The Democratic Anchorage of Governance Networks in Smart Cities: An Empirical Assessment

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Introduction

The smart city approach has gained utmost popularity both among academics and practitioners as a promising way 'to solve tangled and wicked problems inherited in the rapid urbanization' (Nam and Pardo 2011a, 185) through an extensive adoption of ICTs. In one of the most cited definition of smart cities Caragliu, Del Bo, and Nijkamp claim that they 'believe a city to be smart when 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, Del Bo, and Nijkamp 2012, 70).

Yet the concept of smart city is far from being undisputed due both to its fuzziness (Caragliu, Del Bo, and Nijkamp 2012; Albino, Berardi, and Dangelico 2015; Rodriguez Bolivar and Meijer 2016; Grossi and Pianezzi 2017) and to its self-celebrating nature (Hollands 2008, 2015). On the one side, indeed, there is no agreement in literature on a shared definition of smart city and this concept is usually depicted as multidimensional. In smart cities, in fact, technology, knowledge economy, human capital, and environmental sustainability conflate (Meijer and Rodriguez Bolivar 2015; Gil-Garcia, Nam, and Pardo 2016). Within this broad range of elements cities would tailor their approach to become smart on their specific contexts (Meijer, Gil-Garcia, and Rodriguez Bolivar 2016) but there are, nevertheless, some common goals that seem to guide this choice: local economic development, promotion of environmental sustainability, improvement of citizens quality of life through better services, innovation in governance structures and processes, and adoption of ICTs to support service delivery (Nesti 2018a). On the other side, many scholars contest the neoliberal vision of the city produced by 'smart experimentations' as too business-driven and depoliticised (see, among the others, Hollands 2008, 2015; Vanolo 2014; Grossi and Pianezzi 2017). On the same vein Luque-Ayala and Marvin argue that 'most of the existing debate on smart urbanism is primarily undertaken by a relatively exclusive set of commercial, technology and policy interests' (Luque-Ayala and Marvin 2105, 2109).

With reference to this latter point, one of most challenging analytic effort in analysing smart cities is to grasp the nature of their governance dynamics. Governance refers to 'all those interactive arrangements in which public as well as private actors participate aimed at solving societal problems, or creating societal opportunities, and attending to the institutions within which these governing activities take place' (Kooiman 1999, 70). Literature on smart cities generally agrees in stating that processes of interaction and collaboration among stakeholders are a peculiar characteristic of their

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governance approach[1] (Coe, Paquet and Roy 2001; Batagan 2011; Nam and Pardo 2011a, 2011b; Schaffers *et al.* 2011; Caragliu Del Bo, and Nijkamp 2012; Chourabi *et al.* 2012; Zygiaris 2012; Angelidou 2014, 2015, 2016; Albino, Berardi, and Dangelico 2015; Meijer and Rodriguez Bolivar, 2015; Rodriguez Bolivar and Meijer 2016; Gil-Garcia, Pardo, and Nam 2016; Meijer, Gil-Garcia, and Rodriguez Bolivar 2016; van Waart, Mulder, and de Bont 2016; Brorström *et al.* 2018). Recent analyses of governance processes in some smart cities also empirically confirmed the relevance of collaborative relationships among local stakeholders in defining and implementing a smart strategy (Nesti 2017; 2018b). Remarkably, collaboration in smart city is often depicted as a new mode of governance based on networking between different interdependent organisations (Ygitcanlar, Velibeyoglu, and Martinez-Fernandez 2008; Kourtit and Nijkamp 2012; Rodriguez Bolivar 2015). Rodriguez Bolivar describes the structure of governance adopted in smart cities as a network of actors lead by local governments aimed at creating 'an interactive, participatory, and information-based urban environment with the ultimate aim of producing increasing wealth and public value, achieving higher quality of life for citizens' (Rodriguez Bolivar 2016, 53). However, a major problem with the theorization of governance in smart cities as the result of networking processes is that it raises questions about its openness, inclusiveness, and democratic nature. A critical aspect of governance networks underlined by literature is, in fact, their democratic legitimacy (Kljin and Skelcher 2007). Papadopoulos, among the others, argues that networks' democratic legitimacy is problematic because they lack visibility, they dilute responsibilities among actors, and they are often uncoupled from official representative bodies. As a consequence, vertical accountability to the general public is threatened (Papadopoulos 2010).

The democratic nature of governance networks appears even more challenging in smart cities where local governments interact with several non-public actors, especially strong economic players, and where citizens are often depicted only as users and not as part of a local political community where the smart city, in the end, is situated. Moreover, some authors criticised the uncertain democratic legitimacy of governance processes in smart cities (Meijer and Rodriguez Bolivar 2015) since policy-makers could be captured by corporate interests (Hollands 2008, 2015; Vanolo 2014) and citizens have poor chances to voice their needs (Vanolo 2016; Grossi and Pianezzi 2017). These findings confirm the problematic nature of governance processes in smart cities and call for further research on this relevant topic.

[1] Based on an extensive literature review Meijer and Rodriguez Bolivar (2015) identified four conceptualizations of smart city governance: a) as a more effective government of a smart city, b) as a more informed process of decision-making (smart decision-making), c) as the process of restructuring of local administrative structures to cope with new policy challenges (smart administration), and d) as the process of restructuring of internal organisation and external relationships to foster collaboration with the various actors of the territory (smart urban collaboration). In this article we will focus on the last meaning of smart governance.

