Mémoire

CONSULTATIONS PARTICULIÈRES ET AUDITIONS PUBLIQUES AU SUJET D'OUTILS TECHNOLOGIQUES DE NOTIFICATION DES CONTACTS AINSI QUE SUR LA PERTINENCE DE CE TYPE D'OUTILS, LEUR UTILITÉ ET LE CAS ÉCHÉANT, LES CONDITIONS DE LEUR ACCEPTABILITÉ SOCIALE DANS LE CADRE DE LA LUTTE CONTRE LA COVID-19

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RECOMMANDATIONS

1. **Ancrer l'utilisation d'outils technologiques dans une politique globale de lutte contre la Covid-19**
   a) Compte tenu de l'efficacité discutable des applications de notification des contacts et des ressources limitées de l'État, pourquoi investir dans cette technologie plutôt que dans les soins de première ligne et la recherche fondamentale?
   b) Quels sont les bénéfices d'une assistance technologique par rapport à son impact sur les droits et libertés, notamment en matière de vie privée et d'égalité?
   c) Comment les outils technologiques s'inscrivent-ils dans la stratégie globale de lutte contre la Covid-19? (mécanisme de coordination intergouvernementale rapide, gestion des CHSLD privés non conventionnés, réduction des comorbidités, augmentation de la capacité de production d'équipement et de soins de santé, etc..)

2. **Établir une directive de gestion contractuelle du Conseil du trésor pour fournisseurs externes d'outils technologiques**[1]
   a) Une **analyse juridique anticipée** du procureur général du Québec sur la conformité de l'outil avec les droits et libertés, notamment la Charte canadienne des droits et libertés et la Charte québécoise des droits et libertés de la personne ainsi qu'avec le cadre législatif applicable en matière de renseignements personnels.
   b) Un comité transdisciplinaire externe (informatique, droit, science sociale, santé publique) menant une **évaluation d'impact algorithmique** et fournissant une opinion non liante sur l'outil, avec obligation du gouvernement de justifier un refus de suivre les recommandations du Comité.

3. **Spécifications dans l'appel d'offre :**
   a) Application **décentralisée Bluetooth** afin de minimiser les risques d'atteinte à la vie privée.
   b) Code en **source libre**.
   c) Interface de programmation d'application facilitant un **audit indépendant**.

4. **Minimisation de la collecte et l'utilisation des données :**
   a) Durée de stockage **15 jours** maximum.
   b) Utilisation uniquement aux **fins approuvées**, soit notifier les utilisateurs de contact risqué et, le cas échéant, informer les interventions de la protection de la santé publique.
   c) Mécanisme d'**arrêt automatique** lorsque l'OMS déclare la fin de la pandémie.

5. **Garanties additionnelles :**
   a) Mécanisme de **divulgation responsable** pour les chercheurs découvrant des failles informatiques dans la protection des donnés des utilisateurs, et une immunité contre des accusations de piratage.[2]
   b) **Engagement explicite** des services policiers et de renseignements à ne pas utiliser de données recueillies via les outils technologiques de notification des contacts.
   c) **Maillage** avec d'autres juridictions déployant des applications de traçage

Note : Le texte qui suit est adapté d'une parution soumise au *Harvard Journal of Law and Technology*. Lorsque pertinent, l'analyse fait les adaptations nécessaires au contexte canadien et québécois. Ce texte est disponible sous la licence CC 4.0.

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[1] Voir la directive fédérale sur la prise de décision automatisée pour un exemple au niveau des fournisseurs fédéraux.
[2] Voir notamment « Utilisation non autorisée d'ordinateur », Code Criminel, art. 342.1.

THERE'S AN APP FOR THAT
Governance perspectives on digital health surveillance

Used alone, contact-notification apps are shortsighted. They warp interventions to a scale amenable to immediate results, alleviating the pressure to tackle underlying challenges. Governments should steer clear of the siren songs of technosolutionism, instead mapping long arc responses to complex problems like global health.

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I. INTRODUCTION

Digital contact notification apps promote a quick fix to the pandemic. Unless deliberately integrated to broader policy responses, a technology-centric approach could detract from structural interventions. Focusing efforts on an app may distract from broader structural issues underpinning the pandemic. This brief situates contact notification apps in the broader array of possible actions, ranging from superficial technosolutionism to structural reform. While digital contact notification has a role to play in curbing the current pandemic, it should not obfuscate the longer arc of tackling deeper, more complex public health challenges. It also highlights who drives technology governance: private actors. Their invaluable expertise best serves a government-driven process that puts users well-being at the center of all decisions.

