

FROM TEMPORARY TO TIMELESS: WORLD EXPOS AND THEIR IMPACT ON CITIES.

Javier Ostos-Prieto¹

Abstract

World Expos take place in cities worldwide. They offer visions of the future and act as catalysts for urban transformation. Despite their ambitions, these events remain inherently temporary, lasting only three to four months. This paper asks how the Expo format engages with urban dynamics through temporary intervention strategies. It explores the relationship that exists between ephemerality and permanence by examining how temporal complexity shapes urban space at World Expos. It does so with a focus on Expo '92 in Seville. Using a critical comparative analysis of theoretical understanding of time, the paper evaluates their effects at the urban scale. The temporal distance since 1992 allows an assessment of the long-term urban legacy of a short-term global event.

Keywords:

Expo '92, Mega-Event, Seville, Urban Complexity Theories, Urban temporality.

¹ Chair and Institute for Urban Design, Faculty of Architecture, RWTH Aachen University.
E-mail: javier.ostos.prieto@staedtebau.rwth-aachen.de. ORCID: <https://orcid.org/0000-0002-9551-3946>.

1. Time, space and complexity: Towards an integrated understanding of contemporary urbanism

Time is often described as a measure of change. Although we can quantify time, its fundamental nature remains one of the major unresolved questions in physics. While time is commonly perceived as linear, several physical theories describe it as symmetric rather than unidirectional. Here, time links directly to one of the characteristics of a complex system: non-linearity. Complexity-oriented interpretations in physics –from quantum mechanics to gravitational theory – incorporate time to explain observable phenomena, but do not fully clarify their ontological basis. An explanation of time is, therefore, necessary in order to understand its complexity in relation to space and urban systems.

Entropy, from the second law of thermodynamics, links temporal progression to irreversible energy expenditure (Riggs, 2015), while Einstein's theory of relativity conceptualises time as relative to both observers and energetic conditions (Einstein, 1905). It follows, that time emerges through interactions between observers, matter, and energy, with each conditioned by specific spatial and situational contexts (Ikeda, 2012). Quantum theory further complicates this picture, with space and time form overlapping fields in which particles exist probabilistically while also revealing emergence, non-linearity and relational dependencies (Bohm, 1980). These concepts resonate with the characteristics of complex systems: nonlinearity, emergence, spontaneous order, and adaptation.

Urban systems display analogous complexity. Social complexity theory prefers to conceptualise terms such as development and evolution as abrupt shifts in progress, often referred to as 'revolutions' (Portugali, 2006). When scholars conceptually extend principles of physics to urban systems, the same four defining characteristics of complexity emerge: non-linearity, emergence, spontaneous order, and adaptation. From this perspective, cities function as complex adaptive systems in which time, space, and place continually interact.

Contemporary urbanism faces a fundamental tension between the ephemeral and the permanent; a duality that manifests across technical, physical, and conceptual dimensions. Within the framework of urban complexity theory, space and time function as interdependent variables in dynamic urban systems subject to non-linear change. Within these systems, long-lasting structures coexist with temporary interventions and short-lived events, producing emergent behaviours that exceed the sum of their parts (Moroni and Cozzolino, 2019). The concept of urban ephemerality thus extends beyond the transient lifespan of buildings or uses, and instead encompasses a mode of experiencing and organising time in cities.. While early urban transformations evolved through slow rhythmic processes, contemporary cities operate under high-speed cycles of transformation. These challenges include anticipating multiple potential futures without reliance on rigid frameworks and understanding time as a complex web of interconnected events rather than as a linear trajectory. Mega-events, particularly Universal Exhibitions, illustrate this tension by imposing highly structured temporal frameworks onto urban space while also highlighting the interplay that takes place between ephemeral activities and permanent urban forms (Roche, 2003). These events underscore the intertwined nature of ephemerality and permanence, and offer a critical lens through which to view the temporal and spatial dynamics which shape contemporary urban environments.

The complexity of cities significantly impacts urban phenomena (Batty, 2005). Universal Expositions are high-impact interventions that condense multiple temporalities: short-term urgency, futurist projections, and the integration of the past. They are international events of short duration, generally of three to six months duration, which offer speculative and projective visions of the future. Despite their ephemeral nature, these mega-events have also left deep permanent imprints on the urban landscapes upon which they took place. Each Expo event usually displays a unique and spectacular array of architectural objects and structures (Roche, 2003). Iconic structures such as the Crystal Palace in London (1851), the Eiffel Tower in Paris (1889), the Ferris wheel in Chicago (1893), the Atomium in Brussels (1958), the Space Needle in Seattle (1962), and the Al Wasl Plaza dome in Dubai (2020) exemplify the synthesis of ephemeral programming with lasting architectural and urban legacies. Across more than 108 iterations, Universal Expositions have tested new urban models, technological visions, and spatial imaginaries.

Expos are large-scale urban interventions designed for short, fixed durations that can also produce long-term transformations. Like cities, they are complex systems that are made up of multiple components and interactions (Moroni and Cozzolino, 2019). However, the temporal compression and high-intensity development associated with these events also introduces risks. Mega-events frequently generate large urban areas designed for specific, short-term functions that may struggle to adapt after the event concludes. The legacy of these interventions is therefore uneven: while some infrastructures have been successfully absorbed into their given long-term urban fabrics, others have become obsolete, fragmented or chronically underused. In this sense, Expos act as stress tests for the ability of cities to transform ephemeral installations into permanently useful assets.

