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#### CASE STUDY



# Networked disobedience to smart city development: The case of Hong Kong

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#### Abstract

When urban landscapes erupt into civil unrests, smart technologies that are intended to help preserve social order may become prime sites of contention. Integrating critical data studies and research on networked social movements, this article examines the underexplored contours of networked disobedience to smart city development - that is, direct action by self-mobilised and self-organised digitally connected citizens and activists to subvert or disrupt the dominant structure of the datafied smart city - during a large-scale protest movement. The case of Hong Kong's smart lampposts is analysed to explicate a distinct technopolitical contention that emerged in the digital age, focusing on three key aspects: (1) citizens' digital curation of folk theories, which perpetuated a consensus of discontent over the installation of smart city technology, (2) the articulation of a digitised network of counter-power that provided a mediation opportunity structure for mobilisation and intervention, and (3) the crowdsourcing of disobedient practices of data activism aimed at sabotaging or evading the smart city technology. The article illustrates how seemingly ordinary issues of urban datafication can be repurposed to (re)produce political contention and the ways in which controversies over smart city development may fuel adversarial citizen-state engagement with repercussions for data-driven urban governance.

#### KEYWORDS

citizen engagement, digital media, networked dissent, smart cities, smart lampposts, urban technology

### 1 | INTRODUCTION

The smart city agenda represents the latest paradigm of urban governance, in which big and AI algorithms are utilised for sustainable social and economic development [1, 2]. However, when urban landscapes erupt in civil unrest, smart technology apparatuses that are intended by urban authorities to help implement social order may become prime sites of contention. Smart city development is often criticised for the social inequality, segregation and exclusion resulting from its uneven distribution of services [3, 4]. However, and despite a burgeoning literature examining the ways in which big data have become both a new locus for and also a tool of contentious politics [5], little is known about how citizen discontent arises in increasingly automatised and data-driven urban landscapes [6, 7]. Much remains to be understood about how urban datafication opens up or closes off political opportunities for the articulation of citizen action and (counter-)public engagement [8], especially in non- or semi-democratic contexts [9], which have thus far been neglected in the literature.

Integrating critical data studies and research on networked social movements, this article examines the underexplored contours of networked disobedience to smart city development – that is, direct action by self-mobilised and self-organised digitally connected citizens and activists to subvert or disrupt the dominant structure of the datafied smart city – during a large-scale protest movement. Specifically, the case of Hong Kong's smart lampposts is analysed to explicate a distinct technopolitical contention that emerged in the digital age, focussing on three key aspects: (1) citizens' digital curation of

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folk theories, which perpetuated a consensus of discontent over the installation of the smart urban technology, (2) the articulation of a digitised network of counter-power that provided a mediation opportunity structure for mobilisation and intervention, and (3) the crowdsourcing of disobedient practices of data activism aimed at sabotaging or evading the smart urban technology. The article illustrates how seemingly ordinary issues of urban datafication can be repurposed to (re)produce political contention and the ways in which controversies over smart city development may fuel adversarial citizen–state engagement, with repercussions for data-driven urban governance.

### 2 | HONG KONG'S SMART LAMPPOSTS IN CONTENTION

The Smart City Blueprint of the Government of the Hong Kong Special Administrative Region (HKSAR) includes a plan to install over 400 multifunctional smart lampposts throughout the city to harness real-time data, with the aim of building 'a world-famed Smart Hong Kong characterised by a strong economy and high quality of living' [10]. As of June 2019, before the outbreak of the Anti-Extradition Bill Movement (AEBM), over 50 smart lampposts had been implemented during the first stage of a pilot scheme, with the remaining 350 lampposts to be installed in subsequent phases. According to the local government, smart lampposts are used by multiple urban authorities to collect environmental, traffic flow and air quality data in busy districts for business and tourism [11] as shown in Figure 1.

