

# Be Water: Technologies in the Leaderless Anti-ELAB Movement in Hong Kong

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## ABSTRACT

We examine a *leaderless social movement* characterized by participants' autonomy and the absence of leaders and organizations. We conducted a participant observation study of the Anti-ELAB movement in Hong Kong. Focusing on the organization of a protest march, we collected thousands of lines of discourse in the LIHKG Forum and the Telegram instant messaging system. Our grounded theory analysis revealed hundreds of groups acting within a symbiotic network. Participants promoted an ethos of empowering individual participants and groups to act autonomously. At the same time, participants' extensive use of hyperlinks and polls orchestrated a coherent social movement. We discuss how this novel formation can mediate successful leaderless movements.

## Author Keywords

Anti-ELAB; leaderless social movement; ethnography; Hong Kong.

## CSS Concepts

• **Human-centered computing** → **Collaborative and social computing**; *Empirical studies in collaborative and social computing*

## INTRODUCTION

In the last 20 years, technologies have played an increasingly important role in social movements [7,12,25,34,36]. We examine the emergence of a leaderless social movement in Hong Kong characterized by participants' self-organizing, decentralized decision-making and the absence of visible leaders and organizations [11,29,33]. Leaderless movements are increasing. For example, during the 2000 US presidential election, supporters of opposing candidates swapped and traded votes through websites, not leaders, so that a strategic voting movement could achieve mutually agreeable election outcomes [11]. Following the financial crisis in Argentina, neighborhoods spontaneously mobilized and then protested without centralized leaders in what is known as the Argentine

Assembly movement [29]. Within a few years, this movement inspired a protest organization at Occupy Wall Street that adopted the leaderless notion and experimented with consensus-based decision-making within its diverse membership [5,24,29,33]. During the Ukrainian Revolution, participants mobilized on their own even when they later appointed a group of leaders [12].

Apart from cases like the Ukrainian Revolution, leaderless movements have met with limited success. Lack of results leads to questions about whether the idea is simply an unworkable ideal [24,33]. The Occupy Wall Street (OWS) movement is a recent example of a failed leaderless movement. Driven by a fierce rejection of central leadership, it failed to make critical decisions by requiring unanimous support for any action [24]. Some scholars argue that no social movement is feasible without a charismatic leader [21,24,39]. However, the Anti-ELAB movement has had some success, as we will discuss.

The Anti-ELAB movement began on June 7, 2019. It was triggered by an unpopular law—the Extradition Law Amendment Bill (ELAB)—that allows extradition of criminal suspects from Hong Kong to mainland China. Taking in the painful lessons of earlier movements' failures, including incarceration of leaders, Anti-ELAB participants adamantly disavow leadership. The movement appropriated the catchphrase “*be water*” from the late Hong Kong action movie star Bruce Lee, who said:

If you put water into a cup, it becomes the cup. You put water into a bottle and it becomes the bottle. You put it in a teapot it becomes the teapot. Now, water can flow or it can crash. *Be water* my friend.

The phrase encourages participants to act independently, and, like water—to coalesce when opportunity arises, and to disperse when the task is done or the situation unfavorable. The Anti-ELAB movement has conducted dozens of sit-in protests, strikes, and traffic disruptions. Crucially, *it has successfully compelled the Hong Kong government to withdraw ELAB*.

We analyzed the online discourse of the Anti-ELAB movement in a multi-sited ethnography where we “followed the conflict” [20], tracing key events and technologies mentioned in the discourse leading up to a protest march in a mid-size district. By multi-sited, we refer to online groups,

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each performing an independent activity, yet interconnected within a network with overlapping memberships sharing camaraderie, practices, information, and tools. *We found dozens of online groups performing a wide variety of autonomous tasks which were coherently organized.* Notably, participants' extensive use of hyperlinks and online polls orchestrated these activities. We discuss features of this social and technological formation developed by the Anti-ELAB participants, and some design implications.

### RELATED WORK

In this section, we discuss two features of leaderless movements emphasized in the literature—autonomous leadership and networked relationships—and their associated challenges.

#### Replacing Leaders with Temporary Autonomous Tasks

Leaderless movements reject centralized leadership. But this does not imply that they are without leaders—anyone can be a “leader” by volunteering for a task that is only temporary [11,33,35]. In OWS, participants embraced an organizing philosophy known as *horizontalism* characterized by lack of stable leaders replaced by autonomous participation [5,33]. Through self-directed and voluntary ownership of tasks, OWS participants successfully implemented on-site services including food, medical aid, legal assistance, education, libraries, and WiFi [29].

Technologies have been useful in facilitating autonomous tasks in previous movements. In the Tunisian Revolution, young participants used Facebook to disseminate practical advice such as how to treat tear gas injuries [37]. During demonstrations by Palestinians against Israel, and in OWS, participants used mobile phone cameras to document critical incidents. They uploaded them onto online video platforms to build public awareness [5,35,36].

A leaderless movement can be viewed as a collection of temporary, autonomous, and collaborative tasks [11,33,35].

