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Urban Imaginaries as Tacit Governing Devices: The Case of Smart City Vienna

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Abstract

Many cities have formulated strategies, visions, and policies to deploy a local version of the "smart city." While analysts have frequently focused on tech innovators as central players, this paper takes one step back investigating policy documents and how they open a space to reimagine the city. Taking Vienna as a case study, we examine how policy documents translate and adapt globally circulating smart city imaginaries into local versions. This offers insights into values and power relations that underpin urban imaginaries and allows to reflect how they participate in tacitly governing the future directions of urban transformation. Identifying three dominant narrative strands, we gradually trace the emergence of a sociotechnical imaginary of preservation and (technological/digital) enhancement that discursively underlines the importance of local values. However, simultaneously, we witness the striking absence of the voice of citizens in shaping these future visions and how digital capitalism enters the scene through indicator-driven urban positioning work. This leads us to call for responsible imagineering, which not only means to more collectively imagine and

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engineer the future city involving a more diverse set of actors but also to critically reflect related forms of storytelling as performed in policy documents.

Keywords
sociotechnical imaginaries, urban transformation, Smart City Vienna, urban policy, responsible imagineering, imaginaries as governance devices

Introduction

Many cities of scale have formulated strategies, visions, and policies to transition into "smart cities." The smart city alludes to contemporary aspirations to implement technological fixes for all sorts of urban challenges (Marvin, Luque-Ayala, and McFarlane 2015). Various aspects of the smart city agenda and its sociotechnical realizations have already been investigated from diverse angles (e.g., Albino, Berardi, and Dangelico 2015; Anthopoulos 2017; Datta and Odendaal 2019; Karvonen, Cugurullo, and Caprott 2019). Further along these lines, we argue that there is a need to pay careful attention to the local versions of how urban futures are imagined. Sadowski and Bendor (2019), for example, have analyzed efforts made by big corporate actors to develop compelling narratives for smart cities, which contribute to the emergence of powerful, globally circulating smart city imaginaries (Joss et al. 2019). This paper moves away from the vanguard of innovation, so it does not discuss specific sociotechnical realizations or specific tech innovators. Instead, it documents the role of policy actors in their efforts to bring to life a local smart city imaginary for Vienna, and how the imaginaries themselves can function as governance devices.

Why investigate imaginaries? First, imaginaries are key in urban transitions "as they encode not only visions of what is attainable through science and technology but also of how life ought, or ought not to be lived" (Jasanoff 2015, 4) in the city. Imaginaries support the creation of specific realities while precluding others and distribute roles and responsibilities in novel ways (Foley et al. 2020; Hommels 2020; McNeil et al. 2017). Secondly, imaginaries demand our attention specifically because they often come under the guise of "simple visions," easily escaping public scrutiny and leaving critical inquiries unaddressed (Felt and Fochler 2010; Farías and Blok 2016). It is important to understand imaginaries as political objects (Miller 2020). They can serve as powerful justificatory devices in political

decision-making (Hull 2012; Asdal 2015), explicitly or tacitly governing the future directions of urban developments (Felt 2015; Karvonen 2020; Konrad et al. 2017).

This paper presents a detailed investigation of urban imagineering expressed through policy documents envisioning Vienna as a burgeoning smart city. These urban policy documents are relevant testimonials of how a Viennese version of smartification is cast into concrete projects. This allows us to gain insight into the values and power relations that underpin urban imaginaries and how they are manifested in urban governance (Foley and Miller 2020). Investigating smart city imaginaries thus allows deeper insights into practices of *imagineering* (Suitner 2015) smart urban futures, that is, the processes of simultaneously imagining and engineering urban futures through technological interventions. We conceptualize both the practices of imagineering and the resulting imaginaries as governance devices shaping urban decision-making in multiple, often tacit ways.

To root our analysis in the wider field, we begin with some key insights into smart cities from an science and technology studies (STS) perspective. We then outline our conceptual framework pointing to the process that leads to the city becoming an experimental space where policymakers explore projections of urban futures. After introducing our material and discussing documents as an object of study, we present the analysis in three interrelated narrative strands. These narratives together form the basis of smart city Vienna's imaginary. Across these narrative strands, we witness governance as it is practiced by emerging coalitions of discourses. Thinking in terms of discourse coalitions leads us to focus on particular storylines and how they come together, on the actors producing them, and the practices and contexts in which these storylines are employed (Hajer 2009, 60).

