

The Tragedy of Smart Cities in Egypt. How the Smart City is Used towards Political and Social Ordering and Exclusion

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Abstract

Smart cities (SCs) are a new and rising phenomenon emerging across the globe. The present article focuses on the possible impact of SCs on socio-political life and structure, and the organisation of the target society. Here, SCs are critically considered as the spaces where people live, work and vote. The aim of the present article is to discuss SCs, and the digital technologies used in SCs, as a possible instrument of social and political ordering and of social exclusion. Drawing on empirical evidence from Egypt, particularly Egypt's new capital, the article sketches out how the smart city has been used by political and military authorities to socially and politically order and engineer society as well as effectively exclude certain groups, mainly political opponents. Life in the new smart capital has a Janus face. On the one hand, inhabitants of the city have access to excellent services, modern infrastructure, first-class education and health care, and high-tech digital technologies which other Egyptians do not benefit from. On the other hand, these inhabitants are under permanent control and are prisoners of the system. Living segregated, with less freedom than any other Egyptian citizens, they are excluded from natural life in the country and cannot experience any organic development of society.

Keywords

Egypt, exclusion, political and social ordering, smart cities, technology as instrument of control

1. Introduction

Smart cities are a new and rising phenomenon emerging across the globe, from Europe to Asia. They are built on greenfield sites, or smart technologies¹ are installed in old urban centres. Smart cities are projects based on using modern advanced technologies and devices to improve human lives. There is no agreed-upon definition of a smart city, but it can be said that SCs combine data and digital technology to make

Received: 14.11.2022

Accepted: 15.11.2022

Published: 21.11.2022

Cite this article as:

S. Waisova, "The Tragedy of Smart Cities in Egypt. How the Smart City is Used towards Political and Social Ordering and Exclusion," ACIG, vol. 1, no. 1, 2022.

DOI: 10.5604/01.3001.0016.0985

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Publisher NASK. Publishing House by Index Copernicus Sp. z o. o.



¹ Which include big data, the Internet of Things, artificial intelligence, mechanical algorithms and cloud computing, to name but a few.

² For several other ideas about smart cities, digital solutions and the quality of human life see the McKinsey Report from 2018 'Smart Cities: Digital Solutions for a more Livable Future' (www.mckinsey.com/capabilities/operations/our-insights/smart-cities-digital-solutions-for-a-more-livable-future).

better decisions and improve the quality of life. Most literature about SCs list six characteristics of urban smartness: smart economy, smart mobility, smart governance, smart environment, smart living and smart people [1, 2]. Smart city observers [2, 3] state that layers work together to make a smart city. First is the technology base, which includes a critical mass of connected smartphones and sensors. The second layer consists of specific applications which enable users to translate raw data into alerts, insight and action. The third layer is usage by cities, companies and the public. The rising number of SCs together with experience of using smart technologies and devices in urban spaces gives rise to several questions and dilemmas, it has become a policy issue as well as a topic for academic research.

The present article looks into the possible impact of SCs on socio-political life, structure and organisation of the target society. The present debate indicates that there are two main ways of approaching SCs and thinking about their existence: 1) technocratic, which considers SCs a technical-material conglomerate of modern smart technologies and high-tech devices and 2) social, which considers SCs a space of human existence and social, economic and political interactions taking place in an environment using smart technologies and devices. The first approach tends to reduce the SC issue into a debate on technological aspects such as what type of cloud computing would be better to use for smart urbanism. The second approach rather ignores technical and technological issues, and looks at how smart technologies and SCs may influence various aspects of social, political and economic life. To see SCs as a social space opens the door to thinking about SCs in several ways: SCs and urban planning, SCs as an instrument for environmental management and sustainable development, SCs as a way to improve people's security, transport and infrastructure, and as a method of socio-political control and ordering². It is this final issue which is the subject of the present article. The rising number of smart cities and increasing experience with smart technologies in urban life raise several questions about the risk of urban governance driven by technology.

