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SMART CITIES

RESEARCHES, PROJECTS AND GOOD PRACTICES FOR BUILDINGS

SMART CITIES:

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RESILIENCE IN THE TRANSITION TOWNS MOVEMENT TOWARDS A NEW URBAN GOVERNANCE

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ABSTRACT

Resilience, a concept typical in the natural sciences, has for some years been part of vocabulary of spatial planning but it is as yet relatively unexplored. Its common definition still represents resilience as the capacity of a system to absorb disturbances and to reorganize itself, by returning to the original state. Complexity theory shows that resilience is a bottom-up process, closely related to self-organization of a system, which could change the role of institutions and community in urban governance. Recently, the concept of resilience has been associated with the Transition Towns movement, a bottom-up initiative promoted by civil society. Better known as “urban initiatives for the transition”, they are a set of bottom-up practices of urban management, aimed at achieving a self-sufficient and “zero impact” model of urban development.

In this perspective, the research question is: could this new paradigm of development and spatial organization really be a new approach in urban governance?

The paper focuses on the implications of the concept of resilience in spatial planning. The purpose is to understand the extent of innovation in planning practices and urban governance. In particular, the first part of the paper provides a review of the theoretical framework of resilience and the second analyzes the Transition Towns movement, with particular reference to the role of stakeholders.

KEYWORDS:

Resilience; Transition Town movement; Urban governance.

1. RESILIENCE. DEFINITION, ORIGIN AND EVOLUTION

The concept of resilience has been widely studied in many disciplines (Seyfang, Haxeltine, 2009). First formulated in ecology (in the 1960s-1970s), this concept has influenced many other research fields including anthropology, human geography and other social sciences (Folke, 2006). Recently, it has also been discussed in the urban and regional planning sector becoming part of the vocabulary of spatial planning and entering debates in planning theory and practice (Davoudi and Porter, 2012; Papa, 2012).

The first theoretical approach defined it as «*the capacity of a system to absorb disturbance and reorganize while undergoing change, so as to still retain essentially the same function, structure, identity and feedback*» (Walker *et al.*, 2004, p. 5). This definition is used in the spatial metaphor of “resilient city” (Newman *et al.*, 2009; Otto-Zimmermann, 2011; Pickett *et al.*, 2004).

A more thorough inquiry (Folke, 2006) into the adaptive capacity of social-ecological systems underlined the real innovation of the concept of resilience (Papa, 2012). This second approach implies that cities are open adaptive complex systems (Portugali, 1999), that are able to self-regulate and create innovative solutions for urban development. This point of view allows the study of implementation of the concept of resilience in the Transition towns movement (Hopkins, 2008 and 2011). This movement has already spread into several contexts. Despite its phenomenal growth and the wave of positive publicity has received, there has to date been very little empirical research into the development and character of these initiatives, or the impact they have achieved (Seyfang, 2009).

1.1 THE ORIGIN OF THE CONCEPT IN ECOLOGY

According to Pickett *et al.* (2004), there are two distinct research phases in scientific studies on the concept of resilience: (i) one based on balance and (ii) one based on imbalance. In the first, resilience is the system's ability to return to the starting point by overcoming a period of crisis; in the second – which is more inclusive – it is the system's ability to adapt to external disturbance, not necessarily returning to a steady-state (Gunderson, Holling, 2002; Gunderson *et al.*, 2010).

Early studies in the Sixties and Seventies¹, essentially based on empirical analysis of ecosystem dynamics through mathematical models, focused on resilience as the capacity to absorb shocks and still maintain its functions. This engineering approach, named by Holling (1973), implies the ability of systems to return to equilibrium or steady-state and the return time is the measure of resilience². In this theoretical perspective, the consequent policies relating to natural resource management were “linear approach” types (Folke, 2006).

Since the Nineties³, when ecosystems analysis on a large scale included the social sphere (institutions and people), the focus was on the necessity to manage by change rather than simply to react to external shocks. This ecological approach, named by Holling (1973), implies resilience is the ability of systems to overcome external shocks and move to a new equilibrium stage. In other words, it is the capacity to adapt to external shocks. The related policies therefore implied uncertainty and surprise⁴, useful to adapt to the external disturbances.

