

Chapter 9

Contested Spaces for Negotiated Urban Resilience in Seville



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Abstract This chapter aims to analyse collective experiences contributing to urban resilience carried out by self-organised civil society groups in Seville (Spain). We use the idea of contested spaces, embedded in the concepts of radical resilience and negotiated resilience, to analyse the case study. We argue that these practices have promoted, by contestation and negotiation, essential green infrastructure for resilience to hydro-climatic risks in the city. Indeed, these communitarian experiences appear in a context marked by a long history of top-down urban planning, in which urban resilience is traditionally understood as a target to be achieved through a robust hydraulic infrastructure system. With the effects of climate change becoming more and more present, bottom-up civil society initiatives have emerged as a form of community resilience in recent decades. We discuss the processes of transformation and hybridisation of these experiences, their conditions of development as well as the limitations of the communitarian approach related to urban resilience.

Keywords Co-management · Community management · Negotiated resilience · Radical resilience · Urban green infrastructure

9.1 Introduction

Social and community movements have been increasingly demanding for urban green spaces due to the progressive social recognition of their socio-ecological values (Campbell et al. 2016). In the context of the climate emergency, this demand is

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currently addressed in discussions about urban resilience. The purpose of this chapter is to analyse collective urban resilience experiences in the city of Seville (Spain) that, through self-organisation, contestation and civic negotiation processes, have created a large green space system that could be categorised as a network of contested spaces (Low 2009). Despite the unequal power relationship with urban governmental authorities, we argue that these community experiences represent a set of bottom-up initiatives that, since the 1980s, have played a key role in shaping the urban green infrastructures that today are contributing significantly to resilience against hydro-climatic risks in the city. The idea of community contestation, already integrated in the concepts of radical resilience and negotiated resilience, is used to structure the case of Seville, exemplifying a form of co-production of the city.

These community initiatives have gone through different management stages throughout their history, and in this chapter, we differentiate them as follows. We call community management those initiatives managed exclusively by the community in a self-organised and autonomous way. We also differentiate between two types of co-management with the local administration: one called public-community co-management, when referring to a collaboration between the local administration and community movements, and the other called public-private co-management, when collaboration is carried out with private agents (a company or other operators).

The chapter is structured in five sections. The first one is a theoretical section that analyses the main tensions and different logics within urban resilience approaches. Diving into these approaches contributes to the understanding of the prevalent logics in the development of urban flood defence infrastructures in Seville. It also contributes to analyse the logics behind the interventions of social and community movements to reclaim green spaces in the city.

Second, the tragic historical relationship between the city of Seville and hydro-climatic risks (especially floods and heatwaves) is described as the background of current bottom-up experiences of urban resilience. Despite the modification and occupation of areas of floodplains that have experienced frequent and devastating floods in the past, the city currently enjoys a—perhaps false—feeling of security. The current urban robustness to floods results from a costly historical process of infrastructure expansion and constitutes the context for the development of new collective demands and imaginaries regarding climate resilience.

Third, as the core of the work, we present and analyse the initiatives undertaken by self-organised civil society groups. In a context of institutional neglect regarding the provision of public infrastructure and services, and specifically green areas, these initiatives assumed leadership for the socio-ecological transformation of several areas on the outskirts of Seville. The selection of these initiatives is based on the *Booklet of urban resilience community initiatives in Seville and Barcelona: civil society against the effects of climate change* carried out in the context of the RESCITIES Project (Satorras et al. 2020). On this basis, a review is made of the most significant processes of citizen action that have promoted the conservation or creation of green infrastructures in the city. The existing bibliography on the city's contemporary social and environmental history and our transdisciplinary experience in the subject under study have also allowed us to delve into these pioneering

experiences of urban greening in the city. For this purpose, in addition to reviewing specific literature and documents, four semi-structured interviews were conducted with representatives of civil society organisations currently engaged in climate action and governance in Seville (between April and November 2020), and another four unstructured interviews were conducted with key actors involved in community processes (between February and March 2021).

Fourth, as the main conclusions, the study shows that historically, large-scale infrastructure works, especially for protection against flooding, have prioritised safeguarding the interests and spaces of the city's urban elites. In contrast, during the last decades, an alternative approach based on the construction of resilience as a bottom-up and nature-based process reveals the capacity of civil society initiatives to build a more resilient city in terms of hydro-climatic risks. As a result of the spatialised and diachronic analysis of these experiences, we discovered that the process of city co-production is expressed, with different rhythms and durations, through three different management situations, i.e. community management, public-community co-management and public-private co-management. These processes are not conflict-free. Community management and public-community co-management schemes prove to be fragile and costly; they require great collective commitment and strong teams of people who are able to facilitate the processes, promote the values and drive the actions needed to construct this new community climate resilience. Concerning public-private co-management, it leads to the disappearance of the conditions necessary for community resilience, such as the community networks themselves or the feeling of collective ownership and belonging.

9.2 Contested Spaces in Cities for Building Urban Resilience to Hydro-climatic Risks

Multiple scientific reviews in recent years have identified tensions around the concept of urban resilience (Brand and Jax 2007; Meerow et al. 2016; Moser et al. 2019; Chelleri and Baravikova 2020). Meerow et al. (2016), in particular, identify six tensions: (1) characterisation of urban system; (2) notion of equilibrium; (3) resilience as a positive, neutral (or negative) concept; (4) pathways to resilience (i.e. persistence, transitional or transformative); (5) understandings of adaptation; and (6) timescale of action. The tension referring to the pathways of resilience is perhaps the oldest, although it is still relevant. The academic literature on resilience has used two metaphors to show this tension, i.e. the bouncing-back metaphor and the bouncing-forward metaphor, which have been very well explained by Chelleri and Baravikova (2020). The bouncing-back metaphor, developed mostly in engineering and classical ecology, represents a perspective on resilience that places greater emphasis on system robustness and the ability to absorb perturbations before system change occurs. But it also shows a way of dealing with risk. This approach prefers a risk control strategy that allows a return to the previous state as soon as

possible and with little change to the system. On the other hand, the bouncing-forward metaphor represents an approach that includes two possible paths: transition and transformation. This approach addresses risk through management strategies, which incorporate elements such as uncertainty and the ability to adapt and/or transform to different states. In other words, it considers state change as a possible or feasible option. The two metaphors are opposing but coexist today, especially in terms of public policy, as we will illustrate with the logic of contemporary public administrations in Seville when implementing infrastructures to adapt to hydro-climatic risks.

