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Smart as an empty space of encounter

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Abstract

'Smart' is an attribute extensively used to characterise both technological devices—such as smart phones, watches or meters—as well as systems, as in the case of 'smart city'. Smart city projects tend to be associated with other technological trends such as big data or the internet-of-things. Despite a widespread lack of consensus on the definition of these expressions, they are presented to the public as promising solutions, which attract conspicuous public and private investments. In this paper, I will argue that the intrinsic vagueness—or emptiness—of these buzzwords, plays a fundamental role in creating spaces of collaboration without consensus. These spaces of meaning, which I call 'empty spaces of encounter', facilitate the gathering of public and private actors, experts and activists, scientists and citizens, who are often called in just as spectators or data donors. Within this foggy space, actors tend to confuse multiple monologues for common dialogue and produce fuzzy agreements on how to allocate public resources to solve societal problems. Taking as an example the expression *smart city*, this paper presents a theoretical proposal to explore the use of buzzwords in discourses about innovation.

Keywords

Smart city; boundary object; STS; performativity; digital technology; innovation policy.

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Smart as an empty space of encounter

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Keywords

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Smart as an empty space of encounter

Introduction

The space in which we live is a physical, geographical space as well as a space of meaning, interaction, socialization, expression, communication. The novelty, since the 1980s, is the transformation of these intangible, untouchable spaces of meaning and interaction into quantifiable, algorithmically computable terabytes of digital information. Expressions such as 'Internet-of-Things' (IoT) or 'Internet-of-Everything', 'Big Data', 'Cloud Computing', 'Smart City', are intended to *describe* the digitalisation of environments (Gabrys, 2007; Gabrys, 2016) and everyday life. However, considering these expressions as innocuous descriptions of some kind of epistemic or ontological reality would be dangerously inaccurate. They should be rather interpreted as complex techno-social artefacts (Bijker et al., 2012), which play a fundamental role in fostering the adoption and marketability of innovation.

In this paper, through a focus on the expression 'smart city', I argue for a concept of *empty spaces of encounter* as a way of elucidating how such expressions operate. The expression smart city, as other expressions such as big data or internet-of-things, have become ubiquitous in both policy and academic discourses. Commentators tend to agree on the intrinsic vagueness and lack of scientific rigor of these expressions – often called 'buzzwords'. This paper tries to address the issue of how to study these expressions, their mechanics and material effects. The objective is to promote new types of constructive 'critique' (Latour, 2004) and help scholars engage in new forms of self-reflexivity and critical deconstruction—and imaginative reconstruction—of policy discourses and initiatives to foster innovation and societal wellbeing. This endeavour

both responds to calls for urban studies and science and technology studies to enrich each other (Farías and Blok, 2017, Corsín Jiménez, 2014) and to contribute to the debate on the nature of markets (Kjellberg and Helgesson, 2007). In order to do this, it draws on insights from studies around the dynamics of cooperative work in the absence of consensus (Bowker and Star, 1999, Star and Griesemer, 1989), economic performativity (MacKenzie et al., 2007; Birch, 2007) and the sociology of expectations (Brown and Michael, 2003).

Smart City, IoT, Big Data: Marketing tales as empty spaces

Expressions such as *big data*, *internet-of-things* or *cloud computing* populate white papers celebrating *smart city* projects.[1] These expressions pretend to describe (emerging) technological trends that deserve the reader's attention and promise to change dramatically the way business and society operate. Are these expressions illusory or accurate descriptions of the world? Are they likely to become over time accurate representations? And, how is it possible that, despite being criticised for their vagueness, these expressions mobilize significant public and private investments and orient the scientific research agenda? This paper is an attempt to sketch a theoretical roadmap for answering this kind of questions by means of an analytical tool, which I call *empty space of encounter*.

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[1] See, for instance: GlobalCityTeams. (2017) Designing A Smart City Data Platform to Unlock the Power of Civic Internet of Things Technologies: Insights from the National Institute of Technology and Standards (NIST) Global City Supercluster Platform Workshop held in Kansas City, Missouri February 7-8, 2017. Korngold D, Lemos M and Rohwer M. (2017) Smart Cities for All: A Vision for an Inclusive, Accessible Urban Future. BSR and AT&T Inc. Hernandez JF and Larios VM. (2013) Cloud Computing Architecture for digital services into Smart Cities. *IEEE-CCD SMART CITIES WHITE PAPER. Batty M. (2013) Big data, smart cities and city planning. Dialogues in Human Geography 3: 274-279.*

Empty spaces of encounter are linguistic expressions, made of nouns and adjectives, featuring definitional vagueness and positive connotation, as happens in the case of buzzwords. Because of their vagueness, they trigger forms of cooperative work in the absence of consensus—as boundary objects (Bowker and Star, 1999)—while also playing a performative role in the creation of markets and economies (Kjellberg and Helgesson, 2007; MacKenzie et al., 2007) through the mobilization of public and private economic resources. Empty spaces, in fact, create preconditions and a *context* for action—actions such as negotiation, bargaining, trading. They imply—in the rhetoric surrounding them—an urgent need for action and the coming together of organisational actors and their representatives. For this reason, empty spaces are not simply marketplaces, but also epistemic battlefields. They are spaces of encounter because they facilitate the accidental, confrontational, or amicable interaction between practitioners and between observers and practitioners. They are spaces of struggle over meaning, and, as a result, spaces of power (Foucault, 1980).

