STRATEGIC FORESIGHT FOR SUSTAINABLE URBANISATION

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ABSTRACT: In recent decades, cities have undergone significant spatial transformation functioning in an environment of growing complexity and heightened uncertainty. Today, cities face a common set of challenges relating to such forces as globalisation and economic restructuring, social change and rising exclusion, pressure on the environment, fiscal stress and changes in institutional relationships. Demographic factors and the perceived attractiveness of suburban living have precipitated the outward expansion of cities into surrounding hinterland. A key challenge for urban planners and thought provocateurs today is to anticipate the characteristics of the city of the future and to determine how cities might optimally respond to the challenge of sustainable urban development. This paper examines foresight through scenario development as a supplementary planning tool for tackling the inherent short-termism of traditional policy-making frameworks which often impede communities in their efforts to conceptualise and formulate long-term strategies for more sustained urban growth.

Keywords: Urban sprawl, sustainable urban development, foresight, scenario development, strategic thinking.

1. INTRODUCTION

Probably one of the greatest challenges facing humanity today is the creation of a shared vision of a sustainable society, one that harmonises environmental protection with economic development and nurtures the greater inclusion and empowerment of society in a way that is fair and equitable to all of humanity, other species and future generations. However, given the biophysical constraints of the 'real world' such as the increase in environmental and ecological degradation, a rapidly growing human population, the widening gap between developed and developing nations and the persistent threat of global terrorism, such a vision seems illusory if not grossly misleading. In fact, the only certainty in today's world is uncertainty. The evolution and transformation of society and the planet in general is exceedingly complex and attempts to predict its course or to offer one-dimensional or simplistic solutions should be viewed with great scepticism (Hammond, 1999). It could be argued that today's and especially future generations are endangered to an unknown degree by the all too linear and short-term optimisation of technical, social and economic structures. It is clear that innovative and revolutionary approaches are necessary if the life support systems upon which we depend are to be sustained into the future. Consequently, the need to develop new mechanisms to envision and prepare for the future is gaining greater impetus. Cities will play a vital role in this process. By recognising and acknowledging uncertainty, conventional planning approaches are beginning to give way to, or at least be supplemented by alternative methods which encourage vision, creativity, strategy, partnership, integration and democracy. The foresight approach through scenario development identifies key forces of change which drive the development of the urban environment. These drivers help planners to understand the wide range of issues and trends which ultimately contribute to tackling problems within suburban regions and understanding the complex forces, their heterogeneity and interactions, which will shape the global city of tomorrow.

1.1 The Urban Challenge

Cities are the main living, production, consumption, innovation and service points of industrial society and both the commercial and cultural world increasingly is characterised by cities rather than by countries. The urban fabric and built environment are major resources in a country's economic development. However, global urban environments are undergoing unprecedented spatial change and structural transformation. In addition to the migration of people from rural to urban areas, the centres of cities and towns have been subject to depopulation resulting in decay of the urban fabric (Irish EPA, 2000).   The 19th and early 20th centuries saw a gradual increase in suburbanisation attributed mainly to advances in the transportation system such as commuter trains, the innovations of early real estate developers, and the desire to live in rural tranquillity rather than in urban squalor. As car ownership became widespread starting in the 1920s, suburban sprawl continued, a trend that accelerated greatly during the second half of the 20th century (Frumkin, 2002). According to Munoz (2003), this rapid process of urbanisation has been reflected in the appearance of new urban centres, in zones once considered as being on the periphery of the urbanisation process. Often used to describe non-compact features of urban land use patterns, urban sprawl is a regional-level phenomenon driven by individual choices over location and land use that are influenced by a range of factors, including land features, infrastructure, policies, and individual characteristics (Irwin and Bockstael, 2004). Such sustained urban growth gives rise to serious forces of change: social, demographic, economic, environmental, technological and governmental. Because of this, cities and their sprawling environs are often the focal point for many present day problems. The deleterious effects of urbanisation on society and the environment have been well documented and range from climate change, ecological imbalance, traffic congestion, unaffordable housing, wildlife habitat destruction, and water and air pollution. Consequently, urban sprawl has gained in impetus and gravity and is frequently a key policy issue among community leaders and national politicians alike.