Specifically, the smart lampposts are equipped with meteorological and air quality sensors, thermal detectors and light detection and ranging sensors to collect air quality and weather data, along with Bluetooth beacons, radio frequency identification (RFID) and QR-code tags to enable data transmission for geolocation purposes [12]. Cameras have also been installed in some of the lampposts to help monitor and collect real-time information on traffic congestion and accidents, and the lampposts will eventually support free Wi-Fi and permit the installation of 5G mobile base stations by telecommunications operators to provide faster mobile data networks [11]. The collected data are available to government departments, such as the Environmental Protection Department, Transport Department and Land Department, and various industry bodies for analysis. They are also uploaded to the government's digital portal to provide the public with free access to information such as parking space availability and weather and traffic conditions [12].

During the AEBM, this smart city initiative collided with the widespread anger and hostility over the HKSAR government's proposal to amend the Fugitive Ordinance to allow Hong Kong to extradite criminal suspects to mainland China. On 12 June 2019, in response to the local government's decision to move ahead with this amendment, tens of thousands of citizens surrounded the Legislative Council Complex to demand the withdrawal of the bill due to the widespread public



**FIGURE 1** A multifunctional smart lamppost installed in Tsim Sha Tsu District.

distrust of the Chinese legal system [13]. The movement continued over the following months, with four protest marches involving more than one million participants and numerous other sizable protest marches and rallies taking place between June 2019 and January 2020 [14]. Amidst the unprecedented political crisis, protestors and their sympathisers formulated the theory that the smart lampposts were being used against them by the HKSAR government.

With the outbreak of the crisis, some legislators at the Legislative Council asked the HKSAR government to clarify the use of the smart lampposts during the citywide protests, particularly regarding public concerns that the smart lampposts would invade citizens' privacy or collect personal information [15]. The local government responded by clarifying that these smart lampposts had been installed only to collect data on traffic, weather and air quality, without a facial recognition function, and that it had no plans to collect facial or other personal data in the future. On 16 July 2019, the government further stressed that the smart lampposts could not breach the privacy of citizens because some of their functions, such as video cameras facing residential areas, had been withheld and would not be activated until they were approved by district councils [16]. Moreover, as the first wave of lampposts were being installed in June, the local government promised to disable some of the surveillance features, including a camera function for licence-plate recognition, a Bluetooth detector to track the speed and travel time of vehicles and a function to video monitor the dumping of industrial waste at blackspots [17].

However, due to the breakdown of trust in the local state and the surging clashes between protesters and police during the AEBM, some citizens and activists self-organised to vandalise and damage some of the smart lampposts in wildcat actions involving the intensive use of mobile social media and digital platforms [18, 19]. To further address public concerns arising during the AEBM, the Multi-functional Smart Lampposts Technical Advisory Ad Hoc Committee was formed in August 2019 to offer recommendations to the local government. Later, the Committee unanimously agreed that the government should proceed with the Pilot Scheme and install the rest of the smart lamposts [15]. In December 2023, the Pilot Scheme was completed, with over 400 smart lampposts installed in selected locations. The local government now considers smart lampposts to be a standard element of Hong Kong's smart city infrastructure and intends to have them installed in new development areas under planning or construction for enhancing city management and developing innovative services [16].

### 3 | NETWORKED DISOBEDIENCE TO SMART CITY DEVELOPMENT

Data technologies and AI algorithms have been increasingly implemented and promoted in urban governance and planning within the context of smart city policies [10, 14]. At the vanguard of an emerging 'platform urbanism' [20, 21], smart city technologies are guiding current projects of datafication in cities and will continue to guide these projects in the future. Blueprints for smart city development present promising scenarios that link technological progress with sustainable social and economic development. However, critical data studies have contended that urban datafication has brought new ways to subjugate citizens by turning them into normalised subjects of automated surveillance and state control [7, 9, 22]. According to these assessments, smart city development may lead to new inequalities fuelled by processes of urban datafication [2–4]. It is through this lens of critical data studies that scholars have begun to examine citizens' bottom-up engagement with smart city technologies in relation to the datafied power of the state

Among others, for example, Hoyng explored the emergence of integrated tactics of data vandalism and how they undermined the state control of data and re-politicised the smart city during the Gezi protests of 2013 [23]. Hintz, Dencik, Redden and Treré called for more research to identify the civic and political consequences of smart city development, in which smart city policies and projects are perceived as being 'used by those with authority to consolidate power' [24] (p. 3550). As yet, however, little is known about the process whereby ordinary digitally enabled citizens have come to counter state-led urban datafication and to resist the smart city technologies that underpin it. The salient case of Hong Kong provides a vantage point through which to examine how technopolitical contention over smart city technologies arises and proliferates in increasingly digitised urban environments.