In this paper I argue for the use of the category 'empty space of encounter' to investigate expressions such big data, internet-of-things, industry 4.0, or smart city. These and other similar expressions share the following characteristics. They are empty, in the sense of both vaguely defined and spacious, able to adjust to different meanings and respond to different demands. They enjoy the properties of space: they are multidimensional and able to accommodate the performance and contextualization of action. They mobilise economic resources to generate physical and virtual environments that facilitate the coming together of, and interaction between, humans.

In the rest of the paper, I will explore each of these three dimensions—emptiness, spatiality, and encounter—and explain why expressions such as *smart city* might be

fruitfully categorised as empty spaces of encounter. The aim of this paper is to help scholars across disciplines critically reflect on the way they engage with this kind of expressions and with the humans promoting their use.

Emptiness

Empty spaces are expressions intentionally vaguely defined. Lack of definition is a constitutive element of empty spaces. Terminologically and conceptually, empty spaces are *constitutionally underdetermined* (Hetherington and Lee, 2000), like blank figures such as the joker in games of cards. Their *underdetermination* and flexibility save the social and spatial order, because "[t]he blank figure, constitutionally underdetermined, having no stable identity of its own, is the 'present absence' that allows for relation to be made possible" (Hetherington and Lee, 2000: 173). An analysis of the emptiness in empty space resembles what in Hetherington's and Lee's words can be labelled as a semiotics of blankness or a sociology of nothing: the importance of empty characters like the number zero, which operates as meta-sign transforming other numbers in order of decimals.

The attribute 'smart' functions as a blank figure in the expression 'smart city'.[2] 'Smart' erases the certainty of meaning of the noun 'city', opening a space of meaning and triggering a debate on the multiple interpretations of the expression smart city.

Used since the 1990s (Mahizhnan, 1999), the attribute smart has imposed itself over other attributes, such as *wired* (Dutton, 1987), *digital* (Ishida, 2000), *intelligent*

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[2] An in-depth discussion of the various ways the attribute 'smart' has been used in the definition of different technological artefacts will be carried out in another publication, as it goes beyond the scope of this paper.

(Komninos, 2002), which have been used to describe the growing role played by Information and Communication Technology (ICT) in shaping urban life. The smart city conceptual bubble—initially inspired by Singapore's vision of itself as an Intelligent Island (Mahizhnan, 1999; Heng and Low, 1993)—hosts nowadays a variety of definitions.

> "The label 'smart city' is a fuzzy concept and is used in ways that are not always consistent" (Albino et al., 2015: 4).

> "What's a 'smart' city? There's no one definition. For many city leaders—and especially the private sector—the term has become a shorthand for technology that makes cities work better or more efficiently" (Citiscope, 2017).

'Smart' hollows out meaning to facilitate the creation of new meanings. The result is the proliferation of tautological discourses where 'smart' is never defined, but used to change the meaning of other words, which appears in smart city discourses. Words such as: buildings, mobility, energy, citizens, people, communities, governance, healthcare, education, governance (Meijer and Bolívar, 2016), or regions (Morandi et al., 2016). The following passage offers an example of the use of smart as blank figure.

> "The ongoing process of urbanization of the globe requires extraordinary human savviness and smartness in decision-making in order to cope with the looming challenges and to seize the emerging opportunities. In other words, smartness is not a nice-to-have attribute, but rather a necessity. Ideally, smart (democratic) governance paves the path for smart government, which helps instigate the evolution of a smart urban space" (Gil-Garcia et al., 2016): ix-x.

The word 'smart', in the paragraph above, is used with a positive connotation. Both the positive, optimistic component, associated with visions of the 'good city' (Vanolo,

2014), and the use of hyperbole are very common in smart city discourses and in discourses about empty spaces more broadly.

> "A smart city is the place where citizens enjoy sustainable quality of life through technology: economy and productivity, mobility, environment, education, health and security" (Telefonica, 2017).

> "'Smart' appears to be a panacea that will improve society in a multiplicity of ways" (RAE, 2012).

Vagueness of meaning and positive connotations are key characteristics of buzzwords (Cornwall, 2007). In fact, the kind of expressions I am categorizing as empty spaces of encounter are often labelled 'business buzzwords'.[3] Buzzwords are fashionable stereotyped words or phrases. Examples of buzzwords are: 'responsible innovation', 'green technology', 'personalised medicine', or 'public engagement in science' (Bensaude-Vincent, 2014). The danger of buzzwords is that they tend to "obscure the possibility that there might not be any tangible ideas behind the message in the first place. This hollow ambiguity fools people into believing something useful has been accomplished and encourages leaders to make poor decisions based on inaccurate information and unclear objectives" (O'Rourke, 2017: 56).

The apparent weakness of empty spaces, or buzzwords,—their lack of a clear meaning—is actually a source of strength: it represents an implicit invite to engage with, and contribute to, build these expressions. The underdetermination of empty spaces is extremely important to generate a cooperative environment. The vagueness that characterises empty spaces—their emptiness of meaning—lets people with different

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[3] Examples of buzzwords in management studies are: 'synergy', 'out of the box', 'out of pocket', 'leverage', 'ideation' 'take it to the next level', 'it is what it is'; even relatively harmless words like 'amazing' and 'innovative' made the list when frequently repeated (O'Rourke M. (2017) Death to buzzwords. *Risk Management* 64: 56.)

motivations and intentions come and work together. The mixture of indeterminacy and

expectation at the origin of an empty space represents a powerful call for volunteers and

colonizers to come in and define the undefined. As in the case of construction sites in

city centres, where demolition creates the space needed for the construction of new

buildings, empty spaces create an impression of novelty by making invisibles previous

terms and expressions used to indicate similar ideas.[4] The displacement of certain

discursive elements to the domain of oblivion facilitates the adoption of these

(apparently) new terms. The intrinsic ambiguity and open-endedness of these

expressions also facilitate their proliferation and widespread adoption (Davis, 2008).