   As systems subject to significant change and considerable uncertainty, the critical question therefore, is how might cities evolve and adapt in such a way that optimises participation in economic, technological and social progress, while encouraging cultural diversity, environmental protection and democratic expression in shaping the way we live? (Hall and Pfeiffer, 2000). In other words, how might cities optimally respond to the challenge of achieving what is termed 'sustainable urban development'? The possible answer lies in how we anticipate, recognise, measure and interpret urban challenges and how we effectively respond to them (UNCHS, 1997). The major challenges facing cities today are shown in Table 1.

Table 1. Key Challenges facing the urban environment

The Global Economy	Understanding the long-range global outlook lies in mapping out the driving forces that have produced the new global economy and their interactions including *inter alia*: globalisation, politics, societal change and universal connectivity.
The Green Evolution	Well documented environmental problems associated with cities include loss of open space, air pollution, depletion of water resources, concentration of inner-city poor and disadvantaged and urban decay.
Technology	This relates to the scope, pace and direction of technological change, the nature and function of the interactive society, the impact of information technology and advances in communications upon urban structure.
Demographics	This relates to the influence of economic migration, social change and population trends on urban development.
The Liveability Factor	The growth of cities has brought a wave of cultural modernisation, where education, urbanisation and institutional order are transforming social structures and diversity. A key challenge is understanding the effects of urban settings on cultural pluralism, crime, employment and other urban issues.
Civic Leadership	This addresses changing power structures throughout the world, the polarisation and fragmentation of governance, the emergence of city states, the transformation of the role of the public sector and the challenges offered by the emerging virtual world of cyberspace.
Urban Design	How will the urban design of the future create a physical environment that meets the social needs, functions, environment, economic and aesthetic objectives of the people who live there?
Uncertainty	Strategic thinking before strategic planning would enhance the capacities of local communities to tackle the complexity, uncertainty and change that face them, and also determine a shared view of the desired future.

2. INTEGRATION FOR SUSTAINABLE URBANISATION

"Achieving sustainable development and alleviating poverty require the integration of economic, social and political objectives into a coherent overall framework. As the world becomes increasingly urban, it is essential that policy-makers understand the power of the city as an organizing agent for national development" (UN Habitat Strategic Vision, 2003).

Sustainable development is the watchword for the new millennium, and a guiding theme for all human activity. Looking to harmonise socio-economic activities with environmental protection, the idea of sustainable urbanisation is gaining momentum, and playing an increasingly important role in the pursuit of global objectives, particularly in connection with Millennium Development Goals. Though cities differ significantly, they share one particular key ambition in the context of sustainable urbanisation – that of enhancing their economic competitiveness while at the same time reducing both social exclusion and environmental

degradation.

According to Vonkeman (2000) the 'sustainable city' cannot be defined in any feasible way and should therefore be understood as a metaphor. The city is an embedded subsystem of the bigger regional system. Therefore, the sustainable development of a city is not possible without taking the whole region into account, both the city and its hinterland. The debate is ongoing as to which form of development is in fact more sustainable: the high density compact city model or the low density network city. Some researchers champion current suburban-type urbanisation or the network city, stressing its unique capacity to provide large lots at an affordable price, an option negated by more compact urban forms (Berry and Kim, 1993). However, most studies are highly critical of such spatial organisation. They denounce environmental consequences, in particular, air pollution, voracious fuel consumption and loss of agricultural land and natural areas (Filion *et al*, 1999). The outcome of much research into settlement planning has been a general advocacy of the high density, mixed-use settlement and this form has increasingly been translated into land-use policy across Europe (Williams, 1999). In recent years, the 'smart growth' movement (coordinated by the USEPA) has attempted to encourage sustainable urban development through the efficient use of jurisdictional resources, while preserving open space and environmental quality and improving social cohesion (Preuss and Vemuri, 2004). The smart growth movement is driven by *inter alia,* demographic shifts, a strong environmental ethic, increased fiscal concerns, and more imaginative visions of urban growth and development. Smart growth contains all the seeds of the sustainability paradigm. Clearly, it is not smart to design urban systems that cannot be sustained by future generations, so sustainability is implicit in many of the smart growth principles.