After an overview of the technical features of contact notification applications, this brief describes structural issues that enable and exacerbate the pandemic. Those issues include underfunded public healthcare, insufficient stockpiling of medical equipment, dysfunctional coordination between various levels of government and high debt-to-income ratios. Drawing a parallel with risk assessment tools in the criminal justice system, the brief then warns that contact notification apps could distract policymakers from addressing these underlying conditions. Notwithstanding these limitations, contact notification apps still have a role to play in dealing with the pandemic. The next section describes the prominent role of private actors and proposes that governments take a more active role in shaping contact notification apps, notably regarding privacy and equality matters. Concluding with concrete recommendations to implement a polycentric governance model, the brief opens up on the attitude of governments towards technosolutionism.

II. TECHNICAL-ISH DESCRIPTION

Contact notification apps leverage two types of signal: GPS or Bluetooth. GPS-based applications track user geolocalization to determine whether a user trajectory intersects with that of infected individuals. Geolocalization also enables public health authorities to map infection hotspots. By contrast, Bluetooth-based applications record proximity between users without location context. This approach offers a privacy-preserving advantage over GPS-based applications, trading off location-specific data and its potential for mapping infection patterns. Some apps combine GPS and Bluetooth data.

Contact notification apps can adopt two types of system infrastructure: centralized or decentralized. Centralized apps send data to a remote server, either in the form of GPS coordinates or of Bluetooth contact logs. The server looks for matches between users and notifies them. For example, Singapore's BlueTrace application uploads users contact logs to a remote server.[3] The national health authority then processes the information to determine if potential matches raise an infection risk and decides whether to contact users.

In decentralized apps, the match between an infected and exposed individual occurs on the user's phone. For example, the Decentralized Privacy Preserving Proximity Tracing (DP3T) model[4] provides each user a unique ID. When they cross paths, users store their counterpart's ID locally on their respective phones. Each phone now contains a history of contacts with other users. Importantly, this contact repository is encrypted, such that neither users nor third parties can decipher the actual IDs. When a user tests positive and notifies the app, the app sends the user's ID to a remote server. The server thus receives the IDs of all infected users, then sends an aggregated list to all users. Upon receiving the list of infected IDs, the app looks for a match in the phone's local repository of stored IDs (see Table 1 for details). The process is decentralized in the sense that checking the list of infected IDs against the repository of recorded encounters occurs locally on individual phones, with the server lacking visibility into the full history of contact and matches.
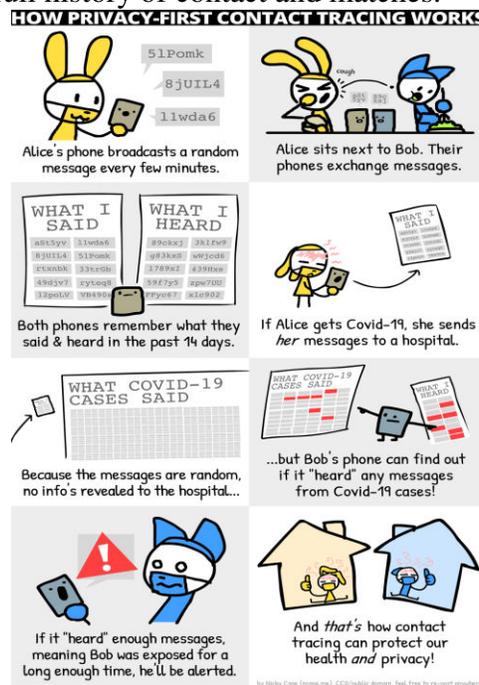
Figure 1: Decentralized contact notification server architecture

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[3] Jason Bay et al., *BlueTrace: A privacy-preserving protocol for community-driven contact notification across borders* 9.

[4] Carmela Troncoso et al., *Decentralized Privacy-Preserving Proximity Tracing* 33.