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The purpose of this paper is to contribute to the study of the democratic nature of governance networks in smart cities through the development of an assessment framework and its application and testing on four European smart cities, Amsterdam, Barcelona, Turin, and Vienna. The framework is based on the notion of democratic anchorage of governance networks developed by Sørensen and Torfing, according to which governance networks are democratic whether they are 'properly linked to different political constituencies and to a relevant set of democratic norms that are part of the democratic ethos of society' (Sørensen and Torfing 2005, 201). In the proposed framework, the concept of democratic anchorage is operationalised into four Indicators that are applied to the four case studies. The four Indicators are then synthesized into an Index of Democratic Smart Governance that would be applied to assess the degree of democratic anchorage of smart cities.

The results of the evaluation show that governance networks in smart cities are steered by public authorities and that anchorage in civil society representation is relatively strong, too, as a result of the engagement of local stakeholders in various governance structures. On the other side, however, the link between political institutions, namely mayors and/or executive councillors, and the general public is relatively weak due to the lack of mechanisms that truly foster citizens' participation, dialogue, and voicing. This absence primarily comes from a policy narrative that strongly promotes economic development and that allows only limited relevant interests to participate in the governance arena. Moreover, this policy narrative is driven by an a-political vision of smart policies that prevents and/or defuses conflicts, finally inhibiting citizens' participation.

The empirical research proves to be useful at a twofold level. First, it tries to assess the degree of democratic legitimacy of governance networks through the adoption of an Index that could be applied in comparative assessments. Second, it advances our knowledge about how democratic legitimacy operatively works when smart city strategies are at stakes, a topic still underdeveloped in literature.

The paper proceeds as follows. Part 1 reviews the literature on governance networks and analyses their implementation in smart cities. Part 2 outlines the research method and the framework for the assessment of the democratic anchorage of governance networks. Part 3 describes how governance networks have been organised in four European smart cities, identifying main actors, roles and implementing structures. Part 4 presents the results of the assessment, discusses main findings, and identifies main drawbacks of governance networks in smart cities. The paper ends suggesting possible strategies to enhance the democratic legitimacy of smart cities and outlines directions for future research.

1. Governance Networks and the Smart City

During the 1990s, 'network' became a sort of a 'fashionable catch-word' (Börzel 1998, 253) used to explain the emergence of a new form of governance where the state has lost the monopoly to define

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the collective good for society and co-operates with market and civil society to produce policy outcomes. Networks arise from a process of territorial and functional differentiation, that limits governments' ability to exert hierarchical control and weakens their problem-solving capability (Hanf and O'Toole 1998). In parallel, networks represent a possible solution to the quest for more effective policy outcomes in social contexts marked by increasing complexity and uncertainty.

A specific type of networks are governance networks that can be defined as 'more or less stable patterns of social relations between mutually dependent actors, which cluster around policy problems, a policy programme, and/or a set of resources and which are formed, maintained, and changed through one or more series of interactions' (Klijn and Koppenjan 2014, 11). In governance networks actors representing the state, the market and civil society are autonomous subjects who interact within 'institutionalized framework of rules, norms, shared knowledge and social imaginaries' to produce 'public value in a broad sense of problem definitions, visions, ideas, plans and concrete regulations that are deemed relevant to broad sections of the population' (Sørensen and Torfing 2009, 236).

In innovative processes, collaboration and networking with private actors, civil society organisations, and citizens offer several benefits for policy-makers, such as flexible responses to policy problems, rapid collection of information, opportunities for mediating conflicts, support to policy implementation (Sørensen and Torfing 2005). On the same vein, Klijn argues that these partnerships between public and non-private actors lead to more efficient policies and better policies and services (Klijn 2008).

Yet several scholars argued that governance networks suffer from weak democratic legitimacy. In traditional democratic theory, in fact, networks are problematic in terms of representativeness, accountability and transparency. For some scholars, in fact, participants in governance networks usually belong to the business sector, to civil society associations, or other types of organisations, and to public administration, while elected official are absent (Papadopoulos 2010). Furthermore, not all citizens are equally represented since participation is granted only to 'relevant and affected groups' that are usually selected without an open competition (Sørensen and Torfing 2009, 243). As a consequence, traditional mechanisms of vertical accountability enabling citizens to control politicians and to hold them accountable for their decisions are non-applicable to governance networks. Part of the problem depends on the generic lack of available information on negotiations made in networks and on their opaque rules of functioning (Klijn and Skelcher 2007).

The concept of governance networks has been extensively applied also in urban studies to describe policy-makers' attempts to define and to pursue policy goals through the co-optation of stakeholders in local decision-making (Le Galès 2001). Blanco (2015, 124) pinpoints that governance networks have raised a lively debate between scholars in urban studies. Advocates of governance networks claim that they represent a third way between anarchic market and hierarchical planning really

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capable of improving policy effectiveness, of empowering local communities, and of democratising policy-making. Critics of the approach, in particular urban regime theorists, argue on the contrary that governance networks are just another neoliberal strategy that reinforces existing power asymmetries between citizens and politico-economic elites.

As already highlighted, literature on smart cities places a strong emphasis on networking and collaboration among actors as the distinctive feature of their governance approach. In the policy discourse about 'smartness', in fact, cities are designed as 'open ecosystems' where politicians, public officials, NGOs, associations, research centres, universities, private companies and individual citizens interact to produce local innovation (Nesti 2018a). Networks are central for smart cities because they represent an open environment where creativity can freely flow among actors and ideas can be pooled together by stakeholders to produce innovation (Schaffers *et al.* 2011). Yet the specific characteristics of networks and networking processes in smart contexts are barely specified. Some authors refer to the relevance of networking among stakeholders to enable effective project delivery, city design and planning (Nam and Pardo 2011b; Batty *et al.* 2012; Chourabi *et al.* 2012; Bakıcı, Almirall, and Wareham 2013) or to promote innovation (Komninos 2008; Rodriguez Bolívar 2015; Castelnovo, Misuraca, and Savoldelli 2016). Other scholars emphasise the importance of networks as a means to improve social capital and citizen empowerment (Dirk, Gurdgiev, and Keeling 2010; Kourtit and Nijkamp 2012; Ratti and Townsend 2011; Angelidou 2014). In general terms, networking is assumed to be a desirable characteristic of the smart city *per se* since it is necessary to boost economic, technological, and social growth. But governance networks in smart cities have also been strongly criticised for their opaqueness and poor democratic performance. Vanolo, for instance, casts doubt on the legitimacy of governance structures in smart cities that are not elected by citizens and calls for the implementation of more stringent mechanisms to strengthen democratic control of public and private partnerships (Vanolo 2014, 891).