As empty spaces represent spaces of interaction and collaboration, they share an

important characteristic with the famous analytical category known as 'boundary

object', which are representational forms—things or theories—that can be shared

between different communities of practice, with each holding its own understanding of

the representation (Bowker and Star, 1999). As boundary objects, empty spaces are

plastic enough to satisfy different informational requirements, yet robust enough to

maintain a common identity across sites. Furthermore, both analytical tools are meant to

indicate sorts "of arrangement that allow different groups to work together without

consensus" (Star, 2010: 602).

Nonetheless, empty spaces are *not* 'boundary objects'[5] for a number of reasons. The

first important distinction is the one between 'objects' and 'spaces'. An object is

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[4] The expression big data, which is considered by some commentators as another way of referring to
analytics or business intelligence McAfee A, Brynjolfsson E and Davenport TH. (2012) Big data: the
management revolution. *Harvard business review* 90: 60-68., is one example.

[5] Star coined the term 'boundary objects' to talk about how scientists balance different categories and
meanings (Star SL and Griesemer JR. (1989) Institutional Ecology, `Translations' and Boundary Objects:
Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39. *Social Studies of
Science* 19: 387-420.) Science has been considered the ideal place where to investigate boundary objects
because "[c]ategories and their boundaries are centrally important in science, and scientists are especially
good at documenting and publicly arguing about the boundaries of categories" p. 296 (Star SL. (1995)

something people act toward and with (Star, 2010), while a space is a set of coordinates

that situate, contextualize the physical or digital interactions between humans. Another

difference is that boundary objects become natural in a particular community of practice

over a long period of time (Bowker and Star, 1999), while empty spaces are designed to

expire within a relatively short timeframe. Empty spaces also are not infra-concepts

(Rommetveit et al., 2017), which are notions that cut across disciplines. Examples of

infra-concepts are: 'integration', 'collaboration', 'engagement', 'shape', 'frame' and

'influence'. The most important difference between empty spaces, boundary objects and

infra-concepts is that empty spaces in the intention of their creators are meant to create

new needs and open new markets. Whether or not the attempt is successful is a question

of empirical investigation.

In this section, I have briefly explored the intrinsic emptiness of meaning that

characterises certain types of expressions. The next step is to move from discussing the

characteristics of this space of meaning to exploring the features of another type of

space related to the first one, and that I will call space-as-context. Thus, the next section

explores the *space* in empty spaces.

Space

The *space* in empty space is the context: the physical, social, economic and

technological context. The corporate nests where empty spaces hatch tend to be spaces

of habits, legitimacy and well-established ideas. Understanding the nature and

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Ecologies of Knowledge: Work and Politics in Science and Technology. Albany, NY: SUNY Press.) In
natural history work, "specimens, field notes, museums and maps of particular territories" are boundary
objects according to Star and Griesemer (1989: p. 408).

characteristics of these nurturing environments is extremely important to uncover the

assumptions and values that make an empty space originate and grow. The centrality

given here to space-as-context is not accidental. It is rather an attempt to counter the

oversimplification and abstraction that are created by expressions featuring bi-

dimensional and unproblematic visions of complex social and environmental issues.

Again I will use the smart city example to explore these aspects.

Smart city initiatives are usually presented in white papers and policy papers as the

solution to critical urban problems produced by intensifying urbanization. The

following quote offers an example of how the problem could be described.

> "Three quarters of our citizens live in urban areas, consuming 70% of the EU's
>
> overall energy consumption and emitting roughly the same share of greenhouse
>
> gases. […] The trend towards urbanisation continues at unprecedented pace at
>
> European and global scale and risks increasing traffic congestion and pollution
>
> which in turn risks rendering cities dysfunctional, undermine[s] competitiveness
>
> and seriously affect[s] quality of life" (EC, 2013: 5).

While the paragraph above signals danger and a call for intervention to mitigate it, in

typical fashion this is followed by some sort of 'opportunity'.

> "Furthermore, cities have a huge economic and purchasing power in Europe and
>
> account for 19% of the total expenditures in the EU. If combined and thought
>
> through in a smart way this could trigger a significant potential for economic
>
> growth and jobs by combining market pull and technology push, even without
>
> reliance on traditional funding mechanisms" (EC, 2013: 5).

This second paragraph describes the economic demand and consequent business

opportunities produced by the same urbanization process. Furthermore, it lays out the

rationale and exposes the material interests of the organisational actors involved. In this case, I would suggest that "significant potential for economic growth and jobs by combining market pull and technology push" is the central policy topic at the core of this document that describes the strategic plan of the "European Innovation Partnership on Smart Cities and Communities" (EIP-SCC). Urbanization—despite being a serious issue—is not framed as a problem worthy of thorough investigation in itself, but as a pretext. 'Urbanization' is described as a problem in order to be made into a justification for presenting 'smart city' as a solution.