In filling these gaps, this article draws on Fotopoulos's work on 'algorithmic disobedience' [25] to examine how people's 'active refusal to conform to predicated use patterns of data collecting devices and platform[s]' (p. 231) unfolded in the Hong Kong case. The article extends Fotopoulou's notion with the renewed concept of networked disobedience, turning its attention to the process whereby ordinary people come to discuss, invent, share and connect ways to challenge, mitigate, evade or sabotage the dominant structures of the datafied smart city. By examining the backlash against Hong Kong's smart lampposts, the article sheds light on how digitally connected citizens and activists converged 'to make sense of goings-on, to orient others towards shared concerns, and to develop a collective repertoire of thought [and action]' [26] (p. 5). Specifically, to deepen understanding of the 'contentious politics of data' [5] (p. 2) in an understudied technopolitical context, three interlinked levels of analysis are identified, each elements constituent addressing different of the (trans)formation of networked disobedience to the installation of Hong Kong's smart lampposts.

The first level of analysis focuses on examining the digital curation of 'folk theories' [27] regarding smart city technologies. In recent years, a strand of research has emerged to investigate how folk theories guide lay people's understanding of algorithms and data technologies by providing them with assumptions and expectations [28]. Serving as contextual and sensemaking frames through which individual users articulate their malleable views and new knowledge to interact with data technology, folk theories inform individuals' responses, and sometimes their resistance, to algorithmic changes [29]. Recent studies have also emphasised the significant role played by everyday experiences and immediate encounters, rather than abstract explanations, in the construction and consolidation of folk theories of how data technologies work [30, 31]. In the case of Hong Kong, the combined effects of intensive urban policing and unfolding adversarial state-citizen engagement led many citizen activists to turn to folk wisdom and articulate their own theories about the government's use of smart city technologies through the process of 'citizen curation' [32] (p. 545-562), defined as the subjective collection, assessment and criticism of information by ordinary citizens in the digital realm.

The second level of analysis looks at the articulation of the digitised network of counter-power for the backlash against smart lampposts. From the perspective of the network theory of counter-power [33-35], proliferating digital networks are conducive to the emergence of a 'mediation opportunity structure' [35] in which 'an ultra-saturated media and communication environment provides ample opportunities for activists to resist, to exert their agency, to self-represent themselves and to defy the structural constraints' [35] (p. 122). By allowing diverse participants to flexibly connect themselves to multiple activist groups and channels [36, 37], the horizontality of networks supports cooperation and solidarity while undermining the need for formal leadership [33]. In turn, the articulation of a robust network of counter-power depends on the active contributions of heterogeneous inputs delivered by diverse participants, who act as informational and relational brokers in forming bridges for diffusing activist narratives and practices and for maintaining connectivity [34].

Relevant studies have demonstrated how the Wi-Fi connectivity and growing communicative mobility in cities enable urban residents to take part in ad hoc activist communities of urban-based activism by uploading multimedia content in real time while riding subways or engaging in other quotidian activities [38, 39]. By simultaneously enabling network horizontality and multiplicity, the pervasive adoption of mobile devices and social media thus affords otherwise dispersed individuals to rapidly converge and develop relational ties in and for contemporary social movements [33].

