

# Empowering minorities and indigenous peoples through technology

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*Advances in technology are revolutionizing the ways in which communities and advocates work to realize indigenous and minority rights. Despite the many ways that technology is being used to reinforce and exacerbate inequality – through, for example, surveillance and discriminatory artificial intelligence – civil society is using the same tools to decentralize power and to destabilize established systems of oppression.*

From monitoring human rights abuses through satellite imagery to designing mobile applications which continue traditional knowledge reproduction, creative technological adaptations have upended long-standing hierarchies by mobilizing successful movements in order to bring human rights violations out into the open.

This chapter outlines some of the ways that technologies are being used and adapted to support the realization of greater rights for marginalized minorities and indigenous peoples. Drawing on examples of online activism, citizen-led data initiatives and the innovative ways in which traditional knowledge is combined with new applications and software, it shows

that, with a rights-based approach, technologies can bring a wide range of benefits to communities – even in sectors such as the digital gaming industry which, similarly to the film industry, has been characterized by discrimination in its storylines and character representations.

## **Online activism and social media campaigns**

The use of the internet and social media platforms has been one of the defining features of this new era, enabling contemporary activists to secure visibility for historically marginalized groups and to transform ordinary citizens into journalists, rapporteurs and human rights advocates. Yet, at the same time,



Demonstrators gather in front of the White House during protests resulting from the police killing of George Floyd. Credit: Hosein Fatemi / Panos

social media is increasingly being used by states as a tool to spy on and to manipulate the work of activists or even whole minority populations. These tactics, at their most cynical, can see movements co-opted for use in proxy wars between states. One notorious case of this is the way in which the prominent 'Blacktivist' and other seemingly progressive social media accounts have been traced back to Russian operatives, with the suspected intention of inciting racial discord in the United States (US) in the build-up to the 2016 elections.

While the desire to infiltrate and co-opt social movements is nothing new, technologies are providing new arenas for this struggle, and these have been

met with equally creative and diligent responses from civil society. The example above, in fact, was specifically intended to piggyback on the very real achievements of a genuine grassroots campaign, Black Lives Matter. If imitation is indeed the highest form of flattery, then the attempts by various repressive states to co-opt online movements in order to promote their own views must represent an awareness that such grassroots networks represent a potential threat to their power. For governments which have long enjoyed an unchallenged monopoly on mainstream media and political expression, these innovative platforms have provided their dissenters and victims with an opportunity to reach large audiences and publicize their views.



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*United States: Black Lives Matter*

The Black Lives Matter movement, one of the most powerful social movements in the US since the civil rights era, has proven that social media has an overwhelming power to draw attention to issues that have been ongoing for decades – if not centuries – but have generally been overlooked, ignored or deliberately covered up. Through the widespread availability of smartphone cameras and pervasive social media use, citizens have been able to film and broadcast police brutality and tell the stories that need to be heard themselves, without any intermediaries. Armed with this evidence and propelled by the acquittal in July 2013 of Trayvon Martin's murderer, George Zimmerman, the #BlackLivesMatter hashtag became a rallying call and organizing force against continued systemic and violent racism by the state, particularly in law enforcement and the justice system. According to the Pew Research Center, by May 2018 the #BlackLivesMatter hashtag had been used almost 30 million times on Twitter, an average of 17,000 times a day.

At the time, this was viewed as a remarkable sign of the #BlackLivesMatter hashtag as a mobilizing force. Use of the hashtag has increased drastically since the brutal killing of George Floyd in police custody on 25 May 2020, catalyzing millions of activists first in the US and then worldwide. According to a further Pew Research Center study, three days after Floyd's murder, #BlackLivesMatter was tweeted 8.8 million times in a single day. During the following two weeks, the hashtag was tweeted on average nearly 3.7 million times a day. The impact is a powerful rejoinder to those who have questioned the potential of online activism to deliver substantive change: the success of this awareness raising on social media was instrumental in driving public demonstrations in cities across the world.

