Guest editorial: accounting for sustainable and smart cities

The smart city (SC) concept attempts to solve the problems of excessive urbanization, with a promise to increase the quality of life and of a sustainable future via smart technology (Manville *et al.*, 2014). Today, there is an increasing number of smart cities globally, and the idea has traveled beyond its original context of excessive urbanization. Despite being a global phenomenon, smart cities are still more hopes and ambiguous aspirations than institutionalized facts. They are expected to develop smartness via investment in infrastructures of data collected from and about citizens, assets and resources. This includes information that are used to, e.g. govern traffic and transportation systems, power plants, water supply networks, waste management, law enforcement, information systems, schools, libraries, hospitals and other community services. This requires investment in advanced technological infrastructure, which will have long-term financial, operational and social consequences and, therefore, require considerations regarding the long-term sustainability of such investment.

Considering the importance of the long-term sustainability of cities, complex investment decisions require attention to be paid to economic, social and environmental performance (e.g. Simnett and Huggins, 2015). This is directly relevant to accounting research, when asking questions about the calculative practices used in mediating the uncertain future (Miller and O'Leary, 2007). This directs attention to the potential of accounting to help mediate futures, in the sense of both *ex ante* investment planning and ex post tracking and monitoring effects. Previous research has highlighted the role in managing cities of accounting that is also relevant to understanding the sustainability challenges for an SC. For instance, Lapsley *et al.* (2010) demonstrate that accounting helps to govern a city via twin processes – visualizing the future and making the city calculable, and representing different interests and intervening, making the city manageable. An SC can be an example of a "promissory economy", i.e. a promise of investment to improve the quality of life of its citizens and a commitment to make accounting a mechanism to facilitate future relationships between the actors in the city, mediating processes of forgetting and forgiving (Mouritsen and Kreiner, 2016). With the exception of a few studies, a limited focus has been placed on the role of accounting in sustainably developing and running smart cities. There is therefore a need for a research-based understanding of how the accounting of smart cities is intertwined with issues of sustainability.

This special issue aims to provide further insights into the role accounting plays in shaping realities and debates around the suitability of sustainable and smart cities. Smart cities can be conceptualized differently, but there is an agreement that they have ambitions to promote urban development with "... investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure [that] fuel sustainable economic growth and high quality of life, with a wise management of natural resources, through participatory governance" (Caragliu *et al.*, 2011). Recently, to an increasing degree, smart cities have been analyzed from a so-called "technocentric"/"technocratic" view of their being gradually replaced with a more "human-centric" and "dialogic" view (Grossi *et al.*, 2020; Mora *et al.*, 2017). While the former view positions technology at the center of urban sustainability (Anthopoulos, 2017; Mora *et al.*, 2017; Wiig, 2015), the latter acknowledges that SC sustainability is more about multiple actors engaged in city development (Mora and Deakin, 2019).

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For our special issues, it is therefore important to focus on how accounting helps mediate between technology for urban sustainability and the human-centric aspects of an SC, including citizen engagement, coproduction and dialog among divergent actors (Grossi *et al.*, 2020). For instance, from a technocratic view, sustainability can be related to the privatization of decision-making in smart cities (Grossi and Pianezzi, 2017), meaning that "smart" can favor market mechanisms, managerialism and extensive privatization. Such "smartness" favors an extensive focus on technological solutions dominated by the economic logic of corporate actors and their vision of smartness, thus limiting political and social issues (Hollands, 2008). On the contrary, the "human-centric" and "dialogic" perspective goes beyond "smart" technology, incorporating SC governance and participatory management. Accordingly, citizens would have to have a say about what would be "smart" for them, requiring collective, legitimate decisions and shared visions on SC development, its performance and sustainability (Meijer and Bolívar, 2016). However, current dialogic accounting practices seem to offer limited emancipatory potential for citizens (Aleksandrov *et al.*, 2018).

This special issue includes five articles, which are summarized in Table 1 below.

The first four articles give us a notion of concern regarding how the use of accounting numbers, and interconnected with it management processes, has failed to address SC governance from a more human-centric (dialogic) view. Rather, we see the use of accounting from a more technocentric/technocratic view of a SC. The article written by Enrico Guarini, ELisa Mori and Elena Zuffada (*Localizing the Sustainable Development Goals: A managerial perspective*) investigates how the Sustainable Development Goals (SDGs) can be integrated into the strategic planning and management processes of local governments. By drawing on the classic strategic planning and control framework developed in management studies, the authors have scrutinized the incorporation of sustainability goals in the strategic plans of all medium-to-large capital cities of the provinces in Italy. The results show that, despite the fact that there has been a national strategy for sustainable development in Italy since 2016, the focus on SDGs at the local government level is still at a very early stage. There is a low level of SDG integration in all stages of strategic planning, indicating that SDGs seem to be used as a rhetorical device to demonstrate the contribution of local government strategies to global

