CITY POWER IN A TIME OF URBAN DIGITALIZED SECURITY

Final Report

Sahil Jain

Jonathan Thrall

Alberto Santarpia

Daniel Haltmeier

Geneva

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Graduate Institute of International and Development Studies

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Graduate Institute Research Team:

Sahil Jain

Jonathan Thrall

Alberto Santarpia

Daniel Haltmeier

Academic Supervisor: Victor Santos Rodriguez

Teaching Assistant: Vaibhavi Sharma Pathak

Edgelands Institute Supervisors:

Laura García Vargas

Beatriz Botero Arcila

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EXECUTIVE SUMMARY

With the digitalization of everyday life, the world has undergone some of the greatest technological changes in history and data is at the heart of it. While digitalization has not halted at the border to rural areas, cities are nevertheless at the center of the digital transformation. Digital technologies have not only become a part of everyday life for citizens, but are also important tools for the government and private sector to provide security services. However, the use of digital security technologies in urban spaces, especially surveillance, can be endorsed by some actors (e.g. the municipal government) while being rejected by other actors (e.g. civil society). At the same time, surveillance technology can be regulated/influenced by actors at various levels of government (e.g. national, regional or local).

In this context of complicated dynamics with many actors, understanding the power that city governments have to influence the deployment of surveillance technologies within their city is an important element to comprehend the role that local governments have in the constant (re)negotiation of the urban social contract - the often unseen rules that govern urban life - and the provision of urban security services through surveillance. Thus, in this report, we answer the question "What forms of power have city governments mobilized to influence the deployment of surveillance technologies within their city during the last 10 years?".

We answer this question by studying the deployment of a particular surveillance technology in three different case cities - London, Beirut, and Singapore - during the timeframe from 2012 to 2022. The study builds on a combination of the theories of local autonomy and multi-level governance, and uses an adapted typology of power in global governance to categorize the different types of power. By using an innovative method of analysis, this report provides a new avenue for the Edgelands Institute and other researchers to study power in urban security governance. The method allows to compare categories which are broken down into indicators formulated as statements that can be responded to with a simple yes or no. The resulting checklist of indicators serves to measure the relative importance of each category.

We compare five categories of power, based on the above-mentioned typology: economic, structural, expert, moral, and discursive power. We find that in each case, the relative importance of the particular types of power was different. Thus, London appears to have mostly relied on structural power in its deployment of Live Facial Recognition (LFR) technology, while economic power only played a minor role in this particular case. Singapore on the other hand got high scores for almost every category, except for expert power. This represents the fact that Singapore, as a city-state, is less affected by power dynamics between different tiers of government. Beirut's municipal government on the other hand achieved relatively low scores in all categories, except for expert power. This translates to its formal institutional dependence on the national ministry of the interior in many aspects of urban security governance.

In sum, our research shows that different cities were able to rely on different forms of power to varying degrees in order to influence the deployment of surveillance technology within their territory. However, our research also shows that the results are highly contextualized. Thus, in our analysis, the same score in a particular category of power for different cities might not mean the same thing. Drawing generalizable conclusions is therefore a challenge, and further research is required.

Key Takeaways:

- The autonomy of municipal governments in urban security governance has two components:
    - Vertical autonomy, referring to the autonomy vis-à-vis other tiers of government
    - Horizontal autonomy, referring to the autonomy vis-à-vis other urban actors (e.g. civil society)

- Different cities were able to rely on different forms of power to varying degrees in order to influence the deployment of surveillance technology within their territory
    - The city-state of Singapore could fully rely on almost all different types of power
    - London presents itself as an intermediate case, relying especially on structural power
    - Beirut's municipal government seems to have had the least power in influencing the deployment of its urban surveillance dispositive

- Municipal government autonomy in urban digitalized security governance is highly contextualized and drawing comparative, generalizable conclusions is a challenge

- Our innovative method of analysis proved useful, and presents potential to be further developed in future research

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LIST OF ABBREVIATIONS AND ACRONYMS

AI	Artificial Intelligence		**MoB**	Municipality of Beirut
BSCC	London Biometric and Surveillance Camera Commissioner		**MoIM**	Ministry of the Interior and Municipalities (Lebanon)
CCTV	Closed Circuit Television		**MOPAC**	London Mayor's Office for Policing and Crime
GLA	Greater London Authority		**MPS**	London Metropolitan Police Service
GoB	Governor of Beirut		**PAP**	People's Action Party
HEROS	Hawk Eye Remote Observatory System		**PBH**	Public Housing Blocks
HTX	Home Team Science & Technology Agency		**PCZ**	Public Camera Zone
ICO	London Information Commissioner's Office		**PoFA**	Protection of the Freedom Act
ICT	Information and Communication technology		**PolCam**	Police Cameras
ISF	Internal Security Forces (Lebanon)		**RFR**	Retrospective Facial Recognition
ISIS	Islamic State of Iraq and Syria		**SDG(s)**	UN Sustainable Development Goal(s)
LAF	Lebanese Armed Forces		**SOST(s)**	Security-oriented Security Technologie(s)
LEA(s)	Law Enforcement Agencies		**SPF**	Singapore Police Force
LFR	Live Facial Recognition		**TfL**	Transport for London
LPEP	London Policing Ethics Panel		**UK**	United Kingdom
Met	London Metropolitan Police Force		**USP**	Unified Surveillance Platform
MLG	Multi-Level Governance		**VOW**	Vehicles on Watch

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INTRODUCTION

With the digitalization of everyday life, the world has undergone some of the greatest technological changes in history and data is at the heart of it. While digitalization has not halted at the border to rural areas, cities are nevertheless at the center of the digital transformation. The majority of the world's population now lives in urban areas, and the advent of digital technology has made cities a data-rich environment.

Digital technologies have not only become a part of everyday life for citizens, but are also important tools for the government and private sector to provide security services. This transformation of urban security provision will impact the core elements of urban social contracts - the often-unseen rules that govern our cities. The urban social contract is a framework of authority between the citizens, other urban actors, and the city government (Vargas et al., 2022). The urban space - where a myriad of different actors cohabit - is a contested space and the urban social contract must be constantly renegotiated. The use of digital security technologies, especially surveillance, can therefore be endorsed by some actors (e.g. the city government) while being rejected by other actors (e.g. civil society). At the same time, the use of surveillance technology can be regulated and influenced by actors at various levels of government (e.g. national, regional, or local) and by non-state actors.

In this complicated context, understanding the power that city governments have to influence the deployment of surveillance technologies within their city is central to our understanding of the role that local governments have in the provision of urban security services through surveillance.

Research Objectives and Question

Currently, the research teams of the Edgelands Institute[2] remain predominantly focused on their specific cities of operation. This report will seek to fill their knowledge gap regarding the global picture of the role of local city governments in the digitalization of urban security and in surveillance more specifically. It provides an opportunity for Edgelands teams to situate findings from their case cities in relation to broader patterns of power and governance.

In addition to contributing to the Edgelands Institute's activities, this report will also fill a gap in academic literature regarding the agency and power of city governments in deploying surveillance technologies within their cities. By applying an innovative method of analysis, we hope to contribute to the understanding of what different forms of power city governments have. The method should however be further developed in future research.

This project will hone in on the cases of three different cities of interest to the Edgelands Institute: London, Singapore, and Beirut. The objective will be to understand how city governments have tried to influence the use of digital surveillance technologies within their cities, with consideration for the specific context of local governance and local autonomy and relations between the most salient actors within that particular urban space. The report will be guided by the following research question:

> *What forms of power have city governments mobilized to influence the deployment of surveillance technologies within their city during the last 10 years?*

The timeframe of the last 10 years (i.e. 2012 to 2022) was chosen for different reasons. First, we didn't want to go too far back in time, as we wished to look at a timeframe when surveillance and digitalized security were already an established phenomenon. Second, 2012 was the year when ISIS started to re-emerge and posed a threat to many cities through its terrorist attacks (Glenn et al., 2019). This renewed saliency of terrorism as an urban security threat increased the cities' use of surveillance of urban spaces (Awan et al., 2019). At the same time, Chinese CCTV camera manufacturers began to export their products to other markets around the world around the year 2012, which had a significant impact on the cost of surveillance dispositives. With more demand for surveillance and dropping prices of surveillance cameras, the year 2012 makes for an interesting starting point.

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[2] See Annex 1 for a description of the Edgelands Institute and its activities.

The term 'deployment' needs further discussion, as it can have various temporal meanings. The military use of the term (i.e. deployment of troops) would include the planning and approval of the use of troops and the actual engagement of troops until the end of their mission. However, given the time and resource constraints of this project, we will not be able to focus on the continued use of surveillance technologies and how this use developed over time. Instead, for this report, deployment will only refer to the time of planning and approval of the use of surveillance technology up until the moment of its operationalization.

The report will begin with an overview of the relevant literature, followed by the definition of the most important concepts. After a description of our theoretical framework and our methodology, we will present studies of our three cases: London, Singapore, and Beirut. These case studies will be followed by a cross-case analysis and a conclusion.

LITERATURE REVIEW

Our literature review is structured along four themes, grouped together in two blocks. The first block explores the themes of digitalization and urbanization of public security. The second block then dives into academic and policy considerations of local government autonomy in urban governance generally, and their role and autonomy when it comes to addressing security issues specifically.

The Digitalization and Urbanization of Security

The Digitalization of Security

If we want to understand "urban digital security", we have to understand how security has become more digitalized over the last decades. We begin with a definitional issue; namely, the difference between digitalization and digitization. **Digitization** refers to the idea of converting non-digital data into a digital format (Brennen & Kreiss, 2016), for example by scanning a physical document. **Digitalization** is a broader concept, referring to changing entire processes by integrating digital technologies along with all steps of that process (Brennen & Kreiss, 2016). Hence, the digitalization of security includes the digitization of older data but moves beyond that by also requiring an adaptation of how security processes are organized.

The digitalization of security is a two-fold process. First, the digitalization of society has created new areas or sectors where security is needed. Hence, new security practices are implemented to address these new needs (e.g. cybersecurity). Second, *previously existing* security practices have been digitalized, meaning that these processes have been transformed and reorganized by digital technologies. Given our interest in surveillance technology, we will focus on this second development in our report.

The digitalization of previously existing security practices started in the military sector. Military innovation embraced digitalization not only for weaponry but also for intelligence gathering, decision-making, and other processes. The goal of doing so was to 'informatize'

warfare, thus creating the capabilities to overpower enemies with superior speed and computerized long-distance killing through precision targeting weaponry (Wilson, 2014).

Many digital innovations from the military domains were dual-use technologies and soon, manufacturers recognized the potential of civilian markets (Wilson, 2014). The ensuing introduction of militarized digital security technologies to civilian sectors was accompanied by the adoption of military pre-emptive logics by law enforcement and other security agencies. Preemption should not be confused with prevention. **Prevention** refers to the neutralization of a concrete threat that has materialized and where the pattern of how this threat will play out is more or less clear (Nishiyama, 2018). **Preemption** on the other hand *"[...] operates in the present on a future threat [which] has not yet even emerged."* (Massumi, 2007). This means that preemptive acts don't try *"[...] to prevent the playing out of a particular course of events on the basis of past data tracked forward into probable futures but to [pre-empt] an unfolding and emergent event in relation to an array of possible projected futures"* (Amoore, 2013, p. 9).

Because of its military origins, the digitalization of urban security was accompanied by a process of militarization. The military ideals of tracking, identifying, and targeting have long been implemented into urban security frameworks (Ellis, 2020) and represent *"[...] attempts to translate longstanding military dreams of high-tech omniscience and rationality into the governance of urban civil society."* (Graham, 2013, p. 11). We could therefore talk of the militarization of urban citizen's everyday life (Ellis, 2020; Kaplan et al., 2013). This militarization of digitalized urban security is oftentimes accompanied by increasing privatization of urban law enforcement and criminal justice (Byrne & Marx, 2011).

The increased reliance on digital technologies in urban security is mostly due to the paradigm change in urban law enforcement towards predictive policing. Such strategies of "smart policing" have been introduced since the 1990s (Albrecht, 2020) and build on information systems that analyze large sets of data in order to make *"[...] accurate predictions as to where, when, by whom (and against whom) crimes are committed."* (Albrecht, 2020, p. 8). Hence, policing in many cities has become a data-driven endeavor that adopts the above-discussed military ideals of pre-emptive action. However, the successful implementation of digitally augmented predictive policing strategies does not only rely on accurate predictions but also on an effective translation of these predictions into concrete interventions (Albrecht, 2020). We share the literature's distrust towards techno-optimist analyses of predictive policing while being aware that such technologies can have operational advantages for police forces.

Technologies used for urban security fall into two categories: hard and soft technologies (see: Byrne & Marx, 2011). Hard technologies refer to hardware and materials (e.g. CCTV cameras), while soft technologies refer to computer software and information systems (e.g. AI-enabled Live Facial Recognition (LFR)). It is usually the interplay of these two categories that produce digitalized urban security strategies.

For soft technologies in urban security strategies and predictive policing, the first subcategory is crime prevention. Software preventing online identity theft would be an example here. A second subcategory of soft technologies is risk assessment, which builds on the idea that *"[...] "a majority of the serious crimes are committed by a small fraction of people, in a small number of crime-ridden neighborhoods [...]"* (Byrne, 2009, p. 1). Hence, risk assessment tools attempt *"[...] to identify this subgroup of offenders accurately, allowing corrections systems to target resources and supervision/surveillance on high risk, people, times, and places."* (Byrne & Marx, 2011, p. 23). The third subcategory of soft technologies employed in urban settings is threat assessment. Here, crowd behavior analysis can serve as an example; a technology that allows to monitor of entire crowds, detect abnormal crowd behavior, and therefore quickly localize real-time potential threats (Nishiyama, 2018). Finally, a fourth subcategory of soft technologies would be the monitoring and surveillance of individuals. This subcategory mostly serves the intelligence aspect of modern police work. This can include the surveillance of social media, particularly of suspects or individuals who are defined as risk factors (Byrne & Marx, 2011; Feldstein, 2019). However, the key digital technology in this subcategory would be (AI-augmented) surveillance which will be discussed further below.

One should not forget that many of these soft technologies only work in association with hard technologies (e.g., LFR needs both cameras *and* software). Hence, these categories should not be understood as being strictly separated from each other. Rather, these different systems increasingly work in a networked manner, producing collaborative outcomes (Haggerty & Ericson, 2000; Meijer & Thaens, 2018).

Surveillance is a prime example of urban digitalized security in general and also for predictive policing more specifically. Surveillance systems have the purpose of monitoring and tracking citizens and are increasingly augmented by AI (Feldstein, 2019). Thus, CCTV cameras are now not only enabling the surveillance of citizens by human security personnel but can in some cases feed directly into automated facial recognition systems (Ellis, 2020).

Sometimes, such surveillance practices may be contradictory to the privacy or human rights of urban citizens, if the proportionality and necessity of the practice are not respected.

However, much of the literature formulating this critique has a somewhat 'activist' approach. More often than not surveillance practices are not against any law.. Even if particular surveillance practices are contradictory to privacy laws, there is a surprisingly little backlash against them. As Meijer and Thaens (2018) put it, most citizens seem to happily sacrifice their privacy for more security. This is not only the case for autocratic states but also for liberal democracies, many of which are major users of surveillance techniques (Feldstein, 2019). However, Ellis (2020) argues that citizens don't simply accept the butchering of their privacy rights but are rather applying what he terms 'surveillance-apatheia', referring to the stoic concept of accepting facts that lie outside one's own control.

It must be mentioned that the literature about the militarization and digitalization of urban security or law enforcement suffers from heavy euro- or western-centrism. Other criticisms are however not directed at the academic study of the phenomenon but rather at the digitalized security practices as such. First, the introduction of surveillance and other digital security technologies does for example not always solve problems of crime; it can simply displace criminal activities to a new area in the city where these technologies are not yet implemented (Byrne & Marx, 2011; Priks, 2015; Waples et al., 2009; Wilson, 2014). Second, the implementation of new digital technologies oftentimes falls victim to the 'fallacy of novelty'. This refers to the fact that everything that is new, particularly in technology, is seen as being inherently 'better' than the already existing system (Byrne & Marx, 2011). However, this is not necessarily the case.

The Urbanization of Security

Urban security has become so important because of the rapid urbanization in the last decades (Agbu & Akpati Nzeribe, 2020). The more people live in cities, the more people are affected by distinctly *urban* security challenges (e.g. terrorism). Urban security refers to cities and defining what a city is is more complex than might be apparent to the reader (Lauermann, 2018). Many urban agglomerations exceed the administrative boundaries of individual municipalities. Some cities incorporate areas with different characteristics - from industrial areas to parks, from shopping centers to landfills - and material and immaterial communication channels connect distant places, leading to widespread development of the city dimension and urbanization of social life. The process of place identification, however, maintains its spatial structure, albeit in flux, characterized by the concentration of people and the built environment, the proximity of heterogeneous humanity, and the presence of networks and flows that cross and connect them internally and externally (Giansanti, 2019).

Urbanization is most impressive when expressed in numbers. In 1950, 30% of the global population lived in cities, but only one out of every hundred lived in an urban agglomeration of more than one million inhabitants; a figure that had increased tenfold by 2000 when almost half of the world's population resided in an urban context (Ritchie & Roser, 2018). Currently, about 4 billion people (55% of the world's population) are living in urban areas (World Bank, 2020). Urban centers will absorb significant rural-to-urban migration and the bulk of population growth over the next decades. Hence, this proportion is expected to increase to 68% by 2050 (United Nations. Department of Economic and Social Affairs, 2018). This phenomenon of urbanization worldwide has been intensified by rapid population growth.

Cities face a range of problems. This could go from local security issues (e.g. pickpocketing) and global security issues (e.g. terrorism) to environmental issues (e.g. pollution in urban spaces) or the provision of essential services such as health and education (Agbu & Akpati Nzeribe, 2020). Coming to our core topic (i.e. security), urbanization has led to a broader understanding of urban security than traditional concepts such as 'national security' or even 'public security' would have it (Agbu & Akpati Nzeribe, 2020). The effects of threats on people's social, economic, and cultural well-being are oftentimes also included in definitions of urban security. Hence, depending on the social, cultural, and environmental context, the perception of these threats can differ. Our understanding of 'security' has to be broadened when it comes to urban contexts. Some cities consider certain topics as security-related (e.g. food security) while other cities from other regions do not consider them to be security issues. What is and what isn't part of urban security is dependent on regional and local factors.

Ultimately, globalization, coupled with the rapid and continual development of ICT technologies, has led cities to become nodes in global networks (Graham, 1999), not least because this has become the scale on which relationships that previously took place on a regional or national scale are nowadays articulated. This change in scale has favored metropolises, from a polycentric perspective. Another impact of ICT technology has been the emergence of 'smart city' strategies, which have become an increasingly popular idea in recent years (Albino et al., 2015). The implementation of smart city technology has been hailed by many as the solution to many urban challenges such as transportation, waste management, and environmental protection (Alawadhi et al., 2012). While these urban challenges are the focus of a growing literature, aspects of security and crime prevention are less often discussed in academic research.

Local Autonomy and the Governance of Urban Security

The following sections are an exploration of the literature that helps shed light on *who* shapes security strategies and makes decisions in matters of digitalized urban security governance. Given the Edgelands Institute's interest in the role of municipal governments, this review is primarily focused on them.

The Role and Autonomy of City Governments in Urban Governance

The very concept of 'autonomy' is intrinsically tied to cities. Etymologically, the term is a compound of two Greek words meaning 'self' (*auto*) and 'law' (*nomos*) that was coined to describe the ancient Hellenic city-states (Miller, 2018). In fact, beyond Ancient Greece, independent local governments have been a historically consistent and salient form of political organization, and local government has indeed been a cornerstone in the institutionalization of democracy worldwide (Sellers & Lidström, 2007).

Yet, in modern history, the territorial (nation-)state reigns supreme, with the autonomy of cities and other local entities largely either framed by, dependent on, or subordinate to the sovereign authority of the state. It comes, then, as almost a poetic twist of historical correction that scholars in recent decades have argued both the evolving and increasingly central role of cities in global (and 'glocal') governance, as well as seized on growing phenomena of decentralization and local autonomy.

Just as scholars in the late 20th century pioneered an expansive and theoretically sophisticated study of the political decentering of the central state in favor of trans-national and supra-national levels, so have scholars in the 21st century cast increasing attention onto a parallel rise in the centrality of sub-national levels (Jouve & Lefèvre, 1999). These two forces, the rise of the supranational and of the subnational, are concomitant: the interaction and interconnection of people, knowledge, and capital that is globalization is not evenly occurring across earth's territories, rather it is concentrated in urban agglomerations, particularly the major 'global cities'. Just as transnational or global governance becomes necessary or even self-evident to national governments, so does urban governance.

As economic and cultural powerhouses, and home to a growing majority of the world population, a number of scholars argue that cities are quickly emerging as the focal point of policymaking around global issues such as climate change, human rights, democracy, and security (Blank, 2010; Bulkeley et al., 2018; Peters & Pierre, 2001; Sellers, 2005). This development has been accompanied by influential scholarly literature on the role of cities in the global

economy and international relations, particularly that of major "global cities," a term popularized by sociologist Saskia Sassen's popular and groundbreaking monograph (Sassen, 2001: original publication in 1991). The phenomenon of 'city diplomacy' is now a prominent, highly mediatized disruption to the notion of the national government's exclusive purview over *international* affairs (Beauregard & Pierre, 2000; Tavares, 2016). The salience of cities as actors of global governance is not simply a matter of transnational exchanges, it also involves cities taking *local* actions and positions of *global* relevance––action at the so-called 'glocal' level.

