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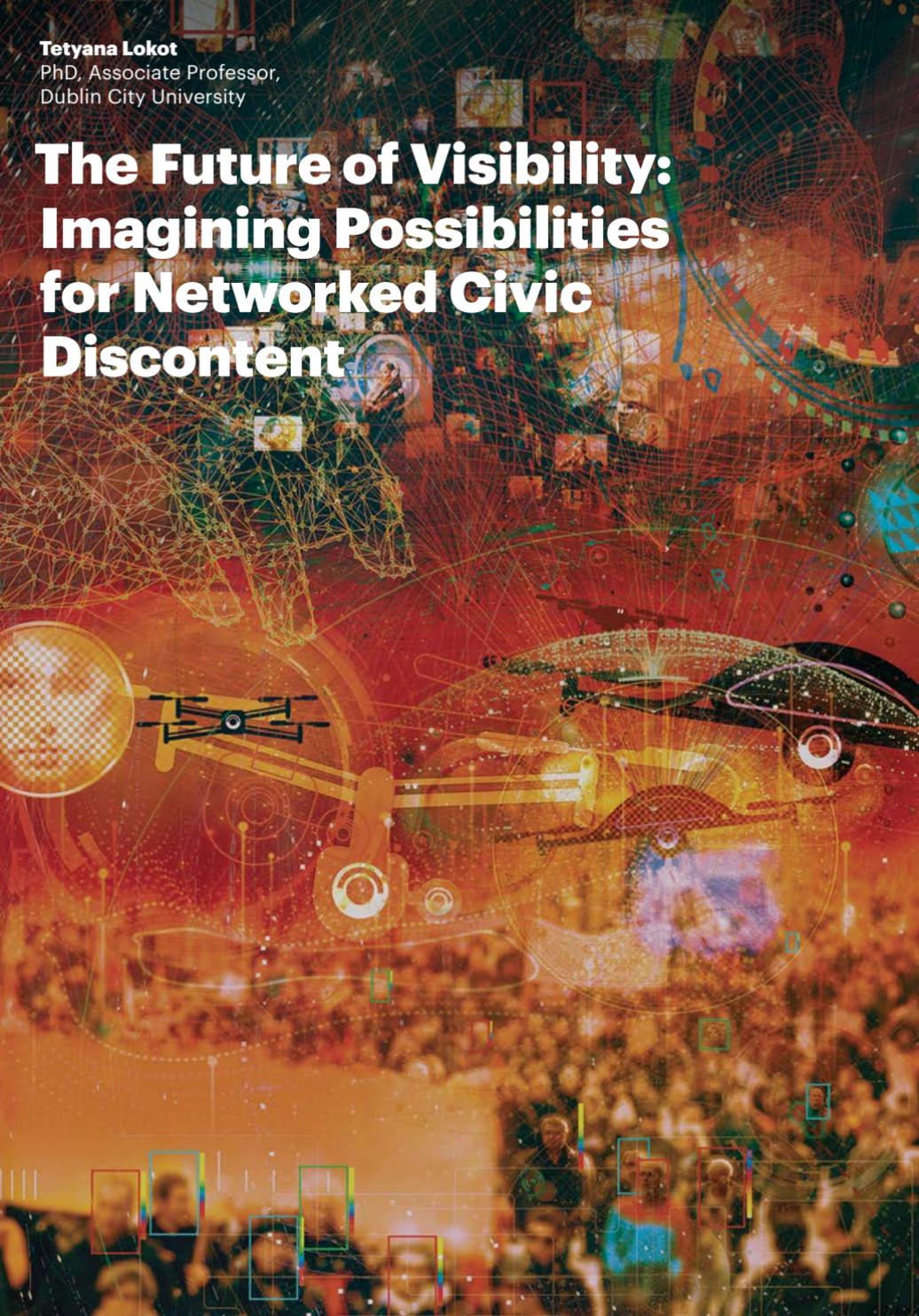PhD, Associate Professor,
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The Future of Visibility: Imagining Possibilities for Networked Civic Discontent

Issue Field and Key Actors

How technologies are entangled in understanding, constructing, and doing citizenship is of key importance to civil society. Expressions of public discontent are traditionally considered one of the key elements of performing citizenship.[1] This article explores the potential futures of technologically augmented discontent and the implications these future scenarios might have for civil society as a source of alternative voices on key social issues and civic rights.

