Introduction

Urban futures: anticipating a world of cities

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Ancient Greece had city-states – in 100 years we will have city-worlds (Sirkka, Heinonen, Neo-Growth in Future Post-Carbon Cities, 2013).

Introduction

The speed, scale and scope of urbanisation in the past decades are unprecedented in world history, and the trend is expected to continue for some decades to come. In 2014, for the first time in history, more people lived in urban areas than in rural areas. This urbanisation trend is likely to continue, with the world urban population projected to grow from 54.5 per cent in 2014 to close to 70 per cent in 2050 (UN DESA, 2014). So, it looks like the urban planet is here to stay (Wigginton et al., 2016; Heinonen, 2013). This growing realisation has made urban issues the increasing subject of interest across disciplines over recent decades.

Urbanisation is not new. The famed cities of the global north are recognised as the birthplace of Western civilisation, having had to solve the problems created by their own very growth and size (Hall, 1998). The entire world system, however, is increasingly becoming urban; socially, economically, technologically, environmentally and increasingly even politically. This is driven by the overlapping urban networks of communications, production and trade, which facilitate the dynamic and productive flows of information, energy, capital, commerce and people (WCED, 1987).

What is perhaps newer and of increasing futures interest is the unfolding pace, scale and shape of urban change and what this spells for the future. Modern urbanisation has led to a larger number of megacities (over 10 million inhabitants) and rapidly growing smaller towns and cities. In 1950, only two megacities existed in the world; New York-Newark (USA) and Tokyo (Japan). By 2015, it is reported that 35 megacities were in existence, the largest of these being Tokyo and Shanghai (China), each with populations of over 30 million inhabitants. Shanghai's population had grown seven times over the six decades; the population of Lagos (Nigeria) is reported to have grown 50 times from 300,000 in 1950 to an estimated 15.2 million currently. Megacities such as Lagos, Dhaka (Bangladesh), Mumbai (India) and New York (USA) also have extremely high population density levels ranging from 20,000 to 30,000 people per square kilometre, which speaks of new, unique settlement patterns and urban forms.

Of interest too are the implications of this accelerated, massive, metamorphic urban change. On the one hand, the rapid urbanisation is hailed as being a transformative force, improving economic prospects and quality of life for the majority, alleviating poverty, driving innovation and productivity, working towards social inclusion and contributing to national and regional development (UN Habitat, 2016). On the other hand, there are also real tensions and contradictions that emerge. For example, similar to economic activity and growth, unemployment/joblessness and poverty are largely urban. The urban concentration of population and economic growth also creates significant societal and environmental challenges. Faced with critical global issues such as climate change,

mobility of goods and people and emerging infectious diseases, cities are fast becoming the simultaneous epicentres of problems and of opportunities and solutions, as they are looked to as the key players in addressing some of these challenges. Another example is that although cities are fuelled by diversity and entrepreneurial dynamism, they also remain the loci of major political conflicts, driven by racial and cultural tensions and diverging citizen values, which are increasingly propelled by the proliferation of digital media.

The trend of urbanisation is also accompanied by efforts in various parts of the world to decentralize political and administrative functions to local governments so as to enhance good governance. These rapid changes, especially in developing countries in Africa, Asia and other parts of the world, impose great challenges for city planning and management and for the articulation of cooperative governance across the various spheres of governance. At the same time, improved management of cities and their challenges holds promises for an improved quality of life and more competitive and sustainable cities and nations.

This mix of factors indicates that cities can be considered not only as a concentration of people but also as a highly complex concentration of interrelated systems loaded with both opportunities and challenges. Although city planners have long utilized their toolbox of methods for analysing various socio-economic trends and land-use patterns, the traditional methods of projecting and forecasting are proving inadequate, given increasing uncertainties, risks and complexities that cities face now. The use of foresight and future-oriented technology analysis (FTA) methods can help planners and policy-makers to understand this complexity, anticipate impending changes, and begin engaging more robustly with future scenarios – normatively, but importantly also adaptively.

