specialized Expos” in Korea, Japan, and Kazakhstan, among other countries (Fig. 1). Thus, the expo model continues to be produced in host cities and countries around the world.<sup>2</sup>

Since 1928, the BIE has orchestrated expos throughout the world. The BIE’s role is to ensure quality and regulate the frequency of expos. It consists of 170 member states that are represented by one or more delegates appointed to a General Assembly. This body convenes twice a year to deliberate on new proposals. In recent years, the BIE has encouraged prospective hosts to deliver “legacy,” touted as a loose amalgam of intangibles and economic impacts (Bureau International des Expositions, 2019). Increasingly, the BIE, host nations and cities, as well as the countries participating in the construction of pavilions have adopted the language of legacy and sustainability in describing the benefits of expos (Bureau International des Expositions, 2019, 2017).

Given that expos are purported to contribute to sustainability and to have both intangible and tangible legacies, it makes sense to investigate how those ideas are translated on the ground. In this article, we consider the tangible legacies of expos in terms of subsequent land use and urban development changes within the former site and surrounding context. We also focus on an aspect of sustainability that is so often overlooked, which is its social equity dimension (Campbell, 1996, 2016). Planning scholarship has pointed to “equity” as the missing “e” in the three “E’s of sustainability” (Oden, 2010). Therefore, the authors sought to develop not only a typology for spatial comparison of sites to characterize how the expo sites have developed many years after the event was staged, but also a framework for comparative criteria to evaluate and strive for equitable urban development across the sites and by urban development typology.

The primary research questions were: How are expos used over time? What are specific spatial and land use patterns at these former mega-event sites? With an understanding of these urban development patterns, how can host cities assess longer term impacts and take steps toward creation of more equitable urban development patterns in their wake? Thus, this article serves two functions: one is to create a spatial typology, useful in considering the long-term spatial and social impacts of world expos. Then it demonstrates the application of this typology in considering how the benefits of urban development could become more equitably distributed over time and how past harms associated with the staging of a mega-event could be acknowledged and addressed.

In the next section, we review existing scholarship on mega-events as tools of urban development and literature pertaining to their longitudinal study and comparison globally. Then we describe methods that

involved the spatial tracing of the former mega-event sites and the creation of a typology based on 20 expo sites to understand patterns in relation to each other, to change over time, and to paradigms of urban redevelopment. We describe how this typology provides a foundation that allows comparison across multiple sites. We then propose a framework that could be used to work toward reparative planning at these sites (Williams, 2020) and to strive for more equitable expo legacies of urban development. We conclude the article with a discussion of the value of the typology and framework, and how these tools could be useful in deepening engagement with specific expo sites, as well as next steps in making more global comparisons through time.

## 2. Material and methods

### 2.1. Spatial and social impacts

There is a considerable and growing literature on mega-projects (Flyvbjerg, 2017) and a subset of those are related to mega-events, including their legacies and impacts. Bocarro et al. (2018) conducted a scan of literature on the legacies of both sporting and non-sporting mega-events. They found that most researchers studied mega-events for only very limited time frames—usually only five years at most. They also found that studies of the legacies of non-sporting mega-events, which were focused primarily on World Expositions and European Cities of Culture events, were most concerned with their positive legacies. They critiqued a lack of empirical evidence used in studies of mega-event legacies and pointed out that most studies were of a single case-study design (Bocarro et al., 2018). In another article that synthesizes observations from multiple expos, De Groot (2005) provides a broad introduction to expos, outlines their potential effects and concludes that their “impact(s) can only be measured in the long run and more research is necessary” (p. 19). Müller et al. (2021) takes this a step farther, arguing for a comparative approach and providing a structure for the collection and comparison of mega-events.

Mega-events literature has pointed to substantial impacts, both positive and negative on urban space, as well as both intended and unintended outcomes. For instance, Roche (2017) considers the space-creating and space-filling properties of expos, where iconic architecture has recast urban skylines and newly constructed public spaces have reshaped topographies of urban real estate value. Chan and Li (2017) reveal the ways in which entrepreneurial spaces were created or reshaped through the 2010 Shanghai expo, including the planning and implementation of large-scale transport infrastructure and the redistribution of industrial uses within the metropolitan area. Shanghai’s expo planning incorporated lessons from waterfront expos in other cities, such as Brisbane and Lisbon, in which maritime and industrial uses were transitioned to new parkland and entertainment uses (Aelbrecht, 2014; Ganis, 2015; Minner and Abbott, 2019). Monclús (2018) describes the formal design of expos and how these have been associated with prevalent urban design paradigms and ideas about urbanism at the time mega-event sites are constructed.

Represented within various reports, journal articles, and public protests, a growing number of housing advocates, scholars, and protesters have condemned the displacement of residents from areas cleared and redeveloped for expos, as well as displacement where housing has transitioned to serve higher income visitors and later higher income residents and new development and infrastructure projects have led to increasing rents, demolitions, and transitions in use after the events (Hall and Hodges, 1996; Terminiński, 2015). In addition, expos have served as a major catalyst for investment in public transport and highway transportation systems (Monclús, 2009). This focus on the role of the public to transform infrastructure in a way that shapes private sector investment patterns is integral to Harvey’s theories of urban entrepreneurialism and the spatial fix (Harvey, 2001). These spatial and social processes are consistent with the observation that mega-events are used as means of completely reshaping urban spaces, removing

<sup>2</sup> Horticulture Expos were not analyzed but are often overlooked and understudied as a mega-event type.

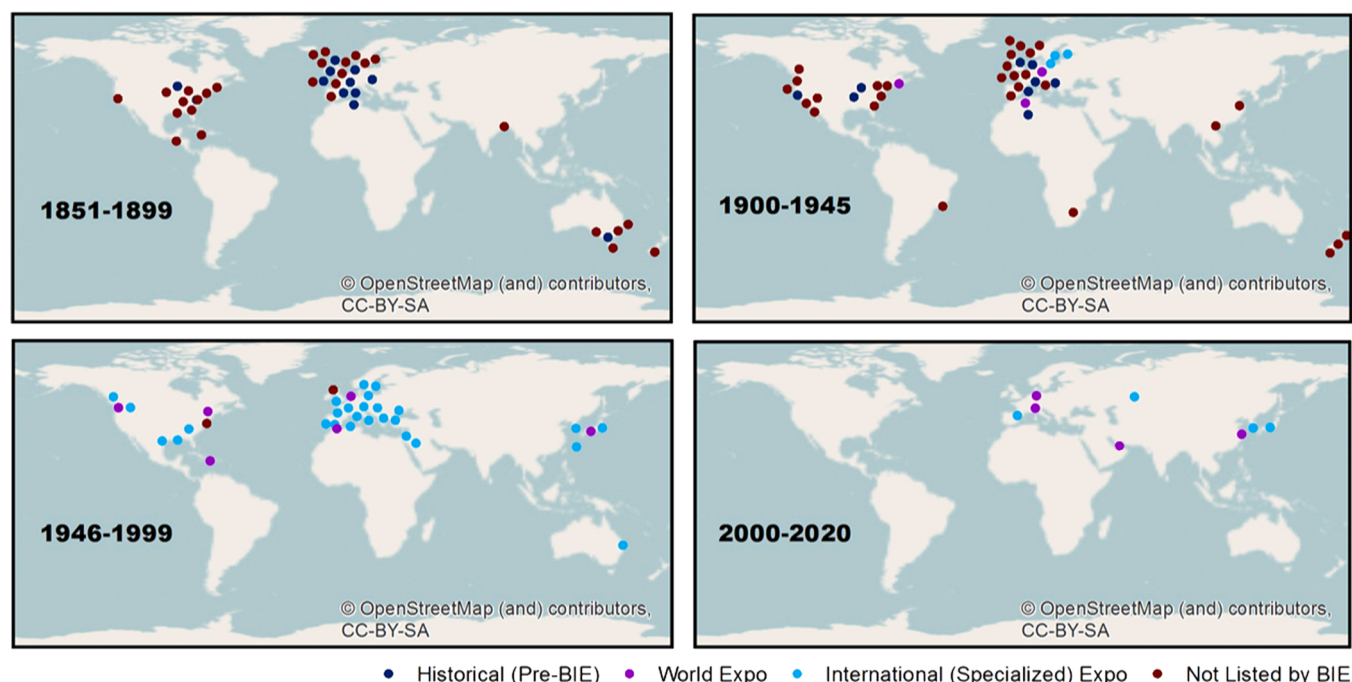


Fig. 1. International Exhibitions by Era. (1851–2020). Map by Lucas Bulger (research assistant) and Jennifer Minner.

buildings and current uses and residents and refilling these spaces with new uses that are most often intended to serve the interests of investors and higher income residents and tourists.