The third and final level of analysis examines the development of disobedient practices against the smart lampposts, focussing on the crowdsourcing of 'best practices through direct action, resource sharing, and detail to organizational process' [34] (p. 165). Given that data technologies and AI algorithms are always and increasingly contentious in nature, how citizen action emerges and evolves in relation to (big) data has prompted scholarly attention. Integrating critical data studies and social movement studies, Beraldo and Milan invoked the notion of 'data activism' to capture citizens' (re)appropriation of data technologies and AI algorithms for engaging in the contestation or subversion of social datafication [5] (p. 2). In this article, such acts of data activism are examined with the complementary concept of 'connective actions' [40], whereby diverse individuals address common problems or issues through content sharing across digital platforms [41, 42]. Through connective actions, digitally connected citizens and activists come to combine information from different online sources to crowdsource what may be known as 'citizen science' [43] that mitigates or challenges the implementation of smart city technologies and to use what is common knowledge about AI and data technology to brainstorm practices of networked disobedience. In so doing, they invent, share and connect strategies or tactics to evade and/or sabotage the smart city technologies.

### 4 | MATERIALS AND METHODS

This study drew on the qualitative methods of digital ethnography and archival research to investigate how the networked disobedience to smart city development unfolded in Hong Kong. The empirical materials were primarily collected from LIHKG, which is a popular Reddit-like digital platform in Hong Kong that was adopted by protestors as a de facto virtual command centre during the AEBM [44-46]. A manual keyword search was conducted to identify, select and archive the empirical materials for the period from June 2019, when the backlash against the datafied smart city emerged alongside the AEBM, to January 2020, when the AEBM was curtailed, in part, by the outbreak of the COVID-19 pandemic. The keywords used for the search on LIHKG were 'smart lampposts', 'surveillance lampposts' and 'multifunction lampposts'. Screenshots were taken of all the threads and posts containing any of these keywords, producing an archive consisting of a total of 14,787 posts under 169 threads.

The study also involved non-participant observations of relevant social media pages and channels that were publicly available on Hong Kong's popular digital platforms, including Telegram, Facebook and Instagram. The empirical materials that were thereby collected offered significant insights into the articulation of the oppositional narratives and bottom-up interventions associated with the citizens' relevant discussions or calls for action in response to the smart city initiative. Following Coleman's [47] analytical framework of digital ethnography, URLs and screenshots of all relevant images, captions and comments or replies were incorporated in documents, accompanied by fieldnotes with an initial interpretation for further analysis.

Furthermore, an immersive reading of media coverage, documents and records was performed. The archive of reading materials was collected and curated as follows. First, keyword searches were used to identify and collect press articles and public records from the LexisNexis database. Second, policy documents, announcements and press releases were collected from government websites and related platforms. This archival research was used to guide the online observations on the digital platforms by identifying the corresponding institutional forces, events and actors at key time points [48]. The materials also provided evidence of the disobedient practices of data activism that targeted Hong Kong's smart lampposts and their contours and ramifications in real-life contexts that could not be fully captured by the digital ethnography.

The analysis of the online observations was integrated with information derived from archival research to offer a contextual account of 'how and why certain issues [of urban datafication] gain political valence, and what opportunities certain acts of politicisation provide' [49] (p. 424). While the process of interpretation remained open, it began with a coding process to identify the key themes regarding (1) the role of different events and actors in the development of the networked disobedience to smart city development, (2) the narratives and practices involved, and (3) how the people's lines of thoughts and courses of action changed over time. To achieve a context-specific account, the study adopted an iterative and dialogical process that moved between the empirical materials and theorisation [50] and gradually refined the themes until sufficient levels of interpretive convergence and theoretical saturation were achieved [51]. To protect anonymity, people's (user)names are not mentioned and the wording of quotations are altered in the findings.

### 5 | RESULTS

# 5.1 | Curating folk theories of smart city technology

5.1.1 | Folk theory 1: 'smart technology of urban policing'

As a distinct type of contentious politics of data, networked disobedience to Hong Kong's smart lampposts 'involves interactions in which actors make claims bearing on other actors' interests, [... and] in which governments are [sometimes] involved as targets, initiators of claims, or third parties' [52] (p. 7). In the case of Hong Kong, folk theorisation is a process whereby networked individuals both make sense of and give sense to the smart city technology and its relationship with the unfolding adversarial state-citizen engagement. In summer 2019, as the AEBM rapidly intensified, prominent discussions arose on LIHKG that linked smart lampposts to the urban policing unfolding in the 'city of protests'. These discussions contributed to the digital curation of the first folk theories regarding the smart city technology through a process of 'mass self-communication' [33] (p. 9), whereby digitally connected citizens and activists drew information from multiple sources to articulate their own theories of the smart lampposts - theories that were developed and mediated through their immediate experiences and encounters during the AEBM.