#### From Mobilizing Around Leaders to Mobilizing within a Network

Even without charismatic leaders, participants can mobilize into collectives by appropriating networking tools such as Facebook and Twitter, or through a shared community space [5,35]. A remarkable example occurred during the Argentine Assembly movement in which neighborhoods spontaneously organized into hundreds of protest assemblies [29]. In one neighborhood, someone wrote on a wall in chalk, “Neighbors, let's meet here Thursday night.” At first a dozen, then hundreds of people gathered [29]. Sitrin [29] described this inspiring moment:

In communities across the country, people greeted one another, kissing the cheeks of neighbors whose names they had never known. They began to ask questions together. This is how the neighborhood assemblies were formed.

Such networks also existed online. During the leaderless “strategic voting” movement in the 2000 US presidential election, 19 websites facilitated communication [11].

Networked voters in favor of Gore and Nader traded their votes. Nader supporters would vote for Gore in states where he had a tight race with Bush, while Gore supporters would vote for Nader in other states to boost Nader's total votes [11]. As participants looked for a website they could use for trading, Earl [11] observed a curious shift in this movement's organizational structure. The collection of websites stood in the place of traditional leaders who would have performed the pairings [11]. Participants described themselves as “shopping” for a website they could use to trade their vote [11]. The notion of leaders had disappeared, and in its place, a set of independent online service providers powered the movement.

Social media have supported participants mobilizing by mediating their autonomous construction of powerful “collective action frames,” that is, coherent and interconnected sets of meaningful narratives often drawn from recent emotional events [1,10,31,32]. In the Ukrainian Revolution, leaderless at the start, participants constructed a collective frame on Facebook that galvanized a spontaneous gathering at the central square of the capital, Kiev [12]. Participants then organized a central leadership structure to coordinate street protests [12].

#### Decision-making in Leaderless Movements

Many have asked whether social movements should be leaderless without central decision makers [21,24,39]. For example, a criticism of OWS is that participants enacted a consensus approach in which all had to agree before the group could take action, causing important decisions not to be made at all [33]. This limitation was compounded by the heterogeneous collective that constituted OWS—feminists, antiglobalists, anarchists—with diverse ideologies, practices, and goals [5]. OWS was unable to express a coherent set of demands for the mass media [5,24]. Roberts [24] noted:

The Occupy movement briefly flourished and then failed. It burned itself out without moving the country substantially closer to remedies for any of the problems...Taken to an extreme, the horizontalist ethic destroyed the capacity of Occupiers to build political alliances.

But whether OWS's failure was due to lack of centralized leadership, or simply an ineffective decision-making process, is debatable. In 2014, Hong Kong's Umbrella Movement partially emulated OWS to utilize sit-in protests, but opted to establish central leadership. It also failed to deliver social change [18]. Its leaders stood firm on their decision to conduct peaceful sit-ins and rejected repeated calls for escalation [14]. After 79 days of protests, Umbrella participants burnt out in ways similar to OWS. The movement ended with police clearance of the protest sites [14].

As leaderless movements grow, their limited success raises important questions. In particular, can digital technologies mediate leaderless movements to deliver real social change? How do technologies mediate participants' decision-making?

How can technologies facilitate participants' self-organizing to perform autonomous tasks?

### THE ANTI-ELAB MOVEMENT

Since its reunion with China in 1997, Hong Kong has been treated as a Special Administrative Region (SAR) by the central government. As a SAR, Hong Kong has sustained a high level of autonomy from the mainland through an independent legislature, police force, and press, as well as considerable freedom of speech. However, many in Hong Kong have perceived a gradual erosion of their independence from the mainland over the years. These perceptions resulted in the Umbrella Movement in 2014. Inflamed by a series of political incidents, the Anti-ELAB Movement began on June 7, 2019. It orchestrated the largest protest march ever seen in Hong Kong with *two million participants*—an astonishing 27% of Hong Kong's population [27].

The trigger for this movement was the proposal of the highly unpopular Extradition Law Amendment Bill (ELAB). ELAB's objective was to enact legal mechanisms to extradite criminal suspects to mainland China. A large spectrum of Hong Kong's residents, including legal professionals, were fearful that ELAB could end Hong Kong's independent legislature. They demanded the withdrawal of the proposal [17]. During an unlawful assembly of protesters on June 12, 2019, Hong Kong police wielded unconscionable force in their attempts to disperse protestors. With anger at the police's actions, support for the social movement erupted. The movement's demand for ELAB's withdrawal expanded to include *an independent inquiry into police actions, exoneration of arrested participants, and a rekindled call for free elections*. Free elections had been the core demand motivating the Umbrella Movement. In its continuation we see some eventual success for the Umbrella Movement even though it dissolved as a movement (see [14]).