The restructuring of urban development, including impacts such as new land uses, new populations and direct and indirect displacement, are recognized as key effects of mega-events. Although there are few sources that document displacement at expo sites, Table 1 provides displacement estimates from previous studies of expo sites. These displacement estimates were conducted by different groups and using different methods; therefore, basic information about the populations who were displaced is not consistent even across these limited examples. It is important to note that no source was found that comprehensively studies displacement at world expo sites either in preparation for the fair or in years after. While a comprehensive inventory of displacement is beyond the scope of this article, we wish to point out that direct and indirect displacement is a dimension of social impact and has been typically estimated within a very narrow window of time. Both the displacement impacts on low-income and vulnerable residents and the lack of consistent study of this displacement should give researchers further impetus to study the distribution of impacts of expos and who

urban development serves in the long run.

Davis (2011) emphasizes in an article focused on the impacts of the Seoul Olympics on its host city, the need for a “longer historical view of the practice of evictions, clearance and demolition associated with events” (p. 582) and contends that event spaces often form part of a larger urban development trajectory beginning before and extending beyond the mega-event. While the Olympics are beyond the purview of this article, we share this concern and apply Davis (2011) insights to the quite distinct demolition and redevelopment patterns of expos.

Müller (2015a) describes the “mega-event syndrome” which consists of seven symptoms including: overpromising benefits, underestimating costs, event priorities overtaking planning priorities, public risk taking with the expenditure of public funds at risk, the suspension of regular rule of law, elite capture of land value and gentrification, and “event fix” for urban problems that becomes “a waste of resources on event as lever for urban development” (Müller, 2015a, p. 7). His more radical prescription for this ailment is to abandon the mega-event as one tied to urban development, given their unwanted impacts, or to work toward more public benefit more pragmatically.

While there is a burgeoning critical literature on mega-events, there are gaps. Literature on the phenomenon of restructured urban space is fairly common; however, land use and urban morphology studies are lacking that are comparative across sites and also in tracing changes over time—especially distant from the time period of the event. Furthermore, recent Olympic sites are generally the most studied as case studies of the impact and adaptive reuse of buildings. This leaves expos a relatively less studied type of mega-event, despite their importance as mega-projects that have impacted the built environment in a variety of host cities. They serve as an important sample of urban redevelopment schemes that should be tapped to understand and compare their performance and urban dynamics over time. Scholars have called for systematically comparing mega-event sites over time (for examples of those who do, see De Groote, 2005; Gold and Gold, 2016; Monclús, 2009; Müller et al., 2021; Roche, 2017). There are also few that discuss displacement and the issue of public acknowledgement of past harms (Alawadi, 2017; Azuela et al., 1998; Bryson, 2013; Centre on Housing Rights and Evictions, 2007; Dutta, 2007; Zhang, 2018). Inspired by both critical literatures on mega-events and concepts of the just city

Table 1

Examples of displacement in literature on expo sites.

1974 Spokane	“506 low-rent units were closed or demolished immediately adjacent to the fair.” (Bryson, 2013, p. 505)
1982 Knoxville	“Between 1000 and 1500 evicted.” (Azuela, Duhau, Ortiz, 1998, p. 3)
1986 Vancouver	“Between 1000 and 2000 lodging-house units were demolished or closed down. This loss occurred between 1978 and 1984 (Expo '86 was announced in 1980), with another 600 units permanently lost between 1984 and 1986.” (Azuela, Duhau, Ortiz, 1998, p. 4)
1988 Brisbane	“Between 1400 and 3000 people were evicted in Brisbane as a consequence of the 1988 Expo.” (Centre on Housing Rights and Evictions, 2007, p. 11.)
2005 Aichi	3000 displaced (Dutta, 2007)
2010 Shanghai	“18,000 registered households and 272 businesses from the Expo Park within Shanghai’s urban core and over 5,000 households from the site of resettlement housing projects in Shanghai’s urban fringes, excluding renters and those displaced who lost their homes to intensive infrastructure development and city beautification projects.” (Zhang, 2018, p. 94)



(Fainstein, 2010), the right to the city (Marcuse, 2014), and reparative planning (Williams, 2020) this research seeks to address the need for comparative empirical study as well as the promise of a normative framework to guide social equity considerations at these sites in the long term.

## 2.2. Methods

In scholarship on mega-events and social change, Roche (2017) identifies 1970 as a year marking the shift between primary and secondary phases of modernization. This research was also focused on this most recent epoch, given the importance of mega-events as a vehicle for urban development and during a period of growing neoliberalism. However, the analysis included expos from two decades prior, as we observed that many of the expos during the 1960s shared urban redevelopment aspirations and also had significant displacement impacts similar to recent expos. In fact, we believe that the impacts to the urban fabric and social displacement have been accelerating since the 1960s. Rather than impose a rigid sampling scheme, we included most expos post World War II.

The authors mapped the footprints of 20 mega-event sites associated with both World Expos and smaller Specialized Expos.<sup>3</sup> World expos are larger, last for six months, and take place every five years. Specialized expos are defined as lasting for up to three months, taking place between two World Expos and having a maximum size of 25 ha, although prior to a 1988 amendment specialized expos could take place with no limitation on size and for up to six months Bureau International des Expositions a., (2020) Both types were selected, because the spatial impacts of specialized expos can also be quite substantial. The BIE lists 9 World Expos after 1960, beginning with the 1962 World Expo in Seattle and ending with the most recent Dubai 2020 expo Bureau International des Expositions a. (2020). A total of 20 specialized expos are listed on the BIE website between 1960 and 2017 Bureau International des Expositions b. (2020). These begin with the 1961 specialized expo in Turin and end with the most recent 2017 specialized expo in Astana. Nineteen of the 20 mapped sites represent about 65% of the official expos since 1960. The 1964–65 world's fair was not officially sanctioned by the BIE, but still had a substantial impact on New York City and thus was mapped. While the Astana expo site was not mapped in detail, its general attributes were analyzed. Thus, nearly 70% of the expos between 1960 and 2020 were included in the urban development typology described below.

This analysis draws from a review of government reports, scholarly literature, event planning documents, and media sources on mega-events. This research also benefits from site visits to former expo sites in the US, Canada, Australia, Japan, and China between the years of 2013–2019, as well as previous research using archival, media, and spatial analysis for several North American and Australian sites. A post-expo development typology was created based on examination of the sites using geographic information systems (GIS), visual observation, and review of the literature. Then the authors examined each of the post-expo development types to create a framework for equitable urban development, as discussed further in following sections.

## 3. Results: attributes of expo sites

### 3.1. Morphology and land use patterns

Mapping 20 selected expo sites at a broad-brush reconnaissance scale provided insights into the urban morphological aspects of the sites (Fig. 2). These include observations about the size and shape of the

original expo footprints and their relationship to surrounding urban space immediately adjacent to the expo site, and location relative to the city center and the rest of the metropolitan region. The case study sites represent a spectrum of locations. These range from public spaces within dense central business districts (CBDs), locations just beyond CBDs, and in the farther reaches of urban and suburban fabrics.

The outlines of event sites were georeferenced from a variety of historical maps using geographic information systems software. The centrality of the site relative to a host city's CBD is also an important element of the morphology and context of expo sites. In order to provide a measure of centrality within the region, the authors calculated the aerial *distance to CBD* and *distance to City Hall*.<sup>4</sup> The two measurements were used because the size and understanding of the exact boundary of central business districts can vary. The expo sites were categorized into urban or suburban, defined by the location of each site relative to the central city and the urban development and transportation contexts of sites, as observed in satellite images. These characterizations are listed in Table 2 below. Nearly half of the analyzed sites could be characterized as suburban (N = 8). There were three additional sites that were suburban in location prior to the expo, but meant to be developed as extensions of the central city or the urban center. The site in Montreal is urban in location, but could be considered more suburban in character. The rest can be characterized broadly as urban (N = 8).<sup>5</sup>

### 3.2. Post-expo development typology

A post-expo development typology was developed for the 20 mapped sites. The post-expo development typology is indicated in Table 2. These are described in detail below. An additional column in the table describes expo sites using the characterization of land use in three primary categories of Visit, Live, and Work as developed by Dovey et al. (2018). All of the sites could be characterized as including land uses that emphasized the *Visit* category. Nine were identified as having employment uses that fall in the *Work* category (other than tourist-serving). Only six included *Live* category associated with housing. There were no sites that were characterized as *Live* only or *Work* only. These serve as a construct that helps describe the role the expo site appears to play in each region at the time of analysis (2019). Land uses both within the former expo footprint and in the immediate surrounding area (as observed in 2019) are briefly described in the last two columns. These represent general characterizations of predominant land uses.