Table 1 shows that during the analysed period, 79 of the 169 threads consisted of posts contributed by citizens and activists that alleged that the smart lampposts were being utilised during street protests by the local government to stealthily collect personal data on protestors. As shown in the table, the phrase 'facial recognition' was used 98 times across these posts and the terms 'police' and 'locating' (or 'tracking') were mentioned 49 and 30 times, respectively. Observations made using digital ethnography revealed that the use of these phrases exhibited a burgeoning criticism and doubt that constituted the first folk theory, alleging that the smart city technology was being used to assist the police with law enforcement and mass arrests.

The online conversations related to the first folk theory reflect citizens and activists' understandings of the installation of the smart lampposts during the crisis while also focussing on specific features of the smart lampposts in asserting their claims. They thus offer a detailed account of 'how users believe a system operates (or will operate) and how that belief guides behaviour and understanding' [29] (p. 3165). For instance, relevant posts included discussions of 'CCTV' and 'footage' (24 mentions) and of the 'full-' or 'ultra-high-definition camera' (53 mentions) and 'Bluetooth beacon' (35 mentions) installed in the smart lampposts. Although the government claimed that it did not run any facial-recognition algorithms on public surveillance footage [53], online discussions demonstrate

 $T\,A\,B\,L\,E\,\,1$   $\,$  The first folk theory, related technologies and frequent keywords on LIHKG.

Folk theory	Thread count	Related technology	Keyword count	Keyword	Keyword count
Smart technology of political repression and urban policing	79	(F/UHD) camera	53	Facial recognition	98
		CCTV/ Footage	24	Police	49
		Bluetooth beacon	35	Locating/ Tracking	30

suspicion that these devices were equipped with cameras and sensors capable of facial recognition to facilitate mass arrests and that they were providing geolocation data to police for the purpose of tracking protests.

# 5.1.2 | Folk theory 2: 'surveillance system for political silencing'

Similarly situating the smart city technology within the changing 'political opportunity structure' [52] (p. 60) in Hong Kong, the second folk theory was curated by networked individuals to depict the smart lampposts as a surveillance system for political silencing. Fitting the smart city initiative into an interpretative scheme or system of meaning that was politicised in the digital realm, networked individuals described and considered the smart city technology as a key element of a broader social surveillance system similar to that used in mainland China and intended to achieve totalising urban control in the near future.

As illustrated in Table 2, online discussions frequently included the terms '(social) credit system' (240 mentions), 'big brother (is watching you/us)' (27 mentions) and 'political silencing' or 'chilling' (18 mentions), suggesting that the installation of smart lampposts was a step towards establishing a citywide social credit system aimed at penalising disloyalty. Although the HKSAR government stated that none of the data collected from the smart lampposts were being or would be shared with third parties, such as the central government [54], citizens and activists were sceptical about the creation of a database intended for grid-style surveillance and its potential to extend automated monitoring into Hong Kong's civil society.

In particular, the legislative amendment proposed by the government to allow Hong Kong to extradite criminal suspects to mainland China fuelled the folk theory that Hong Kong citizens' personal data and private information were already being provided to the central government and that this data collection and sharing were being enabled by the smart lampposts. In the context of an erosion of trust, online conversations that mentioned the technological aspects of the

 $T\,A\,B\,L\,E\,\,2$   $\ \ The second folk theory, related technologies and frequent keywords on LIHKG.$ 

Folk theory	Thread count	Related technology	Keyword count	Keyword	Keyword count
Surveillance system for urban control and political silencing	81	Data collection/ sharing	60	(Social) credit system	240
		5G (network)	29	Big brother (is watching you/us)	27
		RFID/ Smart ID (card)	47	Political silencing/ chilling	18

smart lampposts, such as '5G (network)' (29 mentions) and 'data collection' or 'sharing' (60 mentions) exhibited a perception of the smart city technology as a way to implement systems akin to those allegedly used in Xingjian [18, 19].