In the words of its authors, the EIP-SCC initiative is envisioned as an emerging marketplace, as exemplified in this passage: "we strive for 100 cities to collaborate on bundling demand, 100 industries to cooperate and develop solutions" (EC, 2016: 9). The creation of jobs and economic growth is the central objective in this policy document, which is part of the wider "strategy for smart, sustainable and inclusive growth" laid out by the European Commission to respond to the 2008 economic crisis (EC, 2010). This strategy is informed by a vision of the State—the so-called *competition state*—that features marketization and the creation of economic activities within certain national territories, with the intention of boosting State economic competitiveness[6] in transnational terms (Cerny, 1997; Cerny, 1990). As a result, *competitiveness* is explicitly recognised as a fundamental objective within the *Smart Cities and Communities* strategy.

> "This partnership strives at a triple bottom line gain for Europe: a significant improvement of citizens' quality of life, an increased competitiveness of

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[6] For a discussion on the term competitiveness please see Huggins R and Thompson P. (2017) Handbook of Regions and Competitiveness: Contemporary Theories and Perspectives on Economic Development. *BUSINESS & ECONOMICS*. Edward Elgar Publishing, 592.

Europe's industry and innovative SMEs together with a strong contribution to

sustainability and the EU's 20/20/20 energy and climate targets" (EC, 2015: 3).

Other international organisations and bodies, such as the OECD[7] or the World Bank,

also contribute to favour new forms of 'high-tech urban entrepreneurialism' (Hollands,

2008) and visions of smart city success measured in economic terms (Anthopoulos,

2017). The smart city market is a prosperous business-to-business (B2B) market,

populated by private firms that sell different types of technologies, from broadband

networks and smartphones, to Internet-of-Things, Cloud Computing, Big Data

Analytics, Artificial Intelligence, Facial Recognition, and Geographic Information

System (Research&Markets, 2016) as well as public sector organisations and regional

and local authorities.[8]

"The smart cities market size is estimated to grow from USD 312.03 billion in

2015 to USD 757.74 billion by 2020, at an estimated CAGR of 19.4%. The

driving factors for the growth of smart cities market are technological

advancements in the field of IoT, cloud, sensors, & mobility; growing

demographics & hyper-urbanization; government initiatives; growing energy

consumption & requirement for optimization of energy usage during peak hours;

increasing share of renewable energy and limitations in capacity expansion; and

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[7] See, for example, OECD. (2007) *Competitive Cities: A New Entrepreneurial Paradigm in Spatial Development*.

[8] These are the companies that populate the *smart city market* according to Research&Markets: ABB Ltd. (Switzerland); Accenture plc (US); AGT International (Switzerland); Atos SE (France); Capgemini (France); Cisco Systems, Inc. (US); Ericsson (Sweden); General Electric Company (US); Hitachi, Ltd. (Japan); Honeywell International, Inc. (US); Huawei Technologies Co., Ltd (China); IBM Corporation (US); Intel Corporation (US); Itron, Inc. (US); Libelium Comunicaciones Distribuidas S.L (Spain); Microsoft Corporation (US); Nokia Corporation (Finland); Oracle Corporation (US); Schneider Electric SA (France); Siemens AG (Germany); Silver Spring Networks (US); Toshiba Corporation (Japan); Urbiotica (Spain); Verizon Communications, Inc. (US); Worldsensing SL (Spain) (Research&Markets. (2016) *Smart Cities Market to 2020 - Industry Automation, Power Supply, Security, Education, Buildings & Homes, and Others - Global Strategic Business Report 2016*. Available at: https://0-search.proquest.com.cataleg.uoc.edu/docview/1812903202?accountid=15299.)

decrease in operational cost of smart building infrastructures in capacity

expansion" (GLOBE-NEWSWIRE, 2016).

On the basis of this information, it is now easy to see that the people living in a city, its

citizens, are not the *customer* nor the *user* of smart city solutions, even if most of these

solutions are said to improve their lives. They are seen as a *factor* that contributes to the

expansion of the smart city market (e.g. "growing demographics & hyper-

urbanization"). As a result, citizens have rarely been involved in the deployment of

smart city projects (Thomas et al., 2016). Smart city solutions are conceived to appeal to

city and regional government officials: they are the *client*. They are the ones who should

transform their (smart) cities into machines for achieving higher productivity,

efficiency, employment, economic growth and the promotion of technological

innovation (Nam and Pardo, 2011).

Within this scenario, smart city becomes an innovation policy instrument as well as a

marketing strategy to sell digital technologies (Gabrys, 2014) and entire cities (March

and Ribera-Fumaz, 2016). In the era of market triumphalism (Gibbs et al., 2013), public

sector actors, such as regional governments and city councils, have to find ways to

respond to fierce competition.

> "Cities, not nations, now compete for people, ideas and capital, and a city's
>
> smartness is increasingly becoming a major selling point. City marketing is
>
> necessary for cities that act as a magnet to attract new talent, resources and
>
> investments" (Nam and Pardo, 2011: 189).

