

Balanzó, Rafael de; Rodríguez-Planas, Núria

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DISCUSSION PAPER SERIES

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The Barcelona Case Study**

Rafael de Balanzó
Nuria Rodriguez-Planas

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Crisis and Reorganization in Urban Dynamics: The Barcelona Case Study

Rafael de Balanzó

Sustainability Research Institute, Barcelona Polytechnic University of Catalonia, UPC

Nuria Rodriguez-Planas

Queens College, CUNY and IZA

APRIL 2017

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ABSTRACT

Crisis and Reorganization in Urban Dynamics: The Barcelona Case Study

We use the adaptive cycle theory to improve our understanding of cycles of urban change in the city of Barcelona from 1953 to present. Most specifically, we explore the *vulnerabilities and windows of opportunity* these cycles for change introduced in the *release* (Ω) and *reorganization* (α) phases. In the two recurring cycles of urban change analyzed (before and after 1979), we observe two complementary loops. During the *front-loop*, financial and natural resources are efficiently exploited by homogenous dominant groups (private developers, the *bourgeoisie*, politicians or technocrats) with the objective to promote capital accumulation based on private (or private-public partnership) investments. In contrast, the *back-loop* emerges from Barcelona's heterogeneous urban social movements (neighborhood associations, activists, squatters, cooperatives and NGOs), whose objectives are diverse but converge in their discontent with the *status-quo of conservation* (*the K phase*) and their desire for a "common good" that includes social justice, social cohesion, participatory governance, and wellbeing for all. The heterogeneity of these social networks (*shadow groups*) fosters learning and social innovation and gives them the flexibility that the *front-loop's* dominant groups lack to trigger change not only *within* but also *across* spatial scale (local community-based, neighborhood, city) and time dimensions, promoting a cross-scale process of revolt and stabilization, also known as Panarchy.

JEL Classification: Q01, Q57, R0

Keywords: adaptive cycle theory, crisis, urban change dynamics, urban resilience, social innovation, social justice, release (Ω) and reorganization (α) phases, back-loop, Barcelona's urban planning, Barcelona's urban (sustainable) design era and panarchy

Corresponding author:

Rafael de Balanzó

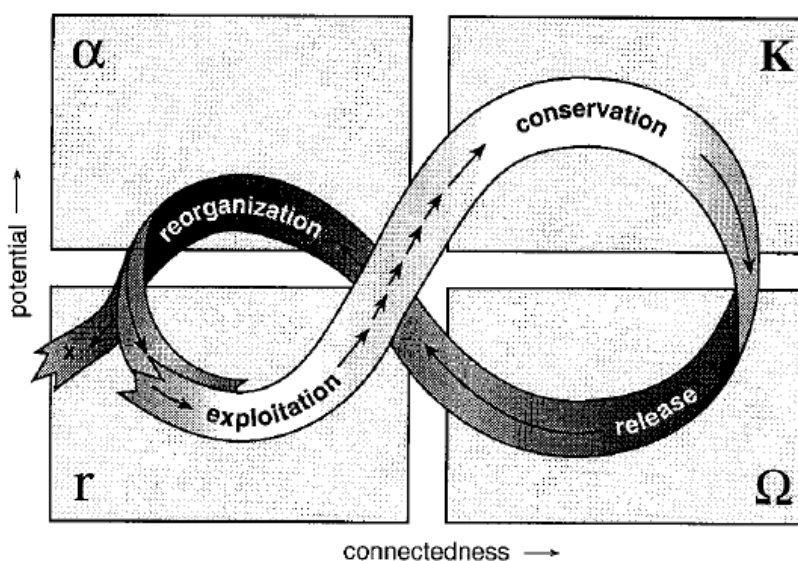
E-mail: rafaelbalanzo@gmail.com

I. Introduction

Over the last decade, resilience has become increasingly central to international and domestic urban policy-making. Climate change, recessions, over-population, or migration flows resulting from systemic environmental, economic, or social crises have affected the evolution of the urban quality of life. These short- and long-term stresses, collapses and changes have brought highly substantial changes in the sustainability of urban systems. In particular, a city's resilience lies in its capacity to adapt and transform itself to meet the needs and aspiration of its citizens, rather than in its ability to return to its pre-crisis form. Hence, there is a need to modify urban planning policies towards generating new strategies that transform the city through resilient processes. However, prior to managing resilience, urban planners ought to understand urban cycles of change and the vulnerabilities and windows of opportunity these cycles of change introduce. This is the main objective of this paper.

To do so, we analyze two recurring cycles of urban change (from 1953 to 1979, and thereafter) in the city of Barcelona (Spain) using Holling's (1986) adaptive cycle theory. As illustrated in Figure 1, this theory examines the dynamics and resilience of ecological and social-ecological systems using a four-phase adaptive cycle, which can be divided in two distinct loops: the *front-loop* includes "exploitation" or growth (the r phase) and "conservation" or consolidation (the K phase), and the *back-loop* includes "collapse" or release (the Ω phase), and "innovation" or reorganization (the α phase).

Fig. 1: Holling's Adaptive Cycle



Source: Adapted from Holling (1986)

In the case study of Barcelona, we observe two complementary loops in the two recurring cycles of urban change analyzed (before and after 1979). During the *front-loop*, financial and natural resources are efficiently exploited by homogenous dominant groups (private developers, the *bourgeoisie*, politicians or technocrats) with the objective to promote capital accumulation based on private (or private-public partnership) investments. In contrast, the *back-loop* emerges from Barcelona's heterogeneous urban social movements (neighborhood associations, activists, squatters, cooperatives and NGOs), whose objectives are diverse but converge in their discontent with the *status-quo* of *conservation (the K phase)* and their desire for a "common good" that includes social justice, social cohesion, participatory governance, and wellbeing for all.

Through our analysis, we identify the key role of the local-community initiatives in the resilient development of the city of Barcelona, and bring to light the relevance of the intra- and cross-scales between the city's institutional networks and its key actors in achieving sustainable development. In particular, we observe that the heterogeneity of the urban social movements (*shadow groups*) fosters learning and social innovation and gives them the flexibility that the *front-loop*'s dominant groups lack to trigger change not only *within* but also *across* spatial scale (local community-based, neighborhood, city) *and* time dimensions, promoting a cross-scale process of revolt and stabilization, also known as Panarchy.

In the last decade, research on urban resilience has flourished. From the theoretical perspective, several authors have highlighted that, because cities are social-ecological adaptive complex systems managed by humans and organizations, ecological models analyzing urban ecosystems ought to include social interactions (Alberti *et al.* 2003; and Marzluff *et al.* 2008). Consistent with this, other authors have modeled cities as heterogeneous, multi-scale social-ecological systems, with heavily intertwined spatial dimensions (Grimm *et al.* 2008; Pickett *et al.* 2004; and Ernston *et al.* 2010). Interestingly, Bristow and Healey (2014) have emphasized that urban policies' success or failure in promoting sustainable development relies on the knowledge and preferences of the city's diverse composition of agents, entities, and networks; and Marcus and Colding (2014) have argued for the need to use the adaptive cycle theory as a tool of analysis of the urban systems. Most recently, Herrmann *et al.* (2016) have used the adaptive cycle theory and panarchy to compare

the growth and collapse of cities, highlighting the complementarities of the two phases, as well as their time and spatial dimensions.

Despite these recent developments on urban resilience, urban studies have seldom used Holling's adaptive cycle theory to examine the dynamics and resilience of urban planning (Marcus and Colding 2014; and Schlappa and Neill 2013). This is our main contribution. In particular, the novelty of our analysis is to focus on the urban policy domain, in addition to the more standard (for the literature) domains, namely the economic, social and ecological domains, when analyzing a city's adaptive cycle. In doing so, we merge urban policy with the adaptive cycle of the social-ecological complex systems (Holling, 1971). To the best of our knowledge, our study complements work from: (1) Pelling and Manuel-Navarette (2011) who use the adaptive cycle to analyze the vulnerability of two coastal cities in Mexico to climate change; (2) Bures and Kanapaux (2011) who analyze Charleston's urban cycles of change to wars and climate change; and (3) Abel *et al.* (2006) who explore processes of release and reorganization in cattle and wildlife ranching in Zimbabwe, and an Aboriginal hunter-gatherer system and a pastoral one in Australia.