Other online discussions speculated that coupled with the introduction of the new smart identification cards (47 mentions), which have a built-in RFID chip for accessing public and commercial e-services, the lampposts would become part of a larger system of politically repressive surveillance and urban control. These oppositional narratives of folk theories (self-)perpetuated on the Internet facilitated the (re)articulation of a consensus of discontent. They fed people's 'data ideologies' and contributed to 'political scripts' [49] (p. 1424) that contested the normative discourses of the datafied smart city, resulting in 'the removal of consent to an existing system via an unofficial consensus' [34] (p. 154).

# 5.2 | Creating a digitised network of counter-power

## 5.2.1 | Network horizontality and relational density

The popularity and horizontality of the LIHKG forum rendered it the most prominent platform for contention over Hong Kong's smart lampposts. Diverse forum participants developed folk theories and crowdsourced disobedient practices of data activism vis-à-vis the instalment of the smart technologies in Hong Kong. Established in 2016, LIHKG registered an overseas server as a measure against censorship and adopted a registration system that required an email address provided by an Internet service provider for identity verification [44]. A prominent feature of LIHKG is its user-friendly interface for users to 'up-vote' or 'down-vote' topics, enabling the most popular topics to rise to the top [45]. By affording anonymity and through its thread popularity mechanism, the open-ended, consensusbased operating system of LIHKG provided a prominent infrastructure for the mobilisation and coordination of the backlash against smart lampposts.

As shown in Figure 2, from June 2019 to January 2020 there were 169 threads created on LIHKG that revolved around politically loaded discussions on the smart city technology. At the peak of the AEBM in July and August 2019, there was a dramatic surge in highly contentious online discussions, which unfolded under 63 and 78 threads, respectively. Figure 3 offers further insights into the dense relational network on LIHKG, with relational density considered a key factor in assessing 'whether dense, complex, and interlocking relationships develop between participants' [34] (p. 163). The figure shows that approximately 23% and 20% of the threads generated more than 50 and 100 reply posts, respectively. These threads with relatively high numbers of reply posts on LIHKG not only demonstrate the popularity of online discussions about Hong Kong's smart lampposts but also indicate a high relational density in the intensity of the communicative interactions among the online participants.

# 5.2.2 | Network multiplicity and relational bridging

Moreover, the creation of the robust digitised network was composed of 'relational, action-oriented, heterogeneous networks of action' [34] (p. 154) within the larger network. In the case of Hong Kong's smart lampposts, while LIHKG constituted a dense organisational hub that connected individuals, the reach and ease of mobile social media and Internet access in the smart city facilitated the creation of a heterogeneous network of counter-power consisting of an array of subnetworks and nodes. Rather than solely converging on the digital platform of LIHKG, '[m]embers of homogenous groups act[ed] as brokering and bridging agents' [34] (p. 169) via cross-posting and engagement across digital platforms.

Table 3 provides information on some of the most prominent social media groups and channels linked to LIHKG,



**FIGURE 2** Total monthly threads about the smart lampposts on LIHKG.





TABLE 3 Prominent social media groups and channels linked to LIHKG.

Platform	Group/Channel	Followers	Major function(s) and/or focus(es)
Telegram	А	<b>52,6</b> 00	Providing real-time updates about citizen actions against smart lampposts; deliberation and contestation of counter-surveillance tactics
	В	50,200	Updating information and news about the development of the smart city initiative; online mobilisation and organisation of sousveillance activities
Facebook	С	26,154	Providing real-time updates about citizen actions against the smart lampposts
		5041	Deliberation and contestation over counter-surveillance tactics
Instagram	D	8845	Raising public awareness of the perceived pitfalls of the smart city project

offering insights into the contours of relational bridging in the heterogeneous network of counter-power. As shown in the table, some of these groups and channels focused on providing up-to-date information and news about the implementation of the smart city technology and raising public awareness of its perceived pitfalls; others provided real-time updates about citizen actions against smart lampposts and hosted debates over counter-surveillance tactics and sousveillance activities.