This paper adopts the framework of urban complexity to analyse Universal Expositions, and in so doing focuses on the concepts of time, urban design, and the tensions which exist between ephemerality and permanence. The chosen case study – the Universal Expo in Seville in 1992 – illustrates these issues particularly well. Although Expo '92 represented one of the most ambitious in Spain's recent history and has left a significant urban footprint, its post-event trajectory reveals a clear failure of adaptable reuse: large sections of the site have struggled to integrate into Seville's long-term urban dynamics, with many structures remaining underutilised, vacant or repurposed only after extensive delays. The Seville case mirrors recurrent patterns observed across other mega-events, where ambitious temporary visions confront the practical challenges of long-term urban assimilation. It offers a critical lens for examining event urbanism and how mega-events can shape and constrain their social and spatial legacies.

2. Objectives and methodological approach: Analysing Expo 92 as a case of ephemeral urbanism

This paper explores the implications of ephemeral urbanism through the specific case of Expo '92 in Seville (Figure 1), and in so doing analyses its relationship with permanence, temporality and urban complexity. It unravels how an intervention which was designed for a short-lived event has had a lasting impact on the city's urban fabric, and also addresses what lessons can be drawn from it for future interventions of a similar nature. It also seeks to provide understanding as to how time, as a structuring category of urban planning thinking and action, shapes the decisions, expectations and outcomes of world exhibitions.

The paper also interrogates the role of time as a structuring category in urban planning thought and practice. It considers how different temporal horizons – ranging from the immediacy of event delivery to post-event adaptation and long-term urban legacy – influence planning decisions, shape stakeholder expectations, and condition the eventual outcomes of world exhibitions. By foregrounding time as both an analytical and operational dimension, the paper contributes to a more nuanced understanding of how temporality operates within mega-event urbanism.

Methodologically, the paper adopts a critical-comparative approach, integrating perspectives from urban theory, spatial planning, architecture and studies about time. A diverse set of sources – including historical records, planning documents, cartographic materials, statistical data, and empirical observations – supports the construction of a comprehensive account of the Expo's ephemeral configurations and their subsequent materialisation into permanent urban forms. The methodology further incorporates elements of systemic analysis. Thus, it treats the city as a complex, adaptive organism whose parts interact dynamically and not always predictably. This complexity-informed lens enables the paper to trace emergent outcomes, feedback loops, and unintended consequences, thereby situating the Seville Expo within broader patterns of mega-event urbanism.



Figure 1. Expo '92 on the left of the river and the historic centre of Seville on the right in 2023. Own elaboration.

3. Universal Exhibitions as urban catalysts: a view from complexity

Contemporary urbanism faces a fundamental conflict when it comes to linking space and time: the coexistence of the ephemeral and the permanent. This duality is not only technical or physical, but also conceptual and philosophical. Urban complexity theories understand space and time as interdependent variables that shape the form and function of cities. Cities are not merely anonymous spaces but unique and familiar places that bear names such as Jerusalem, Paris, and New York, and are immediately associated with memory, history, geography, and mythology (Portugali, 2006).

Urban planning faces the challenge of understanding this complexity. The Master Plans applied to urban environments tend to reduce highly complex problems and uncertain situations into simple problems, thereby losing the ability to recognise the true complexity of the city as a system (Moroni and Cozzolino, 2019). The city, understood as a complex system, is subject to non-linear, unpredictable, and multifactorial changes in which permanent structures coexist with and are affected by ephemeral interventions.

The concept of urban ephemerality refers not only to the limited duration of a building or its use, but also to the experience of time in the city. In this sense, Expos consider people's ability to experience the irreversibility and directionality of the flow of time from the past to the present and the future (Roche, 2003). In this way, ephemeral events shape the urban experience, and leave permanent imprints on collective memory.

In late modernity, the dominant social form is no longer the state but the *network* (Castells, 1996), implying a spatial and temporal reconfiguration in which change occurs in ever shorter and more interconnected cycles. Given this context of high speed and volatility, it is common to think that a plan is necessary to achieve successful results in the city (De Franco, 2024). However, this contrasts with antagonistic concepts such as *laissez-faire* (Allison, 1971), in which the city is simply allowed to self-organise.

In this dichotomy between self-organisation and planning, the city faces the difficulty of predicting the evolution of complex systems. This is extremely difficult when making a Master Plan. One possible answer to this problem is understanding that a qualitative prediction cannot predict particular events but rather indicates what kind of events are expected within a large class of possibilities, while also emphasising the inherent uncertainty of urban systems (Hayek, 1967). In this regard, urban actions possess three essential characteristics: intentionality, subjectivity, and uncertainty (Moroni and Cozzolino, 2019).

In urban planning, temporal action, best understood as a decision, is not an instantaneous process, but rather one that requires social interaction, time and collective negotiation (De Soto, 2008). It follows, that contemporary urban planning faces the challenges of anticipating futures without being truly rigid, and understanding time not as a straight line but as a complex web of interconnected events. It is precisely this understanding that allows us to see complex artefacts, such as the city, not only as artificial products but also as part of an organic natural process in their interactions with the built space (Portugali, 2006).

Universal Exhibitions, as well as other world events such as the Olympics or world football tournaments, are also complex processes that combine political, cultural and social layers that interact across urban, national, and international scales. A city work in the medium term, trying to produce an event and manage its effects (Roche, 2003). They therefore represent a particular form of ephemeral urbanism which has the potential to generate lasting structural changes. Despite their short duration, their impacts are often profound, as they mobilise resources, modify infrastructure, and act as catalysts for projects that would otherwise not be politically viable. In this sense, the intersection of strategic planning and speculative architecture situates urbanism associated with Expos.

During the brief period of an Expo, the host city becomes a global showcase. This temporary nature also brings with it the risk of the fragile: facilities built in haste, spaces designed to be moved through quickly, and programmes that prioritise spectacle over long-term functionality. For this reason, good planning must take into account two time horizons: the short term (2 to 5 years) and the long term (10 to 20 years). In the short term, an Expo should serve to improve infrastructure, provide the city with new facilities, and enable it to update its connectivity. In the long term, the event's resilience will depend on its capacity to reintegrate into the city, offer adaptive uses for its sites, and generate sustainable opportunities. This logic of reversibility aligns with the proposals of tactical urbanism, which treat the temporary as a rehearsal for the permanent.