II. Two Urban Eras

Using two urban eras from the city of Barcelona in Spain, we examine the cycle adaptive's Ω and α phases. During the urban planning era (from 1953 to 1979), the massive development of public infrastructures replaced the citywide deficiencies in public facilities, green spaces, public transportation, and public libraries and schools. During the urban (sustainable) design era (from 1980 to present), the aim towards the "urban common good" replaced an aggressive entrepreneurial urban regeneration based on public-private partnership. Appendix Tables A.1 to A.3 present evidence on the society, support, and nature sub-systems during the different phases of these two eras.

URBAN PLANNING ERA: 1953 to 1979

About two decades after the end of the Spanish civil war, the meager economic results from Franco's autarchy program begged for a drastic economic policy change. Economic liberalization, substantial US economic aid, soaring tourism, and remittances from Spaniards working abroad paid for the country's industrialization and economic expansion. Not surprisingly, this is also a period of massive use of land and natural resources with the booming construction of rainwater reservoirs beginning in the 1950s

and the building of nuclear plants (see support sub-system evidence in column 1, Appendix Table A.2). The country's industrialization concentrated in the old industrial areas of Barcelona and Bilbao, and the capital, Madrid.

The mid-1950s industrialization of Barcelona, a city in the northeast of Spain (41°-12'-41°-48'N and 1°-27'-2°-46'E), attracted an impressive inflow of rural immigrants from all over Spain (as documented in the "Social System" row, column 1, Appendix Table A.1), generating a huge housing deficit (Roca 2010). To stimulate new housing construction, the Spanish government liberalized housing policy by offering loans, subsidies, and fiscal exemptions to developers, transferring most of housing production to the private sector (Parreño and Díaz 2006). At the same time, to address the unprecedented urban sprawl and densification, the government approved in 1953 the Barcelona District Plan (*Plan Comarcal de Barcelona*, BDP53 hereafter), whose objectives were to densify the existing urban fabric in the suburban areas of *Gràcia*, *Sarrià*, *Sants* or *Sant Andreu*, and replace the shantytowns that emerged in the early 1920s with housing superblocks (*polígonos de viviendas*) in the periphery of the city (Oyón 1998, and Busquets 2005). As a result, Barcelona's housing stock tripled from 1950 to 1975 (as documented in the "Infrastructure" row, column 1, Appendix Table A.2).

A loophole allowed municipalities to override the BDP53 plan with *Partial Plans* to the advantage of private developers well connected to the regime's power structure (Calavita and Ferrer 2000; and Herce 2013). As a consequence, housing densities frequently ended up being higher than those originally specified in the plan, and many areas reserved for green spaces and public facilities ended up being developed for residential housing during the sixteen-year mandate (1957-1973) of Mayor Porcioles. According to Calavita and Ferrer (2000), "*about half of the land designated for public use under the BDP53 was used for speculative housing projects instead*". Hugues (1993) explains that developments "*designed without paved roads, playgrounds for the kids, or other signs or thought for infrastructure or public space, quite often made of poor materials that started falling apart within a few year*" were often the norm. This period of aggressive urban sprawl was also a time of rising levels of car ownership and development of the highway system.

Urban Development and Urban Social Movements

Barcelona's urban planning practice led to functional and formal conflicts that brew its urban social movements (Busquets 1992, and Solá-Morales et al 1974). A lack of green spaces and public facilities, difficult car access, and deficient lighting and sanitation conditions accompanied the heavy densification of the suburban developments. The health, social and wellbeing conditions in the housing superblocks and shantytowns were considerably worse as these settlements emerged in isolated areas in the periphery of the city with *a priori* poorly built densities, and their development was deficient in public facilities, green spaces, public transportation, and public libraries and schools. Hence, the extreme densification of Barcelona mixed with the meager supply of public goods generated poor living conditions, social segregation, and deep social conflicts that brew urban social movements (Calavita and Ferrer 2000).

Starting in the late 1960s, the neighborhood associations (*comisiones de barrios*) led Barcelona's urban social movements through different forms of protests, including rallies, marches, traffic interruptions, and signature collections. Even though Spain was still under Franco's dictatorship, and hence, lacked social liberties, the neighborhood protests coincided with clandestine activities of the unions and illegal political parties, the protests of university students and other objecting activities of professional associations against the political regime, contributing to a wider city-level protest movement (Vázquez Montalban, 1996).

What caused the first creative destruction Ω phase?

The following events encouraged the decline of natural resources, and political, industrial and real estate capital:

- ***Natural Capital Collapse:*** The 1950s to 1970s urban development also caused an environmental crisis due to the rising demand of resources, and the massive emission of air, soil contamination, and water pollutants (shown in column 1, Appendix Table A.3).
- ***The strength of Barcelona Urban Social Movements.*** By the early 1970s, the neighborhood associations were key players in *both* social and urban planning issues regarding the city, as well as opposing the totalitarian system. It is important to highlight that the neighborhood associations were not alone building

social networks, and generating human and cultural capital (as shown in “Individual development” row, column 2, Appendix Table A.1).

- ***End of the Dictatorship in 1975.*** The fight against the dictatorship unified the urban social movements by giving them a common dissenting target. At the same time, the harshness of the dictatorship decreased as the society sensed that the Franco regime was arriving to its end (Castell 1983). This weakening of the regime was apparent in many facets of life, such as the normalization of imported foreign books and journals, and the frequent and broad-scale social protests and objecting activities, among others.
- ***Industrial Sector Crisis.*** Obsolete industrial installations and the high value of land occupied by former industrial plants led to the *restructuring* of the industrial sector in the 1960s with the relocation of the industry outside the city (Soja 1983). The higher capital gains on land redirected investment from industrial capital to real estate and office-space operations, reducing the potential for industrial growth.
- ***The Barcelona Metropolitan Master Plan.*** As the BDP53 became obsolete, the government replaced it with the new *Barcelona Metropolitan Master Plan* (BMMP hereafter). A first version of the new plan was released to the public in 1974 for comments (see “Government” row, column 2, Appendix Table A.1). The architect of the BMMP plan, Joan Antoni Solans, explains: “*for the first time, there was a coherent plan that established intensities and densities of development (...) based on the introduction of legal controls that regulated the growth of the city* (Solans 1996).”

What was the nature of the first creative destruction (Ω) phase?

Despite its breakthrough in urban planning, the 1974 revision to the BDP53 generated many complaints and objections from *both* the neighborhood associations and the private sector. The neighborhood associations disliked the proposed thoroughfares, which divided neighborhoods and affected thousands of homes, and the insufficient land for public use. The promoters and landowners feared profit losses and downward pressure in land prices, respectively. At the end, 32,000 allegations were presented, and the plan was revised thoroughly for two years, before its definitive publication in 1976.

These 32,000 allegations set the beginning of the creative destruction (Ω) phase, which was fueled by the urban social movements, led by the neighborhood associations. Put it differently, the strength of the revolt of Barcelona's urban social movements (shadow networks using Olsson and co-authors' 2004 terminology) promoted the first window of opportunity for change. The neighborhood associations' constant protests in the different neighborhoods—from the destruction of the *Plaça Lesseps* due to the construction of the first beltway to the demands of sewage pipes for the shantytowns of *Torre Baró*—generated a city-wide intangible network that released social capital, a scarce capital after 35 years of political repression and lack of civil rights. Social capital was also released from the urban social movements. Indeed, beginning in 1975, local initiatives involving transdisciplinary participatory processes involving architects, sociologists, journalists and neighbors developed the *Social Plans (Planes Populares)* whose objective was to collect their multiple objections to the 1974 BMMP (Magro 2014). These documents were presented to the administration so they could potentially be considered for the revisions of the 1974 BMMP, setting the beginning of the reorganization (α) phase.