In terms of functionality, apps can either flag each suspect contact in a binary fashion or provide a probabilistic infection risk score based on the number and duration of encounters with infected users. One application prototype uses machine learning to determine the risk score.[5] To date, applications do not capture contextual information such as whether users wear personal protective equipment. GPS-based apps could conceivably gather other information relevant to estimating infection risk, including whether the interaction occurred inside or outside.[6]

Google and Apple are collaborating to solve compatibility issues between their Bluetooth technology.[7] The two companies currently provide an application programing interface (API) to facilitate the development of interoperable apps that capture contact between devices running on different operating systems.[8] Importantly, the API only supports Bluetooth-based decentralized apps.[9] These companies enforce additional limitations via their respective distribution platforms, the App Store and Google Play. For example, apps must be limited to one per country and avoid collecting geolocation data.

III.   TAKING THE LONG VIEW ON PUBLIC HEALTH

a)   Efficacy

Contact notification is not a standalone solution to the covid-19 pandemic. Countries that curbed infections deployed a three-prong approach: test-trace-isolate. With widespread testing elusive in many areas, contact notification apps have minimal value because users cannot ascertain whether they are infected in the first place. Moreover, models suggest that contact notification affords limited efficacy at the community transmission stage, that is when the source of infection is unknown given widespread infection.[10] **An emerging global consensus posits that as a matter of first principles, health surveillance technologies must be efficacious to even consider their deployment**.[11] As Québec, especially the Montréal region, is at the late stage of community transmission[12] and lacks sufficient testing capacity,[13] evidence that contact notification can curb the infection is disputed. That is not to say digital contact notification should be abandoned, but rather that it is not a silver bullet. Its limitations should inform the cost-benefit analysis of public authorities allocating scarce resources.

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[5] Peer-to-peer AI-notification of COVID-19, YOSHUA BENGIO (2020), https://yoshuabengio.org/2020/03/23/peer-to-peer-ai-notification-of-covid-19/ (last visited Apr 20, 2020).

[6] Subject to performance limitations in urban areas with skycrapers, see Y.J. Cui & S.S. Ge, *Autonomous vehicle positioning with GPS in urban canyon environments*, 2 1105–1110 vol.2 (2001).

[7] Apple and Google partner on COVID-19 contact notification technology, GOOGLE (2020), https://blog.google/inside-google/company-announcements/apple-and-google-partner-covid-19-contact-notification-technology/ (last visited May 6, 2020).

[8] ExposureNotification | Apple Developer Documentation, https://developer.apple.com/documentation/exposurenotification (last visited May 7, 2020).

[9] Apple and Google partner on COVID-19 contact notification technology, *supra* note 7 Apple and Google prohibit location tracking in new contact notification guidelines, VENTUREBEAT (2020), https://venturebeat.com/2020/05/04/apple-and-google-prohibit-location-tracking-in-new-contact-notification-guidelines/ (last visited Jun 16, 2020).

[10] Joel Hellewell et al., *Feasibility of controlling COVID-19 outbreaks by isolation of cases and contacts*, 8 THE LANCET GLOBAL HEALTH e488–e496, 489; 493 (2020).

[11] International Network of Civil Liberties Organizations, *Surveillance Tech and Covid-19 Principles*, https://covid19.inclo.net/inclo-surveillance-tech-and-covid-19-principles/ (last visited Aug 12, 2020).

[12] Community spread causing most new COVID-19 cases in Montreal | Montreal Gazette, https://montrealgazette.com/news/local-news/community-spread-causing-most-new-covid-19-cases-in-montreal (last visited Aug 12, 2020).

[13] New walk-in coronavirus testing clinic to open in Montreal as mayor criticizes long wait times | Globalnews.ca, https://globalnews.ca/news/7180793/montreal-testing-line-ups-coronavirus-public-health/ (last visited Aug 12, 2020).

Contact notification apps obfuscate recurring, underlying public health shortcomings. While supporting a rapid 'back to normal' deconfinement has advantages, it must not distract from conversations about the public policy shortcomings underlying the current pandemic. These shortcomings include underfunded fundamental research subject to unrealistic timelines. For example, research into a vaccine for SARS-coV-1, a virus in the same family as the SARS-coV-2 causing the current pandemic, was abandoned due to lack of funding once the infection receded.[14] Second, pandemic responses must address the politicization of multilateral organizations. Instead of defunding the World Health Organization (WHO), states should strengthen its early response, legitimacy and convening role.[15] States must also reinforce rather than divest from national capacity to anticipate and address global health threats.[16]