Five post-expo development types are proposed based on land use observations and literature on mega-events, especially the multi-site analyses of Monclús (2009); Roche, De Groote (2017, 2018, 2005) and in Bureau International des Expositions (2019), as well as literature and news articles about redevelopment specific to individual sites. The proposed post-expo typology includes: downtown urban renewal, post-industrial waterfront transformation, suburban satellite recreation park, science and research innovation hub, and new urban extension. These can be used to understand patterns in the strategies behind the siting of expo sites in the first place. They are also useful in grouping similar expo sites for comparison over time. These are not mutually exclusive categories, as some expo sites fit into more than one. One representative site of each post-expo development typology was

<sup>4</sup> Distance to CBD was measured using the distance from the centroid of each expo site to the estimated center of each CBD. Source of most CBD boundaries was Google Maps. *Distance to City Hall* was measured using aerial distance between the centroid of each expo site to the city hall or primary municipal office.

<sup>5</sup> In most cases, there has not been a dramatic shift in whether an expo site or the resulting node or public space that developed in its place would be considered urban or suburban. However, it is conceivable that over time, some suburban locations might eventually be considered higher density nodes that would more appropriately fall into the category of urban.

<sup>3</sup> The footprint of the 2017 Astana expo site was not fully mapped, but was added to the analysis based on existing information from BIE sources. The 1974 Spokane expo was considered, but not mapped or analyzed for 2019 land use.



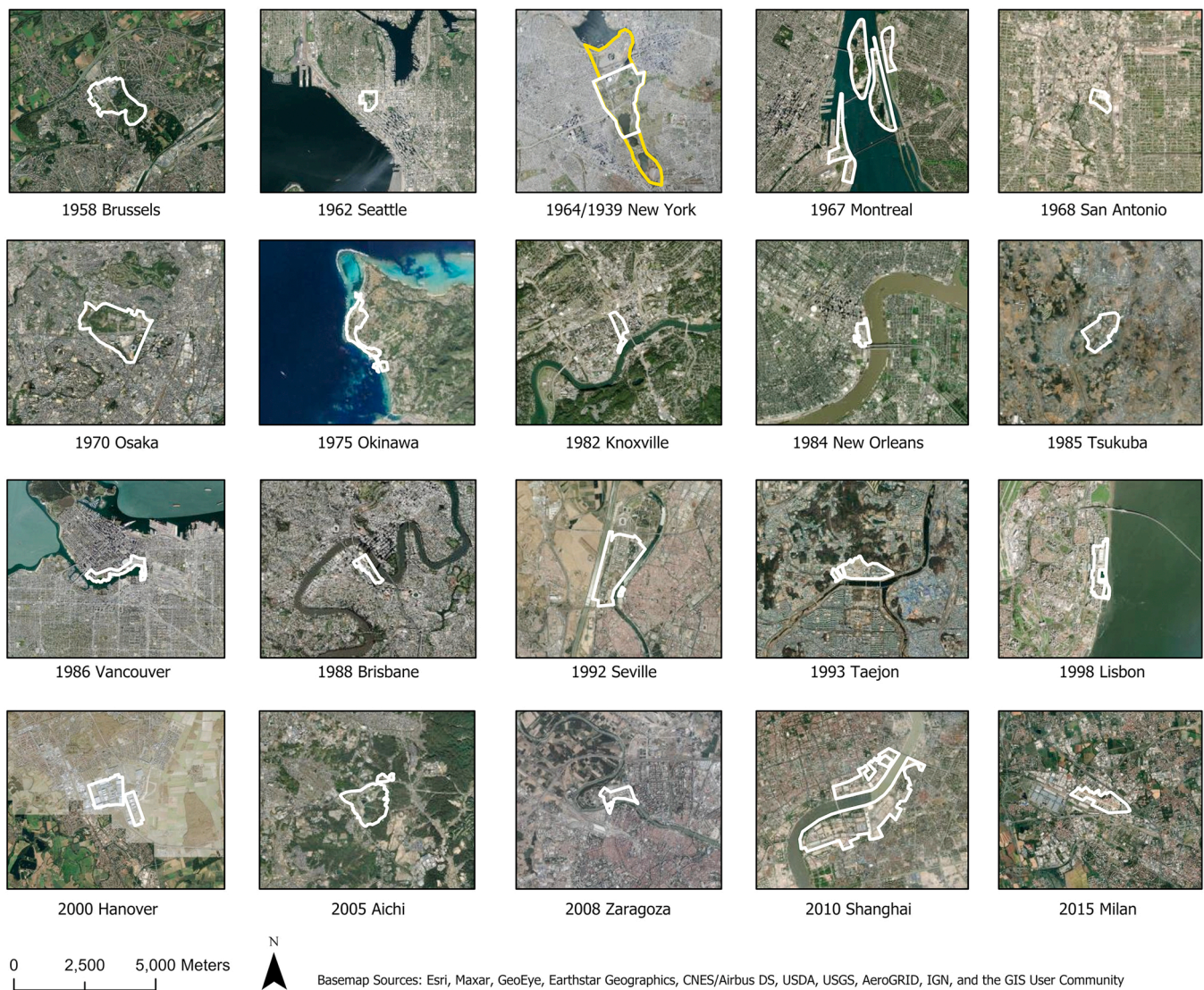


Fig. 2. Mapped World and Specialized Expo sites.

sketched in GIS to illustrate land use patterns as of 2019 (Fig. 3). These sketches of contemporary land use were produced using satellite images from Google Earth, as well as media and additional online sources that provided additional detail as to uses in and around five representative sites.

The authors caution that these are broad brush categories and within the span of this article, only brief summaries are included that discuss example expos for each type.

### 3.2.1. Downtown urban renewal

Downtown urban renewal efforts were aimed at counteracting forces of suburbanization and disinvestment in cities' central business districts, and bringing a new infusion of investment to central cities. This model for expo-led regeneration involved the creation of civic centers that included leisure, culture, and convention center uses (Monclús, 2009). Expo sites that fit this typology were located in areas identified by civic leaders as "blighted," and were targeted for clearance of existing land uses and redevelopment, particularly among North American sites during the 1960s - 1980s. Low-income residents were displaced from urban neighborhoods either directly from demolition and clearance of the site, or indirectly through increases in property values and rents in the area. There have also been conversion of land uses to serve higher income populations and tourists. Conference centers were incorporated at

many of these sites, as were other cultural amenities in the form of museums and shopping areas.

Examples of such sites include Seattle, San Antonio, Knoxville, New Orleans, Spokane and Vancouver. These are relatively small and located in or adjacent to the Central Business District. The Seattle Center, site of the 1962 world's fair, serves as an illustrative example (Fig. 3). The site was inextricably linked to the city's downtown urban renewal scheme and involved creation of a new civic center within downtown. In many ways this aspiration was realized, with the remaining structures from the fair converted into museums, performing arts buildings, and sports venues. Surrounding the site are residential, commercial, and mixed-use developments. To this day, the Seattle Center remains a tourist destination with local, regional, and international draw. In other cases of downtown urban renewal, post-expo redevelopment has stalled and sites have struggled to achieve aspirational goals at particular points in their individual histories. See for example, Minner and Abbott (2019) for discussion of the Hemisfair site in San Antonio, which has undergone multiple redevelopment attempts.