The question of power, control and access to these technologies is also crucial here. In the 1960s, the civil rights movement used the power of television to bring violence against black people in the homes of all Americans. However the power to set the narrative still remained in the hands of the white media, in what they chose to cover and how they chose to frame the discussion. Even the civil rights movement itself rested in the hands of its (largely male) leaders and spokespersons who then spoke on behalf of the people. Social media has enabled that system to be turned on its head, with a less hierarchical, decentralized system of activists who can speak for themselves and inform a wider network. The hashtag #BlackLivesMatter has created a platform for discussion, awareness-raising and collective action by a wide range of organizations that

brings the issues of racism back to the (white) mainstream, while putting the spotlight on corrupt prosecutors, police brutality and the urgent need for criminal justice reform.<sup>1</sup> As Opal Tometi, one of the original co-founders (together with Patrisse Cullors and Alicia Garza) of the Black Lives Matter movement, said, in a June 2020 *New Yorker* profile: 'There are chapters across the country, many of them are operational and do their own fund-raising, and make their demands.... So different chapters might take on different issues, but there is this throughline of valuing black life and understanding that we are not a monolith but being radically inclusive in terms of chapter makeup.'

As the activist Ashley Yates further explained, the civil rights movement had previously defined by 'the singular figure model of black liberation – which was often a man in a suit, at the top, and having him be the microphone for people.... We didn't realize it didn't work until we saw what happened, and they repeatedly killed that leader. It took the wind out from under a movement.'<sup>2</sup> Social media has opened up space for those who have been historically marginalized within the civil rights movement, such as women and LGBTQ+ people. #SayHerName is one such example. It was created by the African American Policy Forum in 2015 to campaign alongside the Black Lives Matter movement with a focus on a gender-inclusive approach to racial justice and to draw attention to black cis- and transgendered women's experience of state violence. This diffusion of power and representation

has resulted in more fluid decision-making structures, with affiliated activists able to define their priority areas and join forces with other allies, as in the support offered in 2016 by Black Lives Matter members to indigenous Standing Rock #NoDAPL activists who were protesting the Dakota Access Pipeline (DAPL).

Of course, this is not to say that social media platforms have been able to banish the hostility and racism which is evident in the offline world. Far from it: the same platforms that have driven the inspiring activism of Black Lives Matter have also served as vehicles for extremists and hate groups to threaten, vilify and abuse minorities, indigenous peoples and those who support their calls for justice. Activists can spend much of their time blocking or reporting threats and racist slurs – a reminder that the struggle to ensure the internet is a safe and respectful place for all will never end.

*Papua, Indonesia: Digital forensic investigation reveals pro-government bot network*

Having witnessed the successes brought about by social media movements, various governments, corporations and other actors have then been caught manipulating these trends for their own ends. While the 'Blacktivist' case mentioned earlier involved a foreign government attempting to exploit social divisions in the US, the Indonesian government has been accused of running a deceptive online campaign to manipulate international support for the Free Papua movement,

1 Roberts, F.L., 'How Black Lives Matter changed the way Americans fight for freedom', ACLU, 13 July 2018.

2 Parker, E. and McIlwain, C., '#BlackLivesMatter and the power and limits of social media', *Medium*, 2 December 2016.



Papuan students protesting racism, calling for independence for their territories and an end to an internet shutdown in Papua.

*Albert Ivan Damanik*

– a decades-old independence movement that regards the Indonesian government as colonial aggressors.

From August 2019, massive protests began to spread across the Indonesian provinces of Papua and West Papua in response to the arrest of 43 ethnic Papuan university students in East Java for allegedly ‘disrespecting’ the Indonesian flag. The government deployed over 1,000 military personnel in the streets of Papua and ordered an internet shutdown in the region. While the protests were sparked over accusations of racism, the events triggered renewed calls for Papuan independence, focusing on grievances over an unimplemented autonomy law, continuing militarization and widespread poverty in the resource-rich province.

The violent protests and the heavy military response were accompanied by a strategic, well-funded social media campaign that spread pro-government propaganda, according to a joint report by researchers at the BBC and Bellingcat, an organization that has pioneered digital forensic investigations. Given the internet shutdown and a ban on foreign journalists travelling to Papua, it is difficult to report on events in the region. Some of those who released videos from the protests, such as Indonesian human rights lawyer Veronica Koma, were targeted by online disinformation and hate campaigns. Nevertheless, investigators noticed that pro-independence hashtags such as #FreeWestPapua, #WestPapuaGenocide, #WestPapua and #fwpc were being ‘hijacked’ by pro-government posts: these typically reported on generous financial assistance to the Papuan provinces, a lack of support for independence among West Papuans, and the inaccuracies or malicious misrepresentations of foreign media coverage on the situation in the region.