Starting with the role of Vienna's past achievements, we stress the importance of highlighting continuities (quality of life, social inclusion) throughout past and future urban transitions. Secondly, we engage with a narrative strand that connects the 2030 sustainable development goals (SDGs) as an emerging urban discourse to stories of past achievements in Vienna. Third, we explore the surfacing of innovation narratives that portray technological enhancement as assuring environmental preservation, which is key to maintaining Viennese high-quality-of-life standards.

In conclusion, in these policy documents, we see efforts to create a sociotechnical imaginary of preservation and enhancement. We also point to important invisibilities, such as the absence of active citizens participating in shaping these future visions. We conclude that if imagineering and imaginaries become important devices for tacitly governing urban smart

futures, then we need to call for responsible imagineering as a collective and a more inclusive effort to envision these futures.

Investigating the Smart City Vienna Imagineering

Investigating urban transformation has a long tradition and has often been connected to study the underlying infrastructural processes (Mumford 1961; Farías 2011). To a large extent, smart cities are an infrastructural reconfiguration of the urban. Investigating smart urbanism means paying attention to infrastructures as "a bundle of heterogeneous things (standards, technological objects, administrative procedures) . . . which involves both organizational work as well as technology" (Slota and Bowker 2017, 531). Infrastructures never grow *de novo* and always must come to terms with preexisting sociocultural routines, and a specific distribution of roles and responsibilities between the actors involved (Star and Ruhleder 1996). New urban infrastructures "emerge out of and store within them forms of desire and fantasy" (Larkin 2013, 329). They addresses specific concerns and values and relate to specific pasts (Hecht 2009).

Of course, it is essential to describe and analyze the outcomes of urban transformations (the implementation of smart technologies in urban management), but as we argued in the introduction, it is even more important to draw attention to the processes that guide those implementation processes, including their visionary elements (i.e., the smart city vision and respective policymaking). Looking at smartification imaginaries means being attentive to how global imaginaries are translated into local versions, specifically connecting a city's past and future through a specific trajectorial vision (Appadurai 2012) and related narrative practices.

In this line, STS contributors critiqued utopian visions of the smart city while raising concerns over the dystopian modes of order and control (Marvin, Luque-Ayala, and McFarlane 2015). Sadowski (2018, 26) goes as for as contending that smart cities are a neoliberal political project and constitute "a battle for our imagination," without falling into the oversimplification of some smart city debates (Coletta et al. 2018). Without a more progressive vision and politics of smartness, as Sadowski argues, urban actors might remain constrained by the continuous neoliberal politics of urban imaginaries.

It is through the imaginative work of a set of urban actors that technoscientific developments can become enmeshed in performing and bringing specific versions of the future city to life. This includes anticipating the lives that will become possible and how the city will be governed. Sadowski

(2018) and similar studies focus specifically on imaginaries imposed by giant tech companies that become involved with city management, for example, through local council's practice of using proprietary software to monitor the city via dashboards and manage traffic flow. The need to study locally specific smart city practices has been stressed in STS (Karvonen, Cugurullo, and Caprotti 2019), but there is still a considerable gap when it comes to carefully investigating the narrative infrastructuring work needed to produce a locally contextualized smart city imaginary—a gap that this paper contributes to filling.

Drawing on Taylor's (2004) reflections on the social imaginaries of modernity to fully understand the processes of smartification, we must first reflect on how policymakers and city officials imagine the social existence of urban citizens. Tracing the social imaginary of a smart city allows us to grasp the "deeper normative notions and images" (Taylor 2004, 23) embedded in specific urban environments, shaping how people (should) cohabitate. However, the central role played by technological innovations urges policy analysts to think beyond social relations. Here, Jasanoff's (2015) concept of the "sociotechnical imaginary" is key. It points to the entangled relation of technology and society, which together coproduce "political orders and technoscientific projects" (McNeil et al. 2017, 449).

Technological realizations seen from this perspective to "operate as performative scripts that combine values and interests, materializing and making tangible the invisible components of social imaginaries" (Jasanoff and Kim 2015, 12). Sociotechnical imaginaries can thus become "associated with active exercises of [a city government's] power," for example, through the "selection of development priorities, the allocation of funds, [or the] investment in material infrastructures" (p. 123). Therefore, it is essential to grasp how such an imaginary takes shape and is reperformed in new urban planning documentation or public events, exercises of engagement with publics and on other occasions (Foley and Miller 2020), until it manages to stabilize and to tacitly drive (Felt 2015) smart city transformation processes.