Dubai Expo is an example of this vision, as it will soon turn into District 2020; a sustainable city focused on community needs (Richards and Leal Lodoño, 2022). Similarly, the 2012 London Olympics were used as a strategic process to regenerate London East with new strategies and infrastructure for 2031 (Davis, 2014). Indeed, the idea of mega-events has been employed as a tool to achieve urban goals crystallised in the concept of *eventual cities* (Richards and Palmer, 2010), articulating Expos as innovation laboratories in which solutions scalable to other urban areas are experimented with: from sustainable building techniques to new models of public space management. However, as Portugali (2006) reminds us, space is not only a landscape full of forces, but also a product that emerges from the interactions that take place within it. If these are not articulated as spaces with a long-term urban strategy, they risk becoming spaces that are disconnected from their surroundings; spaces of exception whose disconnection from the urban fabric prevents their social and functional appropriation.

4. Expo '92 in Seville: Modernisation, Identity and Urban Transformation

The mega-event genre emerged at the end of the 19th century, and was closely linked to processes of nation-building and imperial buildings that symbolised industrialisation and the rise of capitalist societies in the United States and Western Europe (Hobsbawm, 1992). These events responded to state-driven needs to project images of modernity, as well as technical progress and cultural supremacy to the rest of the world. They became strategic instruments in the construction of national identities and international economic positioning. Early Universal Expositions, particularly between 1851 and 1875, reflected the imperial ambitions of powers such as France and the United Kingdom, and served as platforms for displaying both colonial wealth and industrial superiority in competition with emerging nations (Richards and Leal Lodoño, 2022). Within this context, Universal Expositions were spaces for the exhibition of technological and scientific dominance, and consolidated the idea that material progress was the core of civilisation.

Over time, the objectives and narratives of Expos evolved alongside broader socio-economic and cultural transformations. The period between 1925 and 1970, often described as the era of the *Modern Expos*, was characterised by a strong emphasis on avant-garde architecture, rational planning, and utopian urban visions that were influenced by the Modern Movement (Richards and Leal Lodoño, 2022). From the 1970s to the turn of the millennium, the *Postmodern Expos* shifted the focus towards spectacle, theme-based content and entertainment; reflecting the rise of consumer culture and the production of collective imaginaries around progress (Richards and Leal Lodoño, 2022). By the year 2000, events such as the Sydney Olympic Games, the Hanover Expo, and the London Millennium projects had consolidated mega-events as tools in the global economy; reinforcing the role of host cities as nodes of innovation and tourism (Roche, 2003). More recently, the *Expos of the future and sustainable development* – such as Dubai – have articulated discourses of sustainability, technological innovation and cultural diplomacy; responding to challenges posed by climate change and digital globalisation.

Despite their success in image-making and economic impact, mega-events have often prioritised controlled spatial narratives and choreographed experiences. This design logic tends to limit opportunities for informal appropriation and unplanned social interaction, both of which are crucial to the long-term vitality of urban spaces. From an urban complexity perspective, the existence of this tension between predictability and spontaneity is critical to assessing the enduring social and spatial effects of Expo-led transformations, particularly after the given event's temporal framework has expired.

Since the Second World War, Expos have been framed as spaces for the “meeting of nations” and as catalysts for large-scale urban renewal, capable of transforming both the physical and symbolic structure of host cities (Marchena Gómez and Pablo-Romero Gil-Delgado, 2005). Beyond their diplomatic and economic objectives, however, Expos function as experimental laboratories of urban design, where specific spatial configurations actively influence patterns of social interaction. In this sense, the relationship that exists between urban form and social life is not incidental, but central to understanding the long-term legacy of these events within complex urban systems.

Within this framework, the selection of Seville as host city for Expo '92 responded to a national strategy of international projection in the post-Cold War global order. Spain sought to consolidate its image as a modern, democratic and competitive state after decades of dictatorship and isolation. Expo '92 thus became both a symbolic and material opportunity to demonstrate organisational, technical and cultural capacity, and aligned with other major modernisation projects such as the Barcelona Olympic Games and Spain's integration into the European Economic Community. However, policymakers largely articulated this ambition through top-down planning mechanisms and therefore subordinated social integration to representational and infrastructural goals.

The choice of Isla de la Cartuja as the Expo site illustrates this logic. Historically marginal and located on the right bank of the Guadalquivir River, the area remained relatively disconnected from urban developments in Seville. Its selection enabled the creation of a new urban enclave that was largely detached from existing neighbourhood dynamics (Figure 2). Although river channelling and infrastructural works since the 1950s had reduced flood risk and improved accessibility, event-specific requirements for Expo '92 primarily drove the area's transformation. The orthogonal layout adopted – originating from a 1981 competition – was retained in the final master plan despite diverging proposals in the 1985 competition (Díaz Recaséns and Díaz Recaséns, 1981). While this predictable and legible spatial order facilitated visitor flows and event management, it constrained informal uses and spontaneous social interaction; key components of socially resilient public spaces.