The smart city discourse offers two types of advantage to policy makers and city

officials: it represents an opportunity to improve the efficiency of their systems and a

way to contribute to local economic outputs.[9] More specifically, by means of public

procurement—which accounts for a significant proportion of the overall demand for

goods and services—national and local governments can foster new forms of demand-

oriented innovation policies (Edler and Georghiou, 2007). The positive effect of public

procurement on innovation has been compared with the knowledge-transfer effect of

universities and research centres (Aschhoff and Sofka, 2009). North-Baltic Sea cities

have used public procurement to increase their urban competitiveness (Lember et al.,

2011).[10]

This brief reconstruction of the different types of corporate and policy needs and

interests, involved in a complex story such as the EC *Smart Cities and Communities*

strategy, gives an idea of the migration of certain expressions from the realm of

marketing, or scholarly ideas, to the realm of policy and business decision and

implementation. Depending on the time and location wherein we observe this migration,

the degree of transformation of the physical and infrastructural environment will

change. Empty spaces of encounter are transformative discursive expressions. Their

power lies in their ability to persuade policy makers and decision makers to take

decisions to enact them.

Thus, empty spaces of encounter are *performative* speech acts (Searle, 1989), in the

sense that they contribute to create a reality that did not exist beforehand. A complex

network of uncontested truths, habits, taboos and taken-for-granted ideas play a role in

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[9] On the idea of smart city as a strategy for creating value please see for example Tokoro N. (2016) *The Smart City and the Co-creation of Value: A Source of New Competitiveness in a Low-Carbon Society*: Springer.

[10] The way procurement influences innovation is not always predictable and some experts argue that "public purchasing should first and foremost be concerned with ensuring the quality of government services" p. 140 (Uyarra E and Flanagan K. (2010) Understanding the Innovation Impacts of Public Procurement. *European Planning Studies* 18: 123-143.)

the creation of this economic and political reality. The concept of empty space of encounter wishes to contribute to previous studies which have explored the impact of systems of ideas—e.g. economics (Miller, 2005; Callon, 2005; MacKenzie et al., 2007)—on economies and in the making of markets (Kjellberg and Helgesson, 2007).[11] How empty spaces create markets is an empirical question that can be answered by applying a variety of research strategies. For instance, an analysis of differences in national approaches to market regulation, research and developments, and ethical requirements can help scholars shed light on how the competition state uses public policies to promote innovation-based economies under specific flagship terms (Benner and Löfgren, 2007). Assessing the success or failure of multiple attempts to enact ideas into technologies and social or institutional practices is an empirical issue. Characteristics—economic, geographical, political—of the environment where an empty space migrates influences its material declination, concrete meaning and success. There is no one smart city, but millions of stories that can more or less resemble the narrative of a smart city (Hollands, 2008; Shelton et al., 2014; Meijer and Bolívar, 2016).

Space-as-context is an invite to map and reconstruct the (il)logical chains of ideas that justify decisions and discourses taken in name of a certain expression and critically challenge not only the internal consistency of these discourses, but also the existence of fact-based evidence of the appropriateness of the solutions proposed. The objective is to

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[11] The importance of making economics, as a discipline, more accountable and transparent is a topic whose importance has been recognised not only in economic sociology and material culture, but that also finds support in the arguments presented by those who advocate for a *Modern Political Economics* (Varoufakis Y, Halevi J and Theocarakis NJ. (2011) *Modern Political Economics: Making Sense of the Post-2008 World*: Routledge..)

expose the value and values[12] of specific empty spaces in their multiple local

manifestations and/or in the astonishingly homogeneity of its marketing promotion.

These proposals are not new. The expression smart city has been critically challenged

and deconstructed in other studies, which have paid attention to its utopian component

(Bunnell, 2015; Jazeel, 2015). Studies, based on other theoretical underpinnings, have

also explored the space-as-context and shown how private corporations can try to seize

the value of an expression such as smart city through trademarks and corporate

storytelling (2014) or urban marketing labelling processes (Hollands, 2008). A growing

body of work has also drawn insights from the work of Michel Foucault and Gilles

Deleuze to expose the relationship between discourses, power and domination dynamics

(Klauser et al., 2014; Gabrys, 2014; Vanolo, 2014; Krivý, 2016; Luque-Ayala and

Marvin, 2016). Adopting the concept of empty space of encounter to explore these

topics is a proposal to systematize previous knowledge, make comparisons and drawn

on insights coming from a wider theoretical and methodological spectrum.

This kind of analysis could help dig into the mechanics of these expressions and

identify similarities in the way they exercise their persuasive power. For instance, as

shown in the smart city case, empty spaces are characterised by *a rhetoric of hope and*

promise, which has demonstrated to create two sources of permanent bias in policy

response (Brown and Beynon-Jones, 2012). On one hand, it creates a perceived need to

react rapidly to often unchallenged claims about imminent benefits of emerging

technologies. On the other hand, it contributes to foster a climate of institutionalised

historical amnesia whereby policy communities fail to critically reflect on the

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[12] For an in-depth discussion on *value* and *values* please refer to Brosch T and Sander D. (2016) Handbook of value: perspectives from economics, neuroscience, philosophy, psychology and sociology. Oxford (UK): Oxford University Press.

periodicities of hype and disappointment. Finally, it contributes to the mythology of

radical innovation by obscuring the fundamental role played by marketing in any

innovation process (Trías de Bes and Kotler, 2011). An analysis of space-as-context is

an invitation to develop an historical, more sensible understanding of instances of

incremental process and product innovations, as opposed to true inventions (Edgerton,

2006), at the time of approaching terms meant to describe the revolutionary effects of

technology.