Trying to advance the debate on networking in smart cities and on related implications in democratic terms we propose a framework that outlines the characteristics of democratic governance networks and then we will apply it to four cases of European smart cities in order to test their democratic performance.

2. Assessing the Democratic Nature of Governance Networks: A Tentative Framework

While previous studies extensively debated the democratic legitimacy of governance networks, the assessment of their democratic nature only received scant attention. An attempt to measure the democratic nature of governance networks has been made by Sørensen and Torfing (2005, 2009). They proposed a framework based on the concept of democratic anchorage, that refers to the presence of proper links in the network to different political constituencies and to democratic rules (Sørensen

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and Torfing, 2005, 201). According to the authors, governance networks can be considered legitimate if they are steered by democratically elected politicians (*Anchorage in Democratically Elected Politicians*); if they are really representative of groups and organizations participating in the network (*Anchorage in the Membership Basis of Participating Groups and Organizations*); if they are accountable to citizens and they work in a transparent way (*Anchorage in a Territorially Defined Citizenry*); and if they follow a set of democratic norms and rules of conduct regulating the interaction among participants (*Anchorage in Democratic Rules and Norms*).

According to the first type of anchorage, democratic legitimacy of governance networks exists when elected politicians: a) design the way the network is organised, its composition and the institutional procedures to be followed by participants; b) frame the goals of the network; c) manage the network, with particular reference to the activity of coordination and mediation among different and/or conflictual visions; d) actively participate in the network to influence the agenda and decisions. Sørensen and Torfing also refer to this type of anchorage in terms of 'metagovernance' that is 'the governance of governance' (Sørensen and Torfing 2009, 245). It represents the process through which public authorities 'mobilize the knowledge, resources and energies of a host of public and private actors while retaining their ability to influence the scope, process and outcomes of networked policy-making' (Sørensen and Torfing 2009, 246).

Anchorage in membership basis of participating groups and organisations refers to: a) the participation of representatives of groups and organisations affected by networks' decisions in the governance network; b) the process of selection and instruction of representatives made by the membership basis; c) the possibility for groups and organisations to be informed about their representatives' performance in the network; d) the capacity of groups and organisations to control and criticize their representatives who, in turn, should be responsive to these criticisms.

Anchorage in a territorially defined citizenry is ensured when actors participating in the governance network are accountable to citizens for decisions taken. For this reason: a) governance networks' tasks, remit, composition, goals, strategies, and results should be publicly accessible; b) citizens affected by networks' decisions should participate in the network; c) citizens affected by networks' decisions should be able to criticise what actors decide and these actors, in turn, should justify their decisions, actions, and results to the public in a process of on-going dialogue that promotes accountability and responsiveness; d) citizens participating in the network have the power to influence decisions taken in the network.

The last set of criteria to assess the democratic anchorage of governance networks refers to the presence of rules of conduct and procedures promoting a 'democratic grammar of conduct' (Sørensen and Torfing 2005, 211). These 'normative regulations' (*ibid*., 2012) include: a) the involvement of all relevant and affected stakeholders in the network; b) the adoption of a democratic

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deliberative/consensual approach to decision making in the network allowing for voice, negotiation, and respectful dialogue among actors; c) the generation of outcomes enhancing social and political justice; d) the development of an ongoing process of democratization of the network.

Building on the Sørensen and Torfing's conceptualisation of democratic anchorage depicted above, we elaborated a framework to empirically assess the extent to which governance networks in smart cities are democratic (Table 1). More specifically, we analysed four cases of European smart cities – Amsterdam, Barcelona, Turin, and Vienna – to test whether the framework can enhance our understanding of governance processes in smart cities and to point out potential democratic shortcomings. The four cities were selected as typical cases of smart cities, rated by several indexes as some of the 'smartest' in the world[2]. They were analysed using a replication approach to multiple case studies and then compared in the assessment stage (Yin 2009, 56-57).

Since Sørensen and Torfing do not provide specific indicators to measure the presence of the four dimensions of anchorage we propose to operationalise the original framework through the disaggregation of each dimension into criteria derived from the description authors gave of each type of anchorage (Sørensen and Torfing 2005). We transformed each dimension of democratic anchorage in an Indicator (I_{ADEP}, I_{AMGO}, I_{ATDC}, I_{ADRN}) and each criterion in a sub-indicator (Table 1). To measure whether criteria are met by each city we assigned the value 0 when the criterion is not fulfilled, 0.5 when the criterion is partially fulfilled and 1 when it is totally fulfilled. Then we aggregated sub-indicators so that the Indicator related to each type of anchorage is the mean of the related sub-indicators:

E.g. $I_{ADEP} = (I_{PNP} + I_{PD} + I_{PF} + I_{PP}) * 1/4$

Finally, we construct a synthetic Index of Democratic Smart Governance (I_{DSG}) (Garau, Masala, and Pinna 2016) that is the mean of the values scored by each city on the four Indicators of anchorage:

$I_{DSG} = (I_{ADEP} + I_{AMGO} + I_{ATDC} + I_{ADRN}) * ¼$

The presence of criteria has been assessed in each city using data and information gathered through the qualitative analysis of smart cities' websites, of 185 reports and official documents available on websites and supplemented by 37 qualitative semi-structured interviews with key-informants (elected politicians, public officials, experts from the academia and research centres, members of agencies, and public and private companies) conducted in the four cities between 2015 and 2016[3]. The analyses

[2] This article presents part of the findings of a research project on smart city governance carried out by the authors between 2014 and 2016. Cities were selected on the base of the A.T. Kearney Global Cities Index, the Arcadis Sustainable Cities Index, the Innovation Cities Index and the European Digital Cities Index. For Italy, we also used I-City Rate Index and Ernst and Young Smart City Index. Empirical analysis was based on extensive fieldwork and adopted a qualitative approach combining document analysis with open interviews with key informants.

[3] In defining the sample of interviews, we followed the principle of saturation outlined by Glaser and Strauss (1967).

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of Barcelona Smart City and Turin Smart City refer to the period 2010–2015 while data collected from Amsterdam and Vienna websites were updated in November 2018.

Before presenting data two notes of caution should be made. Empirical findings presented in the paper suffer of limited external validity due to the low number of cases examined while operationalisation and the scoring of cases suffer of limited measurement validity due to the lack of explicit criteria that should be used to create indicators (Adcock and Collier 2001). More cases should be analysed to improve our understanding of governance networks in smart cities and further research should also be made to improve the validity of the assessment framework, particularly at the stage of concept systematization. Notwithstanding these limitations, our study would mean an attempt to move beyond theoretical discussions on the democratic nature of governance networks in order to empirically assess their implications for smart cities.

Table 1 – Assessment Framework of Democratic Anchorage of Governance Networks

Indicator	Dimension	Sub-indicator	Sub-dimension
I_{ADEP}	*Anchorage in democratically elected politicians*	I_{PD}	Democratically elected politicians design the organization of the network
		I_{PF}	Democratically elected politicians frame the goals of the network
		I_{PM}	Democratically elected politicians manage the network
		I_{PP}	Democratically elected politicians directly participate in the network
I_{AMGO}	*Anchorage in membership basis of participating groups and organisations*	I_{GOP}	Representatives of groups and organisations participate in the governance network
		I_{GOSI}	Representatives of groups and organisations are selected and instructed by the membership basis to participate in the network
		I_{MI}	Membership basis is informed about representatives' performance
		I_{MSC}	Membership basis scrutinise and criticise representatives' performance
I_{ATDC}	*Anchorage in a territorially defined citizenry*	I_{IA}	Availability of information to the public (transparency)
		I_{CP}	Citizens participate in the network
		I_{CV}	Citizens can dialogue/contest decisions taken in the network (voice)
		I_{CI}	Citizens can influence decision taken in the network

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I_{ADRN}	*Anchorage in democratic rules and norms*	I_{IRI}	Inclusion of all relevant and affected actors in the network
		I_{DA}	Adoption of a democratic deliberative/consensual approach to decision making in the network
		I_{OSPJ}	Production of outcomes that enhance social and political justice
		I_{DGN}	Democratization of governance network processes

Source: Adapted from Sørensen and Torfing (2005)

3. Governance Networks in Four Smart Cities

Amsterdam, Barcelona, Turin and Vienna represent interesting examples of cities that adopted a networked form of governance to become smart. They followed, in fact, different patterns of coordination of the smart city that range from maintaining its management inside the municipality to the creation of 'third-party institutions' in charge of defining its vision and steering projects (Nesti 2018a, 2018b).

An example of the former strategy is Barcelona Smart City (BSC) that was created by the municipality with the specific aim to become the leading smart city in Europe and that was in action in the period 2011-2015. The strategic framework of BSC was elaborated by the Executive Council under the Mayor Xavier Triás and then systematised in the *Municipal Action Program for the period 2012-2015* and in the document *Govern Measure MES: the ICT strategy of the Municipality of Barcelona at the service of the city and citizens* (MES is the acronym of *Mobility, eAdministration and Smart city*). The political coordination of the smart strategy was entrusted to the Department *Habitat Urbá*, created in 2011 and supervised by the Vice Deputy Mayor Antoni Vives while the operational coordination was charged to the Director of the Smart city Program. *Habitat Urbá* coordinated all the activities in the field of urban planning, ICT and environment, and collaborated with the Municipal Institute of Information Technology (IMI), and other local public actors such as the Barcelona Institute of Technology[4], *Barcelona Activa*[5], and the *i2Cat* Foundation[6]. BSC was implemented also through strategic agreements signed with big companies such as Cisco, Abertis, GDF Suez, Schneider-Telvent, Telefónica and IBM (Ajuntament de Barcelona 2012, 4-5). The administration of smart projects was entrusted to a Project Management Office steered by a private

[4] The Barcelona Institute of Technology was a foundation created and managed by the Municipality which promoted partnerships between government, industries, start-ups, incubators, and the research community for the development of innovative urban projects.
[5] *Barcelona Activa* is the office for the economic development of the city.
[6] *i2Cat* Foundation is the Catalan research centre for R&D activities on advanced Internet architecture, application and services.

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consultancy and staffed with personnel belonging to the consulting company and to the municipality (Mora and Bolici 2015).