Table 1. Short summaries of articles in the SI

Dimension Article in this SI	Accounting	Smartness	Sustainability	Empirical city context
Guarini *et al.*	SDGs as KPIs for strategic planning and management	Smart governance (planning)	UNSDGs	Medium to large capital cities in Italy
Cohen and Karatzimas	Reporting to external stakeholders	Smart governance (reporting)	Maintaining different forms for capital	Top 25 smart cities around the world
Aleksandrov *et al.*	Rankings as a calculative technology	Smart governance (human-centric smart city/dialog)	Stakeholder cooperation for the future and better cities	International rankings of smart cities
Trunova *et al.*	Strategy as visualization and calculative technology	Smart governance (technocentric smart city/dialog)	Urban sustainability and quality of life	Case study of St. Petersburg (Russia)
Träskman	Digital platforms, governance/ accountability	Smart governance/ ITC infrastructure	Human intelligence	Case study of Turku (Finland)

concerns on sustainable development, rather than as a new lens to rethink and embed sustainability into practice.

The article written by Sandra Cohen and Sotirios Karatzimas (*Analyzing smart cities' reporting: Do they report "smart"?*) also comes to a somewhat similar conclusion – that smart cities usually follow the old-fashioned ways of mobilizing accounting for governance, e.g. via external reporting. In this study, the authors have examined the online reporting practices of 25 award-winning smart cities. The reports – both financial and non-financial – published in English on their websites were analyzed by adopting the Integrated Popular Reporting frame of reference. The study reports that smart cities' reports do not embed new technological advancements and therefore are mainly developed conventionally. However, there are two extreme clusters of reporting practices – those cities that report only traditional financial information and those which, in addition, provide supplementary reports on several capitals included in the Integrated Popular Reporting. The article concludes with a notion of smart cities following the old-fashioned ways of reporting, without considering new emerging ways of collaborations between citizens and SC councils, promoting the philosophy of co-production and co-creation of public value.

Another way to mobilize accounting for the governing of smart cities is the use of rankings. The article by Evgenii Aleksandrov, Elena Dybtsyna, Giuseppe Grossi and Anatoli Bourmistrov ("*Rankings for smart city dialogue? Opening up a critical scrutiny*") examines four international ranking systems of smart cities, in order to find out whether and how contemporary rankings reflect their dialogic development. By adopting the synthesis of the SC, rankings and dialogical accounting literature, the article demonstrates that existing ranking mechanisms do not include pluralistic and divergent perspectives of smart cities, making it difficult to argue that rankings can facilitate urban stakeholders' engagement based on a multiple voice perspective. The way rankings are constructed limits their dialogic potential with a wide range of stakeholders, meaning that smart cities may face their meaning of smartness being unquestioned and the biased development of an urban agenda because their visions can only be interpreted by a limited number of actors.

The three articles described above show that it is very difficult for smart cities to move the use of accounting beyond a technocentric/technocratic approach toward a more human-centric (dialogic) view. The fourth article, written by Olga Trunova, Igor Khodacheck and Aleksandr Khodacheck ("*Visualizing and calculating the smart city: a dialogue perspective*"), may give us some understanding of and clues to the possible reasons for that. This article examines how smart cities become calculable due to the evolution in a SC strategy. Particularly, though the lens of dialog theory, the authors describe and analyze how the SC development strategy of St. Petersburg, initially appreciating the human-centric vision of the SC, has materialized into the technocentric SC calculations. The article demonstrates that the human-centric vision came into conflict with the materiality of the operational and financial constraints of city administration, necessitating a split and inscription into different existing strategic priorities, programs and agendas. By such, even though the human-centric vision was not forgotten, it was transformed into calculable properties. The authors show that the way the strategy dialog is organized can be crucial for the city development outcome: what actors are included in the dialog, in what roles and hierarchical relations and agenda setting.

Despite such research findings, accounting can be mobilized differently for the promotion of human-centric (dialogic) smart cities. The final article in this special issue, written by Tomas Träskman ("*Smart governance and thinking infrastructure: an exploration of a city becoming smart*"), gives us a glint of how new digital technologies and platforms, if used properly, can be sources of a human-centric SC with improved dialogic accountabilities. The author of this article explores the emergence of SC governance in the case of the digital infrastructures attempting to visualize and rationalize the dynamics of urban development. By adopting the theoretical concept of "thinking infrastructure", emphasizing the cognitive

value of the new digital technologies and the different accountabilities that emerge when this technology is used, the article describes and analyzes the Smart and Wise City Turku (SWT) spearhead project. It highlights how an emerging digital platform was able to mobilize "thinking infrastructure" in three dimensions, by tracing, valuing and governing actors, identities, objects, ideas and relations.

