Editorial

Smart cities beyond technology

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The digital revolution has brought with it the promise of smart cities, harnessing big data to address complex urban issues. This Focus explores how the smart city concept can move beyond its technological foundations to encompass socially just and person-centric solutions that improve urban life.

In July 2024, Santiago de Chile was home to an event called 'Smart City Expo Santiago'. Held in Estación Mapocho, an old train station from the early twentieth century turned cultural center, Smart City Expo Santiago brought together more than ten thousand visitors and more than one hundred exhibitors. Participants and speakers came from government agencies and private companies, but also from the research and development departments of universities and the media — all interested in smart cities.

What makes a city smart? According to the expo programming, it is a combination of smart mobility, utilities, environment, digital transformation, safety, sustainability and urbanism. According to the authors in this Focus, in addition to these seven dimensions, we can include governance, multilateral organizations and 'more-than-human' life (animals, plants and others), which go beyond the technology focus of smartness.

However, the main goal of this Focus is not to define smart cities. The complexity involved is perhaps captured best in our two Reviews, by Caldarelli et al. and Tsybina et al. The former draws insights from complexity science applied to smart city research, and the latter paints a multiscalar picture of what happens to the flow of information from the moment a device records it in the street to when a decisionmaker does something with it.

There is rising interest in the use of digital twins for urban planning and modeling. Indeed, at the expo, one of the exhibitors used virtual reality (VR) googles to simulate Santiago's map in 3D, which enabled the user to 'travel' to different places and interact with them. With increasing modeling, Ahn and coauthors argue in their Comment, designers should tackle the three challenges of oversimplification, the exclusion of social and cultural knowledge, and overreliance only on technical innovation without diverse publics.

These three challenges are well-examined by other contributors in this Focus. Mora et al.'s Comment was written by a group of academics and policymakers from different sectors; they confront the challenge of governance, as smart city innovations could expose local communities to harmful effects if scientific and technical insights do not account for social contexts. In their Brief Communication, Cai and coauthors compare US municipalities that use the term 'smart' in their websites with those that do not. They found that smart cities show better progress towards a number of the Sustainable Development Goals, such as education and sustainability. On a different side of the world, Duca and colleagues' Article carries out a systematic review of academic and gray literature on smart cities in Southern African Development Community (SADC) countries. Importantly for the traditional smart city literature, the authors identify trends that involve sociopolitical and technological challenges in the region, and make the case for more local and governance-oriented processes to make smart city projects more relevant.

Implementing a smart city project in a city requires effort, but in many cases the payoff makes a difference. A Q&A with Victoria Itskovych, the chief information officer of Kyiv, talks about the part that technology — leveraging smart-phone apps — has played in bringing state services (such as financial and mental health aid) to citizens within the context of war. Palmer's News Feature narrates efforts from small cities in implementing smart city projects, as many such cities have limited resources or technical capacity. According to both Palmer's interviewees and Itskovych, the effort is worth it to improve some aspects of the quality of life of residents in these places.

Cities house more than humans. Smart city projects have large environmental impacts because of the energy and resources needed to sustain electricity and internet connections. But other urban dwellers — including animals and plants — are also affected by smart city projects, as Putzer's Books & Arts piece mentions. As such, governance and implementation efforts should include these other lifeforms to make smart cities more accommodating to all. And although this was not an explicit theme in the upcoming UN-Habitat guidelines on smart cities, the issue of fairness is embedded in them, according to a Q&A by Isabel Wetzel (acting executive director of UN-Habitat), who has been involved in smart city projects. For her, smart cities should be need-driven, and not demand-driven, to make people-centered smart cities that are more equitable to all.

The interplay between technology and society can shape the way that cities look and feel, and embody particular ideals of a good life. Smart cities have shown us that these interactions can be about something as concrete and small as streetlight bulbs or as abstract as big data, the internet of things and digital twins. This Focus takes apart some of these points of contact, and its authors show that there is a need to go beyond the fetishization of technology to achieve more just and socially aware projects that fulfill the promise of smart cities: to improve urban life.