Though there are many issues at stake for civil society actors participating in social protest, including mobilisation tactics, managing presence in public spaces, participant security and negotiating legal norms, I focus on the issue of *visibility of discontent* in a mediated world,[2] and the role emerging and future technologies, such as AR, VR and holographic technology, might play in making social protest more or less visible, in both optical and algorithmic terms.[3]

At a time when users' attention is a key currency in the networked information society, the potential discoverability or invisibility of protest activity and messages have clear implications for the power of protest movements to set agendas and win hearts and minds, but also to inform people about potential risks and fragility of control over what is made visible.

I conceptualise the future potentialities of technologically augmented protest visibility through the prism of *technological affordances theory*.[4] Affordances refer to the potential opportunities or limitations of action that emerge at the nexus of actor intentions, technological capabilities, and the environment in which they interact.[5] Such a context-dependent approach is useful in horizon scanning as it allows to account for a number of potential scenarios of technology use and to speculate how each may shape the value and impact of certain technological interventions for particular civic publics.

Developing future scenarios of protest visibility must account for the various actors implicated in this issue, such as social media platforms, technology manufacturers and distributors, civil society groups and national and international regulatory bodies producing policies that regulate both the use of technology and the formats and possibilities of peaceful civic protest.

Background and Context

The technologically mediated nature of everyday life has contributed to the emergence of the *social attention economy*,[6] with social media platforms and other networked technologies empowering citizens to reach out to broader publics, while competing for eyeballs in the era of information overload. This focus on attention, coupled with new affordances of networked technologies for less formal organisation, allows civil society actors to organise spectacular, 'statement' movements more easily.[7] Such protest activity combines peaceful discontent with high-visibility actions aimed at capturing public attention, as well as expressing civic identities, grievances, and concerns. Therefore, the visibility of such movements and actions becomes a key element of protest organisation in the hybrid media system,[8] where old and new media logics co-exist.

Relevance for Civil Society

Protest helps stage important interventions into the fabric of everyday social life. Finding creative ways of using existing digital technologies or experimenting with emerging tools is therefore key to making those interventions visible in a context where every form of social interaction and information exchange is permeated with technology. The visibility of protest-based interventions, in both

physical and digital public spaces, underpins successful claims-making and contributes to informing policy developments and decision-making about a number of issues relevant to civil society work, be it urban planning, human rights and equality, or environmental concerns.

From Strong to Weak Signals

The evolution of civic protest visibility will rest on a number of emerging technologies, but some of them are more predictable than others. Social networking and targeted distribution of protest messages to niche audiences will continue to play a crucial role, and the development of drone technologies can contribute to new ways of making visible both protest action and key protest-related issues. At the far futures horizon, technologies that extend reality such as VR, AR, drones, and holograms can afford new kinds of visibility to civic discontent but could also contribute to visibility siloes, further individualisation and the fracturing of social reality, especially in the context of the possible splintering of the global internet infrastructure.

Near Futures: Informing Tactics
Seamless social sharing, and especially streaming real-time social video is among key tools affording visibility of peaceful street actions, as mobile broadband technology is becoming cheaper and more efficient, while smartphone cameras and other mobile image capturing devices are evolving in sophistication. Along with increased visibility of any urban protest on the ground, social video also affords new kinds of co-presence, amplifying the sense of scale for co-occurring public events and allowing participants to see themselves as part of a larger network of civic activism. Importantly, social video streams bypass mainstream media framing and, especially in environments with limited media freedom, increasingly serve as customised reporting channels for specific civil society initiatives.

