

#Unplugging: Deconstructing the Smart City

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Authors:

Dr Igor Calzada ¹

<http://www.igorcalzada.com/about> .

Research fellow. Oxford Programme for the Future of Cities (COMPAS),

University of Oxford

& Ikerbasque (Spain)

58 Banbury Road, Oxford, OX2 6QS

+44 (0) 7887 661925

igor.calzada@compas.ox.ac.uk

&

Dr Cristobal Cobo

<http://people.oii.ox.ac.uk/cobo>

Research fellow. Oxford Internet Institute (OII)

University of Oxford (UK)

1 St Giles, Oxford, OX1 3JS

+44 (0) 1865 287210

cristobal.cobo@oii.ox.ac.uk

¹ Corresponding author.

ABSTRACT: *This paper explores the subtle notion of unplugging to critically analyze the technological determinism of the Smart City. This exploration suggests that being digitally connected should not be perceived as gaining social capital. This article critiques the assumptions of the Smart City and proposes a ten-dimension conceptual framework. The first section of this article explores hyper-connected societies and how unplugging could be beneficial. The main subjects, Digital Natives, are discussed in the second section of this article. The third section is a decalogue on deconstructing the Smart City, and the final section presents key ideas and questions for future analysis.*

KEYWORDS: *Unplugging, Social Innovation, Smart City, Hyper-connected Societies, Digital & Social Divide.*

The Context

Unplugging is a privilege in digitally divided and hyper-connected societies.

The term **digital divide** implies that the worldwide, explosive growth of the Internet and data (Kitchin, 2013: 3) is an uneven, multidimensional phenomenon. A significant body of literature in this field highlights differences between the haves and have-nots of Internet access. This distinction focuses on the binary classification of technology use considering only whether individuals use the Internet. However, a closer examination of digital technology utilization suggests the need for a comprehensive understanding that includes effective access to the Internet, which cannot be explained exclusively by focusing on access to connectivity but must address the deep-rooted patterns of social inequality (caused by differences in income, employment, education, age, culture and other forms of social capital) (Selwyn, 2004; Norris, 2003; Warschauer, 2004; Van Dijk and Hacker, 2003). This distinction between accessing the Internet (Rifkin, 2000) and remaining connected with friends and family reflects the need to establish a second-level digital divide that is not limited to technological infrastructure but is grounded in the social capital barriers that affect the effective access of digital technologies (Hargittai, 2002; Eastin and LaRose, 2000).

The expansion of technological development, which includes reductions in the cost of connectivity, has increased the deployment of information-centric schemes (Ahlgren et al., 2011). Based on this definition, a **Smart City**² is as a city in which “investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance” (Caragliu et al., 2011: 70). Today, these cities represent a set of **hyper-connected societies**

² Chourabi et al. (2012: 2290). Table of full definitions presented.

that enthusiastically embrace Information and Communication Technologies (ICT) as a key component of the infrastructure of modern cities.

However, the social adoption of technology and technological evolution occur at highly dissimilar rates, suggesting significant socio-technical misalignment (Rogers, 2010). Noting this tension, we consider an interesting contribution to the understanding of Smart Cities developed by Chourabi et al. (2012: 2294), who suggest a comprehensive framework that consists of eight factors. This framework is relevant to our article, though we argue that an update is required to address the special significance of social phenomena within the analysis of these factors. As a result, we aim to re-frame this framework utilizing the social innovation approach (Grimm et al., 2013; Moulaert et al., 2009; Mulgan, 2007) and add 10 dimensions of unplugging. Likewise, the often-cited definition of Smart City must be enhanced to include the subtle notion of unplugging and the 10 dimensions provided in this article (Caragliu et al. 2011).

The framework adopted in this paper is grounded in the approach provided by Chourabi et al. (2012) who established the following: 1) a comprehensive set of factors that are essential to **understanding** Smart City initiatives; 2) a set of components not to rank Smart Cities but to create a framework that can be used to **characterize how to envision** such a city; 3) an integrative framework to explain the **relationships and influences among these factors** and Smart City initiatives; 4) this set of factors is also presented as a tool to support understanding how cities envision their smart initiatives in **different contexts** and for different purposes.

Table 1: 10 dimensions from the critical social innovation.

UNPLUGGING the SMART CITY	1 WHO	2 HOW	3 SYSTEMS	4 GOVERNANC E	5 INFORMATION	6 WHAT	7 SPACE	8 DESIGN	9 SOCIO- POLITICAL PROCESSES	10 POLITICAL ECONOMY
	Social and Digital Divide	Individualism vs Collectivism	Socio vs Technical Systems	Master Planning vs Emergent Plan and Top Down vs Bottom Up	Overload vs Scarcity	Social Networking vs Social Capital	Context Collapse	Ambient Commons	Control & Normative vs Free & Emergent	Profitable vs Unprofitable
From	High	Individualism vs Collectivism	Artificial	Top Down and Master Planning	Controlled	Interaction	Fragmented	Infrastructure- centered	Control and Normative	Private and Financially
To	Low	Networked Individualism or Neo- communitarianism	Integrated	Bottom Up and Emergent Plan	Open Data	Trust	Contextualized	People-centered	Free and Emergent	Communitarian and Socio-economical

Table 1 illustrates the integrated framework for unplugging in the Smart City elaborated by the authors. This framework complements the research conducted by Chourabi et al. (2012) from the social innovation perspective focusing on the relevance of human interaction as a meta-factor of the Smart City, while providing a transversal understanding of some unexplored dimensions, including who, how and what questions and system, governance, information, space, design, socio-political process and political economy issues. This article follows the theoretical contributions made in the field of social innovation by Grimm et al. (2013), Moulaert et al. (2009), Mulgan (2007) and Morgan (2013) and builds an interdisciplinary, systemic and multi-dimensional integrated framework to address the transitions that are currently occurring in Smart City initiatives. This updated framework indicates possible transitions in the understanding and adoption of Smart Cities; while some cases indicate that technologies are accelerators of Smart City 'in the box' initiatives, other experiences of Smart Cities in transition (such as smart citizens, hack the city or FabLabs) envision new possibilities for building more democratic citizenship.