At the same time, contemporary cities' smartification processes must always be understood as a series of diverse self-experiments (Karvonen, Cugurullo, and Caprotti 2019; Karvonen and van Heur 2014), which also demands a degree of openness to unexpected outcomes. In a comparative analysis of the smartification of the Sydney metropolitan area by Dowling et al. (2021, 3303) they point to the tension between "narratives of strategically governed smart development trajectories," and the fact that "the reality of making places smart is just as likely to be piecemeal, composite,

incremental and adaptive." Thus, while smartification creates opportunities for imagining new futures for the city, these imaginations are always also bound by prior experiences and subjected to political interests.

In Vienna, omnipresent references to past urban transformation experiments are daring. One central reference point is the interwar period when *Red Vienna* was transformed in a "socialist laboratory" performing extensive and ambitious experiments in socialist city politics (Gruber 1991, 12). After winning the municipal elections of 1919, the Socialist Party engaged in an ambitious housing program to improve the situation of the working-class, extended public health, and social welfare services, and profoundly reformed the education system. Attempts to make the ideal socialist city for and with the people are some of Red Vienna's key legacies. The party believed this would allow the "organized working class [to] emerge as a powerful force" (p. 12) that could transform Viennese society. The "socialists' belief [was] that they could be the midwives in the creation of '*neue Menschen* [new humans]'" (Gruber 1991, 46).[1]

After almost a century of socialist governance in Vienna,[2] frequent references to its inhabitants' willingness to cooperate for multiple processes of transformation could be interpreted as a form of "invention of tradition" (Hobsbawm and Ranger 1983). An effort to balance the anticipated radical change created through future with the "attempt to structure at least some parts of social life within it as unchanged and invariant" (p. 2). References to tradition and retrospection that highlight the cherished past support a narrative where smart futures appear as an attractive possibility for both the city and citizens in a rapidly changing sociotechnical world.

The tacit underlying assumption is that the smart city is an inevitable future, so both the city and the citizens must be prepared for it. Vienna needs to adapt to ongoing change, as the city successfully did in the past. Urban transformation is staged as a tradition that Vienna embraces, while always being attentive to preserving quality-of-life standards for all—a historically rooted narrative we encounter frequently in our analysis.

Methodological Approach

This study analyzes urban policy documents, contextualized by participation in presentations and some conversations with actors. We understand documents are an inseparable part of organizational work. The agency (Law 2004; Hull 2012) and transformative capacity (Asdal 2015; Asdal and Reinertsen 2021) of documents have been widely debated in STS. A "document" is not understood as an object but as a verb that acts (Shankar,

Hakken, and Østerlund 2017). Documents are not a mere representation of their subject: they are a referential node in a network of "practices, objects, rules, knowledge, and organizational forms that produced them" (p. 62).

As Hull (2012, 260) puts it, "documents also help generate larger-scale forms of sociality—from organizations to states—not only directly as instruments of control but also as vehicles of imagination." In this sense, documents reflect imaginaries of control, social order, the organization of things, and a shared desirable future. In this investigation, we regard documents as capable of making networks and interacting with(in) diverse contexts. Thus, we investigate the selected documents to understand how they become governance devices outlining futures for the smart city over time, how they situate and embed such futures in wider frameworks, and how they create ideas of a future urban space described as worth inhabiting.

We analyzed urban policy documents published between 2014 and 2019 that capture the efforts involved in realizing Smart City Vienna, including elements from the EU's smart city agenda and its promoting bodies, such as the network EUROCITIES, to which Vienna's visions are closely connected to.[3] This is supplemented by textual and visual materials publicly available from the city of Vienna's website and the respective smart city initiatives.[4] These materials are essential components of Vienna's smart city media representation and outline the elements of the urban future to be realized.