One of the most problematic aspects of sustainable urbanisation is its breadth, compounded by the abstract and ill-defined nature of the concept. Policy makers and planners continue to be frustrated by the tenuous nature of sustainable urbanisation, which has led to a variety of interpretations and explanations. In general, however, sustainable urbanisation refers to a well-maintained physical environment (townscape, landscape, neighbourhood, public space), a clean, healthy and safe environment, one that allows residents freedom of choice (mobility, living conditions and amenities) (Van der Valk, 2002). Sustainable urbanisation demands an integrated, holistic and co-ordinated approach that fully incorporates economy, environment and society. A number of European spatial planning policy documents, such as the 1990 Green Paper on the Urban Environment and the 1996 report of the Expert Group on the Urban Environment highlight the importance of an integrated approach to planning.

Key challenges to achieving integrated sustainable urbanisation include:
   a) lack of effective and productive partnerships between government institutions, civil society and the voluntary sector;
   b) lack of will or ability of key urban stakeholders to develop strategic long-term planning;
   c) lack of will of central governments to face the consequences of long-term urban growth in view of a changing global economy, a growing world population and over exploitation of natural and non-renewable resources;
   d) lack of will or ability to establish sustainability as a significant factor in the decision process in neighbourhoods, businesses, schools, natural environment and civic life;
   e) failure to measure, monitor and report on progress towards sustainability by way of agreed indicators for the urban environment;
   f) failure to recognise that sustainable urbanisation is not a fixed state of harmony, but rather a process of change in which driving forces such as, economic conditions, the

exploitation of resources, political forces, technological development and institutional change are made consistent with future as well as present needs.

Overcoming these obstacles requires effective and long-term strategic thinking which embraces integrated community-based visioning, advocates democratic expression and active participation, and encourages the adaptation of sustainability to a community's unique political, environmental and socio-economic climate. However, the potential to link visioning and foresight to debates about the urban environment is still in its infancy.

2.1 Strategic Thinking

In order to mobilise political, business and popular support towards sustainable urbanisation, it is necessary to strategically assess the range of options available, so that programme development and policy making is potentially wiser. Consequently, strategic thinking is evolving as a dynamic and robust approach to understanding the inherent complexities underpinning the sustainability paradigm. Strategic thinking is a process of intuitive synthesis, where the outcome is an integrated perspective of all key participants (Hendon, 2004). The rationale behind strategic thinking is to develop the skill to be sensitive to small initial events and ask how they might evolve to affect the future (Soule, 2002). In recent years, foresight has emerged as a novel and imaginative approach to strategic thinking which recognises the need for integrated and interdisciplinary approaches to understanding complex and uncertain issues driving the urban environment. Foresight (as strategic thinking) is concerned with exploration (based on limited and patchy information) and options, not with the steps needed for the implementation of actions, which is the realm of strategic planning (Burke *et al*, 2004). Strategic planners know that the future of the urban environment cannot be predicted, but it can be prepared for. In the context of strategic foresight, the construction of scenarios may facilitate strategy formulation and evaluation, by developing an understanding of the uncertainty inherent in the external environment, and testing the robustness of any strategies against a set of possible futures (O'Brien, 2004). In this way, policies or plans based on this type of approach can help bring desired and likely future circumstances into closer alignment. Consequently, scenario development is rapidly emerging as a powerful planning tool which provides an effective framework for communicating critically uncertain conditions and options, which ultimately may help policy makers move towards more effective strategies and policies in the pursuit of sustainable urban development. Essentially, scenario planning harmonises prescriptions about how to proceed optimally from the present state to some preferred future state, with descriptions of the present circumstances and the historical trends that led to them (Bruun *et al*, 2002). In the context of sustainable urbanisation, foresight through scenario development may help stakeholders to understand the complex forces shaping the urban environment, to think imaginatively through what this means for their communities and then finally to encourage a readiness to act upon this new knowledge.