¹ See in particular Holling (1961), Lewontin (1969), Rosenzweig (1971) and May R.M. (1972).

² Holling (1973, p. 17) states «resilience determines the persistence of relationships within a system and is a measure of the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist».

³ Especially after the publication of the volume *Barrier and Bridges to the Renewal of Ecosystems and Institutions* by Gunderson *et al.* (1995).

⁴ For a further discussion, see: Carpenter and Gunderson (2001), Berkes, Colding and Folke (2003).

This second view has led to the study of the concept of resilience in socio-ecological systems (Folke, 2006; Gallopin, 2006), which are conceptualization models of linkage between the human and ecological spheres, useful to identify practices of adaptive management. In this socio-ecological approach, resilience shifts from a capacity of system which maintains its original status towards a capacity of system to adapt, innovate and transform, under certain conditions, into new more desirable configurations. Innovation and transformation concern the capacity «for renewal, re-organization and development. [...] *In a resilient social-ecological system, disturbance has the potential to create opportunity for doing new things, for innovation and for development*» (Folke, 2006, p. 259).

Following Carpenter *et al.* (2001), Folke (2006) summed up the characteristics of socio-ecological resilience as follows:

- the amount of disturbance a system can absorb while still remaining within the same state or domain of attraction.
- the degree to which the system is able to self-organize (versus lack of organization, or organization forced by external factors).
- the degree to which the system can build and increase its capacity for learning and adaptation.

Absorbing, self-organization and learning/adaptation appear to be the three key elements related to the concept of resilience. Folke (2006, p. 258) adds that resilience «*emphasizes non-linear dynamics, thresholds, uncertainty and surprise, how periods of gradual change interplay with periods of rapid change and how such dynamics interact across temporal and spatial scales*». Starting from this dynamic perspective, he proposed a modified Panarchy model, a heuristic model of nested adaptive renewal cycles (Gunderson and Holling, 2002) emphasizing cross-scale interplay. The adaptive renewal cycle is divided into four phases of system development driven by discontinuous events and processes: exponential phases of change (the exploitation or r-phase), stasis phases of growing (the conservation or K-phase), readjustments and collapse phases (the release or omega-phase) and re-organization and renewal phases (the alpha-phase) (Folke, 2006). The modified model explicitly takes fast/slow dynamics and cross scale interactions and interdependencies into account. The panarchy is therefore «*both creative and conservative through the dynamic balance between rapid change and memory, and between disturbance and diversity and their cross-scale interplay*» (Folke, 2006, 259).

1.2 THE EVOLUTION OF THE CONCEPT IN SPATIAL

Even today, resilience is defined in planning literature as the ability of a system to absorb external disturbances and reorganize itself on the basis thereof to return to the same function, structure and original identity (Walker *et al.*, 2004). As shown by Funfgeld (2012), this engineering approach is quite often used in the field of climate risk management. In order to conserve the status quo - protect existing assets, people and places from the impacts of climate change - the adaptation measures are designed as thresholds (on the metaphor of “resilient city”⁵ see, for example, Musacchio and Wu, 2002; Newman *et al.*, 2009; Otto-Zimmermann, 2011). As Porter and Davoudi (2012) confirm, this perspective adopts a managerial, command-and-control understanding of systems. This view looks at the city as a linear system.

In line with Folke's theory of the Panarchy model, the reaction of systems to external disturbances depends on a certain degree of their self-organization and creativity. This definition adapts to peculiarities of the

⁵ It's interesting to note that ecology and spatial planning share both the use of metaphor and the relationship between structure and function (Pickett *et al.*, 2004). In spatial planning, metaphor has traditionally had a particular appeal; the most famous is Howard's Garden City but there are also the first hypotheses of bioregionalism formulated by Geddes and Mumford at the beginning of the Twentieth century. Today, the new metaphor of “resilient city” could be the synthesis between ecology and spatial planning.

complex systems «because it is more dynamic and evolutionary» (Pickett et al. 2004, p. 373). According to Davoudi (2012, p. 303), this socio-ecological approach considers resilience «not as a fixed asset, but as a continually changing process; not as a being but as a becoming». Davoudi (2012) called this approach as “evolutionary resilience” and the authors agree with that designation. It enables the use of the concept of resilience in spatial planning, the complexity theory indeed argues that cities are non-linear systems. Translating the concept of resilience from the field of ecology into spatial planning therefore poses some critical issues⁶, the most important being the intentionality of human actions.

