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COMMENTARY

COVID-19 Challenge, Information Technologies, and Smart Cities: Considerations for Well-Being

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Abstract

Coronavirus (COVID-19) raises an essential debate about implementing the ideas and insights of smart technology in the fields of urban planning and design. This commentary sheds light on considerations and challenges in the area of knowledge in these fields as consequences of the recent pandemic. The concluded remarks cover issues with a specific focus on accelerating the digital transformation in education and a typo-morphological analysis that ends with revisiting the norms and standards of social distancing. Besides, this commentary recommends research directions to follow after the pandemic recedes, tackling the multidisciplinarity between fields of specialisation.

Keywords Coronavirus · Smart technology · Urban design · Urbanism next

Introduction

Throughout the ages, humanity has experienced many pandemics that annihilated large numbers of the population. These pandemics include the Marseille plague in 1720, the worldwide cholera pandemics between 1817 and 1923, the cholera pandemic of the Ganges River delta in India from 1817 to 1823, the Spanish flu between 1918 to 1919, the Asian flu in 1957, 1958, and 1968, the Hong Kong flu in 1968, and the 2009 (H1N1) Swine flu. At the end of 2019, a new pandemic emerged in Wuhan City in the Hubei Province of China, which has been named COVID-19 (AAP FactCheck 2020).

In December 2019, the first case of COVID-19 was diagnosed in China (World Health Organization 2020). The virus was first detected in the United States in February 2020. By

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mid-March, all 50 states, the District of Columbia, New York City, and four U.S. territories reported cases of COVID-19. Humankind found itself suddenly facing the most significant challenge and a shakeup in its modern history, due to the COVID-19 pandemic, which caused the deaths of over seven million people worldwide—and all within a few months.

Thousands are still being afflicted every day. The Coronavirus disease (COVID-19) not only caused human deaths but also placed humankind in an unprecedented critical situation that affected all spheres of life. This situation is the result of the contradictions of what the world believed about the applicability of globalisation smart technology and multiculturalism in confronting the current COVID-19 adversity. Therefore, the embarrassment is what happened in the past and what is happening today is that these epidemics occurred during the time known as the era of big data, the technology revolution, and artificial intelligence. In earlier times, urban environments did not have vast economies or advanced digital technologies available today. Moreover, the idea of cities between inter-cultures and cross-cultures had not yet been extended (Bloomfield and Bianchini 2002; Connolly et al. 2020; Sandercock and Lyssiotis 2003).

This pandemic is a national emergency, and many countries proved that they have a very complex system of smart technologies. The example is given here to Great Britain within its regions of Scotland, England and Wales that deal with their measures and data, the cities including London plays no role in it regardless of its smartness and digital capacity. On the contrary, some cities in the Global South possess informational and smart systems, but they often do not have this degree similar to what is established in countries of the Global North. Going in depth, those cities do not have the useful applications of digital and smart technologies that depend on the big data, such as crowdsourcing approaches and internet of things.

Urban studies, urban planning, and design encompass a broad theoretical effort, which refers to more advanced approaches in the areas of high technology, smartness and multicultural cities that target well-being and sustainability. However, the current circumstances of coronavirus pandemic that invaded most of the urban environments show the importance of rethinking the praxis of current technology. The purpose of this commentary is to prove the presence of a gap between theorisation and practice, and that this gap holds new challenges for specialists in disciplines of building cities to identify their pillar causes reaching the solutions for achieving environmental welfare and sustainability.

Hence, this deadly epidemic has opened an important debate about the failure of urban developers in implementing the ideas and opinions of scientists in the fields of urban planning and design. In the first six months of 2020, after the spread of the deadly virus, many countries and cities closed their borders and preventing entry and exit. Besides, all of the countries of the world announced the ban, either in full or in part (Stevis-Gridneff and Pérez-Peña 2020). Moreover, in unprecedented measures, on the global north and south, some countries and cities even prevented their citizens from leaving their homes (The Straits Times (ST) 2020). People watched on the broadcast media as cities of the world became empty. The urban form of many cities has grown as an oil painting, showing natural and human products—from buildings, streets, and squares—all of which have no life. The activities that used to give a city its well-being, conviviality, and vitality of daily life, has disappeared.