The rationale of this special issue on urban futures is to better understand how anticipatory intelligence and governance can be more systematically applied to help cities engage with their looming and complex realities. We first look at the wide set of anticipatory methods that have been applied up to date to various urban issues and settings, ranging from urban development and transportation to natural disasters and urban security. We then look at how this special issue came about and how it aims to contribute to the debate on urban futures. We then introduce the set of papers that form part of this special issue, offering different perspectives to the theme, and finally propose an agenda for future research on the topic:

> Cities are good at generating problems and the city fabric is problem rich [. . .] [but city environments also have a] problem solving nature. (Bjørn Johnson, Cities, systems of innovation and economic development, 2008).

State of play in urban anticipatory intelligence

Urban challenges are tremendous, and the types of challenges addressed in anticipatory initiatives are seemingly suitably vast, ranging from sustainability, the built environment (Eames *et al.*, 2014), energy, culture (Pratt, 2014) and mobility (Urban Foresight Limited, 2014) to security (Engelke, 2013) and food security, exposure to flood and drought hazards (Güneralpa *et al.*, 2015), values (Mullagh *et al.*, 2014), multicultural aspects (Keith, 2005), etc. Regions such as the EU and China have flagged the importance of horizontal topics in which anticipatory intelligence is required, such as the identification of global urban trends, the development of scenarios and transition pathways, urban governance and citizen participation. However, it would appear that advances in both thematic and non-thematic anticipation are still far from a systematic approach. Also, 10 years ago, Ratcliffe *et al.* (2006) argued for more FTA for cities, and this claim still seems to hold.

Urban strategies with a longer-term time horizon are being developed by cities around the globe. In Europe, the European Innovation Partnership[1] on Smart Cities gives an urban dimension to the Europe 2020 Agenda on smart, sustainable and inclusive growth, and the Joint Programming Initiative (JPI) Urban Europe has developed an urban strategic

research and innovation agenda (Robinson et al., 2015) with both thematic priorities (vibrant urban economies, welfare and finance, urban environmental sustainability and resilience, accessibility and connectivity and urban governance and participation) and a set of methodological innovation and transition pathways using urban megatrend screening and developing scenarios, transition processes, related policy instruments and monitoring, etc.

In the USA, Strategy for American Innovation was updated in 2015, identifying Smart Cities as one of the nine areas of strategic opportunity for the nation (Obama, 2015). The initiative focuses on building infrastructure and data collection to improve quality of life. In China, the China Center for Urban Development has been supporting urban development for two decades and focuses on socio-economic and spatial development and land use, and several initiatives have been taken in recent years to explore potential collaboration between EU and China related to urban futures[2]. In Africa, a series of African Futures Forums convened between 2013 and 2015 through the Millennium Project and UNESCO have championed an urban theme, among others, to highlight the critical importance of considering the long-range prospects for Africa's demographic and urbanisation trajectories.

Future-oriented technology analysis and urban futures: the birth of a special issue

The need for more urban anticipatory intelligence was reflected in the papers submitted to the fifth International Conference on Future-Oriented Technology Analysis, a scientific event organised since 2004 by the European Commission's Joint Research Centre bringing together practitioners, researchers and decision-makers from around the world aiming to develop communities of foresight, forecasting and technology assessment. At the event, organised in November 2014 under the headline "Engage today to shape tomorrow", several contributions were presented both directly related to city futures, as well as to challenges with a strong urban dimension. This journal has therefore decided to translate this increased attention for urban anticipatory intelligence into a special issue on urban futures, combining selected papers of the international conference with additional invited contributions. The title 'Urban futures: Anticipating a world of cities' reflects the increasing role of cities in addressing global challenges and our belief that this urban dimension will only further increase in the coming decades.