### 3.2.2. Post-industrial waterfront transformation

The use of expos to transition waterfront lands and build new amenities to attract investment are integral to urban development in host cities worldwide, including Brisbane, Montreal, New Orleans,

**Table 2**  
Attributes of Expo sites relative to host city/area / General land uses in 2019.

	Post-expo Development Typology	Area (hectares)	Distance to Center of CBD / Distance to City Hall (2019)	Urban / Suburban	Visit/live/work using (Dovey et al. 2018)	Primary land uses within the former expo site	Primary land uses in the surrounding area
<b>1958 Brussels</b>	Suburban Satellite Recreation Park	202.3	4.26 km / 5.42 km	Suburban	Visit	Green space, culture and entertainment, convention and exhibition center	Residential, mixed use (hotels, offices)
<b>1962 Seattle</b>	Downtown Urban Renewal	29.9	1.95 km / 2.59 km	Urban	Visit	Culture and entertainment, green space, sports	Residential, mixed use
<b>1964 New York</b>	Suburban Satellite Recreation Park	261.4 <sup>a</sup>	13.39 km / 14.22 km	Suburban	Visit	Green space, culture and entertainment, sports	Residential, mixed use, transportation and parking
<b>1967 Montreal</b>	Suburban Satellite Recreation Park	400.1	3.30 km / 1.56 km	Urban in location/ suburban <sup>in urban fabric type</sup>	Visit	Green space, culture and entertainment (museums, amusement park), transportation and parking	Residential
<b>1968 San Antonio</b>	Downtown Urban Renewal <sup>b</sup>	37.5	In CBD (1.07 km) <sup>c</sup> /1.23 km	Urban	Visit/live (residential under construction)	Mixed use, green space, convention and exhibition center, civic center	Residential, commercial
<b>1970 Osaka</b>	Suburban Satellite Recreation Park	329.8	12.51 km / 13.09 km	Suburban	Visit	Green space, culture and entertainment, commercial (shopping mall), sports, transportation and parking	Residential, education and research (university)
<b>1975 Okinawa</b>	Suburban Satellite Recreation Park	100.0	Okinawa Prefecture Capital > 50 km from event site / multiple City Halls within Prefecture	Suburban	Visit	Green space, culture and entertainment	Commercial (including hotels)
<b>1982 Knoxville</b>	Downtown Urban Renewal	29.1	In CBD (0.53 km) / 0.64 km	Urban	Visit/live	Green space, mixed use, convention and exhibition center	Residential, education and research (university), commercial
<b>1984 New Orleans</b>	Downtown Urban Renewal / Post-industrial Waterfront Transformation	32.9	In CBD (0.85 km) / 1.47 km	Urban	Visit	Mixed use (mall, hotels), convention and exhibition center	Commercial (including hotels), residential
<b>1985 Tsukuba</b>	Science and Research Innovation Hub	101.2	Boundary and centroid of CBD unknown / 2.17 km	Suburban	Work/visit	Education and research, green space	Green space, industrial
<b>1986 Vancouver</b>	Post-industrial Waterfront Transformation / Downtown Urban Renewal	70.8	In CBD (0.95 km) / 1.37 km	Urban	Visit/live	Mixed use (including condos), green space, culture and entertainment, sports	Commercial, residential
<b>1988 Brisbane</b>	Post-industrial Waterfront Transformation/Downtown Urban Renewal	39.7	1.01 km / 1.00 km	Urban	Visit/live/work	Green space, convention and exhibition center, mixed use, education and research	Mixed use
<b>1992 Seville</b>	Science and Research Innovation Hub	214.9	3.77 km / 2.38 km	Suburban transitioning to Urban	Work/visit	Education and research (offices), culture and entertainment (amusement park), green space, transportation and parking	Mixed use
<b>1993 Taejeon</b>	New Urban Extension / Science and Research Innovation Hub	100.0	2.78 km / 2.96 km	Urban	Work/visit	Education and research, commercial, culture and entertainment, convention and exhibition center, green space, possibly vacant lands	Green space, education and research
<b>1998 Lisbon</b>	New Urban Extension	49.8	7.35 km / 5.12 km	Suburban (becoming urban node)	Work/visit/live	Mixed use, culture and entertainment, convention and exhibition center, green space	Residential
<b>2000 Hanover</b>	New Urban Extension / Science and Research Innovation Hub <sup>d</sup>	129.5	7.34 km / 7.33 km	Suburban	Visit	Convention and exhibition center, mixed use (office, hotel), commercial, culture and entertainment	Commercial, residential, green space
<b>2005 Aichi</b>	Suburban Satellite Recreation Park	173.0	16.72 km / 16.56 km from Nagoya City Hall; 3.8 km from Nagakute City Hall	Suburban	Visit	Green space, culture and entertainment	Green space (fields and woods), residential, education and research (university)
<b>2008 Zaragoza</b>	New Urban Extension	23.1	2.88 km / 2.51 km	Suburban (becoming urban node)	Work/visit	Mixed use (government and business office, commercial), green space, culture and entertainment, convention and exhibition center	Green space, culture and entertainment

(continued on next page)

Table 2 (continued)

	Post-expo Development Typology	Area (hectares)	Distance to Center of CBD / Distance to City Hall (2019)	Urban / Suburban	Visit/live/work using (Dovey et al. 2018)	Primary land uses within the former expo site	Primary land uses in the surrounding area
<b>2010 Shanghai</b>	New Urban Extension / Post-industrial Waterfront Transformation	528.0	4.86 km / 5.00 km	Urban (peripheral to CBD)	Visit/live/work	Green space, commercial (mall), mixed use, culture and entertainment, convention and exhibition center, vacant	Residential
<b>2015 Milan</b>	Science and Research Innovation Hub	110.0	9.12 km / 9.00 km	Suburban	Visit/work	(Planned): Education and research (offices), mixed use, green space, culture and entertainment, convention and exhibition center	Transportation and parking, industrial, mixed use, prison
<b>2017 Astana</b>	New Urban Extension	25.0	8.61 km / 8.44 km	Suburban (becoming urban node)	Work/visit	Mixed use (office, hotel), commercial, convention and exhibition center, culture and entertainment, education and research (university), green space, transportation and parking	Residential, hospital, university

<sup>a</sup> Size of the 1939 fair footprint at the same site was measured as 492.3 ha.

<sup>b</sup> The San Antonio site was planned with the extension of the city's Riverwalk area. However, we found the development typology to fit Downtown Urban Renewal, rather than Post-industrial Waterfront Transformation.

<sup>c</sup> The San Antonio CBD boundary is drawn from a US Census Bureau boundary.

<sup>d</sup> The Hanover site is a special case that does not fit neatly in these typologies. The south-eastern part of the site has been turned into an IT, media and high-tech industrial park.

Vancouver, Shanghai, and Lisbon. Mega-event sites that are exemplars of this type are located relatively close or within a city's central business district and in some cases overlap with the downtown urban renewal typology (e.g. New Orleans, Vancouver). This type of waterfront redevelopment typically capitalizes on the "rediscovery" of waterfront amenities, using proximity to a river or oceanfront to draw a mix of commercial, high-end residential and mixed-use development, and public spaces such as beaches, parks, and other recreational facilities. They often include construction of a convention center, either built during or after the expo. Like downtown urban renewal schemes, these are often cases where older land uses were considered by civic elites to be less desirable, such as older industrial and maritime uses or in some cases, whole working-class neighborhoods. In those cases, these uses were cleared through demolition and this was intended to pave the way for development yielding higher property values and rents. Some of the sites involved environmental remediation efforts to clean up contamination from older industrial uses. This was particularly common beginning in the late 1960s through 1980s and was part of a broader regeneration strategy in many cities (see [Abbott, 1993](#); [Hackworth, 2007](#)).