The Expo '92 Master Plan organised the site around a large artificial lake and a system of orthogonal axes, preserving the Cartuja Monastery as a symbolic heritage landmark. Beyond its powerful symbolic charge as a representation of modernity and openness to the world, this operation had a profound impact on Seville's urban morphology. It acted as a lever for large-scale public and private investment and accelerated infrastructural modernisation. The Expo catalysed urban planning interventions at three scales: neighbourhood – new facilities, roads and public spaces –, urban scale – bridges, bypasses and major infrastructures such as the Alamillo Bridge –, and regional scale – improvements in infrastructures and communications benefiting Andalusia as a whole – (Marchena Gómez and Pablo-Romero Gil-Delgado, 2005). However, while these transformations significantly

modernised Seville's infrastructure, their social impact was uneven. Improved accessibility did not translate into full functional or social integration, and the Cartuja remained weakly embedded in Seville's everyday urban life after the event; leading to mono-functional redevelopment and persistent underuse.

These outcomes reflect a technocratic vision of urban modernity which prioritises infrastructure, efficiency and international visibility over social continuity, adaptability and long-term sustainability. As Lovelace (1958) suggests, 'you can't do planning without a plan', but it is also worth asking, does planning need a plan? (Neuman, 1998). Urban planning inevitably projects an idealised image of the city (Alonso, 1963), and in the case of Expo '92, this image centred on an international, competitive and transformed Seville. The materialisation of this vision, however, revealed inherent contradictions: spaces designed for global representation struggled to accommodate local, everyday uses, underscoring how planning narratives are intertwined with power relations and contested urban futures.

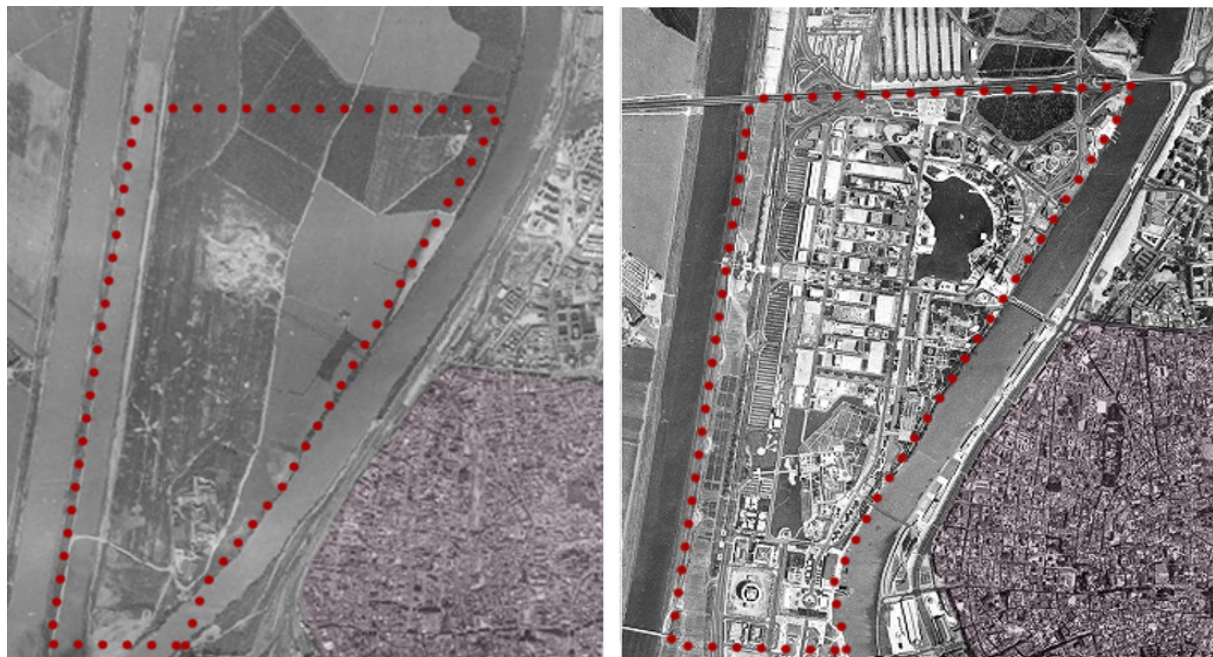


Figure 2. Site of Expo '92 in 1985 (left) and 1993 (right). Own elaboration based on aerial images of the Red de Información Ambiental (REDIAM).

Expo '92 was therefore much more than a temporary event. It constituted a powerful declaration of intent that reshaped Seville's urban identity while simultaneously exposing the limits of predictable, top-down design in producing socially and spatially resilient urban environments. Its legacy reinforces a central lesson for contemporary urbanism: Universal Expositions are not only projects oriented towards the future, but also exercises in memory, political construction, and spatial experimentation whose effects continue to shape cities long after the event itself has concluded.

5. Expo '92 as an engine of change: urban and functional transformations in Seville

A common assumption in urban planning is that a master plan can create attractive and successful urban areas (Cozzolino, 2024). This premise underpins many mega-events, particularly Universal Expositions, which are frequently conceived as catalysts for accelerated urban transformations. The case of Expo '98 in Lisbon, for example, illustrates how an event can be mobilised not merely as a temporary spectacle but as a driver of long-term urban restructuring and regeneration (Carrière and Demazière, 2002). Similarly, Expo '92 in Seville represented a milestone in the city's modernisation process, concentrating investments, urban planning strategies and a vision of progress within a compressed time frame (Carrière and Demazière, 2002). Its designation was not an isolated decision but part of a broader national strategy, reinforced by the simultaneous hosting of the Olympic Games in Barcelona; both sought to reposition Spain within the global economic and cultural landscape.