The turmoil that accompanied the 32,000 allegations also led to political upheaval, weakening the regime's political capital. The industrial crisis and its expansion to other sectors with the 1973 oil crisis and economic recession further reduced Barcelona's industrial capital and considerably slowed down its private sectors' financial capital. At the same time, the political uncertainty that accompanied the transition to democracy and fears of socialism and expropriation of property also pushed land prices down. During the late 1970s, Barcelona also experienced an appreciable change in the population dynamics with both a decrease in fertility and a drop in immigration that would prolong into the 1980s (see "Social system" row, column 2, Appendix Table A.1). Interestingly, Barcelona's population stagnated during the 1970s decade, with a meager increase of 10,667 inhabitants in the city, that is metropolitan area excluded (Ferrer and Nel.lo 1990).

What was the nature of the first reorganization (α) process?

With Franco's death in 1975, parliamentary elections and the restoration of the Generalitat de Catalunya in 1977, and the implementation of the 1976 BMMP, reorganization was on its way. Reorganization was facilitated by: (1) leaders and transformational agents of change who emerged in the neighborhoods and organized

through the neighborhood associations; (2) urban development protest becoming a common platform for action against speculation; (3) a sincere attempt from political leaders to turn the protests of the urban social movements into effective proposals such as the *Social Plans* (Busquets 1979); (4) a larger than expected funds transfer from the Spanish government allowing the city to buy close to 221 hectares for public use (86 hectares for parks and gardens; 50 for woodland, 70 for school sites and other public facilities; and 15 for public housing) for 3 billion pesetas (Solans 1979); (5) broad-scope debates regarding Catalan culture, spanning from language to architecture, theater, and regional planning (*Resoluciones del Congreso de Cultura Catalana*, Barcelona, 1978).

With democracy in 1975, the newly acquired public-use land, and a democratically elected (progressive) mayor (Serra) in 1979, many young architects (led by the new urban planning director, Oriol Bohigas) designed almost two hundred parks, plazas, schools, and other public facilities during the 1980s (Buchanan 1984). The objective according to Buchanan was twofold. First, to promptly respond to citizens' demands by efficiently designing and building what was most needed, including public spaces for civic and political participation. Second, to obtain both local and international recognition that would fuel local enthusiasm, build a reinvented local culture and urban identity (McNeill 1999), and advance a new Barcelona style (Julier 1996; Narotzky 2007).

As the engineer of the BMMP, Albert Serratosa, explains the neighborhood associations “*were the real protagonists (...) in resisting the attacks on the most essential aspects of the plan (BMMP) on the part of powerful pressure groups*” (in Huertas 1968). Similarly, almost three decades later, Serratosa (1996) credited the citizens' defense of the BMMP for “*building cross-scale interactions between citizens, experts, practitioners and politicians. The lack of such interactions remains one of the main impediments to urban planning, even today*”.

Although the BMMP triggered the creative destruction (Ω) phase, the preconditions for the reorganization (α) phase were in place when the shock came, and the system transformed into an early consolidation (K) phase, with social capital replacing the old regime's political capital, and young technocrats and architects developing and regulating the growth of the city. Despite the economic recession, which lasted from 1974 to 1985, the development of the much after thought public infrastructures soared in Barcelona, replacing the city's deficiencies in public facilities, green spaces, public transportation, and public libraries and schools, and reusing the

unoccupied or abandoned (frequently industrial) spaces resulting from the industrial, economic and political crises.

URBAN (SUSTAINABLE) DESIGN ERA: 1980-2016

Redressing Barcelona's Imbalances in the Midst of an Economic Recession: 1980-85

"The critical discussion of the 1970s that spoke out against speculative urban development projects" guaranteed that *"the major intervention projects (of the 1980s and early 1990s) were seen as a strategy to redress balance"* (Busquets 2005), foster social cohesion, and a *"sense of belonging to the city"* (García-Ramon and Albet 2000). Furthermore, *"Barcelona's urban regeneration program coincided with a wider program of democratic citizenship construction in Spain, which involved the implementation of national welfare policies favoring education, training and health"* (Degen and García 2012). Finally, the economic recession and the demographic stagnation set up a background in which the local administration had to cover basic services, and, at the same time, improve the poor living conditions, inherited from the *"Porcioles era"* (Ferrer and Nel.lo 1990).

Hence, Barcelona's new democratic mayors (both socialists) were quick to address the city's former urban planning deficits. Mayor Serra (from 1979 to 1982) and Mayor Maragall (from 1982 to 1997) prompted a massive urban relaunch of Barcelona at different scales of action, which were highly intertwined (Busquets 2005). They began with direct actions targeting the many smaller-scale and specific urban problems originally raised by the neighborhood associations, namely the lack of urban space and green areas, and the need for different forms of urban rehabilitation most compatible with the different existing fabrics in Old town (*Ciutat Vella*), the *Eixample*, and the suburban areas of Barcelona.¹

EU Integration and Barcelona's Nomination to Host the Olympic Games: 1986-95

With the liberalization of the mortgage market in 1981, and the Spanish integration to the European Union (EU thereafter) in January 1986, Spain underwent radical economic changes, which improved economic confidence, boosted corporate investment and employment, and increased household incomes and demand. Barcelona led the country's economic expansion thanks to its 1986 nomination to host the 1992 Olympic

¹ As explained earlier, the suburban areas include *Gràcia*, *Sarrià*, *Sant Andreu*, and *la Rambla del Poblenou* and *El Carmel*.

Games, which boosted public regional and national investment to finance the city's large-scale public works projects (García and Claver 2003) and attracted much private investment to the city. With growth and consumption, the price of land escalated housing prices in certain though-after neighborhoods (as discussed in "Infrastructure" row, column 3, Appendix Table A.2) and resumed the gentrification process that had stalled during the economic recession. It was the beginning of a new economic growth model for Barcelona, based on construction, tourism and service sectors (Degen and García 2012). The construction of new public spaces as well as the celebration of public festivals and cultural events in the different neighborhoods of Barcelona linked the segregated areas of the city and gathered residents from different neighborhood on common ground, enhancing social cohesion and citizen's involvement (as documented in "Social system" row, column 3, Appendix Table A.1)

The Decline in Bottom-Up Participatory Democratic Governance

With the democratization of the Spanish political system, the political opposition dimed, and with it, the urban social movements in Barcelona progressively lost their potential and connectedness. Appendix Table A.4 describes six reasons for this loss. With their loss of potential and connectedness, the neighborhood associations and trade unions became less influential in Barcelona's governance.

At the same time, the strong influence of technical experts in the city's strategic planning combined with the loose or indirect public involvement in strategic, infrastructure, and metropolitan-region planning left little room for democratic control of changes in urban development, infrastructure and environment (Marshall 2000). It is worth highlighting that the municipal regulation whose objective was to give voice to the neighborhood associations in the municipal meetings (*ordenanza municipal de Calidad de Vida y de Participación Ciudadana*) was never applied due to fears that it would slow down the implementation of the urban projects. Marshall (2000) also warns on the limitations of giving technical experts considerable influence across planning spatial ranges because they could easily be over-ruled by stronger personalities in other agencies or administrations, further restraining citizens' control on change.