Another example of governance network steered by politicians and public officials is Smart City Wien (SCW). In Vienna, the strategy to become smart was formally launched by the Mayor Michael Häupl and put under the political responsibility of the Vice Mayor and Executive Councillor for Urban planning Maria Vassilakou. The main goal of the municipal strategy to become smart is 'to offer optimum quality of living, combined with highest possible resource preservation, for all citizens. This can be achieved through comprehensive innovations' (Vienna City Administration 2014, 16). The SCW Framework Strategy was elaborated in 2013 through a long participatory process that involved all the executive policy groups of the Municipality and experts from industry, research institutions, the federal government and civil society organizations. The final Framework was adopted by the Vienna City Council on 25 June 2014 (Vienna City Administration 2014). SCW is steered by a High-Level group whose members are the Head of the Department of Urban Planning, the Head of the Department of Energy Planning, the Chief Executive Officer of the Municipality and representatives of municipal companies (mobility, energy, social service, and education). The operational management of SCW depends on a Team composed of the Head of the Department for Urban Planning, the Heads of other Departments, representatives of municipal companies, and the Smart City Agency, one of the branches of the municipal company *Urban Innovation Vienna GmbH*. The Agency coordinates all the activities developed in the context of the SCW Framework strategy and related to energy, mobility, buildings and infrastructure. An Expert team composed of researchers and academics coming from Austrian and international research centres provides advice to both groups. SCW is currently managing 84 projects[7] whose main partners are City departments, universities, local private and public firms, and non-profit organisations.

The Municipality of Turin created the Smart City Foundation for Sustainable Development in 2011 to manage the overall smart strategy of the city. The Foundation was guided by a Management Board chaired by the Executive Councillor for Innovation and the Smart city, the Executive Councillor for Urban Planning and the Executive Councillor for Environment, Energy and European Structural Funds. Composition, roles, and budgetary rules of the Foundation were detailed in the Statute. Goals and programs were defined by a Steering Committee representing the University and the Polytechnic of Turin, the Chamber of Commerce, the Local Association of Entrepreneurs, the Bank San Paolo, and IREN, the local public multi-utility company. The executive management of the Foundation was assigned to a CEO. The Foundation signed eighteen collaboration agreements with external partners such as private and public companies (mainly multi-utilities), associations, research centres, and

[7] See https://smartcity.wien.gv.at/site/en/projects/ for more details.

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energy providers. To supervise the smart city initiative the City Council also appointed a Special Committee Smart City composed of twenty elected politicians. Main activities and projects of Turin Smart City were defined in 2013 through a participatory process steered by the Foundation and involving 66 local actors (public institutions, private companies, research centres, and associations). The result of the five-month consultation was the Master plan Turin Smart City that collected 45 projects in the field of mobility, inclusion, life and health, energy, and integration.

The Amsterdam Smart City strategy was developed by the Amsterdam Economic Board (AEB) to test innovative ideas in the field of sustainable urban development and to promote the economic attractiveness of the Amsterdam area. The AEB is a Foundation with twenty-five members: the Mayors of Amsterdam and Almere, three Executive Councillors from the municipalities of the metropolitan area, the Vice Governor of the province of North-Holland, three representatives of local Universities, and other representatives of the private sector. To support the implementation of the smart strategy the Board created the Amsterdam Smart City Platform (ASCP), an online community managed by a staff of seven people, dependent from the Municipal Department for Economic Affairs. Stable partners of ASC are the Municipalities of Amsterdam, Almere and Haarlemmermeer, the Province Noord-Holland, Amsterdam University of Applied Sciences, the companies Alliander, Eurofiber, KPN, PostNl, Amsterdam Arena, Arcadis, Engie, the foundation Waag Society-Institute for art, science and technology, and the cultural organisation *Pakhuis De Zwijge*. But there are more than 200 public and private, profit and non-profit organisations active in the fields of digitalisation, energy, circular economy, education, governance, social inclusion, and public engagement that are involved in the 273 projects listed on the ASCP. Ideas and project proposals related to the smart city are sent from local organisations to ASCP that collects them, finds and coordinates partners and that is also responsible for fundraising.

Overall, the empirical analysis of the four smart cities indicates that governance takes place in networking structures where public authorities are always present and relevant stakeholders are involved with different degree of relevance (Table 2). In Amsterdam, the general smart strategy is defined by the AEB that is a network made of public and private actors steered by the Mayor of Amsterdam, while the operational management of projects is delegated to the ASCP. In Barcelona the Municipality defined and coordinated the smart strategy and involved private actors (especially firms) in the implementation of projects through the PMO. In Turin elected officials outlined the smart strategy and implemented it though the collaboration with private profit and non-profit actors. But the Municipality here decided to create an external structure, the Foundation, entrusted to metagovern the network. Finally, in Vienna the governance network is represented by the High-Level Group of Expert, that is steered by public officials and that is made of representatives of the Municipal

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Departments and of representatives of main local public multi-utilities, while smart projects are managed by several Municipal Departments in collaboration with the Smart City Agency.

Table 2 – General structure of governance networks

	Amsterdam	Barcelona	Turin	Vienna
Definition of the smart strategy	Amsterdam Economic Board	Municipal department	Turin Smart City Foundation	High Level Groups of Experts
Coordination of smart projects	Amsterdam Smart City Platform	Project Management Office	Turin Smart City Foundation	Municipal Departments and Smart City Agency
Composition of the governance network	Mixed public and private	Public	Mixed public and private	Mixed public and private

4. Assessing the Democratic Anchorage of Smart City Governance

To what extent are governance network in the four smart cities democratic?

'Anchorage in democratically elected politicians' is granted in all the four smart cities but with significative variations (Table 3). In Amsterdam local politicians directly participate in the Economic Board and manage it but they share and mediate their designing and framing powers with other local stakeholders. In Barcelona the Mayor participated in designing and framing the governance network of the smart city, but management and direct participation in it was delegated to public officials. In Vienna effective metagovernance is ensured by technical bodies through public officials and the Mayor and the Executive Councillor for Urban Planning only participate in framing goals. In Turin the governance of the Smart City Foundation was ensured by the Executive Councillors, who designed, framed, managed and participated in the network.

