

Chapter 14

The Evaluation of Findings and Future of Resilience Thinking in Planning

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14.1 Introduction

The mission of the planner has never been as frustrating as it is today. While planning practice is littered with such terms as democratisation, participation and collaborative decision making, most planners have strong doubts as to whether they are fulfilling their primary mission, that is, to prepare cities for the future. Their role today has rather become one of solving daily problems to satisfy the interests of the dominant actors in the urban system.

In the 1970s, sustainable development was a new approach that reminded planners of their responsibilities – to target economic and social development while also recognising the needs of all living organisms and the earth. The excitement and enthusiasm brought by the sustainability concept, however, has faded since the 1980s under the increasing dominance of the neoliberal ideology, neoliberalisation and market-friendly policies having affected the way cities develop and function since the late 1970s. Competitiveness, globalisation, networking, innovativeness and creativity formed the bases of the new practices, bringing legitimacy to a number of urban projects that in previous periods had been frowned upon. Serving the real

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estate market became the core area of interest in planning, and short-range fragmented projects dominated planning practice. In an increasingly competitive world economy, marketing cities and creating global cities as nodes of the global economic system became a target all over the world, inspired by the exaggerated experience of a small number of cities, with little regard as to whether such an approach was relevant for them or not. The benefits have been widely discussed with only scant regard for costs and the social and environmental consequences; recently, however, several criticisms have been raised on the ideology of neoliberalism and the planning representing this ideology (Harvey 2005; McGuirk 2005; Peck et al. 2009; Purcell 2009; Taşan-Kok and Baeten 2011).

The increasing criticisms found strong support in the increasing number of economic and ecological crises that have been experienced in recent years, which were accepted as signals that the market mechanism that dominated policymaking and planning practices was failing to prepare cities to tackle unforeseen disturbances. The aftermath of the crises showed that even places that were thought to be very robust were in fact not, increasing the frustration with the ongoing policies and planning practices.

The emergence of the concept of resilience at this time fostered a second wave of enthusiasm among academicians and some policymakers, emphasising “new adaptive strategies to manage and cope with change while sustaining their main functions”. This was seen as an attractive solution and was quickly joined by “not only sustaining their main functions, but adopting new innovative strategies and becoming even stronger after the crisis”. In other words, “gaining from the crisis” became the new way of perceiving the “resilience” concept. This change showed that the term resilience, which originated in the ecological sciences field, had now found a home also in the field of urban studies. Resilience is still not well established and is rather a fuzzy concept in urban studies since it has been adopted from other fields. However, as indicated in Chap. 3 of this book, it may become more defined when used not only in theoretical debates but also in research, especially in case studies.

This book attempts to decode this concept and to explore how it can help planners to overcome their agitation and frustration about the future. It would be unrealistic to claim that the book provides all the necessary answers for the creation of a new planning approach based on resilience; however, what can be suggested is how this new conceptual construct can be used in planning practice.

What the resilience approach offers is not completely new, as emphasis is on the instinct that has always been at the heart of planning, that is, to follow a systematic approach by contemplating the interactions between the components of the urban system. What can be considered new here is its suggested use as a “mind frame” when analysing existing systems and understanding that an impetus of change can result in different outcomes depending on a series of interactive impacts.

As defined in Chap. 2, urban land-use planning is traditionally more concerned with attempting to minimise disturbance and reduce the risks and the negative effects of possible disturbances. Resilience thinking first extends the remit of planning to include disturbance as an integral part of the planning process and suggests a shift in priority from those that aspire to *control* the change to those that increase

the *capacity* of the system to cope with, adapt to and shape change. The idea is to accept the fact that changes are going to take place, and while taking steps to reduce the risks, urban systems should be prepared to absorb these changes, reorganise themselves and develop new adaptive strategies to manage and cope with the change while improving their capacities.