3. FORESIGHT THROUGH SCENARIO DEVELOPMENT

As a planning tool, foresight provides planners and stakeholders with an opportunity to think, talk, plan and act creatively and ultimately in concert (Ratcliffe, 2003). In essence, foresight is the process of attempting to broaden the boundaries of perception by carefully scanning the future and clarifying emerging situations. Foresight pushes these boundaries forward by:
a) assessing the implications of present actions and decisions;

b) detecting and avoiding problems before they occur;

c) considering the present implications of possible future events; and

d) envisaging aspects of desired futures.

Foresight, by its very nature is dynamic, complex and often conflicting. Although participation by a multiplicity of actors is essential to the success of the process, disagreements arise as a consequence of participation by different stakeholders in different disciplines with various visions, goals and expectations (Saritas and Oner, 2004). When contrasting general public representations with the visions of key actors (planners and local authority representatives for example), scenario planning no longer appears to be only challenging future visions. Instead, it becomes a process enabling the group to construct representations, which, if not unanimous, are at least a platform for discussion and deliberation (Roubelat, 2000).

Foresight through scenario development enables the participants to identify possible positive and negative consequences for a particular field of reference and to recommend strategic action in an attempt to maximise opportunities and avoid or minimise risks (Niewöhner *et al*, 2004). Consequently, when scenario planning, it is recommended that a range of possible and plausible futures is developed which reflect different perspectives and interpretations on past, present, and future developments (Van Notten *et al*, 2003), giving participants the opportunity to consider, comprehend and construct the scenarios collectively. Scenario thinking as a tool to support strategic management and as a methodology for improving foresight recognises that in dynamic environments the future cannot be known, but it can be understood. Scenario planning, increasingly referred to as scenario thinking, acknowledges the importance of cognition, imagination and the role of individual reasoning techniques in interpreting the past, considering the present and perceiving the future (MacKay and McKiernan, 2004). Scenarios generally come in two forms: exploratory and normative. Exploratory scenarios depict self-consistent future worlds that would emerge from the present through credible, cause, effect and feedback developments and reach an end-point that seems credible. Normative scenarios, on the other hand, represent desirable future worlds (Kelly *et al*, 2004). They define strategic choices, in other words, choices that are possible and desirable in order to keep on course (Godet, 2000). The scenario development process favoured by the authors generally follows the approach adopted by Schwartz (1991). However, most approaches recognise the need to understand the system under study and to identify the trends, issues and events that are critical to the system (Enserink, 2000).

3.1 The Process

The initial step is to set the strategic question, which might be a general examination of the urban environment as a complex adaptive system and its interrelationship and interconnectedness with a larger regional or national network. Key to this stage is the holding of strategic conversations with stakeholders which again emphasises the important role of developing genuine partnerships, opening communication channels and consensus-building throughout the entire process. Strategic conversations provide for a range of different worldviews to be shared and negotiated in order to theorise and understand the future and more importantly, to help create it (Stevenson, 2002).

The next stage is to identify key driving forces of change arising from sustained urban growth and to examine trends of the recent past and their interrelation. The scenario-building process involves initial investigation through surfacing the major driving forces that will influence the development and outcome of critical uncertainties and of the predetermined trends that are considered to be largely predictable and thus, a part of all futures (Cairns *et al*,

2002). Driving forces are identified by continuous monitoring through 'horizon' or 'environmental' scanning; in-depth interviews with acknowledged experts; targeted questionnaire surveys; and brainstorming workshops. Consequently, effective participation is also crucial to this stage. Having identified key issues and trends it is important to categorise those which have the highest degree of uncertainty and the highest level of impact on the strategic question. Comprehending uncertainty and bringing multi-faceted expertise and knowledge to identify and analyse difficult problems and issues is crucial to understanding and preparing for the future and providing the best possible solutions (Cinquegrani, 2002). Often when identifying the issues and trends most relevant to the strategic question, it is found that even the most radical of forecasts are usually too conservative in the long-term. It is important to avoid inadvertently fostering tunnel vision by paying too much attention to current trends, projecting the past forwards, and ignoring the unexpected (Shoemaker, 1998).