As Marshall (2000) explains, Barcelona's governance model was "*only consensual or collaborative because certain power elites were in effect deciding*". Barcelona's Olympic Games organization is a good example of how things worked. The planning of the candidature began in 1982, and was conducted by the mayor, Jordi

Serra, and a small team (Cuyàs 1982). After the nomination, the assistant to the mayor and technical engineer, Josep-Miquel Abad, was appointed representative director of Barcelona's Olympic Organization, and a special urban development apparatus was created to promote work, first called *Municipal Institute for Urban Development Promotion (IMPU)*, and later *Holding Olímpico S.A. (HOLSA)*—Busquets (2005). The authoritarian tradition from the *Porcioles* era combined with the exceptionality and grandiosity of the Olympic project and the pressing deadline of July 1992 “justified” a rigid, inflexible, top-down and authoritarian decision-making in the implementation of the Olympic infrastructure. Not surprisingly, Marshall (2000) warns that “*the more elite-led strategic or infrastructure planning (including the grandiose plans for the city-region)*” were likely to “*overshadow the local development projects.*”

Neoliberalism and the Housing Bubble: 1996 to 2008

Starting in 1995, Spain experienced a decade of loose lending as a result of both the Spanish entry into the European Monetary System (EMU thereafter) and the fierce competition across financial institutions (as documented in “Economic system” row, column 4, Appendix Table A.2). Over that period, interest rates fell, the down-payment requirements loosened and credit standards tanked, making mortgages considerably more affordable and accessible.² As a result, households’ willingness to take on mortgage debt quickly rose with mortgages representing from 40% of disposable income in 2000 to 92% in 2007 (Henn *et al.*, 2009). The increased housing demand coupled with the underdeveloped rental market, the deregulation of the mortgage industry and the low interest rates further boosted the demand for housing developing a housing bubble, with housing prices increasing 175% between 1998 and 2008. At the political level, the conservative party (*Partido Popular*) won the Spanish general elections in 1996 setting the grounds for a shift towards more neoliberal policies. One of these policies further liberalized the land in 1998, signaling to developers that the government was pushing for a construction boom.

Beginning in the mid- to late-1980s, Barcelona’s new economic growth model gave rise to public-private partnerships in the area of economic development, making Barcelona’s urban planning and implementation heavily dependent on private funding

² Real mortgage rates in Spain were around zero as most mortgages were indexed to the 120-month Euribor, and the Euribor hovered around 2% while Spain had a persistent positive inflation differential of ½ to 1 percentage points with its Euro partners (Henn *et al.*, 2009).

(Marshal 2000). Soon thereafter, the construction of the Olympic Village initiates a new phase of housing development, led by private developers and resulting in high market prices (Degen and García 2012). Public-private partnerships marked a change in urban planning priorities as they limited urban planners' potential to build social and environmental goals into the project because these could discourage developers and stall project implementation. With the new century, this new model of urban planning went in crescendo and, remained the modus operandi of the new elected conservative (*Convergència i Unió*) mayor, Xavier Trias, in 2011. Despite the major economic slowdown that followed the international financial crisis and the Great Recession in 2008, Barcelona's local government continued to pursue a growth model for Barcelona that sought international investment through making Barcelona a reference of "smart cities", on the one hand, and a tourism industry, on the other (Degen and García 2012). Long forgotten were the days when Barcelona's urban regeneration had as main objective reaching social cohesion, reducing income inequality, and addressing the growing city's welfare problems.

What caused the second creative destruction (Ω) phase?

The decline of the political capital, the impoverishment of public spaces and infrastructures, the weakening of the inclusive governance model, the loss of industrial and real-estate capital, and the loss of mass consumption resulted in creative destruction (Ω) and reorganization (α) phases:

- ***The Breakdown of the Internal Consensus Model between the Governing Coalition and the Citizens.*** With the *Forum 2004* and *Diagonal-Mar* projects, the "Barcelona Model" gave way to a model of aggressive entrepreneurial urban regeneration that disregarded citizens' needs and voices (Mascarell 2007; Miles 2008; and Borja 2010). The criticism that economic considerations and developers' greed rather than citizens' needs were driving Barcelona's urban planning was becoming more and more common and was broadly shared by residents, local papers and academics (von Heeren, 2002; UTE, 2004; and Delgado, 2007).
- ***Rising House Prices and Urban Sprawl.*** Because of the real-estate boom, young people, seeking more affordable housing, began moving out of Barcelona,

generating an urban sprawl. Because the urban planning of the metropolitan region had been overlooked, it did not follow a general plan and, hence, its development was chaotic (Monclus 2003, and Muñoz 2008). This added to an inefficient network of public transportation failing to connect the area to downtown Barcelona generated massive citizens' objections and frustration.

- ***Weakening of the Inclusive Governance Model.*** After the highly criticized *Forum* project, came other unsuccessful urban projects, such as *Barça 2000*, *el Forat de la Vergonya*, or *el PERI de la Barceloneta*, which brought to light the municipality's governance crisis. The agony of Barcelona's inclusive governance model became apparent with the referendum to reform the *Diagonal* fiasco in 2010, and the demission of the council of Old Town (*Ciutat Vella*), Itziar González, caused by mafia threats regarding municipal real-estate permits. Not only the citizens, but also the local press were denouncing the weakening of the inclusive governance model, as well as the obvious gentrification in Old Town and the unaffordable housing prices in the periphery (La Vanguardia 2007; Pellicer 2008).
- ***Rising Conflicts between different Social Groups.*** As Barcelona developed a booming tourist industry, its local citizens became increasingly frustrated with the uses and meaning of public spaces (see Appendix Table A.1, column 4). Many issues remained open, including the costs of keeping the city clean and efficient with increasing numbers of visitors, and the medium- to long-run viability of the fluctuating tourist market (García and Claver 2003). At the same time, Spain experienced a major inflow of international immigrants. As most of this migration was labor-based (Fernández and Ortega 2008, and Rodríguez-Planas 2012), immigrants were quick to find jobs in the thriving economy. However, the precarious nature of their jobs (with fixed-term contracts) meant that they were not protected from the 2008 recession, and many became unemployed as the economy shed low- and middle-skilled jobs in sectors dominated by immigrants (Nollenberger and Rodriguez-Planas 2016).

Once resources became scarce after the Great Recession, tourism, on the one hand, and immigration, on the other, competed for the municipalities'

attention with the local citizens' needs, increasing social conflict among the different groups and threatening social cohesion (Delgado 2007).

- ***The Global Financial Crisis and the Spanish Real-Estate Bubble Burst.*** After the international financial crisis of 2007, the Spanish economy suffered a major reverse with the burst of the Spanish real-estate bubble in 2008. The collapse of the Spanish housing industry lowered housing prices and devalued the real-estate business and families' wealth (García 2010). Not surprisingly, lower housing prices affected credit and consumption as small- and medium-size companies found it extremely difficult to obtain credit, and families saw their wealth drop, subsequently lowering their household consumption. Quickly after the real-estate bubble burst, the Spanish GDP growth collapsed, the Spanish unemployment rate soared to 23 percent in 2011, income inequality rose, and poverty escalated.
- ***New Urban Social Movements.*** The aggressive entrepreneurial urban regeneration, the rising social segregation, the inaccessible quality housing, the urban sprawl in the metropolitan area, the gentrification of downtown, and the rising social conflicts brought back the urban social movements well rooted in Barcelona's urban history (Nel.lo 2016). Squatters began settling in Barcelona in the mid-1980s, and later, spreading all over the city. The Barcelona squatter movement also created Squatters' Social Centers (*Centros Sociales Okupas*, SSC hereafter) that offered *alternative* infrastructures and services in occupied spaces all over the city. The cooperative movement, with a long tradition in Spain, re-emerged in Barcelona in the 1990s, first with *Coop57*, a cooperative created by workers displaced by the closing of the *Editorial Bruguera* in *Sants*, and during the 2005-2009 expanded across the city (Magrinyà and Balanzó 2015). After 2006, an important new urban social movement emerged, requesting decent housing for all.

What was the nature of the second creative destruction (Ω) phase?

