DEALING WITH RISKS IN URBAN GOVERNANCE: WHAT CAN WE LEARN FROM 'RESILIENCE THINKING'

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ABSTRACT: Uncertainty, unpredictability and change have become key characteristics of today's interdependent world. And although risks, disasters and crises have been inherent to human existence since its beginnings, the speed, frequency and scale in with which they occur today are unprecedented. The financial crisis, the environmental crisis and the threats to human security all have a global character, yet its impacts are felt locally. Consequently cities have to respond earlier, more effectively to new kinds of risks. This requires a different kind of governance than traditional "top-down" models of government or "command-and-control" planning allows. Inspired by what has become known as "resilience thinking", strategies for "adaptive governance" have been developed. Adaptive governance strategies aim explicitly at equipping stakeholders to deal effectively with change, surprises and risks. Yet, although "resilience thinking" has convincingly proven its value in regional management, its application in urban governance so far has been limited to the field of disaster management, where "resilience thinking" was embraced as a new paradigm.

In this paper we briefly discuss the main characteristics of resilience thinking and adaptive governance, focusing on those features relevant for urban governance. These characteristics include – among others – flexible institutions, knowledge systems that integrate different sets of knowledge, the capacities of learning by experiment, creativity, and self-organization. In a subsequent paragraph we contrast these characteristics of adaptive governance with current trends in urban governance. This leads to the conclusion that a number of recent trends in urban governance – decentralization, the shift from government to governance and increased citizen participation – should in principle allow for more adaptive governance models. They allow for greater flexibility and autonomy at the local level. In many cities governance reforms towards more participatory and responsive governance approaches are implemented in tandem with urban management reforms inspired by New Public Management. The turn to a management model that calls for a retreat of the state, increased efficiency and control undermine resilient capacities of cities, and thus their ability to adequately deal with risks.

KEYWORDS: urban governance, resilience, risks

1   INTRODUCTION

Uncertainty, unpredictability and change have become key characteristics of today's interdependent world. Although risks, disasters and crises are inherent to human existence, the speed, frequency and scale with which they occur today are growing. The financial and economic crisis, the concern about long-term climate change and current environmental crises, and threats to human security are all global concerns. However, their impacts are felt locally in differing degrees. The implication is that national and local governments have to think and plan ahead for quick and effective responses to such new kinds of risks. It requires a different kind of governance than what more traditional "top-down" models of government or "command-and-control" planning and management allows.

Two sets of thinking can provide inspiration for a new approach to dealing with risks in urban governance; the debate on governance as such which moves away from a state-led approach to a multi-actor network approach, and the literature on disaster and risk management which has led to the new "resilience

thinking", in which strategies for "adaptive governance" are designed to deal with ecological and security risks. Adaptive governance strategies aim explicitly at equipping stakeholders to deal effectively with sudden shocks, risk and change. Yet, although "resilience thinking" has convincingly proven its value in regional management [1, 2] its application in urban governance so far has been limited to the field of disaster management, where "resilience thinking" was embraced as a new paradigm [3].

In this paper, we look at the way in which thinking about urban governance has developed briefly, before turning to the main question of what contributions resilience thinking can make to urban governance in the future. We do this first by outlining how resilience thinking conceptualizes systems and their functioning and how they deal with sudden shocks and long-term stresses (such as climate change). Secondly, the extent to which this thinking can be linked with urban governance is explored, and finally a new model is suggested in terms of the changes in urban governance which incorporating resilience thinking would require.

2   URBAN GOVERNANCE AND RISKS: A BRIEF REVIEW

The nineteen nineties has seen as shift from government-led models in urban management and planning, to models in which multi-actor networks have developed new strategies for urban economic development (public-private partnership models), urban renewal and poverty reduction strategies (participatory governance models). The main characteristics of such models have been that;
- they recognize other actors beside government (private sector and civil society organizations),
- they include more space for ideas and participation from other actors (in a variable degree, not necessarily equally for all participants)
- they have more strategic and flexible processes of planning and management, which can take changes into account.
- They can lead to more synergy in developing new approaches.

This shift has been accompanied by two processes, which have changed the character of government itself - decentralization and 'new public management'. Decentralization processes have put more responsibilities on local governments in various ways, which have not always been equipped in terms of human resources and financing to deal with such new tasks [4]. The processes have also been uneven, with some national government departments reclaiming responsibilities [5] and the growth of quasi-autonomous agencies to provide services in many areas. The result has been a chequered pattern, in which responsibilities for planning and managing cities are diverse, diffuse, and occur at different scale-levels.