Unplugging is a subtle notion that is emerging as a contestation to the dominant technocratic mode of urban governance (Kitchin, 2013: 9), that is, the so-called Smart City model that demands a transition to overcome the social tensions and misalignments caused by hyper-connected societies. Thus, unplugging is a novel trend that offers a corrective from the corporate, top-down direction of the Smart City mainstream in favor of a transition towards the critical use of digital technologies enabling the construction of a more democratic citizenship. Consequently, we develop the following two hypotheses:

The first hypothesis argues that according to the implementation of Smart City 'in the box' cases, the relevance of face-to-face interactions is increasingly dismissed.

The second hypothesis suggests the existence of Smart City initiatives in transition (as smart citizens, hacking the city or FabLabs) along 10 interrelated dimensions that enable the construction of a more democratic citizenship.

Hence, our analysis focuses on the following two research questions:

1. **To what extent can face-to-face interactions remain at the center of human experience (Allenby and Sarewitz, 2013) given that digitally mediated communications have replaced a large number of physical encounters?**
2. **To what extent can the 10 critical factors (dimensions) be identified to provide an integrated framework that illustrates a transition in the understanding of Smart City?**

Moderating the consumption of information could be perceived as unusual, particularly when the modern understanding of our societies (i.e., smart cities, open government, smart crowds, etc.) and technological development (i.e., telecommunication, computer and smartphone sectors) continuously increase the value of being online continuously (24x7). This apparently paradoxical willingness to moderate access to data can be understood as a side effect of the non-stop stream of data. In hyper-connected societies, being offline is a nearly **unaffordable privilege** (or loss, in some cases) that very few dare to attempt. Currently, the opportunity to be offline is rarely considered to be valuable.

An increasing number of voices note benefits to not being online constantly thus challenging the widely spread techno-enthusiasm of the knowledge society. Scholars including

Turkle (2011), Morozov (2012), Gladwell (2013) and Rendueles (2013) argue that there are exaggerated expectations about how digital connectivity provides the dynamism required by ordinary cities (Robinson, 2006). Concepts such as disorder (Rosen et al., 2013), cyberfetishism and sociophobics confirm increasing concern among scholars in the knowledge fields. These critics echo concerns over increasing amounts of loose social capital in our hyper-connected communities (Tayebi, 2013), neighborhoods, cities and societies highlighted by authors such as Bauman and Lyon (2012), Castells (2012) and Putnam (2001). As Lanier (2011: xiii) stated, “You have to be somebody before you can share yourself.”

The Subject

Who are these Digital Natives (International Telecommunication Union ITU, 2013)? A puzzling collection of designations is attached to the generations³ that grow up in Internet-dominated, information-rich societies. These names include the net generation (Tapscott, 2009), digital natives (Prensky, 2001), millennials (Oblinger and Oblinger, 2005), Google generation (Rowlands et al., 2008) and many others (Jones et al., 2010).

Authors such as Tapscott and Prensky suggest that contemporary youth are qualitatively different from previous generations. Although the capabilities of the younger generations are open to debate, there is an emerging consensus that younger generations are exposed to an increasing amount of (digital) information (Castells, 2009; Hilbert and López, 2011; Rainie et al., 2012). Hence, it is necessary to define who these digital natives are and how they are expected to

³ For an interesting article that underlines the non-deterministic digital nature of young people, see: http://bits.blogs.nytimes.com/2013/10/07/young-people-are-not-as-digally-native-as-you-think/?_r=0

unravel the subtle notion of unplugging as discussed in the framework (see the information dimension).

Telefónica and the Financial Times (2013) conducted over 12,000 online interviews of respondents between 18 and 30 years of age in 27 countries (in North America, Latin America, Western Europe, Central and Eastern Europe, Asia, the Middle East and Africa). That study revealed that respondents are constantly connected, spending an average of 6 hours online every day (equivalent to 2,016 hours or 2.8 months per year).

According to the Oxford Internet Survey (Dutton and Blank, 2011), a multi-stage sampling of 2000 people in the UK, one major change over the past decade has been the growing use of the Internet as a source of information (p. 6). Compared to first generation Internet users, so-called next generation users (NGUs) are shaped by the emergence of two separate but related trends: portability and access through multiple devices. NGUs are not evenly distributed, but they have higher incomes (p. 5) and are “more likely than first generation users to go to the Internet first for all kinds of information” (p. 6). Compared to previous generations, NGUs have a more advantageous relationship with the Internet and the access to information, people, services and other technologies (p. 6) it can provide, including quicker devices such as webcams, Internet connected televisions and games consoles (p. 8).

The World Internet Project (Internet Project, 2012) administered surveys to people aged 18 and older in 37 countries. That study revealed that a high percentage of users believe that going online has (somewhat or greatly) increased their contact with people who share their

hobbies. Compared with other forms of social media, Internet users in many countries are more attracted to social networking and video-sharing websites (Lieberman, 2013).