It has taken some time for the resilience concept to become integrated into planning debates. As summarised in Chap. 3, the evolution of the definition of resilience in urban planning literature has followed a three-stage path: Firstly, *system resilience* appeared as a concept in social sciences; secondly, the *resilience of cities* as urban (ecological, social and economic) systems came under scrutiny, and a wide body of literature on social, economic and ecological resilience of urban systems began to accumulate; and finally, urban planning literature began to seek *principles to plan for a resilient city*, while the emphasis shifted from coping with environmental hazards towards a more comprehensive approach that looked at the resilience of the urban system as a whole, considering economic, social and ecological disturbances as integrated parts of the system.

The *disturbance* concept plays an important role in defining the resilience of a system. Although radical disturbances are mainly associated with environmental disasters and natural hazards, for urban systems, political, social and economic disturbances (financial crisis, political turbulence or public unrest) can be the main source of vulnerabilities. For this reason, economic and social resilience has also appeared as an important dimension in the sustainability of cities. Social resilience is about building institutions for social reorganisation and collective action, robust governance systems and a diversity of livelihood choices (Adger et al. 2005), while economic resilience is connected to coping with the slow and/or radical changes that result from the interaction of endogenous and exogenous economic and other related processes.

Within the evolution of debates, it is the attribute of resilience that has received the most attention. Previous literature has defined several attributes of resilience with the intention being to identify the measurable characteristics of resilient cities and the capacity of urban systems. According to Godschalk (2003), these attributes include *redundancy, diversity, efficiency, autonomy, strength, interdependence, adaptability* and *collaboration*. A resilient city is expected to be able to adapt to uncertainties through combinations of these attributes (Godschalk 2003; Fleischhauer 2008). Walker and Salt (2006) refer to these characteristics as “qualities”, adding to them a social dimension. According to them, the main qualities include *diversity, ecological variability, modularity, acknowledging slow variables, tight feedbacks, social capital, innovation, overlap in governance and ecosystem services*.

The cases presented in this book (see Chaps. 9, 10, 11, 12, and 13) illustrate that some of these qualities can actually increase the resilience of cities against a wide range of vulnerabilities and include *recovery, connectivity, capital building, adaptability, robustness, flexibility, self-organisation and transformability*, which are defined in Chap. 3 and also tackled in the case study chapters. These attributes enable an urban system to be resilient in response to changes and retain its advantage, although for some of them, there is no such consensus, such as for connectivity.

Although most of resilience attributes have been inherited from the sustainability debate, as argued in Chap. 4, resilience attributes are different to the attributes of sustainability, as some new features are considered and may have different interpretations and assumptions. Moreover, sustainability and resilience do not always work in the same direction. For example, policies promoting high-density mixed-use settlements and compact cities can reduce energy demand and transport emissions, although they may intensify the urban heat island effect and may pose problems for urban drainage (McEvoy et al. 2006). Furthermore, the intensification of the core areas of cities aiming at energy efficiency can inhibit natural indoor and outdoor ventilation (e.g. due to insufficient space between buildings) and is likely to lead to an increase in demand for ventilation and air conditioning, with additional impacts on climate change (Pizarro 2009). There may also be indirect effects as a result of people escaping uncomfortable conditions in cities, leading to increased transport emissions (McEvoy et al. 2006).

The main paradigm shift from sustainability to resilience lies in the consideration of urban areas as complex adaptive systems. Furthermore, studying urban systems means bringing the linkage between ecology and planning into the spotlight and investigating the most adequate spatial patterns or forms for dealing with adversities. However, one should keep in mind the complexity and variability of urban systems and recognise that there are different stages of equilibrium. Accordingly, what is considered as the best type of urban development or the best response to sudden environmental changes may evolve over time.

The studies included in this book represent one of the first attempts to discuss and integrate the resilience concept into research with respect to urban planning following a methodological approach that is tested on different case studies. Although an outcome of an international project, this book is not merely a collection of different papers with different perspectives; instead, it introduces a search for a new understanding of the dynamics of cities in the contemporary world and evaluates the planning practices that have been adopted and implemented in the recent past with a common perspective of “resilience thinking” by drawing upon the experiences of different case studies. This practice enables a discussion of resilience as a mind frame as well as a tool for planning with respect to the conceptual, methodological and contextual dimensions of such thinking.