b) Pre-existing Conditions

Contact notification could detract from deeper structural issues that have enabled the pandemic. Limiting infection rates at the community transmission stage will not eradicate the disease, but simply curb infection rates so as to avoid shortage of equipment and healthcare capacity. To be sure, curbing infection until a vaccine or disease management strategy emerges is a laudable goal. But it also conveniently spreads resource-intensive cases over time, allowing healthcare systems to cope without addressing chronic under underresourcing. Two elements contribute to the phenomenon of insufficient healthcare resources. First, the logic of just-in-time production creeped from manufacturing to the public sector.[17] This managerial practice in the service of small-government ideology eliminated "redundant" people and material resources, leaving little leeway to adjust to a surge of demand as that of covid-19 cases. While remarkable altruism and ingenuity expanded capacity, *ad hoc* damage control still falls short of reversing decades of defunding that left public actors unable to scale up to address covid-19 cases. Second, insufficient coordination within and among countries left public actors victims of speculation as demand soared, driving up the cost for procuring personal protective equipment and medical devices such as ventilators. In Canada, the federal government appears to coordinate procurement, mitigating equipment shortages.[18]

Borrowing supply and demand notions from economic theory further clarifies the above point. On the supply side, healthcare and equipment supply is inelastic due to underfunding. Contact notification applications operate on the demand side of the equation, decreasing infection rate and thus easing pressure on healthcare services. In other words, demand-side contact notification interventions palliate for and obscure insufficient and inelastic healthcare supply. This tactical effort to mitigate demand should not detract from the systemic issues crippling

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[14] Scientists were close to a coronavirus vaccine years ago. Then the money dried up., NBC NEWS, https://www.nbcnews.com/health/health-care/scientists-were-close-coronavirus-vaccine-years-ago-then-money-dried-n1150091 (last visited Jun 16, 2020).

[15] Kim Hjelmgaard, *Analysis: Trump halts funding to WHO. Experts say we need it now more than ever*, USA TODAY, https://www.usatoday.com/story/news/world/2020/04/15/coronavirus-covid-19-trump-world-health-organization-who/2987610001/ (last visited May 7, 2020).

[16] For examples in the US context, the Global Health Security and Biodefense team in the National Security Council was redistributed in other units Glenn Kessler and Meg Kelly *Analysis | Was the White House office for global pandemics eliminated?*, WASHINGTON POST, https://www.washingtonpost.com/politics/2020/03/20/was-white-house-office-global-pandemics-eliminated/ (last visited May 7, 2020).

[17] Evan Dyer, *The great PPE panic: How the pandemic caught Canada with its stockpiles down | CBC News*, CBC, July 11, 2020, https://www.cbc.ca/news/politics/ppe-pandemic-covid-coronavirus-masks-1.5645120 (last visited Aug 13, 2020); Christina Anderson & Henrik Pryser Libell, *Finland, 'Prepper Nation of the Nordics,' Isn't Worried About Masks*, THE NEW YORK TIMES, April 5, 2020, https://www.nytimes.com/2020/04/05/world/europe/coronavirus-finland-masks.html (last visited Aug 13, 2020); Editorial Board, *Companies should shift from 'just in time' to 'just in case,'* April 22, 2020, https://www.ft.com/content/606d1460-83c6-11ea-b555-37a289098206 (last visited Aug 13, 2020).

[18] Public Services and Procurement Canada Government of Canada, *Supplying Canada's response to COVID-19 - Supporting Canada's response to COVID-19 - PSPC* (2020), https://www.tpsgc-pwgsc.gc.ca/comm/aic-scr/provisions-supplies-eng.html (last visited Aug 10, 2020).

supply-side funding and coordination. A better approach would complement short-term demand-side interventions with medium-term revisions to the just-in-time logic and lack of federal coordination that undercut supply flexibility in the first place.