Cities, by their nature, are open complex systems and are thereby subjected to constant external disturbances (Portugali, 1999) and characterized by self-organization. Considering the notion of self-organization in the human domain of cities means adding to the list of the main characteristics of open complex systems: human intentionality⁷, hermeneutics and memory. As Portugali (1999, 77) asserts, «individuals in the city act and behave intentionally, they need information about the city. This information they subjectively extract from what they see and experience in the city. They extract this information by means of logic, imagination, past experiences, knowledge and other tools commonly assumed to form the content of the individual's memory. This process by which the individual extracts information by means of memory, and by so doing in fact creates and constructs his/her own and other's city, is termed hermeneutics. And to complete the picture and the feedback loop one should add that memory is also the place where intentions are created, represented and stored».

Accordingly, in order to propose a comprehensive definition of the resilience concept in spatial planning, it is useful to study empirical experiences which also take these aspects into account. Examples include the recent experiences of transition towns (Hopkins, 2008 and 2011, Hopkins and Lipman, 2009). Rob Hopkins, founder of the first transition town in the UK, proposed the original use of the concept of resilience as a reaction to the external disturbance of peak oil.

2. RESILIENCE IN THE TRANSITION TOWNS MOVEMENT

The concept of resilience is the main principle of the experiences of the Transition Towns movement. We will understand how it is used in recent international experiences. According to the main definition, we can list four characteristics that allow the use of the concept of resilience for urban systems, as indicated below:

- *Socio-ecological systems.* The first element concerns the linkage between the ecological and social dimensions of systems. Urban systems are based on the close relationship between environmental resources and human capital, they are socio-ecological systems. This is particularly clear in the Transition Towns movement, the new paradigm of urban development that they propose indeed refers to primary resources (eg. energy and food supply).
- *Complex systems.* The second element concerns entirety of the system (Folke et al., 2010). Cities are indeed complex systems wherein several subsystems interact (Portugali, 2000). The transition town model proposes a new paradigm of urban development which is a comprehensive strategic vision of the city and does not just consider a single subsystem (Brangwyn and Hopkins, 2008).
- *Adaptive renewal cycles.* The third element concerns the adaptive renewal cycle theory. It is composed of the sequence of several status phases. Each status phase involves the loss of resilience and the consequent vulnerability of the system. In the transition town model the sequence is clear and closely

⁶ The critical issues that Davoudi (2012) lists are: intentionality of human actions; outcome or purpose of resilience; system's boundary; resilience for whom?

⁷ Jane Jacobs yet argues that citizens have spontaneous and self-organised behaviors (Jacobs, 1961).

linked to the widespread use of oil; the peak oil – or at least its shortage - is the external disturbance which involves the loss of resilience and the consequent vulnerability of the system (Hopkins, 2008). Following this approach, the urban system has passed the period of growing - K-phase - and is now going through the readjustment and collapse period – Omega-phase. The transition town model proposes overcoming the current phase of crisis and reaching the last phase of renewal and re-organizing – alpha-phase. Each transition initiative takes into account that «[...] life with dramatically lower energy consumption is inevitable and it's better to plan for it than to be taken by surprise and our settlements and communities presently lack the resilience to enable them to weather the severe energy shocks that will accompany peak oil» (Hopkins 2008, p. 134). The adaptive renewal process also has memory ability. The memory of the urban system is a key feature of the transition town model (eg. key role of the elders knowhow and wisdom, in terms of lifestyle not yet dependent on oil) (Brangwyn and Hopkins, 2008). Self-organizing capacity. The fourth and final element is the self-organizing capacity of complex systems. Folke's theory (2006) proves that complex systems are in a continuous adaptive renewal cycle, which never stops but is able to react creatively to external disturbances. The Transition Towns movement is a practical example. It is a bottom-up movement, it is part - even without knowing it - of the alpha-phase of the cycle and so it is an example of the reaction of the urban system to external disturbances. The movement proposes a new paradigm of urban development and a consequent social organization model.