Citizens' growing objections to Barcelona's urban planning, and their rising frustration with the municipal government escalated with the 2008 economic crisis, generating several socially innovative urban initiatives such as *el Forat de la Vergonya*, or *Can*

Ricart. The bursting of the real-estate bubble and the halting of credit lending led to the collapse of Barcelona's urban land and capital as construction work stopped, lots were left vacant and many buildings idle. This release of unused spaces became the *window of opportunity* of the *shadow networks* to occupy them. To put it differently, the global and local crises and the demise of the "*Barcelona Model*" brought about the depletion of real estate and business capital, releasing urban land and capital ready to be used by social networks to generate social capital.

Transformational agents within the shadow networks developed emergent community-based actions that were the basis for Barcelona's revolt and that generated a new era of adaptive renovation (also known as social innovation) with the beginning of the creative destruction (Ω) phase. These social networks resumed resilience and generated social capital in the spatial form of: (1) interventions to reuse and self-manage the idle urban capital (*Can Masdeu* in *Nou Barris*, *Can Ricart* in *Poblenou*, or *el Forat de la Vergonya* in *Ciutat Vella*), on the one hand; and (2) interventions to jointly work and collaborate in the production of goods and services in the third sector (*Coop57*, *Ateneu Flor de Maig*, *Ateneu la Base*, *Ateneu l'Harmonia*, *Espai Germanetes*, and *Aula Ambiental Bosc Turull*), on the other hand.

The 15M movement, a wave of social mobilization that started May 15 2011, and "*featured some of the largest occupation of public squares since the country transitioned to democracy*" (Fuster, 2012) set the beginning of the release (Ω) phase. In Barcelona, the occupation of *Plaça Catalunya* lasted over two weeks, and, thereafter, was moved to the different neighborhoods' public squares across the city. While many participants had no previous political experience and were mobilized through social networks; other participants originated from the different urban movements and, hence, brought with them their previous mobilization trajectories as well as their accumulation of knowledge (Fuster Morell 2012). Among the most relevant urban movements that participated in the 15M movement are the Squatters' Social Centers, and the housing movement and the opposition to and denunciation of the banking system.

In fact, leaders of the Squatters' Social Centers were the transformational agents that led the 15M movement. The 15M movement became particularly relevant to the creative destructive (Ω) phase once it migrated to the different neighborhoods as this implied the creation of solidarity exchange networks (such as the time bank), the sharing of knowledge, the exchange of goods, and the creation of energy cooperatives, as well as cooperatives of agro-ecological consumption (Ubasart et al. 2009). As Fuster

Morell (2012) explains, “*the squares were like living cities, and managing the squares involved many skills*”. Most importantly, the 15M movement re-energized networks by connecting old neighborhood associations with local networks associated to specific environmental actions, urban projects, or temporary urban spaces, hence engaging earlier generations who had participated in the first urban social movements and generating synergies and conversational flows.

What was the nature of the second reorganization (α) process?

The 15M process culminated in June 11 2011 with the municipal council offering to the Neighborhood Association of *La Bordeta* and the Social Center of *Sants* one of the plants of *Can Batlló (bloc 11)*, an obsolete textile factory in *La Bordeta*, so they could use it as a social center (Subirats 2015). This shadow groups’ victory, the result of frequent and important mobilizations, created a unique comprehensive social center with the *Coópolis* project (a start-up of NGOs), a public housing project, and a library. *Can Batlló* became an inspiration to Barcelona’s neighborhood associations, social centers and the cooperative movement, and provoked many other emerging urban actions. All together, these emerging urban actions translated into the Neighborhood Platforms and Assemblies created by the 15M movement, as well as *bottom-up* projects like the plan “The Neighborhood We Want” (*el Barri que Volem* in Catalan) in 2013 (Mesa de entidades de diálogo y convivencia de Vallcarca 2015). At the same time, the 2013 *top-down* municipal initiative *Pla BUIITS* aiming at temporarily allowing the use of the post-Great Recession Barcelona’s empty lots by neighbors and NGOs metamorphosed into network *bottom-up* experiences such the one in *Germanetes*. Crucially, *Pla BUIITS* transferred rights to local communities so they could develop emergent actions in tactical urbanism at fifty different empty spaces across the city (Magrinyà 2015).

All of these initiatives and actions converged and interacted, creating a common framework for articulating actions through social networks, and generating multi-dimensional synergies that multiplied citizens’ social support and engagement, as reflected by several research projects and urban academic studies from universities and research centers, such as the *Observatorio Urbano del Conflicto Urbano* (OACU) from the Department of Anthropology of the *Universidad Autónoma de Barcelona*, the Movement *Transition Towns*, the project *Barrios en Crisis* of the *Universidad*

Autònoma de Barcelona, the project *BCN Comuns*, or the project *POLURB 2015*, among others.

With these emerging initiatives, especially the *bottom-up* ones, reorganization (α phase) was on its way. It was facilitated by: (1) leaders and transformational agents of change who emerged in the neighborhoods and connected, thanks to the 15M movement, generating synergies and networks that opened *a window of opportunity* for change; (2) protests against housing evictions and in favor of decent and affordable housing metamorphosing into a platform against real-estate speculation (*Taller contra la Violència Immobiliària y Urbanística* 2006); (3) a sincere attempt from local assemblies to turn the urban social movements' protests into effective urban planning proposals, such as the “new version” of Social Plans, “*The Neighborhood We Want*” *Plans*; and (5) broad-scope debates regarding collective Catalan patrimony and public assets (*Forum Veïnal*).

In 2014, a new party that emerged from the shadow networks, *Barcelona en Común* (BEC) was created, marking the end of the reorganization phase. As in the 1970s, when the new democratic government absorbed transformational leaders, the transformational leaders of the second α phase entered the municipal administration when Ada Colau, one of the founding members and spokes people of PAH, was elected mayor of Barcelona in 2015. Ada Colau and her team are currently leading the new transformation of Barcelona’s urban dynamic. Whether they will succeed in achieving Barcelona’s urban “common good” remains to be seen.

IV. Barcelona’s Adaptive Cycles

After analyzing two adaptive cycles of Barcelona’s social-ecological system (from 1953 to 1979, and from 1980 to present), we observe that they both conform to the basic sequence of change in the adaptive cycle theory: a growth phase (r phase), followed by a consolidation phase (K phase), prior to a release (Ω) event, that leads to the reorganization phase (α phase). The novelty of our analysis has been to focus on the urban policy domain, in addition to the more standard (for the literature) domains, namely the economic, social and ecological domains. Below, we summarize the main analysis, illustrated in Figure 2.