These local government policy documents are complemented by documents from two European Commission (EC)-funded smart city projects involving Vienna, which play an important role in developing and positioning conceptualizations of "smartness" (e.g., Giffinger et al. 2007; Caragliu, Del Bo, and Nijkamp 2011). These additional documents allow us to reflect on the European Union's (EU) role in promoting a particular view of the smart city as part of an Europeanization project and provide insight into how Vienna relates to other smart cities. These projects try to define what a smart city is—or should be—and how it can be characterized and measured through indicators. The first, *TRANSFORMation* (2014), engages smart cities to address the conditions needed to transition to a low-carbon city as a necessary step toward environmental sustainability.[5] It plays a crucial role in the development of the Viennese strategy (Hartmann et al. 2015). The second project, *CITYkeys*, developed smart city key performance indicators (KPIs; Jakutyte-Walangitang and Neumann 2016).[6] The *CITYkeys* project (Kontinakis and De Cunto 2015; Kontinakis, Portail, and Dragonetti 2017) is important because it proposes developing data architecture for monitoring both smart city developments and the progress of smart city

projects across Europe, in other words, to shape the assessment of smart cities toward their goals.

Our situational analysis was informed by the recommendations of Clarke, Friese, and Washburn (2018) and required us to engage in a bottom-up coding process assisted by NVivo software. During the coding process, we identified the key narratives that together aim to govern the development of Viennese version of the smart city.

How Memories Matter for Smart City Developments

Frequent references to past urban transformation events and the city's long-term commitment to improve/maintain "quality-of-life for all" was one of the consistent reference point that appeared in the document we analyzed. To take one example, in the *STEP-2025* document, we find implicit and explicit references to the Red Vienna legacy to build a quality place for every resident (STEP-2025 2014, 9-10). During this time, the municipality built more than 60,000 new domiciles in Vienna, which offered homes to almost 200,000 Viennese, mainly working-class people. References to the "municipal housing projects of the interwar period, the gentle urban renewal approach since the 1970s and the renewed flourishing of the city after the dismantling of the Iron Curtain in 1989" (SCWFS 2014, 12) all point to a dense memory work meant to create a feeling of continuity despite signaling that profound change lies ahead. In short, "[t]he further development of Vienna equals development for all and is to be perceived as such by all citizens" (SCWFS 2014, 15). To uphold and even improve this quality, the policy documents call for the city "to change and reinvent itself" in the new era (SCWFS 2014, 12) and for citizens to embrace such transformations.[7]

Vienna's smartification strategy underlines that it "brings together all topics of relevance for the city's future" and wants "to offer a joint strategic package for all relevant policy areas" (SCWFS-SDGs 2019, 24), while also stressing the need to align with the core socialist value of putting people at the heart of any future agenda. Thus, one of the three pillars of smartification is dedicated to the city's inhabitants under the thematic framing of "quality-of-life." Readers are reminded that "high quality of life is not an achievement that can be maintained through occasional minor readjustments," but needs "developing new perspectives for the liveable city of tomorrow" (SCWFS-SDGs 2019, 28). The "livaeble city" is meant to assure Vienna's growth and expansion in STEP-2025[8] while staying aligned with the city's history and long-standing socialist values. Without

clearly defining what quality-of-life means, documents often take us back to the interwar period, pointing to urban transformation under the leadership of the Socialist Party—a period subsequently labeled "Red Vienna." This allows policymakers to tacitly communicate a commitment to justice and inclusion without needing to spell out what this would mean in the context of smart cities with its inherently neoliberal urban agenda.

We also encounter references to another important historical transformation in Vienna's urban development. After World War II and Austria's liberation in 1955, the city—again under socialist leadership—adopted a new political agenda for urban development. Two pieces of legislation framed the new urban agenda of the 1970s: one for the *preservation* of characteristic townscapes and the other for the *renovation* of urban infrastructures (Suitner 2015, 120). During this time, the combination of renewal and preservation became an important discursive element within Viennese urban development. Infrastructural developments were perceived as essential to bringing back the city to where it was before World War II. This 1970s trope reappears in contemporary smart city discourse: new developments meet the need for preservation and renewal to successfully bring past achievements into the present and assure that values rooted in past developments also guide visions of the future.

A third shift in rethinking the urban can be identified in the early 1990s after the fall of the Iron Curtain. The comprehensive Urban Development Plan STEP-94 for Vienna aimed to respond to a fundamentally changed geopolitical context. Considering globalization, economic growth, and cross-regional cooperation and competition (Suitner 2015, 115), Vienna resituated itself in an extensive urban network. Vienna reimagined itself at the center of Europe, thus reconnecting with its past geographical and geopolitical emplacement. This new vision was institutionally stabilized through Austria's accession to the EU in 1995; and with the enlargement of the EU to include much of Eastern Europe in the early 2000s.