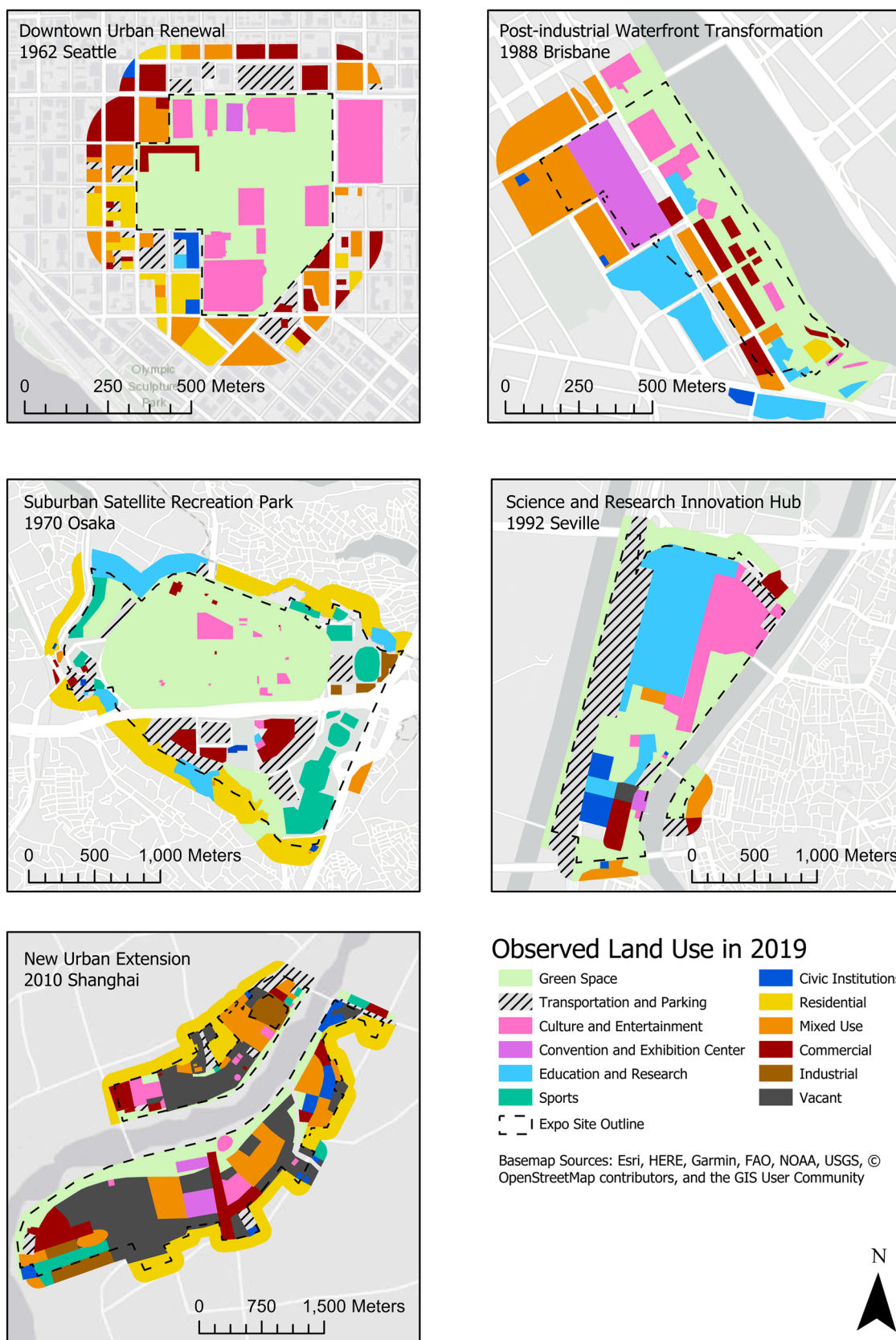
The Brisbane Expo '88 site in Brisbane, Australia is an exemplar of this type of redevelopment. Expo '88 involved clearance of the South Bank area along the Brisbane River and also demolitions and redevelopment in Brisbane's downtown. The expo site was located across the river from the city's CBD. This area was described as a "derelict" post-industrial site by civic leaders who wished to see the area redeveloped. The original post-expo plan was to sell the land off to private developers to create a casino and other tourist and leisure-oriented uses ([Ganis, 2015](#)). However, there was vigorous opposition to a plan that would produce only private and commercial spaces. In response to the controversy, a substantial portion of the site was developed into publicly accessible open space instead after public debate ([Smith and Mair, 2018](#); [Minner and Abbott, 2019](#)). Today, the parklands serve as an amenity drawing additional mixed-use development in the surrounding neighborhoods.

### 3.2.3. Suburban satellite recreation park

Expositions have long been linked to the urban park movement of the mid to late 19th Century in Europe and the US ([Roche, 2017, 2018](#)). This model is observed in earlier fairs in New York and Brussels. Later on, it also appeared as a prevalent typology in Japan in Osaka, Aichi, and Okinawa prefectures. The site is typically a large plot of land in a suburban area, usually more than 10 km from downtown, and often planned with the intention of creating public parklands. The result is usually an abundant supply of public green space with some buildings that hold museums or other cultural uses, and often including sports facilities. Thus, it is for visit type uses.

The New York 1939/1964 site was envisioned to be a large suburban park that rivalled New York's Central Park. Brussels also reused the same site for the 1935 and 1958 expos. The site is adjacent to a large park that had existed for centuries, and later integrated into the urban structure. Expo '70 in Osaka was a conscious effort by the central and local governments in Japan as part of national modernization and regional integration campaign, to raise the competitiveness of Osaka as compared to the Tokyo area ([Urushima, 2011](#)). Later the site was redeveloped into a park that holds recreational and cultural uses. The Aichi expo 2005 site was a public park in a remote suburban location prior to the expo and some of the land was restored. The area is now used as a center for sports with various indoor and outdoor recreational facilities. The Okinawa 1975 Expo was held in an exurban location at a resort-type setting, with the goal of celebrating the return of the island and promoting its status and modernization process ([Monclús, 2009](#)). It is now the Ocean Expo Park, and land uses within the site are comparable to other parks, including mostly cultural and entertainment facilities (museums, botanic gardens, aquariums, etc.). The Montreal site also fits within this category although it is close to downtown. The land





**Fig. 3.** Representative sites in post-expo development typology. Relative sizes of sites in hectares: Seattle: 29.9; Brisbane: 39.7; Osaka: 329.8; Seville: 214.9; Shanghai: 528.0.

uses found there are similar to other sites: vast green space, museums, amusement parks.

### 3.2.4. Science and research innovation hub

This typology, which can be observed at Tsukuba, Seville, Milan, and to a certain extent Taejeon and Hanover, is aimed at elevating the image of a city, region, or country by creating a hub for innovation through science and research. Typically located in suburban areas, primary land uses are set aside for research (e.g. Research and Development Park for businesses) and educational institutions with some additional cultural organizations or convention centers, and often generous amounts of green space. This typology is dominated by uses emphasizing *work*, with a few uses associated with *visit* and little *live* in the Dovey et al. (2018) model. This type often seems to experience issues in management and attracting companies to the post-expo science parks, which then affects the repurposing of the land and development at the site. Emphasis also tends to be placed on high-growth, creative, high-tech industries, which are often hard to attract.

In one example, the Seville Expo '92 was aimed at regenerating a historically depressed city and region, and projecting an image of a modern and technologically advanced country. It is known for its massive site, which was redeveloped as a science and business park (Cartuja '93) and an amusement park (Isla Magica). Critics point out a spatial and experiential disconnection between the two, as well as with the city center of Seville (Roche, 2017). The Cartuja '93 science park was influenced by American thinking of "Silicon Valley" type technology parks and was regarded as a failure at first, but began to take off later (Vazquez-Barquero and Carrillo, 2004).

In another example, Tsukuba Science City, 50 km northwest of Tokyo, was selected in 1963 to be developed as a "new town" to decentralize the capital city. An expo in 1985 promoted the city as a "world science center" (Monclús, 2009). After the fair, about half of the site became a research and development park, and the other half a park. Similarly, Taejeon was dubbed a "science town" in 1973 and the expo was important in promoting it among the Korean public. The site was initially turned into the Expo Science Park, with cultural and entertainment uses and some office and research space (Park, 2002). However, after struggling through 20 years, the original park was demolished in 2014, and a "recreation project" has been underway, to transform the site into a hub of science, innovation, entertainment, and commerce.

### 3.2.5. New urban extension

This type represents newer urban development trends consistent with the "Expo in the Age of Globalization and Post-Modernity" according to Monclús (2009). It usually exhibits nodal redevelopments outside the traditional downtown and in this sense, serves as an extension of the urban centers. It differs from the Post-industrial Waterfront Transformation type as it may not have an explicit focus on a waterfront or the creation of public spaces, but has more focus on spurring commercial and office establishments. Unlike the Downtown Urban Renewal type, these sites are generally distant from the historical downtown areas.

Three of the events in this category were located at post-industrial waterfronts and planned with the vision of urban regeneration at the urban periphery outside of downtown. The Lisbon Expo 1998 was a quintessential example, which had a major influence on the planning of the Shanghai Expo 2010, and influenced the Zaragoza and Hanover sites as well (Aelbrecht, 2014).