The logic of transformation also helps us show a question that is not yet well developed in the literature on urban resilience but has always been obvious to urban social movements. Cities result from a conflictive process involving actors with capacity to influence from the top-down and also actors, such as social movements, with the capacity to *build and transform the city* from the bottom-up and, therefore, to influence its resilience (Davies 2013; De Carli 2016; Delgado Ruiz 2017).

Traditionally, urban planning and public policies developed in many cities have incorporated an engineering perspective on resilience focused on robustness (Abbar et al. 2016). This perspective has put the focus on the infrastructural, technical and environmental urban challenges exacerbated by climate change rather than on social, equity and conflict-related challenges. In fact, as we will see below, most of the urban infrastructures developed in Seville by the public administration to cope with hydro-climatic risks reproduce the robustness approach. It has allowed urban planners and policymakers to plan the city without considering the problems that urban development itself generated nor analysing the socioeconomic consequences that the very act of *defence* against risk generates on the city and the people who live there. When many of these infrastructures to prevent flooding of the main river and its tributaries were developed during the twentieth century in Seville, the concept of resilience was not as present as today among decision-makers. However, we can argue that they followed the logic of bouncing-back. Only recently, the local public administration in Seville has incorporated strategies for risk management, transition or transformation towards more sustainable and equitable use of public space.

In addition to the six tensions identified before, we must add the tensions recognised from a political perspective, which problematises who decides who should become more resilient, in the face of what, how, when, where and at whose expense (MacKinnon and Derickson 2012; Chandler 2014; Vale 2014; Meerow and Newell 2016; Kaika 2017; see Chap. 5 for the results of this the analysis in the Latin American context). The political perspective in urban resilience focuses on understanding the power dynamics that have often been overlooked in the literature and in the practical application of this approach. However, the tensions between who has the power to decide about resilience indicate the difficulties in operationalising the concept of resilience (Davoudi et al. 2012). The use of resilience as a synonym for urban sustainability further complicates its application, with the danger of becoming an unusable analytical framework, or only usable as a metaphor or a bridging concept, rather than as a framework that can generate specific applications for urban policies (Pearson et al. 2014).

To make the debate even more complex, there is a growing trend to inherently attribute to resilience a positive connotation (Meerow and Stults 2016). Resilience is a characteristic of systems, but it does not provide information about the desirability of that system. For example, some urban infrastructures developed in Seville in response to river flooding have systematically forgotten certain neighbourhoods with lower incomes (such as the Triana neighbourhood), thus aggravating their socioeconomic vulnerabilities as well as their hydro-climatic vulnerabilities. Similarly, some highly resilient urban socioeconomic and cultural dynamics are not necessarily desirable for all those who have to endure them and may even compromise the future sustainability of the ecosystems on which these people depend (Dornelles et al. 2020). Thus, the harsh criticism that many authors have made of resilience considers that it consolidates a conservative and neoliberal urban agenda while neglecting issues related to power relations, social inequality and distributive justice in the face of risks and threats (Bahadur and Tanner 2014; Kaika 2017).

This is why the literature on the so-called community resilience insists that other approaches to urban resilience must be included (Mulligan et al. 2016). Developing a public policy or carrying out an intervention using the urban resilience approach can have impacts on different population groups at different temporal and spatial scales. The community resilience framework asks to identify these impacts and how these policies should incorporate the local and/or regional communities affected (Berkes and Ross 2013). It also questions how a community can best cope with specific risks. Further, there are not only one-off events or shocks, such as earthquakes, floods or fires, on which to build resilience for recovery, transition or transformation but also chronic threats, such as unemployment, lack of access to affordable housing or poverty, that weaken communities and thus their resilience (Koliou et al. 2020). The community resilience framework highlights that we must overcome the idea of a return to a previous state when talking about urban resilience, taking into account that there are situations, especially in the urban context, where it would mean bouncing-back to social inequity and unsustainable or undesirable socioeconomic systems (Fazey et al. 2018). Indeed, the inclusion of equity and social justice criteria when applying the urban resilience approach to urban infrastructure and public policies is still an issue to be addressed. We show below some recent attempts to address this gap in the academic literature.

Some authors use the concept of socio-ecological vulnerability to show how climate risks and hazards affect communities living in cities differently, to ensure that the solutions proposed for climate mitigation and adaptation include the needs of these diverse communities (Anguelovski et al. 2016; Shokry et al. 2020). From this perspective, vulnerability to climate risks stems from a combination of social vulnerability defined by sociodemographic variables (e.g. poverty, unemployment, age, minorities, etc.) and ecological vulnerability defined by biophysical environmental factors (e.g. exposure, infrastructure characteristics, etc.) (Lara Garcia et al. 2020).

Other authors analyse urban resilience trade-offs produced due to social, environmental, public policy and urban infrastructure interventions that have supposedly been implemented to improve the adaptive capacity, socio-ecological sustainability and/or social justice of a system (Chelleri et al. 2015). These

trade-offs can occur at different spatial scales and affect different groups in different ways or even across time scales. However, the trade-off framework does not consider the intersectional inequalities within a society, which can be based on sex, gender, ethnicity, class or age. Nor does it consider the role of historical injustices in shaping a community's system of relationships and identities. These shortcomings can determine individual or collective vulnerability in a crisis or the ability to access resources and even the capacity of some groups to participate in decision-making. In fact, the trade-off framework does not address procedural equity in participation; that is, it does not ensure that urban resilience plans meet effective and inclusive participation agendas with a real possibility of having some influence on decision-making (Meerow et al. 2019).

Other works related to equity and social justice, such as that by Harris et al. (2017), highlight resilience's procedural dimension through developing the concept of *negotiated resilience*. From this perspective, urban resilience is understood as a process that includes actors with multiple and sometimes opposing interests and multiple notions of what should or should not be resilient in an urban setting. This multiplicity of actors means that resilience is not understood as an objective per se, but rather as a process, a broad negotiation process in which the participation and inclusion of all the people affected by urban resilience decision-making receive explicit support. However, this framework acknowledges that the unequal correlation of forces among social actors does not guarantee equity in the negotiation process (Ziervogel et al. 2017).