Governance networks were, therefore, anchored to democratically elected politicians (Mayors or Executive Councillors) almost everywhere, but their involvement varies across the different stages of metagovernance. It is worth noting that 'indirect' anchorage to democratic representation is anyway guarantee everywhere through public officials who can have a strong role in metagoverning the network.

Table 3 – *Anchorage in democratically elected politicians*

	Amsterdam	Barcelona	Turin	Vienna
I_{PD}	0.5	1	1	0
I_{PF}	0.5	1	1	1
I_{PM}	1	0	1	0
I_{PP}	1	0	1	0
TOTAL	0.75	0.5	1	0.25

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Anchorage in the membership basis of participating groups was present almost everywhere due to the collaborative nature of the smart city (Table 4). The smart strategy of each city strongly emphasises the inclusion of affected actors as necessary to achieve effective results, but participation in the governance network of relevant stakeholders that usually include ICT and utility companies, research centres, and civil society organisations is not always granted. For instance, in Vienna their participation is clearly stated in the Framework Strategy: 'In general, relevant stakeholders outside the municipal administration are integrated into the processes on a long-term and binding basis' (Vienna City Administration 2014, 91). They are also actively engaged in governance processes in Amsterdam through the AEB. In Turin they participated in the Steering Committee of the Smart City Foundation with an advisory role and they were also involved in the implementation of projects. In Barcelona local stakeholders, i.e. enterprises, were involved only as providers of smart products and/or services but not in the governance network.

Concerning the relationship between representatives and the membership basis, information collected from interviews suggest that groups and organisations work side by side with their representatives in the network, and that these representatives did not deviate from their mandates.

Table 4 – *Anchorage in membership basis of participating groups and organisations*

	Amsterdam	Barcelona	Turin	Vienna
I_{GOP}	1	0	1	1
I_{GOSI}	1	0	1	1
I_{MI}	1	0	1	1
I_{MSC}	1	0	1	1
TOTAL	1	0	1	1

A critical point, if anything, is the degree of openness of network governance to citizens (Table 5). Participation, in fact, seems to be highly selective and to favour consolidated and economically relevant relationships with local actors. Governance networks mainly involved organised and economic interests while representation of citizens is not formally provided. Remarkably, tasks, remits and composition of governance networks are clearly outlined the Statute of the Turin Smart City Foundation and on the AEB website in Amsterdam, they are partially described in the SCW Framework while in Barcelona the governance structure of the smart city was not codified in specific papers.

A relevant dimension in assessing democratic network governance is the availability of information that should promote debate among citizens and should allow them for expressing their views on network's strategies and actions. Documents describing governance networks are barely available on

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websites while goals and expected outputs of smart strategies were quite well communicated. The AEB makes available documents and roadmaps on its website related to its governance approach, while the ASC Platform illustrates projects and allows people to comment and share their opinions through the website. Smart City Wien, Barcelona Smart City, and the Turin Foundation, had a dedicated website to explain the smart strategy, to describe projects, to list partners, and to make documents and reports available to the public. Nevertheless, citizens have limited or no opportunities to influence strategic decisions about the smart city apart from sending comments through blogs and/or websites. Only Turin and Vienna adopted a participatory approach to the definition define their smart strategies, but they included only organised interest, not individual citizens.

Table 5 – *Anchorage in a territorially defined citizenry*

	Amsterdam	Barcelona	Turin	Vienna
I_{IA}	0.5	0.5	0.5	0.5
I_{CP}	0	0	0	0
I_{CV}	0	0	0.5	0.5
I_{CI}	0	0	0.5	0.5
TOTAL	0.125	0.125	0.375	0.375

Anchorage in democratic rules and norms is quite weak as well (Table 6). In all the four smart cities strong emphasis is put on partnerships among stakeholders to reach economic goals, as exemplary stated in the AEB leaflet: 'The Amsterdam Economic Board wants to increase the innovative and competitive strength of [its strong] sectors by means of targeted collaboration between businesses, knowledge institutes and government authorities'[8]. In the Statute of the Turin Smart City Foundation, participation of stakeholders was granted to 'Participants' who shared the Foundation's goals. In Vienna networking between municipal administration, research, business and industry and collaboration is integral part of the governance model described in the Framework Strategy. And in Barcelona, albeit not present in the governance network, private firms are partners in the implementation of projects. Inclusion in and exclusion from the governance network is justified on the functional basis of stakeholders' relevance to achieve the defined targets almost everywhere.

According to our interviews, participation and decision-making in governance network is highly consensual because in smart strategies the promotion of economic development and of sustainability are undisputed issues.

[8] See https://www.amsterdameconomicboard.com/app/uploads/2012/11/algemene-folder-board-2012-EN.pdf accessed on November, 12 2018.