The second process has been what is called the 'new public management' approach. The basic premise of this approach has been that government should function like a private sector company, as efficient and effective in terms of its budgeting and spending patterns. The main shift it has occasioned in government, is that departments are run as 'profit centers', that outsourcing services has become a prevalent pattern, and that resources are allocated according to stricter economically feasible standards [6, 7]. The result has been a shift in providing basic services in high-income countries from universal to more targeted provision, less direct government responsibility for many services, and less inspection of standards maintenance; in low-income countries it has meant a greater focus on effective and efficient tax collection processes, more transparent accounting systems, and more training for (local) government officials.

The question is to what extent the processes described above equip local governments in dealing with new risks and challenges. The classical responsibilities of local government lie in the areas of (social) housing, basic services and waste management, zoning for economic investment and basic education.[1] The following table indicates which risks local governments typically deal with in cities, and the kinds of new risks for the future that are being identified.

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[1] This reflects more the British (and former British colonies) system; the French-based systems are outside the scope of this article.

Table 1. Responsible organizations and how they deal with 'risk' issues					
	Public Health (environmental. Health)	(social) Housing	Infrastructure	Security Issues	Environmental Issues (climate change, disasters)
International organizations				NATO, UN Security Council	UNEP, other UN agencies
National government		Policies, financing	Policies, implementation coordination	Policies, security org.	Disaster prevention and management
Regional government			Coordination, monitoring		
Local government	Drinking water, waste transportation and disposal	Inspecting housing standards, zoning	Local infrastructure, grant programs from national government	Maintaining law and order	Disaster management on occurrence

The table shows that international organizations have strong responsibility in the area of developing policies for the future through the debates and treaties developed and ratified by member national governments [8et.al]. National governments have responsibility for developing national level policies and guidelines for dealing with 'risk' issues, and providing financing or guidelines for obtaining financing for national, regional and local governments to deal with such risks. Local governments have primary responsibility to manage risks as and when they occur, and to provide inspection and basic services to prevent public (or environmental) health risks to their populations. They also have to deal with disasters of whatever type, which occur in their areas of jurisdiction, although they can then call in help from outside. What is clear from this picture is that local governments are not in the forefront of developing policies against new types of risks, so that they can develop (standardized) preventive measures in their localities.

Governance currently is strongly oriented towards decisions about who bears which risks, Beck argues when he characterizes modern society as a 'risk society'[9, 10]. What is the character of such new risks being identified? We will draw on the emerging literature on environmental risks (through climate change) and more briefly on that dealing with security issues (through terrorism). In the last ten years a number of risks which affect cities specifically and societies in general are increasingly being discussed. These include security issues because of terrorist attacks, environmental sustainability issues in the context of the international climate change discussion, together with the volatility of energy pricing (and long-term concerns about sourcing and availability), and more recently concerns about conflicts in land use between food and energy production [11-13].

Characteristic is that these risk perceptions are related to dangers which can happen anywhere in the world – 'mega-scale' risks [14]); this means that all governments are concerned with their possibility. They include both long-term stresses as well as sudden shocks; examples of the former are changes in local and regional climates affecting food flows into cities, rainfall patterns and flooding, effects of transportation patterns to name a few; examples of the latter are sudden disasters, such as floods, earthquakes, and terrorist attacks. Mapping and preparation for such mega-scale risks are usually done at national or international government levels. The distribution of actual shocks and stresses tends to be uneven, at which point local governments have to deal with the consequences, with the support of provincial or national governments, (without having had much to say in the preparatory discussions). To illustrate, the danger of hurricanes to the Southern coast of the United States is well known and occurs yearly; however, the exact location and strength of a specific hurricane is more local and difficult to predict far in advance.

This means that it becomes important to include two major issues in general risk perceptions and in devising local planning and management strategies dealing with risks. The first is that local governments and city populations need to recognize 'mega-scale' risks, and their potential impacts at different scale levels, and how linkages between scale levels may affect the impacts of the risk concerned[2]. This implies that they have to focus not only on their designated responsibilities but also develop knowledge on mega-scale hazards and

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[2] For instance, if a local disaster occurs in a city which is a node in a national or regional economic network, the ripple effects will be much greater than if the affected urban economy is more isolated.

risks which may affect them locally [15].