Identifying key issues and trends and classifying them according to the level of impact and degree of uncertainty forms the basis for scenario logics or scenario skeletons upon which the scenarios are structured. Scenario logics are central to the scenario development process. They give the set of scenarios a framework and foundation and they provide each scenario with coherent, consistent, and sound underpinning. They are the organising principles around which the scenarios are structured and focus on the critical or pivotal uncertainties. Scenario logics lead to novel insights, identify signals of change and generate strategic options for the scenarios. These logics can be articulated and elaborated in a number of different ways. Most usually, by either laying-out in simple narrative form or by depicting the logics and their interactions or relationships diagrammatically showing causal connections.

The penultimate step in the process is to develop the actual scenarios themselves. There is no universally agreed method or single approach to drawing up scenarios. A scenario is basically a descriptive account or narrative of a range of possible and plausible futures. By their very nature, scenarios are inherently qualitative and descriptive and aim to supplement more traditional quantitative research methods. It is highly desirable that the information portrayed in the scenarios is as informative and broad as possible, yet balanced enough to avoid an unconscious bias in the direction of some futures rather than others (Jenkins, 1997). Scenarios, therefore, should account for participant consensus and dissension and should also accommodate possible arbitrary futures, 'wild cards' or low possibility futures. As a means of conceptualising and moving towards strategic planning, scenarios may be viewed as an iterative and proactive form of understanding what the future might hold, and facilitate the identification of what strategies should be pursued in the light of this understanding (Cairns *et al*, 2002).

The final stage is the move to strategic planning. By basing decisions on alternative futures stakeholders are better equipped to strategically plan for uncertainty, and to ensure that these strategies are as resilient and flexible as possible.

4. LESSONS FROM ABROAD

Incorporating foresight into building scenarios or a vision for the urban environment is arguably an under exploited but not entirely unexplored phenomenon. *The Creative City* (Landry, 2000), for example, provides a clarion for imaginative action in developing and running urban life and aims to change the mindset of decision makers and offer a mental toolkit to influence policies, strategies and actions undertaken in cities. In the United States, scenario development exercises have been used to provide a multiplicity of perspectives on, and robust approaches to, urban planning and development. Freeman (2000) illustrates

through creative use of divergent hypothetical scenarios how very different America could look from one metropolitan area to another, depending on the strategies each region chooses to address sprawl. He uses scenario planning to illustrate the housing development implications of four development scenarios: continuation of current practices and policies regarding both sprawl and social equity; adoption of smart growth initiatives to combat sprawl without any consideration of the equity implications; an equity-driven approach without any attempt to combat sprawl through smart growth; and smart growth initiatives that are tempered by a concern for social equity.

In Montgomery County, Maryland, dynamic modelling provides the capacity to examine various initiatives and their effects on improving quality of life over the long term, while protecting ecological systems and the potential for future development (Preuss and Vemuri, 2004). Visioning exercises have been employed by Menlo Park (California) and Helena (Montana) to solicit advice from citizens about how they want their community to grow, thus facilitating the development of incentives and regulations that would help achieve the desired type of community (Reichert, 1999).

In a combined effort by a delegated task force including representatives from local government, business, and environmental groups, a number of scenarios was created for Denver, Colordo, defined in its future development preference *Metro Vision 2020*. Key facets of this regional vision are the designation of the extent of urban development within a specified area, the creation of a balanced multi-modal transportation system, the establishment of a hierarchy of mixed use, pedestrian and transit oriented urban centres, the preservation of the physical identity of the four free-standing communities of Boulder, Brighton, Castle Rock, and Longmont and the protection of the region's natural environment (Murray, 2002).