The Front-Loop

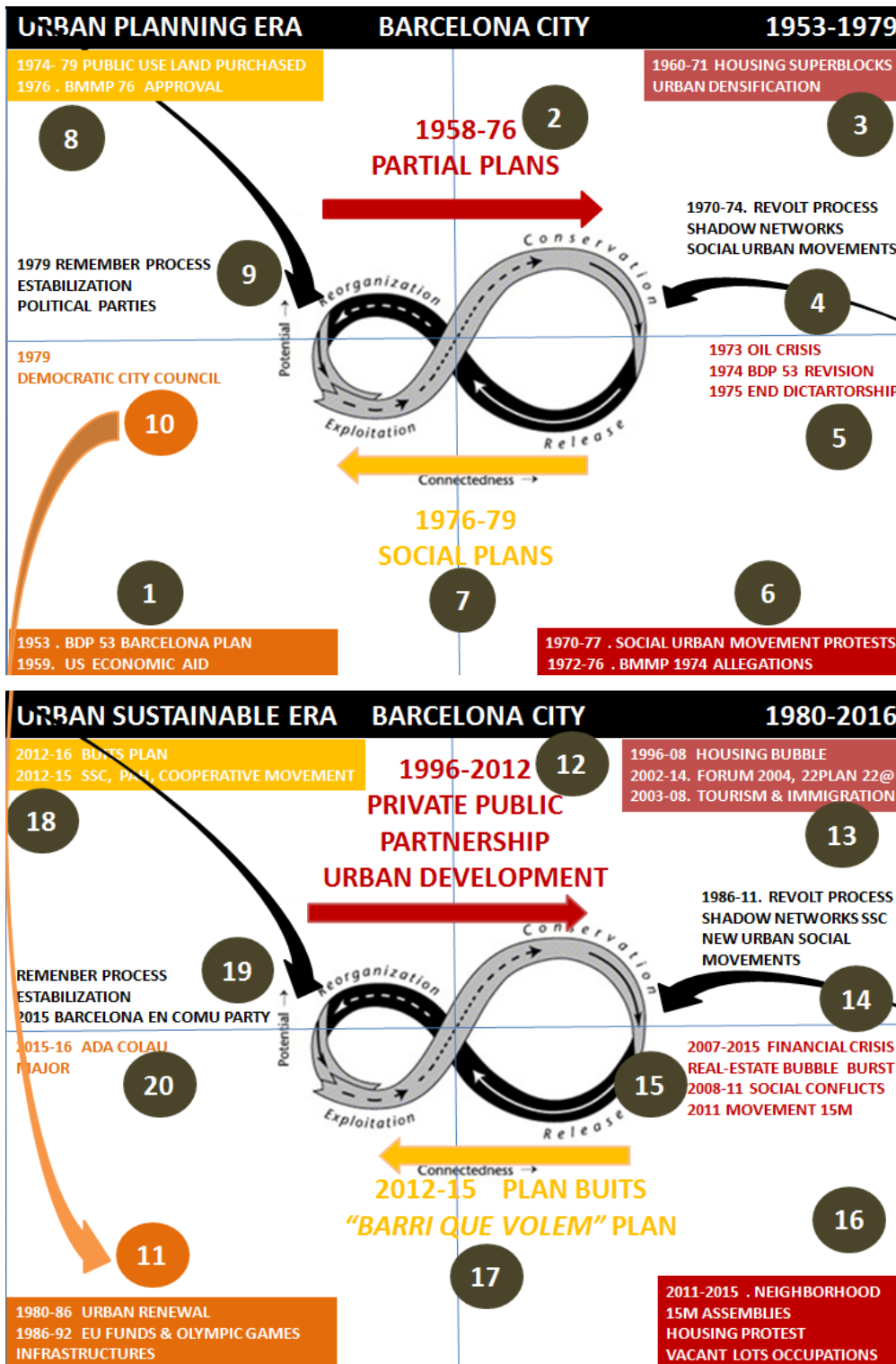
In the case of Barcelona's adaptive cycles, the growth phase (r phase) is long. Financial and natural (land) capital is plentiful, and fast-growing entities (private developers, politicians, or technocrats) take advantage of these resources to efficiently dominate the system. During the 1960s and 1970s, abundant financial capital from US economic aid, international investors, tourism, and remittances, added to economic liberalization set the grounds for Barcelona's massive urban sprawl and densification. In the 1980s and 1990s, the democratic-transition funds and newly acquired public-use land (first), and the mortgage liberalization, the EU and EMU entry, as well as Olympic-games and Forum international investments (second) were the basis for the private-public partnership urban development. While in the 1960s and 1970s, private developers abused their contacts to the dictatorial regime and the shortcomings of the BDP53 to develop massive urban sprawl and densification (via the *Partial Plans*); in the 1980s and 1990s, technocrats and private-developers pursued a growth model based on knowledge economy and tourism industry (shown in bullet points 1 to 3 and 11 to 13 in Figure 2, respectively).

As the adaptive urban complex system matured, a few and homogeneous social groups or organizations (private developers and the *bourgeoisie* well connected to the dictatorial regime in the first era, and international and national private investors and municipality technocrats in the second era) came to dominate the system. During the conservation phase (K phase), resources (land, housing, green spaces, public infrastructure, and wealth) became scarce for "new" (and old) entities (such as youth, immigrants, the working and middle class, or the industry) and the system lost its flexibility as reflected by the rise in social justice, discontent and social conflict (hence, increasing the likelihood of the system collapsing).

The Back-Loop

As explained in the main text, disruptions in economic and governance domains encouraged the decline of capital. Indeed the 1973 economic crisis, the revision of the BDP53 in 1974, and the end of the dictatorship in 1975 encouraged the first change and reorganization (see bullet point 5 in Figure 2). Similarly, the Great Recession and the burst of the real-estate bubble facilitated the release of capital in the second era (see bullet point 15 in Figure 2). Crucially, in both cases, the release phase (Ω phase) was triggered by a disturbance in the social domain as *shadow groups* (urban social

Figure 2. Barcelona's Adaptive Cycles from 1953 to Present



movements in both cases) led by *transformational agents* (the neighborhood associations, in the former case, and the squatter and housing movements, in the latter case) depleted the political capital that had accumulated during the *Barcelona of Porcioles* and the *private-public partnership urban development era* (shown in bullet

points 6 and 16 in Figure 2). In addition, in both cases, political leaders or local assemblies turned the urban social movements' protests into effective urban planning proposals, such as the *Social Plans* in 1976-79 or "*The Neighborhood We Want*" Plans in 2012-2015 (shown in bullet points 7 and 17 in Figure 2). Noteworthy is that enough social capital (social networks, trust, human capital) was retained during Barcelona's back-loops (release and reorganization phases) for the next adaptive cycles. For instance, the neighborhood associations' social capital from the 1970s built "*cross-scale interactions between citizens, experts, practitioners and politicians*" most relevant in "*resisting the attacks on the most essential aspects of the (BMMP) plan on the part of powerful pressure groups*" (Serratosa, 1996), and hence, enabled Barcelona's urban regeneration and social cohesion during the late 1970s and 1980s (shown in bullet points 8 to 10 in Figure 2).

IV. Conclusion and Panarchy

We have used the adaptive cycle theory to improve our understanding of cycles of urban change in the city of Barcelona. Most specifically, we have explored the vulnerabilities and windows of opportunity these cycles of change introduced in the release and reorganization phases. In the two recurring cycles of urban change analyzed (from 1953 to 1979, and from 1980 to present), we observe two complementary and confronted loops. During the *front-loop*, resources are efficiently exploited by homogenous dominant groups with the objective to promote capital accumulation based on private (or private-public partnership) investments. In contrast, the *back-loop* emerges from Barcelona's heterogeneous social groups (urban social movements and the third sector), whose objectives are diverse but converge in their discontent with the *status-quo* of the *conservation (K) phase* and their desire for a "common good" that includes social justice, social cohesion, participatory governance, and wellbeing for all.

The heterogeneity of the shadow groups fosters learning and innovation and gives them the flexibility that the *front-loop*'s dominant groups lack to trigger change not only *within* but also *across* spatial scale (social networks, neighborhoods, city) *and* time dimensions, promoting a cross-scale process of revolt and stabilization, also known as Panarchy. As such, the *local* neighborhood experiences in *Can Batlló* starting in 2011 or Vallcarca neighborhood starting in 2012 (Balanzó, 2015), as well as the *top-down* municipal initiative, *Pla BUIITS*, escalated to network *bottom-up* experiences such as "*The Neighborhood We Want*" plans, and became city-wide emergent and social

innovations experiences. In 2015, Ada Colau, one of the multiple activists of the anti- eviction movement (shadow network) became the new elected mayor, creating a window of opportunity for change in Barcelona urban dynamics.