The Shanghai World Expo site was designed to create a new cultural and economic agglomeration along the Huangpu River (Chen, 2018). Many pavilions were demolished post-expo, with some exceptions such as the China Pavilion and the Theme pavilion, which were turned into museums and exhibition space. Private development has occurred adjacent to the site, however the site itself remains in a state of flux with much of it in various states of vacancy, which range from vacant areas

with no buildings to vacant buildings with no observable uses (Fig. 4). The various vacant areas of the Shanghai World Expo Site in 2019 provide a useful glimpse into the difficulties and long timeframes required to redevelop sites, given that observations were taken nearly 10 years after the World Expo was staged.

## 4. Discussion: comparisons across sites

The post-expo urban development typology is intended to be useful in making comparisons of spatial legacies of expos as a part of the global history of mega-events. Many of the sites with similar attributes share similar issues, and therefore the grouping can aid in both measuring the performance of expo sites with peer sites. For instance, Suburban Satellite Recreation Parks are often highly cut off from surrounding areas with transportation infrastructure, including multi-lane highways and parking lots. Recognizing similar challenges offers the potential for in-depth comparison with the aim of developing shared ways of ameliorating the issues that stem from morphology.

### 4.1. From post-expo development to equitable urban development

We suggest further use of this urban development typology in addressing questions of the tangible legacies of expos and the equity dimension of their sustainability in the long term. In the following examples we demonstrate concepts for redirecting the former mega-event sites through an emphasis on equitable forms of urban development. By equity and social justice, we invoke a spectrum of ideas from planning such as the just city (Fainstein, 2010), the right to the city (Marcuse, 2014), and equity planning (Krumholz and Forester, 1990; Zapata and K. Bates, 2015). We also propose to extend the definition of equitable urban development to reparative planning (Williams, 2020), in which planning addresses past harms. We extend Williams' call for reparative planning beyond addressing white supremacy and anti-Black racial planning to planning that strives to address past harms to any marginalized population negatively affected by a mega-event.

Across all expo types, we suggest prioritizing a series of recommendations to transform former mega-event sites through action (Table 3). For instance, host cities should examine the long-term social and economic effects on former residents and the workers employed in the construction of these sites, paying particular attention to people of non-dominant racial and ethnic identities and vulnerable groups. Former residents displaced from the sites should be compensated fairly and re-housed. After an expo, we believe host cities should place permanent affordable housing provisions in and around sites to stem potential property value increases associated with new uses and ensure this development produces well-paid jobs, especially for those displaced by the event. Table 3 also includes summaries of initial recommendations that are specific to particular urban development types.

Downtown urban renewal sites, especially within the United States, were associated with the displacement of low-income residents and low-rent businesses. With a return of private investment in the central business districts in many of these host cities, redevelopment has come in the form of high-rent properties that limit accessibility. Thus, there should be an emphasis on provision and preservation of affordable housing and incubator spaces for small businesses in proximity to these sites.

Many post-industrial waterfront areas were transformed from low-density, industrial and maritime spaces to places of leisure. This raises the importance of access to stable jobs, as post-expo development often uses temporary labor to displace existing uses with new uses dedicated to leisure for those who can afford them. There should be an emphasis on safeguarding the supply of affordable housing within proximity to new waterfront amenities. These waterfront amenities should remain publicly accessible with areas at no cost and open to all, and development should remediate pollution from prior industrial and maritime uses and contribute to better water quality.





Fig. 4. Shanghai 2010 site mapped in 2019 to depict areas of vacancy.

Suburban satellite recreation parks are, by definition, set away from other population centers and land uses. Therefore, equitable and sustainable transport to suburban satellite recreation centers is of utmost importance to ensure public accessibility to these places. Some sites incorporate nature preserves and as such may make substantial contributions to the local ecosystem. Cities must consider the maintenance of

these spaces, as how large suburban open spaces are maintained may have an impact on surrounding systems. The management of large-scale lawns and playing fields should eliminate fossil fuel usage and the use of chemical fertilizers and other pollutants.

Sites developed as science and research innovation hubs post-expo often have similar environmental impacts and challenges as suburban



**Table 3**

Examples of recommendations for former expo sites for assessing and striving for more equitable urban development.

Across all types		
	Housing	<ul style="list-style-type: none"> <li>• Examine long-term social and economic effects on former residents, paying particular attention to people of non-dominant racial and ethnic identities and vulnerable groups.</li> <li>• Ensure former residents displaced from the site are fairly compensated and re-housed.</li> <li>• Put into place permanently affordable housing provisions in and around expo sites to stem the increase in property values associated with new uses.</li> </ul>
	Employment	<ul style="list-style-type: none"> <li>• Examine long-term social and economic effects on former workers employed in the construction of site.</li> <li>• Ensure development produces well-paid jobs targeted to provide opportunity, particularly to those who may have been displaced by expo development or who emigrated to a community based on temporary construction jobs associated with the mega-event.</li> </ul>
	Public Space/Land Use Mix	<ul style="list-style-type: none"> <li>• People of low and moderate incomes should have access to the museums, public spaces and recreational opportunities on the site. Many of these sites emphasized convention centers or high-profile tourist attractions, some sites may need to actively rebalance land use and public events to include local residents.</li> </ul>
	Environmental impacts	<ul style="list-style-type: none"> <li>• Demolition and rebuilding activities produce demolition and construction debris, and are associated with greenhouse gas emissions. Instead, these sites should be models of managing material flows and conserving energy. Vacant buildings should be repurposed and existing buildings maintained to increase lifespan, conserving embodied carbon. Buildings that must be demolished should be deconstructed and their building materials reused.</li> <li>• Landscapes should also be designed and maintained in ways that minimize waste and greenhouse gas emissions.</li> </ul>
	Memory in Action	<ul style="list-style-type: none"> <li>• Host cities and nations should maintain and make publicly accessible archival information about former neighborhoods at the site.</li> <li>• Public interpretation at sites should be open and honest about the negative impacts at these sites.</li> <li>• Coordinated events should be held to reactivate former mega-events sites as place of dialog about the past and</li> </ul>

**Table 3 (continued)**

Specific to Post-expo Development Type		
	Downtown Urban Renewal	<ul style="list-style-type: none"> <li>• future of urban development and public space.</li> <li>• Associated with the displacement of low-income residents and low rent businesses.</li> <li>• With return of investment to many CBDs, increasing property values.</li> <li>• Emphasis on provision and preservation of affordable housing and affordable spaces for local businesses.</li> </ul>
	Post-industrial Waterfront Transformation	<ul style="list-style-type: none"> <li>• From industrial and maritime spaces to places of leisure.</li> <li>• Importance of access to jobs and safeguarding supply of affordable housing.</li> <li>• Waterfront amenities should remain publicly accessible.</li> <li>• Remediate pollution from prior uses and contribute to better water quality.</li> </ul>
	Suburban Satellite Recreation Parks	<ul style="list-style-type: none"> <li>• Equitable and sustainable transport to these sites should be a priority.</li> <li>• Emphasis should be placed on how large suburban open spaces are maintained may have a large impact on surrounding systems. The management of large-scale lawns and playing fields should eliminate fossil fuel usage and the use of chemical fertilizers and other pollutants.</li> </ul>
	Science and Research Innovation Hub	<ul style="list-style-type: none"> <li>• Focus on equitable and sustainable transport and management of open spaces associated with campuses.</li> <li>• Many of these sites have not been successful in attracting employers. These hubs should be re-evaluated for land use mix, including assessing the feasibility of adding affordable housing.</li> </ul>
	New Urban Extension	<ul style="list-style-type: none"> <li>• These sites have the potential to illustrate how a new mix of uses can create new sustainable and equitable nodes.</li> <li>• Large-scale corporate land uses can deaden urban space and these districts may need to be reactivated.</li> <li>• Marginalized populations and displaced smaller-scale businesses and community uses may need to be reincorporated into these districts</li> <li>• Nodes should be evaluated to prioritize new affordable housing in proximity to amenities and employment opportunities.</li> </ul>

satellite recreation parks. Thus, these areas should focus on equitable and sustainable transport and management of open spaces associated with campuses. In contrast to suburban satellite recreation centers, however, many of these sites have not been successful in attracting employers. These hubs should be re-evaluated to see if a different mix of uses would be appropriate, such as mixing in affordable workforce housing.

New urban extension sites are indicative of a trend toward even

larger scales in reshaping urban spaces. Thus, new urban extension sites have great potential to illustrate how a new mix of uses can create new sustainable and equitable nodes. However, these large-scale development sites can result in large-scale public plazas and corporate land users that are some combination of underutilized, empty, inactive or exclusive. Marginalized populations may need to be reinvented and displaced smaller-scale businesses and community uses reincorporated into these districts. These nodes should be evaluated for the potential to prioritize affordable housing in proximity to new amenities and employment opportunities.