The leaderless structure of the Anti-ELAB movement has emerged by heeding some painful lessons of the Umbrella Movement. The Umbrella Movement was led by two organizations—the Hong Kong Federation of Students (HKFS) representing college students, and Scholarism representing high school students [14,18]. As time went by, many participants became disillusioned about the effectiveness of peaceful sit-ins. Participant numbers suffered a gradual decline until the handful of remaining protesters were dispersed or arrested on December 15, 2014 [14]. Some participants criticized their leaders for failing to escalate the movement, causing a rift within HKFS and Scholarism [38]. Members became divided between two protest philosophies: the escalation philosophy, known as *yung mou* (勇武), and the peaceful protest philosophy, known as *wo lei fei* (和理非). Then, prominent members left HKFS, decimating it [22]. Scholarism was dissolved by its leaders [15]. Thereafter, many leaders of the two groups were arrested and imprisoned, often on charges unrelated to the movement [16,26]. *Both the rift among participants and the arrests*

*were key to Anti-ELAB participants' collective decision to keep the protests leaderless*. It was deemed wiser that each participant do what they wanted to, and, that without leaders, there would be no targets for law enforcement.

The terms *wo lei fei* and *yung mou* are still used to describe protesters and their actions in Anti-ELAB. From this point on, we will refer to the *wo lei fei* group as “the peaceful,” and *yung mou* group as “the brave.”

### Technologies of Anti-ELAB

Unlike the Umbrella Movement [14], Anti-ELAB has no permanent roadblocks, supply stations, medical aid stations, spokespersons, or protest sites. Even without a hierarchy, it has successfully organized the two largest protest marches in Hong Kong's history, dozens of sit-in protests, strikes, subway disruptions, traffic disruptions, acts of hashtag and Reddit activism, product boycotts, human chains, and the singing of a new, anonymously composed song. This song is so solemn, moving, and inspiring, it resonated deeply with public sentiments and became popularly known as the “Hong Kong Anthem” (see Figure 1).



**Figure 1.** A singing of the “Hong Kong Anthem” at a shopping mall.

Two technologies played a major role in making all of this happen—the LIHKG Forum (lihkg.com) and the Telegram instant messaging system.

LIHKG was launched in Hong Kong in November, 2016. Users have the ability to upvote or downvote posts. This mechanic resembles, and has been compared to, the American forum Reddit (reddit.com). LIHKG is one of the most popular sites for Hong Kong's liberal leaning residents. Nearly all its users are local Hong Kong people due to user registration requiring the use of an email address registered with a Hong Kong Internet service provider or a Hong Kong school or university. While LIHKG has provided no user numbers, each user was given a serial number at registration, and this number indicates more than 250,000 users.

Telegram is a mobile phone-based instant messaging system (IM) in many ways similar to WhatsApp. While WhatsApp has remained the most popular IM in Hong Kong, Telegram has been gaining traction since the Umbrella Movement due to a widespread belief that it has better encryption. Telegram allows the formation of enormous chat groups of up to 200,000 members compared to WhatsApp's 256 members. Telegram allows unlimited member channels that look like

groups, but only allow channel owners to post messages, affording a form of broadcasting.

## METHOD

Between July 24 and September 19, 2019, we conducted a participant observation study of the Anti-ELAB movement by analyzing LIHKG posts and discourse in Telegram groups and channels. We adopted Marcus's [20] multi-sited approach to link texts across forums, groups, and channels. We focused our textual analysis on one particular activity ("follow the conflict" [20])—a protest march in one of the 18 districts in Hong Kong. The smallest district has a population close to 150,000 residents, while the largest has about 650,000. *Kowloon Kau* (pseudonym) is a mid-size district. Like other districts, the residents of Kowloon Kau participated in several Telegram groups including the largest—*Kowloon Kau Public Hub*, with about 3,000 members. We found and joined this group by following a hyperlink posted publicly on Reddit. In the five days during which members of the Kowloon Kau Public Hub prepared for the march, participants embedded hyperlinks in their Telegram messages that connected the march to LIHKG and other groups and channels. We analyzed the relationships between these groups.

We anonymize participants' identities in the paper. Following guidelines in Boellstorff et al. [4], all names of participants, groups, channels, hyperlinks, streets, and apartment buildings are anonymized. Images from posts and discussions are either a generic representation of the actual picture shared by participants, or recreated images we did ourselves. We altered details such as dates, time, and places, but in such a way that they retain the ethnographic richness of our data [4].

We recorded all posts and chats in their original language of Cantonese, the major language of Hong Kong. The quotes were translated into English by the first author who speaks Cantonese. This translation process also helps prevent the use of the original Cantonese quotes to identify the participants.

## Grounded Theory Analysis of the Protest March at Kowloon Kau

Our five-day observation began with an afternoon message posted in the Kowloon Kau Public Hub calling for a joint-district strike across Hong Kong. We followed the threads of this activity, reading thousands of lines of text messages that discussed a wide range of topics including news events and publicity. We took fieldnotes regarding our interpretations of these messages. We coded messages relevant to organizing the march. The research team met regularly to discuss emerging trends. For example, early in the analysis, we noticed ritualistic use of new cultural vocabulary within the leaderless movement, such as *tai toi* (大台), literally "the big stage," to denote any authoritative organization or person.