Since the 1990s, the economic rationale has become dominant in urban transformation. Vienna envisions itself as becoming an international hub for the knowledge economy; a place fueled by tech start-ups and inhabited by smart people. As these new visions gained prominence, concerns have also risen about overshadowing the previous core values of socialist politics (Suitner 2021). The slogan "Think European—Act Regionally—Develop Vienna" advanced in the 2005 urban development plan (STEP-05), expresses this concern through acknowledging the wider pan-European policy while stressing the need to develop locally specific solutions.

In the period following STEP-05, we see the first turn toward the smart agenda. Gradually, mobility and energy concerns became the key drivers of change and became embedded in international and European development (Exner et al. 2018). Bold changes are described as necessary, with new smart/digital infrastructures and the major readjustments that would come with them always presented as an opportunity to sustain a specific quality of life. The narrative of the need to preserve past achievements when imagining the future under the smart city framework was still present.

We have seen that the first narrative strand in Vienna's smart imaginary holds that to successfully cast a new urban development in Vienna, it needs to be aligned with entrenched narratives of prior achievement. Even though it remained largely underdetermined, the quality-of-life narrative had become a quasi-obligatory passage point when imagineering a future for Vienna as early as the 1990s. This resonates with what Bos et al. (2014, 151) have called "steering by big words," that is, steering by using "encompassing concepts that are uncontested themselves, but that allow for multiple interpretations and specifications."

The Smart City and Sustainable Futures to Aim for

Quality-of-life entangled with the idea of preservation remains a particularly powerful argumentative resource in the smart city imaginary, but it increasingly needs to articulate with contemporary challenges of environmental sustainability, resource preservation, and energy consumption (SCWFS 2014). An example for such an alignment is the agenda of greening Vienna. Formulating the vision to have more than half of Viennese land devoted to green spaces as a preservation goal (STEP-2025 2014, 9) could be easily connected to Vienna's long-standing tradition of having large-scale green gardening spaces and parks, dating back to the early twentieth century.

Yet new values and concerns must also find their place. The preservation theme gets linked to questions of intergenerational justice, particularly when it comes to climate change and energy consumption. Initial steps to prepare the Smart City Wien Framework Strategy (SCWFS) were driven by the EU's energy and climate agenda for 2050,[9] prompted by Vienna's collaboration in an EU project envisioning infrastructural projects to reduce CO_2 level in the city called TRANSFORM.

The 2019 Vienna smart city strategic framework firmly integrates SDGs, framing this move as an international responsibility: "appropriate adjustments to the objectives of the Smart City Wien Framework Strategy and a

strong commitment to local implementation of the UN 2030 Agenda and its Sustainable Development Goals (SDGs) are imperative" (SCWFS-SDGs 2019, 9). Not only is this ambition repeatedly stated in policy documents, but it is also staged as a future reality: in 2025, "[a]s a smart city, Vienna consumes resources sparingly, uses energy highly efficiently and draws increasingly on renewable energy carriers" (STEP-2025 2014, 10). We thus witness the emergence of a clear problem–solution package: if sustainable development is the problem, then smartification is *the* solution.

However, straightforwardly connecting sustainability to a tech-oriented solution might carry potential dangers on two levels. First, studying the efforts to incorporate the normative imaginaries of sustainability with the idea of a smart city by policymakers in London and New York City, Miller (2020) expresses a clear warning. While the sociotechnical imaginary (Jasanoff 2015) of sustainability might be strong in presenting "a set of goals and values for science and technology," the co-existing "techno-politics dominated by corporate actors and techno-scientific optimists may ultimately prevent cities from opening up space for alternative imaginaries" (Miller 2020, 367). Miller's observations urge us to be attentive to the danger of the sustainability imaginary is being reframed to fit smart solutionism (Vanolo 2014; Parks 2020). Second, a case study by Foley et al. (2020) of debates regarding groundwater pollution in Phoenix, AZ, points to another critical dynamics when looking into Smart City Vienna's sustainability discourse. Observing citizen engagement practices in the course of addressing this pollution issue, the authors show that citizens were gradually excluded as technical expertise was moved to the center. In the end, the water management experts left little space for citizens and other stakeholders to pursue their vision and propose their solutions to the problem. Considering that imaginaries are, as Jasanoff (2015, 26) puts it, "a crucial reservoir of power and action, lodg[ing] in the hearts and minds of human agents and institutions," it is vital to focus our attention on powerful actors such as municipalities and high-tech companies (e.g., Siemens is very active in providing services to Vienna's urban management) with the resources to invest in gradually transforming a vanguard vision (Hilgartner 2015) into a desirable collective future.