The epidemic revealed the dilemma of racial discrimination among citizens, wherein the reports of the Centers for Disease Control and Prevention (CDC) (2020) found in the United States recorded the spread of the outbreak between Africans and Asians

more than Hispanic or Latino persons. The human values of the concepts of intercultural cities have decayed, and the enrichment of acceptance of the other has disappeared. Some countries not only closed their boundaries but began to claim the non-natives to return to their home countries or stay without health support from these hosted countries. Again, the world became divided into independent states with geographical, ethnic, and customary boundaries (Connor 2020).

In another vein, many cities around the world declared themselves on the brink of the worst economic downturn since the Great Depression (Gopinath 2020). Business and finance professionals disappeared; stock exchanges, companies, and banks collapsed, substantial financial and investment entities began to lay off workers, and many small companies closed their doors. Cities that had a strong economy and global competitiveness have disappeared from a theoretical map. Many cities around the world became nearly bankrupt after the closure, leaving their street billboards blank, without publicity or advertisement. They were no longer able to advertise their products after the shutdown. Was this due to the massive financial losses or for other reasons?

The raising question now moves around directions of the global economic system, and informational cities which emerged in the 1980s might be inconvenient to cope with the current pandemic. The evidence proves that this inconvenience is not in line with the pillars of this system that dependence on the flow of information, modern technologies and media (Castells 1997; Stock 2011). For instance, the current situation due to the pandemic hazards in many countries of the Global North and South is not commensurate with this amount of theorizing.

Challenges and Windup Considerations

Globally, nothing has been mentioned about the citizens except for little statistics on the numbers of injured and deaths. As for other detailed information about employment, unemployment, layoffs, companies that closed, entities that have ended, and others that are still in conflict, and the state of food production and the state of hospitals all over the world, there is only scattered information from some global statistical agencies.

According to the World Bank about education,

> *"As of April 8, 2020, universities and other tertiary education institutions are closed in 175 countries and communities, and over 220 million post-secondary students—13% of the total number of students affected globally—have had their studies ended or significantly disrupted due to COVID-19"* (World Bank Group: Education 2020).

The current challenges facing education systems and institutions, for example, prove the invalidity of smart technology. Several blogs and recently published articles figure out some of these challenges in availing distance learning and ensuring the integrity in the online assessment methods (Bane 2019; Salama 2020; Peters 2020). The challenges also extend to employability during institutions and services providers' lockdown and the change in norms for achieving social distancing (Batty 2020; Günther 2020). Short and long-term personal and academic difficulties were the result of the lack of resources to meet the needs of students and institutions, in addition to other challenges represented by

poor digital infrastructures. Only a few countries have been able to implement distance education programs, many of which have achieved unprecedented catastrophic failure. Furthermore, if the virus continues to kill people, and schools and universities continue to be closed, no one can predict what will happen in this world.

This deadly epidemic has demonstrated the ineffectiveness of current technologies. Some cities around the world, especially cities of the Global South, do not have the effective applications of informational, digital, and smart technology. These applications could help in detecting the pandemic and infected persons, as well as to stop the hazards that emerge due to viruses. Moreover, regarding the ITCs, cities of the Global South cannot compare with the USA or the European nations. However, in the current situation, even cities that rely on smart technologies have failed to cope with the damages brought about by the COVID-19 pandemic. This failure is because these cities are limited in their effectiveness as it relates to smart digital technology.