As Telegram, Facebook and Instagram were widely used as instant communication tools during the AEBM [46] and were the most popular social media platforms in Hong Kong, citizen members of several online groups and communication channels on these platforms frequently contributed to the discussions on LIHKG revolving around the smart lampposts. While performing a range of activities that were specific to the mobilisation and coordination of networked disobedience, they functioned as informational and relational brokers to bridge citizen groups and activist channels.

# 5.3 | Crowdsourcing data activism against smart lampposts

# 5.3.1 | Reactive activism against urban datafication

Corresponding to the folk theories curated on LIHKG and across social media, various connective actions of data activism that targeted Hong Kong's smart lampposts were developed and self-mobilised in the digitised network of counter-power. Figure 4 presents the total number of threads corresponding to each of four types of data activism crowdsourced by networked individuals on LIHKG during and after summer 2019. Following Beraldo and Milan, they are classified here as 'reactive' or 'proactive' data activism according to whether they reactively challenged the unfolding issue of urban datafication or proactively harnessed citizen-led data collection as repertoires for the contentious politics of data [5].

Characterised by a set of connective actions that were confrontational and destructive in nature, toppling smart lampposts represents the most prominent form of 'reactive' data activism [5], in which data collection by the smart lampposts became a stake of contention and provoked (radical) citizen action. As entailed in one of the folk theories discussed above, during the AEBM, many protestors and their sympathisers viewed the smart lampposts with vigilance and suspicion and believed them to be surveillance tools used by the police to suppress protests and conduct mass arrests. With LIHKG serving as the major venue for citizen activists to up-vote and down-vote the best practices of wildcat actions during AEBM, mobile action groups were self-mobilised to vandalise some of the newly installed lampposts or disable their surveillance capabilities. This strategy, also known as 'blossom everywhere' [45] (p. 363), required rapid mobilisation on the Internet within a short period - usually a day or two in advance - and was coordinated almost in real time via the encrypted messaging app



FIGURE 4 The four types of data activism and their number of threads on LIHKG.

Telegram and other mobile social media as protests occurred. Although the HKSAR government repeatedly stated that the lampposts did not have any facial recognition technology and that protesters' concerns about the smart lampposts were unfounded [55, 56], about 20 smart lampposts were damaged in summer 2019 and remained out of service until September [53].

Alongside the toppling of smart lampposts, a series of counter-surveillance tactics were crowdsourced on LIHKG and shared across social media platforms as another form of 'reactive' data activism, responding to a fear that protestors' faces were being recognised and their location information collected by the lampposts. Targeting the smart lampposts' alleged automated monitoring and pervasive data collection functions, digitally connected citizen activists developed and improvised counter-surveillance tactics and reminded protestors to use these tactics to increase their anonymity and location privacy. These tactics included covering faces with masks and umbrellas to render facial recognition ineffective, using cash rather than Octopus cards for routine transactions to avoid location tracking during street protests, and disabling the location tracking function on smartphones to provide better protection against the alleged automated surveillance by smart lampposts. Even after the AEBM was over, Hong Kong citizens, especially former protestors, continued to converge on LIHKG to express their concerns that the RFID technology embedded in the smart lampposts would read and record data from the new smart Hong Kong ID cards. Although the HKSAR government stressed that the maximum 'readable' range of the RFID chips on the new cards would be 10 cm, tech-savvy participants on LIHKG suggested wrapping the smart identity cards in aluminium foil to shield them from the lampposts' electromagnetic fields. Other forum participants curated online information and reported their personal experiences in discussing and testing the effectiveness of these measures in a networked and ad hoc manner.