Here, smart cities are critically assessed as the spaces where people live, work and vote. My aim in the present article is to discuss SCs as a possible instrument of social and political ordering and as a tool for social exclusion. In other words, I will concentrate on the third above mentioned layer, i.e. how actors use technologies and SCs. Social and political ordering can be defined as the sum of those methods by which authorities try to control, regulate, enforce and encourage conformity to norms, both formally and informally, and influence human behaviour to maintain a given order or to set up a different one, which will also meet the authorities' needs and projections. Social exclusion is defined as the process in which individuals or groups are blocked from various rights, opportunities or resources (e.g. housing and infrastructure, employment, healthcare and democratic engagement) that are normally available to other members of society [4]. Social exclusion may be direct or indirect and can occur on different levels. Here I argue that the smart city can become an instrument to structure and organise society which may result in social exclusion and even effective segregation. In cases where SCs are built on greenfield sites as new projects unrelated to previous settlements, culture or socio-political developments, they offer a unique opportunity to engineer, manage, order and control society, and to scale up inequalities.

The socio-political risks are already known and have been debated. These risks include various methods for restricting people's freedom. Such restrictions stem from the proliferation of smart technologies, for example, the use of direct biometric identifiers and smart watching technologies, such as location trackers and cameras, for excessive surveillance which is then combined with the creation of a system of rewards and punishments [5–7]. A case in point is contemporary China, where phone-tracking devices are now everywhere, the police have been creating some of the largest DNA databases in the world, and the authorities have been building upon facial recognition technology to

collect voice print from the general public. The Chinese government's goal is to design a system based on smart technologies and digitalisation to maximise what the state can find out about a persons' identity, activities and social connections. This could ultimately help the authorities maintain socio-political order and hence maintain their rule [8].

However, there are several other problems, dilemmas and issues connected to extensive use of digital technologies and building SCs, particularly on greenfield sites. In cases where a city does not evolve organically step-by-step but is planned as one organised project, where people and institutions are relocated in one moment or in several waves based on digital technologies, a smart city may become an instrument to engineer society, to manipulate and exclude particular groups or individuals, in other words it becomes an opportunity to control and order everybody. Smart cities are most often presented as better places to live on account of using smart technologies, devices and applications in an urban space. However, they may become instruments of segregation, exclusion and ordering when they are accessible only for some and are used for extensive surveillance and policing. For the Chinese government the installation of smart technologies and construction of smart cities is unequivocally connected to their aim of controlling and eventually punishing citizens. However, there are other cases in the world where intentionality is not clear or doesn't even exist. Nevertheless, smart cities and smart technologies and devices have become an instrument of social and political ordering and exclusion. Drawing on empirical evidence from Egypt, particularly Egypt's new capital, this article scrutinises how smartness may be used to socially and politically order society and has the capacity to exclude certain groups and implement segregation. Using Egypt as a case study was motivated by three facts: firstly, there are only a few studies on Egypt's SCs, particularly on the social impact of SC development [9, 10]; secondly, the country receives generous financial support from international financial institutions to build smart cities; and thirdly, there are more than three dozen SCs projected to be constructed in Egypt (Table 1) with a target population of more than 15 million. This means that in 2030, when Egypt's population is estimated to reach 130 million people, every tenth inhabitant will live in a smart city.

The case study of Egypt is divided into two parts: firstly, an introduction to the history of smart cities and the socio-political context of smart city development in Egypt; and secondly, empirical evidence on smart cities in Egypt was collected. Data and information about the New Administrative Capital has been used in this paper. The New Administrative Capital (NAC) was chosen to study because it is the most developed smart city project in Egypt, and it is also seen as the model for future smart cities in this country. Data and information about Egypt's smart cities, and particularly about the NAC, were collected in desk research based on analysis of documents, academic articles, newspaper stories and social network posts, this information was then triangulated through several interviews with people familiar with Egypt's political and social situation. The conclusion discusses the findings, particularly how the NAC smart city project was originally conceived as using smart technologies, devices and applications in conjunction with political measures to order its inhabitants. It was found that the NAC project was not participatory and that it does not take into account the needs of the poor, the vulnerable and women. Furthermore, it excludes people without clearly expressed loyalty to the el-Sisi administration. The New Administrative Capital became an instrument of segregation. Based on detailed screening, people are either allowed or denied the right to work and live in the NAC. Segregation and exclusion have several effects: even though those living in the NAC have access to better services and modern infrastructure as well as first-class education or better paid jobs, they have less freedom than Egyptians living outside the city. People living in the NAC are excluded from normal life in the country, they do not have the possibility of experiencing social development. Those living outside the NAC have, in many respects, become second-class citizens and representatives of the 'old republic'.