Contact notification facilitates a quick reopening of the economy without delving into the structural impediments which make a slowdown so difficult in the first place. The inability to sustain confinement highlights chronic lack of savings: with 176$ of debt averaging for 100$ of income,[19] there is little room to maneuver. Contact notification is deployed to quickly jump-start the economy, providing reassurance in the form of objective data about infection risk. Behavioral psychology has long documented the phenomenon of automation bias, leading people to place undue trust in machine outputs.[20] Despite the disputable efficacy of contact notification at the late stage of community transmission, the apps nudge individuals into resuming activity by providing a sense of security. In so doing, the technology privatizes the management of the pandemic. It provides individuals a sense of control over infection risk, empowering them to make seemingly informed decisions about the trade off between personal safety versus engaging income-earning (and spending) activities. To be sure, mental health considerations also justify deconfining people.[21] But economic rationales power deconfinement in the public discourse.[22]

c)   The limits of technosolutionism

Automated risk assessment tools in the U.S. criminal justice system provide a fitting parallel on the role of technosolutionism in obscuring structural dimensions. Both technologies tilt the center of gravity towards short-term superficial interventions, attenuating flare ups rather than solving the underlying issue. Automated assessment tools infer recidivism risk from a criminology questionnaire and demographic data to ascribe a score.[23] The score informs bail, sentencing, security classification and parole release. While data-driven penology purports to safeguard against arbitrary, idiosyncratic determinations, it also oils the cogs of the criminal justice system by streamlining the process, lightening the workload of case workers and first instance judges. Ultimately, risk scores perpetuate mass incarceration because they optimize judicial practices and obscure more transformative initiatives towards decarceration.[24] Similarly, contact notification apps alleviate short-term pressure on healthcare infrastructure by facilitating a return to normal, deflecting from deeper structural reforms.

Used alone, contact-notification apps are shortsighted.[25] They warp interventions to a scale amenable to immediate results, alleviating the pressure to tackle underlying challenges. They dispense with strategic foresight and politically difficult discussions about public spending and societal choices. As with risk assessment tools, contact notification apps can be coopted into stabilizing the status quo, pre-empting deeper structural reform. To be clear, the argument is not against much needed short-term measures that could save

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[19] Statistics Canada Government of Canada, *Household sector credit market summary table, seasonally adjusted estimates* (2018), https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3810023801 (last visited Aug 10, 2020).

[20] Kathleen L Mosier et al., *Automation Bias: Decision Making and Performance in High-Tech Cockpits*, 8 INTERNATIONAL JOURNAL OF AVIATION PSYCHOLOGY 47–63 (1997).

[21] Betty Pfefferbaum & Carol S. North, *Mental Health and the Covid-19 Pandemic*, NEW ENGLAND JOURNAL OF MEDICINE (2020), https://doi.org/10.1056/NEJMp2008017.

[22] Peter Baker, *Trump's New Coronavirus Message: Time to Move On to the Economic Recovery*, THE NEW YORK TIMES, May 6, 2020, https://www.nytimes.com/2020/05/06/us/politics/trump-coronavirus-recovery.html (last visited May 7, 2020)

[23] Risk assessment questionnaire, https://www.documentcloud.org/documents/2702103-Sample-Risk-Assessment-COMPAS-CORE.html; Northpointe Inc., *Practitioner's Guide to COMPAS Core* (2015), http://www.northpointeinc.com/downloads/compas/Practitioners-Guide-COMPAS-Core-_031915.pdf.

[24] Cecelia Klingele, *The Promises and Perils of Evidence-Based Corrections*, 91 NOTRE DAME L. REV. 537–584, 554 (2016).

[25] Two Heartbeats A Minute, NPR.ORG, https://www.npr.org/2020/02/25/809336135/two-heartbeats-a-minute (last visited May 7, 2020).

lives, but rather an invitation to ensure that such tactical responses not obscure longer arcs of transformative policies. To borrow from civil procedure, contact notification apps are akin to interlocutory injunctions preventing serious or irreparable prejudice until a final decision.[26] They are not, but any means, a substitute for a disposition on the merits. In the case of risk assessment tools, the deeper question lurking behind streamlining criminal justice determinations is why the state incarcerates so many people – mostly black and brown in the U.S, but also disproportionately indigenous and black in Canada[27] – in the first place. As for contact notification apps, underlying issues include the above-mentioned lack of stockpiling and insufficient savings. Also relevant is the uneven distribution of co-morbidities increasing the likelihood of death along income and race lines.[28] In sum, the parallel between risk assessment tools and contact notification surfaces the propensity of data-driven technologies to prop up shortsighted approaches to the detriment of structural reform. Both technologies support myopic interventions focused on alleviating immediate pain points.

