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Digital Contact Tracing and the Rise of Big Brother

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Just over a century ago, the deadliest pandemic in human history shook the world. With no vaccine to protect against influenza infection, the world was tragically exposed to the H1N1 virus. Despite the efforts of authorities to enforce isolation, quarantine and limited public gatherings, etc., the number of deaths came to about 500 million people.

Fast-forward to a hundred years later, with humans now confronting COVID-19. Over the decades, scientists have developed powerful weapons to fight the flu. Although the pandemic has not yet come to a halt, the number of deaths are nowhere near that of the flu in 1918. Medical advances are indeed indispensable, but there is also a new form of technology arguably contributing to fighting the pandemic — digital contact tracing. Digital contact tracing, often based on mobile devices, is a method to determine the contacts of an infected user. While some argue that the technology helps cope with the situation, it comes with controversies.

Deployed by approximately fifty nations, digital contact tracing has aroused discussions regarding privacy on a global scale. The utilization of contact data has caused a split of opinion concerning the policy of data disclosure, the fundamental architecture of the applications involved, and other aspects. Even though the outbreak of the pandemic goes back a while, health authorities are still engaged in exploring the ideal balance between controlling the spread of the virus and preserving privacy rights. Moreover, the threat of digital contact tracing is not necessarily limited to privacy concerns. Information Management expert Frantz Rowe describes the technology as follows:

> . . . the adoption of the [contact tracing] app generates important risks to our informational privacy, surveillance, and habituation to security policies. It also may create discrimination, distrust, and generate other health problems such as addiction as 5G technology continues to be deployed without prior impact studies. (Rowe, 2020)

Rowe's observation is in line with the traits of Big Brother in the book *1984* by George Orwell. Big Brother is the totalitarian figurehead who manipulates and monitors citizens with constant surveillance to keep society orderly.

It isn't very often that we see nations all over the world tackle the same issue with similar types of technological solutions. Therefore, this unprecedented event calls for further investigation. The aim is to answer the following question**:** Is digital contact tracing contributing to creating the equivalent of the modern-day Big Brother? This paper will first introduce the objectives for obtaining contact data; second, it will study several cases of how the contact tracing applications are being used; third, it will analyze the change in state power as a consequence of performing digital contact tracing. Finally, it will discuss how the new technology, like a contemporary Big Brother, acquires great influence over our everyday life. Phenomena surrounding digital contact tracing technology will affect or even standardize our future

approaches toward privacy. Thus, it is important to acknowledge what digital contact tracing is capable of and determine its limits before we unknowingly create a real modern-day Big Brother.

Contact Tracing Data Usage

The absence of a unified goal complicates the discussion on digital contact tracing. Due to its low diffusion rate, health officials cannot accurately measure the performance of the emerging technology. Oxford University's epidemiological model shows, "if 60% of the population used the digital contact tracing app, it would lead to a reduction in the number of cases" (University of Oxford, 2020). However, no nation has reached 60%. In Iceland where the penetration rate reached 40%, one of the highest in the world, officials, in an interview with the *MIT Technology Review*, concluded that the contact tracing app was not a "game-changer" (Johnson, 2020). Consequently, the intentions of collecting contact data remain ambiguous, creating divergence in its usage among nations. This section will describe the objectives behind the acquisition of contact tracing data. Collecting data is a process of obtaining insights, and there is always a reason why one needs them.

Figure 1 is a diagram that categorizes the usage of health data and those who benefit from it. The purpose of conducting digital contact tracing can be subdivided as follows: 1) to change the voluntary behavior of citizens, 2) to research their current health status, and 3) to mandate behavior restrictions.

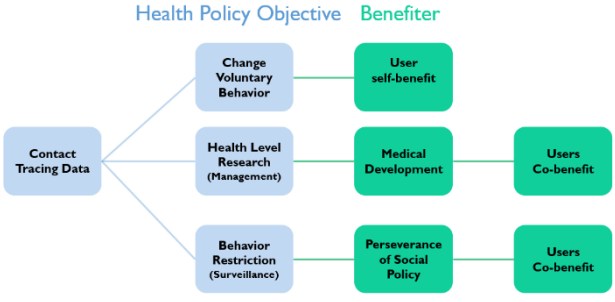

Figure 1. Objectives of Health Care Policy.