In our iterative and inductive analysis of the online discourse, our coding and memoing process initially came up with a

variety of themes such as "ideological shifts," "call-to-action," "first call," "polling for support," "network of protests," "deliberating how to protest," and "fact-checking." We further identified, named, and categorized these themes to generate more general themes, until we arrived at the frame of technologies in a leaderless movement. Under axial coding, the codes were reduced to those that are represented in this paper.

## FINDINGS

In this section, we describe how Anti-ELAB participants mobilized, made decisions, maintained anonymity, conducted on-the-ground activities, and dealt with conflicting information and misinformation.

### Mobilizing Through Adaptive, Shifting, Collective Action Frames

In the spirit of a leaderless movement, it is common for participants to write, "I am not a *tai toi*," or "I speak for no one" after having made a comment. These phrases empower anyone to create a post to mobilize an activity. For example, one evening, eight days before the march at Kowloon Kau, a post on LIHKG called for a large-scale strike and multi-district marches. This post was written in response to mounting public anger towards excessive suppression tactics used by police. Fivedemandsnotoneless wrote:

Since June 9, we held one activity after another – petitions, marches, gatherings – which the government had not just ignored, but had failed to protect Hong Kong residents during last week's terrifying attack [by mobs]... Can't we do more for Hong Kong? Now is the right time for *the peaceful* to repay them [for their lack of response]. Let all professions in Hong Kong unite and strike!

Tg group: @joint\_protesthk

Tg channel: @joint\_protesthk\_ch

This post was initiated by a member of a 50,000 member group, *General Strike and Multi-district Marches* that conceived a large-scale protest across Hong Kong. This call-to-action was worded to leverage recent public anger towards police inaction when a group of mobs, whom many Hong Kong residents alleged to be in collusion with the police, performed random attacks on residents at a subway station. The wording was designed to propel *the peaceful* into joining the strike.

Three days following this LIHKG post, the Kowloon Kau Public Hub called for a strike. Nvrforget wrote:

The General Anti-ELAB Strike

Since our resistance started on June 7, millions went onto the streets and numerous sectors of our society voiced our objections to the evil law. Yet, we have not gotten this bill retracted... Yet, as we *the peaceful* debated, brave young people who loved Hong Kong were bloodied, arrested, locked up [by the police].

As *the peaceful* [who denounced escalation], we have no option left but one – a general strike in five days.

Points to note when going on strike:  
[http://bit.ly/greatstrike\\_note](http://bit.ly/greatstrike_note)

Sample letter of intent to your employer:  
[http://bit.ly/greatstrike\\_letter](http://bit.ly/greatstrike_letter)

Nvrforget argued that *the peaceful* had to act, and had no other option but to join the strike. She included detailed instructions to ensure that participants followed the law while striking. For example, it is illegal to strike without employers' permission during office hours in Hong Kong. Many employees had to take personal leave.



Figure 2. LIHKG's voting function served to estimate the popularity of proposed activities.

**Be Water When Determining What You Want to Do**

On LIHKG, users posted a wide variety of political discussion topics including proposed activities, updates on protest permit applications, news, opinions, and insider information regarding companies and other institutions. LIHKG's upvote and downvote functions helped estimate the popularity of various proposals. Figure 2 shows a series of posts related to a July 7 protest march. The first post, which gathered the phenomenal number of 8,133 aggregated votes, informed others that the march had received a protest permit and would be legal (i.e., not considered an unlawful assembly). This information was important because legal marches tend to attract more participants. The third post, with a respectable 623 aggregated votes, suggested that the march

was a peaceful protest and that participants should avoid prohibited areas.

Unlike forums such as Reddit, LIHKG's upvote and downvote indicators do not merely show an aggregated score (i.e., number of upvotes minus number of downvotes) but also the exact upvote and downvote counts (see Figure 3). This representation can be helpful for users in determining whether participants favor an opinion. For example, Figure 3 shows an unpopular post, which, in response to a widespread report of police violence, argued that there were good police officers as well.



Figure 3. LIHKG's interface shows upvote and downvote counts (see bottom right), not merely an aggregated score.

LIHKG users did not agree on numerical thresholds before vote counts were considered actionable. Thus, upvote and downvote scores only constitute a form of opinion poll. Since the beginning of Anti-ELAB, LIHKG had received numerous complaints that new members were manipulating polls to derail the movement. Thus, on August 13, 2019, LIHKG disabled polling for all members who joined LIHKG after June 2019 (the start of Anti-ELAB). This action allowed only longstanding LIHKG members to influence the polls.

It was also possible to poll within Telegram. Its bots perform algorithmically driven tasks such as disseminating a poll and calculating results within a Telegram group. For example, in the late afternoon four days before the Kowloon Kau march, SD Chan posted:

People are putting their lives on the line, and are you still choosing to do nothing? Will you support them in the strike in four days?

*Anonymous poll*

- Yes
- No

This poll gathered nearly 3,000 supportive responses. But beyond simple polling, phrases like “are you still choosing to do nothing” also constituted a call to action. There were six other similar polls on the same day.