IV.   GETTING CONTACT TRACING RIGHT

Notwithstanding the above reservations about technosolutionism, there is scope for getting the technology right. With at least 25 countries considering or deploying contact notification apps,[29] improving their design, implementation and governance is a worthwhile endeavor.

a)   The role of private and public actors

Private technology companies are the main drivers of policy. The Apple-Google duopoly set the stage for decentralized Bluetooth-based apps, notably forcing the German government to change course.[30] Technical specifications effectively superseded the government's approach to contact notification apps. Faced with a similar override of its centralized contact notification app, France's minister for digital technology issued a

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[26] Quebec Code of Civil Procedure, C. 25.1, art. 511 par. 1: "An interlocutory injunction may be granted if the applicant appears to have a right to it and it is judged necessary to prevent serious or irreparable prejudice to the applicant or to avoid creating a factual or legal situation that would render the judgment on the merits ineffective" [emphasis added].

[27] See OFFICE OF THE CORRECTIONAL INVESTIGATOR GOVERNMENT OF CANADA, *Indigenous People in Federal Custody Surpasses 30% - Correctional Investigator Issues Statement and Challenge - Office of the Correctional Investigator* (2020), https://www.oci-bec.gc.ca/cnt/comm/press/press20200121-eng.aspx (last visited Aug 10, 2020) noting the "indigenization" of Canada's carceral system, with First Nations 6 to 7 times more likely to be incarcerated; SHELLEY TREVETHAN & CHRISTOPHER J RASTIN, *A profile of visible minority offenders in the federal Canadian correctional system* (2004), https://www.passengerprotect-protectiondespassagers.gc.ca/cnt/rsrcs/lbrr/ctlg/dtls-en.aspx?d=PS&i=25572782 (last visited Aug 10, 2020); See also Zone Société-ICI.Radio-Canada.ca, *Noirs et Autochtones surreprésentés dans les prisons*, RADIO-CANADA.CA, https://ici.radio-canada.ca/nouvelle/643334/canada-prisons-noirs-autochtones (last visited Au^g 10, 2020) reporting in 2013 an 80% increase in black inmates in the last decade, who make up 10% of carceral population and 3% of general population.

[28] In the U.S. context, see Yaryna Serkez, *Who Is Most Likely to Die From the Coronavirus?*, THE NEW YORK TIMES, June 4, 2020, https://www.nytimes.com/interactive/2020/06/04/opinion/coronavirus-health-race-inequality.html (last visited Jun 8, 2020).

[29] A flood of coronavirus apps are tracking us. Now it's time to keep track of them. | MIT Technology Review, https://www.technologyreview.com/2020/05/07/1000961/launching-mittr-covid-tracing-tracker/ (last visited Jul 27, 2020) [https://perma.cc/6QWP-D725]; We Saw NSO's Covid-19 Software in Action, and Privacy Experts Are Worried - VICE, https://www.vice.com/en_us/article/epg9jm/nso-covid-19-surveillance-tech-software-tracking-infected-privacy-experts-worried (last visited May 6, 2020); Apps and Covid-19 | Privacy International,https://privacyinternational.org/examples/apps-and-covid-19 (last visited May 6, 2020); Leo Kelion Cellan-Jones Rory, *App stores approve UK contact-tracing app for test*, BBC NEWS, May 4, 2020, https://www.bbc.com/news/technology-52532435 (last visited May 6, 2020); Contact Tracing: Europe's Coronavirus Tech Tangle, BALKAN INSIGHT (2020), https://balkaninsight.com/2020/05/04/contact-tracing-europes-coronavirus-tech-tangle/ (last visited May 6, 2020) [https://perma.cc/2DXD-NGXZ].

[30] Germany flips on smartphone contact notification, backs Apple and Google, REUTERS, April 26, 2020, https://www.reuters.com/article/us-health-coronavirus-europe-tech-idUSKCN22807J (last visited Apr 26, 2020).

thinly veiled retaliation threat about the companies unwavering stance, commenting that "we will remember that when time comes".[31]

At first blush, the net effect of a decentralized privacy-first approach is positive, as it imposes limitations against mission creep and data leakage. However, it remains open to debate whether private actors should have the last word by hard-coding their policy inclinations. Indeed, the confluence between technology companies and privacy concerns is but anecdotal happenstance. Corporate accountability mechanisms such as shareholder derivative action and corporate social accountability offer uneven and unpredictable protection for this fragile convergence. On the one hand, a public law driven process would foster judicial oversight, open debate and accountability through ballot box checks. On the other hand, if past data collection abuse[32] is any indication of future practice, governments that have strained public law protections can hardly be expected to show self-restraint. They could exploit loopholes in centralized contact notification apps to repurpose the data harvested for law enforcement, national security and eventually mass surveillance, such that handing unbridled control to governments entails its own set of risks. The next section will return to this question, proposing a way forward to foster rights-driven collaboration between public and private actors.