Finally, the space in empty space calls for the humans to step in again at the centre of

the stage. This attempt should not be interpreted as a reactionary move toward human-

centred social science and the resurrection of the traditional distinction between nature

and society (Murdoch, 1997). It is rather the opposite: it proposes to dig into the

political economy of technoscience (Goven and Pavone, 2015; Birch, 2013) to shed

light on the co-production of technology and power within environments. The role of

specific social groups in securing the adoption of certain technological artefacts over all

other potential alternatives used to be acknowledged in the past (Bijker, 1995). Yet,

along the way, somehow we have lost sight of how empiricism should be used to build

shared truths[13] (Latour, 2004). To find new ways to oppose the inhumanity brought by

normative abstract reasoning (Mirowski, 2002; Mirowski, 2013), and look for ways to

talk about empathetic relations, mutual care and interdependence of persons (Held,

1995), the next section focuses on meeting the humans who inhabit an empty space,

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[13] A brief excursus to remind ourselves that "[t]o truth only a brief celebration of victory is allowed
between the two long periods during which it is condemned as paradoxical, or disparaged as trivial."
Arthur Schopenhauer, 1818, "Die Welt als Wille und Vorstellung", Preface to the First Edition, p. xxv.
English translation by E. F. J. Payne in The World as Will and Representation, Volume I, Falcon's Wing
Press, Indian Hills, Colorado, 1958.

unveiling their visions of the world, and understanding their motivations, values and beliefs.

Encounter

Since empty spaces of encounter are terms and expressions that facilitate the gathering of humans pursuing different objectives, the last topic we need to cover is the encounter between and with these humans. To approach this issue, let us gather some additional insights form the smart city case. The following quote can serve as introduction.

> "Many have embraced the Smart City banner. But it seems each observer defines 'city in the image of their own profession. CEOs of IT firms say that cities are 'a system of systems' and visualize the city as an increasing and dense flow of information to be optimized. … If we're really to understand and appreciate cities, especially smart cities, our focus has to be elsewhere: it has to be on people" (Cortright, 2017).

This paper is not about smart city. It is about the people who talk about smart cities. The people who explore a complex phenomenon such as a city "in the image of their own profession". I will use the term *practitioner* to refer to these people.[14] Practitioners belong to, and represent, a variety of organisational entities, either public or private, for profit or non-profit ones. Practitioners receive specific training about their duties and responsibilities, and their behaviour is disciplined through a complex structure of penalties and rewards, which influences not only their salary and career prospects but

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[14] The term 'practitioner' is commonly used in business studies to identify those people, engaged in the practice of a profession, who are not scientists or scholars. In this paper, the term is used in its broader sense to include scholars, that is, people who have been awarded a PhD.

also their morale and ethics. Practitioners learn to play roles, such as buyer or seller (Solomon et al., 1985), expert or decision-makers. Since they belong to multiple groups, their identity and individuality could be fruitfully seen as a point of intersection of multiple *social circles* (Simmel, 1950), rather than as a monolithic object of inquiry.

Practitioners are the writers and the readers of policy documents and white papers. They are the Chief [Executive/Financial/Technology..] Officers looking into the future in search of revelatory signs of where to orient their investment decisions. Understanding what this kind of people consider desirable and reasonable—as a result of a complex mixture of experience, education and herding behaviour—implies learning their language. A language made of acronyms, formula, legal terms and programming code. A language full of risks and challenges, promises and expectations (Pollock and Williams, 2010).

Smart city is a space of interaction for scientists, urbanists, business people, city officers and governors. Each type of practitioners bring some type of expertise and pursue some kind of organisational and/or personal goals. Officers of municipalities and local governments who have used the attribute smart as a way to engineer urban competitiveness (Charnock and Ribera-Fumaz, 2011), sometimes indulging in self-congratulatory discourses (Hollands, 2008). Professionals working in standardization bodies have spent great effort in clarifying the smart city domain and its rage of industrial products (Anthopoulos, 2017). Scholars have tried to help other stakeholders define the smart city concept and follow roadmaps toward implementation (Neirotti et al., 2014). Each type of practitioners has contributed somehow to build the space of meaning, legitimacy and materiality of the smart city idea on behalf of their corporations. Because practitioners belong to organisations and often act on their behalf,

their presence is described by referring to the type of entity they work for, as
exemplified in the following quote.

> "[T]he smart city domain is being characterized by an emerging market […]; a
> competitive standardization arena […]; a growing network of city alliances,
> forums and market places that aim to bring together scientists, practitioners and
> city governments in an attempt to define a common urban future; and a
> promising international network of scholars that studies and evolves the domain"
> (Anthopoulos, 2017: 128).