The Pew Internet Project (Brenner and Smith, 2013) determined that nearly three quarters (72 percent) of online U.S. adults (over 2,000 respondents aged 18 years and older) use social networking sites, an increase from the 67 percent reported in late 2012. This increase is notable given that in 2005, only 8 percent of online adults reporting using social networking sites.

These data are not representative of the universe of Internet users but they illustrate clear trends in current Internet use. Rather than aiming for a generalization, these trends signal the key role that the Internet plays in contemporary societies as a social platform that extends (amplifies) face-to-face (analogue) relationships (see the space dimension). These data are relevant to the first research question regarding the dichotomy of face-to-face interaction and digitally mediated communication. Bearing in mind the on-going transition in the Smart City discourse, unplugging is a subtle notion in favor of face-to-face (analogue) social interactions. That is, unplugging emerges as a reaction to the techno-centered enthusiasm that supports Smart Cities.

Rainie et al. (2012) coined the term “networked individualism” (p. 7) to describe the ways in which people connect, communicate and exchange information. This concept will be discussed as part of the how dimension of the integrated framework and highlights the opportunities and constraints of a hyper-connected and extensively networked society, that is, people who continuously and ubiquitously play and work on computers and mobile devices. These authors suggest that the shift to networked individualism has been accompanied by

changes in how people behave socially (p. 42) and how they define the boundaries between private and public (see the discussion of the space dimension) both on and offline as well as the limits between individual and collective actions. This transformation can be observed in a growing community that is shifting from the Internet-as-novelty to the Internet-as-utility in everyday life (p. 72).

According to Zygmunt Bauman (CCCB, 2013), “Our society is addicted to information.” Dr. Larry Rosen, a professor at California State University, adds, “In our studies, the typical teen and young adult checks his or her smartphone every 15 minutes or less and if they can’t check as often as they like they get anxious. This anxiety then drives the need to check in to reduce the anxiety which then begins to build again” (Richmond, 2013). In the Richmond article, Rosen explains that the ubiquitous digital technologies become (mobile and wearable devices), the worse this problem becomes (see the information dimension).

To illustrate the magnitude of this information growth, Eric Schmidt explained, "There were five exabytes of information created between the dawn of civilization through 2003, but that much information is now created every two days." An exabyte is equivalent to one billion gigabytes (Rooney, 2013).

In 1985, Hiltz and Turoff (1985) anticipated that “users will be overloaded with information” (p. 680). In their work, these authors emphasized the need for novel strategies to help users filter information and reduce overload. Edmunds and Morris (2000) added that rapid advances in information and communication technology have exacerbated the effects of

information overload, and they highlighted the need to adopt socio-technical strategies to overcome this situation (see the systems dimension), such as implementing personal information management strategies and software solutions such as push technology and intelligent agents (p. 17) (Lanier, 2011).

Eppler and Mengis (2004) analyzed a number of overlapping terms and relevant perspectives in this field, such as information overload, cognitive overload, sensory overload, communication overload and knowledge overload or information fatigue syndrome. The authors explain information overload by comparing the amount of information supplied (e.g., the number of available communication platforms available) with the information processing capacity of an individual (i.e., the quantity of information one can integrate into a decision-making process within a specific period). In this case, information overload occurs when the supply exceeds the processing capacity (p. 326). After a comprehensive review of experiences, Eppler and Mengis observe that reducing information overload requires a combination of personal factors, information characteristics, task and process parameters, organizational design and information technology applications.

Paradoxically, in an information society, the choice to go offline or unplug from this endless flow of data becomes a nearly unreasonable option that very few individuals make (see the who dimension). Factors such as identity (Buckingham, 2008), socialization (Rheingold, 2012) and the extension of human capabilities (Richardson, 2007) make the voluntary decision to not have a digital device or not be online rather rare. In cities, as Hollands (2008) and Kitchin (2013) noted, it has been atypical to remain uninfluenced by discussions of Smart Cities when

one of the main principles is a technology-driven understanding of modern societies. Although citizens have not necessarily chosen to become a hyper-artificial model for cities⁴, it is increasingly challenging to embrace spontaneous, emergent, unplugged social spaces (see discussions of the governance and socio-political process dimensions).

The idea of shaping boundaries to arbitrarily pre-establish the extent to which being online is appropriate is a solution more typical of a totalitarian system than a society that self-regulates the adoption of appropriate “digital dieting” (Brabazon, 2013) to address the “tsunami of data” without losing its processing capacity. In an extension of the strategies that reduce information overload suggested by Eppler and Mengis (2004), we explore the usefulness of the unplugged Smart City not only to address information overload but also to explore the urban governance model of a city universally considered to be smart. The integrated framework illustrates the transition from mainstream approach towards a more democratic understanding of Smart Cities. Our updated framework (Chourabi et al., 2012) attributes a critical factor to social innovation in power relationships between stakeholders. In that respect, 10 thought-provoking dimensions that can contribute to deconstructing the concept of a Smart City using the so-called unplugging decalogue are proposed. Furthermore, a system of key principles aimed at creating a conceptual and analytical framework is suggested.

Unplugging

How and why should we critically (Hollands, 2008; Kitchin, 2013) deconstruct the term “Smart City” to suggest an integrated framework that provides an improved understanding of the on-

⁴ <http://www.wired.co.uk/magazine/archive/2013/12/features/reality-hits-masdar>

going transition from the mainstream definition? The authors propose an answer to this question as well as a decalogue of 10 dimensions.