These recommendations represent an initial effort to apply the urban development typology to develop a framework for equitable urban development at former mega-event sites. Operationalizing these ideas of equitable urban development and reparative planning at global mega-event sites would require much more research, discussion, and debate within the context of specific host communities.

We also note that mega-event hosts can work to ensure that post-expo development results in publicly accessible areas across both digital and physical spaces. In the digital space, host cities and nations should maintain and make publicly accessible archival information about former neighborhoods at the site. Public interpretation at sites, in both the digital and physical realms, should be open and honest about the negative impacts at these sites. People of low and moderate incomes should have access to post-expo developments such as museums, public spaces, and recreational opportunities at the site. While redevelopment efforts at many sites have focused on construction of convention centers and high-profile tourist attractions post-expo, these sites may need to actively rebalance land use and public events to include local residents thereby ensuring access to the space. In pursuit of these goals, advocates for equitable urban development and the right to the city should consider coordinated events to “reactivate” former mega-events sites as places of dialog about the past and future of urban development and public space.<sup>6</sup> This could take place as anniversary events for specific sites, or there might be the creation of a Global Expo History Day in which events are coordinated at multiple sites simultaneously. This could provide a platform for people to consider continued transformation at former expo sites and host cities, which could also spur planning for more equitable urban development at future expo sites.

## 5. Conclusions

In this article, we searched for methods to aid in the comparative study of expo sites, especially where there are gaps in understanding their spatial patterns and evolution over time. The creation of an urban development typology enables more specific and empirical comparisons between sites. We noted five primary urban development types among the relatively large sample of expo sites that we analyzed. We noted how applying this typology can aid in detailed study of the relative performance of mega-event sites such as cultural centers, public spaces, or new urban hubs through appropriate comparable peer sites. Researchers can use the typology to identify patterns that are both specific outcomes of a particular development strategy, and also longer-term effects, such as changes in use and property values over time. There is also potential to study and compare more detailed aspects of the adaptation, preservation, continued design and maintenance of peer sites. This could include the detailed comparative evaluation of sites with regard to cultural heritage and adaptive reuse and the maintenance and restoration of greenspaces.

We also find that beyond comparison of land use patterns and performance at former expo sites, there is also the potential to apply the urban development typology in striving toward addressing the equity

dimension of sustainability at former expo sites. In the second part of the article we demonstrate how more specificity around the spatial patterns at expo sites can aid in generating more specifics around the concept of equitable urban development.

We note that a limitation to the empirical analysis of land use patterns is that it relied on cross-sectional descriptions at a recent point in time. In order to make longitudinal comparisons, similar observations should be made at regular intervals at multiple sites. Land use change could be captured via analysis of satellite images at regular intervals over time and triangulated using municipal datasets, where available. Assessing the cumulative direct and indirect displacement at an expo site as an example of the need for empirical observations, longitudinal analyses, and normative consideration of equitable urban development in the long term. We note that numbers of residents or businesses that are displaced, or increases in property values and land use change are most often studied at a point in time soon after the expo and then they are not considered again. Indirect displacement post-expo and over time is even trickier to gather and assess. This would require the close monitoring of rental prices, demolition, and redevelopment in proximity to sites at regular intervals. The authors recommend further study of the long term legacies of displacement at former and future expo sites.

The authors also found that transport infrastructure has been integral to mega-event redevelopment and is essential for a full understanding of land use changes over time. Major public infrastructure is constructed in conjunction with mega-event sites usually in the form of transport infrastructure, such as new highways, monorails, new bus lines, etc. that serve the expo site. The location and type of transport infrastructure affects patterns of demolition, redevelopment, and land use change over time. A logical next step for a future spatial analysis would be to trace the transport system changes that served development of these sites and that are likely to have spurred redevelopment radiating from the expo site and out into the metro area. The changes in property values and amount and type of redevelopment surrounding the expo site should be considered in understanding how mega-events have reshaped cities and regions.<sup>7</sup>

The process of spatially delineating and analyzing expo event sites also revealed the potential importance of open geospatial data for mega-events. The authors recommend the sharing of open geospatial data. A repository of geospatial data about mega-events should include information about the infrastructure implemented as part of the mega-event, as well as other structures developed for the mega-event beyond the event site. This data should also be regularly ground-truthed by researchers and archived separately by independent researchers as well.

Former, present, and prospective host cities should become more intentional in the study of post-expo conditions over time. While the BIE has organized the Association des Villes et Régions hôtes d'Expositions internationales [AVE] (the association of international exhibition hosting cities and regions) conference, which has brought together host cities to meet after expos, we propose deeper research and engagement with urban futures at former sites. We propose that former host cities and their communities of non-governmental organizations begin to reconceptualize these global development sites as areas to strive toward equitable urban development. More should be done to facilitate the critical comparison of the spatial impacts and social legacies of the events with which they purport to strive for sustainability and shape global ambitions and realize the dreams of host countries and cities. We emphasize that the positive legacies claimed by the proponents of mega-events must be measured through the systematic, critical, and continual

<sup>6</sup> See for example Minner (2019) for examples of the use of public art by Aboriginal artist Jonathan Jones to reactivate a 19th century international exhibition site.

<sup>7</sup> In addition to transport infrastructure, the authors observed that the Shanghai expo site had “expo coordination zones” of 140 ha that were outside of the official footprint of the mega-event. Although not included in the table above, they appear integral to the staging of the expo and subsequent redevelopment, as these areas were required to change in land use and appearance in concert with the expo site through renovation instead of demolition.

observation of what happens on the ground. We propose taking steps from writing more complete histories as well as creating more equitable futures.

## Funding

This work was supported through grants from Engaged Cornell (now the David M. Einhorn Center for Community Engagement) at Cornell University: [2015–2018 Advancement Grant], USA, and President's Council of Cornell Women: [2017 Affinito-Stewart Grant], USA. Authors also received support from the Dean of the Cornell University College of Architecture Art and Planning's Professional Development fund; and Graduate Teaching and Research Specialist support from the Cornell University Department of City and Regional Planning, USA.

## Acknowledgements

The authors are grateful to Martin Abbott, Lucas Bulger, Cory Mann, Nathan Revor, Ingrid Yingge Shen, and other student researchers within the Cornell Just Places Lab and related special topics classes for their many insights and outstanding research assistance.