Moreover, there are contexts in which institutional neglect results from a supervening event, such as after natural disasters. There are also contexts in which this neglect is the cause of a deliberate lack of institutional interest, e.g. in some areas of the urban periphery, as we will discuss later in this chapter. For all these reasons, how urban conflict is managed will be key to incorporate justice and equity in the framework of resilience. In cities, many people live together with different processes of collective identification of the urban space itself, and, therefore, conflict is an inherent part of the processes of urban co-production (Delgado 2004). It is also the result of control or hegemony over the uses of the urban space, which are affected by global and local market logics (Gramsci 1999; Davies 2013). Starting from the idea that there are different ways of conceptualising the urban, we understand that there must also be a variety of ways of analysing and managing conflict. Capel (2003) recovered the Roman tradition in the denomination of these urban dimensions by affirming that cities are at the same time *urbs*, *polis* and *civitas*. The *urbs* is the built space, what today we would understand as urban infrastructure and urban metabolic flows. The *polis* would correspond to the formal and informal government structure and the political-administrative units that influence urban management. But the city is also the result of the different practices carried out in it by the people who inhabit it, the *civitas*. A city does not exist without its inhabitants and their experiences in urban spaces. That is the reason why it is important to highlight the role that citizens and particularly urban social movements have played and continue to play in transforming the city (Capel 2003). To elaborate on this idea,

Davoudi et al. (2012, p.309) suggest that resilience has *the potential to develop as a more radical and transformative agenda* by recognising the role of bottom-up initiatives, such as those set in motion by social and community movements. To delve deeper into this idea, Jon and Purcell (2018) have proposed the notion of *radical resilience* using the theories of agonistic and anarchist planning. These authors believe that agonistic conflict between government and citizens ignites a spark for community management, i.e. when a community claims a space as its own, and the municipality tries to appropriate the management of that urban space, as we will see later in this chapter. These authors consider radical resilience the process of empowerment in which citizens realise that they can *self-manage their own affairs* (Jon and Purcell 2018, p.1).

As seen in this section, the literature on urban resilience has focused more on the *urbs* and the *polis* following Capel's categorisation. Some authors have incorporated the consequences on the *civitas* of interventions on the *urbs* or the *polis*. However, only some of the above-referenced studies have focused on the city-building power of citizens, who live in the city and contest it, giving a new meaning to urban spaces supposedly created for a specific purpose, to subvert them and re-appropriate them. In what follows, we focus on the spatial practices and representation of urban spaces set in motion when the neighbourhoods of Seville's urban periphery were configured since the early twentieth century, considering this process as a combat for urban resilience. We argue that this process of contestation could be framed in what anthropologist Setha Low categorised as *contested spaces* (Low 2009), since the conflict (i.e. the process of contestation) did not take place in urban space, but *for* urban space. As we will show, social action aimed at demanding and projecting a *way of being and experiencing the city* (Lyons et al. 1980; García Jerez 2011; Huang 2019). Thus, with their subjective and collective urban practices and experiences, and even through occupation and self-organisation practices, the communities of the peripheral neighbourhoods demanded and created not only urban green infrastructure but also other types of basic community services that were later consolidated in the city. Properly designing and maintaining this *social infrastructure* (Klinenberg 2018) might be a powerful strategy for a more equal and resilient society. In other words, the processes of social contestation played a fundamental role in shaping Seville's urban green and social infrastructure, which has ultimately become a key factor in addressing the hydro-climatic risks that the city is currently facing. Moreover, these contestation processes followed logics of transformative resilience that contrast with those of bouncing-back resilience corresponding to the interventions developed by the public administration throughout a previous trajectory and even at the same time. We argue that long before the city's commitment to resilience was on the public agenda of Seville, and even before it was explicitly incorporated into activist and community initiatives, the mobilised citizens organised to transform the urban space, which in turn reinforced community resilience.

9.3 Seville and Hydro-climatic Risks: The Construction of a Robust and Self-Confident City

Very intense socio-natural risks and opportunities for human wellbeing are combined and concentrated in the city of Seville due to its situation, location and territorial resources and the nature and history of its urban functions. The city is situated at the end of the Guadalquivir River basin that, with a surface area of 57,000 km², spreads over a valley of fertile land. The river catchment is exposed to ocean winds and enjoys mild winters and relatively abundant, although recently decreasing, rainfall (around 600 mm/year). The city is located 80 km inland, at the last fordable point of a navigable estuary, the only river port on the Iberian Peninsula, and at a crossroads for terrestrial communication. These conditions explain the existence and importance of the city as the economic capital of the Hispanic Empire (sixteenth and seventeenth centuries). Even today, Seville is the principal city in the south of the Iberian Peninsula.

The Guadalquivir River is more like a gigantic creek than a river (Vanney 1970; Del Moral 1991), as the relatively abundant winter rain is characterised by its great seasonal and inter-annual irregularity. Before the infrastructural transformation carried out throughout the twentieth century, the river instantaneous flow fluctuated between 10,000 and 10 m³/s, with a yearly cumulative flow of between 20,000 and 500 hm³/year. Most of Seville's urban space, protected by city walls since antiquity, is less than 7 metres above sea level, in an area where river floods higher than this height used to occur every 10 years. Apart from the flooding caused by the river overflowing, Seville has also had to contend with stormwater flooding (*internal flooding*). Whenever the water outside the protected city rose to a height above the ground level inside the walls, it was not possible to discharge the rainwater through the traditional drainage network. On the contrary, the external floodwaters entered the city through the drainage system, aggravating water accumulation in the lowest areas. This, together with its long history as an urban centre, explains why Seville has one of the longest and most detailed chronicles of documented flooding in the world (Guichot 1877; Palomo 1878; González Dorado 1975; Solís 2022).

To complete this general characterisation, it should be noted that mild, frost-free winters are combined with torrid summers (temperatures of 45 °C are not unusual on some days in July and August). The mean annual temperature in the city (Fig. 9.1) shows an upward evolution throughout the period 1940–2016 (statistically significant at $p < 0.01$). After 1994, the mean temperature has always exceeded 16.0 °C. By contrast, throughout the period 1940–1994 (40 years out of a total of 53), it was frequent to find lower temperatures (mean temperatures below 16.0 °C). Comparing the two halves of the series, the mean annual temperature has gone from 15.6 °C in the period 1940–1980 to 16.1 °C later (CHG 2021). Regarding heatwaves, the dates show an increase in frequency and a prolongation in the number of heatwave days, as well as an advance in the months of appearance (May–June) before the hottest period (July–August). Concern about the consequences for the population's health, especially for the most vulnerable sectors, is growing (Junta de Andalucía 2019).