The disparate impact of contact notification apps risks getting lost in the handoff between public health authorities and private app developers. For example, underlying digital divides could lead some demographics to be left out of notification processes. Historically oppressed groups could also face increased stigmatization if the technology suggests higher infection rates among them, reinforcing narratives about the dangerous Other. Precarious workers may be under *de facto* obligation to reveal infection status or risk, with employers weaponizing voluntary apps against employees. Public health authorities may be unable to track those dynamics, while developers lack training to anticipate and recognize the disproportional effect of their technology on marginalized communities. Such disparate impact on protected and historically marginalized groups could run counter to constitutional guarantees of equality and non-discrimination.[33] However, bringing private technology developers within the purview of constitutional protection is mired with uncertainty.[34] That said, provincial quasi-constitutional protection could offer better prospects for addressing the disparate impact of contact notification apps, notably via sector-specific protection.[35] Irrespective of the varying potential of these judicial avenues, one common thread is that they all favor *post facto* remedy. Equality considerations are seldom integrated upstream at the conception stage. While interdisciplinary efforts have made significant headway into narrowing the gap between analog-era legal conceptions of discrimination and technical implementation, notably in the machine learning space,[36] the distinct trajectories of legal and technical approaches tend to be that of two ships passing in the night, colliding only once harm materializes. In order to address these serious risks, this brief recommends conducting independent algorithmic impact assessments prior to deploying contact notification and notification technologies.

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[31] France accuses Apple of refusing help with "StopCovid" app, REUTERS, May 5, 2020, https://www.reuters.com/article/us-health-coronavirus-france-tech-idUSKBN22H0LX (last visited May 7, 2020).

[32] In the U.S. context, see Glenn Greenwald, *NSA Collecting Phone Records of Millions of Verizon Customers Daily*, The Guardian (June 5, 2013); James Risen & Eric Lichtblau, *Bush Lets U.S. Spy on Callers Without Courts*, New York Times (Dec. 16, 2005).

[33] *Canadian Charter of Rights and Freedoms*, s.2(a), Part I of the *Constitution Act, 1982*, being Schedule B to the *Canada Act, 1982* (U. K.), 1982, c. 11, art. 15 (1). For a critique of the formalist approach of the Supreme Court in analysing discrimination claims, see Bruce Ryder, Cidalia Faria and Emily Lawrence, "What's *Law* Good For? An Empirical Overview of Charter Equality Rights Decisions" (2004) 24 Supreme Court Review 1 at 14.

[34] Jason Schultz & Kate Crawford, *AI Systems as State Actors*, 119 COLUMBIA LAW REVIEW 1941, 1964 (2019).

[35] *Quebec Charter of Human Rights and Freedoms*, R.S.Q. c. C-12, arts. 10 generally; 12-15 in private contracting and 16-19 in employment contexts.

[36] WORLD ECONOMIC FORUM, *How to Prevent Discriminatory Outcomes in Machine Learning* (2018), https://www.weforum.org/whitepapers/how-to-prevent-discriminatory-outcomes-in-machine-learning (last visited Mar 15, 2018); Amnesty International & Access Now, *Toronto Declaration: Protecting the rights to equality and non-discrimination in machine learning* (2018), https://www.accessnow.org/toronto-declaration.

b) <u>Towards Polycentric Governance</u>

Rather than a zero-sum game between public and private actors, a better approach would allocate governance tasks according to respective expertise. Using the spiderweb metaphor, the notion of polycentric governance[37] brokers decision-making power among a plurality of interrelated interests. Public actors remain stewards of the public good, the proverbial spider at the center of the web coordinating a rights-centered approach to technological deployment. With input from private actors, academics, and civil society to contribute a more granular understanding of the potential of contact notification and implementation roadblocks, governments should remain responsible and accountable for the main orientations. Specifically, accountable public actors – setting aside the specific challenge of authoritarian regimes – would bear responsibility for the cost/benefit analysis between risks to civil liberties and public health advantages. Private technology companies are best placed to advise governments on feasibility and implementation. If given sufficient access to the technology and data at the development stage, civil society and academid stakeholders can lend legitimacy to the process.