Separately from the globalization-induced rise of local government actors in major cities, scholars also note a growing worldwide trend towards local government autonomy for its own sake, on the premise that it ensures more efficient and just governance. It is this thinking that seems to underpin a movement of national governments that enact a wide range of policies aimed at varying forms of decentralization, but also the increasing claims and demands of local representatives for greater autonomy––including those of 'global city' councils and mayors (Keuffer, 2016). By illustration of these trends, there are now perhaps more countries in the world with constitutional provisions for local (municipal) governments than there are with federal provisions for subnational states or provinces (Sellers & Lidström, 2007). In many ways, this is a reflection of a broader and deeper trend in the refashioning of state governance, from a model of central 'command and control' to one in which the state 'enables' a variety of actors and stakeholders at different levels through the provision of guidelines and resources (Peters & Pierre, 2001, p. 131).

Yet if we consider the role of local governments in matters of urban governance, it is crucial to note that local urban autonomy is wide-ranging in its manifestations and arrangements. For one, autonomy can depend a lot on legal arrangements: a state that recognizes local governments and sets provisions for its power in its constitution may have greater autonomy than one where there is scant legislation (Kaufmann, 2020). Surprisingly perhaps, a federal state does not necessarily confer greater autonomy to cities than a unitary one. The principle of federalism dictates a constitution that formally recognizes only the sovereignty of the constituent states or provinces, leaving the status of local governments for them to decide through their own constitutions and legislation (Blank, 2010). Though many federal states today have since amended their original constitutions to recognize the powers of local governments (e.g. Switzerland) others remain silent or ambiguous (e.g. United States) (Kaufmann, 2020). Meanwhile, some unitary states like the United Kingdom have had long traditions of local government autonomy (Bulkeley et al., 2018).

The autonomous status or capacity of cities can also vary widely according to their role or relative importance within a country or region, for example, their political significance as a capital city (Kaufmann, 2020) or their economic weight as a global city (Lu, 2019). Similarly, the political culture of a certain country, region, or even governing party can affect the degree of autonomy (Tulumello, 2018). And perhaps most significantly, the nature of a city's autonomy over various policy areas may be greatly defined by its capacity to set and levy its own taxes or otherwise be self-funded, in other words by its level of fiscal autonomy (Kaufmann, 2020; Slack, 2017).

City Governments' Approaches to Urban Security

It is striking to note that most of the scholarly and policy literature on the autonomy of city government actors remains rather silent on issues of urban security. Indeed, much of the city governments' prominence on issues of urban governance is overwhelmingly concerned with issues of 'sustainability'. This appears in large part due to security provision remaining, despite trends towards city autonomy and decentralization, a key prerogative of the central state, indeed a defining element of its (Weberian) sovereign power, which it is less inclined to devolve. Slack's (2017) analysis of the key functions of eight major city governments shows security provision as conspicuously absent among a patchwork of schooling, environmental and sanitation, and urban development responsibilities.

And yet, in light of the trends in the urbanization of security discussed above, cities must contend with countless possible 'threats' ranging from petty street crimes to riots and terrorism (Agostini et al., 2010; Moser, 2004). The ill-effects of globalization post-1980s show how irregular migration, unplanned development, unequal distribution of wealth, lack of economic opportunities, and terrorism have become new security concerns for cities that affect the lives of ordinary citizens residing in urban areas, as well as local governments' ability to deliver services for effective functioning of their cities (Bugliarello, 2003; Edwards & Hughes, 2013; Lemieux, 2016). Moreover, these problems are deeply correlated with the political goal of the local authorities, which has an influence on relations and conflicts within various social groups that make up the urban space (Taylor, 1995).

In this way, city governments are far from ambivalent or silent on matters of urban security, which cut directly at their ability to execute their non-security functions. Indeed, scholars have also shown how governments must define their urban governance strategies so as to ensure compliance by residents and gain their trust too, for which they compete not just with other government actors but with informal actors (e.g. cartels) as well.

City governments must strike a difficult balance between responding to current threats and equipping themselves to protect from future threats while upholding the rights of their citizens (Bugliarello, 2003). For this, cities rely on social prevention and situational prevention. Social prevention considers social justice and well-being vital for preventing crime. In contrast, situational prevention focuses on self-responsibility and looks for opportunities to reduce committing of the crime (Tulumello, 2017). The choice of these approaches can depend on a number of local factors of demographic and geographical context.

Thus, the extant literature shows that despite security provision not typically being a core function of local government power, but one that instead remains squarely under the purview of the central authorities, city governments can hardly be said to be inactive on matters of urban security. These actors can also act in collaboration with central authorities, as the Edgelands Institute's work in Medellin (Lasso-Harrier et al., 2021) has shown, as well as strategically positioning themselves within the limits of their scope of authority. This can give rise to complex interactions between local security forces and their national counterparts.

ANALYTICAL FRAMEWORK

Theories: Local Autonomy and Multi-Level Governance (MLG)

From the literature presented above, two broad theoretical lenses, which are related, emerge as relevant to our research: that of 'local autonomy' and 'multi-level governance' (MLG). The theory of local autonomy was pioneered by Clark (1984), whose analysis of local autonomy is centered on legal and institutional aspects and is defined in relation to higher tiers of state government. Clark (1984) viewed local autonomy as made of two components: the 'power of initiation', which is the ability to act within the bounds of prior rights granted by higher authorities; and the 'power of immunity', which refers to a city's ability to "*[…] act however they wish within the limits imposed by their initiative powers […]*" without fear of the oversight authority of higher tiers of the state (Clark, 1984, p. 198).

Scholars have continued to build upon Clark's theoretical framework and typology, with the most prominent critique that it is too legalistic and focused on a top-down devolution of power from the central government. Goldsmith (1995) first expanded considerations of local autonomy to include the nature and range of functions assigned to local authorities, financial autonomy, and the ability to influence higher powers of government. Seizing on this complexification, Pratchett (2004) described autonomy as in flux and the result of (re-)negotiation, influence, and collaboration with different levels of government. Similarly, Blank (2010) argued that local autonomy should be approached through the lens of 'subsidiarity', seeing central and local powers not as "*operating at the expense of one another,*" but as overlapping and often in cooperation. Pratchett (2004) also makes the case that autonomy should involve the extent to which local authorities reflect local identity. This view usefully introduces a horizontal corollary to the vertical dynamics of central and local government.

From here, Bulkeley et al. (2018) have argued that 'urban autonomy' should be viewed as 'relational' instead of something that is just granted to or stripped from cities, and it operates both horizontally and vertically: Autonomy is to be located just as much in a city's negotiations

with central authorities as in its relations to the private sector and civil society. All while advocating for 'enhanced urban autonomy', these authors, like others (Botero Arcila, 2021; Pratchett, 2004), caution us to be wary of tethering too optimistic or normative expectations onto local autonomy. It seems difficult to claim that greater autonomy for local government necessarily entails better outcomes or reduced inequalities for local constituents.

In its most recent redefinitions, the theory of local autonomy finds much common ground with the analytical lens of 'multi-level governance' (MLG). This theoretical lens, popularized by Hooghe et al. (2001), argues that many aspects of governance should be viewed as shaped concurrently by multiple actors at different scales without a single structuring authority. Using MLG theory, Hoorak and Young (2012) proposed to study two dimensions to urban governance: one vertical between different levels of government, and another horizontal that includes the involvement of local non-governmental actors.

Together, the theories of Local Autonomy and MLG present a useful analytical lens through which to approach our research question. While our research is focused on local governments, this framework will push us to consider that they are in relation with many other actors, and that their salience with regard to urban surveillance may vary from city to city. Their ability to influence surveillance strategies, moreover, may be more or less successful––or even possibly desirable––in achieving more secure and equitable outcomes for residents, and this autonomy will not necessarily be exclusive of or stand in opposition to the power and strategies of central authorities or other non-governmental actors.

It must be said that these theories also present limitations in their applicability to our themes of digitalization and urban security, as well as our global geographical scope. In the first place, these frameworks are extremely Western-centric, having emerged in fact from the study of the European Union context of decentralization, subsidiarity, and supra-national governance. This is analytically problematic in non-western contexts, because assumptions that are central to the frameworks might not apply in non-Western cases. Secondly, the theories have scant been applied to the contexts of surveillance and urban security.

Yet, scholars have already used both frameworks to study urban contexts of the Global South (Chigwata & de Visser, 2018; Croese et al., 2021; Cruces Burga & Devoto Ykeho, 2021; Hickmann & Stehle, 2019), and recent contributions to the field of MLG have called for bolstering research into considerations of security and digitalization (Roy, 2021; Schröder, 2021), in addition to local autonomy being applied to the context of 'smart cities', which present unique issues of digitalized security.

Concepts and Definitions

City Government

The term 'city government' must be understood in a broad manner. In some national contexts, city governments can have great legislative, tax-raising, and other powers. In other contexts, urban metropolitan governments may however be administrative units with minimal responsibility to provide basic services (Tonkiss, 2020). Thus, on a global scale, the urban governmental structures are too varied to allow for a narrowly defined definition of a city. Given these variations, the term 'city government' will be defined in its broadest sense for this work, based on the following set of characteristics:

> *A city government is a formal organization with a legal authority to exist which derives from a higher authority and with a distinctly public character, tasked to perform specific functions within a distinct geographic territory that is urban in nature.*

We are aware that this broad definition has its weaknesses, but a more detailed definition would not do justice to the global variation in formal urban governance. By 'city government', we don't mean local militias or other authorities with *de facto* control over a particular urban territory. The decisive element of a city government is its formal authority with a *de jure* basis. By city government, we also don't mean entities of a national government that act within a city. The national police force - for example - would not be part of a city government as it is administered by the national government. What we do however mean by 'city government' is the government in its entirety - referring to its legislative, executive, and judicial branches. Keeping the importance of these three branches in mind, the executive branch will however be most relevant when it comes to surveillance practices.

Surveillance

The word surveillance stems from the French word 'surveiller', which means "watching from above" (ten Have & Patrão Neves, 2021). However, surveillance moves beyond the simple fact of watching by being a purpose-driven endeavor; the purpose being that of using the information gathered by watching others to achieve a specific goal. Foucault's (1975) understanding of surveillance as a disciplinary tool for ranking, ordering, and normalizing individuals shows this idea. The fact that surveillance means the monitoring of the surveilled by a surveiller implies the existence of a power relationship (Harper et al., 2013).

Surveillance can therefore be defined as the "*[...] monitoring [of] people in order to regulate or govern their behavior*" (Gilliom & Monahan, 2012, p. 2). This definition of surveillance provides room for much interpretation. These debates can go so far that even practitioners on the ground sometimes disagree on the question of whether surveillance is taking place or not (Monahan & Wood, 2018).

In our research, we will limit ourselves to urban surveillance from a distance using electronic devices (e.g. CCTV). These devices often operate in union with software that makes sense of the gathered data (e.g. AI-enabled facial recognition based on CCTV footage). In doing so, our research will focus particularly on the use of so-called surveillance-oriented security technologies (SOSTs), which is a collective term to describe technologies that identify or prevent crime by collecting information and observing residents (Pavone & Esposti, 2012). The term 'surveillance-oriented' is central, as not all new security technologies are focused on surveillance. However, a significant number of crime prevention and detection systems involve, or rely on, some type of monitoring or sensing component (Laufs et al., 2020).

There are multiple reasons for this choice to focus on SOSTs. First, the case of CCTV surveillance and facial recognition in urban spaces coincides with the research activities of the Edgelands Institute (see Annex 1). Second, other forms of surveillance (e.g. digitally transmitted information) rarely respect urban boundaries and are thus less fitting to our research objectives.

Power

In this report, we follow Bourdieu's original idea to conceptualize power as capital (Bourdieu, 1986). The two terms are equal. His four types of capital - economic, cultural, social, and symbolic - are not strictly separated. Economic capital can for example be augmented by social capital. This fungibility of Bourdieu's capital shows how one kind of power can amplify others or be transformed over time (Moon, 2019).

While we will maintain Bourdieu's idea of the fungibility of capital, we depart from his definition of the four types of capital. They are not wrong per se, but we need to adapt his sociological conceptualization to the context of urban security governance. Hence, we will build our analysis on the typology of power provided by Suerie Moon (2019). By defining power as "*[...] the ability to shape the thinking and/or actions of other actors [...]*" (Moon, 2019, p. 5), she adopts an expansive view of power which is needed to accommodate the multitude of actors and interactions within the urban context.

Given this expansive view of power, a city government can use its different forms of power to shape the thinking and/or action of other actors within the urban space (e.g. civil society or citizens) who have interests that conflict with the city's, in order to obtain their preferred surveillance dispositive. An example would be that a particular city plans on installing a particular type of surveillance camera that is produced in a particular country with a questionable human rights record. Other actors within the city - such as human rights groups - might oppose this purchase. The city could now use different types of power (according to the typology described below) to influence the thinking of all actors involved in the debate about the purchase in order to defend the deal.

Although Moon's (2019) typology was originally developed for global governance processes, many types of power remain applicable to urban security governance with only minor adjustments. Table 1 presents the five types of power - economic, structural, moral, expert, and discursive - we use in our research. Moon (2019) mentions three other forms of power in her typology; namely, physical power, network power, and institutional power. However, these forms of power are not included in our analysis for different reasons. First, some of them are more applicable to power in the international system than to urban governance. This is especially the case for physical power (e.g. threat of military force). Second, with our desk research method, we would be unable to find convincing evidence for some of these types of power, for example in the case of network power. However, future research, using other methods, should try to incorporate network power.

Table 1: Typology of City Power, adapted from Moon (2019)

Type	Definition	Application
Economic Power	*"[T]he use of material resources (e.g. money, goods) to shape [...] thinking and actions [...]"*	A municipal government with high economic power has sufficient financial resources and autonomy to independently fund its project without compromising on features.
Structural Power	*"[T]he use of an actor's position in the structures of society to shape the thinking and/or actions of other actors. [...]"*[2]	A municipal government with high structural power is able to leverage a high degree of vertical autonomy and a legal mandate to implement decisions without checks to its authority.
Moral Power	*"[...] when an actor shapes the principles that others believe to be right or wrong, and the actions that may then follow"*[2]	A municipal government with high moral power can rely on its reputation as an ethical and law-abiding actor and is able to justify its project as a public good.
Expert Power	*"[...] when an actor shapes what others consider to be legitimate knowledge, and therefore what they understand to be factually true or correct"*[2]	A municipal government with high expert power can rely on in-house expertise, facts, data, and the support of external experts to advance its project.
Discursive Power	*"[...] when actors shape the language others use to conceptualize, frame, and thereby define and understand an issue"*[2]	A municipal government with high discursive power is able to deploy effective campaigning and promotion strategies in favor of their project, including convincing slogans.

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[3] All citations in this table were taken from: Moon, 2019: 6

Methodology

Our analysis will proceed in two parts. First, we will carry out three case studies; one for each chosen city. Each case study will first descriptively present the process of deployment of a particular surveillance technology during the last 10 years[4] within this city, before turning to a second, analytical part. In this second, analytical part each case will be analyzed with an innovative method, inspired by the one used in Alterman and Todman's CSIS report (2019). We adapted the method to our study in close collaboration with our Edgelands Institute supervisors.

Our method is based on a systematic comparison of categories, which are broken down into specific indicators. In our case, the categories are the types of power from Moon's (2019) typology (*supra*). Each indicator is formulated in a statement that can be answered with a yes or no. An overview of the indicators is given in table 2, while the full justification of each indicator can be found in Annex 3. This list of indicators produces a checklist for each category, where every indicator is one element in the checklist. For each case, we will therefore go through the checklist and - if we have evidence for the existence of a particular indicator - check this particular element for this particular case. Hence, categories with a high count in the checklist are categories of power that seem to be comparatively more important in a particular case than the other categories with lower scores. This provides a good understanding of what types of power were or weren't present in a particular case city's deployment of specific surveillance technology. A more detailed explanation of the method for the analysis can be found in Annex 3.

Given that the checklist criteria for every indicator are the same across all three case analyses, the results from these analyses are comparable. Hence, in the second part of the analysis, the three case study checklists will be compared in a cross-case analysis. This will allow us to draw conclusions on similarities and differences between the cases and give explanations for some of these differences/similarities.

The analysis will be based on secondary data, gathered through desk research. This research method was chosen for two reasons. First, our case cities are also the cities where the Edgelands Institute will deploy its next research teams. Hence, on-the-ground interviews and participant observation methods for these very same cases will be used at a later point in time. Second, the resources for this applied research project were limited.

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[4] See 'Introduction' section for the justification of this timeframe

Table 2: Overview of Checklist Indicators for Analysis

A. Economic Power	B. Structural Power	C. Moral Power	D. Expert Power	E. Discursive Power
A.1 The city government has its own budget for security.	**B.1** The decisions of the city government are not subject to veto power of external governmental authorities.	**C.1** The city government's surveillance project responds to a major security event.	**D.1** The city has a history of investing in innovative security practices.	**E.1** The city government engaged in public discussion of its surveillance project.
A.2 The city's budget is sufficient to support the entire cost of the surveillance project.	**B.2** The city government holds the executive authority to implement its decisions.	**C.2** The city government is generally perceived to advance public security.	**D.2** The city government emphasizes police training as part of its surveillance project.	**E.2** The city implemented a concerted promotional strategy and/or an advertising campaign.
A.3 The city government can levy its own taxes and/or has other autonomous sources of funding to help fund its budget.	**B.3** The city government autonomously decides how to allocate its budget.	**C.3** The city government's surveillance project advanced without allegations of corruption or abuse of power.	**D.3** The city government's rationale for the surveillance project relied on security data.	**E.3** The city used particular slogans or turns of phrase to paint the surveillance project in a positive light.
A.4 The city's autonomous sources of funding are sufficient to support the entire cost of the surveillance project.	**B.4** The city government's authority extends to matters of security.	**C.4** The city government's surveillance project advanced without significant pushback from civil society.	**D.4** The soundness of the city government's surveillance project was not significantly challenged by security and technology experts.	**E.4** The city government's surveillance project advanced without significant accusations of misinformation.
A.5 The city can deploy its project without compromising on key features for economic reasons	**B.5** The legality of the city government's surveillance project was not called into question by the judiciary.	**C.5** The city government's surveillance project benefitted from citizen buy-in.	**D.5** The city government leveraged external expertise to advance its surveillance project.	**E.5** There is evidence of public buy-in to the city's discursive efforts and/or the city's discursive arguments were boosted by external actors.

CASE STUDIES

Our case studies will center around the deployment of a particular surveillance technology between 2012 and 2022 in the cities of London, Singapore, and Beirut. The selection of these case cities adhered to Edgelands' criteria for selecting cities, namely to ensure a diversity of urban social contracts and governance arrangements.

Source: https://mapstyle.withgoogle.com

Figure 1: Map of case cities

This specific criteria may limit the general applicability of our findings, but this limitation was accepted as the main goal of our applied research here is to contribute to the work of the Edgelands Institute. In addition to the Edgelands Institute's criteria, each city was selected because of certain specificities.

The choice of London corresponds to a desire on the side of our team to analyze a European city, so that we can effectively enhance our research by comparing cities from different geographical regions. In addition, from a purely operational point of view, London responds to found practical needs, such as resources available in a language understandable to each member of the group (English); and an already extensive literature, which allows us, since our work is desk research, to be more efficient.

Our second case - the city-state of Singapore - has a unique history as this has grown to be one of the most prosperous nations, with very high economic freedom and export rates. However, it faces several challenges in the international domain concerning security in Southeast Asia. It is this scenario that made the city of Singapore interesting for our research. Moreover, it emerges as a highly developed city albeit not a Western one. This will make a comparison to our European case more interesting. An additional perspective that makes this city appealing for our research arises when applying the city versus state government dualism, as this is a city-state. The case will therefore also serve the purpose of problematizing some of the assumptions in our theoretical framework.

The choice of our third city fell on Beirut because - in addition to being among the cities in which the Edgelands Institute will be active in the coming years - it represents a unique scenario in the global landscape. The city offers a relatively extreme case concerning the expansion of its security system and the levels to which it interferes with the daily practices of residents. Moreover, it represents an interesting research case because of its high fragmentation, privatization, and contestation level. Furthermore, as our research is projected toward analyzing the use of digital technologies in the security domain, it will be interesting to identify how a city such as Beirut, which is highly militarized, deals with digitalization.

London

City Profile and Context

Founded by the Romans two thousand years ago, London has long been one of the world's great cities, with connections forged through centuries of international commerce. Due to the effects of Britain's first industrial revolution, London held the title of the biggest metropolis in the world for most of the 19th and early 20th centuries. Nine million people call it home now, and its diversity reflects both its character and position in the global economy: more than 300 languages are spoken, and 37% of Londoners were born outside of the United Kingdom. 40% of Londoners also identify as black, Asian, or members of an ethnic minority (World Cities Culture Forum, 2022). After Britain's manufacturing foundation was lost, London preserved its economic

and cultural vibrancy through innovative service sectors. It is a major hub for cultural and creative industries as well as financial and commercial services. This industry's strengths span a wide spectrum, including publishing, music, design, fashion, cinema, and television, as well as a rapidly growing technology sector.

London covers an area of 607 square miles and is administered by the Greater London Authority (GLA). Based in City Hall, the GLA is governed by the Mayor of London, currently Sadiq Khan, and the London Assembly. The mayor provides a wider strategic direction for the capital and its policies cover all 32 boroughs and the City of London. In accordance with our research objectives, we will mainly focus on the role of the mayor of London, and that of other municipal actors involved in urban security.

Administration and Security Provision

Major Actors	Responsibilities
Mayor of London	*provides citywide leadership and creates policies in the public interest. Sets strategies and budget for policing*
Mayor's Office of Policing and Crime (MOPAC)	*responsible for overseeing the Metropolitan Police Services (MPS) and ensuring public accountability.*
Metropolitan Police Commissioner	*controls all activities of the MPS. Accountable to the Home Secretary and MOPAC.*
London Policing Ethics Panel (LPEP)	*provides ethical advice on policing issues that may impact public confidence.*
Biometrics and Surveillance Camera Commissioner (BSCC)	*provides citywide leadership and creates policies in the public interest. Sets strategies and budget for policing*
Information Commissioner's Office (ICO)	*responsible for overseeing the Metropolitan Police Services (MPS) and ensuring public accountability.*
HM Treasury Office	*controls all activities of the MPS. Accountable to the Home Secretary and MOPAC.*

Table 3: Major actors in London

In March 2022, the Mayor released the draft of his Police and Crime Plan for London. The plan sets out the mayor's commitment to ensure that the London Police Service has the resources it needs to put more officers on the streets to tackle violence and to respond to the demands and pressures involved in policing in a capital city. The plan also outlines actions the mayor is taking to continue holding the MPS to account, ensuring that all Londoners have confidence in their police force.

