THE SMART CITY IN A DIGITAL WORLD

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THE SMART CITY IN A DIGITAL WORLD

VINCENT MOSCO

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To my father Frank Mosco, whose devotion to the New York City he loved earned a new name for the Manhattan block we lived on: Mosco Street.

To my grandparents Lucy and Vincent DiPilato. Immigrants to America. Driven out of the coal-mining town of Barton, Maryland by the Ku Klux Klan. Planned a return to Italy. Stopped off in New York City. Made a life.

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I'd got a bit o' the brave by now an' I asked our visitor why Prescients with all their high Smart'n'all want to learn all 'bout us Valleysmen. What could we poss'bly teach her what she din't know? *The learnin' mind is the livin' mind*, Meronym said, *an' any sort o' Smart is truesome Smart, old Smart or new, high Smart or low*.

— David Mitchell, *Cloud Atlas: A Novel*

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ABOUT THE AUTHOR

Vincent Mosco is Professor Emeritus, Queen's University, Canada where he held the Canada Research Chair in Communication and Society. He is also Distinguished Professor, New Media Centre, School of Journalism and Communication, Fudan University, Shanghai. He is the author or editor of 26 books and over 200 articles and book chapters on communication, technology and society including *The Digital Sublime, The Political Economy of Communication, To the Cloud: Big Data in a Turbulent World* and *Becoming Digital: Toward a Post-Internet Society*.

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My projects often benefit from the experience and knowledge of family members and *The Smart City in a Digital World* is no exception. Not many people know more about

Disney than my daughter Madeline Mosco and her partner Derek Morton. Visits with them to 'the happiest place on earth' and conversations about Disney's vision helped me to understand the company's significant impact on urban design and planning. Through numerous conversations over many years, my daughter Rosemary Mosco, a science communicator and author, schooled me on the significance of climate change, an issue that is all too often ignored or mentioned only briefly in discussions of smart cities.

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This is my second book with Emerald Publishing and I am especially appreciative to my publisher Jenny McCall, who kindly reached out to ask about my interest in writing for the *SocietyNow* series. Her initial contact led to my 2017 book *Becoming Digital: Toward a Post-Internet Society* and her continuing support and encouragement for a book on technology and cities significantly helped to bring this project to fruition.

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THE WORLD IS URBAN

Projections suggest cities will swell at an astonishing pace – but whether that means our salvation or an eco-disaster is by no means certain.

—John Vidal[1]

What makes a city smart? *The Smart City in a Digital World* takes on this question by describing, challenging and offering democratic alternatives to the view that the answer begins and ends with technology. In the wake of the 2008 global financial meltdown, corporations converged on cities around the world to sell technology, harvest valuable data and deepen the private governance of urban life. They have partnered with governments to promote what on the surface look like unalloyed benefits to city dwellers. These include safer streets, cleaner air, more efficient transportation, instant communication for all and algorithms that take governance out of the hands of flawed human beings. Another story lies beneath that surface. Technology-driven smart cities deepen surveillance, shift urban governance to private companies, shrink

democracy, create a hacker's paradise and hasten the coming of catastrophic climate change. *The Smart City* insists that human governance still matters, that people make cities smart, and that genuinely intelligent cities start with a vibrant democracy, support for public space, and a commitment to citizens' control over technology. To make this happen, it is essential to understand the technologies, the organisations and the mythologies that power the global smart cities movement. It also means assessing the growing resistance to a technology-driven city. Drawing on case studies from around the world that document the redevelopment of old cities and the creation of entirely new ones, *The Smart City* offers a guide to the future of urban life in a digital world.