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Appendix Table A.1. Society Sub-System of Urban Planning and Urban (Sustainable) Design Eras

	URBAN PLANNING ERA: 1950-1979		URBAN (SUSTAINABLE) DESIGN ERA: 1980-2016	
	1950-1970	1970-1980	1981-1995	1996-2016
Society				
Social system	<p>Barcelona's population soared from 1,280,179 inhabitants in 1950 to 1,557,863 in 1960 and 1,745,142 in 1970. Most of this growth—79% in the 1956-1960 period, 90% in the 1961-1965 period, and 57% in the 1966-1970 period—was driven by the arrival of rural immigrants (Ferrer and Nel.lo 1990).</p> <p>The construction of housing superblocks in isolated areas in the periphery of the city began in the 1950s and grew exponentially during the 1960s and early 1970s. Shantytowns in the outskirts of the city continued to multiply.</p> <p>By the early 1970s, Barcelona had become one of the highest density cities in the world with 300 habitants per ha (Tatjer 2009), and an area per habitat as low as 34.5 square meters, a third of the minimum recommended (Camarasa 1977).</p>	<p>Barcelona's population stagnated during the 1970s as a result of both a decrease in fertility and a drop in immigration (Ferrer and Nel.lo 1990).</p> <p>In the 1970s, Barcelona's unemployment rate soared to over 20 percent, further deepening the housing and public infrastructure crises, worsening living conditions, increasing the social segregation, and rising social conflict (Trullén 1988).</p> <p>Starting in the late 1970s, construction of a program of democratic citizenship and implementation of national welfare policies favoring education, training and health.</p>	<p>Unemployment rate dropped from 17.75% in June 1986 to 11.6% in September 1989.</p> <p><i>"The city's major intervention projects (of the 1980s and early 1990s) were seen as a strategy to redress balance"</i> (Busquets 2005), foster social cohesion, and a <i>"sense of belonging to the city"</i> (García-Ramon and Albet 2000).</p> <p>Social diversity replaced social and spatial segregation, urban identity was built around <i>"Barcelonity"</i>, and the <i>"discourse of class was replaced with one of municipal citizenship"</i> (McNeill 2003) generating <i>"a common democratic culture"</i> in the city (Mascarell 2007).</p> <p>The gentrification process resumed.</p>	<p>International immigrants, grew to represent close to one fifth of the population by 2009 (up from less than 2% in 1996).</p> <p>Aggressive entrepreneurial urban regeneration that disregarded citizens' needs and voices.</p> <p>Gentrification in Old Town.</p> <p>Over time, immigrants' low and irregular incomes prevented or excluded immigrants from accessing quality housing, segregating them in overcrowded sublet conditions in run-down parts of the inner city or the periphery of Barcelona (Pareja 2005; and Terrones 2007).</p> <p>Increasing social conflict among the different groups and threatening social cohesion.</p> <p>After 2008, the Spanish unemployment rate soared to 23</p>

	<p>While the bourgeoisie settled in the <i>Eixample</i> and around the <i>Diagonal</i>, the working class remained in <i>Ciutat Vella</i>, and the migrant workers were pushed to the peripheral neighborhoods.</p> <p>The dispersion of land prices further pushed industries to the periphery of the city, and segregated social classes to different areas of the city (Ferrer and Nel.lo 1990).</p>			<p>percent in 2011, income inequality rose, and poverty escalated. In Barcelona, unemployment more than doubled within 5 years from 7.4% in 2006 to 16.9% in 2011 (Observatorio Barcelona 2013).</p>
Individual development	<p>Starting in the late 1960s, the neighborhood associations (<i>comisiones de barrios</i>) led the urban social movements through different forms of protests.</p> <p>Despite the lack of social liberties, the neighborhood protests coincided with other group's clandestine activities against the political regime, contributing to a wider protest movement at the city level.</p> <p>The fight against the dictatorship unified the urban social movements by giving them a common dissenting target.</p>	<p>In 1973, Barcelona's neighborhood associations occupied the city hall to protest against a <i>Partial Plan</i> that would have destroyed 4,730 homes, resulting in the successful halt of the plan and the demotion of Barcelona's Mayor Porcioles the next day by the Spanish government (Calavita and Ferrer 2000).</p> <p>Beginning in 1975, local initiatives involving transdisciplinary participatory processes with architects, sociologists, journalists and neighbors developed the <i>Social Plans (Planes Populares)</i> whose objective was to collect the different groups' multiple objections to the 1974 BMMP</p>	<p>Urban social movements in Barcelona progressively lost their potential and connectedness.</p> <p>Political opposition dimed.</p>	<p>Urban sprawl generated massive citizens' objections and frustration in the metropolitan area.</p> <p>Downtown Barcelona's soaring overnight stays from 3.8 million in 1990 to 12.4 million in 2008 (Turisme de Barcelona, 2009) generated escalating tensions over the local residents' "<i>right to sleep</i>" versus tourists' "<i>right to enjoy a Mediterranean nightlife</i>" (Degen 2004).</p> <p>Squatters began settling in Barcelona in the mid-1980s, the cooperative movement re-emerged in Barcelona in the 1990s, and other activists and decent housing movements emerged demanding a solution to</p>

		(Magro 2014). Specialist magazines such as CAU, <i>Quaderns</i> , and <i>Novatecnia</i> “established a rigorous, critical discussion of Barcelona’s urban problems during the 1970s (Busquets 2005)”, hence also contributing to Barcelona’s cultural, human and social capital.		citizens’ problems. The 15M movement. In 2014, <i>Barcelona en Común</i> (BEC) was created.
Government	Totalitarian system. Liberalization of housing policy. The 1953 Barcelona District Plan (BDP53) aimed at densifying the Barcelona. A loophole allowed municipalities to override the BDP53 plan with <i>Partial Plans</i> to the advantage of private developers well connected to the regime’s power structure (Calavita and Ferrer 2000; and Herce 2013).	Because of the massive opposition to the 1974 BMMP, the Spanish government replaced a benevolent mayor (Masó) with an intransigent one (Viola), well connected to the regime’s power structure. Franco died in November 1975. The 1976 BMPP aimed at reducing the allowable densities from a potential of 9 to 4.5 million people, and reclaiming land for public use. Viola was soon required to resign due to the constant neighborhood associations’ complaints regarding real-estate speculation going on during the revisions of the BMMP. In December 1976, he was replaced by mayor Socias, who led the city through democratic	The municipality focused on broader and more ambitious projects, whose objective was to address the lack of facilities and services in Barcelona’s periphery, and mitigate the social segregation and poor living conditions of the “ <i>Barcelona of Porcioles</i> ” To implement education, health, and social services, Barcelona built a complex multi-level governance model, integrating the municipal government with other local administrations (regional and provincial) as well as social partners (business and trade unions) and NGOs, and financed with funds from regional, national and European institutions (Truño 2000). Beginning in the mid-1980s,	Shift towards more neoliberal policies as a result of the conservative party (<i>Partido Popular</i>) winning the Spanish general elections in 1996. Further liberalization of land in 1998. Weakening of the inclusive governance model. The new elected conservative (<i>Convergencia i Unió</i>) mayor, Xavier Trias, in 2011. <i>Barcelona en Común</i> (BEC) wins municipal elections (in coalition) in 2014. Transformational leaders entered the municipal administration when Ada Colau was elected mayor of Barcelona in 2015.