Following the results of various user-driven polls, each person was on their own—without organizational obligation to take any action, as in the ethos of *be water*. For example, during the Kowloon Kau march, the Kowloon Kau Public Hub was brimming with messages indicating what users were doing. We saw messages such as, “I am marching on

auto-mode,” “What are we doing next?,” “Occupy post office or *Tai Kei Shopping Centre?*,” “Nobody knows—*be water.*”

Here, *be water* provided an imaginary of acting within the leaderless movement. A leader is a strong figure but can be broken, that is, arrested and jailed. Without a leader, the group can more easily adapt—water taking the shape of the cup. Participants can gather to perform activities or disperse to avoid arrest (“water can flow”). Thus, *be water* indicates that on the ground, each participant decides on his or her own what to do (e.g., whether to occupy or to disperse).

Taken together, both *not a tai toi* and *be water* constructed an ethos to avoid some of the problems many Hong Kong activists witnessed during the Umbrella Movement. This stance was summed up by Francisco in an LIHKG post upvoted more than a thousand times:

*Tai toi* is every person around us. The reason that an activity can last long is because all of us have given our own opinions, and participated in decision making... [and] not forcibly imposed decisions on other people. Each person, after reading various pieces of information, please think carefully how your decision will affect you and the movement, and take responsibility for your own decision. Do not run because a person told you to run, or stay because another told you to stay. Did you come out to march because you felt that there was injustice, or only because you saw the others doing so? ... Regardless whether you are *the peaceful* or *the brave*, we were all Hong Kong people doing this for the sake of our own family. There is no need to differentiate us at all.

In this post that addresses the conflict between *the peaceful* and *the brave*, Francisco clarified that each participant now not only has the moral authority to take initiative, but also to answer to their own decisions. This ethos resolved the fundamental contradiction in the hierarchically organized Umbrella Movement. To encourage solidarity within a diversity of opinions, participants ritually chanted a common protest slogan, “Do not differentiate *the peaceful* and *the brave*, we are forever indivisible” (毋分和勇，永不割席).

### Maintaining Anonymity and Security

Occasionally users posted reminders in the Kowloon Kau Public Hub about technology safety. While Telegram was perceived to be secure, Anti-ELAB participants were iteratively updating information regarding potential vulnerabilities, such as the widespread belief that the police and other institutional actors were monitoring and identifying members of the chat group. For example, in Telegram, a user’s identity is not anonymized by default, and other group members can look up names and phone numbers. Some users had thus circulated several versions of privacy instructions, in text and graphical formats, advising users to remove their profile pictures, anonymize their names, and set their phone numbers to private. Within the four days leading up to the march, the number of users of the Kowloon Kau Public Hub ballooned from 3,000 to 10,000, and privacy instructions were more frequently shared.

The effort to maintain anonymity extended to real-life contexts, particularly where there were surveillance cameras and suspicions of undercover police. For example, on the day of the Kowloon Kau march, at around 2 pm, ZZ shared a photo of a dozen cartons of drinks neatly placed right outside the shutter of a closed store in a well-known shopping mall. Unlike in the Umbrella Movement in which supply points resembled convenience stores, well-stocked and staffed, Anti-ELAB’s supply points were makeshift, minimal, and unattended to minimize confiscation and theft, and to avoid revealing the donor’s identity.

### Acting on a Network of Actionable Information

While LIHKG gave the movement a sense of direction, crucial details of activities were discussed and disseminated within dozens of Telegram groups and channels. These groups and channels were open to anyone. Any Telegram user interested in any group or channel can click on a hyperlink that reads like “<https://t.me/chi2020>” or “<https://t.me/submittochi2020>.” While there are also private, invitation-only groups, they are beyond the scope of this research.

We encountered groups including:

- (1) Location-based groups to conduct neighborhood watch and to organize activities;
- (2) Profession-based groups to organize activities like marches and strikes;
- (3) Publicity groups for producing digital posters, videos, and animations to promote activities;
- (4) Scouting groups to report police movement in real-time;
- (5) Fact-checking groups to verify news and live information of protest activities;
- (6) Mapping groups to produce detailed live maps indicating locations of police, protest participants, non-participating residents, supplies, surveillance cameras, first-aid stations, tear gas, and roadblocks within a protest site;
- (7) Civil rights groups to assist arrested participants.

For location-based groups alone, there were at least one, but likely several, groups and channels covering each of the 18 districts. There were also one or several groups serving each of at least 16 major professions including civil service, finance, information technology, healthcare, music industry, engineering and construction, food and beverage, retail, accounting, aviation, and education.

Between two to three days before the march, chats within the Kowloon Kau Public Hub were frequently interrupted by users sharing professionally produced publicity materials selected from many of the publicity channels. We saw one publicity channel containing more than 80,000 users. (See Figure 4 for an example of a poster.)