3. THE IDEA OF TRANSITION

Transitioning is a key assumption of the Transition Towns movement. A relevant topic to discussions on sustainability is the research on transition in socio-technical niches⁸, «[...] *protected spaces where new social and technical practices can develop*» (Seyfang and Haxeltine, 2009, p. 3). This concept has been the subject of numerous scientific projects and debates with reference to its innovative solutions and alternatives to the sustainable development topic (Foxon *et al.*, 2008, Smith and Stirling, 2010).

Extending this concept into the social economy, Seyfang and Smith (2007, p. 3) propose a model of grassroots innovations to describe «*community-led, value-driven initiatives for sustainability, which respond to local problems and develop innovative socio-economic arrangements as much as (or in preference to) new technologies*». The benefits of grassroots innovations for sustainable development derive principally from their creation of a space for the development of new ideas and practices, for experimenting with new systems of provision, and for enabling people to express their alternative green and socially progressive values, and from the tangible achievement of environmental and social sustainability improvements, albeit on a small scale (Seyfang and Smith, 2007; Seyfang *et al.*, 2010).

In line with the socio-technical niches theory, the Transition Towns movement proposes a bottom-up paradigm of urban development which comes from the creativity of the urban community. In other words, this movement is a civil society movement which brings together «*diverse parts of a community to act and produce change and innovation at the whole systems level*» (Seyfang and Haxeltine, 2009, p. 21). Creativity means generating new ideas, practices and policies for urban management.

⁸ On Strategic Niche Management (SNM) see, for example, researches by Smith A., Stirling A. and Berkhout F. (2005), "The governance of sustainable socio-technical transitions", *Research Policy*, 34, 1491-1510; Geels F.W. (2005), *Technological transitions and system innovations: a co-evolutionary and socio-technical analysis*, Elgar, Camberley; Loorbach D. (2007), *Transition management: new mode of governance for sustainable development*, International Books, Utrecht.

3.1 ORIGINS AND QUALITATIVE CONSISTENCY

The Transition Towns movement was founded in 2005 in Kinsale, Northern Ireland, by Rob Hopkins, a permaculture teacher⁹.

The first transition town initiative involved the small town of Totnes (2006), in south-west Britain.

REGION	FORMAL INITIATIVES (JULY 2009)	MULLERS (SEPT 2008)
UK and Ireland	119 (83)	496
Continental Europe	4 (1)	48
North America (of which)	37 (5)	143
USA	33 (5)	113
Canada	4 (-)	30
Latin America	1 (1)	7
Asia	1 (1)	4
Australasia (of which)	24 (15)	100
Australia	17 (9)	54
New Zealand	7 (6)	46
Total	186 (106)	802

Tab.1 Geographical distribution of Transition Towns

Starting from this initial experience, which actively began in 2009, the Transition Towns movement quickly spread, firstly in the UK and then in other European and non-European countries (Seyfang and Haxeltine, 2009).

To date, we could list hundreds of initiatives¹⁰ worldwide. According to recent researches, the transition towns are located in Europe (about 50% in the UK and the remainder in Ireland, Germany, the Netherlands and Italy), but also in Oceania (Australia, New Zealand) and North and South America (the USA, Canada, Brazil and Chile) (Hopkins and Lipman, 2009; Smith, 2011).

As other current grassroots movements, the Transition Towns movement is a socio-technical niche that involves a small part of society. A recent survey on UK transition initiatives (Smith, 2011), shows that 86% of respondents are well-educated to post-graduate level. It is not possible to determine whether this trend is valid for all initiatives, but we can stress that - at least according to recent researches - the phenomenon is progressively spreading. This trend also depends on the different kinds of initiatives, in terms of location (urban, rural and island) and extent (local transition initiatives, regional transition networks, regional hubs,

⁹ Permaculture, another key assumption of the transition initiatives, is not discussed here. For a discussion of this concept, see Holmgren (2002).