The team traced the digital footprint, focusing first on suspicious Twitter accounts. Following two specific Twitter hashtags, #WestPapua and #FreeWestPapua, from 29 August to 2 September 2019, they built an itemized dataset of the usernames that used these tags, retweeted or liked the posts, the post time-stamps, URLs and type of activity (tweet, retweet, quote or mention). Data was then imported into the open-source visualization platform Gephi and transformed into a graphic visualization that revealed abnormal Twitter activity suggestive of automated accounts, or ‘bots’. Three key markers identified the accounts as bots: Google

reverse image searches revealed that most of the profile photographs were fake, originating from elsewhere on the internet; the accounts did not interact and were used exclusively for posting or spreading pro-government content; and the patterns and timing of posting suggested automation through synchronization. The Twitter accounts were linked to Facebook, Instagram and YouTube accounts that disseminated the same content. Under the Transparency tab on any given Facebook page, information is provided regarding the page's creation date, location and whether they are running paid Facebook ads as well as the ads' targeted locations. Most of them were targeting European audiences, and slandering the pro-independence movement.

After the team's lead researcher Benjamin Strick published some of his findings on *Medium* and *Bellingcat*, Facebook announced it had found evidence of 'coordinated inauthentic behaviour', subsequently closing 69 Facebook accounts, 42 Pages and

34 Instagram accounts. Facebook revealed that the account-holders had spent US\$300,000 in their efforts and traced them to Indonesian media firm InsightID. The investigation shows how social media is becoming an international battleground over competing narratives relating to minority and indigenous peoples' rights, but that careful digital forensic examination of disinformation tactics using open verification methods can restrict these efforts.

#### *Xinjiang, China: Uyghur digital flash mob*

While Indonesia maintains a relatively free internet space, activists in other parts of the world are showing how online resistance can still continue in even the worst-case scenarios, where human rights abuses are now being bolstered by the most advanced technologies. Xinjiang, also known as East Turkestan, is the homeland of the ethnic Uyghur Muslim minority that is currently enduring a massive forced assimilation programme by the Chinese state. Advanced

### THREE KEY MARKERS IDENTIFIED THE ACCOUNTS AS BOTS:

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surveillance techniques are the defining characteristic of the program, with popular messaging applications like WeChat being used to spy on any Uyghur accused of 'undermining the Chinese state' or participating in 'radicalized Islam' – vague, catch-all terms which are used to justify arbitrary monitoring and forced disappearances.

WeChat became extremely popular among Uyghurs after the government installed 3G networks in the region in 2011, offering them a virtual space to develop their arts, music, culture and religious expression unmolested as the wider online world became increasingly policed by the Chinese government. It is estimated that by the end of 2013, around 1 million Uyghurs were using the app. At that time, the use of Arabic script made it more difficult for Chinese censors to monitor, and much of the communication was done as audio clips or script embedded over images in memes. After the state began implementing its 'Strike

Hard against Violent Terrorism' ethnic assimilation campaign, posting or sharing any content relating to Uyghur or Muslim culture could put one at risk of being sent for 're-education' in one of the de facto internment camps that are now estimated to hold 1 million Turkic Muslims (mostly Uyghurs but including other ethnic Turkic groups).

In early 2017, it was still possible for the diaspora Uyghur community to communicate with their families via WeChat, but this was an extremely high risk for those still in Xinjiang, who were hesitant to discuss anything about their situation or the widespread forced disappearances being carried out by Chinese authorities. As a result, families began to communicate via code. For example, if someone was jailed, they would say 'admitted to hospital'. Eventually coded emojis began to be used: a wilted rose meant that someone had been arrested, a dark moon meant they had been sent to the camps, a sun that they were still alive, a flower that they had been released. Eventually, though, by the end of 2017, those in the diaspora were being deleted from their families' WeChat accounts as people began to go incommunicado.



In early 2017, communicating to the diaspora community via WeChat was high risk for Uyghurs in Xinjiang. Families began using coded emojis: **a sun meant they were still alive.**

Xinjiang is now one of the most tightly controlled information environments in the world. There are severe restrictions on journalists and region-wide blocks on Facebook, Instagram and Twitter. One of the few remaining social media apps in Xinjiang is Douyin, the domestic Chinese version of TikTok. TikTok has been downloaded 15 billion times worldwide and is mostly popular among youth as a place where they can post short videos set to music. Those inside China must access it through its firewalled version, Douyin.