The four key themes of the plan can be summarized as reducing and preventing violence; increasing confidence; improving victim assistance, and protecting people from being exploited or harmed (London Metropolitan Police, 2022).

Meaningful is also the role of the mayor in drafting the annual budget for implementing the above policy plan. The fulfillment of this function is realized through the Mayor's Office of Police and Crime (MOPAC). Likewise, MOPAC is recognized by the Police Reform and Social Responsibility Act 2011 with responsibilities including overseeing the Metropolitan Police Service (MPS) and ensuring public accountability.

However, the mayor and MOPAC do not take on all responsibilities in urban security. Operational policing decisions are among them; they are entrusted to the Metropolitan Police Commissioner. The latter represents the most important and influential policing role in the United Kingdom. The Commissioner is operationally independent, working closely with the Mayor's Office for Crime and Policing (MOPAC) to exercise control over all the force's activities. Furthermore, the Commissioner is not only accountable to MOPAC, but also to the Home Secretary.

Alongside the local actors, attention should also be drawn to the national institutions that play a role in protecting and safeguarding the security of London. Specifically, we want to refer to the Biometric and Surveillance Camera Commissioner (BSCC), the Information Commissioner's Office (ICO), and the London Policing Ethics Panel (LPEP). These respectively are responsible for monitoring that surveillance activities are conducted in line with the National Code of Practice for Surveillance and for regulating relations with the public, promoting data transparency to nurture public confidence in the activities of the police and its organs.
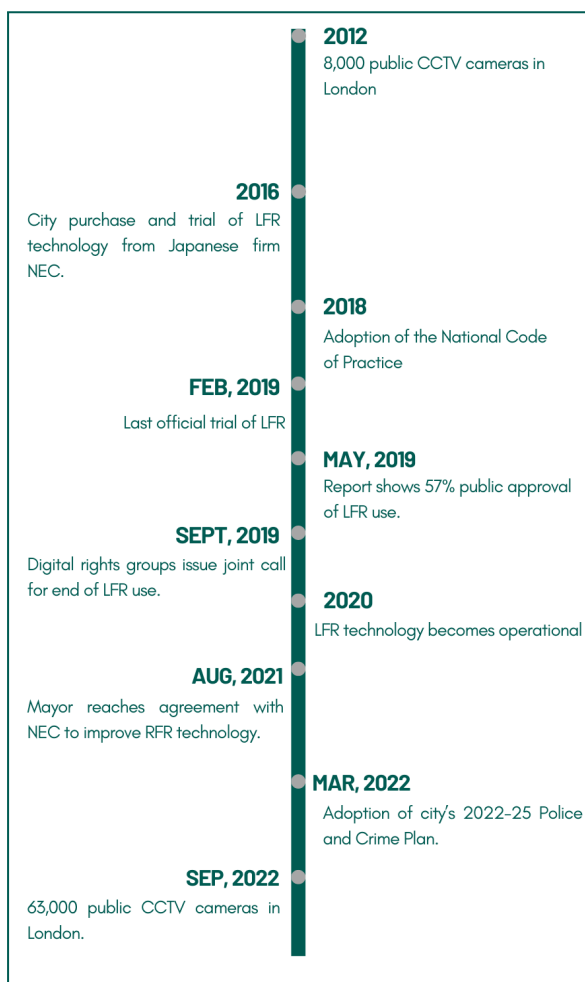
For economic aspects concerning the availability of resources to implement Police and Crime policies, prominent is the role played by the HM Treasury Office. The Treasury Office disposes of the funding derived from the central government directed to the financial coverage of security activities implemented by the London government. More in detail, the latest annual budgets approved by the central government, describe a financial situation highly dependent on funds coming from the central government (MOPAC, 2020). Indeed, a handout of funds amounting to an average of 55 % of the total budget is recorded in each of the periods under review (MOPAC, 2022).

In the description just given, there are deliberately no mentions regarding the involvement of private companies and foreign companies and/or governments, as no information regarding their involvement in this matter was found. Therefore, it can be assumed that the issues related to security in the English metropolis originate and are exhausted within the national boundaries involving, as seen, only the bodies in charge of it, be it on a local or national scale.

Hence, the actors introduced work synergistically and on multiple levels to reduce the risk rates of incidents that may undermine public safety. As such, the key threats that the London Metropolis is called upon to address and/or prevent can also be declined on a local and a national scale. Domestic issues are intrinsically linked to those in the social fabric, thus poverty, homelessness, alcohol and drugs, violence, and burglaries. On a national scale, the issues that also directly and/or indirectly afflict London fall under cybercrime, organized crime, and terrorism. Of these, organized crime appears to be the most significant issue because-- according to the National Crime Agency report (2018)-- *"[...] it affects more citizens, more often, than any other threat to national security and causes more deaths in the UK than terrorism, war, and natural disasters combined"* (National Crime Agency, 2018, p. 8).

Public Surveillance Technology

2012
8,000 public CCTV cameras in London

2016
City purchase and trial of LFR technology from Japanese firm NEC.

2018
Adoption of the National Code of Practice

FEB, 2019
Last official trial of LFR

MAY, 2019
Report shows 57% public approval of LFR use.

SEPT, 2019
Digital rights groups issue joint call for end of LFR use.

2020
LFR technology becomes operational

AUG, 2021
Mayor reaches agreement with NEC to improve RFR technology.

MAR, 2022
Adoption of city's 2022-25 Police and Crime Plan.

SEP, 2022
63,000 public CCTV cameras in London.

Figure 2: Timeline of public surveillance technology in London

Within the context described above, part of the strategy adopted by the London government to tackle security threats includes the adoption of Closed Circuit Television (CCTV), which is implemented widely across London and the UK (Dixon et al., 2003) - Research conducted by Clarion Security Systems has estimated that there are 942,562 CCTV cameras in London, a number resulting from all CCTV cameras in the area - public and private (Barker, 2022).

Moreover, based on the report published by Big Brother Watch in 2012, and thanks to recent studies conducted by Clarion Security Systems, it is possible to estimate that the number of CCTV Cameras controlled by the London government in the past 10 years has increased by 238.16%.

The total number of cameras and municipal control has increased from 7'911 units in 2012 to 20'873 in 2022. In addition to these, cameras operated by Transport for London (TfL) and those used directly by the Metropolitan Police should also be considered as belonging to the

public sphere. Thus, the number of public CCTV cameras across London rises to approximately 63,449 (Barker, 2022).

The numbers exposed give us useful information for understanding the number of private cameras in operation compared to those of public-operated CCTV cameras. The study estimated that across the entire UK private CCTV cameras could outnumber public CCTV cameras by as much as 70 to 1 (Barker, 2022). This finding opens up a concern regarding the lack of clear regulations governing privately operated cameras. Nevertheless, while relevant, this discussion is deliberately deferred to future studies. The emphasis of this research is on the development and implementation of new CCTV systems - namely, Retrospective Facial Recognition (RFR) and Live Facial Recognition (LFR).

Before delving into the process that led to the adoption of the two technologies under consideration and the subsequent updates, it is necessary to briefly define them: RFR is a software system responsible for identifying post-event individuals from images or videos, which is done by sending an image or video to the system. The image is compared with all images of individuals in the reference image gallery, and a set of ranked candidates is returned to an agent for human evaluation (MOPAC, 2021). LFR on the other hand is a real-time deployment of facial recognition technology, which compares a live camera feed (or multiple feeds) of faces against a predetermined watchlist, in order to locate persons of interest by generating an alert when a possible match is found (for more, see Annex 2) (MOPAC, 2021).

Recent developments have led to the implementation of RFR and LFR technologies in the British capital. Each of these involves the Japanese tech firm NEC, from which the London government purchased both software. The newest RFR software was purchased in 2021, based on a four-year contract worth £3 million (MOPAC, 2021), while the LFR technology was purchased earlier by the Mayor of London - in 2016 (Hayward, 2019). However, of the two, the LFR technology is the one that has been the subject of the most experimentation. London police have been testing LFR technology starting from 2016. Since then, nine more trials have been conducted, the last of which took place in February 2019, before becoming operational in early 2020 (Klovig Skelton, 2020).

However, the implementation of these technologies did not take place with the total complicity of the population. It is worth noting the presence of challenges, mainly related to the nature of the technologies in question. Indeed, the potential violation of privacy to which software such as RFR and LFR can lead is questioned. This issue has been picked up by NGOs such as Big Brother Watch, which is still campaigning against the use of these technologies,

calling for clearer regulations defining how they can be used (BBW, 2019). Nevertheless, a recent survey conducted by LPEP found that among the population there is generally widespread appreciation regarding certain purposes for which RFR and LFR are used. Specifically, what emerges is an 83% appreciation when such technologies are used to identify individuals linked to terrorist activities and/or organized crime (London Policing Ethics Panel, 2019). Correspondingly, a decline in acceptance is reported when they are involved in the detection of subjects linked to minor crimes, in which case it falls below 50% (London Policing Ethics Panel, 2019).

Consequently, in view of the campaigns led by these digital rights groups, the legal framework in which the RFR and LFR operate was further rectified, to ensure the most legally compliant use. Thus, European legislation was first framed, then declined at the national level before being further regulated by local realities. Therefore, this legislative framework requires that the use of these surveillance technologies is performed in accordance with the European Convention of Human Rights and the Data Protection Act 2018 (DPA), as well as Article 35 of the General Data Protection Regulation (GDPR). Subsequently, national bodies such as the BSCC and the ICO take over, which have been granted by the Protection of the Freedom Act of 2012 (PoFA) the authority to oversee the implementation of these technologies. Concretely, the aforementioned entities ensure that RFR and LFR are used in accordance with the Police and Criminal Act of 1984, the National Code of Practice of 2018, and the previously mentioned DPA of 2018.

In conclusion, as mentioned above, further opportunities for regulation materialize at the local level. In this case, the key players are the MOPAC, jointly with the LPEP. Indeed, it is these two who establish, within the MPS, an additional oversight body such as the Facial Recognition Technology Board, as well as providing themselves a further degree of oversight and control.

Case Analysis

The following is an analysis of the most striking results from the completed checklist in Annex 4, which has for object the Implementation of RFR and LFR technology in London over the period 2012-2022.
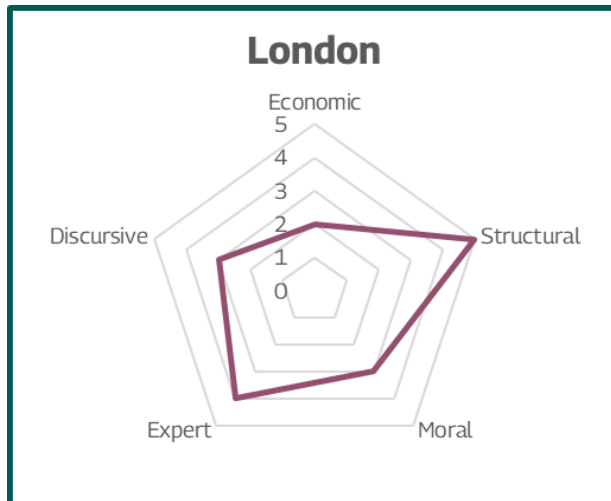
Figure 3: Power typology graph for London

Surprisingly, what emerges from our analysis is London's high economic dependence on the Central Government. Indeed, unlike other areas of local government, whenever policing and crime are concerned, the local authority is severely constrained by the need to receive funds from the central government.

This statement finds its justification in the annual budget allocated to MOPAC/MPS operations, which presents a remarkable 50% of total funds as coming from the central government (MOPAC, 2022). Therefore, despite the considerable freedom granted to the Mayor of London, his government can only do little relative to the injection of additional economic capital where needed. Despite the possibility that is given to the mayor to re-allocate the budget according to his or her strategies, our research has come across documents that demonstrate a general situation of underfunding of the budget allocated to policing and crime strategies in the British Capital, which has the potential to damage the implementation of planned security policies. Though directly denounced by the Mayor and MOPAC, the latter seems to have not yet been subjected to improvement. Therefore, we can indirectly argue that the Mayor of London's executive power, despite receiving no direct constraints from peer bodies, is constrained by the financial availability provided by HM Treasury.

However, when we come to the analysis of the structural power exercised by the government of the London Metropolitan City, the situation is reversed. Our research emphasizes how the Mayor of London and the organs reporting to him have a high degree of decision-making autonomy concerning the administration of public affairs relative to security issues (for more see Annex 4. B). An illustrative example is a unilateral willingness to advance the surveillance

technology at hand that led the mayor to work out an agreement with the technology company NEC. Sadiq Khan adopted this decision freely, in consensus with MOPAC and the MPS.

Continuing, in the analysis of moral power, a balanced situation is highlighted. Indeed, the local population generally seems to like the policies adopted during the period under review by the mayor. Even regarding RFR and LFR technology, it must be acknowledged that despite the criticism received regarding the possible (and so far only alleged) invasion of privacy to which these may lead, there is general public appreciation. Indeed, it is the London Policing Ethics Panel that has collected data showing a 57% appreciation regarding the use of surveillance technologies. Nevertheless, this percentage deserves more proper contextualization. In fact, during that analysis, the LPEP reported a tendency for appreciation to fluctuate, due to the kind of use that is made of RFR and LFR. More clearly, when this surveillance technology is used for serious crimes (terrorist attacks, cybercrime, organized crime, etc.) its approval rating reaches 83%, differently when it comes to minor crimes it drops below 50% (London Policing Ethics Panel, 2019).

Going further, discovering London's high expert power did not surprise us. It is known to most that London has always been a benchmark for other cities in a variety of areas, and that of security did not seem to be any different. Indeed, it stands out in a multiplicity of actors involved in all phases of the local surveillance project, to which they contribute by conferring parameters of efficiency and legality. In the constant technological progress undertaken, the MPS, as an implementation terminal, plays a key role. Hence, we can understand the Mayor's interest in constant training of the police force, which, in addition to being functional in the proper use of the technologies provided, also contributes to building citizens' confidence and trust in the police force.

Finally, in addressing the discursive power of local government, it seems to be precisely the trust and confidence that citizens have in the MPS, which is emphasized by the mayor and his government. Indeed, this emerges as one of the four cornerstones on which the Mayor's police plan lays its foundation, along with reducing and preventing violence, better-supporting victims, and protecting people from being exploited or harmed (London Metropolitan Police, 2022). Nonetheless, although publicly expressed on several formal occasions, no other evidence was found during our research that could attribute a higher score in discursive power to London.

Singapore

City Profile and Context

The city-state of Singapore is a young nation that was born out of a journey from British colonialism to Malaysian independence to an individual nation-statehood from the violence of 1960s race riots. Singapore's legal and political attitudes towards security have been an integral part of state-building due to its concept of 'Total Defence' which comprises six pillars, i.e. Military, Civil, Economic, Social, Digital, and Psychological Defence (Matthews & Yan, 2007).

The 'Founding Father' of Singapore, Lee Kuan Yew, is credited with the success and development of Singapore into a financial powerhouse and one of the most secure states in the world who served as a leader from 1959 and was the first elected Prime Minister until 1990 (Adam & Chen, 2015).

The People's Action Party (PAP) was founded by Lee and has politically and socially been relevant for the formation and implementation of security policies as they have governed the state continuously since 1965 (The Economist, 2015). Due to this longevity, PAP has established its hold on the majority of the Singaporean Parliament, establishing common and continuous policies for security and development.

The city-state is currently made up of 5.64 million out of which 1.57 million are immigrants showcasing its popularity among immigrants due to high standards of living and better employment opportunities since historical times (Department of Statistics, 2022). Thus Singapore embraced multiracialism as its official multicultural policy during its foundation in 1965, leading to four main racial groups i.e. of Chinese, Malays, Indians, and Others, being categorized as CMIO collectively by the government.

Administration and Security Provision

In terms of the legal and political-administrative system, the de facto one-party state of Singapore is not without critics. Singapore, which is one the world's wealthiest nations has achieved an astounding level of development and economic growth but has also been considered often by Western states as lacking the characteristics of a full democracy. However, the focus on an efficient and practical government, investor-friendly trade policies, and the presence of social order for its multiracial society has made Singapore one of the strongest nations in the world economically, and also a target for terror attacks due to its surrounding geographic location characterized by corruption, political instability, and increasing challenges with radicalization from its neighboring countries (Chun Han, 2015).

Thus, the government's approach towards managing its multicultural composition has been important due to the race riots experienced in the 1950s and 1960. The riots during that time made a lasting impression on Singapore's government and the importance of racial and religious harmony within the region became necessary from a security context. Hence, the government focused on the effects of fear and community division which could create a threat to peace and harmony, especially post 9/11, when the area of the Malay Archipelago, became the 'second front' in the war against terrorism (Vasu, 2008).

Major Actors	Responsibilities
Prime Minister's Office	*Approves the government's agenda, leads cabinet meetings, oversees general policy direction and execution.*
Ministry of Home Affairs (MHA)	*A.K.A the Home Team, responsible for overseeing national security, public security, civil defense, border control and immigration*
Singapore Police Force (SPF)	*Principal national law enforcement agency, responsible for crime prevention and safety and security nationwide.*

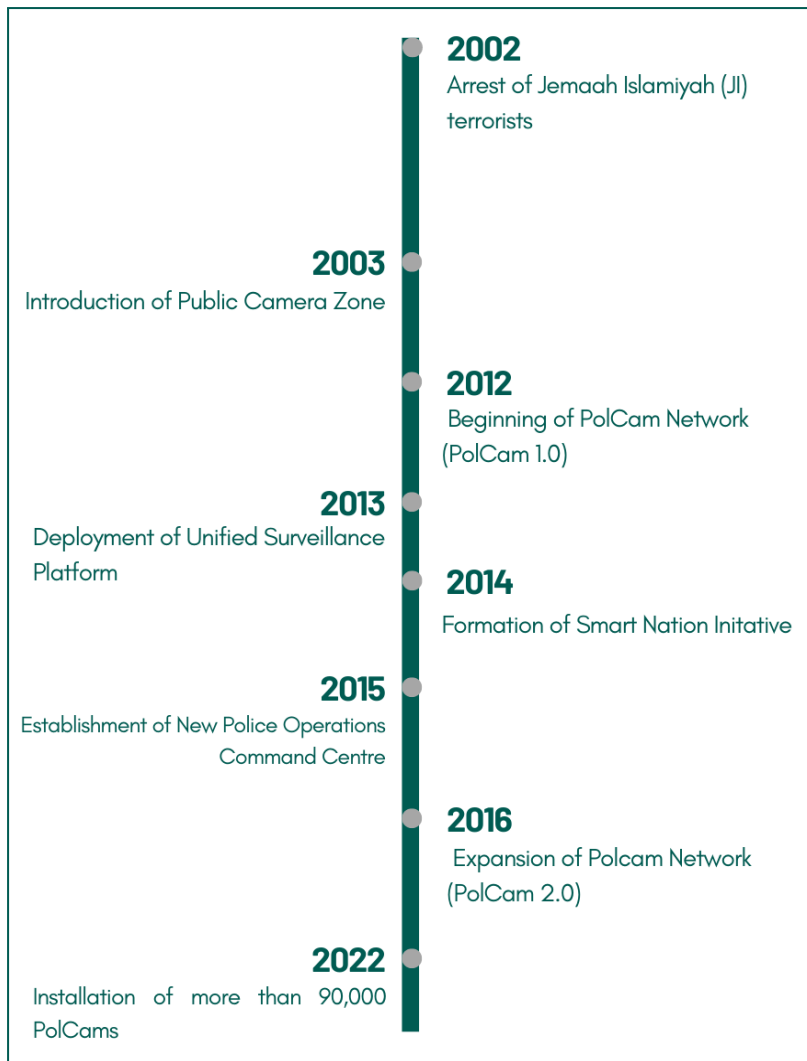*No distinction between central and city government*

Table 4: Major Actors in Singapore

Under the supervision of the Ministry of Home Affairs (MHA), the Singapore Police Force (SPF) is the principal law enforcement agency for the city-state which found itself facing new issues when arrests were made of terrorists belonging to Jemaah Islamiah (JI) in 2002 who were planning to attack Singapore. This led to SPF becoming an early adopter of using CCTVs to enhance policing and counter threats.

Public Surveillance Technology

In 2003, the SPF introduced the Public Camera Zone (PCZ) project to provide surveillance of strategic commercial precincts due to the 2001's Jemmah Islamiyah's bomb plot (Chew, 2009; L. U. Liang, 2014). This was followed by The Hawk Eye Remote Observatory System (HEROS) introduced in 2013 which comprises high-rise CCTV cameras that are capable of capturing faces and vehicle number plates (Sapuan, 2013) and complements the existing street-level PCZ program (L. Y. Liang, 2013). All of the CCTV monitoring systems integrate data from external CCTV cameras in the public transport network and the commercial resorts to support frontline policing which is being added to the Unified Surveillance Platform (USP) to support real-time incident management (Koon, 2014).

The surveillance of the state is one of the methods to secure the city, which the Singapore Police Force (SPF) actions are reflected through the proliferation of CCTV cameras and the use of Big Data (Au- Yong, 2014; Heng, 2016).

2002
Arrest of Jemaah Islamiyah (JI) terrorists

2003
Introduction of Public Camera Zone

2012
Beginning of PolCam Network (PolCam 1.0)

2013
Deployment of Unified Surveillance Platform

2014
Formation of Smart Nation Initative

2015
Establishment of New Police Operations Command Centre

2016
Expansion of Polcam Network (PolCam 2.0)

2022
Installation of more than 90,000 PolCams

Figure 4: Timeline of public surveillance technology in Singapore

Thus, the most extensive ongoing project for the installation and use of CCTV is the Police Cameras (PolCam) initiative which has seen the installation of over 90,000 cameras at some 10,000 Public Housing Blocks (PBH) which are managed by the government, followed by further installation of more than 200,000 cameras by 2030 (Chua, 2021). The PolCam Network which began in 2012 has been credited with solving more than 5,000 cases ranging from criminal investigations to finding missing people (Dass, 2022).