On the last day before the march, members of the Kowloon Kau Public Hub began to conduct physical publicity efforts in and around their district. For example, Ilovewinnie wrote,

“Hey please help to Airdrop this publicity poster! (Apple only)”

Airdrop is an iPhone feature that allows users to share digital photos or documents with nearby users anonymously. Airdrop has been used to disseminate publicity materials in physical spaces.



**Figure 4.** An example of a professionally produced digital poster to gather support for a march on Aug 18. This poster invoked the shocking incident of a female medic blinded by a riot control shot gun round—to be aimed at extremities and *not* the head or abdominal areas.

Supplies had to be gathered, usually food and water, as well as gear such as gas masks, protective goggles, hard hats, elbow and knee guards, gloves, towels, saline solution, and walkie talkies. Importantly, many of *the brave* were students, and they did not have the resources to sustain frontline activities. Starting four days before the march, users of the Kowloon Kau Public Hub began asking for and volunteering to buy supplies. Users like JH left messages such as, “If any Kowloon Kau folks need protective gear or food please pm [private message]. I can’t go to the frontline, but I can contribute a little bit of money to the cause.”

More experienced users like Dontliberateme attempted to help donors prioritize purchases, and wrote:

Pardon me, but many groups already have collected more than 200,000 food vouchers for distribution.

But it looks like everyone is fighting for gear. And gear is expensive. Even finding supply is difficult. I would prioritize buying gear.

In this message, Dontliberateme suggested that *the brave* had ample food vouchers, but not gear. Following messages like this, users of the Kowloon Kau Public Hub began discussing where to buy such gear, and the preferred models, brands, and sizes for male and female users. Other users shared details on the exact shops and streets of Kowloon Kau where such gear was available.

Due to the lack of supply stations, supply distribution was a concern. For example, Gooseduck forwarded a message from the Dog Scout channel, dedicated to reporting police

locations and disseminating important information, a mere two days before the march:

A reminder to all brothers. There is a marked shortage of supplies at the frontline. In addition, the police dogs have been sniffing out supplies. All supply groups, please do not publicly collect these supplies to avoid confiscation and disruption of our supply chain. If you have supplies, keep them safely. It is best that you hand them to the frontline yourself.

In this quote, *dog* was a derogatory slang term referring to the Hong Kong police. As Anti-ELAB progressed, the Hong Kong police operationalized countermeasures such as the confiscation of gear from known supply collection points. The Dog Scout channel advised donors to hand gear to members of *the brave* in-person.

A majority of Hong Kong residents live in apartments secured at the entrance by a four-digit passcode. In anticipation of police making arrests, many had pre-compiled a list of up-to-date passcodes of most apartments in Kowloon Kau. The passcodes allowed members of *the brave* to find sanctuary if they were surrounded by the police. For this purpose, *S Chan* shared access codes of more than 50 apartments:

Tin Seng [residential area]  
Tin Fung A [block] 2087  
Tin Fung B [block] 4559  
Tin Wai A [block] 9174  
Tin Wai B [block] 1003  
...

While disclosure of apartment passcodes is against residential policies, it became a common practice in the movement.

Despite each Telegram group and channel serving a different purpose, their solidarity in sharing and exchanging complementary information through text forwarding and hyperlinks cannot be overstated.

#### Geographic Mapping and Fact-checking Misinformation

Starting three days before the march, the discourse on the Kowloon Kau Public Hub addressed ironing out details such as gathering points and protest routes. However, due to lack of a centralized verifiable source of information, misinformation or informational conflict was plentiful. For example, in response to information regarding gathering points on the day of the march, a series of users asked in the group: “So many versions,” “Which is it,” “Is it *Golden Park?* Or *Kenny Square?*” “But everywhere else says *Kenny Square?*” “Who is the organizer? Which is the real location?”

One day before the march, polished publicity posters that mapped out the protest route were disseminated within the group. Figure 5 shows an example of one such poster. Produced by a publicity group, the map contained details such as gathering and ending points, anticipated routes, recycling, supply, and first-aid stations.

Early on the morning of the march, signs that the march had begun emerged as early as 7 am. Joe wrote, “Is anyone at the road junction at *Tin Mei*? I want to set a roadblock.” “Count me in,” replied another participant. Someone said, “There are a lot of motorcycles here.” “Just move them to one side,” replied a fourth user. By the afternoon, Telegram chat was brimming with constant updates of incidents at various sites. For example, David D called for first aiders around 3 pm, “Tin Kei carpark needs first aid.” This was quickly followed by, “Kowloon Kau Road cross junction needs first aid.” As thousands of participants were marching in the streets, online participants helped report on police activity. For example, Glorytohongkong forwarded a piece of information from Dog Scout that read, “8:43 [am]. Kowloon Kau [subway station.] A [and] B exits 10 anti-riot [police] carry guns have shield.”



Figure 5. Example of a detailed poster indicating protest route. (Courtesy of @sakurali41713 at [13]).