³ For population statistics and projections see World Bank (data.worldbank.org/indicator/SP.POP.TL?locations=EG)

⁴ Egypt Vision 2030 (mped.gov.eg/EgyptVision/?lang=en)

⁵ For the complete list see The Arab Republic of Egypt Presidency (www.presidency.eg/en/) (في موقعا لى - عى براش م لى)

⁶ The military owned companies are more competitive, based on the decision from 2016 that the military and other security institutions were given exemptions in a new value-added tax (VAT) law enacted as part of IMF-inspired reforms. The law states that the military does not have to pay VAT on goods, equipment, machinery, services or raw materials needed for the purposes of armament, defense and national security. Furthermore, in 2015, nearly 600 hotels, resorts and other properties owned by the military were exempted from real estate taxes. Military companies also receive an exemption from import tariffs and from income taxes. Cargoes sent to military companies do not have to be inspected.

2. Egypt and Smart Cities

Egypt has been witnessing a rapid population growth for several decades; while in 1960 Egypt had 26.6 million inhabitants by 2000 there were 69 million people in the country, and in 2021, 104³. Forecasts for 2050 indicate that the Egyptian population will reach 190 million if current growth continues [11]. This population growth has been a challenge for the country's housing situation and access to food as well as other goods and services. In particular, urban housing shortage has become a serious issue. During recent decades, the price of construction land in Egypt has increased, and consequently, informal housing has mushroomed. Estimates [12] indicate that the country will need more than 8 million additional housing units by 2030 to satisfy demand. Egypt's governments reacted by transforming housing policies, in 1977 the New City initiative was launched, which was later implemented by the New Urban Communities Authority, established in 1979. Since then, there have been 31 cities built across Egypt. The new cities are divided into groups, called generations, based on the time built, urban conception and technology used. The fourth period of mega-city projects started after the Arab Spring turmoil calmed down and a military coup installed General el-Sisi as president. Fourth generation cities were announced and confirmed by several documents and presidential speeches. They have been declared as an official goal in one of the government's strategic documents: Egypt Vision 2030⁴.

It is important to stress that all this has been going on in the background of the administration of President Abdel Fattah el-Sisi. General el-Sisi first took power in a 2013 coup while serving as Egypt's defense minister and armed forces commander. In the 2018 elections, Sisi received 97 percent of votes and remained in the presidential office. In 2019 constitutional amendments were adopted which added two years to Sisi's term, extending it to 2024, at which point he will be allowed to seek an additional six-year term. Parliamentary elections since 2014 have not been regarded as free, and elections for local councils have not been held since 2008 [13]. The policy making process as well as public life have been dominated by the security apparatus since the 2013 coup [14]. President el-Sisi started a series of political and economic reforms, these reforms include construction of several mega projects (called 'projects of national importance')⁵. Fourth generation cities are part of them.

The Politics of Smart Cities

The aim to construct a fourth generation of cities was announced in 2018. As of October 2022, 37 new cities to be built on greenfield sites were in planning or under development (Tab. 1.), and 24 existing cities were undergoing smart city transformation where smart technologies will be implemented into the existing urban arrangement and socio-political life. In fourth generation cities technology is presented as the only viable option to resolve many social, environmental and economic issues. However, Egypt has no official definition of fourth generation cities or smart cities. There have been steps to draw up a code for Smart Cities for Egypt but to date no documents have been accepted. The biggest project is the new capital city of the country – the so called New Administrative Capital – which is planned to replace the old Cairo.

The main contractors to build smart cities and other infrastructure megaprojects are construction companies owned by the military [15]⁶. The companies equipping the cities with smart technologies are mainly from other countries. Foreign companies include Chinese tech-giants such as Huawei, but also big Western companies such as Honeywell or Siemens. In the next section, the construction, management and operation of the New Administrative City will be scrutinised.

The Tragedy of the New Administrative Capital: How the City and Digital Technologies are Used for Social Exclusion and Socio-Political Ordering

The construction of the NAC began in 2015. The city is located around 45 kilometres east of Cairo. The owner and developer of the NAC is the New Administrative

Table 1. Fourth Generation Cities on the greenfield site announced in 2018 or later [16].