Objective 1 refers to policies aimed at changing users' voluntary behavioral patterns, such as by wearing masks, taking the PCR test, staying home, etc. The alert function of the contact tracing applications belongs in this category. The application notifies users and encourages them to take the PCR test if they have been in contact with an infected patient. Policies with these objectives are designed to benefit users by protecting them from health threats. However, action on the users' part is not mandated. Therefore, it is at the discretion of each user to decide if they want to offer their contact information. Importantly, whatever their decision, they are held responsible for it. However, this can only work on the premise that citizens possess sufficient device and application literacy.

Objective 2 demonstrates the usage of contact trace data for research. The data acknowledges the current health status of citizens, and constitutes a base compass for brainstorming suitable follow-up measures. For example, some nations have collected GPS data to analyze trends in both the movement of their people and the spread of the infection (discussed further below). Such research data directly contributes to the development of health studies in general, while also providing direct benefits to the users involved. Due to its universality, the considered use of such data for research purposes resides within legal boundaries. In order to accelerate measures that are produced in this category, specifying regulations such as through medical law and privacy law will be of highest priority.

Objective 3 refers to actions that forcibly restrict or mandate the behavior of citizens. Lockdown is a prominent example. There are other measures such as mandating the download of the contact tracing app. These actions help to preserve social policies, benefiting users in a roundabout way. Yet, approaches based on Objective 3 are rather debatable due to their

authoritative manner. Arguments regarding these actions consist not only of scientific evidence but also reflect political ideology and social opinions. At least in a democratic state, it is desirable that the impact of such measures is discussed at a public level before implementation.

As stated above, there is wide divergence in objectives of using contact data. Those who do or, on occasion, do not benefit from the submission of contact data vary according to the range of objectives the authorities have. Keeping this factor in mind, the next section will investigate actual contact tracing cases from four countries.

Case Studies

What can be retrieved from contact data depends on the model which different nations implement in their contact tracing applications. There are two types of models in deploying this application: the centralized model and the decentralized model. The centralized model extracts anonymized ID and the codes collected from phones to a centralized database when the user reports a positive test. The decentralized model gives users more control over their information by providing nothing but the user's anonymized ID (Kelion & Criddle, 2020). The decentralized approach is the initial model that Google and Apple built and for which they disclosed its APIs. It is supported by 600 scholars through the Contact Tracing Joint Statement.[1] The main reason why some nations use a centralized model over a decentralized one is that the former provides authorities with more insights due to its rich volume of private information. In fact, several nations claimed the necessity of the centralized model considering the risk of false diagnosis reports (Veale, 2020). Based on the three objectives introduced in the previous section, let's now look at the case examples of what can be done with contact data.

Japan's "COCOA" is one example of the decentralized model. COCOA only keeps encrypted data that flags phones that have been in contact. It does not store personal information such as location data, name, gender, etc., and its only function is to notify the user when the device had contact with a person who tested positive (Byfird, 2020). Given this specification, it can be inferred that changing a user's voluntary behavior is the only function the app is capable of. Since it doesn't store any other data, it is difficult for COCOA to be used as evidence for either health level research or behavior restriction.

Qatar's "EHTERAZ" is made of the centralized model, activating live location tracking of all users or specific individuals. The government of Qatar makes it mandatory to download the app, and any violation will lead to fines or even criminal charges (Al Jazeera, 2020). The app also requests permission to access photo albums on the phone, which seems quite irrelevant in fighting the pandemic (The World, 2020). While EHTERAZ possesses certain leverage in changing the user's voluntary behavior, it relies on the assumption that its service is mainly used for the better, namely research and restriction purposes.