The objective of this final section is to explore potential ways to engage with those
"scientists, practitioners and city governments" who contribute to transform marketing
buzzwords into material urban, environmental and technological changes. To follow the
authors—or shadow writers—of pieces of legislation, public contracts or influential
white papers through the corridors of corporations and large bureaucracies, I would
suggest to adopt an epistemic community approach (Haas, 1992).[15]

Epistemic communities give their members not only instruments to interpret reality, but
also point toward preferable courses of action based on shared assumptions on cause-
and-effect relationships, risks, benefits, and positive and negative values (Haas, 1992).
Exploring the anthropological and philosophical assumptions embraced by each
epistemic community could help us understand the extent to which certain types of
practitioners are intellectually compatibilities or incompatible. Individualistic rather

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[15] The term *epistemic community* has been used to acknowledge and investigate how patterns of reasoning
and ideas adopted by policy-makers, or by those to whom they turn for advice under conditions of
uncertainty, influence the identification and pursue of national interests and world politics. The
expression *epistemic communities* should be interpreted as "a vehicle for the development of insightful
theoretical premises about the creation of collective interpretation and choice", p. 368 (Adler E and Haas
PM. (1992) Conclusion: Epistemic Communities, World Order, and the Creation of a Reflective Research
Program. *International Organization* 46: 367-390.)

than collectivistic approaches to problem-solving could be favoured by epistemic groups who are familiar with individualistic interpretative models. Research methods and working habits, or working standards, as well as exposure to diversity,[16] can also contribute to create compatibilities or incompatibilities between people who come from certain epistemic communities and migrate across interdisciplinary epistemic networks (Rommetveit et al., 2017). Humans entering into an empty space can face accidental, confrontational or amicable encounters with other humans depending on their interests and culture. Since within empty spaces people discuss, take decisions and contribute to co-create innovation trajectories, studying the interactions and group dynamics of the actors operating within these spaces could help us understand the repetition of certain techno-scientific imaginaries and compare their appearance with the degree of diversity in the composition of groups.

Mapping the complex process of migration of ideas from certain epistemic areas into the realm of policy and practice is certainly not easy. Understanding the impact of each group of practitioners, or of certain individual practitioners, requires historical and archaeological work to explore causal relationships between events. Sometimes it is difficult to explain why some proposals made by scholars become extremely popular in the policy domain. The 'smart specialization' idea, which advocates for orienting public investments in research and development activities at regional level to favour specific

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[16] Diversity refers in this context to any sort of variation in knowledge and experience a person can have. Humans can discover diversity by changing academic field, the country they live in, organization they work for, parenting duties, level of wealth, professional title, sexual preferences, living environment, as well as by working and living with people from different cultures and ethnic origins. In this respect, studies on geographies of encounter offer fruitful insights for future research. See for example: Friedman SS. (1998) *Mappings: Feminism and the cultural geographies of encounter*: Princeton University Press. Askins K. (2015) Being Together: Everyday Geographies and the Quiet Politics of Belonging. *ACME: An International Journal for Critical Geographies* 14: 9. Valentine G. (2008) Living with difference: reflections on geographies of encounter. *Progress in Human Geography* 32: 323-337.

types of technologies or population of firms, is a clear example of the rapid policy adoption of certain scholarly ideas (Foray et al.; Foray and Goenaga, 2013).

Acknowledging the contribution of individuals or groups of practitioners within a specific empty space is a complex yet important task to promote accountability and critical thinking. Concepts such as epistemic community, or *communities of practice* (Wenger, 1998),[17] represent just proposals to engage with this task. Other types of approaches, and analytical and methodological instruments can be envisioned to map controversies, expose monologues transformed into shared agreements, unveil power dynamics and identify those groups who are excluded, under-represented or are given a fictitious presence, as happens with women (Czarniawska, 2010) or citizens in smart city projects (Gabrys, 2014).

To explore collaborations taking place within empty spaces, a rich array of methodological approaches can be embraced and imagined. Ethnographies, for instance, have been used in anthropology to experience and explore of the Other's space while adopting a certain openness of mind, a constant need to problematize, a refusal to take anything for granted, to treat things as obvious and familiar (Kociatkiewicz and Kostera, 1999). The illegitimate stranger is an important source of learning (Bowker and Star, 1999). In fact, someone's illegitimacy appears as a series of interruptions to experience (Dewey 1916, 1929) or a lack of a naturalization trajectory that make visible the invisible of what members of the community take for granted; it allows the researcher to question and problematize the 'obvious', to take notice of the implicit assumptions on which the orders are founded.

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[17] In our human daily experience, meanings are neither static nor immutable, but constantly negotiated amongst people. Communities of practice feature mutual engagement, joint enterprises and common repertoires as distinctive characteristics.

Finally, the encounter in an empty space does not take place just amongst the humans

who inhabit that space, but also between the observer and those humans. We, both the

reader and the writer of this paper, are practitioners in this view.[18] Furthermore,

whoever adopts these expressions—to support, criticise or simply explore them—

intentionally or unintentionally contributes to legitimatise it[19] and to substantiate and

make real the space of meaning the expression is meant to create. Naming the

expression represents the first step toward entering into an empty space. Even scholars

who are "skeptically conscious that the 'label' may be just a trend" (Battarra et al.,

2016: 2), or wish to criticise the rhetorical aspects of a term like smart city (Hollands,

2008), are sucked into the empty space in the same moment they start talking or writing

about it. The concept of empty space represents an attempt to help scholars reflect on

how they want to engage with the latest buzzword, by reminding them that they are void

like black holes, and what kind of policy impact—if any—they are trying to produce.