The government's initiative to become a 'Smart Nation' since 2014 has them deploying cameras and sensors which gather data ranging from pedestrian movement to air quality to the well-being of elderly residents in their homes (Poon, 2017; Watts & Purnell, n.d.). Around 80% of Singaporeans reside in PHB and at the end of 2016, all public housing and multi-story car parks that accompany them have been fitted with CCTV cameras.
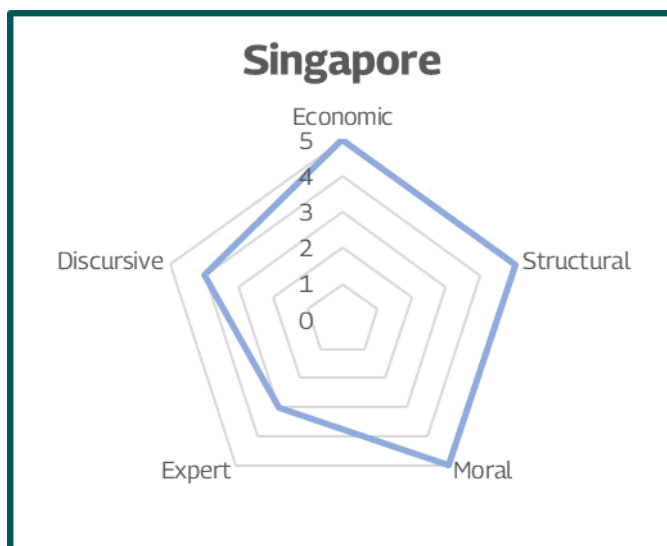
CCTVs do not only act as a tool to watch and control the population for the government but also view the deployment of surveillance as the solution to preventing unwanted incidents from happening again. Be it to discourage future riots within the multiracial society (L. Y. Liang, 2013) or to stop wild boar attacks (Lee, 2017), every problematic incident that occurs in the island state is usually followed by the deployment of surveillance cameras as a security intervention.

Despite such a drastic and large presence of surveillance, the population has a positive perception towards the SPF initiatives to the extent that there is a growth in lateral surveillance in Singapore in which citizens are beginning to adopt surveillance techniques into their normal lives. Besides the popularity within the population of the Vehicles on Watch (VOW) project of the SPF (Singapore Police Force, 2015), another example of lateral surveillance occurs on the metro trains in which citizens use their mobile phones to capture photos or video which would then be uploaded onto the Internet, most commonly on the citizen journalism such as STOMP when they encounter mistreatment or improper behavior (Skoric et al., 2010).

Case Analysis

The following is an analysis of the most striking results from the completed checklist in Annex 5, which has for object the Police Camera (PolCam) programme led by the Singapore Police Force over the period 2012-2022. The analysis indicates how Singapore's legal and political commitment towards security for maintaining racial and religious harmony has been integral to state-building, which is showcased by achieving full grades in economic, structural, and moral power.

Figure 5: Power typology graph for Singapore

Singapore's financial capacity has allowed the Ministry of Home Affairs to implement its surveillance projects without any financial worries to the extent that the SPF has separated the operational, repair, and new programs for PolCam separately in its financial budget as it receives a large share from the MHA budget. Interestingly, while deploying new systems, one would expect cost-cutting and tussling between the Ministry of Finance and the SPF for better technology. However, the Ministry of Finance not only acknowledges the increases in expense for the better camera but defends the SPF by stating that the security of the nation is more important.

The high score in structural power of Singapore showcases that no issues are being faced by the SPF and MHA in enforcing its surveillance project, but has to keep in mind that legislation and governance structure, which is highly controlled in nature. Being a city-state and having a unicameral system, keeping security as its utmost priority due to its past incidents and present threats, the SPF hardly faces any resistance in terms of either budgetary issues or the execution of its programs as its principal and national law enforcement agency.

The moral power score does not only show the commitment of the government of Singapore to protect its citizens but also the citizen's dedication to protecting the nation which has been ingrained into them through concepts such as: 'Total Defence'; maintaining social and religious harmony; most of the men being part of the National Service which further makes them realize the importance of security. Also, the commendable work and high trust for the Singapore Police Force don't only reflect through the absence of protests or incidents showcasing misuse of power but also through citizens participating in the surveillance programs by buying private cameras.

Despite being one of the tech hubs in the region, and having the Home Team Science and Technology Agency (HTX) which is responsible for advancement in MHA's security operations, Singapore scored least in expert power. The main reason behind these is the sudden deployment of cameras to tackle issues ranging from wild boar attacks to a riot in the area, where a six-fold increase in new camera installations is noticed. Furthermore, the lack of evidence from experts for the PolCam Project could either indicate that they are solely dependent on HTX for the assessment, or they hire external experts whose reviews are kept classified. Yet, taking advantage of being a tech hub along with the regional headquarters of major tech companies, the HTX is partnering with these companies for further advancements of its system.

Finally, in terms of discursive power, despite having a strong bond with its community, the SPF and MHA actively carried out campaigns to make the surveillance project look like the 'safeguarder' of a neighborhood. The PolCam is advertised as a deterrent and a tool for preventing crime, rather than a tool of surveillance. By using statistics and incident reports in its social media posts, the SPF has shown the PolCam as a value-adding and necessary tool not only for them but also for the citizens, which has been agreed upon, especially by the citizens living in PBHs (i.e. citizen buy-in).

Beirut

City Profile and Context

Beirut is one of the world's oldest inhabited cities, with a history stretching back thousands of years through its role as a major city-state of the Phoenician civilization. Today it serves as the capital of the multiconfessional Lebanese Republic, established by colonial France in the 1920s and independent since the mid-twentieth century (UN-Habitat Lebanon, 2021). The largest municipality in Lebanon, Beirut is home to half a million residents. Bigger still, the metropolitan area of "Greater Beirut" accounts for over a quarter of the country's six million inhabitants (UN-Habitat Lebanon, 2021), making it the third largest city in the Levant region and a major cultural and economic hub for the Arab world and for a Lebanese diaspora that is as large as the country's resident population (Saliba, 2012; UN-Habitat Lebanon, 2021). The capital hosts an array of government entities, embassies, international organizations, and influential cultural and educational institutions.

Beirut's population is virtually a microcosm of Lebanon's demographic diversity in a country governed on the basis of confessional identity. Lebanese politics operate on a *sui generis* system in which elected offices and appointed positions of power are apportioned among members of 18 recognized ethnoreligious groups (Belhadj et al., 2015; UN-Habitat Lebanon, 2021; van Veen, 2015). Leaders are democratically elected but voting rights are restricted to one's declared confessional belonging and place of residence––or rather that of one's ancestors, as no official census has been conducted since the French Mandate in 1932, given high stakes for the sectarian power balance (Barshad, 2019; UN-Habitat Lebanon, 2021). Likewise, access to citizenship on the basis of naturalization has flammable political ramifications and is heavily circumscribed in practice (UN-Habitat Lebanon, 2021).

Sectarian politics thus make it impossible to accurately estimate the demographic breakdown of Beirut's population. Lebanese citizens in Beirut are, certainly erroneously, said to be evenly split between Muslims (Sunni, Shia, and a small number of Druze) and Christians (Maronites, Greek Orthodox, Armenians, and several other Catholic, Orthodox, and Protestant minorities) (Salibi, 2022). Greater Beirut is also home to some 300,000 Palestinian and Syrian refugees, accounting for a quarter of the city's population, as well as the majority of Lebanon's 400,000 migrant workers (UN-Habitat Lebanon, 2021). The city is densely populated, with just under 20,000 inhabitants/km2 (UN-Habitat Lebanon, 2021).[5]

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[5] For reference, Dhaka, Bangladesh is one of the world's most densely populated cities at 44,500 inhabitants/km2, while London has less than 6,000/km2. Beirut's population density is roughly on par with Medellin. See: UN-Habitat Lebanon, 2021, p.32.

Despite the city's diversity, most Beirutis reside in overwhelmingly homogeneous neighborhoods, down to the level of individual streets or blocks in the case of 'mixed' quarters, largely the legacy of the civil war that roiled the country from 1975 to 1990 (Belhadj et al., 2015; Fawaz et al., 2012). During that time, the city was divided along a so-called 'Green Line' that demarcated areas controlled by Christian and Muslim militias. To this day, the eastern part of the city remains overwhelmingly Christian while Muslims make up the majority in the western part of Beirut, including the Shia-majority southern suburbs, with the exception of the historically mixed cultural and economic hub of Ras Beirut (Belhadj et al., 2015; Fawaz et al., 2012; UN-Habitat Lebanon, 2021). Refugees and migrant workers live throughout Greater Beirut, in even greater concentrations in the poorer neighborhoods along the former Green Line and on the outskirts of Beirut municipality (UN-Habitat Lebanon, 2021).

Lebanon's sectarianism has long posed the greatest challenge to Beirut's security (Belhadj et al., 2015). Despite the end of the civil war, many wartime leaders and their families continue to dominate the political landscape, after militias disarmed and rebranded as political parties (van Veen, 2015).[6] Political confrontation feeds insecurity, but governing elites also share a collective interest in maintaining the status quo, including a weak central state against which they consolidate loyal constituencies through cronyism, corruption, and clientelist provision of public goods and services (van Veen, 2015). Eviscerated, the weak state has been on display since the early 2000s throughout street skirmishes, political assassinations, indiscriminate bombings, and full-scale conflict fueled by sectarianism and its regional and geopolitical imbrications (van Veen, 2015).[7]

The interplay of sectarianism and migration, particularly the political mismanagement of migration, has been a persistent theme in Beirut's insecurity (Sharro, 2013). In the last decade, the presence of Syrian refugees––who at one point accounted for as much as one-quarter of the population and were driven to cities on account of government 'no-camp' policies––has been repeatedly cited as a central security concern by political leaders and citizens alike (Chuter, 2015; UN-Habitat Lebanon, 2021). This threat perception was aggravated by the legacies of Lebanon's long Syrian occupation (1976-2005) and sectarian leaders' imbrication in the

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[6] Since 2005, with the assassination of Prime Minister Rafiq Hariri, who brokered the Taif Agreement that brought an end to the civil war, and the subsequent withdrawal of the Syrian occupation, Lebanon's sectarian parties have durably split along a pro- and anti-Syrian line. The former camp includes the major Shia parties Hezbollah and Amal and key Christian factions, while most Sunni parties and the remaining Christian parties coalesce in the latter camp. For more, see: van Veen, 2015; Wannis, 2014.

[7] In Beirut alone, one might cite: the car-bomb assassinations of PM Rafiq Hariri in 2005, of Head of ISF Intelligence Wissam al-Hassan in 2012, and of former finance minister Mohammad Chatah in 2013; ISIS-claimed bombings in 2015; Israeli shelling of the city during its war with Hezbollah in 2006; and the 2008 conflict that opposed Sunni pro-government factions against Shia factions, during which Hezbollah seized control of West Beirut.

Syrian conflict, as well as difficult memories of Palestinian refugee camps and concerns over the sectarian status quo (Chuter, 2015).

Yet more recently, many citizens have identified the country's political elite as the main source of insecurity. In October 2019, Beirut was the epicenter of nationwide peaceful protests against the ruling elite that brought one-fifth of the Lebanese population to the streets and met with a severe crackdown by security forces (Amnesty International, 2020; UN-Habitat Lebanon, 2021). The protests triggered the government's resignation and political turmoil but the sectarian status quo has largely prevailed, even after the August 2020 explosion in Beirut's port that killed more than 200, injured over 6,000, and left another 300,000 homeless (UN-Habitat Lebanon, 2021). The negligence of national political leaders is the suspected source of the explosions; derailed official investigations have only cast further light on political corruption and unaccountability at the state level (Dadouch & Durgham, 2021).

Administration and Security Provision

There is no single supra-communal or federative entity to govern Greater Beirut, a continuously built-up urban area that spreads across the municipality of Beirut (MoB), located in the Beirut Governorate, and 30 smaller municipalities in several districts of the surrounding Mount Lebanon Governorate (UN-Habitat Lebanon, 2021). While governorates are merely administrative divisions of the unitary central state, municipalities are legally distinct, and endowed with juridical personality and administrative and financial autonomy (Mourad & al-Siddiq, 2018). Directly elected by voters every six years and led by a mayor, municipal councils have many powers and prerogatives established by law, including the provision of security and the administration of an armed municipal police force (Loi Sur Les Municipalités, 1977; Mourad & al-Siddiq, 2018).

Despite this autonomy, the law still sees municipal power heavily circumscribed by the central government, especially through the tutelage of the Ministry of Interior *and Municipalities* (MoIM). As the representative of the MoIM, the Governor has not only a central consultative role pertaining to the resources the government can make available to the municipality, but must in fact review all decisions and legislation emanating from the municipal council, and a large array even requires their approval (Loi Sur Les Municipalités, 1977). Even the territorial integrity and geographical reach of the municipality are subject to central decision-making (Mourad & al-Siddiq, 2018). In fact, a recent parliamentary proposal to divide Beirut into two separate municipalities was decried by a number of local residents as a means to further disempower local government and entrench sectarian governance (Hijazi, 2022; SBI, 2022a).

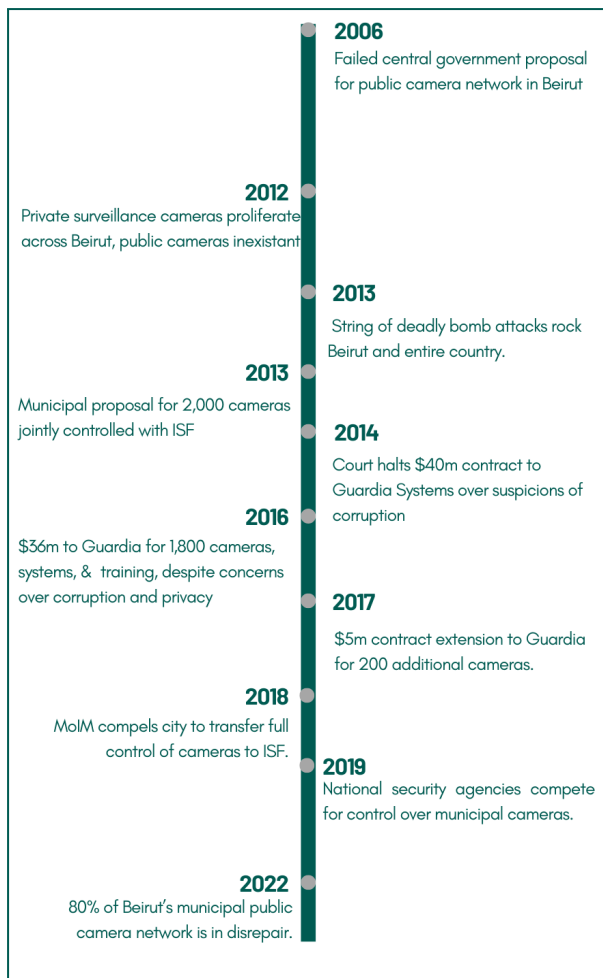| Major Actors	Responsibilities
Internal Security Forces (ISF)	*Militarized civilian police and intelligence agency reporting to the MoIM, in charge of law enforcement, traffic, public safety and order. Historically under the sectarian political influence of Sunni elites.*
Lebanese Armed Forces (LAF)	*Military force reporting to the Ministry of Defense and President, with purview over domestic security and civil unrest and a sizable intelligence wing. Historically under the political influence of Christian elites, but viewed as a successful case of multiconfessional integration.*
General Directorate of General Security (GS)	*Intelligence and border security agency officially reporting to the MoIM but under the political influence of Shia elites and the armed Hezbollah party.*
Municipality of Beirut (MoB)	*Elected council responsible for deliberating over local regulations and ensuring their enforcement through a municipal police force. Mayor does not possess executive power, requires GoB approval to implement council decisions.*
Governor of Beirut (GoB)	*Local representative of the central state, reporting to the Ministry of the Interior and Municipalities (MoIM). Possesses sole executive authority over the MoB.*
Neighborhood Committees & Private Security Contractors	*Private actors involved in informal surveillance and security enforcement, often in collaboration with sectarian national political parties.*
Political Parties	*Sectarian political organizations, many of which trace their roots to civil war-era militias and maintain informal but influential security apparatuses.*

Table 5: Major actors in Beirut

The MoB is administratively unique from the rest of its metropolitan area in several key respects. First, the governorate and municipality of Beirut share contiguous borders, there being no other towns or administrative districts within the division (Mourad & al-Siddiq, 2018; UN-Habitat Lebanon, 2021). Second, the capital's municipal council is purely deliberative and the Mayor does not have the executive power to implement its decisions, that authority instead resides with the Governor of Beirut (Mourad & al-Siddiq, 2018).

In both cases, the result is direct involvement by the Minister of the Interior in municipal decisions (Mourad & al-Siddiq, 2018). On the other hand, the MoB benefits from a more significant population, economy, and real estate park than neighboring municipalities, which it can tax to help autonomously fund a yearly budget that totaled US$240 million in 2017 (Alieh, 2017).

While the MoB has the mandate and resources to participate in security provision in the city, its role is only as important as the central government likes it to be. Municipal police forces in Lebanon are generally weak secondary actors whose role is limited to enforcement of municipal regulations, secondment to the national police, and bureaucratic tasks (Saliba, 2012). Despite greater resources and investments, Beirut's municipal police force is far from international standards (Saliba, 2012), although its manpower enables it to be an effective partner of state security agencies (L'Orient-Le Jour, 2013b, 2020b).

The three most prominent state security actors, each active in security provision and surveillance in Beirut, are the Internal Security Forces (ISF), the Lebanese Armed Forces (LAF), and the General Directorate of General Security (GS). The ISF, the national police force that

reports to the MoIM, is responsible for public order, crime, protection of property and persons, traffic management, and enforcement of national laws and regulations (Arakji, 2022; Saliba, 2012; van Veen, 2015). Albeit in a superior league to municipal counterparts, the ISF is equally perceived to be an ineffective police force lacking in professionalism and does not command great respect (Belhadj et al., 2015; Geha, 2015). The LAF, the national military force which reports to the Ministry of Defense and the President, is cited as a successful case of post-war multiconfessional reconstruction and is the most esteemed among generally distrusted state institutions (Belhadj et al., 2015; Geha, 2015; Knudsen & Gade, 2017; Saliba, 2012). In addition to its external security mandate, the LAF is deployed across the country to manage internal unrest and ensure domestic order (Belhadj et al., 2015; Saliba, 2012). The GS meanwhile is the primary intelligence agency, reporting to the MoIM, and also has responsibilities over passports and visas, monitoring foreign nationals, and media censorship (Arakji, 2022; Nashabe, 2009; Saliba, 2012). Overlap and duplication across these institutions is significant, as evidenced by the influential intelligence arms of the LAF and ISF, or the militarized nature of the civilian ISF and GS (Nashabe, 2009; Saliba, 2012).

That Lebanon's security sector is defined by a multiplicity of actors with legally ambiguous and overlapping mandates is the result of the prolonged Syrian occupation, as well as sectarian power arrangements that feed the sector's inefficiency, lack of specialization, competition, and unaccountability (Geha, 2015; Nashabe, 2009; Saliba, 2012; van Veen, 2015). Beyond confessional parity among rank-and-file, divisional leaderships are often distributed on a sectarian basis and each of the largest confessional communities has unwritten assurances to leadership and political influence over a given agency (Nashabe, 2009; Saliba, 2012; van Veen, 2015). But sectarian governance is also reflected in Beirut's plural security landscape, in which public actors operate alongside non-state actors, and the public and private identities of security agents are often blurred (Belhadj et al., 2015; Fawaz et al., 2012). Despite having formally disarmed, many political parties and leaders maintain security apparatuses and collaborate with neighborhood committees and private security companies to surveil and protect their de-facto territories (Belhadj et al., 2015; Fawaz et al., 2012; Geha, 2015). State and municipal actors, who maintain the official mandate for security provision, operate both in parallel and in conjunction with these informal private actors through unwritten and fluctuating arrangements. Often, public security actors will intervene on a scene only after prior intervention, possibly even a green light, from sectarian political operatives (Belhadj et al., 2015; Price & Warren, 2015), and ISF and municipal officers are frequently stationed based on their confessional identity or even prior vetting by political parties (Belhadj et al., 2015).

Public Surveillance Technology

2006
Failed central government proposal for public camera network in Beirut

2012
Private surveillance cameras proliferate across Beirut, public cameras inexistant

2013
String of deadly bomb attacks rock Beirut and entire country.

2013
Municipal proposal for 2,000 cameras jointly controlled with ISF

2014
Court halts $40m contract to Guardia Systems over suspicions of corruption

2016
$36m to Guardia for 1,800 cameras, systems, & training, despite concerns over corruption and privacy

2017
$5m contract extension to Guardia for 200 additional cameras.

2018
MoIM compels city to transfer full control of cameras to ISF.

2019
National security agencies compete for control over municipal cameras.

2022
80% of Beirut's municipal public camera network is in disrepair.

Surveillance cameras were already a prominent part of the security infrastructure in Beirut at the start of the decade under consideration. By 2012, Beirut was a highly securitized city, albeit very unevenly, with security infrastructure and deployments visibly reshaping entire areas of economic and political significance, namely those housing government institutions, embassies, banks and major private sector offices, high-end hotels, and shops, but also party headquarters and private residences of political figures (Fawaz et al., 2012). Infrastructure and deployments––barricades, checkpoints, and surveillance cameras––involved overlapping public and private actors, including a constellation of private security contractors (Fawaz et al., 2012).