In South Korea "The Coronavirus Disease-19 Website" uses the centralized model. The government discloses user information to the public, including gender, nationality, age, diagnosis, date, hospital, and even his or her location trail (though removed in the latest version) (Sun, 2020). This function makes people

[1] KU LEUVEN. (n.d.). *Contact Tracing Joint Statement* [Press release]. Retrieved August 30, 2020, from https://www.esat.kuleuven.be/cosic/sites/contact-tracing-joint-statement/

refrain from visiting spots near the location of patients. While helping the health authorities in insightful health level research, it does cause privacy issues (discussed below). Unlike EHTERAZ, the South Korean application cannot directly mandate citizens to take any particular action. However, it is capable of attaching a social reputation risk to users that can eventually lead to regulating the behavior of citizens.

"Hamagen" provided by the Israeli Ministry of Health uses the decentralized model. It merely confirms location data on the user's phone but leaves it in the internal memory of the device (France-Presse, 2020). Therefore, it can be said that the app's main objective is to change people's voluntary behavior. With the consent of the diagnosed user, the Health Ministry can acquire user data for research purposes and also can release his or her location trails to the public. This seems to be a reasonable approach because the users have the option to disclose their information or not. In this case, the efficacy of associated research will rely upon the number of people who decide to share their information, which might delay new insights from getting discovered.

Gradation can be spotted between the level of a potential threat and the performance of the contact data contributing to health. The examples above show that digital contact tracing is NOT a binary choice between mass surveillance vs the uncontrolled spread of coronavirus. In other words, deploying digital contact tracing does not automatically lead to mass surveillance; there are a number of levels in between. The most important point is to determine the appropriate relationship with the digital tool and find reasonable steps toward it.

Change in State Power

While the pandemic presents a challenge to all nations, it can also act as a justification for conducting policies that might have been judged as too extreme in the pre-coronavirus period. If nations took advantage of the current situation, to what extent could it advance national capabilities? Stated below are three examples of increased powers that nations were seen to exercise throughout the pandemic.

(1) Mass Surveillance. Since the outbreak of the virus, the idea of a nation gathering location data of its citizens has become rather common. Nearly ten nations, about a quarter of the countries with an official app, are collecting location data from contact tracing software (O'Neill, 2020). Bahrain, Kuwait, and Norway's contact tracing apps use GPS data and allow for real-time tracking of their users. Amnesty International judged these three applications to be "highly invasive surveillance tools which go far beyond what is justified in efforts to tackle COVID-19" (Amnesty International, 2020). Given its ban of the application, Norway's health official FHI director has claimed in an interview with *POLITICO*: "Without the app, we are less equipped to prevent new outbreaks that may occur locally or nationally" (Manancourt, 2020). Countries such as Doha and Bahrain mandate citizens to install the app, with those who do not download it being fined (France-Presse, 2020). It is noteworthy that Norway is causing controversial outcomes alongside Middle Eastern countries which are famous for their rigorous network restrictions. Norway's precedent shows that European countries known for their thorough defense of human rights aren't exceptions. There is no assurance that these measures won't escalate into acquiring more sensitive data. If location tracking or other forms of surveillance tools proved to be favorable, constant extraction of personal data might become a basic principle of life even after the pandemic goes away.

(2) Social Pressure. A new form of social concern has arisen as a consequence of contact data. In Japan, numerous cases of bullying of Covid patients were reported. The Ministry of Education had to make