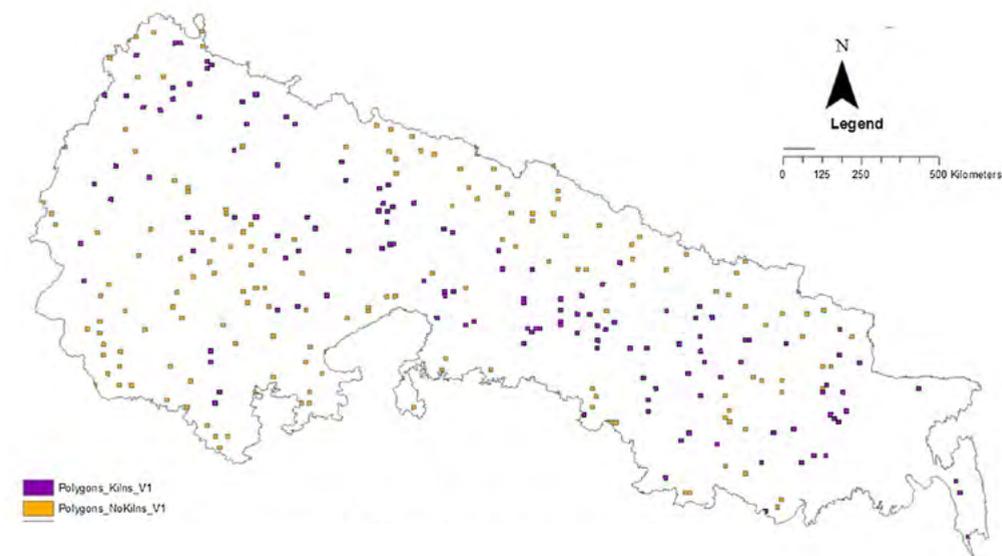
It is one of the few social media apps available in Xinjiang and can only be accessed outside of China with a Chinese mobile phone.

At the end of July 2019, a senior Chinese official announced that 90 per cent of detainees had been released from the detention camps and 'returned to society'. Diaspora Uyghurs were incensed and baffled, as still no news of their relatives and friends had yet surfaced. A couple of weeks later, a series of eerie videos began to be posted on Douyin, in what seemed to be a digital flash mob silent protest over the government's claims. Each video is only a few seconds long, showing the subject standing silently or softly crying and superimposed over pictures of loved ones, all set to a mournful sounding song called 'DönmeK', which means 'return' in Turkish. Nothing in the video is explicit, but it is assumed that the pictures in the background are of their missing loved ones. One woman holds up four fingers, as if to express the four men in her life pictured in the background, and slowly makes a fist.

The videos are the only sign of coordinated non-violent resistance to come out of Xinjiang in years, and have spread to the outside world despite a firewall that is effectively working to keep the world out of China (as well as to keep those in China in). Uyghur activists outside China such as Arslan Hidayat, who monitors Douyin for evidence of forced assimilation, have reposted dozens of videos for the world to see via Facebook and Twitter with the hashtag #WeHearU. The ambiguity and high volume of the videos seems to have enabled them to bypass state content monitors. Within days of being posted, though, the accounts had been shut down or videos deleted. Another Uyghur activist commented, 'These people are incredibly brave because they know the risks they are taking. I'm afraid that the people in these videos might be arrested, especially with the facial recognition technology that China is already using to monitor the Uyghur population.' Despite massive internet surveillance, information control,

Screenshots of videos on TikTok showing videos of Uyghurs silently posing with photos of detained relatives.

*Foreign Policy*



Randomly Sampled Brick Kiln Locations and Sample Areas within the extended Brick Belt

Source: <https://www.sciencedirect.com/science/article/pii/S0924271618300479>

firewalls and threats to their personal safety, people still find ways to circumvent oppressive technology for their own forms of creative protests.

### Open-source investigation to document human rights abuses

Open-source investigation is a methodology that has been revolutionized by the vast amounts of publicly available digital data such as posts on social media platforms and geospatial satellite imagery. Its techniques can be particularly effective in areas of the world that are inaccessible due to war or tight restrictions on civil society by authoritarian governments and regimes. The rapid expansion in the use of open-source investigation techniques has been credited to the increase in the use of smartphones with 3G/4G connections with which to record human rights violations, a concentration of social media platforms where information can

easily be shared and freely accessed by the rest of the world, and public access to remotely sensed data.