## References

- Abbott, C., 1993. Five downtown strategies: policy discourse and downtown planning since 1945. *J. Policy Hist.* 5 (1), 5–27.
- Alawadi, K., 2017. Place attachment as a motivation for community preservation: The demise of an old, bustling, Dubai community. *Urban Stud.* 54 (13), 2973–2997. <https://doi.org/10.1177/0042098016664690>.
- Broudehoux, A.M., 2007. Spectacular Beijing: the conspicuous construction of an olympic metropolis. *J. Urban Aff.* 29 (4), 383–399.
- Bryson, J., 2013. Greening urban renewal: expo '74, urban environmentalism and green space on the Spokane riverfront, 1965–1974. *J. Urban Hist.* 39 (3), 495–512.
- Bureau International des Expositions, 2017. Sustainable Innovation and Legacies in Expos of the 21st Century. A World in Common. Bulletin 2017. Bureau International des Expositions, Paris, France.
- Bureau International des Expositions, 2019. Expo Cities - Urban Change. Bulletin 2019. Bureau International des Expositions, Paris, France.
- Bureau International des Expositions, 2018. Image of A Nation: Country Branding at World Expos. bulletin 2018. Bureau International des Expositions, Paris, France.
- Abbott, M., Minner, J. (2022). How images construct cities: the art of resisting mega-event amnesia. Unpublished manuscript under review.
- Aelbrecht, P.S., 2014. A world fair for the future: a study of the legacy of the expo '98 urban model. In: Pearce, C., Schweizer, B., Hollengreen, L., Rouse, R. (Eds.), *Meet me at the Fair: A World's Fair Reader*. ETC Press, pp. 485–501.
- Azuela, A., Duhau, E., Ortiz, E. (Eds.), 1998. Evictions and the Right to Housing: Experience from Canada, Chile, the Dominican Republic, South Africa, and South Korea. International Development Research Centre. (<https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/24261/IDL-24261.pdf?sequence=1>).
- Bocarro, J., Byers, T., Carter, L., 2018. Legacy of sporting and non-sporting mega event research. In: Brittain, L., et al. (Eds.), *Legacies and Mega Events Fact or Fairy Tales?* Routledge, pp. 7–24.
- Broudehoux, A.M., 2004. The making and selling of post-Mao Beijing. Routledge.
- Broudehoux, Anne-Marie, 2017. Mega-events and Urban Image Construction: *Beijing and Rio de Janeiro*. Routledge, London; New York.
- Bureau International des Expositions a. (2020). About Specialized Expos, Bureau International des Expositions. Retrieved September 28, 2020, from (<https://www.bie-paris.org/site/en/about-specialised-expos>).
- Bureau International des Expositions b. (2020). About World Expos, Bureau International des Expositions. Retrieved September 28, 2020, from (<https://www.bie-paris.org/site/en/about-world-expos>).
- Campbell, S., 1996. Green cities, growing cities, just cities?: Urban planning and the contradictions of sustainable development. *J. Am. Plan. Assoc.* 62 (3), 296–312. <https://doi-org.proxy.library.cornell.edu/10.1080/01944369608975696>.
- Campbell, S.D., 2016. The planner's triangle revisited: sustainability and the evolution of a planning ideal that can't stand still. *J. Am. Plan. Assoc.* 82 (4), 388–397.
- Centre on Housing Rights and Evictions. (2007) Fair Play for Housing Rights: Mega-events, Olympic Games, and Housing Rights. Geneva, Switzerland: The Centre on Housing Rights and Evictions (COHRE). Available online at (<https://www.ruig-gian.org/ressources/Report%20Fair%20Play%20FINAL%20FINAL%20070531.pdf>).
- Chan, R., Li, L., 2017. Entrepreneurial city and the restructuring of urban space in Shanghai Expo. *Urban Geogr.* 38 (5), 666–686.
- Chen, Y., 2018. Not just "Better City, Better Life": Creating sustainable urban legacy beyond World Expo 2010 in Shanghai. *Bureau International des Expositions Bulletin* 2018. Expo. Cities—Urban Change, pp. 114–133. ([https://www.bie-paris.org/site/images/bulletins/BIE\\_BULLETIN\\_2018.pdf](https://www.bie-paris.org/site/images/bulletins/BIE_BULLETIN_2018.pdf)).
- Davis, L.K., 2011. International events and mass evictions: a longer view: international events and mass evictions: the Seoul Olympics. *Int. J. Urban Reg. Res.* 35 (3), 582–599.
- De Groote, P., 2005. A multidisciplinary analysis of world fairs (= expos) and their effects. *Tour. Rev.* 60 (1), 12–19.
- Dovey, K., Pafka, E., Ristic, M. (Eds.), 2018. *Mapping Urbanities: Morphologies, Flows, Possibilities*. Routledge.
- Dutta, A., 2007. Development-induced Displacement and Human Rights. Deep & Deep Publications, New Delhi.
- Fainstein, S.S., 2010. *The Just City*. Cornell University Press, Ithaca, NY.
- Flyvbjerg, B. (Ed.), 2017. *The Oxford Handbook of Megaproject Management*, first ed. Oxford University Press.
- Ganis, M., 2015. *Planning urban places: self-organising places with people in mind*. Routledge.
- Gold, J.R., Gold, M.M. (Eds.), 2016. *Olympic Cities: City Agendas, Planning and the World's Games, 1896–2020*, third ed. Routledge.
- Hackworth, J.R., 2007. The neoliberal city: governance, ideology, and development in American urbanism. Cornell University Press.
- Hall, C.M., Hodges, J., 1996. The party's great, but what about the hangover?: The housing and social impacts of mega-events with special reference to the 2000 Sydney Olympics. *Festiv. Manag. Event Tour.* 4 (1), 13–20.
- Harvey, D., 2001. Globalization and the "Spatial Fix". *Geogr. Rev.* 3 (2), 23–30.
- Krumholz, N., Forester, J., 1990. *Making equity planning work: leadership in the public sector*. Temple University Press.
- Marcuse, P., 2014. Reading the Right to the City. *City* 18 (1), 4–9. <https://doi.org/10.1080/13604813.2014.878110>.
- Mataruna-dos-Santos, L.J., Pena, B.G. (Eds.), 2017. Mega events footprints: past, present and future = As pegadas dos megaeventos = Las huellas de los mega eventos. Rio de Janeiro: Engenho.
- Minner, J., 2019. Assembly and care of memory: placing objects and hybrid media to revisit international expositions. *Curator: Mus. J.* 62 (2), 151–176.
- Minner, J., Abbott, M., 2019. Conservation logics that reshape mega-event spaces: San Antonio and Brisbane post expo. *Plan. Perspect.* 1–25.
- Monclús, J., 2009. *International Exhibitions and Urbanism: The Zaragoza Expo 2008 project*. Routledge.
- Monclús, J., 2018. International Exhibitions and Urban Design Visions. In *Bureau International des Expositions Bulletin 2018. Expo. Cities—Urban Change*, pp. 8–27. ([https://www.bie-paris.org/site/images/bulletins/BIE\\_BULLETIN\\_2018.pdf](https://www.bie-paris.org/site/images/bulletins/BIE_BULLETIN_2018.pdf)).
- Müller, M., 2015a. The Mega-Event Syndrome: Why So Much Goes Wrong in Mega-Event Planning and What to Do About It. *J. Am. Plan. Assoc.* 81 (1), 6–17.
- Müller, M., 2015b. What makes an event a mega-event? Definitions and sizes. *Leis. Stud.* 34 (6), 627–642.
- Müller, M., Wolfe, S.D., Gogishvili, D., Gaffney, C., Hug, M., Leick, A. (2021) The mega-events database: systematising the evidence on mega-event outcomes. *Leisure studies*, 1–9.
- Oden, M.D., 2010. "Equity: the Forgotten E." In: Moore, S.A. (Ed.), *Pragmatic Sustainability: Theoretical and Practical Tools*. Routledge, London and New York, pp. 31–49.
- Park, K., 2002. Research Note: A Case Study of Post Exposition Site Utilization in Korea. *Event Manag.* 7 (3), 197–204.
- Poynter, G., Viehoff, V., Yang, L. (Eds.), 2016. *The London Olympics and Urban Development: The Mega-Event City*. Routledge.
- Roche, M., 2017. *Mega-events and social change: spectacle, legacy and public culture*. Manchester University Press.
- Roche, M., 2018. Mega-events, Parks and the Challenges of Urbanisation. In *Bureau International des Expositions Bulletin 2018. Expo. Cities—Urban Change*, pp. 60–86. ([https://www.bie-paris.org/site/images/bulletins/BIE\\_BULLETIN\\_2018.pdf](https://www.bie-paris.org/site/images/bulletins/BIE_BULLETIN_2018.pdf)).
- Smith, A., Mair, J., 2018. The making of a city: How Expo 88 changed Brisbane. In: *Bureau International des Expositions Bulletin 2018. Expo Cities—Urban Change*, pp. 88–101. ([https://www.bie-paris.org/site/images/bulletins/BIE\\_BULLETIN\\_2018.pdf](https://www.bie-paris.org/site/images/bulletins/BIE_BULLETIN_2018.pdf)).
- Terminiński, B., 2015. *Development-induced Displacement and Resettlement: Causes, Consequences, and Socio-legal Context*. Ibidem Press.
- Urushima, A., 2011. The 1970 Osaka Expo: local planners, national planning processes and Mega Events. *Plan. Perspect.* 26 (4), 635–647.
- Vazquez-Barquero, A., Carrillo, E. (2004). Cartuja 98, A Technological Park located at the site of Sevilla's World's Fair. Paper presented at the 44th Congress of the European Regional Science Association: "Regions and Fiscal Federalism", Porto, Portugal, August 25–29, 2004.
- Williams, R.A., 2020. From racial to reparative planning: confronting the white side of planning. *J. Plan. Educ. Res.* 1–11. (<https://doi-org.proxy.library.cornell.edu/10.1177/0739456x20946416>).
- Zapata, M.A., K. Bates, L., 2015. Equity Planning Revisited. *J. Plan. Educ. Res.* 35 (3), 245–248.
- Zhang, Y., 2018. *Densification, dispossession and disposable lives: a case study of urban space production through the Expo in Shanghai*. In: Searle, G. (Ed.), *Compulsory Property Acquisition for Urban Densification*. Routledge, pp. 94–108.