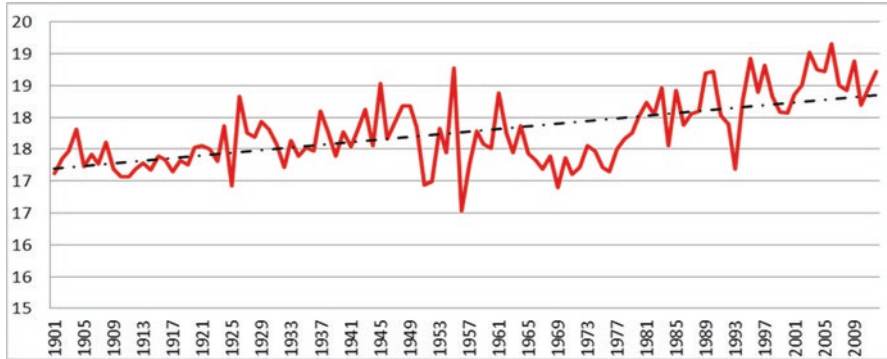


Fig. 9.1 Mean annual temperature in Seville (1901–2010). (Source: author's elaboration based on data from CRU TS 3.21)

Given the content of the case study developed in the following section (community-based initiatives of urban green infrastructure relying on community management and public-community co-management), in this background and context synthesis, we do not address the issues related to drought, which also seriously threatens the city. Since the spatial scale at which drought is generated surpasses the urban scale, as well as its impacts and the responses it provokes, drought is not a central issue to the experiences exposed as flooding and heatwaves.

9.3.1 *The Defence Against Floods*

Although earlier preventive actions were developed, it was not until the beginning of the twentieth century that the execution of the public works started to radically transform the hydrographic network of Seville. This network includes both the channel of the main river, the Guadalquivir, and its torrential tributaries on the left bank (i.e. Tagarete, Tamarguillo, Guadaira). The systematic diversion, channelling or tubing of these streams was accompanied by the construction of a belt of dikes with a height of 12 metres above sea level that extends the defended area from the 260 ha of the historic urban site to the current 5280 ha (Fig. 9.2).

The major stages of the construction of this hydraulic infrastructure are the so-called Moliní and Sanz Larumbe Plan (1903–1929), the Delgado Brackenbury Plan (1929–1950), the diversions of the Tagarete and Tamarguillo (1930 and 1962), the channelling of the Guadaira (1977) and the Cartuja Channel (1975–1982). This was a long and costly process interspersed with catastrophic floods, such as those in 1917, 1926, 1945, 1952 and 1963, and many others less traumatic. Repeated catastrophes revealed the fragility of the system and the increase of risk, in terms of people affected, throughout this period. Despite the hydraulic infrastructures, the enormous urban expansion during the twentieth century took place mostly over flood-prone lands. To a certain extent, this risk was addressed by the accumulation

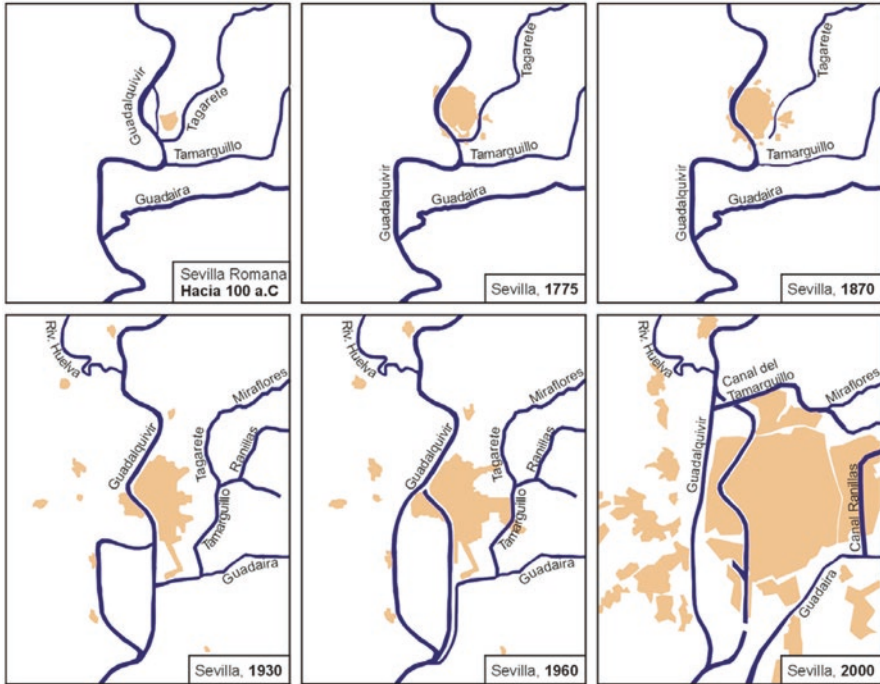


Fig. 9.2 Guadalquivir River with its tributaries as it passes through Seville with the modifications made to their courses. (Source: García García (2004))

of technical-administrative initiatives (action protocols, personnel and resources allocated ad hoc) and local knowledge (consolidated practices of solidarity and mutual support) that allows the implementation of actions to reduce impacts both during and in the wake of the catastrophes themselves (Solis 2022). However, the catastrophes served above all to justify the continuous development of the hydraulic infrastructure programme led by the government authorities as a condition for consolidating the urban expansion of the city without taking into account the real physical potential of the affected hydrographic network (García García 2004).

Throughout that process of infrastructure development, there has been an intense citizen debate about the conception and technical design of the different alternatives, their objectives and priorities, privileged and neglected areas as well as their costs and benefits. In this regard, it is meaningful to highlight that once the Seville Port was expanded and modernised (Moliní Plan 1929), the popular neighbourhood of Triana continued to be exposed to flooding for decades (until the Delgado Brackenbury 1950 Plan). In the same sense, the channelling and diversion towards the south-east of the streams that crossed the city (i.e. Tagarete and Tamarquillo), which enabled the urbanisation of a large area for the 1929 Ibero-American Exhibition, increased the vulnerability of the working-class settlements that had arisen on the east bank of these streams (Díaz del Olmo et al. 2012). Both of them

are examples of the hegemony of certain urban-territorial approaches with sometimes internal conflicting interests, i.e. urban expansion and Port consolidation. Nonetheless, underneath these discrepancies lies a common hard infrastructural strategy for fighting the *atrocious, ferocious and destructive* swells of the Guadalquivir and its tributaries and other similar expressions used to refer to them in the discourses used by government authorities. At the same time, a big part of the population had to suffer the vast and unevenly distributed impacts of this mode of coping with the *natural threat*. In the decades of the 1940s, 1950s and 1960s, fast and unordered urban expansion over flood-prone areas, along with unfinished or poorly designed hydraulic and urban infrastructure, produced large masses of refugees to the urban periphery (the so-called Seville of the shelters), in a post-civil war, dictatorship context (Solís 2022).