The legitimacy of evidence gathered and verified through open-source techniques is increasingly recognized by governments and human rights bodies. In 2017, the International Criminal Court (ICC) issued its first ever indictment for war crimes based exclusively on evidence gathered through social media (relating to mass executions around Benghazi, Libya). These and other increasingly specialized techniques are being utilized by a variety of civil society organizations to investigate and publicize human rights abuses against minorities and indigenous peoples.

#### *South Asia: Identifying brick kilns using geospatial technology*

The 'brick belt' is a vast area stretching across Pakistan, northern India, Nepal and Bangladesh, with thousands of functioning brick-making factories, employing between 10 million and 23 million workers. There are endemic

levels of debt bondage slavery in the brick factory system and most of these bonded workers are from either Dalit or other marginalized communities. The prevalence of these factories is notoriously difficult to quantify, as they flourish beyond the reach of civil society and law enforcement agencies. The pioneering Slavery from Space initiative by the University of Nottingham Rights Lab is the first attempt to engage geospatial observation to assess the extent of slavery by developing, through a statistically robust estimate of the number of brick kilns, a proxy estimate of the number of slave labourers at these kilns. Their research was facilitated by three key technological advances – publicly available fine spatial resolution satellite sensor data, crowdsourced citizen verification and advanced machine learning applied to image classification – all of which would have been impossible just a decade ago.

Brick kilns can be identified using satellite imagery due to their distinctive shape and the spatial organization of the surrounding area: oval or circular tracts, sometimes 150 meters long, often with a tall chimney in the middle. The kilns may be surrounded by clay fields where the raw material is gathered. The initial stage of the project, conducted in 2017, used crowdsourced human ‘visual searchers’ to manually make these identifications in a 250 km<sup>2</sup> select target area in Rajasthan, India. Volunteers were gathered through citizen science web platform Zooniverse and received a large influx via social networks promoted through *New Scientist* magazine. Fifteen volunteers were required to view and tag each of the 396 image extracts, which, finally, were verified by the lead researcher to comprise the ‘ground truth’, the final calibration of the remotely sensed data.

A labourer carries bricks in a kiln in the ‘brick belt’ of South Asia.  
REUTERS/  
Ranita Roy



Machine learning algorithms, known as deep learning classifiers, were then trained using the human-identified samples, which the team claims could identify the brick kilns in a given area to an overall accuracy of 95 per cent. The methodology can then be replicated and adapted for other contexts and is already informing the work of local civil society organizations. The team has also made headway in identifying slavery in shrimp and fish processing plants in Bangladesh, and plans to use satellite infra-red capabilities to detect illegal mining operations as the unearthed minerals produce different reflective qualities. Even then, the link between slavery and the data produced by satellite needs to be verified on the ground. 'What we are driving toward,' explained Doreen Boyd, director of the data programme at the Rights Lab, 'is the fact that people who carry out slavery activities can't hide. It's a methodology that you can't hide from.'<sup>3</sup>

*Palestine: Reconstructing human rights abuses through 'forensic' data analysis*

Forensic Architecture (FA) is a research agency based at Goldsmiths, University of London, which is pioneering the use of 'counter-forensic' investigative techniques to reconstruct the sites of human rights abuses. Using new and emerging technologies, as well as analytical tools that until recently were only in the hands of states and their intelligence apparatuses, FA pieces together evidence from a variety of sources, including crowdsourced videos, social media posts and remote sensing data, and then using architectural modelling techniques

to spatially organize the evidence through digital modelling, animation, video synching and mapping, as well as other more revolutionary evidence-gathering methods such as smoke plume analysis. As FA director Eyal Weizman explained to *WIRED* magazine, 'The concept of testimony is being completely reformatted. Usually, human rights organizations have to wait days, even months, and collect things from memory. But these are testimonies of people who were there, technological testimonies through their cameras and videos.'

Much of FA's continuing work has focused on Palestine, a quintessential example of how military technologies, including advanced weaponry, surveillance, drones and satellite imagery, have been used heavily against the civilian population as tools of control. FA's continuing work there represents a disruptive attempt to use similar technologies to counteract state oppression. In 2018, they teamed up with the *New York Times* (NYT) to investigate the 1 June 2018 killing of Palestinian medic Rouzan al-Najjar, apparently shot by an Israeli sniper bullet while providing assistance to protesters. The 2018 protests in Gaza against the continuing blockade by Israel were the largest in recent history and resulted in the killing of hundreds of protesters and wounding of thousands of others by Israeli forces, using live ammunition. The Israeli authorities, however, claimed that all shots fired were through the precise identification of a target that posed a direct and imminent threat.