City	Situation	Target population
New Administrative Capital + Badr City	First phase of the construction completed, in December 2021 relocation of ministries started, including redeployment of officers. Housing for civil servants and lower-middle class employees.	6.5 million 650,000
New Alamein	Construction started, first flats and businesses opened.	2.5 million
New Aswan	First phase completed, second phase to be completed by 2025.	850,000
New Mansoura	First phase completed.	3 million
Sheikh Zayed Extension	First phase completed.	675,000
Plans exist for		

6 October, 10 Ramadan, 15 May, Assiut, Behira, Beni Suef, Dakahlia, Giza, Luxor, Marsa Matrouh, Minya, New Akhmim, New Borg Arab, New Damietta, New Farfara, New Ismailia, New Nubaria, New Salhia, New Sphinx, New Obour City, North Sinai, Port Said, Rosetta, Sadat, Shrouk, Tiba, Toshka, Quena

Capital Company (ACUD), co-owned by the armed forces (51 percent) and the New Urban Communities Authority (49 percent), which is part of the Ministry of Housing. The NAC will accommodate all government ministries, the presidential office, parliament, the headquarters of all domestic banks, diplomatic missions, eight fourth-generation domestic universities, six international universities, several hospitals, an international airport, research and development centres, a business hub, religious buildings and a new, very modern public transport network including high-speed rail. The NAC will also house the State Strategic Command Centre Complex which includes the Egyptian army headquarters and the Ministry of Defence. To accommodate all the civil servants, military officers and labourers a new neighbouring city – Badr City – is being constructed at the same time. Badr City, 47 km from Cairo and 7 km from the NAC, now has 160,000 inhabitants, but is planned to be home to 650,000⁷. The relocation of ministries and their civil servants started in December 2021 after several delays. When the relocation was started, President el-Sisi declared the moment ‘the birth of a new state’ [17]. The second phase of construction was announced in September 2022. The first phase of construction works was paid for by Egypt based on a domestic budget and several loans from international financial institutions. For the second phase, foreign investors are being sought (there are already some Chinese and Emirati developers in the city) and more loans from international banks are being requested [18].

At first sight, the project seems perfect – modern, technologically advanced, offering housing opportunities for thousands and having the potential to guarantee sustainable development. However, the opening of the city and the first wave of relocating civil servants to the NAC presents number of issues: there are strong signs that the NAC is the government’s instrument to order citizens, to exclude some social groups and set up a system of social segregation based on political loyalty. The empirical evidence indicates that the ordering and exclusion are achieved by a combination of five strategies:

- ownership of estates and facilities in the city
- pricing of housing combined with granting of permission to buy property in the city
- granting permission to work in the city
- a closed and controlled system of ticket sales for public transport
- management of life in the city including the system of communication with citizens

⁷ For details see New Urban Communities Authority (newcities.gov.eg/english/New_Communities/badr/default.aspx).

Here, supported by the evidence from the NAC, all five strategies will be introduced and analysed.

Ownership of the estates and facilities in the city

As mentioned above, the owner and developer of the NAC is the New Administrative Capital Company (ACUD), co-owned by the armed forces (51 percent) and by the Ministry of Housing. The government will pay ACUD to rent ministries and other official buildings in the new office district [18]. The main constructors of the city facilities are army-owned companies, the military is also responsible for security and public safety in the NAC. Based on a presidential decree from 2014 which entered into force in 2021, the Egyptian military has the authority to secure so-called 'public and vital facilities'. The armed forces are allowed to assist the police in protecting public and vital facilities without specifying any time limit. Crime against public and vital facilities and properties is subject to the jurisdiction of military courts [19] which means civilian cases are transferred to these courts. Properties in the NAC were proclaimed to be public and vital facilities. This means that anybody who lives, works or visits the NAC will be under military jurisdiction.

House pricing combined with the granting of permission to buy property in the city

From the beginning the NAC project has targeted the upper-middle class; however, when apartments in the NAC and Badr City went on the market, it was clear that only a small circle of Egyptians would be able to buy or rent a property in either of the new cities. Even though Badr City was presented as housing for civil servants working in the NAC, and the NAC itself was planned to include housing for civil servants as well as social housing, the prices in both cities are higher than what Egyptian civil servants can afford. Based on the government's decision, civil servants may apply for a subsidy from employers in order to rent a flat. To buy a property the permission of ACUD is needed. Thus, permission to buy a property, the price of flats⁸ and the system based on an employers' subsidy (which is not automatic as civil servants who relocate to the NAC or Badr City have to apply for it) have created a system which controls who will populate the city. Except civil servants, the NAC is planned to be populated by military personnel⁹, wealthy elites from the Gulf, and high-income residents of governorates outside Cairo.