Mega-events possess the capacity to transform ordinary spaces into special and symbolic places (Roche, 2003). Achieving such transformation, however, requires prospective planning that anticipates multiple scenarios and long-term consequences, rather than responding solely to immediate functional demands (Moroni, 2023). The case of Seville reflects this process. Prior to 1992, the city had limited cross-river connectivity, with only four bridges over the Guadalquivir and a fragmented railway system which possessed two train stations, San Bernardo and Plaza de Armas, and whose lines formed significant urban barriers. The Expo accelerated a radical urban and infrastructural transformation. In less than five years, authorities constructed approximately 75 km of new road infrastructure across the metropolitan area. Major transport investments included the completion of the A-92 motorway linking Seville and Granada, a comprehensive restructuring of the railway network through the construction of the Santa Justa station, and the inauguration of Spain's first high-speed rail line connecting Seville and Madrid. In parallel, planners expanded the airport's capacity fourfold. Finally, significant river engineering works restored approximately 7 km of the city's riverbanks, while seven new bridges were constructed and the port underwent extensive redevelopment (Marchena Gómez and Pablo-Romero Gil-Delgado, 2005).

The magnitude of these investments was decisive. In Seville and its surroundings alone, 139,874 million pesetas – equivalent to around 840.38 million euros – were allocated, while total investments across Andalusia reached 5,256.32 million euros (Marchena Gómez and Pablo-Romero Gil-Delgado, 2005). These resources financed extensive road access systems, public spaces, transport networks, thematic pavilions, scenic spaces such as the Central Theatre, an auditorium, and a cinema, as well as sports facilities and service buildings. Collectively, these interventions redefined both the functional organisation and symbolic structure of Seville, and reinforced its role as a regional and international hub.

The infrastructural expansion had tangible and lasting effects. Within little more than a decade, the number of bridges crossing the Guadalquivir doubled, improving urban mobility and re-integrating the river as an *urban river*. The Santa Justa station eliminated long-standing physical barriers and, through the high-speed rail connection, reduced travel time to Madrid to two and a half hours, while the completion of the A-4 motorway strengthened Seville's strategic position within the national transport network between central and southern Spain. At the same time, the modernisation of the river port and, especially, the airport placed the city firmly on the international map. It opened the door to continental tourism, and the city has attract3e an increasing number of visitors every year since then.

Bertolini (2007) reminds us that infrastructure should be designed for a world full of multiple, constantly changing actions, increasing its adaptability and resilience. Seville's experience reveals the limitations of event-centred planning when planners fail to address long-term integration. While post-1992 urban mapping depicts a more extensive and better-connected city, it also exposes persistent fragmentation. Large areas surrounding Isla de la Cartuja struggled to consolidate, and many Expo buildings failed to secure viable permanent uses; illustrating a broader failure of adaptable reuse. In this context, the event's spectacular and representational dimensions tended to overshadow functional continuity and everyday urban needs. The Expo's ephemeral logic was not effectively translated into a flexible long-term framework, and complexity was addressed in response to immediate deficiencies rather than as an ongoing condition requiring adaptive governance.

6. Ephemeral Urbanism and Permanent Legacy: The Temporal Complexity of Expo '92

One of the most significant legacies of Universal Exhibitions lies in their capacity to accelerate urban development and mobilise large-scale spatial transformations within exceptionally short timeframes (Sykta, 2020). Conceived as showcases of modernity, innovation and progress, these events often leave enduring material and symbolic imprints on host cities. However, accumulated experience demonstrates that such transformations rarely follow linear trajectories, or automatically produce coherent, functional and sustainable urban outcomes. The long-term effects of Expos led development depend less on the magnitude of initial investment than on the institutional and social capacity to adapt specific infrastructures and spaces once the ephemeral spectacle has concluded.

In the 21st century, the concept of planning has increasingly moved away from the closed, deterministic models that dominated much of the previous century. The recognition of cities as complex systems – characterised by both ordered and random interactions – has revealed the limitations of projects based on fixed objectives and rigid spatial prescriptions. Public actions, regulations, and flexible structures are more efficient for designing and planning the city, which Moroni (2023) calls *adaptive, multi-stage, or multi-component plans*. This vision recognises that ideal spatial configurations cannot be fully anticipated, given the continuous emergence of new needs, actors and challenges (Moroni and Cozzolino, 2019). As a result, cities should not be designed as static systems, but rather as dynamic realities in constant transformation.

Considering this perspective, Cozzolino (2018) points out that urban planners should abandon the assumption that inhabitants' preferences and behaviours can be predicted with certainty. Rather than imposing closed solutions, planning should establish regulatory frameworks and spatial conditions that allow complexity and self-organisation of urban systems to flow. Hakim (2014) reinforces this idea by advocating for the use of negative rules – those that indicate what not to do – rather than positive rules that prescribe specific actions. This enables greater freedom in spatial production and facilitates spontaneous and unpredictable solutions. Similar arguments are advanced by Schubert (2018), who conceptualises planning as a form of non-planning oriented towards maximum flexibility. De Franco (2024) further warns that every plan, as an act of design, simultaneously enables certain possibilities while excluding others, thereby limiting its capacity to urban complexity. Much like in quantum mechanics, where particles are understood probabilistically rather than through fixed positions, urban planning must accept indeterminacy as a fundamental condition. Planning, therefore, is never a definitive solution, but a provisional hypothesis to continuous revision and adaptation.

Expo '92 in Seville exemplifies how a six-month ephemeral event can generate long-lasting – though often incoherent – effects on urban morphology and functionality. Such mega-events produce both failures and opportunities, with impacts unfolding across short (2-5 years), medium (10-20 years) and long-term horizons, as clearly evidenced in Seville. Many interventions implemented for the Expo, including ephemeral structures, became effectively permanent due to the absence of clear post-event strategies. The event thus left deep material and symbolic traces, reinforcing the idea that ephemerality in urbanism does not necessarily equate to reversibility.