Derridá (1977) suggested that deconstruction is one way to approach distinctions, “Unless a distinction can be made rigorous and precise it isn’t really a distinction” (Derridá, 1977: 126). Within this article, we deconstruct our understanding of a Smart City and suggest a framework that is complementary to previous classic taxonomies (Chourabi et al., 2012) of the systemic and multi-dimensional social innovation perspective.

A deconstruction (Wolfram, 2012) of the Smart City⁵ (Caragliu et al., 2011: 70) is provided and articulated using 10 dimensions of unplugging, which are grounded in critical social innovation (Calzada, 2013a). Critical social innovation drives transdisciplinary research and provides a guide for collective action, which are interrelated concepts that indicate significant changes, social evolution, structures modification and consideration of ethical norms (Moulaert et al., 2013: 9-13). This definition suggests the importance of an analytical discussion to explore a transition that is occurring in the discourse of Smart Cities.

Which dimensions should be considered to deconstruct the Smart City model (Hollands, 2008)? To what extent is it possible to address socio-technical ideological dimensions (Peck, 2013) to understand the economic and social changes occurring in modern cities (Moulaert et al., 2013: 18)? As Kitchin argues, “...technologies need to be complemented with a range of other instruments, policies and practices that are sensitive to the diverse ways in which cities are structured” (Kitchin, 2013: 10). The authors present 10 dimensions of a multidimensional,

⁵ <http://www.fastcoexist.com/1680538/what-exactly-is-a-smart-city>

interrelated and systemic combination that is explained by an epistemological focus on critical social innovation.

Most likely, because of the claim that the Smart City paradigm has been shaped primarily by providers of large-scale technology⁶ (Kitchin, 2013: 2), the remaining the stakeholders in the urban sphere tend to explore thought-provoking alternative interpretations, such as smart citizens (Hemment and Townsend, 2013), Hacking the City (Sterling, 2011) and FabLabs (Gershenfeld, 2005). The dominant Smart City approach failed because it was not attuned to bottom-up innovation or to the complex, disruptive ways that people use technology. Furthermore, the principle “to be smart, citizens must be connected” (Hemment and Townsend, 2013) denotes part of the major premises in contrast with Harvey’s (Harvey, 2008: 23) statement that refers to the notion of social transformation rather than simply digital connectivity. “It is a right to change ourselves by changing the city.” Hence, the Smart City is perceived by critical thinkers (Holland, 2008; Hemment and Townsend, 2013; among others) as a top-down, master-planned vision shaped around the needs of suppliers rather than the needs of citizens (see the governance dimension).

While large corporate technology companies have been selling a “Smart City in a Box” to cities (p. 5), we open this box to determine which dimensions can be summarized using a non-technological deterministic notion, unplugging. This perspective suggests that citizens can and should play a leading role in conceiving, designing, building and maintaining their cities, as

⁶ See, for example, City Next (www.microsoft.com/government/ww/public-services/city-next) or TheSmarterCity (<http://www-03.ibm.com/innovation/us/thesmartercity>)

argued by Jacobs (1970) and Geddes (Welter, 2003) (see the socio-political processes dimension).

Montgomery (2013) raised many questions in his book “Happy City.” For example, how much of this commonly accepted environment is based on the idea of unplugging? Why do we need to rescue unplugging in the design of our cities? Can we combine off- and on-line environments to create a smarter balance? He argues, “It is not too late to rebuild the balance of life in our neighborhoods and cities and, in so doing, to build a more resilient future.” Addressing the first hypothesis, Turkle (2011) severely critiqued social networking when she referred to the over exposition of social networks while expecting more from technology than from one another. Is Sennett (2012) right when he argues that humankind has forgotten how to cooperate such that we must learn rituals, pleasure and the politics of cooperation? What if instead we focused on the ambient commons (McCulloch, 2013), whole, subtle and sometimes invisible notion of information that is overlooked when modern life is oversimplified as connectivity (see the design dimension)?

It is necessary for the Smart City to be deconstructed to avoid techno-deterministic conditions and to observe how relevant unplugging dimensions can be to social innovation in a more realistic, grounded and socially equal urban sphere. The dimensions of the unplugging decalogue are summarized in Table 1.

Who: Plugging in vs Unplugging - The Social/Digital Divide

After the increasing enthusiasm for using data to improve the life of citizens in modern societies (i.e., open data, the Internet, cloud computing, etc.), the publication of considerable amount of confidential information of citizens (see the space dimension) and heads of states via espionage and theft has somewhat altered the data enthusiasm of some communities (Brown and Marsden, 2013; Benkler, 2011). In fact, there are hazards in certain digital applications⁷ of the Smart City. While some simply collect data, others use that data to control and design citizen interactive artificial services. First, it is relevant to determine who is plugged in and why. Who controls citizen data and why? When big technology providers mention multiple stakeholders, they are not necessarily addressing the penta-helix model of social innovation (Calzada, 2013a) in which civil society, academia, activists or entrepreneurs become central agents in the design of private and public policies. Finally, are Smart City solutions currently based more on vendor push than on city government pull? What are the politics of big data in various Smart Cities?

Apparently, in a Smart City, everyone should be plugged as passive mass users, while the data control center decides what to do with the information. As Greenfield⁸ argues, “The praxis of everyday survival goes almost entirely unrecognized in the contemporary Smart City literature” (Hemment and Townsend, 2013: 10).