Though many platforms and apps, such as Instagram, YouTube, and Twitter, already offer conventional streaming video capabilities which allow for immediate visibility and are difficult to censor en masse, the emergence of new tools and platforms such as TikTok and Instagram Reels, may bring new parameters of visibility, as they experiment with video formats, image filters, geolocation markers and offer non-live looped video capability that also contributes to creative expression. A diverse range of tactics speaks to the complexity of mediated visibility, as it encompasses capture, editing and sharing of audio-visual data to networked audiences.

Other emerging aspects of the social web afford civil society members engaged in protest activity the capability of one-to-few publishing, enabling strategic visibility of curated content and messages to specific audiences. Focusing communicative efforts on comparatively small, but highly responsive issue publics is made possible by targeted subscription offers and creative use of messaging apps such as Telegram and WhatsApp. In the near future, we can expect to see more niche networks launched by civic interest groups and various rights advocates, including individual or community newsletters, messaging app channels, podcasts and video blogs, close-range mesh networks, and even interactive applications in areas such as citizen science and environmental accountability.

The key challenge in terms of affordances of social network technologies for mediated co-presence, strategic visibility and discoverability of protest-related content is that social media platforms tend to tweak their algorithms in real time, so changes in discoverability and virality rules can be unpredictable. Most recently, these algorithmic tweaks have sought to minimise the spread of bot-driven and artificial discourse and misinformation across platforms. In the near future, these tweaks will continue to happen, though most of them may be insignificant.[9] Keeping up with the uncertainty of the "always-in-beta" mode of network-enabled social visibility will demand resource-

fulness and quick reaction from civil society groups who wish to remain at the top of their constituents' news feeds.

The ongoing growth of networks of CCTV cameras and sensors in urban public spaces spells new risks for protest participants, when they become visible to authorities but lose control over their visibility. Increasingly sophisticated image and facial recognition technologies, powered by machine learning and AI, are being harnessed by governments and law enforcement to police protests and public space in general. In response, activists are developing new obfuscation tactics, using lasers,[10] anti-surveillance reflective clothing[11] and camouflage face paint[12] to disrupt the image recognition capabilities and to remain visible on their own terms while preserving anonymity. However, facial recognition technology is also growing in sophistication[13] and presents an ongoing challenge for activists.

Drone technology presents a wide array of affordances for visibility of civic protest activity. For mass protest events, drones can capture the scale of the effort from above, contributing to "digital enthusiasm" or "collective effervescence"[14] and fostering solidarity among protesters. Advanced camera technology and increased computational power can help drones count participant numbers with greater precision. These affordances of drone technology are, of course, also beginning to be used by law enforcement for protest policing and general surveillance, thus creating tension for civic interpretations of visibility as valuable, but also potentially risky.

Camera-equipped drones are becoming more affordable and can assist civil society groups with issue visibility as well. For instance, faster processing, better algorithms, and AI capabilities are on track to allow activists to engage in real-time mapping[15] of hard-to-reach areas, that, together with satellite imagery,[16] offer new opportunities for visualising key issues related to urban transportation and construction, conflict and human rights advocacy, environment, and biodiversity. These remote issue visibility capabilities will contribute to constructing credible

protest claims about key aspects of urban governance, environmental policy, and social welfare.

Far Futures: Informing Strategy and Vision
Civic protest is fast moving towards a hybrid reality where material and digital aspects of discontent extend into each other, creating what Wanenchak calls "augmented event-fulness."[17] Correspondingly, there is a whole field of mixed reality technologies that could offer new affordances for protest visibility in this hybrid environment. Also known as extended reality technologies, they introduce various enhanced, manipulated or computationally generated lay-ers or immersive environments where human interaction, communication, and thus, contestation and claims-mak-ing, can occur. The field of mixed reality technologies includes AR (augmented reality), VR (virtual reality) and more novel tools such as holographic technology. Though these technologies have become firmly embedded in the popular imagination and the technology industry has been quick to begin developing commercially viable applications, they are far from ubiquitous in everyday life. Furthermore, they are virtually unexplored by civil society actors, though they can offer great creative potential in terms of enabling new forms of visibility for contentious action on key civil and human rights issues.