Subsequent planning instruments, particularly the 2007 Master Plan, consolidated a predominantly mono-functional development model for the former Expo site (Figure 3). Unlike other areas of the city – such as the historic centre or Triana – characterised by a mix of residential, commercial and civic uses, the Expo '92 area was largely assigned to industrial, business and public facilities uses. The absence of residential uses left a structurally incomplete urban fabric, and rendered the area as an enclave largely inactive outside working hours. From the perspective of urban complexity, this condition constitutes a critical failure: without permanent inhabitants, the city's fundamental social substrate is missing. Although several buildings were reused for business, technological and cultural purposes, many pavilions remain abandoned or underutilised, reflecting a clear failure of adaptable reuse and the absence of a coherent long-term regeneration strategy.

Despite the construction of a technology park, cultural areas, sports facilities, hotels and the Alamillo Park – with over 900,000 m² of green space (Marchena Gómez and Pablo-Romero Gil-Delgado, 2005) – Isla de la Cartuja has not been consolidated as a fully integrated urban district. The Expo continues as a temporary place; a space in which society carries out ephemeral and simple actions. The single-function workspace has not allowed for the spontaneous development of shops or restaurants for workers. The rigidity of the planning framework governing the site has inhibited the emergence of mixed uses, local commerce and informal social practices. Like a subatomic particle, the area exists in a constant state of observation.

In this context, time cannot be understood solely as a linear chronological dimension. Rather, it operates as a relational and structuring force that shapes urban experiences and conditions design decisions. The compressed, urgent temporality of the Expo collided with the slower, accumulative and evolutionary time of the city, producing a persistent mismatch between event-driven spatial logics and everyday urban life. The post-Expo period has been marked by an ongoing search for functions, identities and meanings for a space conceived as exceptional and never fully normalised within Seville's urban structure.

From a complexity theory perspective, these outcomes emerge as non-linear effects. Decisions made in the years preceding 1992 did not merely shape the immediate present but generated bifurcations and divergent trajectories that continue to resonate decades later. Isla de la Cartuja has thus become an urban laboratory where obsolescence, fragmentation and reinvention coexist. Demolished pavilions adapted office spaces, technological centres, university spaces and cultural facilities form a heterogeneous landscape that resists conventional urban categorisation.

Although a linear, functionalist perspective might interpret this functional and morphological heterogeneity as a planning failure, an alternative reading understands it as an expression of non-deterministic urban evolution. If we understand the city as an open complex system, the absence of a single, stable outcome does not necessarily signal dysfunction, but rather highlights the contingent nature of urban processes. The challenge lies not in eliminating uncertainty, but in creating frameworks capable of accommodating adaptation, reconfiguration and resilience over time.

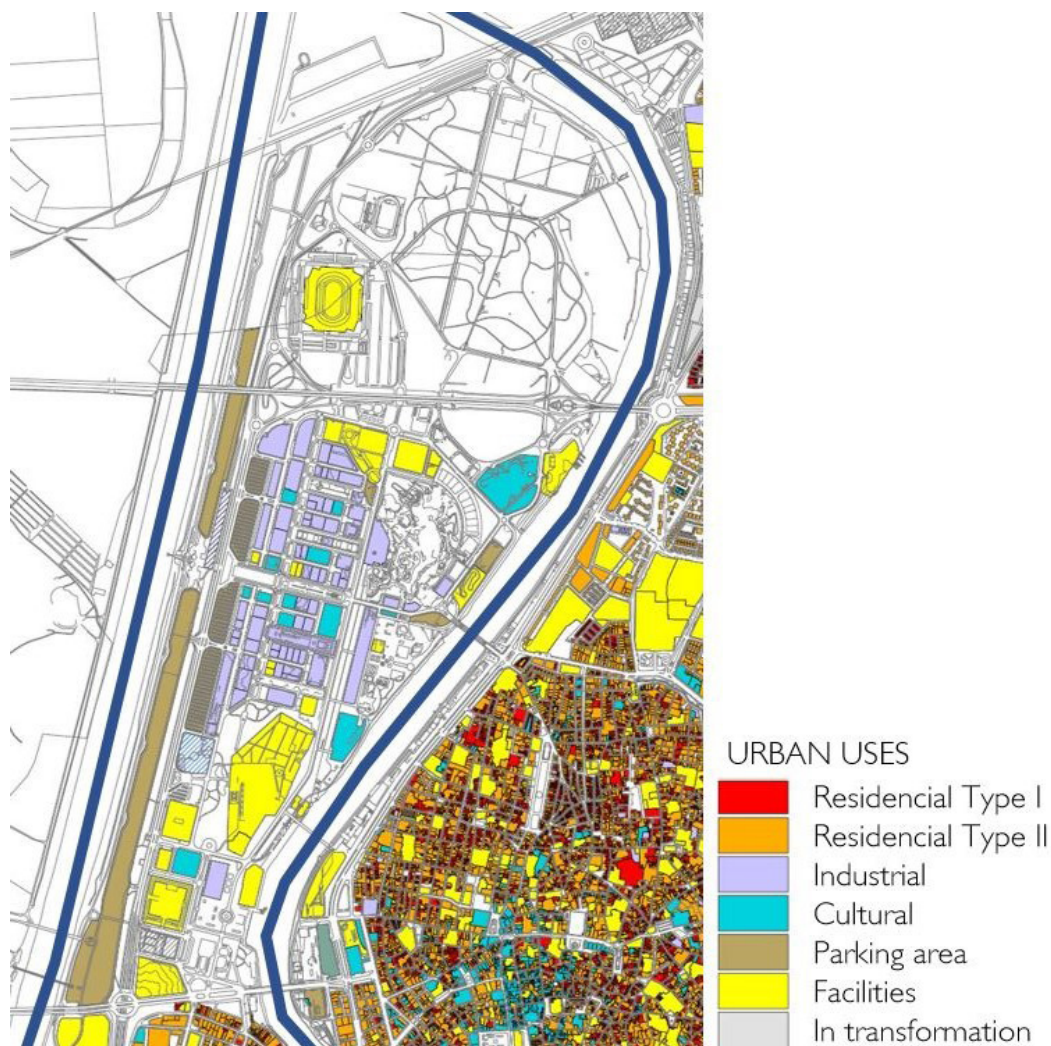


Figure 3. Urban uses established by the Seville Master Plan 2007. Source: Plan General de Ordenación Urbana de Sevilla of 2007.