Conclusions

Certain words and expressions play an important role in translating complex emerging

technological realities into promissory science easily digestible and appealing to policy-

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[18] Latour presents this situation as a lacerating dilemma for the intellectual when he writes "[w]ars against ignorance and wars out of ignorance. My question is simple: Should we be at war, too, we, the scholars, the intellectuals?" Latour B. (2004) Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern. *Critical Inquiry* 30: 225-248.: p. 225. However, Donna Haraway dissolves the paradox by bringing back the reality of life into the aesthetic and rhetoric of the intellectuals: "[t]hese wars are personal. They make me who I am; they throw me into inherited obligations, whether I like it or not" Haraway DJ. (2004) *The Haraway Reader,* London: Routledge.: p 1. From the standpoint of reconciliation through the making of experiences and relationships, I suggest to look for Haraway's 'elsewhere': "[t]here can be an elsewhere, not as a utopian fantasy or relativist escape, but an elsewhere born out of the hard (and sometimes joyful) work of getting on together in a kin group that includes cyborgs and goddesses working for earthly survival" ibid.: p. 3.
[19] For a review on the concept of legitimization in organizational settings please see Hybels RC. (1995) On legitimacy, legitimation, and organizations: A critical review and integrative theoretical model. *Academy of Management Proceedings.* Academy of Management, 241-245.

makers and investors. This study introduces the concept of *empty space of encounter* by using as an example discourses emerging around the expression 'smart city', used to indicate promises and advancements associated to the application of ICT in urban environments. Empty spaces of encounter, such as Internet-of-Things, Big Data, Cloud Computing, Digital Transformation, or Industry 4.0, not only describe but also help *co-produce* technological innovation (Jasanoff, 2004). They do so by creating visions of the future (Borup et al., 2006) and expectations about the future—or discourses about alternative futures[20]—which have the power to orient decisions about public and private investments and make prevail certain innovation pathways over others (Brown and Michael, 2003).

By creating hopes and expectations, illusionary challenges and achievements, technological buzzwords become empty spaces of encounter for attracting money and attention. The concept of empty space of encounter wishes to help scholars and more broadly, observers disentangle rhetorical argument from real political concerns. From a policy perspective, it is important to investigate these spaces because they may accommodate deceptive marketing practices, narrow or biased interpretations of complex problems, and misleading insights on where to invest economic resources. From a scholarly point of view, empty space is an attempt to foster critical thinking amongst those who tend to take for granted the legitimacy and meaningfulness of

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[20] Multiple, contradictory expectations and visions of the future can guide action in areas as different as hydrogen energy (Eames M, McDowall W, Hodson M, et al. (2006) Negotiating contested visions and place-specific expectations of the hydrogen economy. *Technology Analysis & Strategic Management* 18: 361-374.), cord blood stem cells banks (Brown N and Kraft A. Ibid.Blood Ties: Banking the Stem Cell Promise. 313-327.), or interactive TV (Konrad K. Ibid.The social dynamics of expectations: The interaction of collective and actor-specific expectations on electronic commerce and interactive television. 429-444.)

buzzwords used in business and marketing propaganda and underestimate the political

and ethical implications of uncritically embrace them.

Expressions, which can be categorised as empty spaces of encounter, feature three basic

characteristics: they are terminologically vague and have a positive connotation as

buzzwords. Discourses around these expressions generate hope and expectations about

the promises of science and technology, urgency for action and mobilization of public

investments. Finally, the analysis of these expressions require an investigation into the

epistemic viewpoint of those humans who create, adopt, criticise or promote these

expressions. The concept of empty space of encounter helps us reconstruct the

relationship between discourses, contexts and practitioners, make comparisons, and find

new ways to challenge pitfalls, conflicts of interests and areas of uncertainty in policy

initiatives.

The concept of empty spaces represents a proposal, a manifesto, a call for action to

imagine an *elsewhere* (Haraway, 1991). It assumes that a powerful critique not only

unveils the ideology—and the myths (Swyngedouw, 2000)—hidden behind the curtain

of objectivity, necessity, market imperative, and inscrutable citizens' desires present in

experts' discourses, white papers and publications, but that it also suggests a way

forward.[21] From a *pars destruens* to a *pars construens*, from deconstruction to

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[21] The advantage of adopting a constructionist epistemological perspective (Berger PL and Luckmann T. (1966) *The social construction of reality: A treatise in the sociology of knowledge,* New York: Garden City.) on empty space lies in this simple consideration: by changing what we believe in, we can change the world around us. Or, as expressed by Jasanoff: "[b]riefly stated, co-production is shorthand for the proposition that the ways in which we know and represent the world (both nature and society) are inseparable from the ways in which we choose to live in it" (Jasanoff S. (2004) States of Knowledge: The Co-Production of Science and the Social Order. *International Library of Sociology.* London: Routledge.: p. 2.) The same spirit can be found in the turn to ontology in STS, which could be understood as another attempt to apply its longstanding core slogan – 'it could be otherwise' – this time to the realm of the ontological (Woolgar S and Lezaun J. (2013) The wrong bin bag: A turn to ontology in science and technology studies? *Social Studies of Science* 4: 321 –340.) In embracing this call for 'thinking otherwise', we face a fundamental distinction between descriptive and normative knowledge and an opportunity to explore new forms of normativity, such as care-based approach to ethics and politics (Wickson F, Preston C, Binimelis R, et al. (2017) Addressing Socio-Economic and Ethical

construction, from critique to alternative proposals. Empty spaces invite technologists and intellectuals to reflect on what future they are helping to imagine and create and to expose the conflicts of interest, dreams, values and biases of the humans inhabiting and contributing to build these spaces. The aim is to put the human back into the centre of the network, engage in discourses on power and unveil the material interests covered under the rhetoric of any easy technology fix.

Considerations in Biotechnology Governance: The Potential of a New Politics of Care. *Food ethics*.), and new approaches to the creation of expert and non-expert knowledge.

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