In this respect, some contextualization of the broader institutional constraints over urban planning and urban management should be considered as follow:

- Citizen collaboration and participation in the city management with their governments (e.g. creating collaborative and participative environments) (Kaushalya et al. 2019).
- Improving information transparency and disclosure (Ibid).
- Creating the balance between republican and cybernetic citizenship, the first emphasizes citizens' sovereignty and the second emphasizes their immersion into informational environments (Zandbergen and Uitermark 2019).
- Thinking outside the box, freeing citizens from the bondage of receiving information, and accustoming them to making information and creating ideas.

A smart city measures the capabilities of its citizens against smart technology applications. The smart city is the city of networks, communications, traffic, citizenship, and knowledge. Smart cities are based on collecting big data analysing through appropriate, robust, wireless connectivity (sensors of networks) for each situation, which should be pervasive, secure, and available to everyone without additional expense. Smart technologies include:

- Buildings and physical structures, electrical, electronics, communications information technology infrastructure and software, green and renewable energy resources.
- Network connectivity, such as communication via fibre optics to home, citywide Wi-Fi, near field communication (NFC), Bluetooth and cyber-physical systems (CPS): The Internet of things (IoT).
- Mobility of rapid mass transit and sustainable systems, which improves mobility, safety, and smart parking.
- Short-message services (SMS) including communication mechanisms; smart meters, electronic/intelligent cards, and IT connectivity digitalisation. Additionally, the availability of wired and wireless connectivity with the capacity to expand to meet any foreseeable growth.
- E-Governance, citizen participation, and healthcare by using biometric sensors.
- Technologies that are less exposed to hazards use fewer resources and provide affordable services.
- Resilient urban environments to confront the emergence of environmental, economic, or political conditions.

The example is given here to London, New York, Amsterdam, Paris, Reykjavik, Tokyo, Singapore, Copenhagen, Berlin, Vienna. Korea, the Netherlands, Sweden, and Japan are the smartest cities in the world, which are already deploying digital solutions to facilitate today's rapid urbanization and meet its challenges (IESE Business School 2019; Management Events 2018).

Now, the questions are: How many cities in the world possess all of these specifications for a smart city? In contrast: In how many cities around the world has their COVID-19 technology succeeded? Did this epidemic bring down the myth that says: "Many cities in the world claim to have the technology to allow it to be called a smart city?"

Notably, smart cities, first and foremost, are cities that can serve and secure their citizens in all experiences of daily life. The questions are: "Where are the smart technology factories, hospitals, schools and universities? Where are the sustainable means of transportation that do not allow infection from this virus? Where are the quick smart links in all cities that provide knowledge sharing around the world? How many cities in the world have a digital technology environment covering all areas of life? Where are the smart technologies in the primary and university education process?"

Research Directions to Follow after the Pandemic Recedes

Modern urban planning and design are intricately linked to community well-being considerations. During the last two decades of the twentieth century, many researchers of urban studies and urban environments development offer common trends to promote the existing and new urban community well-being. In their writings, specialists relied on proposing measuring well-being that included considerations and differentiation indicators that supported societal welfare (Baldwin et al. 2020; Munoz et al. 2020). The studies also presented many paradigms starting from the eighties of the last century, for example, the global and informational city (1980), city branding (1990), transcultural cities (1996), smart city, and great city (2000) (Abusaada and Elshater 2019).

Despite the numerous studies, real estate developers, planners, and designers for cities and city management fell between the gavel of theorisation and the anvil of the status quo. Even though thousands of research papers have been filled with concepts, principles, and guidelines for creating sustainable cities, community-minded applications, these applications failed in facing the current epidemic crisis. In today's modernised communities, the concept of smart technologies in urban environments and their impact on urban forms and everyday lifestyles has become one of the widely recognised and growing challenges in the urban planning and design literature. It is followed by challenges of the concepts of informational, and multicultural cities, city branding, great cities, and sustainable cities.

