

## Chapter 74

# Smart Cities and the Internet: From Mode 2 to Triple Helix Accounts of Their Evolution

**Mark Deakin**

*Edinburgh Napier University, UK*

### **ABSTRACT**

*This chapter challenges recent mode 2 accounts of smart cities and in particular, the idea they are an index of the future internet. Adopting the triple helix model of knowledge production, it studies smart cities, not as the emergent technologies of economic transactions, but in terms of civil society's support for the integration of Web2.0-based information and communication platforms into their regional innovation systems. This reveals that no matter how technologically advanced such an internet-driven reinvention of cities may appear, being smart is something which reaches beyond this. Beyond this and towards policies, leadership qualities and corporate strategies that not only serve the knowledge economy, but which are also smart in allowing cities to cultivate the creativity of the internet as the information and communication technologies of regional innovation systems.*

### **INTRODUCTION**

Over the past decade, cities have increasingly become the object of academic interest, scientific and technical study. Examples of this appear in the work of Landry (2008), Komninos (2008) and Hollands (2008) on the innovation of creative, intelligent and smart cities. Collectively they serve to highlight some of the most pressing socio-demographic issues currently facing the scientific and technical community: the need for cities to be (come) innovative hubs and creative milieus and requirement for their institutions to not only be intelligent, but smart. Together they also do much to map out the institutional setting for the scientific and technical community to begin learning about the knowledge base of smart city developments. Separately they also offer a series of critical insights into how little the scientific and technical community currently knows about either the innovation, or creativity underpinning such developments, let alone the basis of any intelligence supporting this transition to smart cities (Deakin & Al Waer, 2011).

DOI: 10.4018/978-1-5225-7030-1.ch074

What follows proposes that nowhere are these limitations better illustrated than in the notion of smart cities recently advanced by Schaffers et al. (2011), Komninos et al. (2012) and Komninos and Tzar-chopoulos (2012). In particular, the idea advanced that smart cities are an index of the future internet and digital technologies which they draw upon to service such developments. What the chapter shall argue runs contrary to this. For it shall propose: smart cities are not an index of the future internet, but instead developments whose full significance can only be understood by challenging the scientific and technical basis of the “*mode 2*” accounts such statements currently stand on. That is to say, by chal-lenging the basis such future internet statements stand on and replacing them with *triple helix accounts* of smart city developments able to account for their evolution (Leydesdorff & Deakin, 2011; Deakin & Leydesdorff, 2013).

Against this backdrop, the second part of this chapter examines the shift from the so-called “mode-2” to triple helix accounts of the relationship between smart city developments and the internet. Drawing upon the critical insights this offers, the third part of the chapter examines the ongoing reconstruction of Montreal and Edinburgh as smart cities and reflects on the critical role the internet plays in their development. The fourth part of the chapter draws upon all of these insights and offers an alternative account of the evolving relationship between smart cities and the internet.

Structured in this way, the chapter avoids the current temptation there is to try and define smart cities by reference to either some pre-defined metrics, or the performance related assessment such develop-ments are associated with. Here any such definitions are set aside because they relate to the very mode 2 thinking this chapter aims to challenge, expose the limitations of and replace with a triple helix inspired account of smart city developments. The definition this chapter aligns with is that offered by Caragliu et al. (2011, p. 70) which suggests a city may only claim to be smart:

*... when investments in human and social capital and traditional (transport) and modern (ICT) com-munication infrastructure fuel sustainable economic growth and a high quality of life, with a wise man-agement of natural resources, through participatory government.*

This definition is particularly valuable for the simple reason its holistic nature nicely balances the different social, cultural and economic components of smart city developments, without pre-judging either the weight or significance of one relative to the other. Perhaps more significantly, the definition also serves to emphasise the role ICT-related developments play in sustaining economic recovery, un-derpinning social welfare and supporting cultural health and well-being, by highlighting the internet as an enabler of participatory government.

## **FROM “MODE-2” TO TRIPLE HELIX ACCOUNTS**

The proponents of the “mode-2” thesis argue the social system has undergone a radical transition and this has changed the prevailing mode of knowledge production. They propose disciplinary-based under-standing shall increasingly become obsolete and be superseded by techno-scientific knowledge gener-ated in “trans-disciplinary” projects. Advocates of this thesis also propose that it is the economics of the nation-state which provide a stable system for the development of innovations capable of deploying such techno-scientific knowledge, either by way of industrial *sectors*, or through *regions* (Schumpeter,

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