¹⁰ It seems difficult to determine a list of the initiatives currently active in the world. The literature shows a lack of data: according to Bailey et al. (2010), on July 2009, the phenomenon involved more than 186 cities, while according to Seyfang and Haxeltine (2010), on January 2010, it involved 156 cities in the UK and 109 in the rest of the world.

national transition support organisations/networks, temporary groupings of local initiatives to carry out particular projects, as well as other manifestations) (Hopkins and Lipman, 2009).

3.2 PURPOSE AND PRINCIPLES

Hopkins and Lipman (2009) define the transition initiatives as «[...] *an emerging and evolving approach to community-level sustainability*» (Hopkins, 2008, p. 134). Bailey *et al.* (2010, p. 601) complete this definition by considering the Transition Towns movement as «*an environmental movement that has both drawn extensively on the perspectives and techniques of its predecessor and peer environmental movements, and adapted these to the specifics of peak oil, climate change and relocalisation*».

The formation process of each transition initiative follows seven principles¹¹, twelve steps¹² (Connors and McDonald, 2011) and three stages¹³. Although this set of guidelines, listed by the UK Transition Towns Network, should only provide directions for the process (Hopkins and Lipman, 2009), in some cases it is considered quite binding and prescriptive (Connors and McDonald, 2011).

Following the concept of resilience, the purpose of transition initiatives is «*to support community-led responses to peak oil and climate change, building resilience and happiness*» (Hopkins and Lipman, 2009, p. 7). In line with socio-technical niches theory, these initiatives are virtuous examples of interplay between system supply/use of resources and new models of social institutions and regulation, especially in terms of their influence on sustainable lifestyle (Seyfang and Haxeltine, 2009).

At national level, these collect and monitor all the initiatives (eg. UK and USA) (Hopkins and Lipman 2009). At regional level, the best practices in the transition initiatives are shared in order to support those that are newly active and those in the process of formation and to manage partnership with private or public corporations. At local level, transition initiatives concern crosswise all fields of urban governance, with particular reference to oil-led ones (such as food and energy supply).

For each field there is an organization subgroup that deals with strategic and propulsive activities. The final goal is to outline the Energy Descent Action Plan (EDAP). In this view, two other assumptions of the movement are: «*we have to act collectively, and we have to act now and by unleashing the collective genius of those around us to creatively and proactively plan our energy descent*» (Hopkins 2008, p. 134).

The EDAP anticipates three phases of aims (Brangwyn and Hopkins, 2008): a local resources framework, a transition timeline and a set of resilience indicators (such as the percentage of food grown locally, the amount of local currency in circulation, the number of businesses owned locally, the percentage of energy produced locally, the quantity of renewable building materials, and so on).

The Energy Descent Action Plan constitutes a strategic urban plan of a future vision to be carried out through specific practical activities. It differs from traditional strategic planning for a voluntary and shared community-led vision.

¹¹ The seven principles are: positive visioning, help people access good information and trust them to make good decisions, inclusion and openness, enable sharing and networking, build resilience, inner and outer transition, subsidiarity (Hopkins and Lipman, 2009).

¹² According to Brangwyn and Hopkins (2008), the 12 steps of transition initiative are: set up a steering group and design its demise from the outset; awareness raising; lay the foundations; organise a great unleashing; form working groups; use open space; develop visible practical manifestations of the project; facilitate the great reskilling; build a bridge to local government; honour the elders; let it go where it wants to go; create an energy descent plan (EDAP).

¹³ According to Hopkins and Lipman (2009), each transition initiative should follow a succession of stages: the initial stage (meeting and gathering around the principles of the transition), the mulling stage (contacting and joining the Transition Network Ltd) and the formal transition initiative (declaration of intention).