Scholars from different disciplinary backgrounds relevant to city planning and design should start to discuss the intellectual implications of the application of the latest technologies (e.g., crowdsourcing and the internet of things). These applications should mainly move to confront environmental hazards, which are due to the impacts of the newest challenges, such as pandemics, social poverty, and loss of hope. This discussion should occur in diverse scales in the urban environment on the everyday life experiences from individual buildings, urban spaces and places, neighbourhood

communities, to the city. These discussions would present opportunities to generate a new discourse that aims at understanding the impacts of the latest technologies on the daily lifestyles of the public and public places, especially if contemporary technologies were in users' hands. This discourse would cover issues in urban planning and design with a specific focus on:

- Urban planning and architectural education that support distance learning and online exams.
- The life-long learning supported by university programmes and/or training providence to help the adversity in unemployment.
- The reconsideration of urban typo-morphology to cope with the newly everyday life experiences that have been changed during COVID-19.
- The revisit of norms and standard that ensure the challenge of social distancing in mobility and public places: indoor and outdoor of the urban environment,
- The acceleration of digital transformation in different inter-disciplines attached to urban planning and design (e.g., transportation, psychology, urban geography, and informational and communication technology), and
- The usage of contemporary digital methods like crowdsourcing and the internet of things to control and ease facilities of well-being for a better convivial life.

Ultimately, today, it is necessary to know what is right in the theoretical literature. This commentary has thrown up many questions in need of further investigation. Are these academic rules wrong or correct, and what are the shortcomings? Why were the countries unable to succeed in implementing them? Moreover, can these technologies be applied quickly and at minimal cost, to support poor and less developed societies? What are the plans to put what shall come in theorising so for implementation?

The vital step to salvation lies in thinking about analysing existing experiences, comparing each urban experience with the information found in the literature of theorists. Moreover, all nations must review how many cities can be launched as smart city, an information city, a city of shared cultures, an intercultural city, a competitive city, a city sustainable, or a liveable city.

What might the implications of COVID-19 for urban designers intend now, not only on the urban form of urban environments and the experiences of everyday life but also on infrastructure technology? Scholars can no longer manage the toolkits of urban developments to be used by professionals in the status quo. Critical thinking to restore the action plans that link theory and practice are crucial in promoting a community's well-being, starting from educational plans, applied research practices, and planning and design in the professional practice. The present readings for these challenges provide a roadmap that begins by revisiting the application of smart technology regarding the pressing confronts.

Today, therefore, the roles of urban planning and design research as they relate to contributing to the creation of an innovative urban toolkit are essential. These toolkits are now limited to engaging multiple actors to activate principles for environmental performance and community well-being for each urban planning and design paradigm. At the same time, stakeholders have the great responsibility of identifying the positive aspects of selecting the right policies needed to achieve a community's well-being.

Concerning governance and institutional constraint, informational city and smart technologies enhance urban environments well-being through to issues. The first focuses on long-term sustainability through increasingly using ICTs to improve citizen participation (Giffinger et al. 2007). The second aims at improving the new services and applications by various types of users (López-Quiles and Bolívar 2018). One of the most technical and smart solutions today is developing the potentialities to use big data analysis. In this respect, crowdsourcing approach provides "creative solutions" (Howe 2008, p. 19), and the internet of things and its application in healthcare for epidemic detection, which depends on advanced computing technologies (Kaushalya et al. 2019).

Future research should use these toolkits that cover multi-disciplinary and multilateral approaches in pedagogy, urban planning, city design, health, human well-being, and information and communication technology. In accelerating digital technology, another challenge might become apparent for urban theorists through achieving urban identity and character that might happen when using mass production and prototypes of architectural forms. This technology will impose copy-cat forms in cities, mainly in the Global South. Indeed, the praxis of standard usage rates and guidelines needs to lead to the re-assemblage of city forms. This deserves new research. One final challenge may be around the corner after coronavirus recedes, and large, developed cities meet their challenges in pandemics. This challenge is that the small towns in Global South could be the vector for a second attack of COVID-19 or the spread of other epidemics and the cause of death to a more significant number of people around the globe.

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