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3 The Rights Track, 'Modern slavery: a human rights based approach', 17 July 2018. Podcast available at: <http://rightstrack.org/modern-slavery-what-can-we-count-and-how>

In order to assess the validity of these claims, FA created a digital landscape of the site from drone footage taken by the *NYT* team, and used photogrammetry software to make a precise measurable 3D model from over 1,000 photos and videos from the day of the protest. Using the sound of the gunshot, the video clips were synchronized, and through camera tracking and Cinema4D software they were able to digitally plot the rotational movement of the various cameras against a common horizon. Then, the team utilized a panoramic stabilization technique from still images and mapped the composite panorama into a 3D model using open-source software Blender. This comprehensive 3D model showed the general density of the crowd, the positioning of the eight medics present, and established a likely 'cone of fire,' tracing the trajectory of the single bullet to a sand berm on the other side of the border fence where three Israeli personnel were located. This model, along with 30 witnesses who were interviewed for collaborating evidence, pointed to a single bullet that ricocheted off some rocks, hitting one medic in the leg and another medic with its shrapnel, before continuing its trajectory to hit and kill Rouzan al-Najjar, in an act summarized by the *NYT* as 'reckless at best, and possibly a war crime.'

FA's findings directly contradicted Israel's claims that only protesters who posed an immediate threat were targeted. FA's model clearly showed that there were eight medics among the protesters, none of whom were posing an immediate threat and who were at a significant distance from the border fence. After Rouzan's death, Israel engaged in a smear

campaign to deflect responsibility for her killing, but later the Israeli Defence Force's Military Advocate General reportedly ordered the Military Police Investigation Unit (MPIU) to carry out a criminal investigation into the killing. Yet no recent update on the case has been released, and civil society activists have noted that MPIU investigations often fail to hold anyone accountable for such crimes.

As state abuses against Palestinian civilians have been ongoing with impunity for many decades and received with very little in the way of official investigations, the irrefutable data provided by FA's analysis represents a unique step towards ensuring accountability. FA has gained traction applying these and similar methodologies in other parts of the world, including an analysis of the impact of oil and gas extraction on indigenous Mapuche communities in Argentina, uncovering proof of a historic genocide in Quiché, Guatemala and analysing cases of police killings of African-American men in Chicago, US.

### **Traditional knowledge and smart technologies**

Indigenous peoples have been evolving and embracing technology for millennia. The digital revolution is no different. There is a prevailing mainstream idea that tradition and technology are at odds with each other, a notion influenced in part by the preference of some indigenous communities for their communal knowledge, developed over centuries, instead of assimilationist or environmentally destructive notions of 'progress'. This perspective not



Indigenous peoples represent only **2 per cent** of the game industry, and only **27.8 per cent are female, transgender or another gender identity.**

only overlooks the inequalities and abuses that have accompanied the introduction of certain technologies to these populations, often as part of a broader programme of dispossession, but also the long history of indigenous technological innovations being co-opted by non-indigenous populations, including the canoe, kayak, toboggan and snowshoe, quickly adapted by European settlers and used to colonize Canada.

In sum, indigenous peoples and other marginalized groups do not fundamentally have a fraught relationship with technology. Rather, underlying power dynamics, including those stemming from discrimination or poverty, create barriers to access that can disadvantage whole communities. Indeed, when technologies are available on their terms, not as tools of repression but rather of empowerment and community, indigenous peoples have demonstrated how they can be combined with traditional knowledge to address a wide range of challenges, including climate change.

*Canada: Helping Inuit hunters by bridging traditional knowledge with smartphones*

Indigenous Canadian communities, however, are overturning these assumptions and showing how digital technologies can be utilized to continue their traditional ways of life and to refine, store and share their knowledge systems. In the words of Inuit hunter Peter Kattuk, 'It's time for the harpoon and the computer to work together.' The Indigenous Knowledge Social Network (SIKU) smartphone application, launched in December 2019, is doing just that. Named after the Inuktitut word for sea ice, the app was developed by Nunavut civil society organization Arctic Eider Society with funding from the 2017 Google.org Impact Challenge. The app primarily addresses Inuit communities' need to be informed about sea ice conditions while hunting or travelling, as well as documenting and sharing detailed traditional knowledge and language between community members, in a way that can engage the younger generation yet also leverage the power of the crowd.