AR technologies offer exciting possibilities for making protest action visible as they provide digitally simulated overlays onto our fields of vision, either through custom headsets or through smartphone screens. Building AR solutions for mass gatherings could allow civil society actors to create better navigation for protest participants and make mediated participation more meaningful through strategic placement of protest slogans and claims made visible in the augmented layer. Especially in urban spaces, protest actions focusing on urban issues such as preservation of historic buildings, green public spaces or building more sustainable transport infrastructure, could offer visible representations of potential threats or

improvements by generating symbolic visuals and placing them in key locations. These symbolic representations of alternative solutions could become a viable, non-threatening form of occupying public space, as the intervention would only happen in the AR layer, yet still be meaningful if experienced by citizens through AR-enabled phone screens or headsets such as Microsoft's HoloLens.

Virtual reality technology offers even greater immersive potential than AR, affording the ability to place viewers in computer-simulated environments to experience events and spaces in new ways. A number of technology companies are making their own VR gear, including Facebook-owned Oculus Rift, as well as headsets from Sony, Samsung and Google. VR is increasingly being used in entertainment and media scenarios, but there is also a potential for using it to advocate for specific issues of public importance and making them visible to the public in new ways. For instance, if a protest campaign defending an urban public park or an architectural gem that has fallen into disrepair seeks to gather more signatures for an online petition, it could create a VR experience for those who are unable to visit the locations in question. By being able to step into them virtually and be immersed in the visual representation of the space, citizens can potentially feel a closer affinity and an affective connection to the building or the park, and be inspired to sign the petition or engage in other ways. Similar virtual reality interventions could help make visible the plight of underserved communities or victims of human rights abuses, affording new opportunities for emotional and empathetic connection and contributing to protest mobilisation. Social VR, which should enable collective simulated experiences, could further contribute to meaningful shared experiences informing protest sensibilities.

Another extended-reality technology, holograms, enables the projection of images in three-dimensional space. So far, holograms have been predominantly used in entertainment (e.g., BASE Hologram has organised con-

certs featuring holograms of deceased performers) and media (with CNN piloting holographic representations of its reporters in the studio). But we are also seeing political and social actors starting to experiment with the technology. In the US, 2020 presidential candidate Andrew Yang announced plans to use holographic projection to campaign "in several places at once."[18] In Spain in 2015, civic activists with the No Somos Delito movement protesting against a new public safety law collaborated with a digital advertising firm DDB Spain to create "the first hologram protest in history."[19] Holograms for Freedom crowdsourced photos and video recordings of people from around the world, which were then rendered as holograms and projected near the parliament building in Madrid. In 2016, Amnesty International used a similar tactic to crowdsource content for a holographic protest planned in Seoul, South Korea, to protest alleged erosion of free speech in the country.[20] The holographic technology thus emerged as a creative solution for visible public protest even in the face of prohibitive rules for physical mass gatherings.

While extended reality technologies are evolving quickly, they are still largely out of reach of the average citizen or activist. High costs of required equipment and content generation mean that it may be a while until these technologies are scalable, so as to be useful to ordinary civil society groups. Still, despite their limited applications and prohibitive costs, they should remain on the watchlist for civic activists exploring the creative potential of future technologies for protest visibility.