Figure 6: Timeline of public surveillance technology in Beirut

Surveillance infrastructure was almost exclusively privately owned and operated, although state security actors such as the ISF could gain access to camera footage for investigative purposes (Merhi, 2012). Publicly-owned cameras remained almost nonexistent, after the council of ministers in 2007 scrapped a much-touted antiterrorism plan to install a network of cameras across the city (Le Figaro, 2006; L'Orient-Le Jour, 2013b; Merhi, 2012). What cameras did previously exist, installed by the MoIM at the city limits, were of poor quality and aging, and their infrequent use was limited to traffic enforcement (Merhi, 2012).

Following a string of deadly bombings that shook the country in 2013, including several in and around the capital, the MoB decided to invest in a publicly operated network of surveillance cameras (El Nashra, 2014). The decision was preceded by public expressions of anger at the state's inability to prevent the attacks (L'Orient-Le Jour, 2013a), and calls from the city's members of parliament for greater security measures, including installing security cameras (L'Orient-Le Jour, 2013b). The plan was crafted in consultation with the Governor of Beirut

(L'Orient-Le Jour, 2013c). The city's Mayor called the proposal "the most important project in Beirut's history" (el-Khoury, 2014) and part of extraordinary measures intended to "boost citizen's confidence in the security situation" (Naharnet Newsdesk, 2013). In 2014, a limited-selection tender was issued to five companies for the procurement of some 1,500-2,000 state-of-the-art surveillance cameras and control-room infrastructure (el-Khoury, 2014). Dubbed 'Beirut Surveillance Project', the US$40 million contract was awarded to a Middle East-based private security firm called Guardia Systems (Inavate, 2016).

Questions surrounding the procurement process were quickly raised in the press, including concerns over the pre-selection and questionable qualifications of the limited slate of bidders, the vote on the final award that was hurried through the municipal council outside of ordinary procedures, and the suspiciously high price-tag for the camera network (Baalbaki, 2014; el-Khoury, 2014). The state Court of Account subsequently suspended the contract, which it deemed illegal for non-conformity with procurement regulations; the final decision on the matter was however referred to the sympathetic MoIM (The Daily Star, 2014). Ultimately, the contract with Guardia Systems went through after the municipality negotiated a downward revision to US $36 million (Baaklini, 2017). It did so despite civil society alarm bells over privacy concerns (SMEX, 2016), and continued suspicions and allegations over corruption in the procurement process, relayed even by high-profile national politicians (L'Orient-Le Jour, 2016).

Over a year leading to the network's operationalization in 2017, Guardia Systems installed 1,800 cameras for monitoring vehicles and individuals at 350 points of surveillance across the city. Components for the cameras were sourced from over 20 different brands and include both fixed and 360-degree cameras with 32x zooming capabilities. Cameras are able to collate data on traveling speed, make, model, and direction of vehicles, and to track any unplated vehicles (Guardia Systems, 2022; Inavate, 2016). Feedback from the camera network was designed to be transmitted to two control rooms: a 'central control room' operated by the MoB, and a second 'additional crisis control room' for the ISF. Each room is staffed by 50 operators initially trained by Guardia Systems personnel, and powered by two data centers with a total of five petabytes of storage capacity and a system that allows enhanced inspection of footage through in-room projection and 'smart' touch tables (Guardia Systems, 2022; Inavate, 2016).

In 2017, a plan to introduce 200 new cameras through a noncompetitive award of over $5 million to Guardia Systems revived suspicions of corruption and stirred heated debate within the municipal council (Baaklini, 2017). The plan was ultimately approved, tipping Guardia System's total contract amount over the initial $40 million (SBI, 2022b). Around the same time, the municipality was compelled to hand control of both operation rooms over to the ISF

following a decision of the MoIM, though it maintained ownership over the expensive infrastructure. It wasn't until 2019 that the municipal council issued a decision to formalize this arrangement and relinquish operational control over its surveillance infrastructure, with questions surfacing as to the responsibility the MoIM should take for the cost of the infrastructure (LBCI, 2019). That same year, the intelligence wing of the LAF openly vied for control of one of the two rooms, making its case to the prime minister and the press (LBCI, 2019). In 2022, 80 percent of the cameras were reportedly out of order (SBI, 2022b) and the ISF requested that the municipality examine necessary repairs (el-Sayyed, 2022). Meanwhile, the municipality continues to be mired in allegations of corruption (L'Orient-Le Jour, 2020a) and a conflict with the MoIM over the subjugation of the council's deliberative powers to the MoIM's executive authority (SBI, 2022a).

Case Analysis

The following is an analysis of the most striking results from the completed checklist in Annex 6, which has for object the 'Beirut Surveillance Project' initiated in 2013.
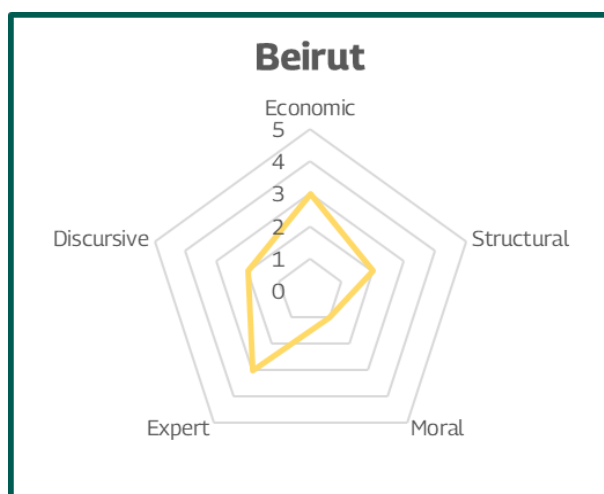
Figure 7: Power typology graph for Beirut

The low marks for structural power reflect the municipal council's subjugation to the executive authority of the GoB and MoIM. What this low score does not translate is that the surveillance project sailed through thanks to significant buy-in from the central government, and possibly to a culture of corruption and cronyism.

The proposal matched calls by elected MPs and built on the momentum of a failed government plan nearly a decade earlier. Essentially, the score does not evidence the extent to which the council was able to rely on the structural power of the central state, which may have been the most defining factor in the successful deployment of this project.

Insofar as the municipality's intentions are aligned with the central government interests, the municipal council has a fair level of financial latitude through its budget and self-funding

mechanisms, as reflected by its higher score in economic power. In fact, this score could potentially have been higher if municipal financial data were more publicly available.[8]

Despite the moral impetus for the project in the form of public consternation over the string of deadly attacks, the municipality was not able to rely on moral power in light of the suspicions of corruption over the speedy and pricey procurement. The low score on moral power is actually the inverse corollary to the power that stems from a culture of corruption and political influence.

On the other hand, the contract with Guardia Systems conferred the MoB a certain amount of expertise by association. With that said, the equal scores for expert power and economic power seem to minimize a relatively greater importance of economic power to this project, perhaps pointing to a limitation of our checklist.

In terms of discursive power, the MoB did publicly discuss its project and argue its merits, but it did not go any further to try to win over the public through marketing. Perhaps it did not feel it needed to, given the assent of the central government authorities.

The checklist scores for Beirut evidence some limitations to our checklist and graph analysis tool. In the first place, our checklist does not account for the power that stems from corruption, cronyism, lack of checks to power, and weak rule of law. This also includes public apathy or resignation that might grow from low expectations of unaccountable political leaders. Likewise, it cannot capture groupthink or interest alignment among governing elites at various levels of government. It is possible that these factors could have been captured by our inclusion of a network power category in our checklist.

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[8] The municipality's website remained inaccessible throughout the research period due to an expired security certificate: https://beirut.gov.lb/

This section here will build on the previous case-specific analytical sections for each case city. By drawing comparative conclusions from our case studies, we will highlight differences and similarities between the cities and the types of power they were able to rely on in their deployment of the respective surveillance technology studied in each case.
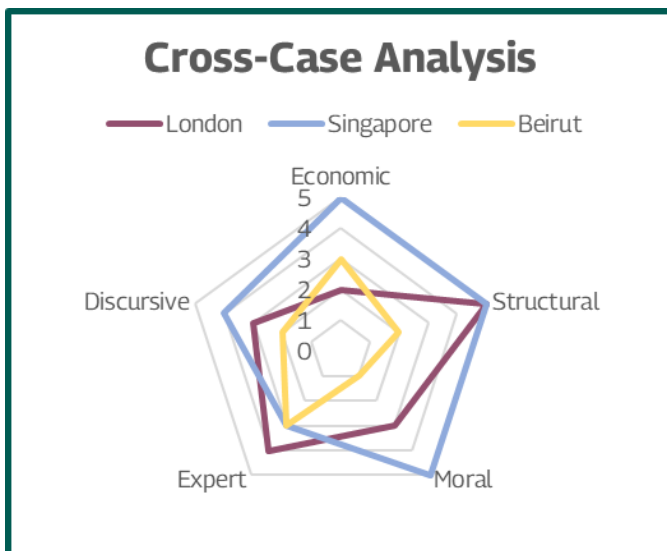

Figure 8: Cross-case analysis graph for power typology

Figure 8 shows the three radar diagrams of the cases overlaid and gives a graphical representation of the overview of our findings. Thus, we can see the relative importance of each type of power in each case. It is important to highlight that this is only the relative importance of a particular category of power in a particular case.

As will become clear from the next few paragraphs, comparing the importance of categories across cases is difficult, as the results of our analysis are highly contextualized. The same scores for two different cases might not mean the same thing. However, overall we can still conclude that Singapore could rely heavily on many different types of power in its deployment of surveillance technology, while London paints a mixed picture and Beirut's municipal government was the least powerful in influencing the deployment of surveillance within its own territory.

Singapore has high scores on all categories. Given that many of our indicators regard the relationship between the national and local governments, we expected these results, as in Singapore the municipal government and the national government are the same. One

exception to this is Singapore's high economic power, which does not stem from its administrative structure but from its wealth in general. It is for example the only one of the three cases where no compromises on features were made to accommodate budgetary concerns (i.e. indicator A.5).

We chose Singapore as a case precisely because of its exceptional administrative structure as a city-state. This will serve to problematize our own findings and some prevalent assumptions in the literature about city governance, as can be seen in the paragraphs below. In general, with a few exceptions, our research shows that city-states enjoy more leeway than cities integrated into larger state structures when it comes to the types of power they can rely on to influence the use and deployment of surveillance technology in their territory. This finding is not surprising, as the theories of MLG and city autonomy would predict a similar outcome.

Compared to the other cases, Beirut's municipal government seems to have the least power it can rely on when it comes to urban surveillance. This conclusion must however be relativized, as our sample size is too small and the method too unproven to draw this conclusion with complete certainty. The Beirut municipal government's low scores translate to its reliance on the central government in many aspects of urban security governance. Of our three cases, it is for example the only municipal government to be subjected to veto power from the national government in decisions concerning security. The surveillance project was only successfully implemented because the two governments (city and state) agreed on most aspects of the project. It would be interesting to see in future research whether this is due to groupthink among the Lebanese elites or if there are other reasons for this alignment of interests.

Figure 9: Cross-case analysis between Singapore and Beirut
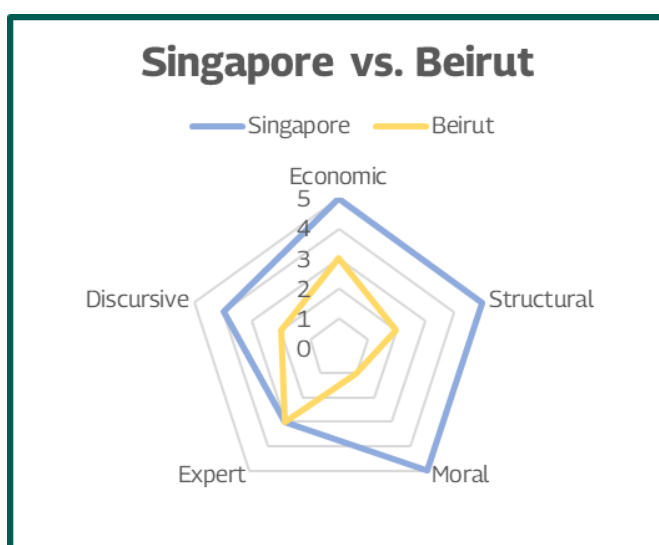
Our analysis has only looked at the isolated power of the municipal government in Beirut. If an argument for elite groupthink can be made, and the city and state governments are generally expected to closely collaborate on issues of urban security governance, it might make more sense to look at the combined power of both governments.

Groupthink among elites at different levels of government might therefore have similar effects as the existence of a single, unitary elite, like in a city-state (e.g. Singapore). In this case, the graph for Beirut would probably look similar to the one in Singapore. While this is an interesting thought, cooperation between national and municipal governments doesn't seem to be perfect, as can be seen with the current struggle over control of the CCTV camera system in Beirut.

Figure 10: Cross-case analysis between London and Beirut
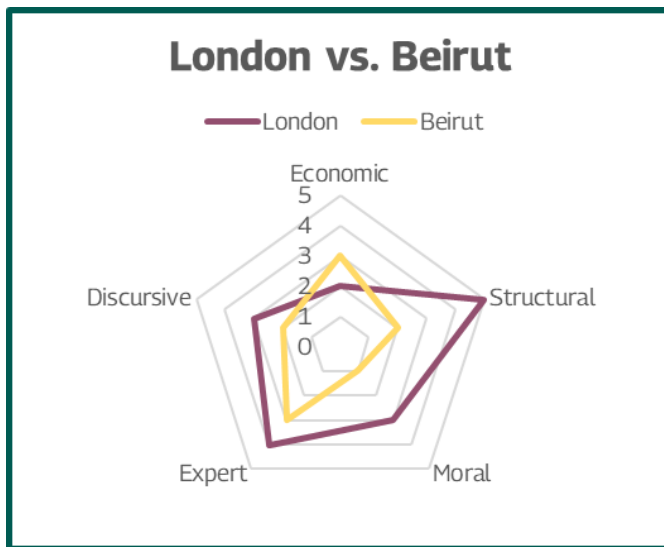
For the case of London, a comparison to Beirut is most interesting (see Figure 10). London is placed in a democratic and highly decentralized system of national governance. This can give the municipal government significant leeway, especially when it comes to structural power. Beirut on the other hand is placed in a more centralized system.

This significantly limits its leeway, as is visible in the structural power category, where both indicators B1[9] and B2[10] could not be checked for Beirut. These two indicators are 'killer arguments' for structural power: with little to no executive authority and being dependent on an external governmental institution with veto power, the Beirut municipal government's formal structural power is negligible.

Another interesting finding is that Beirut has more economic power in its domestic context than London does. This is most visible with indicator A.2[11]: while Beirut was able to finance its surveillance project from its own budget, London's mayor depended largely on funds from the national government. However, it would be hard to make the argument that Beirut generally has more economic power than London, given London's comparative wealth. Thus, our results must be understood as locally contextualized.

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[9] Indicator B.1 from category B (Structural Power): "The decisions of the city government are not subject to veto power of external governmental authorities."

[10] Indicator B.2 from category B (Structural Power): "The city government holds the executive authority to implement its decisions."

[11] Indicator A.2 from category A (Economic Power): "The city's budget is sufficient to support the entire cost of the surveillance project."

Both London and Beirut have comparatively low scores for moral power, as there was significant pushback from civil society organizations concerned over privacy issues. This indicates, in accordance with Moon's (2019) argument, that moral power is mostly wielded by civil society actors and less by state actors. While municipal governments can rely on other forms of power, moral arguments are usually mobilized *against* the government's surveillance project and not in its favor. Here again, Singapore is the exception and limits the general applicability of this finding, as its population morally subscribes to the surveillance program. It is beyond the scope of this work to explain this Singaporean citizen's support of the surveillance project, but future research on citizen buy-in for security programs should study Singapore as an interesting case. A better understanding of citizen buy-in and the reasons for differences in moral power across cities would be useful in refining our typology of city powers.

Our findings on indicator E.1[12] seem to be connected to this finding about civil society pushback and the use of moral power by non-state actors *against* state programs. We argue that the more civil society pushback there is (i.e. the more moral power is mobilized against a municipal government's surveillance plan), the more public discussions of the project will arise. The municipal government will therefore be forced into participating in these discussions, which requires it to use discursive power. Further research should investigate and prove this proposed causal link.

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[12] Indicator E.1 from category E (Discursive Power): "The city government engaged in public discussion of its surveillance project."

CONCLUSION

In sum, our research shows that different cities were able to rely on different types of power to varying degrees to influence the deployment of surveillance technology within their territory. While Singapore could fully rely on many different types of power, London presents itself as an intermediate case and the Beirut municipal government had the least power in influencing the deployment of its urban surveillance dispositive. However, our research also shows that the results are highly contextualized. Thus, in our analysis, the same score in a particular category of power for different cities might not mean the same thing.

The conclusions from our analysis are however limited. Our method of analysis doesn't account for things like corruption or the lack of checks to power. Given our indicators' focus on formal power, our method is better applicable to the case of London, where power and authority is legalistic, while it is less applicable to the case of Beirut, where de facto power (e.g. corruption) plays a more important role. Our method also doesn't account for 'surveillance apatheia' (see: Ellis, 2020). If we measure the impact of discursive and moral power by looking at the public's reaction, public resignation to resisting surveillance should be taken into account.

Nevertheless, the method has proved to be useful in understanding urban security governance dynamics. Both our theoretical framework, which has so far only rarely been applied to urban security governance, and our research method were innovative and produced meaningful, comparable results. The checklist method based on typology categories is a resource-saving but coherent way of analyzing and understanding urban governance issues. Hence, we encourage future research to use the method and further improve and develop it wherever we encountered limitations in our own approach. Future research should also attempt to combine our method of analysis with new forms of data collection, such as on-the-ground interviews. Furthermore, future studies should provide insights into the importance of network power in urban digitalized security governance and how informal power can change the described dynamics. Finally, further research applying similar methods on other case cities would greatly improve the value of our comparative conclusions.

BIBLIOGRAPHY

Adam, S., & Chen, S. (2015, March 22). *Lee Kuan Yew, Who Guided Singapore's Transformation, Dies at 91*. Bloomberg. https://www.bloomberg.com/tosv.html?url=L25odHRwczovd3d3LmJsb29tYmVy Zy5jb20vbmV3cy9hcnRpY2xlcy8yMDE1LTAzLTIyL2xlZS1rdWFuLXlldy1zaW5nY XBvcmUtcy1mb3VuZGluZy1wcmltZS1taW5pc3Rlci1kaWVzLWF0LTkxZXdzL2Fy dGljbGVzLzIwMTUtMDMtMjIvbGVlLWt1YW4teWV3LXNpbmdhcG9yZS1zLWZvdW 5kaW5nLXByaW1lLW1pbmlzdGVyLWRpZXMtYXQtOTE/&uuid=ecd0a026-5633-11ed-a439-4a586b51726c&vid=

Agbu, O., & Akpati Nzeribe, S. (2020). Urbanization and Security in Africa: A Technological Perspective. *Sumerianz Journal of Business Management and Marketing, 3*(10), 148–153. https://doi.org/10.47752/sjbmm.310.148.153

Agostini, G., Chianese, F., French, W., & Sandhu, A. (2010). *Understanding the Processes of Urban Violence: An Analytical Framework*. ALNAP. https://www.alnap.org/help-library/understanding-the-processes-of-urban-violen ce-an-analytical-framework

Alawadhi, S., Aldama-Nalda, A., Chourabi, H., Gil-Garcia, J. R., Leung, S., Mellouli, S., Nam, T., Pardo, T. A., Scholl, H. J., & Walker, S. (2012). *Building understanding of smart city initiatives*. 40–53.

Albino, V., Berardi, U., & Dangelico, R. M. (2015). Smart cities: Definitions, dimensions, performance, and initiatives. *Journal of Urban Technology, 22*(1), 3–21.

Albrecht, H.-J. (2020). Data, Data Banks and Security. *European Journal for Security Research, 5*(1), 5–23. https://doi.org/10.1007/s41125-019-00062-9

Alieh, Y. (2017, January 26). $240 million budget at the Municipality of Beirut. *BusinessNews.Com.Lb*. http://www.businessnews.com.lb/cms/Story/StoryDetails/5894/$240-million-bu dget-at-the-Municipality-of-Beirut

Alterman, J. B., & Todman, W. (2019). *Independence Movements And Their Aftermath*. Center for Strategic & International Studies. https://csis-website-prod.s3.amazonaws.com/s3fs-public/alterman_independenc

emovements__FULL__WEB.pdf

Amnesty International. (2020, October 27). *The unprecedented mass protests in Lebanon explained.* Amnesty International. https://www.amnesty.org/en/latest/news/2019/11/lebanon-protests-explained/

Amoore, L. (2013). *The Politics of Possibility: Risk and Security Beyond Probability.* Duke University Press. https://www.academia.edu/12152150/Louise_Amoore_The_Politics_of_Possibility_Risk_and_Security_Beyond_Probability_Durham_and_London_Duke_University_Press_2013

Arakji, D. (2022). *Lebanon: New Challenges to the Delivery of Security Assistance.* Italian Institute for International Political Studies (ISPI). https://www.ispionline.it/en/pubblicazione/lebanon-new-challenges-delivery-security-assistance-35928

Au- Yong, R. (2014, November 25). Vision of a smart nation is to make life better: PM Lee. *The Straits Times.* https://www.straitstimes.com/singapore/vision-of-a-smart-nation-is-to-make-life-better-pm-lee

Awan, I., Spiller, K., & Whiting, A. (2019). *Terrorism in the Classroom: Security, Surveillance and a Public Duty to Act* (1st ed. 2019). Springer International Publishing : Imprint: Palgrave Pivot. https://doi.org/10.1007/978-3-030-01710-1

Baaklini, S. (2017, May 23). *Beyrouth: Débat houleux au conseil municipal autour de nouvelles caméras* [News Website]. L'Orient-Le Jour. https://www.lorientlejour.com/article/1053159/debat-houleux-au-conseil-municipal-autour-de-nouvelles-cameras.html

Baalbaki, S. (2014, February 16). بلدية بيروت قررت تركيب بين *1500* و*2000* كاميرا بكلفة *27* ألف دولار للواحدة! أعضاء ينتقدون الكلفة المرتفعة: السعر العالمي بين *2000* و*7000* دولار للكاميرا [News Website]. Annahar. https://www.annahar.com/arabic/article/108953-بلدية-بيروت-قررت-تركيب-بين-1500-و-2000-كا-كاميرا-بكلفة-27-ألف-دولار-للواحدة-أعضاء

Barker, R. (2022). *How Many CCTV Cameras are in London? UK CCTV Numbers (Updated 2022).* Clarion UK. https://clarionuk.com/resources/how-many-cctv-cameras-are-in-london/

Barshad, A. (2019, October 17). In Lebanon, a Census Is Too Dangerous to Implement. *The Nation.* https://www.thenation.com/article/archive/lebanon-census/

BBW. (2019). *Joint statement on police and private company use of facial recognition surveillance in the UK.* Big Brother Watch.