WORKING GROUP	MAIN ACTIVITIES
Building and housing	Eco-construction Cohousing
Economics and livelihoods	Local currency: the Totnes pound ATMOS: sustainable business park Oil vulnerability audits with local companies
Education	Transition tales with local schools Public future scenario workshops
Energy	Totnes renewable energy supply company Solar water heater challenge Partnership with good energy
Food	Garden share project Sustainable fisheries Seed and plant swaps Allotments association
Health and well-being	Directory of complementary health practitioners Collections of illness-to-wellness stories Discussion group on national health service and sustainability
Heart and soul	Meetings to discuss events and experiences Meditation meetings
Local government	Building of links with town, district and county councils to support and encourage inclusion of climate change and peak oil in decision-making
The arts	Events utilising the arts to explore peak oil, climate change and transition
Transport	Totnes cycling group Totnes rickshaw company

Tab.2 Main activities of Transition Town Totnes

The public sector role, especially of local government, is still central but it has to support - not to drive - transition initiatives, as happened in the Transition Towns Totnes, Lewes, Stroud, Penwith (Brangwyn and Hopkins, 2008).

3.3 COMMON CHARACTERISTICS

The comparison of the main international transition towns enables the common characteristics, both in terms of promoter organizations and initiative typologies¹⁴, to be listed as follows. In regard to the first term, the main characteristics are:

- *voluntariness*¹⁵. Unlike traditional strategic planning for urban sustainable development, the transition initiatives focus on community-level action, essential to the success of the initiative (Seyfang and

¹⁴ On this topic there are no surveys, the only exception is the work of Seyfang and Haxeltine (2009) about the British case studies.

¹⁵ Seyfang and Haxeltine (2009, p. 6) underline that «[...] the vast majority (89.0%) are set up by individual citizens (76.7% are set up by several individuals coming together to instigate the group, and another 12.3% are set up by just one person at the outset). At the same time, 19.2% have one or more pre-existing groups involved in setting up the

Haxeltine, 2009). Common action implies the voluntariness of community members towards a shared goal.

- *common mission*. The common mission is building local self-reliance¹⁶, shared by all community members at the time of agreement.
- *legal form*. The legal form ensures greater legal credit to organizations' actions and facilitates external partnerships. Different contexts affect the legal form of the transition organizations.
- *internal network*. The internal network is made up of working groups and subgroups. There is no leadership, but network organization. Interplay between members is inclusive and participative (Hopkins, 2008).
- *external network*. The Transition Towns movement is not isolated but it interacts with other local and pre-existing social organizations¹⁷ (Seyfang and Haxeltine, 2009). The goal is to focus the actions of civil society on a common aim, without losing the identity and specificity of each initiative. The network organization also avoids the risk of excessive localism. At the same time, there is a network between all the transition initiatives (eg. sharing best practices).

In regard to the second term, the transition initiatives are characterized by:

- *same strategic actions*. The strategic actions concern fields of energy (renewable resources), transport (sustainable mobility), open space (community gardens) and building planning (eco-compatibility), urban economy (food supply, local currency) and community (learning, sense of community, human capital)(Hopkins, 2008; Bailey *et al.*, 2010). Local currency is not a necessary criteria.
- *relationship with the public sector*. The relationship with the public sector is usually promoted by transition organizations but it may be the case that local governments are interested in the transition initiatives in terms of forms of cooperation (Bailey *et al.*, 2010).
- *EDAP as final goal*. Although sharing strategic actions fields, each plan concerns a set of initiatives that originated from the local contexts. Therefore, each plan is different because it is flexible within local contexts.

4. CONCLUSIONS. TOWARDS NEW URBAN GOVERNANCE

Folke's theory of the Panarchy (2006) enables the Transition Towns movement as a practical example of the use of the resilience concept in a spatial dimension to be analyzed.

In particular, the concept of resilience in the Transition Towns movement emerges as a *new paradigm of urban growth and development* (Connors and McDonald, 2011) based on oil-free ideas, practices and policies for urban management.

In this movement, resilience is the capacity of urban systems to react to the external disturbance of peak oil. Regarding this disturbance, the transition initiatives propose new ways of using environmental resources that focus on energy conservation and closing energy cycles (eg. food supply based on local production).

