Editorial

B Urban Analytics and City Science

Mumford's recurring challenge: What is a city?

EPB: Urban Analytics and City Science
2022, Vol. 49(2) 387–390

DOI: 10.1177/23998083221078077
journals.sagepub.com/home/epb
SAGE

In 1937, Lewis Mumford, one of the greatest historians of cities in the 20th century, wrote an influential essay entitled "What Is a City?" in which he argued that cities should primarily be considered as social institutions rather than physical artefacts. Everything about a city, he argued, such as its size and the organisation of its economic activities could only be understood as part its social functioning. In hindsight, this now appears to be an obvious and widely agreed perspective on cities but back then, it was quite a radical view. Throughout history, cities had been considered first and foremost as physical forms whose functioning might be improved by physical planning. It took the rest of the last century to transform this notion of planning into the social rather than the physical organisation and even now, there is much left to do to enable this transformation and to integrate both perspectives.

In fact, these two views of cities – the physical and the social – represent a prelude to a much wider set of conceptions and theories. At an extreme, there are as many views about what a city is as there are citizens living in a city, each with their own perceptions of what such aggregates of population actually mean. To an extent, this is a somewhat nihilistic notion but it does resonate with the idea that as more and more people live in cities – and as I have argued elsewhere almost everyone will be living in cities by the end of this century (Batty, 2011, 2018), cities are getting ever more complex. New technologies enable an increasing proportion of their populations to engage in very specific activities that are tailored to their interests, expertise and likings. In short, there are as many definitions as there are people.

Amongst this multitude of distinctions that now characterise the study and planning of cities, one that stands out quite clearly is based on the management of cities based on technologies that enable control to be exercised over city functions in the very short term. The focus on the short term – how cities function over minutes, hours, perhaps days – has generated many different ways of managing the city other than through physical planning whose traditional mode prescribes for a sustainable future over the medium and long term – over years, decades, even centuries. The focus on the very short term – on the 24 h city or the 'high frequency city' (Batty, 2018) – is in stark contrast to the long term where the 'low frequency city' pertains to how urban processes work themselves out and evolve over much longer time spans. The high frequency city has always been there but since information technologies have scaled down to the point where they can be embedded into very small objects – as part of an internet of things (IoT) – many problems have emerged that pertain to the short term that can now potentially be addressed using these new 'smart city' technologies.

To an extent the smart city has become fashionable as much because our attention span has dramatically shortened. Ideas such as the 15 min city based on the idea that you can walk to all your close friends and places and acquire all the goods you would need to live within this time and space are strongly related to the smart city project. Moreover the increasing pace of urban life which is now dominated by instant access to digital media from any time and at any place is changing the focus of planning to the immediacy of rapid action and change. Of course the short term eventually merges into the long term but although the high frequency city has been within our sights for almost two decades, there is little sense so far that the accumulation of change in the short term translates

easily into clear patterns and trajectories that define the longer term evolution of cities. Too many things appear to be evolving at the same time.

The singly-biggest difference between the high and low frequency city is in how those associated with each perspective embrace the same theory and model of what the city is. This was Mumford's (1937) quest – to chart the differences between two perspectives, in his case the social and the physical, and to integrate them. The differences between the short and long term city however are much more subtle and it is easiest to chart them in terms of different ideologies and practices. The short term is now dominated by the generation of massive data streams defining the functioning of the city, associated with the internet but arrayed at a very fine scale which barely have any regard for the spatial and physical representation of the spaces and places that the contemporary city embraces. Smart city technologies provide new ways of managing existing infrastructures that are in one sense universal but agnostic of space and place. These are not merely networks but platforms built on networks that are operated as online market places whose producers and consumers gain comparative advantage from using various kinds of devices that access data pertaining to how they and the city are functioning. The devices that both produce data and sense it are at the smallest of scales and can be deployed everywhere. Mobile phones, so-called smart phones, are ubiquitous and can penetrate spaces where producers and consumers decide to operate their business, while layer upon layer of networks of various kinds are being continually put in place to improve the functioning of the city.

There is no identifiable theory or model of the city behind the deployment of these smart city technologies. In fact in the domain of the smart city, it is rare to sense any knowledge of how cities function other than as a passive medium for everyday life. The long-standing history of research and practice in urban studies and planning which now provides an enormous body of knowledge about the city is largely unknown to those who invent, produce, market and implement these technologies. It is unusual to find any real sense of the comparative advantages of location in the deployment of such technologies. There is of course some recognisance of location, very often in hindsight, because the unenveness of the physical city steers the introduction of new technologies into places where there is advantage, and in this sense, smart city technologies reinforce existing patterns of desegregation and polarisation.