		<p>transition.</p> <p>In 1977, Parliamentary elections and the Generalitat de Catalunya were restored, and in 1979, the democratic municipal election was celebrated.</p> <p>Starting in the 1970s, the local administration began covering basic services, consequently, improving the poor's living conditions.</p> <p>The new democratic government absorbed transformational leaders.</p>	<p>Barcelona's new economic growth model gave rise to public-private partnerships in the area of economic development, making Barcelona's urban planning and implementation heavily dependent on private funding (Marshall 2000).</p>	
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Appendix Table A.2. Support Sub-System of Urban Planning and Urban (Sustainable) Design Eras

	URBAN PLANNING ERA: 1950-1979		URBAN (SUSTAINABLE) DESIGN ERA: 1980-2016	
	1950-1970	1970-1980	1981-1995	1996-2016
	Support			
Infrastructure	<p>The share of the Spanish labor force working in the industrial sector grew from 23.5% in 1950 to 34.6% in 1970. Industrialization concentrated in the old industrial areas of Barcelona and Bilbao, and the capital, Madrid (Ferrer and Nel.lo 1990).</p>	<p>The economic recession also brought the scarcity of capital for developers bringing the price of land down (Calavita and Ferrer 2000).</p> <p>The industrial crisis and its expansion to other sectors further reduced Barcelona's industrial</p>	<p>In the 1980s, public infrastructures soared in Barcelona, replacing the city's deficiencies in public facilities, green spaces, public transportation, and public libraries and schools, and reusing the unoccupied or abandoned (frequently industrial) spaces</p>	<p>Housing prices increased 175% between 1998 and 2008 (Gonzalez and Ortega 2013). In Barcelona, the price hike was even greater with prices for new dwellings tripling (after adjusting prices for inflation) from €2,035 per square meter to €5,918 per square meter from 1996 to 2008 (Ajuntament</p>

	<p>Barcelona's housing stock escalated from 282,952 to 1,028,634 units (Ferrer and Nel.lo 1990). Housing densities of 560 to 800 dwelling per ha were frequent, even though the maximum threshold was 400 (Solans 1997).</p> <p>Development of Barcelona's highway system.</p> <p>Between 1960 and 1970, the <i>Partial Plans</i> increased by 12% the areas for residential use, 53% those for industrial use, and 23% those for transportation infrastructures to the detriment of green spaces and public facilities, which lost 43% and 46% of the BDP53 originally assigned space, respectively (Ferrer and Nel.lo 1990).</p> <p>The concentration of services in <i>Ciutat Vella</i>, <i>Eixample</i> and the area of the <i>Diagonal</i>, added to Barcelona's radial public transportation system pushed up these areas' land prices and widened the dispersion in land prices across the different neighborhoods (Nel.lo 1987). According to Lluch and Gaspar</p>	<p>capital and considerably slowed down its private sectors' financial capital.</p> <p>The political uncertainty that accompanied the transition to democracy and fears of socialism and expropriation of property also pushed land prices down.</p>	<p>resulting from the industrial, economic and political crises.</p> <p>1986 nomination to host the 1992 Olympic Games boosted public regional and national investment to finance the city's large-scale public works projects and attracted much private investment to the city.</p> <p>Housing prices soared. For instance, within a year (from 1987 to 1988), housing prices increased by 51% in <i>l'Eixample</i> and 100% in <i>Diagonal</i> and <i>Pedralbes</i> (Calavita and Ferrer 2000).</p> <p>In 1988, the <i>Plan for Hotels</i> laid the foundations for making Barcelona a tourist attraction and boosting its tourist industry.</p> <p>Municipal intervention aiming at connecting and rebalancing the different areas of the city, and included the infrastructure of the 1992 Olympic Games. It also implied reorganizing the road network and defining nine areas of new centrality, plus the arrival of the <i>Diagonal</i> thoroughfare to the sea, the use of large-scale buildings as museums and cultural</p>	<p>de Barcelona 2009).</p> <p>Unaffordable housing prices also expanded to the periphery.</p> <p>Barcelona's housing prices fell 12% between 2007 and 2009 (Idealista.com 2009).</p> <p>The bursting of the real-estate bubble and the halting of credit lending led to the collapse of Barcelona's urban land and capital as construction work stopped, lots were left vacant and many buildings idle.</p>
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	(1972), the land price in the area of the <i>Diagonal</i> (2,000 <i>pessetes el pam quadrat</i>) was more than 4 times that of the suburban area of the <i>Guinardó</i> (450 <i>pessetes el pam quadrat</i>) and 80 times greater that of the <i>Prat de Llobregat</i> in the periphery of the city (25 <i>pessetes el pam quadrat</i>).		infrastructure (theaters and the like), the role of Old Town (<i>Ciutat Vella</i>), and Barcelona's seafront.	
Economic system	<p>Economic liberalization.</p> <p>US economic aid and intense foreign direct investment.</p> <p>Thriving tourism.</p> <p>Remittances from Spaniards working abroad.</p> <p>Booming car industry.</p> <p>Spanish GDP grew an average of 8.6% from 1961 to 1966, and 5.8% from 1967 to 1972.</p>	<p>With the 1973 energy and economic crises, the industrial crisis affecting Barcelona worsened and expanded to other sectors, especially the construction sector (Ferrer and Nel.lo 1990).</p> <p>The economic recession lasted from 1974 to 1985.</p>	<p>Liberalization of the mortgage market in 1981.</p> <p>Spanish integration to the European Union (EU) in January 1986.</p> <p>Improved economic confidence, boosted corporate investment and employment, and increased household incomes and demand.</p> <p>Consumption soared as reflected by the doubling of new vehicles registration from 114,077 in 1986 to 237,000 vehicles in 1989, and the building of new housing units from 11,621 to 26,330 (Ferrer and Nel.lo 1990).</p> <p>From 1985 to 1988, Barcelona's commercial electric consumption increased by 15%, long-distance calls rose by 74%, and the demand of concrete escalated by 180%.</p>	<p>During the 1990s, Barcelona's (and Catalonia's) GDP per capita grew an average of 2.4% per year, and 2.8% from 2000 to 2005 (Parellada 2004).</p> <p>New economic growth model for Barcelona, based on construction, tourism and service sectors.</p> <p>Entry into the European Monetary System and loose lending result of fierce competition among financial institutions.</p> <p>Interest rates fell, down-payment requirements loosened and credit standards tanked.</p> <p>Immigrants were responsible for 20% to 25% of the gains in the Spanish GDP per capita (Bank of Spain 2006).</p> <p>After 2008, the real-estate bubble burst, credit lending stopped, the</p>

				<p>Spanish GDP growth collapsed.</p> <p>Barcelona's local government continued to pursue a growth model for Barcelona that sought international investment through making Barcelona a reference of "smart cities", on the one hand, and a tourism industry, on the other (Degen and García 2012).</p>
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Appendix Table A.3. Nature Sub-System of Urban Planning and Urban (Sustainable) Design Eras

	URBAN PLANNING ERA: 1950-1979		URBAN (SUSTAINABLE) DESIGN ERA: 1980-2016	
	1950-1970	1970-1980	1981-1995	1996-2016
Nature				
Resources	Massive use of land and natural resources with the booming construction of rainwater reservoirs beginning in the 1950s and the building of nuclear plants, result of the mid-1950s Spanish-US treaties.		Barcelona's natural capital downfall accelerated as domestic waste production increased by 32.5% in only three years (from 1985 to 1988).	<p>2003 heat wave.</p> <p>2007 energy black-out.</p> <p>2008 water drought and the collapse of the sewage water system.</p>
Environment	Environmental crisis due to the rising demand of resources, and the massive emission of air, soil contamination, and water pollutants.	The vulnerability of Barcelona's natural capital persisted up until the early 1990s.		Exponential growth of carbon emissions.

Appendix Table A.4. Reasons for Barcelona Urban Social Movements' Loss of Potential and Connectedness

1. The new democratic local government had effectively addressed most of the neighborhood associations' claims on specific urban issues, such as lacks in education, health services, and public spaces in the different neighborhoods.
2. The new administration hired many of the former leaders, members, and sympathizers of the neighborhood associations, incorporating their views in the city's governing coalition, but also absorbing them into the political system.
3. The local administration provided funds and offices to the Federation of Neighborhood Associations making their objections to the municipal power more difficult (Calavita and Ferrer 2000).
4. The 1977 *Social Compromises (Pactos Sociales)* between the Spanish government, the private sector and the labor unions set the grounds for minimum social conflict with the new democratic government at all levels of the administration.
5. The collective Catalan identity and new sense of place and city pride that accompanied the urban regeneration of Barcelona (Associació Pla Estratègic Barcelona 1994; Subiros 1999; Rodríguez Morató 2008) mitigated any objecting voices.
6. The economic expansion, the EU entry, and the Olympic host nomination set a tone of euphoria across the population that quiet any dissenting voices until the end of 1992.