Possible future scenarios

Desirable Future
Civil society activists have free reign to creatively explore the affordances of social networking, drone imaging and mixed reality technologies for protest visibility. The emergence of open-source solutions and DIY devices is

bringing down the previously prohibitive costs of AR- and VR-ware, and commercial companies are starting to offer free or freemium versions of firmware and software enabling extended reality construction. Costs of mobile internet connections keep falling, and streaming video is becoming the default way to report from protest events and enable mediated co-presence, with popular streams gathering huge audiences and eclipsing mainstream news channels. Satellite internet connections and drone technologies are becoming deregulated and extensively used by both commercial and civic actors. Drone videos and satellite imagery exposing environmental and biodiversity threats, large-scale evidence of corruption, and urban issues such as congestion or lack of bicycle lanes are becoming a mainstream genre in civic advocacy and protest. Street protests are growing increasingly powered by AR technology, with protesters designing AR-enabled posters, signage, and clothing to create additional opportunities for those who engage with the protest through screens and headsets. AR representations of sustainable social imaginaries are widely used in urban protest action to provide context. Human rights organisations excel at creating immersive VR experiences that allow citizens to step into the shoes of minorities, animal rights activists or underserved communities, and these immersive experiences significantly boost protest campaign participation. Even in those societies where public protest is restricted by tougher regulations civic activists successfully conduct mass holographic protests, making projection technology the norm for protest participation.

Undesirable Future

Civil society activists face prohibitive costs and stricter government regulation of the key emerging technologies. Though social streaming video remains popular, quality mobile broadband connections remain concentrated in large cities, which impedes mass adoption of social sharing of protest action through video. Large-scale

internet shutdowns during protests in authoritarian states have become the norm. Civic protest organisers resort to low-bandwidth sharing measures such as one-to-many publishing and use encrypted messaging platforms to make protest-related content visible to small, highly engaged issue publics. Drone technology is still prohibitively expensive and subject to strict state regulation. Drone surveillance of protest action, along with networked sensors and CCTV cameras used for facial recognition, is widespread, but activists themselves are mostly unable to use drone videos and photos as airspace in most cities is restricted by no-fly zones or is only open to commercial drone deliveries and law enforcement video drones. AR and VR technologies also remain costly and building apps for most mobile operating systems or headsets requires licensing from the proprietors of the technologies. Holographic technologies continue to be used in entertainment, but their use for protest purposes is episodic, though select civil society groups continue to use them successfully in small-scale protests in conditions when mass public gatherings are prohibited. These limitations impede creative civic efforts to boost and reinvent protest visibility through experimenting with new technologies.

Warnings

Image recognition with the use of AI and machine learning algorithms presents a key challenge for mediated protest visibility. The ongoing developments in facial recognition technology signal further risks for protesters in those societies where physical occlusion of faces (e.g., with a mask or balaclava) at public protests is already outlawed. As citizens and activists create new tools to obfuscate their persons and faces from surveillance (e.g., lasers, camouflage paint, etc.), we can expect these counter-tactics to become illegal as well.

Some experts argue that excessive personalisation and augmentation of our environments and surroundings through AR technology may lead to alienation and dissolu-

tion of a collective reality.[21] By experiencing societies, relationships, and spaces through highly customised layers of AR, individuals may become less likely to possess shared or common experiences, which can lead to the fracturing of civil society, communities of action, and issue publics and severely impede protest mobilisation.

Wild cards
One weak, but persistent signal on the horizon is the potential splintering or "balkanisation" of the global internet and the implications of this emergence of local or national internets for the use of networked technologies in making protest more visible. Recent developments in internet regulation, informed by concerns such as data protection and national security, are increasingly suggestive of the potential for a fragmented internet (see, e.g., EU's GDPR legislation or Russia's "sovereign internet" laws). Given that the majority of social network sites and services are owned by Western corporations, and that the makers of AR- and VR-enabled devices also have national affiliations, it is increasingly likely that cross-border compliance and connectivity will become key factors for the availability of these technologies to civil society groups. Unless there is a concerted effort to harmonise internet regulation and technology standards across the globe, a splintered constellation of national internets could result in a differential landscape of opportunities for visibility and impede the creative potential of civic activists to make their protest efforts visible to their local and global audiences.