Even today, new projects to expand the flood defence system exist, such as the rechanneling of the Tamarguillo in the north or the new lock of the Port, built in 2010 in the south. However, since the last flood in 1963, the city has not been affected by any serious floods, apart from small marginal (in spatial and social terms) areas outside the protected enclosure and apart from water ponding problems caused by heavy rains (see next section). Along with the local defence against flooding, the Guadalquivir River Basin Authority has carried out large-scale hydraulic works to regulate the river flow, building a reservoir system of more than 40 big dams, with a total capacity (8500 hm³) greater than the average annual flow of the river (6000 hm³/year). In addition, the course of the estuary downriver from Seville has been straightened (with the river course shortened by 20 km), which facilitates the drainage of river floods. The main drivers behind the former were agricultural interests (e.g. irrigation), while behind the latter were Port interests. These two agents—irrigation and navigation—along with urban development promoters have been aligned in their strategy to control nature, albeit not without contradictions and partial conflicts between them.

9.3.2 *Internal Flooding and Rainwater Management*

Internal flooding has always been another risk in the city's history and continues to be so today. It originates from the inability to discharge stormwater, especially when Seville was surrounded by floodwaters that entered the city through the ramshackle traditional drainage system. The slow modernisation of this system gradually reduced the problem in the city's central areas. It was not until January 1976 that the municipal water supply and treatment company (EMASESA) passed a comprehensive water drainage plan for Seville to be developed during the 1976–1982 period. The plan's execution was prolonged until 1989 and included the construction of 23 large drains or discharge pipes, pumping stations and 4 wastewater treatment plants (Del Moral 1991; Solís 2022). Even so, nowadays, waterlogging problems persist in some city areas. This, together with new factors that affect the quality of wastewater, has recently led to new hard infrastructure developments, such as rainwater

retention tanks, that clash with the discourse favouring *nature-based solutions*, such as sustainable urban drainage systems (Lara 2018; EMASESA 2020).

9.3.3 Heatwaves

Another major hydro-climatic risk in Seville is the heat and, more specifically, the periods of extreme heat, heatwaves, in the context of global warming. The torrid temperatures in the Guadalquivir valley during long summers that can last 5 months are an intrinsic characteristic of the city. While historically valued and experienced as an inconvenience, it has never been perceived as a *catastrophe* as severe as floods. Sevillians have historically developed a well-known and socially valued traditional culture of adaptation to heatwaves that includes adjustment of urban and building typologies to heat, adequation of timetables and types of activities and seasonal changes of residence for those able to afford them. Still, there is unequal access to these adaptation strategies (Figueroa and Suárez-Inclán 2008).

Social acceptability and resilience towards periods of extreme heat have decreased over recent decades, even before the current increase in the frequency, duration, temperature levels and temporal location of the heatwaves attributable to climate change. Since the end of the twentieth century, and especially since the 1990s, the currently dominant infrastructure and technology-driven response to heat, i.e. air-conditioning, has become very widespread in the city. The use of air-conditioning today, unlike decades ago, is considered socially essential in any public space, work centre and means of transport and by a very high percentage of private (not necessarily affluent) households. Public interventions have been fundamentally directed in this direction.

A significant and intense social debate is taking place around new focuses, diagnoses and alternatives to the dominant technology response for facing heatwaves. For instance, in an interview published in the local media in Spain, Prof. Enrique Figueroa leading the University of Seville's Sustainability Unit calls for the recovery of what he names *good traditional practices*: *We must carry out a study of pedestrian areas to implement measures to make them more pleasant and introduce climatic criteria in development plans. We must analyse which are the best materials and create shadows with suitable trees, pergolas or other structures. We must make the city more liveable, without forgetting the most disadvantaged neighbourhoods and outskirts that have enormous deficiencies* (Parejo 2021, p.2). In a return to adaptive local knowledge and the culture of co-existing with the heat (e.g. shade, vegetation, building orientation, incorporating water into the home, etc.), some collective experiences and projects in the city are working to put into practice these imaginaries and underpin debates on how new community strategies generate resilience. These experiences are presented in the following section.

9.4 Resilience as a Transformative Process: Social Contestation Around Seville's Urban Green Infrastructure

Since the time of ancient civilisations, vegetation has been a common component of the urban system (Guerrero et al. 2016). Mediterranean cities have traditionally included garden areas that combine elements of vegetation with flowing water, with an obvious social and climatic function, while shaping their cultural identity.

Discourses supporting the greening of urban spaces and nature-based solutions are increasingly gaining prominence in urban resilience policies, especially as adaptation strategies to hydro-climatic risks (WHO 2016; Gutiérrez et al. 2017). The search for the benefits provided by nature has also led to the evolution of the concept of urban green spaces: from the previous perspective of gardens as a means of beautifying public space to the current vision that seeks to generate infrastructures capable of providing urban ecosystem services. Thus, urban green infrastructure is defined as a *system of natural spaces and processes to support urban resilience and the quality of life* (Juvillà 2019, p.20). This definition helps to connect and give coherence to the elements that compose the natural heritage of urban areas: from the street trees to natural habitats on the sub-regional scale.

Urban parks emerge as core components of this green urban infrastructure from the point of view of constructing resilience against hydro-climatic events (Gutiérrez et al. 2017; Juvillà 2019). The large volume of plants and water in urban parks helps to create shade and absorb heat through evapotranspiration.¹ When properly irrigated, urban parks are able to create a microclimate that mitigates the heat island effect occurring in cities (Guerrero et al. 2016). Water retention is also a key aspect, especially in Mediterranean climates, where vegetation maintains its evapotranspiration ability as long as it is able to extract water from the soil. From this perspective, urban parks are large areas of permeable land that provide a territory with an improved capacity for infiltration, thus contributing to water retention and aquifer recharge. Adequate integration of green infrastructure with the urban water network helps reduce exposure to flood risk and retain water resources to avoid drought.

The contribution of parks to urban resilience is underpinned by their attributed social value as places to connect with nature. They are places where recreational, cultural and educational activities can take place in the open air, thus facilitating social relationships and connection with the environment (Gutiérrez et al. 2017). An example of this has been the large number of people visiting parks during the COVID-19 pandemic (Kleinschroth and Kowarik 2020). In the context of mobility restrictions caused by the pandemic, these spaces enabled the population to find the connection with nature that they needed during local lockdowns (Fig. 9.3).