Clark (2020) in her book on *Uneven Innovation* makes the point that it is not just the technocrats and technicians intent on selling their latest computational media such as networks and ever-smaller and faster computers to agents who facilitate change in cities in both the private and public sectors. Those involved in policy and business generally have little idea of what we know about the city already and how we might adapt smart city technologies to enable them to work better and inform the many grand challenges that are widely recognised such as aging, mobility, climate change, and so on. From the President's Council of Advisors on Science and Technology in their report on *Technology and the Future of Cities* (PCAST, 2016), Clark (2020) says:

> "Only a small number of the more than 100 contributors to the report represented the perspective or expertise of the social sciences that are dedicated to cities and the urban scale: urban policy, urban planning, urban geography, urban history, urban economics, or urban administration (p. xii).

Arguably there should be engagement from all sides but the very nature of the smart city fights against traditional ideas about how cities evolve and how they might be planned. It is hard to see any vision for the city in the deployment of smart city technologies other than enabling more efficient operations which, in the event, are not always assured. To a large extent because the technologies are so small physically and because they are deployed inevitably in network fashion, they become all-encompassing and although they do generate and reinforce various digital divides, this is largely because the high frequency city is barely planned with the sort of sustainability in mind that features

in our thinking about the future of the low frequency city. Ideas about the high frequency city are thus of a different nature than those of the low frequency.

If I were to guess Mumford's reaction to this schism in knowledge and action between the high and low frequency city, it would be one of horror. Jacobs (1961) would be perplexed by the hype that now characterises the continuous flow of new technologies into the city. She, too, would be more dismayed to find that technologies that might enrich her quest for diversity were being largely used to make money through advertising, with information continually bombarding our senses as we engage in a wide variety of urban functions. It is in the nature of contemporary information technologies that they can be introduced into our cities from the bottom up and in a sense this supports Jacob's (1961) quest for diversity. But the way they are deployed is with a complete absence of any vision for sustainability, and little knowledge of the key problems faced by modern cities. In fact, arguably they represent a new kind of large scale infrastructure that unlike the massive technological megastructures of the past such as freeways, edge cities, and large scale high density public housing, are more invisible to the naked eye but much more pervasive than the unthinking interventions in our cities that began over 80 years ago in the name of modernism.

In fact Mumford (1937) himself did anticipate some of this schism. Although he wrote his essay just as the first digital computers were being invented, new waves of communications and connectivity had been underway since the first industrial revolution when the steam engine was invented. In talking of the emergent urban landscape, he said: "Giant power strides over the hills, ignoring the limitations of wheeled vehicles, the aeroplane even …." (p. 95). He went on to talk of the future city as a polynucleated urban structure, in the quest to break up large agglomerations into their smaller pieces, implying that the city of the future, should be more like a landscape of small cities, more decentralised, with more space. Potentially new information technologies could be instrumental in such a future. Until the smart city project embraces these wider and deeper, more established ideas of theory, new information technologies will remain as instruments for automating tasks that often do not need to be automated, reinforcing the unevenness of development, and continuing to polarise cities into the haves and a growing number of have nots.

I have only sought to compare the smart city which I have largely defined as the development of instruments to sense, measure and control the high frequency city at a fine scale, with more traditional approaches to planning the future city over the medium and long term but there are many other visions of 'what is a city?'. Mumford articulated the long standing distinction between the physical and the social which he implied were two sides of the same coin but there are many other visions. The idea that cities are largely composed of buildings focuses on construction all the way to urban design, the notion that it is planning and policy that are intimately entwined with the physicality and social structure of the city and can never be divorced from it, and that cities are ways of harnessing energy to enable a circularity of materials processing – these form a myriad of viewpoints that all now need to be considered in our quest to understand 'the kind of problem a city is' (Jacobs, 1961). Mumford's question poses a recurring challenge and one which this journal is focussed on continuing to explore through the lens of city science and urban analytics. But in doing so, it is important to indicate how this vision relates to more technocratic visions which define the conventional wisdom of the smart city, the deeper, more established approaches to cities that dominate the social sciences, and the quest to see planning and policy as the intrinsic mechanisms that enable our cities to become more sustainable and more equitable. The city science and urban analytics that we pursue in this journal has strong relationships to these perspectives and it is important to continue to relate to this great plurality of ideas that is growing extensively as cities become ever more complex.

Michael Batty
University College London, UK

References

Batty M (2011) Commentary: when all the world's a city. *Environment and Planning A* 43(4): 765–772.
Batty M (2018) *Inventing Future Cities*. Cambridge, MA: MIT Press.
Clark J (2020) *Uneven Innovation: The Work of Smart Cities*. New York: Columbia University Press.
Jacobs J (1961) *The Death and Life of Great American Cities*. New York: Random House.
Mumford L (1937) What is a city? *Architectural Record* 82: 93–96.
PCAST (2016) *Technology and the Future of Cities*. Washington DC: The White House, President's Council of Advisors on Science and Technology. https://obamawhitehouse.archives.gov/sites/whitehouse.gov/files/images/Blog/PCAST%20Cities%20Report%20_%20FINAL.pdf (accessed 19 January 2022)