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Dominant narratives of the smart city were completely disjointed from issues related to democracy and/or social justice. Although public and academic discourses emphasized participation, accountability and transparency as integral elements of the smart city paradigm, nevertheless these elements were not deeply discussed or problematized in the strategies concretely adopted by the municipalities. In general terms, narratives were mainly focused on few specific issues, such as the digitalisation of the smart city, but not on democratic questions. Only Vienna is concerned with democratic innovation and renewal, as emerged from an interview with a Viennese public official who claimed that 'We have a precise idea of what we want to do: our goal is social transformation, social innovation in the city'[9]. Similarly, while there's no empirical evidence in Amsterdam, Barcelona, and Turin of a strong commitment to democratize the governance process, in Vienna the Framework Strategy is periodically revised and this process involves all the interested organisations within or related to the municipality[10]

Table 6 – *Anchorage in democratic rules and norms*

	Amsterdam	Barcelona	Turin	Vienna
I_{IRI}	1	0	1	1
I_{DA}	1	0.5	1	1
I_{OSPJ}	0	0	0	1
I_{DGN}	0	0	0	0.5
TOTAL	0.50	0.125	0.50	0.875

If we combine the different dimensions of the democratic anchorage of governance networks described above, we obtain a synthetic Index of Democratic Smart Governance that can be applied to compare the democratic 'performance' of the four smart cities. The Index varies between 0 (no democratic anchorage of smart governance) and 1 (full democratic anchorage of smart governance) (Table 7).

Table 7 – Index of Democratic Smart Governance

	Amsterdam	Barcelona	Turin	Vienna
I_{ADEP}	0.75	0.50	1	0.25
I_{AMGO}	1	0	1	1
I_{ATDC}	0.125	0.125	0.375	0.375
I_{ADRN}	0.50	0.125	0.50	0.875

[9] Personal interview, 19/01/2016.
[10] See https://smartcity.wien.gv.at/site/en/the-initiative/framework-strategy/

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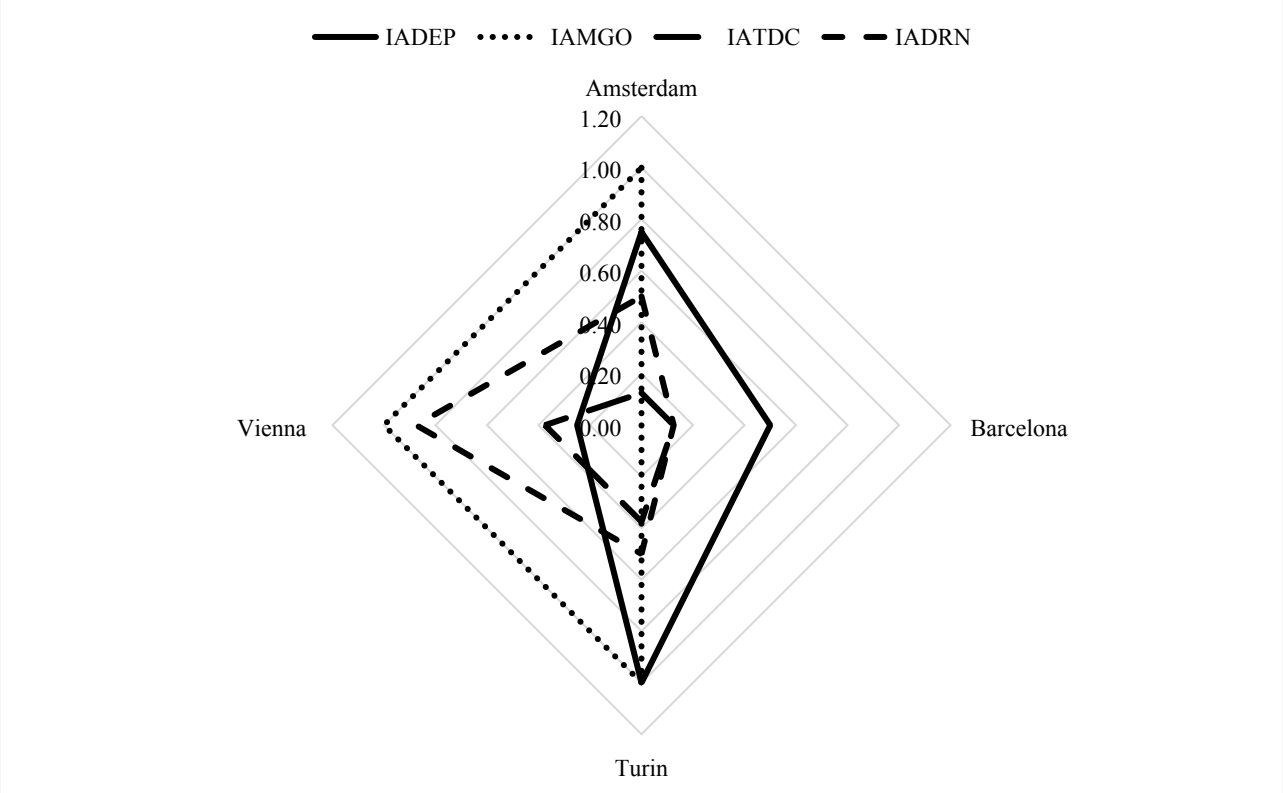
TOTAL	0.59	0.19	0.72	0.625

According to the Index I_{DSG}, the smart city with the most democratic governance network is Turin, followed by Amsterdam, Vienna, and Barcelona. Figure 1 graphically summarised the results achieved by each smart city in each Indicator of anchorage.

Figure 1 –Democratic Anchorages in Four Smart Cities



Turin registers a high score in the dimension related to the anchorage in elected politicians, and almost the same is for Amsterdam. These smart cities, in fact, directly involve politicians in metagoverning the governance network while the other two cities delegate this function to public officials. Participation of public authorities is, therefore, ensured everywhere but in Barcelona, Turin and Vienna public authorities metagovern the network in an autonomous way, while in Amsterdam politicians share this coordinating role with other actors particularly in the phase of network design and network framing.

All the smart cities except Barcelona score high on the Indicator related to the representation of participating groups and organisation, and this would mean that openness and participation of different constituencies are ensured in these smart cities. We would suggest, nevertheless, a more cautious interpretation of this finding since the Indicator does not assess an important democratic aspect quite debated in literature, that is the influence a particular organisation can exert on decisions-

making processes in the governance network. Could the governance network be captured by specific interests? The Indicator does not assess this important issue.