To disseminate accurate information, the anonymous administrators of the Dog Scout channel conducted verifications known as *fact-checking* on reports it received from its 150,000 members. In the channel, it stated the following reporting rules:

- Submit only **FIRST-HAND FIRST-HAND** information!
- Information must be accompanied by a photo, and one sentence to describe the incident. Do not say “hi.” Report to one and only one admin. Camera must activate time stamp; blur faces. Use *Secret Chat* as far as possible.

Secret Chat is a messaging mode in Telegram that encrypts text messages. Through a rigorous system of fact-checking, Dog Scout released hundreds of live reports daily to users all over Hong Kong.

At times, participants would report sightings on their own without using channels like Dog Scout. Within five minutes following Glorytohongkong’s message, Smileyface shared, “Several white dog cars at Kowloon Kau Centre. Be careful of dog cars.” And LastOpportunity replied, “I will fact check myself,” indicating that she would personally visit the location to verify the information.

Sometime after 4 pm, a picture of Google Maps containing simple markings of police roadblocks was shared in the chat. A recreated image of this map is shown in Figure 6.



Figure 6. Recreated image of a map produced by a participant indicating the locations of police and their roadblocks.

A few weeks after the Kowloon Kau march, a new Telegram channel, Hong Kong Geographic, emerged. In contrast to the map shown in Figure 6, this group was distributing better looking maps, uncomplicated and highly detailed, clearly marking locations of police, tear gas, residents, roadblocks, first aid points, and resting points (see Figure 7).



Figure 7. Detailed, high quality maps developed by participants of Hong Kong Geographic channel.

Through inventive, careful use of a set of digital technologies, the anonymous and autonomous Anti-ELAB participants formed dozens of online groups to foster their



cause. They volunteered as poster designers, donors, fact-checkers, scouts, technology specialists, and map-makers. They constructed a cohesive, adaptive, synergistic network that had, by September 4, 2019, surpassed the 79-day duration of the Umbrella Movement. *Most crucially, Anti-ELAB participants forced concessions from the Hong Kong government to withdraw ELAB—demonstrating the feasibility of technology-mediated leaderless movements.*

## DISCUSSION

In this study, we examined how digital technologies can mediate a successful leaderless movement. In the case of Anti-ELAB, the technologies mediated the emergence of dozens of autonomous groups organized by districts, professions, preferred activities (e.g., a strike), and forms of peer production (e.g., digital poster production). The groups mobilized participants and resources and produced and distributed high quality posters, best practices, scouting information, and informative maps. Importantly, *while leaderless movements like OWS developed mostly physically co-located groups, many of the Anti-ELAB groups are tightly connected online.* The use of digital technology mediates many novel practices that we will discuss in this section.

### A Leaderless Movement as an Opinion-seeking Autonomous Network

LIHKG as a closed resident-only community with tens of thousands of members lends credibility to the representativeness of its polls. Telegram allows polls to be conducted through bots, and it supports group sizes encompassing an entire district or interest group. By the time this paper was accepted for publication, the largest group we encountered (Dog Scout) had grown to 280,000 members. With useful affordances built into the design of the technologies, Anti-ELAB participants were able to frequently and recurrently seek opinions on proposed activities. Not only were the opinions informative, they created a sense of connection and solidarity among participants crucial for any social movement [8].

The results of Anti-ELAB's polls are informative, not prescriptive, a kind of non-binding opinion-seeking. This use of opinion contrasts with the OWS consensus model that required unanimous agreement [24]. *In Anti-ELAB, it was the responsibility of activity organizers (e.g., members conducting publicity) to consider these opinions when developing their activities.* Opinions were not merely fodder for news articles, as in much of the mass media in the US, but had a clear place in the decisions of activity organizers, who took them seriously. This bottom-up organization turns centralized social movements upside down in a way resembling methods of feminism which downplay traditional roles of "important figures" by focusing on actions of individual participants instead of movement leaders [3].

With the freedom to post on LIHKG, Anti-ELAB participants proposed many activities. Through voting on LIHKG, organizers could identify which sentiments and ideas were popular and compelling, and which were

unpopular (e.g., a sympathetic view towards the police proved unpopular). This use of voting marks a shift from how centralized movement organizers must carefully craft collective changes in their messages and activities [31]. Anti-ELAB participants suggested ideas and collectively voted in the online polls for ideas they would support.

Anti-ELAB participants made autonomous decisions down to the individual level. As a result, many of the online texts circulating meeting points and instructions were crafted to be actionable at the individual level. As in OWS, this method of allowing participants freedom to pursue their own activities led to a wide diversity of service offerings within the movement (e.g., map-making and fact-checking) [11,33,35].

In this form of opinion-seeking autonomous network, there is enormous value in catchphrases and slogans embedded in day-to-day interactions, almost ritualistically. For example, while "I am not a *tai toi*" alluded to respecting others' opinions, *be water* legitimized individual judgement. Through these phrases, participants developed robust imaginaries to organize new and creative activities such as the collective composing of the "Hong Kong Anthem" and fact-checking within the Dog Scout channel. These activities reflected and deepened public sentiments.