CITY–STATES

In 2018, two-thirds of US cities were busy applying smart city technologies and yet the country is not the world leader in that field. China, which has been rebuilding older cities and creating new ones at an astonishing rate, tops the list for the number of municipalities under smart city development. Indeed, the smart city movement is genuinely international with every region of the globe from London to Singapore, Rio de Janeiro to Delhi and Cape Town to the Pacific island of Mauritius, actively displaying their smart city credentials. Given the speed of smart city development, it is troubling that so few people know about it. For example, a 2018 survey of 1,000 city residents in the UK determined that nearly 7 in 10 did not even know what a smart city is.[2]

According to the World Bank, cities accounted for 54% of the world's population in 2017, and, at current rates of expansion, they will grow to 68% by 2050. Moreover, urban communities consume close to two-thirds of the world's

energy and account for more than 70% of global greenhouse gas emissions.[3] The largest encompass entire regions and are better viewed as modern-day city-states (Table 1). We live in an age of what *The Guardian* newspaper calls 'overstretched cities' where places like Lagos, Nigeria can go from a small coastal city of 200,000 people surrounded by a few villages in 1960 to today's 1,000-miles-square megacity of over 22 million people. It is not alone. Once a sleepy Pearl River Delta town of some 30,000 people in 1980, the population of the Chinese market city of Shenzhen has zoomed to over 12 million. One result of these changes is that planners, developers and politicians are turning to technology to provide some hope of managing this seemingly relentless growth. In doing so, they frequently turn to big companies such as IBM, which hold out the promise that advances in information and communication technology can create a 'smarter city'.

CRITICAL SOCIAL SCIENCE

Understandably, most smart cities research concentrates on technology and highlights the benefits for residents and entire societies. This book adds to only a handful of publications that address the programme from a critical social science perspective, which questions the belief that creating smart cities is primarily about applying smart technologies to urban areas. In addition to describing the history, main characteristics and the significance of what has become the global smart cities movement, the book aims to enlarge debates by examining what the smart city movement means for governance. In particular, what does it mean for democracy, understood as the fullest possible control over the decisions that affect individual and collective lives in cities? This is especially important because technology companies that today feast on our

Table 1. The World's 50 Largest Urban Areas (Population in Millions).

Tokyo, Japan	42.80
Jakarta, Indonesia	31.69
Delhi, India	26.45
Seoul, South Korea	25.43
Mumbai, India	24.34
Shanghai, China	24.26
Manila, Philippines	24.20
New York, USA	23.69
Cairo, Egypt	22.97
Lagos, Nigeria	22.83
Beijing, China	21.72
São Paulo, Brazil	21.09
Mexico City, Mexico	20.88
Osaka-Kyoto-Kobe, Japan	19.78
Bangkok, Thailand	18.93
Los Angeles, USA	18.69
Dhaka, Bangladesh	18.52
Kolkata, India	16.68
Karachi, Pakistan	16.63
Chongqing, China	15.29
Tehran, Iran	15.26
Buenos Aires, Argentina	15.10
Moscow, Russia	14.93
Hyderabad, India	14.73
London, UK	14.61
Chengdu, China	14.53
Ho Chi Minh City, Vietnam	13.65
Johannesburg-Pretoria, South Africa	13.40
Bengalaru, India	13.18
Baghdad, Iraq	13.03

Table 1. (*Continued*)

Madras, India	12.90
Guangzhou, China	12.70
Paris, France	12.48
Lahore, Pakistan	12.33
Rio de Janeiro, Brazil	12.14
Kinshasa, DRC	12.07
Ruhr, Germany	11.86
Nagoya, Japan	11.32
Tianjin, China	11.08
Surabaya, Indonesia	10.82
Bogotá, Colombia	10.76
Lima, Peru	10.69
Shenzhen, China	10.36
Wuhan, China	10.12
Chicago, USA	9.88
Washington, D.C.	9.66
Taipei, Taiwan	9.16
San Francisco-San Jose, USA	8.75
Bandung, Indonesia	8.50

Source: Dig. (2018, August 15). The world's fifty largest urban areas, visualized. Retrieved from http://digg.com/2018/largest-metropolitan-areas-mapped

data – Google, Facebook, IBM, Siemens, Alibaba and Cisco among others – are increasingly moving into cities to extend their power over urban infrastructure, to harvest the mountains of profitable data derived from monitoring every feature of daily life and to develop models for the private governance of public spaces. As Evgeny Morozov puts it:

> *From transport to food delivery, from*
> *accommodation to energy consumption, the city*

also figures prominently in how digital technologies penetrate our life. That the city is also the primary target of big tech is no accident: if these firms succeed in controlling its infrastructure, they need not worry about much else.[4]

To stop or restrain this activity, critics and activists often turn to government regulation and especially to the nation-state, which historically has succeeded in widening access to essential resources such as water, energy and communication. The problem with this strategy for preserving democracy and maintaining control over digital life is that the nation-state is increasingly compromised by the power of business, especially information technology companies, by its own tendencies to foster a conservative nationalism and by constraints imposed by international organisations that promote corporate globalism. Nation-states are unquestionably important. However, it is increasingly cities that hold out the promise of democracy because they are generally more cosmopolitan than the nation-state and yet they remain closer to the interests of the typical citizen. Indeed, networks of the world's cities, the regions that contain most of the world's productive capacity and provide the lion's share of its GDP, are best positioned to resist the pressures of big tech and big government. In one sense, this is a trip back to the future because cities have historically been places where people found spaces for democracy, freedom and individuality when authoritarianism, whether in the form of a feudal nobility or an authoritarian ruler, restricted these values. A critical social science perspective gives these values special attention and evaluates technology for its ability to advance them.

It is undoubtedly the case that the application of computer communication can enhance the operation of cities. For example, traffic signals that adjust timing with the flow of

vehicles can move people from here to there more smoothly, and connected thermostats can make more efficient use of energy in businesses and in homes. Some smart city experts expand the concept to include places that do not just deploy digital technologies; they also provide spaces to invent, develop and promote them. These high-tech districts not only manage information technology in cities; they also incubate the newest versions of places modelled after California's Silicon Valley. Google's proposal to turn a vast tract of old waterfront in Toronto into a model smart city – and build a major new Google facility on a piece of the property – is an example that combines both approaches. From this perspective, the ideal smart city is one that systematically develops new technologies in the context of a city that makes extensive use of them.

The gleaming new technologies that are the face of the smart cities movement require a critical social science perspective because they tend to conceal a transformation in urban governance. Beneath the glossy exterior of sensors, data centres and algorithms that promise automated decision-making, lies a deeper transformation in urban governance, an insistence that private sector organisations (either alone or in partnership with government agencies) are best equipped to run cities by making use of private business principles. Smart cities are not just about the development and application of technologies that can improve urban life. They are also about who governs cities, who profits, and who is left out. The political battles over smart cities often come down to the ability of technology companies to expand their power by becoming real estate dealmakers and developers, who invest in digital technologies that offer new stores of profitable data on the behaviour of people and the performance of things. On the other side, we have urban citizens who fear losing democratic rights because governance is privatised, surveillance is expanding and data on their lives is becoming

a marketable commodity. Governments, especially at the municipal level, often hold the balance of power but they do not always understand that the wonders of digital assistants, autonomous vehicles, street lights that look out for crime and parking lots that keep track of vacant spaces come with a price that requires constant vigilance and action to protect public space and the rights of citizens.

CLIMATE CHANGE

The massive growth in the population and territorial expanse of cities does not take place in isolation. A book about smart cities must account for the looming prospect of massive climate change, something that smart city advocates either ignore or try to counteract with overrated technological solutions. That is unfortunate because cities are profoundly changing their relationships to nature. Human settlements require massive changes in the environment including the elimination of forests, grasslands and wetlands, the diversion of rivers and the emission of pollutants into the air and water. The changes are so transformational that they are having an impact on evolution. According to a study reported in *Science*, the beaks of house finches and other birds are growing larger to better enable them to eat from backyard feeders. Lizards called crested anoles are growing longer limbs and stickier toes for climbing tall buildings in tropical cities. A mosquito that lives underground is emerging as a new species from urban subway tunnels and sewers beneath cities around the world. It contains different genes and exhibits different feeding and breeding habits from its cousins that live on or above the surface.[5]

Nature is changing with the explosive growth in urban populations and cities have to deal with transformations in nature.