14.2 Conceptual Contributions of Resilience in Planning: Resilience as a Mind Frame

The study introduced in Chap. 10 claims that urban policies should be prepared to provide guidance in resilience to deal with changes. If not, reaching a sustained level of development will be difficult, even if the policy instruments are implemented in detail. In this respect, the resilience concept provides a point of focus and a useful framework.

One of the main features of this framework is *treating urban areas as systems*. Is this a new approach? Not exactly. During the quantitative revolution in planning in the 1960s, system thinking was very popular (see Forrester 1969, 1987; Chadwick 1971). The main difference was that the 1970s system approach was focused on internal dynamics, taking certain subsystems and their relations into consideration, while the resilience approach shows that the external factors may be even more important than the components of the system. In fact, the novelty of resilience thinking lies in the importance of external dynamics that bring about important changes within the urban systems.

Planners, policymakers and the general public are all aware that cities are whole systems that constitute more than merely the sum of their parts. Cities can be seen as interconnected systems which may result in optimal or suboptimal outcomes. Moreover, external disturbances disseminated throughout the system may have a series of indirect impacts on each subsystem, some of which may be difficult to predict due to the multiplier effects of certain changes; and the nature of the existing resources may lead to different outcomes. The urban metabolism perspective is quite useful in the systematisation of the interconnections and in defining not only direct and indirect effects but also those that are induced (Resilience Alliance 2007). The urban metabolism concept is defined as “the sum total of the technical and socioeconomic processes that occur in cities, resulting in growth, production of energy, and elimination of waste” (Kennedy et al. 2007: 44). There are some studies that look at the sustainability of cities from this perspective and search for evidence of how the metabolism of an urban system may be disturbed, for instance, through a change in ground water levels, exhaustion of local materials, accumulation of toxic waste, summer heat islands, irregular accumulation of nutrients, etc. (Kennedy et al. 2007).

For this reason, there is a need for systemic thinking, taking the interactive processes among the subsystems and also the different subdivisions of an urban area into account. In Chap. 11, Eraydin, Türel and Altay Kaya claim that even between small parts of the metropolitan area, the level of adaptive capacity may vary considerably and that the adaptive capacity of one area may easily deteriorate the adaptive capacity of its neighbouring areas or even the metropolitan area as whole. This is true not only for environmental issues, but also for economic and social ones too.

These findings are important to show, firstly, that the scale of analysis is very important; secondly, that the relationships between the parts and the whole need to be carefully defined (Chap. 12 by Schmitt, Greve-Harbo, Tepecik-Diş and Henriksson provides a good illustration of this way of thinking, showing that the concept of polycentricity demands a high level of systemic understanding of the Stockholm city region in general, and its different regional urban cores in particular, with the help of a resilient perspective); and finally, how the impacts of a disturbance on one area may disseminate, which needs to be assessed carefully. Traditional planning mainly considers the first round of impacts, without taking the indirect affects into account.

The most important peculiarity of resilience thinking, however, is *long-term future simulation models*. What is striking in literature is that short-term decisions may have devastating effects on urban systems in the long term. As explained by

Taşan-Kok and Stead in Chap. 13, in some of the case study cities, namely, Lisbon, Oporto and Istanbul, planning according to different motivations increased the vulnerability of the cities because they were unable to predict the long-term consequences of their policies and plans, which was something that was addressed in the Dutch long-term planning perspective.