¹The transpiration process of vegetation can dissipate between 30 and 70% of net solar radiation falling on the surface during the hottest period, turning it into latent heat of vaporisation and bringing down the temperature by up to 10 °C on hot, dry days (ACMG n.d.).



Fig. 9.3 Large affluence of people to Alamillo Park (Seville) during COVID-19 derived local lockdown. (Source: Ángela Lara (27 March 2021))

In what follows, we show the urban dynamics involved in the construction of Seville's current green infrastructure (*urbs*), by focusing on the institutional initiatives (*polis*) and social processes (*civitas*) as an example of urban co-production. Firstly, the main milestones and public actions for constructing the urban green infrastructure are outlined. Secondly, the social mobilisation that motivated these public actions is described, as well as the evolution of the co-production processes linked to them.

9.4.1 Conception and Construction of the Seville City Green System

The presence of green spaces has been part of Seville's city landscape from the very beginning of the city history. Examples of these early interventions are the gardens of the Alcázar and the *Casa de la Contratación* palaces and the *Alameda de Hércules* (1574), which is said to be the oldest public garden in Spain and even in Europe.

The first large park in the city, Maria Luisa Park, was built in the first decades of the twentieth century. It was part of an operation to expand the city to the south through the large bourgeois development constructed for the 1929 Ibero-American Exhibition. This intervention was in line with the above-mentioned project to expand the Port to the South (Molini Plan 1903). Later on, the city's first Urban Plan in 1946 (the Bidagor Plan) set down the conceptual bases of the city's current green space. Based on zoning theories, this plan sought to make the municipal territory functional by surrounding building space with a *green belt* that, like a wedge, sliced into the consolidated residential area (Martín 1996). Despite not having much impact, the 1946 Plan proposed an urban model that would be rolled out in the

following general plans (1963, 1987, 2006). The 1963 General Urban Management Plan (*Plan General de Ordenación Urbana—PGOU*) subsequently finalised and formalised the layout of the green space system. The city’s main parks were sited in some important areas on the city’s periphery, many on the courses of former rivers and streams from which the parks would later take their names (i.e. Miraflores, Tamarguillo, Guadaira; see Fig. 9.4).



Fig. 9.4 Seville City Green System. 1. Miraflores Park; 2. Tamarguillo Park; 3. Infanta Elena Park; 4. Amate Park; 5. Guadaira Park; 6. Maria Luisa Park; 7. Buhaira Gardens; 8. Alcázares Garden; 9. Los Príncipes Park; 10. Vega de Triana Park; 11. American Garden; 12. Alamillo Park; 13. San Jerónimo Park. (Source: author’s elaboration)

Although the city green space system was conceived by planning in the 1960s, until the 1980s, the City Council had only developed green spaces in the bourgeois areas of urban expansion where the more privileged classes lived (i.e. the parks of Maria Luisa and Los Príncipes). Meanwhile, in the working-class periphery of the city, the large housing estates lacked basic facilities, which became the main demands of neighbourhood associations. Thanks to pressure from the powerful community movements, in the 1980s, work began preparing the land for the Amate and Miraflores Parks (Díaz 2010). Initially conceived as low-maintenance green areas, there was no overall project to link them to the historical and socio-cultural characteristics of the areas, as demanded by community movements (CPPEM 1992).

The large investments in public works due to the 1992 Universal Exhibition solved some of the issues arising from rapid urban expansion (Díaz 2010), including the conversion of the Guadalquivir riverbed as it passes through the city into a basin through the construction of the Cartuja canal. This action enabled the riverbanks to be turned into long walkways, and two new parks were built in areas near the Exhibition site (San Jerónimo and Alamillo). In addition, the historical Buhaira Gardens were restored in the heart of the Nervión district, next to the city's new financial area (see Fig. 9.4).

However, these significant investments did not have any impact on the large brownfield sites on the urban periphery. It was not until the early 2000s that, due to community mobilisation, the City Council used European funds to develop new green areas in the peripheral neighbourhoods (Constenla 1999). A large part of these funds was invested through the signing, in 2003, of an agreement between the Seville City Council and the Guadalquivir Basin Authority to implement a plan for *Hydrological and Forest Restoration and the Protection of Water Courses in the Municipality of Seville*. The objective was to restore 425 hectares of green areas linked to the city's hydrographic network. The plan's actions duplicated the city's green areas between 2004 and 2014 (Jiménez 2014). Nonetheless, the projects provoked several conflicts between citizens and the City Council. For instance, in the context of the 2008 financial crisis, some of these parks were opened without the necessary equipment (e.g. lighting, fountains, benches, etc.), which generated new social protests and mobilisations (Jiménez 2014).

The investments from this Hydrological and Forest Restoration Plan improved some water ecosystems and their integration into the city. However, the endeavour to integrate the green space system into the watercourse network was limited, although the 2006 Urban Plan recognised this problem and included the need for a Green Belt, as already established decades before in the 1946 Bidagor Plan.

Social movements are currently calling for the Green Belt project. They see the project as a strategic opportunity to demand participation in the rehabilitation and management of urban stretches of rivers, which would provide a green infrastructure capable of contributing to urban hydro-climatic resilience. On the other hand, Seville's grassroots climate movement *Movimiento de Entidades por el Clima de Sevilla* has presented a proposal to demand real citizen participation in the co-design of the Green Belt. They have also demanded a commitment from the City Council

that this green belt will be ecologically and functionally connected to the rest of Seville and the green system of its metropolitan area (Ameneiro 2021).

9.4.2 *From Demands to Management: Community Resilience Through Community Management and Public-Community Co-management of Urban Green Spaces*

In Seville, the process of creating green spaces has become a common goal and a key component of social transformation and civic empowerment, mainly in the traditional working-class neighbourhoods. Civic recognition of their social and environmental values has boosted the historical claim for green spaces. It has also given rise to collective urban experiences that have resulted in a green infrastructure system in the form of *contested spaces* (Low 2009). These spaces have become crucial in shaping the current configuration of the city.