In our document analysis, we observe that Vienna's futures to be aimed for draw on expert-driven narratives, and we hear few traces of citizens' voices. This emphasis on technocratic narratives allows for a specific set of meanings and values relevant to urban development to be articulated and circulated. This enables policy actors to stabilize a core set of publicly recognized narrative registers (i.e., quality of life, sustainability, and

climate change) that guide future visions but do not include much specification. These narrative registers are also key actors in translating the global urban discourse around smart cities into local urban technological innovation.

Smart City Vienna's development aptly illustrates Michael's (2017, 510) description of a process of discursive transformation of "big futures"—that is, futures whose "spatiotemporal horizons are relatively large-scale," such as the SDGs—into more locally oriented, well circumscribed "little futures" that possess a "relatively tighter spatiotemporal horizon." This discursive transformation facilitates a tighter sociocultural embeddedness while holding space for equivocation and fluid interpretation. The question remains who had and will have a voice in defining these little, much more local futures. Such a discursive transformation becomes even more visible in the innovation narrative in Smart City Vienna, which we will unpack in the final narrative strand we identified.

Innovation as a Central Agent in Future Cities

Innovation is depicted as "the third major approach" (SCWFS 2014, 14) in Vienna's smart city development. We regularly encounter statements such as, "[a] smart city conserves resources and the environment and improves its quality of living through innovation in all fields" (SCWFS-Overview 2014, 5). In the SCWFS (2014), and even more so in SCWFS-SDG (2019), social and technological innovations are imagined to coemerge, to target and disrupt entrenched habits and structures while simultaneously maintaining or even improving the quality of life, and to stay in line with local value ecologies. Innovation is consistently described as essential to addressing global challenges such as urban population growth, rapid global technological development, and climate change (SCWF-SDG 2019, 15-17), which are described as threats imposed on the city from the outside. Meanwhile, a prevailing narrative underlines Vienna's ability to turn challenges into innovation opportunities. We thus gradually observe the coming into being of an imaginary where preservation and technological enhancement narratives coexist.

While the ideal of preservation and enhancement through innovation is explicitly spelt out, the precise meaning of innovation remains ambiguous. Overall, innovation is staged as a motor for change, "a magic word" (Godin 2015, 12), closely entangled with research, education, and the contemporary market economy. It is largely left unaccompanied by clearly articulated explanations or action plans. While this could be seen as problematic, we

want to point to the fact that it is precisely this ambiguity, as Farías and Mendes (2018) argue, which creates a space for alliances of future-making actors in the urban context. In other words, the inherent fuzziness of the very notions of innovation and smartness, as well as of the future agenda for change, allows a variety of actors to make sense of and connect to the idea of necessary transformations.

In a similar vein, Dowling and co-authors (2021) analyze the urban smartification process as city (re)branding and show how a city's history matters. They argue that multiple situated development aims become interwoven with political agendas "in the design, capacitation and implementation of the smart city in ways that are more deeply contextualized and incrementally constituted" (p. 26). In the case of Viennese urban policy, innovation discourses also have to demonstrate some form of "*Austrianness*" (Felt 2015), for example, by fitting into the local value ecology and wider urban development narratives.

In Smart City Vienna, innovation—as vague as it is left to be—becomes a value of its own. It manages to meet specific expectations related to quality of living standards; it also makes the city competitive in attracting people and investment. Both narratives are reflected in the city's good ranking, listed alongside other European metropolitan regions (see SCWFS-SDG 2019, 124).[10] As a result, we observe the making of Smart City Vienna's identity in relation to and comparison with other cities, particularly in the European context. Yet comparison is never an innocent undertaking: it is meant to fuel regional competition and facilitate a new kind of geopolitical positioning work. As such, the Viennese vision for science and research to be achieved by 2050 is:

> Vienna is one of Europe's leading innovation hubs and is known as the research capital of Central Europe. This makes the city especially attractive to students and academics, researchers and innovative enterprises and start-ups. There is a lively exchange with other major international research centres and with research partners in the wider metropolitan region, especially in sectors that are among Vienna's key strengths and drive the city's progress as an incubator of innovation. (SCWFS-SDG 2019, 122)

To this end, the *CITYkeys* project played a key role in Vienna. It was designed to define KPIs and collect relevant information for being able to document smart city development (Hartmann et al. 2015). This project comes alongside an innovation-oriented and neoliberal-tainted discourse, which highlights the importance of implementing new technological

infrastructures while defining indicators that allow achievements to be measured against set goals—further supporting comparison and ranking on an international scale. As is often the case with indicator-driven change, comparative assessment opens a very specific set of developmental opportunities while it closes others (Porter 1995; Power 1999).