The five case studies in this book indicate that each city has different priorities, depending on its experience and inherited structural characteristics, as well as its own problems, and *each city has defined its own means and priorities* when facing unexpected changes. The most resilient cities are those that foster creative and innovative approaches to global challenges by designating their weaknesses and vulnerabilities. It is also important to define *no-regret conditions and measures* (i.e. measures that are effective under a range of possible future conditions) for resilient decision making. Flexibility in decision making in cities also constitutes a crucial part of urban resilience. In Chap. 13, this point is illustrated by Taşan-Kok and Stead using the case of the Stadshavens area in Rotterdam. The current development policy in the city of Rotterdam prescribes minimum standards for the height of the ground relative to high water levels on which development can take place. Where the ground level is currently too low, it cannot be developed unless the ground level is first raised. This process can be very costly and does not differentiate between land uses and the different levels of protection they require. In response to this, the Structural Vision (strategic plan of the city) proposes new guidelines for development, including a differentiation between building types, where vulnerable buildings and land uses (e.g. residential development) are given more protection against flooding than less sensitive buildings and land uses (e.g. parks or industrial storage). In other words, what is considered as an acceptable flood risk in one area may be completely different in another. In addition, because flooding is only likely to occur at high tide and never last more than a few hours, various development options are proposed that might be able to cope with these risks.

Achieving cities that are more resilient often requires a shift in infrastructure, investment and a *prioritising of public investment*. This can be done by prioritising funding for public transport, instead of solutions based upon individual car ownership, or improving rail transport within the urban system, as discussed in Chap. 9 by Dias, Morgado and Costa. They show that for the case of Oporto, public investment in transport development can increase the accessibility of a certain area; and increases in land values resulting from such public investment can often attract private development investment. As well as increasing the economic value of an area, focused public investments can also improve local economic activities and amenity values for the community as a whole. This emphasis on public investment is very important since from 1980 onwards, public investments in cities have dropped in almost all parts of the world, with priority shifting to market reliance and private investment as the new core of the agenda.

Lastly, the book suggests several *innovative and flexible solutions*. In Chap. 9, Dias, Morgado and Costa show that the intensification of connectivity of the Alcantra neighbourhood, as designated in the urban plans, increased the resilience of this urban region. In Chap. 10, where policy initiatives to address central Oporto's

declining urban population and increasing vacancy are presented by Oliveira, Martins and Cruz, urban rehabilitation instruments, such as lowering taxes in the intervention area (Baxia district) or providing different types of buildings, have been implemented to attract different demographic groups. In Chap. 11, Eraydin, Türel and Altay show that a flexible approach in encouraging foreign enterprises to locate in the case study area (Büyükdere Avenue) has led to the creation of new and diverse employment opportunities, making it possible to sustain the existing diversity of the resident population in a rapidly changing urban core. In Chap. 12, the *indicative regional planning* approach is investigated by Schmitt, Greve Harbo, Tepecik Diş and Henriksson, involving negotiations between municipalities and relevant stakeholders as a means of resilient governance. In Chap. 13, Taşan-Kok and Stead provide examples of “*dryproof*” development, where public spaces can be flooded without damage and allow buildings to stay dry, and “*wetproof*” building techniques, by which water cannot easily penetrate buildings.

14.3 Methodological Issues

It has been emphasised that an analysis of spatial dynamics is important for defining the attributes of resilience. The different spatial dynamics that may occur in urban development can be related to the concept of urban resilience, as we have seen in Chap. 4. There is evidence that some attributes of resilience are related to urban patterns and dynamics, although the context and local specificities may play an important role. It should be noted that most analyses of sustainable land use are also valid for the concept of resilience; however, the focus should be on the capacity to cope with disturbances, problems and adversities, which is essential when introducing a new perspective to the traditional paradigm of sustainable development.

The methodological framework introduced in Chap. 8 by Pinho, Oliveira and Martins allows an understanding of how far policies and plans can help to strengthen the resilience of urban systems. In Chap. 12, by Schmitt, Greve-Harbo, Tepecik-Diş and Henriksson, it is noted that the concept of urban resilience has particularly helped to enrich this analysis by focusing on the institutional responses and individual reflections on the hitherto unknown (until 2001) planning concept of polycentricity. In this context, attributes of resilience have special importance. In the case studies introduced in Chaps. 9, 10, 11, 12, and 13, the attributes of resilience of an urban system are explored with the help of a set of indicators, which allow an understanding of to what extent the built environment is transformed to meet the new conditions defined by global processes, together with the transformability of the economic structure under global market pressures. As the case study in Chap. 9 by Dias, Morgado and Costa exemplifies, the methodology highlights both the merits and the negative outcomes of the planning process. Dias, Morgado and Costa propose that *adaptability* can be achieved through intensified connectivity within the urban plans. In Chap. 10, Oliveira, Martins, and Cruz analyse *recovery* and *capital building* as important attributes in making the Baxia area of Oporto resilient to a decline in