Table 9.1 Community-led initiatives in Seville committed to the creation of green infrastructures. CM and PCCoM mean community management and public-community co-management, respectively, while PPCoM refers to public-private co-management

Citizen initiatives	Green space typology	Mobilisation start date	Construction date	CM or PCCoM period	Current situation
Valle Gardens	Historic garden	1977	Fifteenth century	–	Government management
Miraflores Park Committee	Urban garden and park	1983	1991/1999/2011	1991–2016	PPCoM
Tamarguillo Park Committee	Urban garden and park	1990	1999/2007	2006–2012	PPCoM
San Jerónimo Gardens	Urban garden and park	–	1992	1996–present	CM (gardens)
Green and Public Tablada	Floodplain—metropolitan park	2003	–	–	Private property
Rey Moro Garden	Urban garden	2004	2004–present (self-construction)	2004–present	CM
Living Guadaira Park Platform	Park	2002	2014	–	PPCoM
Green Torreblanca Civic Project	Public spaces naturalisation	2018	2018–present (self-construction)	2018–present	PCCoM

Table 9.1 describes some examples of such citizen involvement in the defence and creation of the city's green spaces from the 1980s up to the present day. The leadership of the local community and the capacity of the processes to become transformative tools that improve people's living conditions while coping with climate stressors in these neighbourhoods make these experiences clear examples of community climate resilience and urban co-production processes.

As we will see below, urban gardens in Seville are closely linked to and explained by the active role of community movements in the construction of large parks. In the recent history of the city, urban gardens have been understood as catalysts that spark the emergence of new social subjects (*civitas*) that are able to generate production and social management dynamics in the urban habitat (*polis*), with some specific proposals for an alternative city model (*urbs*) (Dimuro et al. 2013). To show this idea, we focus on one of the most significant examples of this type of practice: the process of co-production and co-management of the Miraflores Park. We discuss this case in relation with other similar experiences, in which social mobilisation has also promoted processes of community urban resilience linked to the construction of the urban green infrastructure in Seville. Throughout such discussion, we identify three characteristics that are common to these processes:

- Cross-cutting nature combining aspects of environmental, urban, social, heritage and collective identity construction
- Social significance and willingness to spread knowledge of historical and natural tangible and intangible heritage, from traditional gardens to river courses, including old buildings, water infrastructure and archaeological artefacts
- Marked proactive and, at the same time, rebellious character, reflected in the launch of provocative agroecological urban garden projects, which also enable citizens' active participation in the design and construction of the city

As mentioned above, one of these processes, undertaken by the Miraflores Educational Park Committee (CPPEM, *Comité Pro-Parque Educativo Miraflores*), has generated major interest due to its long history of over 30 years and its significance and projection on the local, national and international levels.² This experience is a prominent example of the construction of climate resilience as a result of a process of social contestation, combining proposals for *community*, *radical* and *negotiated resilience* having a great influence and major repercussions on the city's urban and social dynamics.

The CPPEM was formed in 1983 by different neighbourhood associations self-organised to promote the Miraflores Park creation through civic participation (Pozo 2019). This community organisation, where women played a fundamental role, demanded the park as a necessary green space in a newly constructed, densely populated, poorly skilled neighbourhood. The park was understood as an instrument of empowerment and social transformation and a possible solution to the social

²It was presented at the United Nations Habitat II International Conference held in Istanbul (1996).

problems that existed. Moreover, it aimed to recognise and enhance the natural and cultural heritage of this part of the city periphery, linked to an agricultural past and on which a cultural neighbourhood identity could be built. In this way, the methodological proposal for the construction of the Miraflores Park explicitly stated the need to transform the traditional relationships between citizens, politicians and technicians, turning the neighbours in the area into active participants in the park's creation (CPPEM 1992) (see Fig. 9.5).

In 1991, based on a great capacity for collective self-organisation and in the absence of institutional initiative, the CPPEM took direct action by occupying the *Finca de Miraflores* (named *Casa de las Moreras* and almost 3 hectares of land), where they began the first garden-school projects. The strong social support and great success of the initiative forced the municipal government to formalise the process in an agreement in 1994 to cede the use of land in the area to the CPPEM and provide them with funding for the garden-school project. The involvement of a contracted technical team and the community movement consolidated this project. Together with the space generated around the *Casa de las Moreras*, it became a focus for environmental awareness and an important social engine for action in the neighbourhood. In addition, this initiative developed in Miraflores became a reference for other groups and cities promoting climate resilience strategies.

Following the example of the CPPEM, a second project for social gardens in the *Parque de San Jerónimo* was initiated in 1996. A grassroots socio-environmental



Fig. 9.5 Community tree planting in Miraflores (1993). (Source: Isabel Muñoz)

collective, *Ecologistas en Acción*, proposed the project and signed a similar agreement with the City Council. These two projects were consolidated and grew in the following years. In 2004, a progressive coalition entered the municipal government and launched a participatory budget scheme, which led to the development of three new social gardens (*Parque del Tamarguillo*, *Torreblanca* and *Jardín del Rey Moro*).

Thus, the social gardens became part of a community strategy to demand the conversion of the city's urban wastelands into public parks, preceded in some cases by the occupation of the areas by local residents. During the brief experience of participatory budgeting in Seville (2004–2010), municipal funding of these projects allowed organisations to act with a certain degree of independence, handing over responsibilities to the community organisations that provided the gardens. Citizens designed and built the projects with the understanding that the gardens were a tool for the collective dynamisation and construction of green spaces (Interview 1).

As the projects became established, the demand for green areas increased, and some new community initiatives emerged, such as Guadaira Park and Vega de Triana. Subsequently, in 2009, the Urban Garden Platform (*Plataforma de Huertos Urbanos*) was created as a coordination instrument, becoming a key stakeholder in promoting projects contributing to climate resilience. Despite notable differences in the urban context and organisation model of the collectives, the Platform had a common goal: *to link the neighbourhood with the will to build reality and city around projects with a great potential for transformation* (Interview 1). Based on its experiences, the Platform detailed its proposals in a Master Plan for Gardens (2009), which was presented and discussed with municipal officials. However, it was not formalised in any binding agreement with the City Council (Interview 1).

The lack of any institutional commitment to formalise the projects in the long term, the 2008 economic crisis and the new conservative local government elected in 2011 brought a radical change in the relationship with the City Council that stopped funding the projects (except the Miraflores project that suffered a significant reduction in its funding). In the case of Tamarguillo social gardens, a high level of confrontation was developed against the municipal government, bringing power imbalances into play. The experience was halted by the City Council in 2012 by deposing the team that facilitated the process (Ameneiro 2012). Other projects like San Jerónimo or Rey Moro social gardens continued through community management. So, from 2012 onwards, not only the garden models started to diversify but also their survival strategies.