The second major issue is that risks are a result of social phenomena as well as natural stresses and shocks. There is 'uneven allocation of risks, and uneven commitment of resources', (see [16] quoted in [17]. Such uneven allocation of risks tends to fall more heavily on poor, vulnerable groups with little political influence [9, 15]. Local governments often lack sufficient funding and knowledge to anticipate risks pro-actively or to be able to deal with them when they occur (Katrina hurricane assessment by SEDAC, quoted in [15]). They need to be able to recognize and develop local risk profiles, institutional networks to deal with potential risks, and know, allocate, or access funding flows for dealing with such risks. A vulnerability analysis provides a framework which recognizes that risks are the combined result of several issues; system exposure to stresses and shocks; a lack of the system to cope; and the long-term impacts on recovery patterns at system level [15]. Socio-economic vulnerability can undermine the capacity of cities to deal with environmental or security stresses and shocks to such an extent that the impacts become much greater in scale and may extend over longer periods of time.

Table 2a. Elements of a risk analysis for cities – Recognizing system exposures at different scale levels			
	System exposure		
Scale levels	Local	national	Global
Risks	-location (coastal zone)	-public security risks -food security -energy security	-long-term stresses (climate change; internationalization of terrorism)
Socio-economic vulnerability	-community vulnerability -levels of poverty -basic infrastructure -financial structure	- state of the economy (diversity, income differences) -social policy -financial support programmes for vulnerable groups/cities	-climate change effects -energy security -food security -conflicts -financial crises -economic crises

Table 2b[3]. Elements of a risk analysis for cities – coping and recovery processes		
Scale levels	Coping ability (short-term recovery)	Long-term rebuilding patterns
Local	-financing local government, other organizations; -strength of social capital in civil society organizations (learning, self-organizing capacity) -linkages to provincial, national scale-level government	-local capacity in disaster planning -disaster prevention planning in place - adaptation planning in place
National	-organized support for local governments -national networks of civil society organizations	-support programmes for rebuilding, adaptation - financial support for rebuilding
International	-disaster relief organizations	

Therefore, in developing a risk analysis for cities, the risks that occur at different scale levels and

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[3] In this part of the table we only deal with environmental risks to illustrate the approach we advocate.

which can be felt locally, need to gain recognition by local government and civil society organizations (Table 2a). Such a risk analysis also needs to deal with the different scale levels at which processes of coping and recovery will take place, and from which support in those processes can be expected (Table 2b).

3 RESILIENCE THINKING; DEFINING RESILIENCE AND ITS COMPONENTS

In the previous section, the idea of pro-actively recognizing stresses and shocks and planning how to deal with them, has already been mentioned as an important part of creating a more resilient city environment. Resilience has been defined in many ways and used in a variety of contexts. Its roots lie in child psychology, ecology studies [18], and in livelihoods, environmental risk and security risk studies [cf. 3]. Walker and Salt define resilience as 'the ability of a system to absorb disturbance and still retain its basic function and structure' [18:1]. Other authors have added components of different systems (physical, biological, personality, social and cultural systems) and their ability to 'absorb, respond and recover to an internally or externally induced set of extraordinary demands' [19]. Godschalk calls a 'resilient city: sustainable network of physical systems and human communities' [17]; in which physical systems are the constructed and natural environmental components of the city; human communities the social and institutional components. The author indicates that traditional hazard mitigation programmes focus on infrastructural aspects, whereas an integrated focus on both physical and social network systems is required.

Some authors not only include the capacity to respond to eternal shocks and stresses, but also the ability to anticipate their occurrence. For instance, Aguirre includes the 'ability to anticipate crises and to enact, through planning and recovery, changes in the system that will mitigate their effects' [19:1]. This definition goes further because it incorporates not only the ability to respond, but also includes the preventive measures which can be incorporated at different scale levels into local urban planning, management, design and community inclusion processes beforehand.