Indicators do not simply measure and represent the smart city, they also define what a "good" smart city is (Kontinakis, Portail, and Dragonetti 2017, 24). For example, in an indicator-driven environment, if there are no clear indicators for capturing social dimensions of smartification, such concerns could easily fall out of the attention zone and gradually be marginalized due to the difficulty of capturing them within the logic of indicators. The introduction of this infrastructure, which is meant to measure performance and trace achievements, could also be seen as an enactment of governance by code (Kitchin 2017). Although this shift has been politically embraced by local governments, it also calls for careful reflection. Any set of performance indicators has to be seen as "a model for, rather than a model of, what it purport[s] to represent" (Anderson 1991, 178).

In practice, the innovation narrative in Vienna simultaneously promotes adjustments and advancements for both the city and its citizens. Innovations must always demonstrate a sufficient fit with certain traditions—to be successfully implemented, sociotechnical developments are either Viennese from the start or they must be made Viennese. Adjustments at the social level often take the form of promotional and educational programs to develop the necessary digital skills, particularly among two age groups: children and older adults or, in some cases, among members of socially disadvantaged communities, such as refugees. Adjustment, however, also means that both businesses and "members of the workforce [have] to acquire new skills and qualifications and repeatedly change direction" (SCWFS-SDGs 2019, 15) to fully thrive with new technological opportunities.

The 2019 Framework Strategy formulates: "Vienna's ambitious climate action target can only be achieved through a radical reduction in energy consumption in all areas . . . . It can be done with the aid of highly efficient technologies and technical innovations . . . . However, it *also requires changes in behaviour*" (SCWFS-SDGs 2019, 46, our emphasis). This explicitly acknowledges that the success of innovation ultimately relies on the capacity to make citizens embrace the needs created by these transformations. Later in the report, this point is further emphasized by stressing that "the Viennese public" has to show "forward-looking consumer behaviour" to make the transformation possible (SCWFS-SDGs 2019, 85). In the end, it

is the citizens who are required to adapt to a new kind of infrastructure and ways of being and behaving in the smart city.

Conclusion

In this paper, we analyze policy documents to document the emergence of three dominant narrative strands that establish and stabilize a sociotechnical imaginary of Vienna as a smart city. We also saw that these documents mainly give voice to policy experts and that specific storylines are repeatedly performed to establish the idea of continuity and preservation. We thus witness the emergence of a strong discourse coalition (Hajer 2009). This creates an experimental space for imagineering a smart city future that claims to reconcile local value ecologies with the seemingly universal smart cities agenda. It brings to life a sociotechnical imaginary of preservation and technological/digital enhancement that frames, guides, and governs the development of smart urbanism in Vienna.

Our analysis critically scrutinizes these discourses and offers insights into how the processes of imagineering, and the resulting temporarily stabilized urban imaginaries, become crucial governance devices. By examining the construction and evolution of an urban sociotechnical imaginary, we gain insight into the process by which diverse actors must converge to shape a vision of the future that aligns with particular values and interests, as well as what is deemed appropriate for the future. And we can get a deeper understanding of how such a governance device can transcend the boundaries between different areas of practice and discursive ecologies. Ultimately, this analysis can inform the development of more reflective, responsible, and inclusive urban governance strategies that engage a broad range of actors in the creation of a sustainable and equitable future. In our concluding remarks, we will identify three major tensions that challenge responsible ways of imagineering a smart city.

Firstly, considering imagineering and imaginaries as governance devices in the context of documents that mainly feature policymakers and experts prompts us to examine how citizens are present/represented within these narratives. Our analysis suggests that the voices of citizens are largely absent or unheard. Instead, citizens appear to be relegated to the role of future consumers in a technologically reconfigured, improved version of the city. Although presented in a language of participation of and care for citizens, the documents reflect a more paternalistic vision of the collective urban future, with policy actors assuming they can speak for the citizenry, know their needs, concerns, and desires.