population and the deprivation of the built environment. In Chap. 11, Eraydin, Türel and Altay Kaya show through a detailed study of selected indicators that it is possible to define the *adaptive capacity* of an urban system to respond to changing conditions. Transformation projects, new urban built-up areas and changes in the composition of activities are positive indicators of adaptability, although the cost of adaptation is clear on the labour markets and increasing income differentials, leading to increasing residential segregation. In Chap. 12, *adaptability*, *transformability* and *connectivity* were analysed by Schmitt, Greve Harbo, Tepecik Diş, and Henriksson, who concluded that polycentricity can help to increase a city region's robustness in the face of economic crises, the demise of specific sectors, urban sprawl, social segregation, climate change and environmental degradation. As Taşan-Kok and Stead showed in Chap. 13, *adaptation* can be achieved with long-term planning.

14.4 Contextual Issues

In the book, several contextual issues of resilience are highlighted, the first being related to urban form. It is difficult to claim that one form of city is superior to another, since especially in the major cities of Europe (at least in the case study cities), different spatial dynamics leading to different urban forms can exist at the same time (see Chap. 5). Defining a certain *urban form* as more resilient means an overgeneralisation of the simplistic relations, which may be difficult to observe in major global cities. In previous literature, cities have been recognised as sustainable if they have a compact form as opposed to a sprawling form; a high level of connectivity within their transport networks; a land use pattern that is well integrated with public transport, with options for walking and cycling; and defined areas of growth, or "town centres" that contain a mix of residential, commercial and recreational land uses. Internationally, there has been a resurgence of interest in the more compact urban form, while in contrast some recent documents, such as the European Spatial Development Perspective (European Commission 1999), advocate polycentric urban development as a more flexible and adaptive formulation of the built environment, and social relationships in the large urban regions with less environmental impacts.

These types of generalisations may be misleading not only due to the specificities of each case but also due to the danger of assessment at a general level, which fails to take into account the iterative processes. For example, Chap. 11 shows that how people travel within the urban system is more important than the urban form itself, given the vital relationship between transport and the economic, physical and social aspects of the city.

Travel demand management is a widely used tool for changing people's behaviour towards more sustainable forms of transport (Davis et al. 2007). The measures used are commonly divided into two types: "hard" measures, such as high-occupancy vehicle and bus-only lanes, tolls, road pricing, congestion charges, parking pricing

and fuel taxes, and “soft” measures, including land-use planning, parking policies, travel marketing and organisational travel planning. Because of the way individual urban areas vary in shape, and the varying cost and effectiveness of different measures, an integrated range of measures can be tailored to the specific region or city.

Resilient infrastructure is important for creating robustness and adaptability, which in turn help cities to become more resilient. As mentioned earlier, the robustness or strength of an urban system allows it to withstand stress and disturbance, while adaptability in an urban system allows it to respond to changing conditions and objectives. Resilient infrastructure makes greater use of more localised and diverse ways of providing different services (electricity, drinking water, storm water amelioration and wastewater disposal) while also building capacity to cope with the different risks and crises (R&D, academic institutions, research facilities, etc.). Chapter 9 by Luis, Morgado and Costa clarifies how important the infrastructure is for increasing the resilience of certain areas. There are other examples of this, such as the use of solar technology, giving homeowners the ability to generate their own electricity. This sort of infrastructure can reduce the scale of damage from extreme events to more localised levels, such as in the event of a power failure, resilient infrastructure design can restrict the outage to a few suburbs rather than across the whole city (Ministry of Environment-New Zealand 2008).