### A Learning and Developing Infrastructure

In the autonomous network of the movement, participants continuously learned to use technologies more effectively, to create and manage social relationships, and to generally develop practices to expand social and technical infrastructures.

In any social movement, participants will encounter problems such as institutional countermeasures [1,30], medical contingencies [37], and police violence [5]. To adapt to these situations, Anti-ELAB participants shared what they learned online, for example, by forwarding IM text advice to reorganize their supply chain or to make changes to Telegram's privacy settings. This online sharing was observed in the Tunisian Revolution when participants shared first-aid information [37] and during OWS and the Palestinian demonstrations when participants shared photographic proofs of violence by authorities [5,36]. In Anti-ELAB, participants further developed new and better information services such as the creation of the Hong Kong Geographic group.

Within a Telegram group, some information was only shared locally, such as information with a high level of specificity, for example, the exact brands and models of gear and where to purchase it. Not only was such information localized, it was *live*, with participants spontaneously proposing ad-hoc activities—for example, set a roadblock, provide medical aid, go to a particular location to pick up supplies, form a temporary workgroup to handle emerging tasks as events were unfolding. Through technology, Anti-ELAB was able to make extensive use of information that was timely, detailed, and locally relevant—powering a developing living network.

### Designing for Leaderless Movements

While the emergence of technologies like facial recognition are bestowing greater power to states and institutions [19], the appearance of leaderless social movements may be an indication that other technologies are also mediating changes to social movement structure in powerful ways [5]. Social movement tasks that citizens autonomously organize include mobilizing and disseminating general tactics (e.g., treating injuries); documentation; scouting; and building public awareness and solidarity [5,12,14,36,37]. In Hong Kong, participants leveraged digital technologies to further support these tasks through robust means of assessing opinion, encouraging autonomous decision-making, creating and disseminating clever publicity, effectively managing supply chains, making maps, disseminating localized and live information in a timely fashion (e.g., distributing building access codes), and organizing ad-hoc contingency teams (e.g., for medical aid). To increase the likelihood for social movements to effectively deploy a leaderless structure, *designers can create technologies that better support each of these tasks.*

For example, an important task is opinion-seeking from citizens on a city or country-wide scale. In Anti-ELAB, LIHKG and Telegram have supported (to an extent) resident-only registration, extensive group size, and polling within the social movement. But there are two concerns. The first is, to what extent do members of LIHKG represent the true opinions of the entire population of Hong Kong? LIHKG members are known to be liberal leaning, and their decisions may not represent more conservative citizens. While we may cheer democracy on, political polarization in, for example, the US and the UK, gives pause—there is a cost to creating a class of people who feel ignored. The second concern is that technologies like LIHKG and Telegram invite privacy risks. Service providers need to prevent hacking and surveillance of their databases to protect members' identities, and make it easy for users to choose a secure setting (e.g., [23]). But even with competent privacy design, governments can still seize providers' computers to access the databases. And anonymous user registration and polling are not options as these platforms need to validate users' residency.

Emerging cryptographic methods (e.g., *zero-knowledge proofs*) may address these two concerns at once [6]. In designing to enhance privacy within direct democracy, Buccafurri et al. [6] proposed a system that can verify that its members are real citizens, yet does not require citizens to reveal their identities. Cryptographic methods can allow all citizens to discuss online and vote anonymously. Designing such systems would entirely remove privacy information from the databases, thus enabling wider participation and privacy at the same time. When used in direct democracy, although these methods do not completely address issues of polarization, they might help citizens feel they are not ignored and can express their own views, potentially reducing devolution to populist leaders who emerge historically when people feel alienated.

In a leaderless social movement, government could also disrupt technologies through Internet censorship or shutdown, such as what happened in the Egyptian uprising [2]. As an alternative to relying on the Internet, designers could consider designing opinion-seeking autonomous networks on wireless mesh technologies (e.g., utilizing Bluetooth technology). Some of these technologies have already been developed to handle communications during crisis recovery [9,28]. Designers could extend these technologies to support leaderless movements.

We identified a powerful sociotechnical formation to sustain leaderless movements. At the time of writing, the resilient Anti-ELAB movement has perturbed a powerful, massive government that has been unable to suppress it. With more than six thousand protesters arrested and the economy in recession, Hong Kong's citizens are also paying a high cost for this movement. But when a centralized movement is no longer practical, technologies now exist to mediate a new form of movement that provides a glimmer of hope for the people to reclaim their civil rights.

### CONCLUSION

We conducted a participant observation study of a leaderless movement, the Anti-ELAB movement in Hong Kong. We found that in contrast to leaderless movements like Occupy Wall Street and the Argentinian Assembly in which participants developed physically co-located networks, much of Anti-ELAB's network is *online*. By utilizing a set of digital technologies, Anti-ELAB participants developed an opinion-seeking autonomous network in which dozens of groups perform diverse sets of tasks autonomously while aligning their work with other participants through frequent online polls. Within this novel formation, Anti-ELAB participants were able to orchestrate creative practices to achieve significant success in the leaderless social movement.

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