As mentioned above, the Miraflores Park had an almost 30-year history of community mobilisation behind it and 20 years of managing garden programmes. It had progressed from the initial demand and creation phases to a management phase (Carmona 2004). Its track record was characterised by a strategy of constant negotiation that precluded a position of greater confrontation with the City Council, and this had produced several internal conflicts over the years. Thus, we argue that this initiative could be an example of negotiated climate resilience that managed to live during almost three decades. However, the lack of an adequate leadership handover at the internal level caused the model to deplete. The association's board, avoiding

any internal debate, negotiated with the administration the end of the public-community co-management process (Interviews 3 and 4), which was formalised in 2016, whereby the City Council took over the management of the garden. The municipal government took advantage of this decision to privatise the management of almost all the city's urban gardens.

Some of the questions arising from the long-term co-management process of the Miraflores Park point to the complexity involved in the public-community management of this activist project. For instance, key questions concern updating the decision-making organs and processes, the precariousness and institutional dependence due to the project's economic instability and the roles adopted by the people who carry out each of the functions (Pozo 2019). These questions can also be analysed from the gender and age perspectives.³

Except for a few cases, the different strategies adopted by each community initiative and, above all, the lack of adequate municipal support since 2012 led to a widespread shift from a public-community management model to a public-private model (see Table 9.1). Thus, a standardised and bureaucratised model affected the specific identities that had developed each of these processes. Professionals with no connection to the neighbourhood communities replaced the facilitating teams that had been socially and politically involved in the community processes. Consequently, the garden collective dissolved, and the community management of the space ceased to exist, as did the capacity for collective creation and transformation (Interview 1) undermining their potential for building resilience.

Nevertheless, other experiences that opted for different community management models remained (e.g. San Jerónimo and Rey Moro social gardens) and acquired greater independence from municipal power, enabling them to carry on their community management processes up to the present day (Interview 2).

As the interviewed actors themselves stated (Interviews 2 and 3), there are substantive differences between community management, public-community co-management and public-private co-management concerning to the construction of neighbourhood links and sense of collective ownership that are required conditions to negotiated climate resilience models:

If it's only each of them looking at their own little piece of land and looking out for their own interests, well, in the end what you have is just the opposite, a mechanism to privatise and appropriate what is collective. (Interview 2)

La Casa de las Moreras (in Miraflores Park) used to be a lively place. There were always people there, it had a heart and soul ... Today it's a loveless project. It's public but not communitarian. Everything that's communitarian is public, but not everything that's public is communitarian. No one there feels that it belongs to them. (Interview 3)

³In fact, a dialogue process is being promoted between the different visions of the conflict through a community memory recovery project (La Digitalizadora de la Memoria Colectiva 2021).

The model in which the administration provides the spaces and some of the resources, and the community movements self-organise, still generates some conflicts among different visions of what each concrete space should be. However, as the actors also recognise, these conflicts can enrich the process, generate dialogue and form part of the learning.

9.5 Conclusions

For centuries, Seville has faced severe hydro-climatic risks affecting the city with a strategy of local hydrography radical transformation framed in a top-down decision-making model. Carried out with little or no citizen involvement, urban climate resilience—in fact, *urban climate defence*—has been achieved through a robust and expensive infrastructure system. In this context, which conditions the problems and their potential solutions, an alternative approach is analysed, based on the construction of resilience as a bottom-up and nature-based process. This form of urban production reveals the commitment and determination of civil society to build contested spaces that contribute to a more climate-resilient city and to generate community resilience in contexts of institutional neglect.

This case study shows that the large-scale infrastructure works, especially for protection against flooding, have prioritised safeguarding the interests of the city's urban elites and the areas where they have settled. These interventions have generated a series of direct and indirect resilience trade-offs, as illustrated by the investments based on improving the living conditions in the new areas of the city where these elites reside, and the prioritisation of speculative interests that triggered urban expansion into areas of the city that were prone to floods.

In contrast, Seville's social geography shows that large numbers of working-class citizens are concentrated in neighbourhoods in the outskirts of the city, where community experiences as the ones presented here have emerged. Historically, factors of social vulnerability (poverty, unemployment, minorities) have overlapped with environmental injustices in these neighbourhoods, especially regarding poor-quality housing, infrastructure and public space, which have turned them into highly sensitive neighbourhoods to hydro-climatic risks, especially concerning heatwaves. This, together with a process of institutional neglect by the City Council regarding the provision of public infrastructure and services, and specifically green areas, has been the breeding ground of experiences of spatial contestation and radical resilience.

The discourse underlying these community demands, as explicitly expressed by one of the *citizen park committees*, the CPPEM (1992), justifies the need for green spaces as mechanisms to mitigate these socio-ecological vulnerability factors. Green spaces, as central components of green infrastructure, support urban resilience to hydro-climatic risks (Juvillà 2019), improve the living conditions of the areas in which they are located, become an instrument of empowerment and response to social problems and can be a form of co-production of the city.

Communities promote a way of living and creating the city that Lefebvre understood as spatial practices (1974), which contribute to strengthening the social fabric of the areas where they are produced and to articulating processes of reinforcing community resilience. These processes of self-organisation of civil society gave rise to transformations in urban space (*urbs*), as a result of social praxis and an urban experience constructed by its inhabitants (*civitas*) who, through contestation, intervention and negotiation with the structures of government (*polis*), configured what we could call contested and negotiated processes of urban and community resilience: experiences that again challenge the underlying assumption in many relevant policy documents that *it is the city government that is in the lead position to deliver urban resilience at the city scale* (Ziervogel et al. 2017, p.3).

Even so, the community management and public-community co-management processes are not conflict-free and therefore threatened by the continuity of the experiences and their projection over time. Collective creation is fragile and costly; it requires great commitment, which may generate burnout situations that, as we have seen, can be occasionally used by the institution to subvert those processes. In every case, there is a visible need for a team of people to facilitate the processes, promote the values and principles and drive the actions needed to construct a collective reality that generates community climate resilience.

Concerning infrastructure, over the past two centuries, the city has established a dominance and occupation relationship with the complex network of rivers and streams on which it sits. These watercourses have been profoundly altered and have lost their heritage and identity values (Zoido and Fernández 1996; García García 2004). In contrast, the strategy to integrate these courses (or what remains of them) into the city's major parks through a Green Belt is the social demand for a city model in which the *concept of integration replaces the concept of dominance* (García García 2004, p.22).

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