Granting permission to work in the city

Even once all ministries have relocated to the NAC, not all civil servants are expected to relocate as well. To work in the NAC civil servants need permission. The government's decision concerning who gets permission to be transferred to the new capital is a closely monitored security process. Until now, over 50,000 civil servants have been selected. After undergoing a series of security checks, those selected were put through a training programme¹⁰. The training focused on raising national awareness and digital skills. It was also announced that the government would maintain a database of trained civil servants regarding employee capability for possible future training¹¹. The system of permissions to relocate and work in the NAC has the potential to divide families (when one family member receives permission and another is rejected) and handicaps certain groups, particularly women. Based on local cultural and religious rules it is almost impossible for single women to relocate if their parents are not allowed or cannot move into the NAC or Badr City. Thus, women who want to work in the NAC have to commute every day.

A closed and controlled system of ticket sales for public transport

For those allowed to work in the NAC but not allowed to buy or rent a flat, the only possibility is to commute every day. However, the commute is controlled. The

⁸ Social conditions remain difficult in Egypt, with around 30 percent of the population living below the national poverty line (according to the household survey results for October 2019 - March 2020). The World Bank, 2021, Egypt's Economic Update, April and October 2021. Available at: <https://thedocs.worldbank.org/en/doc/9dbe40280b581a94ff950a11ca42fb3-0280012021/original/4-mpo-sm21-egypt-egy-kcm2.pdf> ; <https://www.worldbank.org/en/country/egypt/publication/economic-update-october-2021#:~:text=Unemployment%20declined%20to%207.3%25%20by%20population%20further%20hindering%20poverty%20reduction>

⁹ Read more in Al Monitor (<https://www.al-monitor.com/originals/2022/08/more-hurdles-could-delay-opening-egypts-new-administrative-capital#ixzz7h0UIN376>) or Egypt Today (www.egypttoday.com/Article/3/53793/Pros-Cons-of-investing-in-New-Administrative-Capital)

¹⁰ For more see Egyptian Streets (egyptianstreets.com/2019/01/22/vacating-cairo-50000-public-sector-employees-to-be-transferred-to-egypts-new-capital-city-by-2020/), Ahrām Online (english. ahram.org.eg/NewsContent/1/0/330603/Egypt/0/Egypt-state-employees-to-be-assessed-ahead-of-tra.aspx) or Asharq Al-Awsat (english. aawsat.com/home/article/2728911/egypt-govt-trains-employees-ahead-move-new-administrative-capital)

¹¹ For more see Egypt Independent (egyptindependent.com/egypt-finishes-assessing-1042-state-servants-before-transfer-to-new-capital/)

¹² The grid control centre for NASC will be delivered by Siemens. Siemens is also involved in several other strategic projects in Egypt, such as laying a communications cable through the Red Sea, creation of the Industry 4.0 Innovation Centre in the new capital's Knowledge City and delivering low-voltage control systems for the new capital's Iconic Tower. For more see Trade.gov (www.trade.gov/country-commercial-guides/egypt-electricity-and-renewable-energy).

¹³ These digital surveillance systems, technologies and devices are delivered by international tech-giants such as Honeywell, Huawei, SAP, Orange, IBM, Fibre Misr System and Mastercard.

system of tickets for public transport is closed and the sale is controlled: employees get public transport tickets from their employers, these tickets only cover trips between the home station of the employee and the station where the employer is located. The whole system is digitalised; passengers have e-tickets and each station has a digital check point to screen the movement of people across the city. This system is completed by a sophisticated surveillance system. While a smart city is expected to have the potential to support participation, engagement and community, the controlled system of movement in the NAC effectively limits meetings and talking outside of the work place and thus is not conducive to the development of social life.