The current Smart City achieves nearly complete connectivity, but the concept does not attach enough importance to the tacit influence of an information-driven Smart City. To what extent is it possible for “smart citizens” to stimulate public spaces where unplugged people are **not constrained** either by or because of their digital technology?

⁷ IBM Smarter Cities Intelligent Operations Center: http://www.youtube.com/watch?v=onOXhk_IVNo

⁸ <http://www.youtube.com/watch?v=9keDwTBmZ3o>

As Greenfield (2013: 11) contended, “how might we inscribe a robust conception of the right of the city in all of the technological interventions proposed, including but not limited to those intended to enhance personal mobility, citizen engagement and processes of (individual and collective) self-determination.” As the author suggested, legitimacy must be given to those who decide to live unplugged or to be connected to others without the use of technology.

Currently, the United Nations (Cerf, 2012) has suggested that access to the Internet is a basic human right. However, attention should not be focused solely on the rate of Internet penetration but on the capability to choose whether to be connected—in other words, possessing a critical position of why, how and when citizens are connected or unplugged. Therefore, this dimension goes beyond instrumental factors and focuses on human interaction (see the first research question) as a central element to reduce the social divide in unplugging.

How: Networked Individualism and Neo-communitarianism - Individualism vs Collectivism

When Tim O'Reilly founded the 2.0 paradigm, he also established the way by which cities would be structured in the network society paradigm (Castells, 1999) that involved a new combination of the individual and the collective. Bauman and Beck, among others, commented on threats to individualism in contemporary society, providing significant dimensions for this analysis.

On the one hand, there is the assumption in the Smart City context that relationships are merely peer-to-peer, where ideas and relationships all arise from intimate collaborations across ubiquitous, distributed networks. Ratti (Hemment and Townsend, 2013: 20) called this approach “networked specifism,” Rainie et al. (2012) refer to this as “networked individualism,” while

Turkle (2011) termed it “alone together.” These terms favor an ideal mix between a person and the network in a new constructive and desirable configuration.

On the other hand, Davies (2012) observes an emerging trend of “neo-communitarianism,” which is defined as “a similar counter-movement developed within and against neoliberalism (...) a new vision of the individual is emerging.” In this context, new dynamics among citizens reshape their interactions in society, adopting either the **networked individualism** or the **neo-communitarianism** approach. While networked individualism emphasizes that the individual plays the predominant role in the networked-shaped collectivism, neo-communitarianism highlights how the community may be reshaped based on the actions and behaviors of individuals. Neo-communitarianism further suggests a tension between this hybrid condition that combines individual and collective activities in a “communihood” (Tayebi, 2013). Therefore, rather than suggesting a one-size-fits-all concept, unplugging can be addressed from either the **individual or the collective** perspective.

According to the second hypothesis, this dimension addresses the need to overcome the individualistic form in which the mainstream Smart City definition has been built. Therefore, the integrated framework contributes a balanced to be explored between individualism and collectivism. This dimension is intertwined with the dimensions of governance, focus, socio-political processes and political economy.

Systems: Socio-Technical System Strategies - Urban Systems

The Smart City is all about systems that are connected to individuals who are plugged into digital information devices. However, as Puel and Fernandez (2012: 1297) note, “the existence of socio-technical systems, practices and strategies produce urban forms which intensify social fragmentation.” Thus, how a new technical local infrastructure affects communitarian life should be considered beforehand.

What is the sustainable design for non-plugged or not connected urban spaces? Is it possible to better integrate the social dimension of the city with sensor-driven mainstream design? In today’s society, the Smart City should overcome the initial idea of separation between designers and users (Calzada in Moulaert et al., 2013: 220). Indeed, the main criticism of the term Smart City, as Hollands (2008: 305) noted, stems from the positive and rather naïve stance towards urban development that the term reflects.

Throughout this article, we have referred to the mainstream Smart City perspective. New Songdo (Korea), Masdar (United Arab Emirates) and PlanIT (Portugal) are clear examples of this perspective. These flagship Smart Cities (“in the box”) were built from the scratch as the result of closed planning between governments working alongside large IT firms, such as Microsoft, IBM or Cisco (Ratti, 2014). For instance, one renowned mainstream Smart City is described by Cugurullo (2013: 34) as “with little space for the social aspects of sustainable development and for the basic social dimension of the city”.

How can we design and co-create (see the governance dimension) more open, transparent, democratic, self-regulated, participatory and less artificial (technology-driven) socio-technical urban systems, or a dynamic city metabolism (Baccini, 1997)?

Governance: Master Planning and Top-Down vs Emergent Planning and Bottom-Up

Here is where unplugging the Smart City forces us to examine it as an entrepreneurial city (Harvey, 2000) rather than as the sum of technological social artefacts (Pinch and Bijker, 1984) and gadgets (Lanier, 2011) being controlled by large corporations (see the dimensions of governance, information and socio-political processes). This approach leads to the next dimension in observing the Smart City from the social innovation perspective (Grimm et al., 2013: 450; Calzada, 2013a). Indeed, this description implies that we observe the city from a complex urban governance systemic scalar framework (Herod, 2011) and that we address the contradictions (Harvey, 2000) emerging between the macro and micro where the meso is the black box that must be unwrapped (Mintzberg et al., 1998). With respect to the current debate about governance models, the meso consists of the minutiae that are embodied in the entrepreneurial projects of the city (see the governance dimension). For instance, Shirky (2009) considers “organizing without organizations” and questions what happens when people are given the digital tools to collaborate without traditional organizational structures.