The climate crisis has made predictions of sea ice more difficult for Inuit hunters. If they identify a dangerous type of sea ice, mainstream social media like Facebook may be able to share that information, but it is restricted to the hunter's own network, does not allow for GPS mapping of the location, and is soon lost in the barrage of the recipients' newsfeeds. SIKU however allows for geotagging of locations with symbols to correlate the data with indigenous knowledge of sea ice. For example, one hunter

identified a type of sea ice that looks like a normal tidal crack but can break open if the wind is strong. After they had tagged the location, in a couple of hours the satellite imagery available in the app showed that the ice had in fact broken apart, making return to the other side of the ice impossible. Hunters in the area using the app would have been made aware before the conditions posed a risk to their lives.

SIKU was created to maintain the feel of a social network, but with specialized features for Inuit hunters. It has four main types of posts: 'social', 'wildlife,' 'sea ice' and 'tools'. Place names can be tagged in multiple dialects and act as 'living wikis of indigenous knowledge'. Users can track wildlife sightings and other unusual circumstances that are identified by Inuits' intimate knowledge of their lands and species habitats. 'Tools' brings data collection a step further with the ability to capture data with scientific instruments, such as water or ice core samples. This knowledge is especially crucial for locally based climate change monitoring, helping to inform the community of its impact while providing for collective approaches towards adaptation. The app's specialized privacy settings also ensure that the rights of its indigenous users to their traditional knowledge remain protected – an important feature given the fact that much indigenous technology in the form of knowledge and intellectual property continues to be expropriated by corporate interests and other mainstream groups to this day.

### *Addressing discrimination in digital games through 'indigenous self-determination'*

Digital games have been an arena of contestation over fair access to technology, and particularly over how a lack of participation in the design and marketing phase of games has resulted in heavily racist and gendered stereotypes that continue to be perpetuated – especially with regard to North American indigenous peoples. The digital gaming world is stereotypically the domain of white men, designed by and for a white male audience. While of course not exclusively true, the statistics on the numbers of minorities or indigenous people in the game industry are illuminating. According to the International Game Developers Association's latest figures, people who identify as 'white, Caucasian or European' comprise 68 per cent of global game industry employees, while other ethnicities remain under-represented. In particular, indigenous peoples represent only 2 per cent of the industry. Only 27.8 per cent are female, transgender or another gender identity.

Given this lack of representation, it is perhaps unsurprising that video games continue to perpetuate negative stereotypes, with inaccurate, misogynist, violent colonial representations being the prevalent model, even today. However, indigenous game developers are seeking to overturn this model, however, while addressing structural inequalities at the game design phase and setting their own representations in games, with the goal not only of making the end-user experience



A scene from the videogame *Thunderbird Strike*.

Credit: Elizabeth Lapensée

more accessible but also using digital game creation as an expression of indigenous self-determination.

'True self-determination in games must happen from the code up',<sup>4</sup> according to Elizabeth LaPensée, an Assistant Professor of Media and Information at Michigan State University and an award-winning creator of digital video games. The games she has developed, such as the topical *Thunderbird Strike* (where players battle a 'pipeline snake') or the educational *When Rivers Were Trails* (focusing on the impact of the assimilationist allotment acts of the 1890s) are expressions of her Anishinaabe and Métis worldviews. The games incorporate indigenous ways of knowing into their designs, themes and story-telling formats, for example by using non-linear paths that replicate traditional story-telling structures, using characters from indigenous stories, situating games in historical realities and prioritizing

acts of relationality in games.

LaPensée designs and creates games through collaboration with other indigenous artists, designers, elders and community members, ensuring that the design process is inclusive from start to finish. The creation of digital games is a method through which indigenous people can create digital 'self-determined spaces' for the expression of their identities on their own terms.