However, two further elements also need to be included to be able to analyze resilience in an urban context; spatial scales and their linkages and pathways over time (dynamics). Ideas on these two aspects can be drawn from discussions on socio-ecological system thinking. Social systems are considered complex dynamics systems; that is, they have interconnected and interacting components, continually adapting to change at different spatial scales, which are themselves connected in various ways [18, 20]. This implies that such systems have patterns of unpredictable change and multiple outcomes; this situation is compounded when taking external unpredictable change into account [21, 22]. A recent model integrates these aspects into a heuristic model which combines the 'adaptive renewal cycle' with a set of different spatial scales (panarchy)[20]. The adaptive renewal cycle consists of four phases of change, linked to discontinuous events and processes.

In the first phase, a period of rapid growth occurs, as actors identify new resources and develop them innovatively. In this phase, there is a weak connection between the components of the system and there is relatively little regulation in the growth sectors.

In the second phase, there is a transition from rapid growth to slower change and a certain degree of more rigid organization takes place (see the conservation phase – K phase in figure 1). In this phase, connections between actors in a sector increase and become more established and regulated. Resources are used more efficiently, and specialization and stability increase. However, precisely this stability makes the system more vulnerable to outside shocks. Therefore, the transition to the next phase of readjustment and collapse (A phase) can take place very quickly when a disturbance intervenes; resources are released and 'leak out of the system' - this is considered a period of 'creative destruction'. This is followed by periods of re-organization and renewal, with experimentation and renewal in new directions. The first two phases are called the 'fore-loops' of development, and have received the majority of analytical attention. The last two phases are called the 'back-loops' and show that disturbances (i.e. external shocks) are just as important in explaining dynamics of system change, and for understanding when systems are vulnerable and how they can build resilience [22].

Folke [20] has added a final element by including different spatial scales by 'nesting' the adaptive renewal cycle within different scale levels; and in doing so, has shown how feedback loops in such cycles can lead to very diverse outcomes at various spatial scales (see Figure 1). The variable speed at which change occurs is also incorporated into his model. When existing systems with such a degree of complexity experience sudden external shocks or long-term stresses, the results will vary according to the phase in which

the system finds itself, and the spatial scale at which the shock occurs. The model is a heuristic tool which allows more complex questions to be raised about the resilience of a city, within the wider spatial, organizational and societal context in which its exists.   It incorporates aspects of spatial scale, dynamics within the system, and according to phases of development or renewal. As such, it is a great improvement over existing models.
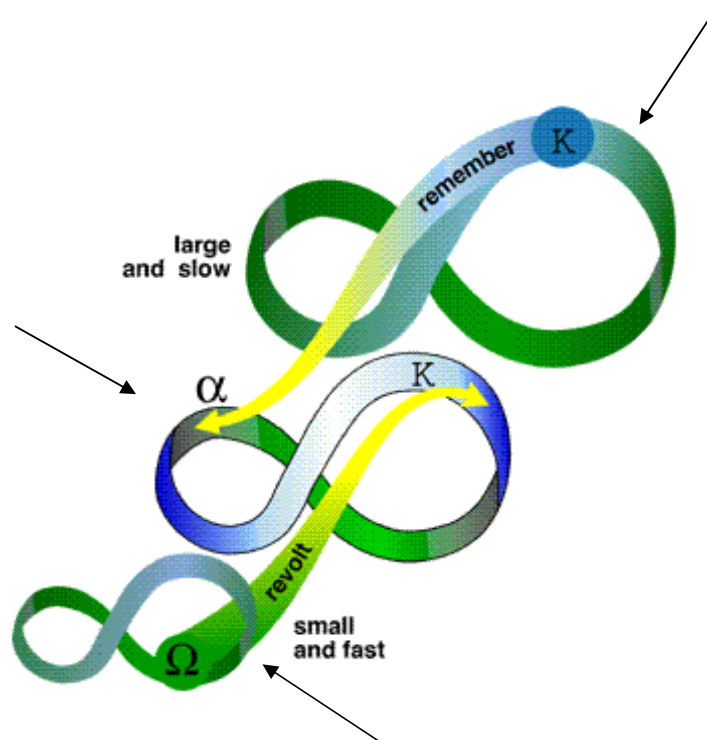

Figure 1   Panarchy model, with external shock points
Source: adapted from Folke [20]

4   RELATING RESILIENCE THINKING TO URBAN GOVERNANCE

In this section we turn to the ways in which resilience thinking can be related to urban governance issues.   In the earlier section, we indicated that the new thinking about urban governance recognizes more actors, creates more space for ideas and participations from actors outside of government, incorporates more flexible patterns of planning and management, and can lead to more synergy in developing new approaches. These new methods of urban planning and management have the potential to provide more effective ways of dealing with sudden shocks (such as hazards and disasters) and long-term stresses (such as poverty and vulnerability), as they match up to resilience thinking in a number of areas.