EDGELANDS
institute

https://bigbrotherwatch.org.uk/wp-content/uploads/2019/09/Statement-to-stop-live-facial-recognition-surveillance-BBW-September-2019-1.pdf

Beauregard, R. A., & Pierre, J. (2000). Disputing the global: A sceptical view of locality-based international initiatives. *Policy & Politics, 28*(4), 465–478. https://doi.org/10.1332/0305573002501081

Belhadj, S., van der Borgh, C., Jaffe, R., Price, M., Stel, N., & Warren, M. J. (2015). *Plural security provision in Beirut* [Policy Brief]. Knowledge Platform Security & Rule of Law. https://www.kpsrl.org/publication/plural-security-provision-in-beirut

Blank, Y. (2010). Federalism, Subsidiarity, and the Role of Local Governments in an Age of Global Multilevel Governance. *Fordham Urban Law Journal, 37*(2), 509–558.

Botero Arcila, B. (2021). The Place of Local Government Law in the Urban Digital Age. *SSRN Electronic Journal.* https://doi.org/10.2139/ssrn.3848202

Bourdieu, P. (1986). The Forms of Cpital. In J. G. Richardson (Ed.), *Handbook of Theory and Research for the Sociology of Education* (pp. 241–258). Greenwood.

Brennen, J. S., & Kreiss, D. (2016). Digitalization. In *The International Encyclopedia of Communication Theory and Philosophy* (pp. 1–11). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781118766804.wbiect111

Bugliarello, G. (2003). Urban security in perspective. *Technology in Society, 25*(4), 499–507. https://doi.org/10.1016/j.techsoc.2003.09.004

Bulkeley, H., Luque-Ayala, A., McFarlane, C., & MacLeod, G. (2018). Enhancing urban autonomy: Towards a new political project for cities. *Urban Studies, 55*(4), 702–719. https://doi.org/10.1177/0042098016663836

Byrne, J. (2009). *The New Generation of Concentrated Community Supervision Strategies: Focusing Resources on High Risk Offenders, Times, and Places.* (Public Saftey Performance Project). Pew Charitable Trusts.

Byrne, J., & Marx, G. (2011). Technological innovations in crime prevention and policing: A review of the research on implementation and impact. *Journal of Police Studies,* 17–38.

Cheng Wei, A. (2018, February 3). *Spending on security to be "very major" Budget item.* MOF. https://www.mof.gov.sg/news-publications/media-articles

Chew, V. (2009). *Jemaah Islamiyah's bomb plot (2001/2002) | Infopedia.* https://eresources.nlb.gov.sg/infopedia/articles/SIP_1411_2009-01-20.html

Chigwata, T. C., & de Visser, J. (2018). Local Government in the 2013 Constitution of Zimbabwe: Defining the Boundaries of Local Autonomy. *Hague Journal on the*

Rule of Law, 10(1), 165–185. https://doi.org/10.1007/s40803-017-0063-0

Chua, N. (2021, October 10). More than 200,000 police cameras to be installed islandwide by 2030. *The Straits Times.* https://www.straitstimes.com/singapore/courts-crime/more-than-200000-police-cameras-to-be-installed-islandwide-by-2030

Chun Han, W. (2015, March 22). *Lee Kuan Yew, Singapore's Founding Father, Dies at 91.* WSJ. http://www.wsj.com/articles/lee-kuan-yew-singapores-founding-father-dies-at-91-1427056223

Chuter, D. (2015). *Perceptions and Prescriptions: How Lebanese People View Their Security* [Background Paper]. International Alert. https://www.international-alert.org/publications/perceptions-and-prescriptions/

Clark, G. L. (1984). A Theory of Local Autonomy. *Annals of the Association of American Geographers, 74*(2), 195–208.

Croese, S., Oloko, M., Simon, D., & Valencia, S. C. (2021). Bringing the global to the local: The challenges of multi-level governance for global policy implementation in Africa. *International Journal of Urban Sustainable Development, 13*(3), 435–447.

Cruces Burga, A., & Devoto Ykeho, A. (2021). How Much Local Autonomy Is Good for a City? An Analysis of the Peruvian Constitutional Design for Cities and Its Effects in the Case of the Lima Metropolitan Area. In E. Hirsch Ballin, G. van der Schyff, M. Stremler, & M. De Visser (Eds.), *European Yearbook of Constitutional Law 2020: The City in Constitutional Law* (pp. 77–99). T.M.C. Asser Press. https://doi.org/10.1007/978-94-6265-431-0_5

Dadouch, S., & Durgham, N. (2021, February 21). Six months after massive Beirut explosion, official investigation has been upended. *Washington Post.* https://www.washingtonpost.com/world/middle_east/beirut-explosion-blast-investigation/2021/02/20/632f75a6-72ba-11eb-8651-6d3091eac63f_story.html

Dass, D. (2022, October 22). *The Police's Eyes on the Ground!* Singapore Police Force. http://www.police.gov.sg/Media-Room/Features/The-Polices-Eyes-on-the-Ground

Department of Statistics. (2022, June). *Overview.* https://www.population.gov.sg/our-population/population-trends/Overview/

Dixon, J., Levine, M., & McAuley, R. (2003). *Street Drinking Legislation, CCTV and Public Space: Exploring Attitudes towards Public Order Measures.*

Edwards, A., & Hughes, G. (2013). Comparative European criminology and the question

of urban security. *European Journal of Criminology, 10*(3), 257–259. https://doi.org/10.1177/1477370813482611

el-Khoury, B. (2014, February 28). *Polémique autour de l'installation de 1.500 caméras de surveillance à Beyrouth* [News Website]. Le Commerce du Levant. https://www.lecommercedulevant.com/article/23217-polmique-autour-de-linstallation-de-1500-camras-de-surveillance-beyrouth

El Nashra. (2014, February 28). بلدية بيروت توافق على مشروع تركيب شبكة كاميرات مراقبة. *El Nashra*.
https://www.elnashra.com/news/show/718734/بلدية-بيروت-توافق-على-مشروع-تركيب-شب كة-كاميرات-مرا

el-Sayyed, Y. (2022, February 9). مجلس بلدية بيروت عقد جلستين متتاليتين ووافق على صيانة كاميرات المراقبة وغرفة التحكّم [News Website]. Al-Liwaa.
https://aliwaa.com.lb/أقسام-أخرى/بيئة-بلديات/مجلس-بلدية-بيروت-عقد-جلستين-متتاليتين-ووافق-على-صيانة-كاميرات-المراقبة-وغرفة-التحك-م/

Ellis, D. (2020). Techno-Securitisation of Everyday Life and Cultures of Surveillance-Apatheia. *Science as Culture, 29*(1), 11–29. https://doi.org/10.1080/09505431.2018.1561660

Fawaz, M., Harb, M., & Gharbieh, A. (2012). Living Beirut's Security Zones: An Investigation of the Modalities and Practice of Urban Security: Living Beirut's Security Zones. *City & Society, 24*(2), 173–195. https://doi.org/10.1111/j.1548-744X.2012.01074.x

Feldstein, S. (2019). *The Global Expansion of AI Surveillance.* Carnegie Endowment for International Peace. https://carnegieendowment.org/2019/09/17/global-expansion-of-ai-surveillance-pub-79847

Foucault, M. (1975). *Surveiller Et Punir.* Gallimard.

Geha, C. (2015). *Citizen's Perceptions of Security Institutions in Lebanon* [Background Paper]. International Alert. https://www.international-alert.org/publications/citizens-perceptions-security-institutions-lebanon/

Giansanti, A. (2019). *Sviluppo locale, Europa, nazionalismi. Territorio e globalizzazione in una prospettiva critica.* goWare.

Gilliom, J., & Monahan, T. (2012). *SuperVision: An Introduction to the Surveillance Society.* University of Chicago Press. https://press.uchicago.edu/ucp/books/book/chicago/S/bo14365311.html

Glenn, C., Rowan, M., & Caves, J. (2019, October 28). *Timeline: The Rise, Spread, and Fall of the Islamic State | Wilson Center*. Wilson Center. https://www.wilsoncenter.org/article/timeline-the-rise-spread-and-fall-the-islamic-state

Goldsmith, M. (1995). Autonomy and City Limits. In D. Judge, G. Stoker, & H. Wolman (Eds.), *Theories of Urban Politics* (pp. 228–252). SAGE Publications.

Loi sur les municipalités, Pub. L. No. Decret-Loi n.118 (1977). https://www.localiban.org/IMG/pdf/decret_loi_municipalites_libanaises_118_du_3_6_1977_ses_amendements_fr.pdf

Graham, S. (1999). Global Grids of Glass: On Global Cities, Telecommunications and Planetary Urban Networks. *Urban Studies*, *36*(5–6), 929–949. https://doi.org/10.1080/0042098993286

Graham, S. (2013). The new military urbanism. In *The Surveillance-Industrial Complex* (pp. 11–27). Routledge.

Guardia Systems. (2022). *Success Stories: Airport & Critical Infrastructure*. Guardia Systems. https://guardiasystems.com/airport-critical-infrastructure/

Haggerty, K. D., & Ericson, R. V. (2000). The surveillant assemblage. *The British Journal of Sociology*, *51*(4), 605–622. https://doi.org/10.1080/00071310020015280

Harper, D., Tucker, I., & Ellis, D. (2013). Surveillance and subjectivity: Everyday experiences of surveillance practices. In *The Surveillance-Industrial Complex*. Routledge.

Hayward, J. (2019). *ICO investigation into how the police use facial recognition technology in public places*. Information commissioner's Office. https://ico.org.uk/media/about-the-ico/documents/2616185/live-frt-law-enforcement-report-20191031.pdf

Heng, J. (2016, March 9). *Network of CCTV cameras proving effective*. AsiaOne. https://www.asiaone.com/singapore/network-cctv-cameras-proving-effective

Hickmann, T., & Stehle, F. (2019). The embeddedness of urban climate politics in multilevel governance: A case study of South Africa's major cities. *The Journal of Environment & Development*, *28*(1), 54–77.

Hijazi, S. (2022, July 18). Two municipalities for Beirut? *L'Orient Le Jour*. https://today.lorientlejour.com/article/1306015/two-municipalities-for-beirut.html

Hooghe, L., Marks, G., & Marks, G. W. (2001). *Multi-level governance and European integration*. Rowman & Littlefield.

Horak, M., & Young, R. (2012). *Sites of governance: Multilevel governance and policy making in Canada's big cities* (Vol. 3). McGill-Queen's University Press.

HTX Home Affairs. (2021a, October 14). *Meeting of Minds: HTX and Thales form first CO-LABorative Partnership*. HTX Corporate. https://www.htx.gov.sg/news/featured-news-meeting-of-minds-htx-and-thales-form-first-co-laborative-partnership

HTX Home Affairs. (2021b, October 27). *HTX Receives 24 Minister's Awards*. HTX. https://www.htx.gov.sg/news/featured-news-htx-receives-14-minister-s-awards

Inavate. (2016, May 23). Beirut Surveillance Project protects the city. *Inavate Magazine*. https://www.inavateonthenet.net/case-studies/article/beirut-surveillance-project-protects-the-city

Jouve, B., & Lefèvre, C. (1999). De la gouvernance urbaine au gouvernement des villes? Permanence ou recomposition des cadres de l'action publique en Europe. *Revue Française de Science Politique*, 835–853.

Kaplan, C., Loyer, E., & Daniels, E. C. (2013). Precision Targets: GPS and the Militarization of Everyday Life. *Canadian Journal of Communication, 38*(3), Article 3. https://doi.org/10.22230/cjc.2013v38n3a2655

Kaufmann, D. (2020). Capital Cities in Interurban Competition: Local Autonomy, Urban Governance, and Locational Policy Making. *Urban Affairs Review, 56*(4), 1168–1205. https://doi.org/10.1177/1078087418809939

Keuffer, N. (2016). L'autonomie locale, un concept multidimensionnel: Comment le définir, comment le mesurer et comment créer un indice d'autonomie locale comparatif ? *Revue internationale de politique comparée, 23*(4), 443–490. https://doi.org/10.3917/ripc.234.0443

Klovig Skelton, S. (2020, January 27). *Met Police to launch facial recognition operationally*. ComputerWeekly.Com. https://www.computerweekly.com/news/252477334/Met-Police-to-launch-facial-recognition-operationally

Knudsen, A. J., & Gade, T. (2017). The Lebanese Armed Forces (LAF): A United Army for a Divided Country? In A. J. Knudsen & T. Gade (Eds.), *Civil-Military Relations in Lebanon: Conflict, Cohesion and Confessionalism in a Divided Society* (pp. 1–22). Springer International Publishing. https://doi.org/10.1007/978-3-319-55167-8_1

Koh, F. (2020, April 7). Parliament: Six-fold increase in police cameras in Little India from 2016. *The Straits Times*. https://www.straitstimes.com/politics/parliament-six-fold-increase-in-police-cam

eras-in-little-india-from-2016

Koon, T. Y. (2014). Police Technology Department. *SINGAPORE POLICE FORCE ANNUAL 2013*, 31.

Lasso-Harrier, A., Botero Arcila, B., García Vargas, L., & Uribe-Sáenz, S. (2021). *Medellín: A diagnostic report on urban security, surveillance and challenges to the urban social contract* (p. 58) [Research Report]. Edgelands Institute. https://www.edgelands.institute/reports/medellin-report

Lauermann, J. (2018). Strategic simplification and the urban politics of defining 'the city.' *Handbook of Emerging 21st-Century Cities*, 14–29.

Laufs, J., Borrion, H., & Bradford, B. (2020). Security and the smart city: A systematic review. *Sustainable Cities and Society, 55*, 102023. https://doi.org/10.1016/j.scs.2020.102023

LBCI (Director). (2019, May 28). Who maintains control over surveillance cameras in Beirut? In *Breaking Headlines*. LBCI Lebanon. https://www.lbcgroup.tv/news/breaking-news/447112/who-maintains-control-over-surveillance-cameras-in/en

Le Figaro. (2006, October 19). *Beyrouth bientôt sous surveillance vidéo* [News Website]. Le Figaro. https://www.lefigaro.fr/international/2006/10/19/01003-20061019ARTWWW90343-beyrouth_bientot_sous_surveillance_video.php

Lee, J. (2017, October 24). *Surveillance cameras installed after wild boar incidents*. The New Paper. https://www.tnp.sg/news/singapore/surveillance-cameras-installed-after-wild-boar-incidents

Lemieux, F. (2016). Urban security: Challenges for twenty-first century global cities. *Police Practice and Research, 17*(4), IX–XI. https://doi.org/10.1080/15614263.2016.1180875

Liang, L. U. (2014, May 3). More "eyes" on the ground for police. *The Straits Times*. https://www.straitstimes.com/singapore/courts-crime/more-eyes-on-the-ground-for-police

Liang, L. Y. (2013, December 11). Little India Riots: Police install 26 more CCTV cameras in Race Course, Buffalo roads. *The Straits Times*. https://www.straitstimes.com/singapore/little-india-riots-police-install-26-more-cctv-cameras-in-race-course-buffalo-roads-0

London Metropolitan Police. (2022, March 24). *Police and Crime Plan for London 2022*

to 2025.
https://www.met.police.uk/police-forces/metropolitan-police/areas/about-us/about-the-met/police-and-crime-plan/

London Policing Ethics Panel. (2019). *Final Report on Live Facial Recognition*.
http://www.policingethicspanel.london/uploads/4/4/0/7/44076193/live_facial_recognition_final_report_may_2019.pdf

L'Orient-Le Jour. (2013a, August 24). Après l'attentat de Tripoli, les responsables tentent de calmer la colère de la rue. *L'Orient-Le Jour*.
https://www.lorientlejour.com/article/829481/apres-lattentat-de-tripoli-les-responsables-tentent-de-calmer-la-colere-de-la-rue.html

L'Orient-Le Jour. (2013b, August 27). *Kabbani pour l'installation de caméras de surveillance à Beyrouth* [News Website]. L'Orient-Le Jour.
https://www.lorientlejour.com/article/829869/kabbani-pour-linstallation-de-cameras-de-surveillance-a-beyrouth-.html

L'Orient-Le Jour. (2013c, August 30). Sécurité encore plus renforcée à Beyrouth et dans les régions... *L'Orient-Le Jour*.
https://www.lorientlejour.com/article/830459/securite-encore-plus-renforcee-a-beyrouth-et-dans-les-regions.html

L'Orient-Le Jour. (2016, April 4). Joumblatt s'en prend à la municipalité de Beyrouth. *L'Orient-Le Jour*.
https://www.lorientlejour.com/article/979085/joumblatt-sen-prend-a-la-municipalite-de-beyrouth.html

L'Orient-Le Jour. (2020a, May 4). Corruption: Note d'information pour gaspillage et détournement de fonds à la municipalité de Beyrouth. *L'Orient-Le Jour*.
https://www.lorientlejour.com/article/1216732/corruption-note-dinformation-pour-gaspillage-et-detournement-de-fonds-a-la-municipalite-de-beyrouth.html

L'Orient-Le Jour. (2020b, August 7). 400 gardiens municipaux déployés dans les rues de Beyrouth. *L'Orient-Le Jour*.
https://www.lorientlejour.com/article/1228593/400-gardiens-municipaux-deployes-dans-les-rues-de-beyrouth.html

Lu, X. (2019). *A Comparative Study of Local Autonomy Levels of Global/World Cities in Developing Economies: Cases from China, India and Vietnam*.
https://doi.org/10.17169/refubium-2767

Massumi, B. (2007). Potential politics and the primacy of preemption. *Theory & Event*, *10*(2). https://doi.org/10.1353/tae.2007.0066

Mathews, M., Suhaini, S., & Tan, A. (2020, April 24). *Attitudes towards the use of*

surveillance technologies in the fight against COVID-19. Lkyspp.
https://lkyspp.nus.edu.sg/ips/news/details/ips-report-on-attitudes-towards-the-u
se-of-surveillance-technologies-in-the-fight-against-covid-19

Matthews, R., & Yan, N. Z. (2007). Small Country 'Total Defence': A Case Study of
Singapore. *Defence Studies, 7*(3), 376–395.
https://doi.org/10.1080/14702430701559289

Meijer, A., & Thaens, M. (2018). Quantified street: Smart governance of urban safety.
Information Polity, 23(1), 29–41. https://doi.org/10.3233/IP-170422

Merhi, J. (2012, April). Surveillance et sousveillance: Janus de la sécurité. *Défense
Nationale Libanaise - Le Magazine de l'Armée, 80*.
https://www.lebarmy.gov.lb/fr/content/surveillance-et-sousveillance-janus-de-la-
s%C3%A9curit%C3%A9#_ftn43

Miller, S. R. M. (2018). Autonomy. In B. A. Arrigo (Ed.), *The SAGE Encyclopedia of
Surveillance, Security, and Privacy* (pp. 79–82). SAGE Publications.
https://doi.org/10.4135/9781483359922.n38

Ministry of Finance. (2022). *FY2022 EXPENDITURE ESTIMATES*. MOF.
https://www.mof.gov.sg/docs/librariesprovider3/budget2022/download/pdf/37-
mha-2022.pdf

Ministry of Home Affairs. (2021, June 22). *SPF Workplan Seminar 2021—Message by Mr
K. Shanmugam, Minister for Home Affairs and Minister for Law*. Ministry of Home
Affairs.
http://www.mha.gov.sg/mediaroom/speeches/spf-workplan-seminar-2021/

Monahan, T., & Wood, D. M. (Eds.). (2018). *Surveillance Studies: A Reader*. Oxford
University Press.

Moon, S. (2019). Power in global governance: An expanded typology from global
health. *Globalization and Health, 15*(1), 74.
https://doi.org/10.1186/s12992-019-0515-5

MOPAC. (2020). *Annual Governance Statement 2020/21*. Mayor of London Office for
Policing and Crime.
https://www.london.gov.uk/sites/default/files/annual_governance_statement_2
02021_final_with_dmpc_signature.pdf

MOPAC. (2021). *DMPC Decision—PCD 1008: Retrospective Facial Recognition System*.
Mayor of London Office for Policing and Crime.
https://www.london.gov.uk/sites/default/files/pcd_1008_retrospective_facial_
recognition_system.pdf

MOPAC. (2022). *MOPAC/MPS Budget Submission 2022/23 to 2024/25*.
https://www.london.gov.uk/sites/default/files/mopac_draft_budget_submission
_2022_23_final.pdf

Mopac_draft_budget_submission_2022_23_final.pdf. (n.d.). Retrieved November 24,
2022, from
https://www.london.gov.uk/sites/default/files/mopac_draft_budget_submission
_2022_23_final.pdf

Moser, C. O. N. (2004). Urban Violence and Insecurity: An Introductory Roadmap.
Environment and Urbanization, 16(2), 3–16.
https://doi.org/10.1630/0956247042309847

Mourad, A., & al-Siddiq, Z. (2018). *Citizen & Municipality Handbook: Simplified Legal Rules
Governing Municipal Work in Lebanon*. Nahnoo.
https://transparency-lebanon.org/Uploads/Library/115/download/8c11a34b-d4
3b-4391-ad8e-7382bec8a38d_115.pdf

Naharnet Newsdesk. (2013, August 29). *Beirut Municipality to Install CCTVs across City,
Stage Patrols with ISF* [News Website]. Naharnet.
http://www.naharnet.com/stories/en/96058

Nashabe, O. (2009). *Security Sector Reform in Lebanon: Internal Security Forces and
General Security*. Arab Reform Initiative.
https://gsdrc.org/document-library/security-sector-reform-in-lebanon-internal-se
curity-forces-and-general-security/

National Crime Agency. (2018). *National Strategic Assessment of Serious and Organised
Crime*. NCA: National Crime Agency.
https://www.nationalcrimeagency.gov.uk/who-we-are/publications/173-national-
strategic-assessment-of-serious-and-organised-crime-2018/file

Nishiyama, H. (2018). Crowd surveillance: The (in)securitization of the urban body.
Security Dialogue, 49(3), 200–216.
https://doi.org/10.1177/0967010617741436

Pavone, V., & Esposti, S. D. (2012). Public assessment of new surveillance-oriented
security technologies: Beyond the trade-off between privacy and security. *Public
Understanding of Science, 21*(5), 556–572.
https://doi.org/10.1177/0963662510376886

Peters, B. G., & Pierre, J. (2001). Developments in intergovernmental relations: Towards
multi-level governance. *Policy & Politics, 29*(2), 131–135.
https://doi.org/10.1332/0305573012501251

Poon, L. (2017, April 21). *Singapore, City of Sensors*. Bloomberg.