# 5.3.2 | Proactive activism against smart city development

In addition to the 'reactive' data activism based on connective actions, doxing constituted a prominent type of 'proactive' data activism whereby citizen activists harnessed the potentials of citizen-led data collection to contend with the implementation of smart lampposts. Corresponding to the two folk theories, which alleged that urban authorities were using the smart lampposts as a tool for urban policing and political silencing, a doxing campaign was mobilised and coordinated across LIHKG and social media platforms to track down the production network of surveillance technology. Most notably, during a street protest, some protesters not only felled one of the newly installed smart lampposts in the Kwun Tong district but also 'anatomised' it in an attempt to identify the IT companies that had provided the core components for the lampposts and installed them for the local governments [55]. Based on the information found on the components scavenged by protestors, other citizen activists then analysed their functions and obtained open data from the Internet to investigate the corporations involved. By creating and disseminating social media posts that expressed intense public criticism, they subsequently revealed information about these IT companies and denounced their senior management staff in an attempt to force these suppliers and constructors to cease supplying and installing the smart city technologies. As a consequence, in late August 2019, a local company involved in the smart lampposts project, Ticktack Technology Limited, decided to cease supplying Bluetooth beacons and installing the smart devices for smart lampposts after its employees and the directors' families were doxed. The HKSAR government expressed sympathy and deep regret regarding this decision [53].

As another type of 'proactive' data activism that similarly involved citizen-led data collection, citizen activists converged online to crowdsource maps of the newly installed lampposts as a popular 'sousveillance' [57] activity. While the smart lampposts collected real-time data on urban environments, crowdsourced mapping constituted a significant component of counter-surveillance through citizen-led data collection and visualisation. By reversing the direction of the 'gaze' of surveillance from citizens to urban authorities, digitally connected citizen activists appropriated a similar logic of surveillance to inform their networked disobedience. Especially after summer 2019, when the connective action of toppling smart lampposts declined along with street protests due to protestors switching their strategy from street protests to 'mall protests' [46], citizen activists concentrated on soliciting information about the smart lampposts and their installation while circulating analyses of their perceived dangers in the digital realm. To provide fellow citizens with up-to-date information, they utilised their mobile phones to collect data and report the locations of newly installed smart lampposts and their technological features and assumed functions across LIHKG and social media platforms. Coupled with the counter-surveillance tactics crowdsourced by citizen activists that are described above, crowdsourced mapping emerged for the specific purpose of evading the smart urban technology by rendering the implementation of the technology digitally visible to people across the city.

### 6 | CONCLUSIONS

This article unpacks the (trans)formation of networked disobedience to smart city development by illuminating the distinct modality by which a smart city project and apparatus were turned into an incident of technopolitical contention. It provides a critical reassessment of the challenges posed to urban datafication while explicating the key constituent elements that underpin the smart city backlash. Specifically, using the case of Hong Kong's smart lampposts, the article proposes three levels of analysis that could be fruitful in future research. The first level examines the articulation of the discursive backbone of networked disobedience to smart city development, with a particular focus on citizens' curation of folk theories that perpetuated a consensus of discontent in the digital realm. The second level considers the creation of a digitised network of counter-power that enabled the mobilisation and self-organisation of networked disobedience. The final level maps out the various forms of citizen direct action and intervention, demonstrating how a wide range of disobedient practices of data activism were crowdsourced to facilitate diverse participation in contention over the datafied smart city.

By analysing the case of Hong Kong's smart lampposts, this article offers nuanced insights into understudied aspects of the emerging literature on the smart city backlash. In particular, it sheds light on the new (dis)juncture between the (local) state's 'smart' power and emerging insurgent citizenship. The article also illustrates how smart city technologies may be repurposed to (re)produce local contentious politics in relation to the proliferation and use of mobile social media and digital platforms. Future research on data-driven urban governance and its discontents should pay attention to how the smart city apparatus is both experienced and acted upon by digitally enabled citizens and activists by focussing on the (counter-)public perceptions of and responses to datafied smart cities. Future studies could also consider the legacy of the previous episodes of technopolitical contention and their impact on subsequent instances of smart city backlash, thus providing a dynamic understanding of datadriven urban governance and its discontents.

#### AUTHOR CONTRIBUTIONS

**Tin-yuet Ting:** Conceptualisation; Methodology; Investigation; Resources; Data curation; Writing – original draft; Writing – review and editing; Visualisation; Project administration; Funding acquisition.

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#### CONFLICT OF INTEREST STATEMENT

The author declares no conflicts of interest.

### DATA AVAILABILITY STATEMENT

Data may be made available on request.

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