Digital games are also one of the key platforms to transmit cultural ideologies, teachings and aesthetics to indigenous youth. LaPensée has embraced this by encouraging her own children to engage in indigenous-created games and through game development workshops for indigenous youth. Her work includes a collaboration with the Aboriginal Territories in Cyberspace (AbTeC) research network, which coordinates training programs, known as the Skins Workshops, for indigenous

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4 LaPensée, E., 'Games as enduring presence.' *PUBLIC*, 54: Indigenous Art: New Media and the Digital, 2016, pp.178-186.

youth based out of Concordia University in Montreal, for which LaPensée helped develop a curriculum. 'Game modding' is the adaptation or creation of game content using commercial game engines or software. 'Skinning' is another word for this practice and lends its name to the program. Youth share stories and ways of knowing from their cultures and incorporate them into game design, while building their programming and software design skills and reflecting authentic self-representation in the games they create. Many of the program participants are young women, and some of the games created out of this program have included an active, empowered female lead character who overturns highly sexualized stereotypes.

Of course, it is difficult fully to escape the legacy of an industry that is still characterized by inequalities and discrimination. Even these pioneering digital games are still mostly developed in pre-existing Western-coded game engines, so that indigenous peoples are building their games using software that was not developed with indigenous worldviews or languages in mind. 'Just as there are many cultures, there are many ways game engines could take form, rooted in different ways of knowing, languages, and practices,' LaPensée explains. She hopes in the future to see indigenous-made game engines, bringing self-determination expression in games to the next level. 'While Indigenous self-determination in digital games is currently limited by the systems within which games are developed, modified systems or Indigenous-made game engines can expand the possibilities of self-expression.'

## Moving forward: towards a rights-based approach to technology

The pace and scale of societal change brought about by the digital revolution today may be unprecedented, but minority and indigenous communities are leading the way in realizing positive ways to harness digital and emerging technologies so as to encompass inclusive and participatory approaches to technological design and innovation. Yet, as suggested at the start of this chapter, there is the very real threat that technological advances are moving so quickly that they are proceeding without careful application of a human rights-based approach. With many minorities and indigenous peoples continuing to face structural discrimination across the world and at all levels of society, there is the real possibility that technological innovations will only reinforce existing discrimination and marginalization.

As highlighted by the case studies here, however, this is not the only possibility. With the right approach, digital technologies could deliver wide-ranging and much needed benefits to communities struggling to protect their identities and livelihoods in the face of environmental upheaval, targeted violence and land rights violations. The following principles present a positive framework for technology that promotes inclusion and respects the rights of minority and indigenous peoples.

Technologies should therefore be:

- **Accessible:** In order to ameliorate the impact of reinforced discrimination through technology, minorities

and indigenous peoples must be supported to develop their fluency in digital technologies and their application towards the realization of their rights through education, training and capacity development. Accessibility must also extend to members of minorities and indigenous peoples experiencing the impact of intersectional discrimination, such as women, LGBTQ+ groups, people with disabilities, youth and the elderly.

- **Affordable:** Open-source technologies should be prioritized and promoted among minorities and indigenous peoples, with programs in place both to monitor whether associated costs are excluding marginalized groups from accessing software and to ensure that clear frameworks are put in place to remove these barriers.
- **Adaptive:** Mainstream technologies should not merely be standardized products aimed at a majority market. They need to be able to adapt to the needs and creative desires of minorities and indigenous peoples, as communities with cultures that also change and adapt.
- **Respectful:** Minority and indigenous communities must be able to have their privacy respected, especially when technological innovations are designed specifically with their communities in mind. Collective intellectual property rights also need to be considered during the creation and realization of technologies that veer into these areas.

- **Disruptive:** Technology should not just support and replicate the status quo. It needs to be a force that can be harnessed to disrupt existing power structures, including those stemming from intersectional discrimination towards those marginalized groups belonging to minority and indigenous communities. While technological innovations may lead to a shake-up of existing structural inequalities, technologies that encourage the realization of the rights of minorities, indigenous peoples and other excluded groups must be supported to allow these changes to take place.
- **Participatory:** Governments, industry and civil society must apply a human rights-based approach to technology with the active involvement of minorities and indigenous peoples so that their rights are safeguarded.

As summarized by Enrique Piracés in *The Future of Human Rights Technology*: 'Humans have created technology, and humans have used technology to alter society. We should avoid giving agency to technology and remind ourselves constantly that technology is created by people and organizations with agendas. These are agendas that will impact us, and we should aim to influence them.'<sup>5</sup> As technology has an ever greater influence on our world, we must recognize that how we respond to the challenges and opportunities it presents today will ultimately shape every aspect of our existence, including human rights, equality and social inclusion.

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5 Piracés, E., 'The future of human rights technology', in M.K. Land and J.D. Aronson (eds), *New Technologies for Human Rights Law and Practice*, Cambridge University Press, 2018.