From the conference contributions and looking at the aim of this special issue to consider a more systematic approach for urban anticipatory intelligence, the guest editors considered the following topics on the futures research agenda:

- new approaches to city governance, citizen participation, etc.;
- methodological considerations in tailoring FTA to an urban context;
- FTA for cities in different categories (macro-regions such as the Brazil-Russia-India-China-South Africa (BRICS), megacities, regional development and linkages between urban and rural areas);
- the role of regional (smart) specialisation strategies;
- topical anticipatory exercises (e.g. on energy, food security, water and sustainability); and
- cities and innovation.

This special issue, however, only beings to makes a start with addressing some of the topics on the ambitious agenda and aims to both foster debate on it, as well as invites the foresight communities and policy-makers to further drive the agenda more pragmatically.

The terrain covered

Following this introductory chapter, the special issue presents three papers that are generally on the subject of anticipatory intelligence and strategy building. The first paper on *Cities Futures* by Fernández Güell and López appropriately opens by examining how foresight and its methods have or might be incorporated into the disciplines and initiatives that actually plan and form cities. These authors argue that there has been a relatively weak understanding or application of the potential of foresight to contribute to the formulation of urban policies, strategies or plans and propose an opportunity in this regard.

In the second paper, "Foresight in cities and the possibility of a strategic urban intelligence", Ravetz and Miles explore further the application of foresight in urban work by interrogating the case of the UK "Future of Cities" program as a basis for considering possible future directions for city-level foresight processes.

The third piece in this rough "set" is "strategic planning and foresight" on the case of Tuscany's smart specialisation strategy. In this paper, Fabbri uses a regional innovation systems process in Tuscany to examine how foresight methods could be used to augment strategic planning processes so as to accelerate the process of regional innovation governance.

The second and last sets of papers are more thematic, focusing on a range of key urban futures issues. The first is exploring participatory scenario and storyline building for sustainable urban futures, where Bina and Ricci present the case of a participatory, visionary scenarios project in China in 2050. The paper seeks to understand, through an EU-China project, how foresight concepts and methods can be applied to big normative issues, such as sustainable futures, in ways that are acceptable and relevant in specific contexts.

The second paper is on energy foresight, scenarios and sustainable energy policy in Brazil. In this paper, de Paula Oliveira and colleagues use policy scenarios and meta-scenarios to foster an understanding of possible Brazilian energy futures and pathways and the differentiated impact of the various energy scenarios on the different regions of the country.

The third paper on global food security by Maggio and partners approaches the critical issue of food trends and policies. It argues for taking a systems approach to the issue and proposes that there has been inadequate consideration of the consequences of urban growth for regional food security.

Conclusions

This set of papers offers a rich and useful contribution towards building a more systematic agenda for urban foresight and/or FTA. Such an agenda could consider not only key thematic issues that are currently underexplored (such as new forms of urban governance and participation, future urban economies, future urban "smart city" lifestyles, urban culture, etc.) but also foresight studies that consider the nature of cities as complex, evolutionary, differentiated systems. This means that various city typologies, actors, functions and interlinkages must be considered, and evolutions and/or adaptations towards achieving context-relevant methods and approaches will be of the essence. A further consideration for the agenda might also engage with more epistemological issues, aiming to bring together different approaches (e.g. natural resource modelling and natural resource foresight) to help develop new knowledge and insight.

Authored by guest editors Dr. Geci Karuri-Sebina, Mr. Karel Haegeman and Professor Apiwat Ratanawaraha:

> The 21st century will not be dominated by America or China, Brazil or India, but by The City. In a world that increasingly appears ungovernable, cities – not states – are the islands of governance on which the future world order will be built (Parag Khanna, When Cities Rule The World, 2011).

Notes

1. https://eu-smartcities.eu/

2. An EU-China dialogue on smart cities was initiated in 2013, including the set-up of a joint smart cities laboratory (http://eu-chinasmartcities.eu/), and a joint research call between EU and China has been studied (Lundin, 2015).

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