Nevertheless, there is an emerging trend of **bottom-up** participatory models (i.e., smart mobs (Rheingold, 2012), FabLabs⁹, Hacking the City (Sterling, 2011) and other interventions in public and communicative spaces) that openly criticize the Smart City as “...economically polarized, but also socially, culturally and spatially divided” (Hollands, 2008: 312). We cannot determine whether evidence-based cases of informal *peer-to-peer* encounters and physical interactions that are unplugged have improved the governance model output (see the first

⁹ <http://fab.cba.mit.edu/about/faq/>

research question). As Williams (1983) stated, “Technology is never neutral, it has the potential and capacity to be used socially and politically for quite different purposes.”

Therefore, we have certain contextual questions wherein the unplugging notion would fit with some hypothetical governance models (see second hypothesis). How can the Smart City be a centralized vs decentralized decision-making process? (See the socio-political processes dimension). Can bottom-up and **top-down** models coexist (and if possible, how)? Which planning paradigm is more consistent with the socially innovative Smart City? As evidenced, there are many unanswered questions relating to the governance dimension. As Innerarity (2013) stated, “The perspective of governance merely reaches the conclusions dictated by the fact that current social plurality, dynamism and the complexity of the tasks with which it is charged demand, not a central governmental subject, but the cooperation of governmental and non-governmental actors, at various levels and with differing methods and tools” (p. 70).

Information: Overload vs Scarcity

Smart citizens can be understood as an alternative initiative to the technocratic determinism of the Smart City approach. Smart citizens prioritize bottom-up, community-driven, low-cost and local innovative strategies rather than large-scale, urban infrastructure projects (Shepard and Simeti, 2013: 14-15). Today, it is increasingly recognized that smart citizens have an interest in participating in a transition from **controlled** data mining to **open access and user-centered** systems in which the smart use of information can increase transparency, accountability,

participation and collaboration (see the systems and information dimensions). However, as Morozov (2013) stated, “Poor information diets give us new forms of ignorance— ignorance that comes not from a lack of information, but from overconsumption of it.” Information overload is increasingly common in a hyper-connected society, i.e., there is still a gap to overcome to manage this abundance of information. The challenge is how to provide relevant information for improved decision making without overloading citizens with endless data streams that might generate interference or information anxiety (Wurman et al., 2001). Can public and open spaces facilitate information-friendly environments without having to address information overload? (See the who and space dimensions).

McCullough (2013) proposes the management of the ambient commons of a public space, which is clearly significant to rediscovering surroundings or, as we say, unplugging from surroundings, which is similar to Jacobs’ (1970) special attention to drawing on the local knowledge of citizens. As noted by Smart (2013), “Individuals and business are paying the price as time-scarcity, attention-poverty and information-saturation clog the “mental machinery” we rely on.” The “Real Smart City might use IT [information technology] to enhance democratic debates about the kind of city it wants to be and what kind of city people want to live in, a type of virtual public culture.” This idea is consistent with what Kitchin (2013) referred to as a real-time city that opens up new concerns about the needs and desires of the society. The digital and social divides must be addressed accordingly within the political realm, which makes this dimension of unplugging a relevant transition towards a more “progressive Smart City” (Hollands, 2008) as encouraged by the social innovation critical paradigm (Moulaert et al., 2013). (See the who dimension)

What: Social Networking vs Social Capital

Currently, the Smart City has focused on the social networking approach. With the pure definition of the imperative to be connected, we could guarantee that social capital (Putnam, 2001) is not directly achievable. One of the first principles of unplugging is the value of face-to-face and off-line social **interaction** to gain trust among diverse urban development stakeholders (see hypothesis one).

When addressing the question of whether Facebook (or a similar domain) is a complement or substitute for face-to-face interactions, Pollet et al. (2011) admitted that time spent using technology based social media is not associated with larger off-line (face-to-face) networks or feelings of emotional closeness to off-line network members. Furthermore, Pollet et al. stated those who used social media, compared to non-users, did not have larger off-line networks (see the who dimension, first research question and first hypothesis). As Allwinkle and Cruiskshank (2011) noted, there is an unspoken assumption surrounding the “self-declaratory” nature of Smart Cities that they foster **trusting** interactions and contribute to increased social capital, which is an incorrect assumption.

Tayebi (2013) highlighted an alternative to the dominant notion of the Smart City when he spoke of a communihood as “the context for human and social life in the twenty-first century that provides opportunities for active citizenship and local activists to improve the quality of life in their communihood.” The basis of the communihood is the hybrid place-based power relations

and the potential of ICT and social media. As suggested by Pollet et al. (2011), online mechanisms of socializing are not necessary proxies for face-to-face relationships.

Therefore, while the construction of social capital requires a place that allows for physical contact among its members, it could benefit from plugged in artefacts to share and create a sense of belonging. The simple adoption of social networking interactions (i.e., Facebook, Twitter, WhatsApp, etc.) does not imply a direct, positive correlation, nor does it increase the rate of development of a trusting social interaction. Moreover, unplugging and face-to-face interaction spaces are of the utmost importance within the hyper-connectedness described herein (see the following dimension).

Space: Geolocalization > Context Collapse¹⁰ - Fragmented vs Contextualized

Although credit for coining the term is given to Danah Boyd¹¹, the direct source of inspiration was Meyrowitz's (1986) "No Sense of Place" whose perspectives are aligned with the term "space of flows" proposed by Castells (1999: 294). Space of flows, according to Castells (1999:294), represents "the material arrangements that allow for simultaneity of social practices without territorial contiguity." In the context of the Smart City, social media enable the dynamics of networked publics that are implicitly juxtaposed with an analogue era of face-to-face interaction. Therefore, the Smart City may be the connected spaces that "by default, span multiple arenas of the actor's social world; collapsing contexts that were previously segmented."