Likely Future
The most likely future is a delicate balance, where civic activists will be able to creatively experiment with available social and mixed reality technologies, while acting within the limitations of affordability and of relevant norms and regulations. Organisers of civic protest and advocacy campaigns will continue to use targeted publishing to make their activity visible to issue publics. Social stream-

ing video will grow in popularity, but further growth will be predicated on the availability of affordable mobile internet connections and video-enabled devices. Drone videos and satellite images will be used by civil society in an opportunistic manner, but this use is likely to be sporadic until these technologies become more widespread. It is likely that mass commercial use can make certain civilian applications of drones more acceptable, despite them being a dual-use technology.

AR- and VR-technology will likely be limited to a small number of manufacturers and, unless there are more opportunities for open-source development, civil society will find it difficult to popularize creative use of extended reality applications. In this respect, civic protest groups will likely seek the most affordable modes of engagement and visibility, be it simple AR overlays or crowdsourced holographic projections. It is also likely that civil society groups in those societies where physical mass protest is regulated more tightly will be pushed to find more creative approaches to using extended reality technologies to compensate for the limitations of occupying material public or urban spaces.

Control over key internet infrastructure and public surveillance networks will likely continue to be the power lever used by governments to curtail or control protest visibility. New developments in image recognition technology, decentralised social connectivity and anti-surveillance tools will be the site of contestation between citizens and those in power.

Known Unknowns
The key unknowns, with regard to future technological affordances for civic protest visibility, revolve around several key variables. The first variable is one of costs: there is not enough information currently to predict whether networked technologies, especially more sophisticated extended reality ones, will become sufficiently affordable in the next 10-15 years to warrant broad adoption by civic

groups and citizens. Many of these technologies are proprietary and while there is a small proportion of open-source software and DIY mixed reality hardware, most of these are protected by patents and owned by large technology companies whose primary goal in developing these technologies is generating profit.

The second variable is the possibility of future equal access to these technologies. This is likely to be modulated by emerging regulation of networks, information, and technology, as well as by other factors. The trend for internet and technology legislation in many European countries has been to apply national norms to the regulation of online spaces, discourse, and content. As governments seek to protect their citizens' data and identities, they also contribute to the fracturing of global networks. If standards for extended reality technologies become significantly different from country to country, this may impede transnational creativity and collaboration opportunities for civil society groups. In terms of licensing for specific technologies, this may also prevent certain brands or companies from operating in particular markets. The other side of technology regulation deals with strategic geopolitical and security concerns: the use of encrypted messaging platforms for one-to-many publishing may become difficult as states seek to minimise the use of encrypted communication for national security reasons; drones, already a dual-use technology, may face stricter regulations and in some states their use may be limited to military and law enforcement purposes, impeding both commercial and civic creativity.

Conclusion

Making civic protest efforts visible is a cornerstone of performing citizenship in increasingly mediated and networked societies. Understanding which technologies are or may become entangled in this visibility work is central

to short-term tactical planning and long-term strategic vision development for civil society groups that engage in activism, advocacy, and protest activity in the area of civil freedoms, citizen welfare and human rights.

The lens of technological affordances presents a useful toolkit for horizon scanning the possible futures of technologically augmented visibility of civic protest. Affordances emerge at the nexus of actor intentions, technological capabilities, and the contextual environment in which civil society groups operate. As I've demonstrated, thinking about near and far futures of how particular technologies will evolve is only part of the story: to constructively imagine possible futures for civil society we must also account for the creativity of its constituents as well as for the potential regulatory, commercial and cultural contexts that will come to circumscribe the uses of particular technologies. Though technologies such as social streaming video, drone imaging, and extended reality technologies such as VR, AR, and holograms hold many possibilities for making peaceful civic protest activity and messages visible, such possibilities will be tempered by how these technologies evolve in terms of cost, access, and opportunities for creative modification and by the regulatory field that emerges around these technologies in particular countries.

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