To begin with, they both recognize the importance of networks and linkages, rather than depending on local government alone. Governance thinking emphasizes the necessity of including the strength of the *horizontal* networks between local governments, and those of civil society organizations, or private companies (embeddedness). The resilience model emphasizes *vertical linkages* between different scale levels of (government) organizations in the model framing resilience. If vertical networks linking civil society and private sector actors are taken into account as well, they provide a comprehensive set of networks which can contribute to more effective governance.

Secondly, urban governance thinking provides space for ideas and participation of others. Aguirre [19] shows how such a way of thinking about hazards and potential disasters would influence the ways that

governments think about civic and private sector networks; as a resource rather than a burden or ignoring their potential. This would mean a turnaround in the way governments see their roles – they do not have the final responsibility in an emergency, but would work together with local community networks, especially immediately after a sudden shock, when social and civil networks are the first on the ground [19]. Aguirre names 17 kinds of institutions in which networks could effectively be active in building local resilience[4]; they include voluntary and religious organizations, and professional groups. But the private sector can also play a stronger community role in both preventing as well as in dealing with sudden shocks or long-term stresses. This has been shown in particular cases (food banks in the Netherlands, where food companies donate resources for vulnerable groups of people). Networks providing mutual support services without payment in cash are another illustration of new ideas and participation – which could taken further in developing resilience in urban areas.

Thirdly, resilience thinking in the form of the panarchy model, shows the importance of assuming constant, discontinuous changes in socio-ecological systems. The new urban governance thinking can take this into account, when it develops more strategic and flexible processes in planning and management. Instruments such as scenario planning allow for different combinations of factors, following variable pathways.

Finally, the new urban governance thinking can lead to more synergy in developing new approaches, by including more than the classic responsibilities of local government. When urban governance networks are drawn into wider networks of strategic policy development to prevent disasters and to promote long-term development (and reduce stresses), their views need to go beyond their specific responsibilities. Aguirre [19] calls this the 'culture of safety' in which governments provide patterns of anticipated effects - of sudden shocks - and strategies to deal with them, together with formats for response, recovery and mitigation/adaptation. To develop synergy, it is important to do this in urban governance networks on a continuous basis, providing training and support, and including the whole network in scenario planning exercises against future shocks. Resilience thinking contributes to such an approach, by incorporating ecological, social, and economic systems into its thinking, as well as the spatial scales, temporal changes, and situational diversity.

5   CONCLUSIONS: REQUIREMENTS OF FUTURE URBAN GOVERNANCE

We end by suggesting a few basic requirements for future urban governance that emerge from the discussion above.   The first is that urban governance against sudden shocks and long-term stresses has to become much more pro-active in identifying risks and hazards and providing approaches for dealing with probably directions of change.   Such approaches should include a focus on flexibility and adaptability in both physical as well as social network systems [17]. To provide for such flexibility, we need to re-think our ideas on infrastructural organization, the use of knowledge and information and the experience in working together with different actors, and political leadership.

Infrastructural flexibility implies a certain level of diversity of provision of services and infrastructure, and a certain level of redundancy rather than strict efficiency and just-in-time provision.   If one (part of a) system fails, another can take over. As Godschalk states, resilient general systems are 'independent, diverse, renewable, and functionally redundant, with reserve capacity achieved through duplication, interchangeability, and interconnections' [17:139].

Finally, a much deeper and diverse knowledge system is needed at local levels; providing up-to-date information for local governance networks. This implies stronger linkages with knowledge institutions, doing research on various long-term processes, which can predict how future stresses and disasters are likely to occur.   Their knowledge needs to be combined with local governance network knowledge on planning and management processes to develop new approaches to 'cultures of safety and adaptability'.
This means that we have to move away from the paradigm of the 'new public management' in which financial accountability and economic efficiency are primary criteria for assessment; in the future urban governance adaptability, flexibility and redundancy are new criteria for assessing resilient systems.

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[4] These include family, neighborhood groups, politics, economic groups, medicine and health professional groups, education and sciences groups, law and the courts, religious groups, insurance and police groups, firefighters and others.

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