¹⁰ <http://thesocietypages.org/cyborgology/2013/01/10/context-collapse-a-literature-review/>

¹¹ <http://www.zephoria.org/thoughts/archives/2013/12/08/coining-context-collapse.html>

Nevertheless, we argue that high value social capital interactions based on trust require physically contextualized environments (see the focus and design dimensions). The Smart City discourse assumes that the meaning of context collapse is socially and personally **contextualized** by social media interactions.

“Mobile hyper-connectivity in fuzzily bounded public-private spaces changes individuals’ expectations about the availability of other people and the accessibility of information” (Rainie et al., 2012:104). By no means does this statement appear valid when examining trends¹² in urban spaces and how people behave and interact in cities. Perhaps one of the key differences is the revalorization of analogic urban spaces for a common shared meaning and a sense of context awareness. As McColloughs (2013) suggested, people are still intent on seeing, feeling and creating from new experiences that can be fed by any type of external stimulus over the ambient online environment (rediscovery of surroundings). We call this design dimension of the Smart City from the unplugging perspective the ambient commons.

Design: Ambient Commons – The Structure of Connectivity and Space

Why do we need technology in the Smart City? Given the need for technology, how should the Smart City be designed? The critical definition provided by Hollands (2008) highlighted the **infrastructure-centered** design of Smart Cities when he stated that we require “the utilization of networked infrastructure to improve economic and political efficiency and enable social, cultural and urban development.” Although this is changing, there remains insufficient attention to the people-centered analysis of Smart Cities thus far.

¹² <http://www.fastcompany.com/3013212/unplug/unplug-not-what-you-think-it-is>

We believe that by applying McCollough's (2013) term, ambient commons, we address the main challenge of urban design, which is that physical positions are progressively tagged and digitally augmented. Within this flood, attention matters more than ever (see the who dimension). The fixed forms of architecture and the city play a cognitive role in the flow of ambient information, and accordingly, this work explores current obsessions with smart phones (constant social connectivity) to rethink its focus. Therefore, there is tension between information superabundance and the perspectives of context (see the information and space dimensions). McCullough (2013) suggests the relevance of "rethink attention itself, especially with respect to surroundings." This is also explained by Anderson (2012: 31-32) when he highlights the do it yourself (DIY or new makers) revolution in which "people working together with extraordinary new tools create a manufacturing revolution...Rather than top-down innovation by some of the biggest companies in the world, we're seeing bottom-up innovation by countless individuals, including amateurs." (See the governance dimension). Thus, how can the Smart City transform from an infrastructure design into **people-centered** design, which requires the management of all socio-political decision-making processes.

Socio-Political Processes: Control and Normative vs Free and Emergent

The tension between self-administered freedom and the oppressive role of technologies and meta-organizations in the lives of citizens has been widely discussed (Mattelart, 2010; Foucault, 1975). Cities are urban spaces in permanent conflicts of interest with the socio-political negotiation processes within (Harvey, 2000). However, according to Hollands (2008), the Smart

City paradigm has only reached as far as using “self-promotional examples by stressing their underlying pro-business and neoliberal bias, as well as raising hidden questions about social justice and sustainability.”

There is a growing group of academics (Kitchin, 2013; Moulaert, 2009; Mulgan, 2009; Morgan, 2013; and Grimm et al., 2013) who are conducting evidence-based research addressing the challenge of involving all socio-political stakeholders in a more democratic and participatory process. To the extent that we are able to reach this aim, we will build cities that are consistent with the direction of the statement, “Being (digitally) connected is no guarantee of being smart” (Evans, 2002) (see the who dimension). As discussed, one of the greatest challenges for the Smart City paradigm is to connect penta-helix of stakeholders (public sector, private sector, academia, entrepreneurs/activists and civil society) (Calzada, 2013a) at the local level (Moulaert and Nussbaumer, 2004) in every city to experiment with a new *ad-hoc* urban governance model (Mulgan, 2007)¹³ that is much wider than the previous self-deterministic and uncritical (Kitchin, 2013: 3; Hollands, 2008) Smart City discourse of the mainstream approach (see the system dimension).

It is becoming increasingly relevant for promoters of openness and inclusiveness and for contemporary public administrations to face trade-offs and place limits on transparency. It remains unclear whether so-called 2.0 administrations will ultimately earn the mantle of transparency or reinforce public cynicism about the new “Stasi government,” which has as its final goal the diversification of the mechanisms of control and suppression rather than the use of technologies to embrace freedom (Coglianese, 2009). These processes must be anticipated and

13 <http://thegovlab.org/what-works-the-concept-of-experimental-government>

invigorated as **free and emergent** rather than as **controlled and normative** (see the governance dimension).

Political Economy: Is unplugged Profitable or Unprofitable?

The mainstream and dominant Smart City approach is accused of being neoliberal (Brenner, 2014; Peck, 2013; Hollands, 2008; Kitchin, 2013). Peck (2013) actually emphasizes, “In the political-economic twilight world that has been taking shape after the crisis, it appears that neoliberalism has not gone away, but neither does it remain as it was.” As suggested by Hassan (2009: 80), “Neoliberalism and digital technologies combine to produce a powerful momentum.” What we can state here is that after the technological boom of the Smart City, we are now questioning the property, use and benefits of these investments in cities. Who will benefit from the Smart City? As Mulgan¹⁴ recently stated, if someone wins, someone loses, which implies that we should certainly address the social justice divide (see the who and how dimensions).