Ultimately, we should not assess the urban legacy of Expo '92 solely in terms of physical permanence, economic return or immediate functionality. Its significance also lies in its contribution to urban imaginaries, institutional learning, and critical reflection on the limits of spatial control. The Seville experience demonstrates that urban design is a hypothesis tested within a dynamic and unpredictable environment. In this sense, sustainability is less about achieving predefined outcomes and more about maintaining openness to change, embracing uncertainty, and enabling cities to learn, adapt and reinvent themselves through both their failures and their successes.

7. Conclusion

This paper's analysis of Expo '92 in Seville as a paradigmatic case of ephemeral urbanism reveals key insights into the interaction among time, complexity, and permanence in urban transformation. Conceived as a six-month event, the Expo nonetheless operated as a powerful catalyst for change across multiple scales – local, urban, regional and national. Major investments in transport infrastructure, cultural facilities, public spaces and regional connectivity significantly transformed Seville's spatial structure, integrating the city into high-speed mobility networks and reinforcing its position as a strategic node in southern Europe. While these interventions produced substantial material and symbolic benefits, they have not consistently yielded equitable social outcomes or long-term urban sustainability.

A central conclusion concerns the unresolved tension which exists between the ephemeral logic of the event and the long-term logic of the city. Expo '92 operated under conditions of urgency, compression and exceptionality, whereas urban life unfolds through cumulative, evolutionary and relational processes over time. This temporal mismatch generated persistent imbalances in the site's spatial and functional integration. The consolidation of Isla de la Cartuja as a predominantly single-functional area – focused on business, technology and public uses – limited opportunities for a diverse, dynamic and socially active urban fabric. The near absence of residential function has constrained social appropriation, reinforced spatial isolation, and reproduced a functionalist logic that is at odds with the diversity and resilience principles which are central to complex urban systems.

From the perspective of urban complexity theory, Expo '92 exemplifies how decisions and interventions under uncertainty can generate non-linear, emergent effects far beyond initial planning intentions. The reorganisation of transport infrastructure, riverfront transformation, and the construction of new architectural landmarks transformed both Seville's urban image and its functionality. Simultaneously, these interventions produced bifurcations that led to divergent development trajectories: Isla de la Cartuja evolved into a heterogeneous urban laboratory in which obsolescence, abandonment and reinvention coexist. The coexistence of demolished buildings, reused pavilions and unresolved spaces illustrates the city as an open, dynamic and adaptive system, challenging linear and deterministic planning paradigms.

The Expo also highlights the importance of incorporating flexibility, adaptability, and multi-scalarity into urban plans for mega-events. The *adaptive plans* and *multi-stage plans* proposed in contemporary literature (Moroni, 2023) offer more resilient alternatives to rigid master plans, facilitate the gradual integration of event spaces into the urban fabric and reduce the risk of long-term obsolescence. Complexity theory underscores the limits of absolute urban control, and emphasises planning frameworks that support self-organisation, as well as the emergence of spontaneous solutions and iterative adaptation rather than fixed prescriptive spatial outcomes.

Expo '92 further demonstrates the ambivalent nature of mega-event legacies. While it successfully projected Seville as a modern, globally connected city, its social and spatial outcomes remain uneven. The prioritisation of spectacular objectives often overshadowed everyday urban functionality. Post-event planning rigidity inhibited the emergence of spontaneous activities, local commerce and residential uses. This experience consequently reinforces the necessity of viewing mega-events not as isolated spectacles, but as integral phases within the city's lifecycle, where adaptability and programmatic flexibility are essential for long-term sustainability.

Beyond urban form, mega-events function as political and symbolic constructs. Seville's selection for Expo '92 was embedded in Spain's broader national project of modernisation and international repositioning. The Expo projected strategic national and urban intentions, and demonstrated how symbolic imperatives shape planning decisions. Complexity theory provides a lens through which to understand these dynamics: interventions are not only infrastructural but also socio-political experiments in which outcomes emerge through the interaction of multiple agents, scales, and temporalities.

Ultimately, the most enduring lesson of Expo '92 is that urban design is inherently provisional. Planning interventions are hypothesis-tested in dynamic, uncertain, and evolving environments. Cities cannot be reduced to static systems with definitive solutions. They are complex realities that require openness to

uncertainty, flexibility in the face of change, and the capacity to learn from both successes and failures. Expo '92 reinforces the need to move beyond deterministic planning toward approaches grounded in adaptability, functional diversity, social integration and ecological responsibility; principles central to complexity theory and essential for addressing the challenges of contemporary urbanisation in an increasingly interconnected and complex world.