However, peak oil is not the only external disturbance (Trapese, 2008). There are indeed several external disturbances that could spark off system shocks (eg. the current economic crisis). Consequently, resilience is not only the capacity of urban systems to react to peak oil disturbance but it is closely linked to the adaptive and progressive capacity to react to all evolving external disturbances (Folke, 2006). It is a progressive, adaptive (also to context) and learning process, that could take a long time and may not involve

group. Only one of the respondent groups (1.4%) had a business involved in setting up the group, and none of them were started by local councils».

¹⁶ Data confirm that 55.2% of the respondents share this mission (Seyfang 2009).

¹⁷ According to Seyfang and Haxeltine(2009), the 82.4% of the initiatives are linked to other initiatives promoted by pre-existing social organizations (in particular 86,5% are environmentalist ones).

all urban systems in the same way, at the same time. In this sense, the Transition Towns movement is only one model in terms of the use of the resilience concept in spatial planning.

As a first conclusion, we can affirm that resilience has a broad extent. It concerns the rethinking of the traditional idea of urban growth and development that outstrips the traditional paradigm of sustainability and concerns the use of resources in general (Latouche, 2005).

On the other hand, the concept of resilience in the Transition Town movement also emerges as *innate capacity of systems to propose bottom-up ideas, practices and policies for urban management*.

Extending our gaze to the nature of the phenomenon itself, the Transition Towns movement is a grassroots movement - like several others - that provides solutions in order to manage urban complex systems, especially on a local scale. As Jane Jacobs said (1961), the renewal of cities – as complex systems – is innate in the capacity and interest of citizens. The Transition Towns movement was indeed born in and spread through the urban context and it is a practical reaction promoted by the urban community. The movement never refuses the idea of the city. Bottom-up strategic actions aim at new common and shared solutions in terms of urban management.

In this sense, the concept of resilience underlines how some events could be chances to improve the current urban systems status, to trigger social mobilization, to recombine sources of experience and knowledge for learning, and to spark novelty and innovation. It may lead to new kinds of adaptability or possibly to transformational change (Folke *et al.*, 2010).

As a second conclusion, we can affirm that resilience is the innate adaptive capacity and creativity of urban systems to react to various external disturbances and propose new paradigms of growth and development. In other words, system reactions to external disturbances (not only peak oil) are not related to top-down solutions but to solutions innate in the systems, especially in their characteristics and memory.

According to both meanings of resilience in spatial planning – as a *new paradigm of urban growth and development* and *innate capacity of system to propose bottom-up ideas, practices and policies for urban management* – we can stress that it is an approach, a way of thinking, able to propose a *new urban governance perspective* (Folke *et al.*, 2010).

This new urban governance, based on the concept of resilience, concerns urban systems management relating to bottom-up learning capacity and adaptive ability to propose new paradigms and practices. In other words, it means rethinking urban governance through a new rules framework that concerns the three features of *stakeholders*, their *roles* and consequent *tools*, as follows:

- *Stakeholders*. Community-led movements – and those of transition towns – could be stakeholders able to propose new paradigms of urban development and planning practices (Friedmann, 2011).
- *Roles*. Citizens may have a more central role in public choice and, on the other hand, the public sector could innovate itself, learning from bottom-up experiences. In other words, the new urban governance perspective concerns restoring the balance of the stakeholders' role. It means understanding the relevance of inclusive decision-making and (horizontal) subsidiarity (Hirst, 1994; Hirst and Bader, 2001; Brunetta and Moroni, 2012).
- *Tools*. Finally, both features – regarding all stakeholders and their new balanced roles - may have repercussions on urban governance tools (policies and practices). In particular, it means promoting more inclusive policies and practices, which also learn from bottom-up experiences (e.g. EDAP).

To sum up, the concept of resilience and its use in the Transition Towns movement suggests a new urban governance perspective that takes into account evolving social, economic and territorial organization and consequent systems complexity. It may be based on a new balance between institutional and social stakeholders in both decision-making (policies) and subsidiarity (tools achievement).

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TABLE SOURCES

Cover Image: http://commons.wikimedia.org/wiki/File:Toronto_Downtown_Core_at_Night.jpg; Tab. 1 and Tab. 2: Bayley et al., 2010.

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