Management of the city including the system of communication with citizens

The NAC has been declared the high-tech model for Egypt's future and a green sustainable city, the best in Egypt. There are plans to integrate people through smart applications: Wi-Fi is to be accessible in public areas, residents will be able to use smart cards and apps to unlock doors, make payments and report complaints and problems. Infrastructure is planned to include a data transmission network, e-gates, smart utility management and specialised data centres, to name but a few. The NAC has its own grid control centre and there will also be a National Energy Control Centre located as the strategic command headquarters for all stations across Egypt¹². The administration and operation of the city is run from the centralised and integrated City Operation Centre and Commander Control Centre. The data and information for both centres on developments in the city are collected via more than 6,000 cameras linked wirelessly to a command centre, mobile phone trackers, digital check points and digital control gates in public transport stations, to name but a few. The centre also includes technology to run video analysis.¹³ As declared by ACUD, the aim is to 'monitor crowd and traffic congestion, detect incidents of theft, and observe suspicious people or objects which trigger automated alarms in an emergency situation' [20]. There are also new solutions tested in the NAC. The state-owned Egypt Post is planning to issue a one-stop-shop e-card (a so called 'citizen single card') which is planned to be used for cashless payment, there is also an ID programme, including digital signature and personal identification for various purposes (health system, etc.) [20]. Egypt's authentication system will use vein biometrics. The technology shines a near-infrared light on users' fingers and captures the image of the vein pattern using small cameras installed in the scanner. The image is then processed, compressed and stored in a system [21]. All the data generated by the surveillance system and gathered and evaluated by the control centres is owned by ACUD, which has no civilian control. When Colonel General Mohamed Ahmed Zaki Mohamed became Minister of Defence in 2018, democratic civilian control of the armed forces was terminated. In the NAC military and state apparatuses grow through. Currently, there is only a limited social city life in the NAC, furthermore, the NAC is controlled through digital technologies and applications. City inhabitants do not know what city management will do with personal and other data, so they will live under an omnipresent threat of the loss of privacy.

3. Concluding Debate: May Egypt's Smart Cities be Better Places for Living?

The New Administrative Capital was opened in December 2021. Currently, it is partly populated and has become Egypt's first functioning city of the fourth generation. Planned as the model for other smart cities in Egypt, it is worthy of evaluation. The interest here is to assess the smart city as a possible instrument of social and political ordering and exclusion.

Before debating the case of the NAC it has to be said that digital technologies themselves and the smart city as an urban concept are neutral on their own, only in the hands of people, in Egypt's case in the hands of political and military authorities, may smart cities and digital technologies and devices serve as ordering instruments

and tools for exclusion. Digitalisation of Egypt and implementation of smart solutions, particularly in the NAC, go far beyond the construction of a smart city for sustainable development and improvement of the quality of life. In the hands of Egypt's political and military elite smart solutions effectively produce 'a state within a state, a society within society' – a space and a group with different rules, opportunities and a different political and social order than the rest of the country. In Egypt's case, the smart technologies of the NAC work as an instrument to engineer society to create a 'new state' [15, 17]. Even though life in the NAC is still in its infancy and the situation can still evolve, it seems from present information that the people responsible for the city prefer technologies and applications which have the potential for control, such as crowd management, predictive policing and smart surveillance, over those without it, such as apps for bike sharing, smart parking or waste collection, to name but a few.

In the NAC only those with permission can work in the city, and only those with permission and money can find a home there. Movement across the city is restricted, authorities have the equipment, technologies and interest to control it. The system of technological control has been effectively completed by legislation combined with the system of ownership. Military forces are not only the majority owner of city property, but the property itself is designated as 'public and vital', as such it comes under military rule and protection. In fact, those living and working in the NAC are segregated from other citizens of the country. However, this does not mean that the situation of the inhabitants of the NAC is better than that of other Egyptians. Life in the NAC has a Janus face: on the one hand, inhabitants of the city (all digitally literate and with smart devices) have access to better services, modern smart infrastructure, first-class education and health care, and high-tech digital technologies; on the other hand, they are prisoners of the system with less freedom than many other citizens of the country. The smart technologies are not used for civic participation, protection of civil liberties or crime prevention. They are rather used for data-driven policing and deep control. The inhabitants of the NAC have only a limited possibility of living authentically and experiencing a natural and organic development of society. The NAC has become an instrument of segregation, exclusion and a source of social, political and economic inequality.

For a long time urban planning has been discussed as a political practice [6], however, by implementing smart technologies into urban living the debate has got a new impetus, and now several new questions have been raised about the impact of technology on social life and human freedoms. Egypt's case indicates that the implementation of smart cities and smart technologies into urban planning necessitates not only research and debate concerning the positive effects of smart cities, but also of the societal risks which smart technologies may give rise to. The present article opens the debate about risks such as the 'terror of technology', misuse of cybernetic control, and the smart city as a disciplinary strategy [22–25].

Funding

This article is the outcome of a project supported by the Czech Science Foundation, Grant No. 19-09443S.

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