A strategy employed to generate acceptance of (or at least to reduce resistance to) sociotechnical change is to frame fundamental technological transformations as being in line with the past. This may explain the trend of embedding Smart City Wien's current developments in a trajectorial narrative (Appadurai 2012), linking Vienna's past, present, and future to create a space that accommodates the idea of innovation-driven progress. In this narrative citizens are expected to adapt to changes and acquire new skills to align with the smart city of the future. This can be viewed as a discursive continuity with the interwar period, when urban transformations in Vienna aimed to create "new humans" (Gruber 1991, 46) capable of fitting into experts' imagination of urban transition. We thus witness a significant contradiction between a discourse of participation and a top-down paternalistic imagineering of the future city.

Secondly, the policy documents analyzed here extensively reference the significance of local values (e.g., social justice, inclusivity) and a reflexive discourse on the preservation of Viennese values during urban transformation. Yet proposed solutions primarily focus on technical innovation. Smart City Wien thus aligns with the logic of digital capitalism (Sadowski 2020) and smart solutionism (Vanolo 2014), restricting the range of possible innovative directions and limiting the diversity of solutions. Here, we observe another perplexing paradox. Despite the emphasis placed on "Viennese values" as guiding the city's imagineering, the fact that they always remain underdetermined allows smart capitalism and its solutions to take center stage.

The emphasis on technological innovation in the policy documents reflects a larger trend of prioritizing digital solutions and smart technologies in urban development. This trend is driven by the belief that smart solutions can both solve complex urban problems and enhance urban livability. However, this approach limits the range of possible innovative directions and diversity of solutions, while fundamentally neglecting the multiple lived realities of citizens that would have to be considered in the processes of envisaging local, little futures. They matter when it comes to embracing and making sense of urban transformations.

Thirdly, our analysis highlights that the smartification of Vienna also leads to transforming its understanding of its position in a global geography. Smart City Vienna seeks to contribute to the global trend of developing smarter futures while emphasizing its unique history and local distinctiveness. However, under the current prevailing neoliberal logic, defining one's place on the map of urban transformation also involves making decisions about how to compare, collaborate, or even compete with other cities.

We learn from debates on the "quantified self" movement (Lupton 2016) that practices, meanings, discourses, and technologies associated with tracking are inherently shaped by broader digital capitalism. Smart City Vienna's reliance on indicators—such as progress toward SDGs—risks neglecting the complex social and environmental contexts that underpin urban development. While it is important to assess the impact of policies and reflect developments, a more critical and reflective approach is necessary to ensure that the smartification of Vienna aligns with its values and priorities, considers existing inequalities and power imbalances, and makes space for context-sensitive social innovations.

In the end, combining these three key findings, our analysis brings to light the inherent tensions involved in imagineering and in the resulting imaginaries. Neither the practice of imagineering nor the outcome is neutral; they are never just future projections or social experiments, but rather powerful governance devices shaping the possibilities of the smart urban lives of the future. Citizens' roles and responsibilities are redefined; vague references to "Viennese values" allows digital capitalism to unfold as a powerful force; and data-driven understandings of urban progress draw attention to a narrow set of features while relegating others to the background. Our analysis of Vienna's imagineering process thus points to the need to reconsider what responsible smartification would mean in the urban context. We have shown that responsible smartification cannot start when implementing the digital solutions into urban environments and instead needs to include a critical examination of imaginaries crafted and deployed through policy documents—and of the actors that can(not) participate in developing them. We need to design processes of *responsible imagineering*, acknowledging the inherent tensions, complexities, and power relations. Being more attentive to this early stage of urban transformations would allow for more inclusive forms of governance.

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Notes

1. For more insight on Vienna's socialist city-making past and present, see Kazepov and Verwiebe (2021).
2. The Socialist Party has governed the city of Vienna since 1919 with an interruption only between 1934 and 1945 when the Austrofascist and National Socialist parties were in power.
3. EUROCITIES is a network of more than 140 major European cities in which Vienna is an active partner.
4. https://smartcity.wien.gv.at/en/projects/.
5. http://www.transformyourcity.eu.
6. http://www.citykeys-project.eu.
7. For a detailed study of Vienna's urban development periods, see Hatz (2008). Hatz, Gerhard. 2008. "City profile Vienna." Cities 25(5): 310-322.
8. Vienna's number of inhabitants has grown from approximately 1.5 million during the 1980s and 1990s to more than 1.9 million today.
9. https://ec.europa.eu/clima/policies/strategies/2050_en.
10. Find a list of rankings in which Vienna appears on the top (https://www.wien.gv.at/english/politics/international/comparison/).

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