If a community (or communihood) can effectively adapt to and adopt digital technologies to address specific local, context-based, community interests, there are increasing possibilities for the development of new relationships, social objects and engagements that can be understood as *new currencies* of the *social* economy. Some suggest that this can be understood as a new capitalism that is self-initiated and self-organized (i.e., crowd funding, open source projects, etc.) and which has particular relevance to social capital (see the focus dimension) (Miller, 2006). Others suggest that there is now another capitalism that is making the large organizations larger and the small organizations smaller (McChesney, 2013; Morozov, 2012).

¹⁴ <http://www.youtube.com/watch?v=8OVyX2Pg-X8#t=77>

Conclusion

This article is grounded in previous research, focuses on understandings of the Smart City, and proposes a ten-dimensional integrated updated framework for its critical analysis. This revision aims to contribute to an enhanced understanding of the Smart City by emphasizing the critical social innovation perspective (Grimm et al., 2013; Moulaert et al., 2009; Mulgan, 2007) and providing a continuum from the mainstream to an emergent and critical transitional version of the Smart City (see the second hypothesis).

Answers to the two main research questions and hypotheses are summarized as follows:

- 1) In the broad context of hyper-connected societies, physical encounters have been impacted by the increasing adoption of digitally mediated communications not only in number but also how the encounters have qualitatively evolved, as was demonstrated by the studies conducted by Telefónica and the Financial Times (2013), the Oxford Internet Institute (Dutton and Blank, 2011) and the World Internet Project (Internet Project, 2012). This research indicates that the evidence that digital technologies have replaced the face-to-face interactions is unclear. Nonetheless, it is noteworthy that the fuzziness of social networking cannot be understood directly as a driver of social capital.

- 2) Grounded in the analysis provided by Chourabi et al. (2012: 6), technology could be considered a meta-factor in Smart City initiatives. In contrast, unplugging, a subtle notion and novel trend, highlights the importance of identifying human interaction (see the focus dimension) as the key meta-factor, which is transversal for the analysis of our framework. In addition to the idea of 'human-interaction' as a meta-factor spread in the 10 dimensions framework, it is noteworthy that each dimension illustrates the inherent tensions and contradictions within the mainstream and dominant Smart City 'in a box' approach (New Songdo, Masdar and PlanIT) and the emergent Smart City initiatives in transition (such as smart citizens, hacking the city or FabLabs).

This article concludes with 10 unresolved questions that will redefine the future research framework and consequently the renewed Smart City policy agenda. These 10 questions serve summarize the previously presented dimensions. The 10 aforementioned dimensions comprise a complex interdependent corpus driven by human-interaction meta-factors.

1. [The Who Dimension] Will the Smart City evolve into an urban sphere in which dwellers have the right to decide whether to be connected (Brenner, 2014)? Will unplugging be a right or a privilege? To what extent is it possible to foresee a transition of Smart Cities from the high to the low social and digital divides towards more democratic, participatory and equal Smart Cities?

2. [The How Dimension] How will the transition between individual and collective entities be organized? Will we witness new hybrid configurations by experimenting with

unplugging? Can the function of the Smart City be understood as a proxy for community (de Wall, 2013; Townsend, 2013; Greenfield, 2013)? Is the city a social interface in which the citizens will be able to self-design their social everyday life needs?

3. [The System Dimension] To what extent is it possible that dwellers can be less passive in deciding the role of urban technology systems? Will these devices serve the citizens more than the citizens serve the devices? Will the transition from an artificial system to an embedded system be understood as an opportunity for adding value to citizen experiences?

4. [The Governance Dimension] How will the Smart City avoid technocratic, dominant, top-down governance? Are there experimental governance schemes that embrace bottom-up, emergent strategic planning and are considered to be real possibilities? Is the bottom-up innovation perspective simply wishful thinking?

5. [The Information Dimension] How realistic is it to combine open access civilian deliberative systems within a confidential, espionage-obsessed paradigm? In the big data era, is it possible to transition from controlled to open data driven models?

6. [The Focus Dimension] Are open, democratic communities of individuals facing a transition from a business-led and techno-deterministic approach to socially innovative community-driven cities (Moulaert et al., 2009; Hollands, 2008; Bauman and Lyon, 2013)? Do we notice the difference between simple social interactions and trusting human ties?

7. [The Space Dimension] Will we observe changes in which context-collapsed information will be contextualized to enhance social interactions? To what extent can context collapse enable new opportunities for social capital?

8. [The Design Dimension] Will technological devices be designed based on people's needs rather than on corporate or infrastructure interests? How can design and user interactions be improved to anticipate an ambient commons for citizens?

9. [The Socio-Political Processes Dimension] Will the socio-political establishment experience a shift towards free and community-driven processes? What are the boundaries to establish these processes in the urban arena?

10. [The Political Economy Dimension] Finally, will the political economy of the Smart City be altered as a consequence of changes in stakeholder power relationships?

The purpose of this article was to present a debate as well as a cross-disciplinary research agenda about unplugging¹⁵. This analysis explores new research opportunities at the intersection of the future of cities, technology, businesses, digital humanities, sociology, ethnography and smart urbanism as well as other disciplines.

¹⁵ TORCH, The Oxford Research Centre in Humanities at the University of Oxford (UK) at <http://www.unplugging.eu>

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