To summarize, accounting can be an important tool for managing and controlling the sustainability of smart cities, but we need to place greater attention on how accounting becomes involved in a SC's governance settings.

(1) Even when new types of accounting numbers and processes are introduced in urban planning and development (e.g. SDGs, popular reporting and rankings), they can fail to be part of both existing political processes and the increasing aspiration of improved citizens' involvement. Creating new innovative numbers and indicators reflecting the smartness of smart cities is desired, but it seems to be important to pay more attention to how those numbers become part of a political agenda and the inspiration for a dialogue and negotiations between different stakeholders – or fail to do so. As this special issue reports, accounting numbers fail because segregation into known calculable elements hides – and thus can fail in the materialization of – alternative agendas.

(2) Second, numbers that are supposed to reflect the co-development processes of an SC also need to be co-developed. Rather than being a tool for promoting human-centric (dialogic) smart cities, accounting so far seems to be a tool used to support the technocratic view of a smart city and to control the agenda for urban development.

(3) Finally, smart use of digital platforms as "thinking infrastructures" can reshape accountability and control, if made properly, promoting a more human-centric SC. Old and new actors can be enabled and integrated into such platforms. Digital platforms can also enable compromises, as our special issue shows. However, we need more knowledge regarding how digital platforms can improve SC governance, stakeholders' engagement and accountability. What are the potential benefits and challenges related to making accounting work for its human-centric ambition in relation to governing a city via digital platforms?

Lastly, there are some final reflections about smart cities and the smartness they develop. All five articles in this special issue also illuminate that, in the development of smart cities, it is crucial that smartness develops mediating knowledge endogenously. Smartness has a technological infrastructure that discloses knowledge for people to handle and make their choices. Much of this knowledge is conveyed by platforms or websites in various forms and which "consist of an ecology of accounting devices in the form of rankings, lists, classifications, stars and other symbols ('likes', 'links', tags, and other traces left through clicks) which relate buyers, sellers, and objects" (Kornberger *et al.*, 2017). Such mediations allow knowledge to be mobilized in some ways. This mobilization does, however, come with ambiguity. There is the challenge that websites disclose explicit, and separated, items of knowledge rather than connected flows of tacit knowledge (Nonaka and Ikujiro, 1995). There is a challenge that mediation of knowledge may require dialogue and debate for it to be a learning moment (Busco and Quattrone, 2017). A challenge may also be that such knowledge moves into private decisions because it has to be accommodated in relations that are not made visible by the websites (Miller and O'Leary, 2007). Finally, there may be a problem that the facts produced by websites may entice very different and opposing political concerns (Latour, 2005). Therefore, it is not so surprising that the facts of smartness can turn into surprising and ambiguous individual and collective action. Therefore, it is useful to consider what smartness does to the collective.

There are three ways of thinking about smartness of SC, and they are also relevant to the articles of this special issue. They all discuss situations in which there may be different tensions between the three modes of thinking about smartness of SC, and indeed they provide different ways in which smartness helps to mediate cities, even if they are not *a priori* organized according to this three-way understanding of smartness.

The first possibility is that smartness produces what Deleuze calls "control societies" (1992). This is a type of society where smartness induces behavior by technological means. Surveillance and feedback may force people to conform to norms and become puppets, enacting a rather narrow notion of intelligence. This is a society where knowledge trumps political action. This is a society where smartness circumscribes the city and makes a claim to enclose us in the question "Who are we?"

Another possibility is what Kornberger *et al.* (2017) term as "evaluative infrastructures", where smartness discloses the possibility of finding and interacting with others. This is a society of connectivity, where linking people and ideas may have a generative effect that releases people's creativity, and it is a society, which is also diametrically opposite to control societies. Such a society would be concerned with the question "Who wants to be here?", as people attempt to link up with new and unknown others, so that the enclosure of society is under construction and reconstruction.

A third possibility is Latour's Parliament of Things (Latour, 2005), where the distinction between smartness as matters of fact and their reception through matters of concern does not lead primarily to differences in (abstract) political discourse. It leads to tolerability via material additions of the collective, which may have become materialized in rules, technology and artefacts by means of a multitude of compromises. It is not the individual compromises that society consists of but the accumulation of compromise. This implies a society concerned with the question "How can we live together?" in a complex situation but which is sedimented materially and not only ideationally.

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