References

- Allison, Lincoln (1971) Politics, Welfare, and Conservation: A Survey of Meta-Planning. *British Journal of Political Sciences*, 1, pp. 437–452. <https://doi.org/10.1017/S0007123400009236>
- Alonso, William (1963) Cities and City Planners. *Daedalus*, 92, pp. 824–839. <https://www.jstor.org/stable/20026814>
- Batty, Michael (2005) *Cities and Complexity: Understanding Cities with Cellular Automata, Agent-Based Models, and Fractals*. MIT Press.
- Bertolini, Luca (2007) Evolutionary Urban Transportation Planning: An Exploration. *Environment and Planning A: Economy and Space*, 39, 8, pp. 1998–2019. <https://doi.org/10.1068/a38350>
- Bohm, David (1980) *Wholeness and the Implicate Order*. Routledge, London.
- Carrière, Jean-Paul and Demazière, Christophe (2002) Urban planning and flagship development projects: Lessons from EXPO 98, Lisbon. *Planning Practice and Research*, 17, 1, pp. 69–79. <https://doi.org/10.1080/02697450220125096>
- Castells, Manuel (1996) *The Information Age. Vol. I – The Rise of the Network Society*. Blackwell, Oxford.
- Cozzolino, Stefano (2024) Planning and design for long-term neighborhood adaptability: an investigation of the formation and evolution of Kreuzviertel in Dortmund, Germany. *URBAN DESIGN International*, 30, pp. 81–103. <https://doi.org/10.1057/s41289-024-00243-6>
- Cozzolino, Stefano (2018) Reconsidering Urban Spontaneity and Flexibility after Jane Jacobs: How do they work under different kinds of planning conditions? *COSMOS+ TAXIS*, 5, 3, pp. 14–24. https://cosmosandaxis.org/wp-content/uploads/2018/03/cozzolino_ct_vol5_iss3_4.pdf
- Davis, Juliet (2014) A promised future and the open city: issues of anticipation in Olympic legacy designs. *Architectural Research Quarterly*, 18, 4, pp. 324–341. <https://doi.org/10.1017/S1359135515000068>
- De Franco, Anita (2024) To plan or not to plan? Is this the question? *Transactions of the Association of European Schools of Planning*, 8, pp. 10–23. <https://doi.org/10.24306/TrAESOP.2024.01.002>
- De Soto, Jesus Huerta (2008) *The Austrian School: Market Order and Entrepreneurial Creativity*. Edward Elgar, Cheltenham.
- Díaz Recaséns, Montserrat and Díaz Recaséns, Gonzalo (1981) La Corta de la Cartuja, Sevilla. *Arquitectura*, 232, pp. 60–63. <http://previa.coam.org/media/Default%20Files/fundacion/biblioteca/revista-arquitectura-100/1981-1986/docs/revista-articulos/revista-arquitectura-1981-n232-pag60-63.pdf>
- Einstein, Albert (1905) Zur Elektrodynamik bewegter Körper. *Annalen der Physik*, 322, 10, pp. 891–921. <https://doi.org/10.1002/andp.19053221004>
- Hakim, Besim S. (2014) *Mediterranean Urbanism Historic Urban / Building Rules and Processes*. Springer, Berlin.
- Hayek, Friedrich A. (1967) *Studies in Philosophy, Politics and Economics*. Routledge, London.
- Hobsbawm, Eric (1992) Mass-Producing Traditions: Europe, 1870–1914, in: *The Invention of Tradition*. Cambridge University Press, Cambridge, pp. 263–307.
- Ikedo, Sanford (2012) Entrepreneurship in action space, in: *The Spatial Market Process*. Emerald, Bingley, pp. 105–134.
- Lovelace, Eldridge (1958) Three Short Articles Designed to Provoke Discussion and Re-Examination of Basic Principles. *Journal of the American Institute of Planners*, 24, 1, pp. 7–10. <https://doi.org/10.1080/01944365808978260>
- Marchena Gómez, Manuel Jesús, Pablo-Romero Gil-Delgado, María del Pópulo, (2005) La Exposición Universal de Sevilla de 1992: consecuencias de orden territorial. *Territorio y desarrollo local*, 4, pp. 19–30. <https://hdl.handle.net/11441/79057>
- Moroni, Stefano (2023) Distinguishing 'planning' from the 'plan'. Institutional and professional implications of taking urban complexity seriously. *European Planning Studies*, 31, 11, pp. 2327–2341. <https://doi.org/10.1080/09654313.2023.2217851>
- Moroni, Stefano and Cozzolino, Stefano (2019) Action and the city. Emergence, complexity, planning. *Cities* 90, 12, pp. 42–51. <https://doi.org/10.1016/j.cities.2019.01.039>
- Neuman, Michael (1998) Does Planning Need the Plan? *Journal of the American Planning Association*, 64, 2, pp. 208–220. <https://doi.org/10.1080/01944369808975976>

- Portugali, Juval (2006) Complexity theory as a link between space and place. *Environment and Planning*, 38, pp. 647–664. <https://doi.org/10.1068/a37260>
- Richards, Greg Leal and Lodoño, María del Pilar (2022) Festival cities and tourism: challenges and prospects. *Journal of Policy Research in Tourism, Leisure and Events*, 14, 3, pp. 219–228. <https://doi.org/10.1080/19407963.2022.2087664>
- Richards, Greg and Palmer, Robert (2010) *Eventful Cities: Cultural Management and Urban Revitalisation*. Routledge, London.
- Riggs, Peter J. (2015) Contemporary Concepts of Time in Western Science and Philosophy, in: *Long History, Deep Time: Deepening Histories of Place, Aboriginal History Monographs*. ANU Press, pp. 47–66. <https://www.jstor.org/stable/j.ctt183q3h5.10>
- Roche, Maurice (2003) Mega-Events, Time and Modernity On time structures in global society. *Time & Society*, 12, 1, 99–126. <https://doi.org/10.1177/0961463X03012001370>
- Schubert, Dirk (2018) Cities and plans—the past defines the future. *Planning Perspectives*, 34, 1, 3–23. <https://doi.org/10.1080/02665433.2018.1541758>
- Sykta, Izabela (2020) Urban and architectural heritage, as well as the impact of American world expos on city planning and development on example of Philadelphia, Buffalo, Saint Louis and Cleveland. Part I. Initial studies—supplement. *Teka Komisji Urbanistyki i Architektury pan Oddzialw Krakowie Urbanity and Architecture Files*, 48, pp. 315–348. <https://doi.org/10.24425/tkuia.2020.135421>