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https://www.bloomberg.com/tosv2.html?vid=&uuid=310ef54f-5638-11ed-b90c-505165496773&url=L25ld3MvYXJ0aWNsZXMvMjAxNy0wNC0yMS9wcml2YW
N5LXRha2VzLWEtYmFja3NlYXQtaW4tc2luZ2Fwb3JlLXMtdmlzaW9uLW9mLWEt
c21hcnQtbmF0aW9u

Pratchett, L. (2004). Local autonomy, local democracy and the 'new localism.' *Political Studies, 52*(2), 358–375.

Price, M., & Warren, M. J. (2015, December 15). Plural Security: How Lebanon's Divided Authority Seeks Order. *IPI Global Observatory*. https://theglobalobservatory.org/2015/12/beirut-lebanon-plural-security-hezbollah-isis/

Priks, M. (2015). The Effects of Surveillance Cameras on Crime: Evidence from the Stockholm Subway. *The Economic Journal, 125*(588), F289–F305.

Ritchie, H., & Roser, M. (2018). Urbanization. *Our World in Data*. https://ourworldindata.org/urbanization

Roy, J. (2021). Digitalization and multilevel governance. *A Research Agenda for Multilevel Governance*, 95–113.

Sadiq-for-London-Manifesto-.pdf. (n.d.). Retrieved November 24, 2022, from https://sadiq.london/wp-content/uploads/2021/04/Sadiq-for-London-Manifesto-.pdf

Saliba, A. (2012). *The Security Sector in Lebanon: Jurisdiction and Organization*. Carnegie Endowment for International Peace. https://carnegieendowment.org/files/Security_Sector_in_Lebanon2.pdf

Salibi, K. S. (2022, July 31). *Beirut*. Encyclopedia Britannica. https://www.britannica.com/place/Beirut

Sapuan, M. A. B. (2013). Ready for the Future. *Police Life Special Edition, Police Week 2013*, 29.

Sassen, S. (2001). *The Global City: New York, London, Tokyo* (REV-Revised). Princeton University Press. https://doi.org/10.2307/j.ctt2jc93q

SBI (Director). (2022a, July 18). *The proposal to divide the municipality of Beirut threatens between a security and social explosion* [Interview]. Sawt Beirut International (SBI). https://english.sawtbeirut.com/video/the-proposal-to-divide-the-municipality-of-beirut-threatens-between-a-security-and-social-explosion/

SBI (Director). (2022b, August 22). *Les caméras de Beyrouth sont hors service....* Sawt Beirut International (SBI).

https://french.sawtbeirut.com/video/les-cameras-de-beyrouth-sont-hors-service/

Schröder, U. (2021). The multilevel governance of security. *A Research Agenda for Multilevel Governance,* 211–226.

Sellers, J. M. (2005). Re-Placing the Nation: An Agenda for Comparative Urban Politics. *Urban Affairs Review, 40*(4), 419–445. https://doi.org/10.1177/1078087404272673

Sellers, J. M., & Lidström, A. (2007). Decentralization, Local Government, and the Welfare State. *Governance, 20*(4), 609–632. https://doi.org/10.1111/j.1468-0491.2007.00374.x

Sharro, K. (2013, February 14). *Warspace: Geographies of conflict in Beirut.* OpenDemocracy. https://www.opendemocracy.net/en/opensecurity/warspace-geographies-of-conflict-in-beirut/

Singapore Police Force. (2015, May 17). *LAUNCH OF THE VEHICLES ON WATCH (VOW) PROJECT.* Singapore Police Force. http://www.police.gov.sg/Media-Room/News/20150517_others_vehicles_on_watch_project

Skoric, M. M., Chua, J. P. E., Liew, M. A., Wong, K. H., & Yeo, P. J. (2010). Online Shaming in the Asian Context: Community Empowerment or Civic Vigilantism? *Surveillance & Society, 8*(2), 181–199. https://doi.org/10.24908/ss.v8i2.3485

Slack, E. (2017). *How Much Local Fiscal Autonomy Do Cities Have? A Comparison of Eight Cities around the World* (No. 19; IMFG Perspectives). Institute on Municipal Finance & Governance. https://www.semanticscholar.org/paper/How-Much-Local-Fiscal-Autonomy-Do-Cities-Have-A-of-Slack/2c678fb0333d1d03258f21134df394d51eb16216

Smarter_london_together_v1.66_-_published.pdf. (n.d.). Retrieved November 24, 2022, from https://www.london.gov.uk/sites/default/files/smarter_london_together_v1.66_-_published.pdf

SMEX. (2016, June 13). 2000 Eyes to Surveil Beirut by Year's End. *SMEX.* https://smex.org/2000-eyes-to-surveil-beirut-by-years-end/

Tavares, R. (2016). *Paradiplomacy: Cities and States as Global Players.* Oxford University Press.

Taylor, R. B. (1995). The Impact of Crime on Communities. *The ANNALS of the American Academy of Political and Social Science, 539*(1), 28–45.

https://doi.org/10.1177/0002716295539001003

ten Have, H., & Patrão Neves, M. do C. (2021). Electronic Surveillance. In H. ten Have & M. do C. Patrão Neves (Eds.), *Dictionary of Global Bioethics* (pp. 455–455). Springer International Publishing. https://doi.org/10.1007/978-3-030-54161-3_223

The Daily Star. (2014, February 22). Beirut responds to camera deal accusations. *The Daily Star*. https://www.thefreelibrary.com/Beirut+responds+to+camera+deal+accusations.-a 0359385668

The Economist. (2015, March 28). After the patriarch. *The Economist*. https://www.economist.com/asia/2015/03/28/after-the-patriarch

Tonkiss, F. (2020). City government and urban inequalities. *City, 24*(1–2), 286–301. https://doi.org/10.1080/13604813.2020.1739931

Tulumello, S. (2017). Toward a Critical Understanding of Urban Security within the Institutional Practice of Urban Planning: The Case of the Lisbon Metropolitan Area. *Journal of Planning Education and Research, 37*(4), 397–410. https://doi.org/10.1177/0739456X16664786

Tulumello, S. (2018). The Multiscalar Nature of Urban Security and Public Safety: Crime Prevention from Local Policy to Policing in Lisbon (Portugal) and Memphis (the United States). *Urban Affairs Review, 54*(6), 1134–1169. https://doi.org/10.1177/1078087417699532

UN-Habitat Lebanon. (2021). *Beirut City Profile 2021*. UN-Habitat.

United Nations. Department of Economic and Social Affairs. (2018). *World youth report: Youth and the 2030 agenda for sustainable development*. United Nations Publications New York.

van Veen, E. (2015). *Elites, power and security: How the organization of security in Lebanon serves elite interests* [CRU Report]. Netherlands Institute of International Relations Clingendael. https://www.clingendael.org/sites/default/files/pdfs/Elites_power_security_in_ Lebanon_2015.pdf

Vargas, L. G., Bogdani, K., Cordy, J., Deshusses, P., & Hofmann, F. (2022). *Geneva: A City of Paradoxes and Dualities* (p. 38). Edgelands Institute. https://www.edgelands.institute/reports/geneva-diagnostic-report

Vasu, N. (2008). (En)countering terrorism: Multiculturalism and Singapore. *Asian Ethnicity, 9*(1), 17–32. https://doi.org/10.1080/14631360701803203

Waples, S., Gill, M., & Fisher, P. (2009). Does CCTV displace crime? *Criminology & Criminal Justice, 9*(2), 207–224. https://doi.org/10.1177/1748895809102554

Watts, J. M., & Purnell, N. (n.d.). *Singapore Is Taking the 'Smart City' to a Whole New Level.* WSJ. Retrieved October 27, 2022, from http://www.wsj.com/articles/singapore-is-taking-the-smart-city-to-a-whole-new-level-1461550026

Wilson, D. (2014). Border militarization, technology and crime control. In *The Routledge Handbook on Crime and International Migration*. Routledge.

World Bank. (2020, April 20). *Urban Development*. World Bank. https://www.worldbank.org/en/topic/urbandevelopment/overview

World Cities Culture Forum. (2022). *London*. World Cities Culture Forum. http://www.worldcitiescultureforum.com/cities/london

ANNEX

Annex 1: About the Edgelands Institute

The Edgelands Institute is a multi-disciplinary organization that uses academic research, data, and art to explore how the digitalization of urban security is changing the urban social contract — the often-unseen rules that govern our cities. We create pop-up spaces that bring citizens, policymakers, academics, and other stakeholders into the dialogue about the way that digital tools are being used by city governments and transforming urban social fabric.

The Edgelands Institute is a global movement. We set up temporary residences in select cities across the globe that have made innovative strides in their use of digital technologies, particularly in application to security. Our first stop was Medellín, Colombia, where we engaged local youth in research and activism that focused on how city leaders are using surveillance tools to address crime in the city. Currently, the Edgelands Institute is also active in the city of Geneva, Switzerland.

What are the "edgelands"?

The "Edgelands" is a term used by city planners to describe the transitional, liminal areas of space found on the boundaries of country and town. As the global population continues to urbanize and cities grow, these boundaries may begin to blur or even disappear altogether. At the Edgelands Institute, we've applied this concept of liminal space to the boundaries between public and private life in urban spaces. Digital tools used to monitor people and places or exchange information have the capacity to change the frameworks of authority (the social contract) between a government and its citizens.

What is a pop-up space?

A pop-up space (or a "pop-up") is a space that is temporarily activated for a specific use. Most often, pop-ups are retail or event spaces that appear for a brief period to create buzz around a certain item or idea. The pop-up concept — as well as the energy it brings— is central to our work at Edgelands. We believe that incorporating the pop-up as a mode of engagement will break down the barriers of accessibility and diversity of experience that so often exist in traditional academic and policymaking circles. Furthermore, the excitement of pop-up events spreads awareness of the complex issues that we work on. We create spaces for dialogue and research both on and offline that are collaborative and compelling.

Our Institute is temporary by nature, and will only exist for a few years. Our mission is to catalyze movements for digital transparency in cities and support local communities to independently bring these movements forward.

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Annex 2: About the Live Facial Recognition in London

The LFR technology is an overt operational tactic that helps the Metropolitan Police Service (MPS) stop dangerous people who are wanted for serious criminal offenses. LFR helps the MPS locate those posing a risk of harm to themselves or others, by monitoring facial images of people within a Zone of Recognition. Images from specially placed cameras are searched against a Watchlist of images of people who are wanted or based on intelligence are suspected of posing a risk of harm to themselves or others. Watchlist composition is normally restricted to individuals suspected to be in the proximity of an area, and therefore where there is some possibility or likelihood of an individual passing through an LFR Deployment. LFR works by analyzing key facial features to generate a mathematical representation of them. This representation is then compared against known faces in a database to identify possible matches against persons of interest to Law Enforcement Agencies (LEAs).

Where the LFR system identifies a potential image match, the LFR system flags an Alert to a trained member of MPS personnel who then decides whether any further action is required. In this way, the LFR system works to assist MPS personnel to make identifications rather than acting as an autonomous machine-based process devoid of user input.

The table on the next page summarizes the technical operation of LFR technology.

Stage	Action
1	**Creating or using an existing database of images**
	The LFR system requires a Watchlist of reference photos against which face images from the video feed are compared. Images used for LFR are processed such that the facial characteristics connected with their individuals are retrieved and represented numerically.
2	**Obtaining a facial image**
	A camera captures real-time digital photos of face images, recording images when a person walks across the Zone of Recognition and utilizes them as a live feed. The placement of the cameras, and hence the position of the LFR Deployment, is critical to the legal use of LFR.
3	**Face recognition**
	When a live CCTV camera takes footage, the LFR software recognizes individual human faces.
4	**Feature extraction**
	Using the recognized face, the program pulls facial traits from the image automatically, generating the biometric template.
5	**Face comparison**
	The LFR program compares the biometric template to the Watchlist.
6	**Matching**
	When two photos' face characteristics are analyzed, the LFR algorithm gives a similarity score. This is a numerical value that indicates the degree of resemblance, with a higher score suggesting more similarities. A Threshold value is specified to determine whether the LFR software will issue an alert indicating the possibility of a match. Trained police officers will analyze the Alerts and determine whether any additional action is warranted. In this sense, the LFR system assists police officers in making identifications rather than working as an autonomous machine-based procedure with no user interaction.

Annex 3: Checklist-Method of Different Forms of Power

Our method for this report was partially developed by the research team itself, in close collaboration with the supervising team from the Edgelands Institute. However, the idea for this method is not entirely new, as it is inspired by the method used in the report "Independence Movements and their Aftermath", published by the Center for Strategic & International Studies (Alterman & Todman, 2019). The method builds on a number of categories that are to be compared. In our case, these categories correspond to the types of power we took from Moon's (2019) typology. Thus, we have 5 categories (i.e. economic, structural, moral, expert, and discursive power).

For each category, a number of indicators are defined. In a best-case scenario, the same number of indicators exists for every category, as this makes the comparison of the categories more convincing. Each indicator functions as an element in a checklist and is formulated in the form of a statement that can be answered with either "yes" or "no". In our case, we defined five indicators for each category. Each indicator is then checked against a particular case; meaning that we searched evidence for or against each element in the checklist. Each element for which one finds evidence gives a point. The total number of checklist points for each category is then added up. In our case, this meant that for every case city, we could give a maximum score of five points per category (i.e. type of power). The more elements of the checklist can be confirmed for a case, the greater the relative importance of this category is in a given case.

Given that the categories, checklist elements, and criteria to check a box (or not) in the checklist are the same for every case we studied, the comparison of these total scores for each category allows us to draw comparative conclusions over all three cases. We can also compare the evidence for particular indicators across the three cases to get more in-depth insight into particular aspects of particular types of municipal government power. The application of the same grading scale also allows us to have consistent graphical representations of the results we found. These graphical representations can be found in the case analyses and the cross-case analysis section.

In the next few sections of this annex, we will present the checklists for each category (i.e. form of power). Besides presenting the checklist statement for each indicator, every element in the checklist is also explained and justified. For the analysis, we searched for evidence for or

against each statement for each element in the checklist. If we found evidence for it (answer = yes), the box would be checked for that particular case. If we found explicit evidence against an element of the checklist, the answer would be "no". If no evidence for or against the element/statement could be found, the answer would be "not applicable or n/a", which is treated the same as a "no". For every category of power (see Moon's (2019) typology), we defined five elements in the checklist (i.e. five statements to check). The more checklist elements we could find evidence for in a particular category of power for a particular case, the more this case city relied on this particular type of power in their deployment of surveillance technology. The detailed checklists and justifications for each case can be found in Annex 4 to 6.

Economic Power

Economic power is *"[…] the use of material resources (e.g. money, goods) to shape […] thinking and actions […]"* (Moon, 2019, p. 6) regarding urban surveillance. One example would be the provision of funding for research supporting the city government's interests when it comes to urban surveillance.

Category of Power	Statement	Explanation & Justification
A. Economic	**A1.** The city government has its own budget for security.	By 'its own budget' we refer to the city having a budget distinct from any other level of governance, for example, the central government. If the city has its own budget, it has finances at its disposal that it can use for specific purposes. This gives them economic power.
	A2. The city's budget is sufficient to support the entire cost of the surveillance project.	This refers to the question of whether the surveillance project can be funded entirely by the municipal budget, without the need for cost-sharing with the central government or other entities. Cost sharing restricts the economic power of a city government, as it depends on the economic power of other (sometimes rival) actors. Cost sharing also often includes the right to have a say for other actors, which further reduces the city's control over a surveillance project.

Category of Power	Statement	Explanation & Justification
	A3. The city government can levy its own taxes and/or has other autonomous sources of funding to help fund its budget.	If the city government can levy its own taxes to fund its budget, this gives them more financial independence from other levels of government than if they were simply allocated funds by, for example, the national government. It presumably also gives them the possibility of changing the amount of taxes that are collected. This is another indicator or element of the city government's economic power.
	A4. The city's autonomous sources of funding are sufficient to support the entire cost of the surveillance project.	Although similar to A2, the rationale behind this element is different. The element A2 only looks at the budget as such, independently of where the funds in this budget originate from. The funds themselves could, for example, come from the central government. Here in A4, however, we take it as an even stronger (i.e. an additional) indicator for economic power if not only is the municipal budget sufficient to cover the entire cost of the project, but the autonomous sources of funding like local taxes are themselves sufficient to cover the project.
	A5. The city can deploy its project without compromising on key features for economic reasons	In more crude terms, this is the argument that 'money is not an issue' for the city. If the city does not have to worry about the cost of the project and can simply focus on features, this indicates that they have considerable economic power.

Structural Power

Structural power is the *"[…] use of an actor's position in the structures of society to shape the thinking and/or actions of other actors. […] Governments, for example, have the structural power to regulate the behavior of private actors in their territories […]"* (Moon, 2019, p. 6). The municipal government might for example have executive power over some issue areas, but not over security where it is a different actor, said the ministry of the interior, that has executive authority. The structural power of a city government in that issue area would therefore be limited.

Category of Power	Statement	Explanation & Justification
B. Structural	**B1.** The decisions of the city government are not subject to the veto power of external governmental authorities.	If the city's decisions are independent from other external government authorities (e.g. the central government), this indicates considerable structural power of a municipal government over what happens within their territory. Of course, this element here excludes the veto of judicial authorities in the case that a city government's decision is contrary to the law. Normatively speaking, this veto should exist in all cases. Here, we only refer to vetos from executive governmental authorities (e.g. if a city government's decision can be overturned by the ministry of the interior).
	B2. The city government holds the executive authority to implement its decisions.	If the municipal council is just a deliberative body, it has no executive authority to implement its decisions. Hence, the question here is about how decisions are implemented. The fact that a city government exists is no proof of the actual executive authority of that 'government'. However, if a city government can not not only deliberate but also has executive authority to implement the decisions of its deliberations, it has more structural power over what happens within its territory.
	B3. The city government autonomously decides how to allocate its budget.	This refers to the question of whether the central government does not get to decide the sub-allocations of the municipal budget, the city government does. The deployment of surveillance technology is mostly also a financial operation, as hardware and software has to be acquired, in addition to hiring consultants, PR specialists, etc. Therefore, if the city government has the formal (i.e. structural) authority over decisions of allocations of its budget, we can assume that they have some structural power regarding urban digitalized security through surveillance.
	B4. The city government's authority extends to matters of security.	A city government's authority could theoretically be restricted in some issue areas while not being so in others. With this checklist element, we want to draw attention to this fact. If the city government's authority does not extend to matters of security, this significantly reduces its structural power to influence the deployment of surveillance technology within its territory.

Category of Power	Statement	Explanation & Justification
	B5. The legality of the city government's surveillance project was not called into question by the judiciary.	This refers to the question of whether no judge or court called the legality of the project into question, either by ruling against the project or taking a case in the first place. It is a complementary part of element B1. However, it is not the same as B1 as the argument is different. Element B1 referred to the executive authority, meaning that a decision of the municipal government can be overturned by the simple decision of a more powerful executive. Here, however, the question is whether the judicial system can use 'rules and norms' against a city government's decision or whether the city can in fact use the 'rules, norms and decision-making procedures' to its advantage, which indicates structural power as defined by Moon (2019).

Moral Power

Moral power is *"[…] when an actor shapes the principles that others believe to be right or wrong, and the actions that may then follow"* (Moon, 2019, p. 6). An example here would be an influential political leader in the city (e.g. the mayor) making value judgments about what is right or wrong when it comes to surveillance.

Category of Power	Statement	Explanation & Justification
C. Moral	**C1.** The city government's surveillance project responds to a major security event.	If the surveillance project is launched after a major security event (e.g. terrorist attack) with the argument that the surveillance is supposed to prevent similar events in the future, this is an argument that it is the right and necessary thing to do to prevent the evil, the bad or the wrong from playing out the same way again. Hence, we take this as an indicator of moral power.
	C2. The city government is generally perceived to advance public security.	If the city government is generally seen to advance public security and if the trust in the security institutions of the city is high, this indicates moral power for the municipal government as it is more trusted to do 'the right thing' or to implement a surveillance project in 'the right way'.