Improvements in urban quality support the adaptive capacity of urban areas. Chapter 10 by Oliveira, Martins and Santos Cruz provides an illustrative case of how rehabilitation can be important in creating positive impacts on urban areas. Quality urban planning and design results in places with a high level of use and value while also determining the nature of the spaces in which people interact within an urban form.

14.5 Towards a Research Agenda on Planning for Resilience

Despite the growing number of studies on urban resilience analysing how and under what conditions urban subsystems, institutions and other components of urban eco-systems adapt to and develop innovative solution in response to (un)expected threats, how resilience planning may be integrated into planning is an area that has received little coverage in academic circles.

This book has introduced the major principles of the resilience planning paradigm and has made a comparison with rational and communicative planning paradigms. Some exemplary case studies have been presented to introduce the diverse ways resilience thinking may be integrated into planning so as to ensure ideas and thinking is converted into firm action. Also, the different examples introduced in the book have shown the benefits in following an analytical approach, namely, identifying vulnerabilities and taking them as the focal point in an analysis of the adaptive capacity of urban subsystems, thus helping to define both the priorities and red tape in the decision-making process. These explanatory studies, which make an evaluation of the planning practices conducted in geographically delimited areas, raise questions

for future research and highlight several major challenges to adopting the resilience approach in planning. It is possible to define the major challenges under five headings:

First, there is a need for further research into the benefits of adopting a systems thinking, which focuses on the whole, not the parts, of a complex urban system and defines the impacts of interactive relations, interfaces and arrangements among the components of the urban subsystems. As urban planning not only deals with ecological but also economic and social subsystems and metabolic flows, this is not an easy task. Still, understanding the co-evolutionary dynamics of urban systems and defining the substance of planning accordingly are vital for resilience planning. This research shows that different urban systems have different organisational capacities to adopt a systemic approach, meaning that some systems with a high organisational capacity will adapt to the new situations and cope with the threats much faster and more effectively than others. For some systems, using a systems approach requires changing the basic construct of organisational and institutional bodies before making future plans. In such complex systems, is it possible to understand the existing relationships among the components of the urban systems and define how they will evolve in the future? And how can such an understanding be enhanced?

Second, there is need to define the critical nodes of urban systems when adapting to change and building transformative capacity, which also necessitates systemic and long-term thinking. However, the identification of the critical issues and the priorities among them needs further clarification. How are planners able to define the critical issues; and are they, in fact, in a position to define critical issues or priorities in the complex field of political decision making? How far do the critical issues defined by studies of technical departments lead to planning decisions? Do we really need societal perception types of studies to define critical issues and vulnerabilities?

Third, there is need to find ways to define short- and long-term priorities. This requires a multilevel governance approach in which the roles and responsibilities of decision-making bodies are clarified. This research has shown that, especially in the public sector, if the tasks and responsibilities are not made clear, each public organisation tends to make its own plans and programmes according to its own priorities. In times of need, a lack of coordination in ideas will be an obstacle in the way of making a clear decision on how to address the threat. Moreover, how economic, social and ecological priorities can be matched with those that are technical and social in nature is one of the questions that are important in transforming resilience thinking into practice.

Fourth, introducing a value system is important when setting principles for the creation of resilient urban areas; however, this is not an easy task and raises several new questions. Is it possible to change the value systems imposed under the market-dominated approaches and introduce new value systems that are more sensitive to the future needs of society? Is there a possibility to define new planning ethics that will be based upon the concept of resilient urban areas?

Finally, how can resilience thinking be brought to the level of each individual and community, thus increasing awareness as part of the resilience strategy so that

it does not become just another fashionable policy term that appears in every policy document without real meaning for practice? The authors believe that the first step is to increase awareness among the social scientists and planning scholars who think, write and carry out research to come up with convincing arguments for urban policymakers about the urgent need to change the way we understand just what planning is all about and how it should be practised. This book intends to contribute to the initial steps towards increasing the awareness of planners and thus changing the way we think.

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