 The secret of Chattanooga, Tennessee's success lies in the commitment and integrated effort of the city's local government officials, local population, civic leaders and financial investors willing to fund a range of environmental innovations. This resulted in a visioning process, *Vision 2000*, which brought together stakeholders from all sectors of society to identify and address the city's economic, social and environmental problems.

In Europe, most notably France, foresight in the form of '*la prospective*' has been rigorously applied for almost fifty years in a formalised approach towards regional and city planning and development. Most recently, the regional government of Grand Lyon in France has used regional foresight to elicit greater democratic participation by its citizens in urban planning policy debates (Cariola and Rolfo, 2004). Similarly, efforts in metropolitan Tunis confirm that participatory scenarios can be prepared even where political and social restrictions are considerable. By utilising future workshops participants felt "closer to their future visions" and were able to think more creatively and effectively about development strategies (Barbanente *et al*, 2002). A recent study in the North West region of England explored attitudes to foresight and existing capacities amongst public, private and voluntary organisations and key urban and regional development stakeholders. A key objective of the study was to ascertain best practices in different sectors, and to investigate potential gaps, constraints and needs in terms of futures thinking for urban and regional development (Puglisi and Marvin, 2002).

In Ireland, foresight was employed to create a suite of scenarios for Dublin. Given Dublin's prominence as Ireland's premier city, the scenarios incorporate key aspects of Ireland's cultural, political and economic climates. The scenarios aim to illuminate plausible and possible future outcomes for key stakeholders engaged in testing and monitoring present policies so that they are proofed, so far as possible, against the vagaries of future changes (Ratcliffe *et al*, 2003).

Although the above examples employ various approaches to examine the long-term implications of present day urban planning policies and strategies, they all recognise the need to adopt longer perspectives than those commonly afforded by traditional planning approaches. This growing trend in cities throughout the world reflects the rapidly transforming characteristics of the urban environment and the need to anticipate and prepare for inevitable change against a dynamic global backcloth.

5. CONCLUSION

Foresighting is essentially a participatory process which fosters a further understanding of forces shaping the long-term future which should be taken into account in policy formation, planning and implementation. However, for all the interest in 'territorial foresight' at European and national levels, the potential for linking the future to debates about sustainable urban and regional development is still in its infancy. The urban environment is increasingly being recognised as a complex system subject to dynamic and unpredictable transformation. Until recently, urban development was coterminous with urban expansion. This proliferation outwards was accompanied by critical spatial, social and environmental problems which sparked the urgent necessity for urban planners to pinpoint survival strategies for the city of the future (Xuan Thinh *et al*, 2002).

Conventional planning approaches have been criticised for their tendency to reinforce the present, thus rendering it difficult for towns and cities to contemplate, design and build alternative visions of the future more suited to their specific needs and desires. Consequently, foresight through scenario development is rapidly emerging as an alternative which accommodates longer perspectives, embraces critical uncertainties and long term visions, as well as mechanisms for conflict avoidance and resolution. Scenario planning derives from the observation that, given the impossibility of knowing precisely how the future will play out, a good decision or strategy to adopt, is one that plays out well across several possible futures. Scenario development identifies key forces of change which drive the development of the urban environment. These drivers help planners to understand migration and allocation patterns, and consequently settlement and traffic patterns related to polycentric dynamics which ultimately contributes to tacking problems within suburban regions (Loibl and Toetzer, 2003). Used in public planning discussions, scenarios have the potential to translate expert opinion into a format comprehensible also to non-experts and so to stimulate the debate between the expert community and the general public (Wegener, 1993). The establishment of a sense of social ethos is crucial in working towards sustainable urban development. More important still is the need to encourage community resolve to adopt sustainable development as the basis for living and community planning and to persevere with the implementation of consequent action plans (Thomas and Furuseth, 1997). Innovative ideas and solutions are required to provide fertile ground for improvements and creativity (Mega, 2000).

Foresight through scenario development challenges many contemporary perceptions of urban planning and invites decision makers and members of the public alike to think imaginatively and cognitively in the pursuit of integrated and holistic planning for the future of the global city.

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