V. GOVERNANCE SOLUTIONS

Below are existing or recommended initiatives that bring to life polycentric governance in the context of contact notification apps.

<u>a- Ex-ante parameters</u>
The EU recommendation for contact notification applications sets forth a development toolbox. It lays out privacy-preserving recommendations pertaining to purpose and storage limitations, cyber security and transparency.[38] Although non-binding,[39] this proactive stance sets the tone for technology companies. In light of France's above-mentioned threat along with the broader context of increased antitrust scrutiny and trend towards more robust legislation pertaining to the activities of technology companies,[40] the latter would be well-advised to consider the toolbox highly persuasive.

<u>b- Procurement guidelines</u>
Procurement provides a promising lever to organize the respective obligations of public and private actors regarding contact notification apps. The modalities for outsourcing the development of these apps are an opportunity to ensure that public and private actors align in providing rights-respecting technology. For example, the contract terms could require an ongoing third-party security audit to minimize privacy risks. Coupled with a responsible vulnerability disclosure process for security weaknesses, open source code could also bolster privacy by channelling the input of security researchers from academia and civil society. In multiplying the opportunities for contributions from diverse stakeholders, open source requirements narrow

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[37] LON L. (LON LUVOIS) FULLER, ADJUDICATION AND THE RULE OF LAW (1960); J.W.F. Allison, *Fuller's Analysis of Polycentric Disputes and the Limits of Adjudication*, 53 C.L.J. 367–383 (1994).

[38] EUROPEAN COMMISSION, *Recommendation of 8.4.2020 on a common Union toolbox for the use of technology and data to combat and exit from the COVID-19 crisis, in particular concerning mobile applications and the use of anonymised mobility data* (2020) https://perma.cc/E9B7-9KE7.

[39] Treaty on the Functioning of the European Union, 2012/C 326/01, art. 288 *in fine*.

[40] E.U.'s New Digital Czar: 'Most Powerful Regulator of Big Tech on the Planet' - The New York Times, https://www.nytimes.com/2019/09/10/world/europe/margrethe-vestager-european-union-tech-regulation.html (last visited May 7, 2020); France Plans a Revolution to Rein in the Kings of Big Tech | WIRED, https://www.wired.com/story/france-plans-revolution-rein-kings-tech/ [https://perma.cc/9BDH-YZNK] (last visited May 7, 2020).

blind spots inherent to any one position in the ecosystem. Canada's binding procurement directive moves in that direction, prioritizing open source code for outsourced automated decision-making software.[41]

c- Setting a timeline for storage limitations

One area which would benefit from clearer public-private task allocation is defining an exit strategy. Even when Bluetooth data is cabined through decentralized architectures, contact notification provides exceptional surveillance capabilities. If the post 9/11 bulk data collection is any indication, emergency powers tend to have long-lasting effects on civil liberties, particularly privacy.[42] Governments should take the lead and provide clear sunset clauses for these exceptional powers. The EU recommendation to wind down data retention when the pandemic is declared 'under control'[43] is a step in the right direction. It suggests that the EU will align with WHO directives, as the latter organization is responsible for such declaration. While the politicization of WHO may prove problematic, tethering a sunset clause on the WHO provides an opportunity for reforming this important multilateral organization.

VI. CONCLUSION

With companies coding policies by fiat, technology can not only disrupt, but displace the law. A more proactive stance by governments should supplement after-the-fact recourse for privacy breaches and disparate impact. Governments should reimagine their role at the center of a polycentric governance model, leveraging their convening power to align all actors involved, setting principles ahead of development and ensuring ongoing monitoring capacity. More broadly, governments should steer clear of the siren songs of technosolutionism, instead mapping long arc responses to complex problems like global health.

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[41] TREASURY BOARD OF CANADA SECRETARIAT, *Directive on Automated Decision-Making*, https://perma.cc/6B4L-XTUH (last visited Apr 12, 2019) s. 6.2.6. Complementary measures to incentivize independent security testing could include a safe harbour against hacking charges for researchers exposing vulnerabilities through a disclosure program.

[42] Matt Olsen, National Security Law and Practice Seminar, Harvard Law School, March 2020, informal comment.

[43] EUROPEAN COMMISSION, *supra* note 38.
at 10 s. 16 (5).