Category of Power	Statement	Explanation & Justification
	C3. The city government's surveillance project advanced without allegations of corruption or abuse of power.	If such allegations come up, the city's moral power is hampered as it can hardly make the argument to do 'the right thing' or implement the project in 'the right way'. Citizens' trust in the project will decrease as a consequence. Here, we only consider allegations of corruption or abuse of power on a larger scale. A few Twitter accounts raising doubts won't be enough proof to indicate the public's general distrust in the city government's surveillance project.
	C4. The city government's surveillance project advanced without significant pushback from civil society.	Although related to the previous element (C3) it is not the same. Civil society pushback can originate from concerns over privacy and mass surveillance and doesn't necessarily originate from concerns over corruption or abuse of power. If there is pushback from civil society, this can indicate the city government's failure to convince other actors that the planned surveillance project is 'the right thing to do'. On the contrary, it can indicate that the public believes it is 'the wrong thing to do'.
	C5. The city government's surveillance project benefitted from citizen buy-in.	Here, we raise the question of the silent majority. Even if some civil society activists militate against the deployment of the surveillance project (see elements C3 and C4), the majority of citizens might silently agree with the municipal government's plans. This can be taken to indicate that a majority of the urban population is convinced that the surveillance project is 'right' instead of 'wrong'.

Expert Power / Knowledge Power

Expert power is *"[...] when an actor shapes what others consider to be legitimate knowledge, and therefore what they understand to be factually true or correct"* (Moon, 2019, p. 6). This power is limited to experts in the field; for example, police officers with substantial knowledge in urban digitalized security and surveillance. Another example here could be a private company specializing in surveillance technology that is hired by the city government to plan the deployment of such technology.

Category of Power	Statement	Explanation & Justification
D. Expert	**D1.** The city has a history of investing in innovative security practices.	An innovative city government has a competitive edge when it comes to trust in the factual correctness of what they are doing, as they are perceived as being guided by the innovative technical aspects of a project and less by other factors. Second, they also have prior experience in implementing innovative projects in the security sector. Hence, we take this to indicate that a city has more expert or knowledge power.
	D2. The city government emphasizes police training as part of its surveillance project.	This is an argument of 'in-house expertise'. If the city can successfully argue that its police is trained in these surveillance practices, it can make the argument that the statements of that municipal police force about the deployment of the surveillance dispositive are also factually correct.
	D3. The city government's rationale for the surveillance project relied on security data.	Leveraging data, specifically security data, be that from their own city or from the experience of other cities, is a form of proving expertise. By showing the data to support their arguments, municipal governments try to strengthen the perceived factual correctness of their arguments.
	D4. The soundness of the city government's surveillance project was not significantly challenged by security and technology experts.	If other experts (e.g. private sector) challenge the factual correctness of the city government's arguments, plans, or similar, this significantly reduces the expert power of the city itself. However, for this indicator to be applicable, the challenge of other experts also needs to be received by at least parts of the urban population. Hence, here we do not only look at the comments from other experts, but also at how much 'reach' these comments had.
	D5. The city government leveraged external expertise to advance its surveillance project.	A city government cannot only be challenged by experts, it can be supported in its position by these experts. This support can take many forms, but in all cases, it strengthens the idea that the arguments of the city government are to be taken as 'factually correct'. Although this is power by association with other actors, it nevertheless is a relevant power for the city government as it only supports them but doesn't force them to compromise.

Discursive Power

Discursive power is *"[...] when actors shape the language others use to conceptualize, frame, and thereby define and understand an issue"* (Moon, 2019, p. 6). This form of power is closely linked to all other forms of power, as will be shown in our cross-case analysis. For example, moral power is likely to rely on speech acts that highlight the rightfulness of a particular course of action. Besides using moral power, the actor therefore also uses discursive power through the reframing of an issue in light of moral arguments. Even though discursive power will be a problematic category for our analysis (i.e. isolating it from other forms of power), it is an extremely important form of power that must be mentioned here.

Category of Power	Statement	Explanation & Justification
E. Discursive	**E1.** The city government engaged in public discussion of its surveillance project.	By public discussions, we refer to press conferences, media interviews with questions, town halls, and similar observable events. In these public discussions, the city government is bound to use discursive power, as this is what a public discussion builds on. Hence, the active participation of city governments in public discussions is understood as an indicator of the use of discursive power.
	E2. The city implemented a concerted promotional strategy and/or an advertising campaign.	By implementing a concerted promotional strategy and/or an advertising campaign, the city government can attempt to reframe the debate around a topic. Of course, this is tied to other forms of power as well. A campaign can for example combine the discursive power element of reframing a debate while also mobilizing expert power by trying to convince citizens of what is factually correct or moral arguments by convincing them that the planned surveillance project is morally right. However, these combinations of power are in line with our conceptualization of the fungibility of capital.
	E3. The city used particular slogans or turns of phrase to paint the surveillance project in a positive light.	This goes back directly to the examples given in Moon's (2019) typology for the different forms of power. If a city government attempts to paint its surveillance project in a more positive light by using turns of phrases, it attempts to reframe the debate by shaping the language others use to understand the issue (Moon, 2019). Examples here would include the use of particular advertisement slogans, euphemisms, or other turns of phrases that obfuscate critiques.

Category of Power	Statement	Explanation & Justification
	E4. The city government's surveillance project advanced without significant accusations of misinformation.	If the city government is called out for misinformation or misleading statements, its discursive power is at least partially disproven. It means that their discursive power was not sufficient to convince their interlocutors of the misleading information. This is not to say that misinformation is (normatively) positive. But it is a tool of discursive power, when it is used to reframe the debate around an issue like surveillance.
	E5. There is evidence of public buy-in to the city's discursive efforts and/or the city's discursive arguments were boosted by external actors.	Another indicator of discursive power is when the city government not only tries to reframe the debate around the issue of surveillance but is actually successful in doing so. This can be seen when the citizens and other actors within the urban space start using the same discursive arguments, for example by referring to the project with the same euphemistic title the city might have chosen for its campaign.

Annex 4: Checklist for London

The sources for the justifications in this checklist can be found in the descriptive case studies of the report. All additional information, which was not presented in the descriptive case studies, is cited here in the annex.

A	ECONOMIC Power	Total: 2	Justification
A1	The city government has its own budget for security.	TRUE	The Mayor of London sets the budget for the MOPAC and MPS and is responsible for creating policies and plans for the Policing and Crime area as well.
A2	The city's budget is sufficient to support the entire cost of the surveillance project.	FALSE	The municipal budget alone does not seem to be sufficient. What has emerged is that the MOPAC/MPS budget has a financial gap due to underfunding by the Central Government.
A3	The city government can levy its own taxes and/or has other autonomous sources of funding to help fund its budget.	TRUE	The gross expenditure for the GLA (Mayor and Assembly) and each functional body is funded through a combination of resources directly controlled and allocated by the mayor (ex. council tax and retained business rates income).
A4	The city's autonomous sources of funding are sufficient to support the entire cost of the surveillance project.	FALSE	Research has shown that at least 50% of the MOPAC/MPS budget is represented by Central Government funding. Hence, it is considered reasonable to admit that local resources alone are not sufficient to be able to independently implement security projects
A5	The city can deploy its project without compromising on key features for economic reasons.	FALSE	There is evidence that the mayor has demonstrated a willingness to continue the project toward a safer city even at the cost of further increasing council taxes, nevertheless, this instance has not yet occurred, and therefore it was deemed appropriate not to check this box (*Sadiq Khan, 2021*.).
B	STRUCTURAL Power	Total: 5	Justification
B1	The decisions of the city government are not subject to veto power of external governmental authorities.	TRUE	Despite the influence that the Central Government may have on the Mayor of London's decisions, there is no evidence of an authority that formally has veto power.

B2	The city government holds the executive authority to implement its decisions.	TRUE	The Central Government grants full powers to the mayor of London regarding the administration of the city, including the executive power to implement its decisions.
B3	The city government autonomously decides how to allocate its budget.	TRUE	Among the powers given to the Mayor of London by the Central Government is the ability to allocate the budget differently, depending on demonstrated need.
B4	The city government's authority extends to matters of security.	TRUE	We can easily assert that the Mayor of London, through MOPAC, is responsible for setting the strategies and policies on policing and crime.
B5	The legality of the city government's surveillance project was not called into question by the judiciary.	TRUE	Despite some regulatory adjustments related to the use of RFR and LFR technologies - such as the introduction of a Code of Practice in 2018 - no evidence of direct challenge by the judiciary emerged in our research.
C	**MORAL Power**	**Total: 3**	**Justification**
C1	The city government's surveillance project responds to a major security event.	FALSE	Despite the terrorist attacks that occurred during the period under review, the London surveillance project must be seen as part of a broader policing plan to make the city generally safer and not as the result of policies undertaken in the wake of a single specific event.
C2	The city government is generally perceived to advance public security.	TRUE	The adoption of the technologies under consideration is perceived by the public as an example of constant innovation in favor of protecting the local community.
C3	The city government's surveillance project advanced without allegations of corruption or abuse of power.	TRUE	To the best of our knowledge, we found no evidence of corruption or abuse of power in our research.
C4	The city government's surveillance project advanced without significant pushback from civil society.	FALSE	In regards to RFR and LFR technology, the public has shown concern for their right to privacy. This sentiment has been captured by various NGOs and, more generally, digital rights campaign groups, who are still involved in legal proceedings against the London government in order to ensure that citizens' right to privacy is not violated.
C5	The city government's surveillance project benefitted from citizen buy-in.	TRUE	A recent report from the London Policing Ethics Panel has shown that overall 57% of respondents thought that in general terms, police use of LFR was acceptable.

D	EXPERT Power	Total: 4	Justification
D1	The city has a history of investing in innovative security practices.	TRUE	Even through a quick comparison of the most recent annual budgets approved by the Mayor of London, a predisposition for technological innovation in the field of security clearly emerges. Equally, the introduction of cutting-edge technology such as RFR and LFR is considered a factor in favor of this case.
D2	The city government emphasizes police training as part of its surveillance project.	TRUE	The MOPAC pays a lot of attention to the training of the police force, especially when it comes to the use of RFR and LFR technology. Evidence is shown in the annual MOPAC/MPS budget and the MPS LFR policy document.
D3	The city government's rationale for the surveillance project relied on security data.	TRUE	The security project carried out by the Mayor of London is supported by statistical data on crime, which is made public through the institutional platform, generally available at https://www.london.gov.uk/programmes-and-strategies/mayors-office-policing-and-crime-mopac/mopac-data-and-statistics.
D4	The soundness of the city government's surveillance project was not significantly challenged by security and technology experts.	TRUE	The technological advancement to improve security in Greater London has not drawn criticism from experts in the field, although the situation regarding the relationship between these and human rights is quite different.
D5	The city government leveraged external expertise to advance its surveillance project.	FALSE	Although the current RFR and LFR technology was purchased from a third-party company, the training, use, and implementation are entirely conducted by the MPS, and therefore it was not deemed appropriate to check this box.
E	DISCURSIVE Power	Total: 3	Justification
E1	The city government engaged in public discussion of its surveillance project.	TRUE	As part of the city mayor's intended strategy to foster transparency in MPS operations, MOPAC and the ICO regularly promote data related to the use of surveillance technology.
E2	The city implemented a concerted promotional strategy and/or an advertising campaign.	TRUE	Promotional aspects of the safety project feature in the broader "Smarter London Together" project commissioned by the Mayor of London in 2018. (*Sadiq Khan, 2018*)
E3	The city used particular slogans or turns of phrase to paint the surveillance project in a positive light.	FALSE	Despite the presence of projects such as "Smarter London Together," no form of slogans specifically related to the subject of surveillance was found during our research.

E4	The city government's surveillance project advanced without significant accusations of misinformation.	TRUE	No information emerged from our research regarding the presence of allegations of misinformation.
E5	There is evidence of public buy-in to the city's discursive efforts and/or the city's discursive arguments were boosted by external actors.	FALSE	No information emerged from our research to prove public adherence or involvement of external actors in promoting the London surveillance project.

Annex 5: Checklist for Singapore

The sources for the justifications in this checklist can be found in the descriptive case studies of the report. All additional information, which was not presented in the descriptive case studies, is cited here in the annex.

A	ECONOMIC Power	Total: 5	Justification
A1	The city government has its own budget for security.	TRUE	The Ministry of Home Affairs gives the largest share of its budget for police operations which is provided by the Ministry of Finance (Ministry of Finance, 2022)
A2	The city's budget is sufficient to support the entire cost of the surveillance project.	TRUE	The Ministry of Home Affairs directly funds the SPF through the budget provided by the Ministry of Finance.
A3	The city government can levy its own taxes and/or has other autonomous sources of funding to help fund its budget.	TRUE	The budget provided is completely sufficient for both maintenance and operation of the budget every year due to a separate expenditure cost noted for Polcam programs
A4	The city's autonomous sources of funding are sufficient to support the entire cost of the surveillance project.	TRUE	The Singapore Police Force is completely funded by the Ministry of Home Affairs thus not needing to cost-share
A5	The city can deploy its project without compromising on key features for economic reasons.	TRUE	The allocation of separate funds for surveillance projects along with the determined will of the lawmakers in Singapore has allowed for not only having key features but also investing in their advancement (Cheng Wei, 2018)
B	STRUCTURAL Power	Total: 5	Justification
B1	The decisions of the city government are not subject to veto power of external governmental authorities.	TRUE	Due to the structural power of the political system of Singapore, there is no veto power present that could counter the decisions of the Ministry of Home Affairs.
B2	The city government holds the executive authority to implement its decisions.	TRUE	The SPF under the Ministry of Home Affairs is the sole law enforcement agency for the city-state, thus having the executive authority to implement its decisions.

B3	The city government autonomously decides how to allocate its budget.	TRUE	In coordination with the Ministry of Finance, the Ministry of Home Affairs is able to determine its budget.
B4	The city government's authority extends to matters of security.	TRUE	The Singapore Police Force is the only major authority on matters related to security answering to the Ministry of Home Affairs.
B5	The legality of the city government's surveillance project was not called into question by the judiciary.	TRUE	No criticism has been found against the surveillance project by the judiciary system.
C	**MORAL Power**	**Total: 5**	**Justification**
C1	The city government's surveillance project responds to a major security event.	TRUE	The city government has increased surveillance in past in an area post a major security event (Koh, 2020)
C2	The city government is generally perceived to advance public security.	TRUE	The SPF is seen as the most important element for public security as it is the national and principal law enforcement agency.
C3	The city government's surveillance project advanced without allegations of corruption or abuse of power.	TRUE	Due to lack of evidence the Polcam Project has continued without any sign of corruption or abuse of power. Furthermore, a survey had shown that the 58% of population agreed to use surveillance through CCTV cameras during COVID (Mathews et al., 2020)
C4	The city government's surveillance project advanced without significant pushback from civil society.	TRUE	There has been an absence of pushback against the surveillance project from civil societies
C5	The city government's surveillance project benefitted from citizen buy-in.	TRUE	There have been reports of people encouraging and promoting camera usage along with taking part in the government's surveillance programs such as Vehicles on Watch (VoW).
D	**EXPERT Power**	**Total: 3**	**Justification**
D1	The city has a history of investing in innovative security practices.	TRUE	The Ministry of Home Affairs has the Home Team Science and Technology Agency (HTX) which is responsible for the innovation of its security operations(HTX Home Affairs, 2021b).
D2	The city government emphasizes police training as part of its surveillance project.	TRUE	Apart from the HTX, the SPF has its Workplan Seminar each year which focuses on the usage of technology and surveillance during training (Ministry of Home Affairs, 2021)

D3	The city government's rationale for the surveillance project relied on security data.	FALSE	There have been instances where surveillance measures were immediately operationalized post an incident immediately without focusing on data (Koh, 2020)
D4	The soundness of the city government's surveillance project was not significantly challenged by security and technology experts.	FALSE	There is a lack of evidence or criticism from experts in regard to the ongoing PolCam Surveillance project.
D5	The city government leveraged external expertise to advance its surveillance project.	TRUE	The HTX often partners with other commercial players for enhancing surveillance projects (HTX Home Affairs, 2021a)
E	**DISCURSIVE Power**	**Total: 4**	**Justification**
E1	The city government engaged in public discussion of its surveillance project.	TRUE	The SPF and MHA have actively promoted its surveillance project through the medium of press briefings, statements, speeches, etc.
E2	The city implemented a concerted promotional strategy and/or an advertising campaign.	TRUE	The SPF has used promotional videos and social media of promoting the PolCam by highlighting its capacities and using statistics on the effect of the cameras in reducing crime..
E3	The city used particular slogans or turns of phrase to paint the surveillance project in a positive light.	TRUE	The MHA and SPF have termed the PolCam project as "Safeguarding Our Neighbourhoods" for deterring and solving crime in our neighborhoods. Another title for the project is 'Community Policing System', which also avoids the negative connotations of surveillance.
E4	The city government's surveillance project advanced without significant accusations of misinformation.	TRUE	No information has emerged that showcases any accusations of misinformation.
E5	There is evidence of public buy-in to the city's discursive efforts and/or the city's discursive arguments were boosted by external actors.	FALSE	No evidence has been found that the citizens used the campaign messages in spreading the discursive power of the city

Annex 6: Checklist for Beirut

The sources for the justifications in this checklist can be found in the descriptive case studies of the report. All additional information, which was not presented in the descriptive case studies, is cited here in the annex.

A	ECONOMIC Power	Total: 3	Justification
A1	The city government has its own budget for security.	TRUE	The municipality of Beirut has its own budget and public security provision, including maintenance and management of the municipal police is one of the city's prerogatives.
A2	The city's budget is sufficient to support the entire cost of the surveillance project.	TRUE	The cost of the contract for surveillance cameras is $30-40m, for a yearly municipal budget of around $240m.
A3	The city government can levy its own taxes and/or has other autonomous sources of funding to help fund its budget.	TRUE	The municipality of Beirut has several local taxes it can levy.
A4	The city's autonomous sources of funding are sufficient to support the entire cost of the surveillance project.	FALSE	There is not sufficient data on the total revenue perceived from local taxes versus allocations from the central government.
A5	The city can deploy its project without compromising on key features for economic reasons.	FALSE	The contract to Guardia Systems was ultimately reduced from $40m to around $36m, but it is unclear whether this came at the cost of key features of the project (such as range of equipment, type of equipment, number of cameras).
B	STRUCTURAL Power	Total: 2	Justification
B1	The decisions of the city government are not subject to veto power of external governmental authorities.	FALSE	All of the municipal council's decisions are subject to approval from the Governor of Beirut.
B2	The city government holds the executive authority to implement its decisions.	FALSE	The Governor of Beirut holds full executive authority. The municipal council is a purely deliberative body.
B3	The city government autonomously decides how to allocate its budget.	TRUE	Although the Governor must approve the budget, the municipal council is in charge of allocation.

B4	The city government's authority extends to matters of security.	TRUE	Public security provision is one of the prerogatives of the municipal council if one that it must exercise in coordination with the central authorities.
B5	The legality of the city government's surveillance project was not called into question by the judiciary.	FALSE	The court of accounts declared the initial contract with Guardia Systems was illegal. It called into question the procurement process and advised the municipality and MOIM to negotiate a lower price tag.
C	**MORAL Power**	**Total: 1**	**Justification**
C1	The city government's surveillance project responds to a major security event.	TRUE	The proposal for security cameras was a direct response to the string of bombings in Beirut and elsewhere in Lebanon in 2013. The Mayor publicly announced the proposal as part of his response to these attacks.
C2	The city government is generally perceived to advance public security.	FALSE	The municipal police force is widely seen as ineffective and lacking in professionalism in comparison to the central government authorities or non-state actors.
C3	The city government's surveillance project advanced without allegations of corruption or abuse of power.	FALSE	In addition to the judicial strike against the project, there were several high-profile suspicions and allegations of corruption from civil society and the political class alike.
C4	The city government's surveillance project advanced without significant pushback from civil society.	FALSE	Some major civil society organizations raised concerns about privacy. Mainly though, pushback was regarding the cost and procurement of the Guardia Systems contract.
C5	The city government's surveillance project benefitted from citizen buy-in.	FALSE	Unclear. There appeared to be no significant pushback against the installation of cameras, but there were concerns voiced over the cost of the endeavor, and suspicions of corruption. Even so, it is not clear whether there was much trust or hopes that the project would have a significant impact on security.
D	**EXPERT Power**	**Total: 3**	**Justification**
D1	The city has a history of investing in innovative security practices.	FALSE	Unclear. But the municipal council is not widely seen as a major security provider and its police force is seen as ineffective and lacking in professionalism.
D2	The city government emphasizes police training as part of its surveillance project.	TRUE	The contract with Guardia Systems involved training for municipal officers. In fact, this training was touted as one of the rationales for the high price tag of the contract.

D3	The city government's rationale for the surveillance project relied on security data.	FALSE	The project clearly responded to a string of attacks, but no data appears to have been invoked to substantiate the expected effectiveness of the project.
D4	The soundness of the city government's surveillance project was not significantly challenged by security and technology experts.	TRUE	There is no evidence of substantial pushback from experts on the necessity or rationale of the project, particularly given the previous near-absence of public cameras.
D5	The city government leveraged external expertise to advance its surveillance project.	TRUE	The municipality relied on the expertise of Guardia Systems, as well as Dar Group, to give the public a sense that the surveillance project was sound and destined for success.
E	**DISCURSIVE Power**	**Total: 2**	**Justification**
E1	The city government engaged in public discussion of its surveillance project.	TRUE	The mayor and other council members spoke directly with the press about the proposed project, even responding to deflect accusations of wrongdoing in the procurement process.
E2	The city implemented a concerted promotional strategy and/or an advertising campaign.	FALSE	Beyond speaking to the press, there is no evidence that the municipality invested in any sort of campaign nor that there was any marketing strategy.
E3	The city used particular slogans or turns of phrase to paint the surveillance project in a positive light.	FALSE	The mayor initially described the project as being one of "the greatest projects" ever undertaken by the municipal council. But this does not amount to a slogan or tagline, and the descriptor does not appear to have ever been reiterated.
E4	The city government's surveillance project advanced without significant accusations of misinformation.	TRUE	Arguably, the municipality's defense against allegations of corruption and procurement of an overpriced contract might have been argued as misinformation. But there were no explicit accusations that the municipality was being misleading and little pushback on the necessity of the project.
E5	There is evidence of public buy-in to the city's discursive efforts and/or the city's discursive arguments were boosted by external actors.	FALSE	The city did not engage in much discursive or promotional effort for its proposal.