Yet all four smart cities are weakly anchored to the territorially defined citizenry and to democratic rules and norms. Only Turin and Vienna score relatively better than the others on these dimensions because they adopted participatory strategies to co-decide their smart city strategies. Information about governance networks are available on websites but they only relate to goals and strategies pursued by local administration with smart projects but not to decisions taken inside the network.

The assessment framework points out that weakest elements of democratic anchorage are accountability and 'voice'. Accountability is a relationship through which an actor is obliged to explain and to justify his/her actions to a forum which, in turn, can sanction him/her for possible misconduct (Bovens 2007; 2010). In smart cities hierarchical accountability, linking elected officials to voters, is theoretically possible in governance networks since politicians participate in the metagovernance process. To date, nevertheless, there is no empirical evidence of decisions on smart cities contested by the general public also because data on results achieved through smart strategies are not available. Moreover, also horizontal forms of accountability based on peer reviews and mutual controls made by the other members of the network (Maggetti 2010) albeit theoretically possible, *de facto* are not activated due to the consensual nature of smart city goals.

Voice refers to the 'positive, active way in which citizens can participate in concrete decisions and the processes by which they are arrived at' (Klijn and Koppenjan 2016, 218). In smart cities' governance networks voice is granted to all the relevant and affected stakeholders but not to citizens who are generally excluded from decision-making processes. Citizen engagement can take place through online platforms in the implementation stage of the smart city strategy. But this form of participation is usually limited to co-design and to test products or services. Due to the technical nature of these processes, voice is limited to manifestation of comments on projects that might emerge from the community of geeks participating in online smart communities. Here exit strategies are not adopted and political dissent is not manifested.

Finally, deliberation processes within governance networks are also problematic because decisions are usually taken in a fair and satisfactory way. But access to the governance network is highly selective: Participation of relevant actors is evident, but it is granted only to specific categories of interests. Even if the smart city is often portrayed as an 'open ecosystem', therefore, it is eventually accessible only to selected groups, such as public actors, firms, associations, and experts.

Conclusions

The main goal of this paper was to contribute to the study of governance networks adopted in smart cities by assessing their democratic anchorage to four relevant dimensions.

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The first finding of our research is that governance networks in smart cities are steered by public actors (politicians and civil servants) who play a pivotal role in metagoverning them. These networks can be located inside the municipal organisation or in external structures that still operate in 'the shadow of hierarchy' (Capano, Howlett, and Ramesh 2015, 319) but in both cases they are not merely self-organised entities and governmental actors, being them politicians or bureaucrats, can influence their goals, organisation, and activities (Klijn 2008).

The second finding is that the presence of politicians and the participation of relevant interests help ensuring a certain degree of openness, inclusiveness and democratic legitimacy but citizen participation, contestation, and accountability are not sufficiently promoted. Put differently, the selection of who can participate is often too restricted, and – to echo Schattschneider – it stills seems that 'in the pluralist heaven (…) the heavenly chorus sings with a strong upper-class accent' (Schattschneider 1960, 35). In fact, the results presented in this article are consistent with previous research on governance networks which suggests they are subjected to an inherently tension between pluralism and concentration of power (Viitanen and Kingston 2014; Blanco 2015). As in the case of governance networks, in fact, smart cities can empower some actors – especially private companies – and disadvantage other actors, especially less privileged interests (Kljin and Koppenjan 2000; Grossi and Pianezzi 2017).

Thus, how can democratic anchorages be improved in smart cities? Kljin and Koppenjan (2016) suggest strengthening the accountability of governance networks through the adoption of procedural and/or institutional mechanisms. Process design should create the set of explicit rules to guide interactions among actors and to foster horizontal accountability. Information processing, evaluation criteria, negotiation, deliberation, flexibility and goal adjustment should increase political control over complex, interdependent, and dynamic processes of governance through networks.

All these mechanisms could be implemented also in smart cities to enhance democratic legitimacy. First, accountability among stakeholders could be reinforced by making publicly available the results of governance networks' decisions and by introducing indicators to assess the achieved results. Second, political accountability could be strengthened through a more effective involvement of politicians elected in City Councils. An example of this approach is represented by the municipality of Turin where a dedicated Smart city commission in the City Council was appointed to supervise how the Foundation operated and how the budget was spent[11].

Third, political accountability should be promoted also by binding members of the network to give account for their decisions to the general public and to allow citizens for contesting these decisions. Municipalities engaged in smart city initiatives should improve their capacity to communicate to

[11] For instance, in 2012, two members of the City Council from the opposition questioned the financial sustainability of the smart city project and publicly asked the Executive Councillor to give count for this problem.

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citizenry and should create opportunities to involve individual citizens both in strategic decisions and in the evaluation of smart city initiatives.

Finally, proceduralised inclusion in the various phases of decision-making of less organized actors (such as local social movements) may be particularly important to increase the legitimacy and effectiveness of the 'smart cities'.

A concluding remark relates to the policy narrative that underpins the smart city. The paradigm of 'smartness' postulates that problems and related solutions have only a technical nature that is, by definition, a-political. This neutral vision of technology leads policy-makers to disregard equality and diversity issues although the smart city - and its products and services - is not accessible to everyone. Thus, the technical nature of urban problems should be re-framed in political terms. Technical choices, in fact, have always a political dimension, since they affect the distribution of power among citizens and they can exacerbate social inequalities (Winner 2010; Viitanen and Kingston 2014). Actors governing the smart city should, therefore, address these issues and tackle them in order to avoid seclusion and to improve equity.

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