a statement to students and school staff to refrain from harassing those who were tested positive (Ito, 2020). Also, students of Kyoto Sangyo University, where group infection had occurred, were mistreated. They received hate speeches, were suspended from their part-time jobs, and some teachers' children were denied daycare services. (Tsujita, 2020). These series of events signify the possibility of discrimination when the contact data is mishandled. South Korea's "The Coronavirus Disease-19 Website" exemplifies how state power can put social pressure on citizens. Using location data and credit card records, the application discloses patient movement history. Identifying locations including those of LGBTQ communities and love hotels, movement logs can reveal personal secrets, potentially earning patients considerable public disapproval. Besides, bars, restaurants, or any other venues that the patient has visited could fall into disrepute due to misinformation. In fact, regarding privacy, one lawsuit was brought by a coronavirus patient in Busan against the National Human Rights Commission of South Korea (Denyer & Kim, 2020). Furthermore, digital contact tracing also revealed the segregation of a minority community. Some of the alerts informed on LGBTQ-friendly corners in certain neighborhoods, leading to public intimidation. In an interview with *The World*, Todd Henry, a Korean studies expert at the University of California San Diego, says that "the coronavirus epidemic has unearthed deep-seated anxiety about sexual minorities" (Strother, 2020). He also states that "If their off-the-radar communities are being put under surveillance by COVID[-19], there is no space or room for LGBT[Q] people to move and navigate in Korean society" (Strother, 2020). The disclosure of contact data could force minorities all over the world to confront hidden discrimination. Social pressure and reputation can become uncontrollable, and if damage occurs, it is often very hard to recover from it. Mishandling of contact tracing data can generate discrimination and/or hate, leading to a division of society beyond repair.

(3) Legitimacy. The legal responsibility for the use of personal data remains ambiguous in most countries. However, in the current emergency, it is not rare for health officials to make legal exceptions in cases of transfer and viewing rights of certain sets of data. In March 2020, the South Korea Centers for Disease Control and Prevention launched the COVID-19 Epidemiological Survey Prompt Support System. This system enables prompt delivery of data relevant to infected individuals or those suspected to be infected. The data is handed to epidemiology investigators immediately after requisite data are collected from the police, mobile carriers, and credit card companies, etc., on a near real-time basis. The legal basis of this change is the Contagious Disease Prevention and Control Act (CDPCA). With the amendments made during the 2015 MERS outbreak, the CDPCA was given the authority to override certain provisions of the Personal Information Protection Act and other privacy laws (Park, 2020). Political/legal responses to expand state discretion regarding personal data will likely increase during the pandemic. Where are the boundaries in data sharing? What parties are credible enough to give data to? Without doubt, agile data transfer and prompt data analysis are important. However, it is equally important to constantly question and review whether enough time, thought, and resources have been allocated to debating these policy changes sufficiently.

Based on the analysis above, digital contact tracing has been found to have a significant effect on citizen behavior by lending itself to mass surveillance and the exertion of social pressure. While the legitimacy of such developments remains unanswered, it is clear that features of digital contact tracing could be understood in the sense of a modern Big Brother. As yet,

this type of technology doesn't quite fulfill Big Brother conditions due to the lack of uniformity across countries. However, it can be said that digital contact tracing has the potential to meet the requirements for a totalitarian figurehead.

Reflections of 1984

Now that we understand how nations can gain power through high-tech mechanisms such as digital contact tracing, let us reflect on how its features introduced in the foregoing section are portrayed in Orwell's *1984*.

(1) Mass Surveillance. The citizens of Oceania are monitored by ubiquitous posters displaying Big Brother with the slogan "BIG BROTHER IS WATCHING YOU." Through telescreens and numerous hidden devices, the Thought Police can cross the personal boundaries of citizens and seize them for "wrongdoings." Not only are citizens monitored by devices, but they are also surveilled by each other. There are a few instances in the book where family members were even reported by their children. Though Big Brother does not appear directly in the story, his inescapable presence is symbolized by the panopticon of these devices and eyes.

(2) Social Pressure. Social pressure is conspicuous in the world of *1984*. Computer science scholar Bahalul Haque analyses the book as follows.

> In the Book, *1984*, the writer assumed a surveillance state where each and every aspect of human emotion is controlled by the ruling state. The key factors of our life like language, emotions are controlled and monitored by the state. People don't have anything to say anything as they are being manipulated psychologically to abide by the rules and regulations (Haque, 2019).

As an outcome of the daily inculcations such as "Two Minutes Hate" and "Doublethink," the beliefs of citizens are amalgamated into a single monolithic standard. The peer to peer surveillance relationship between citizens gives rise to a feeling of personal guilt unable to challenge this standard. This mob mentality phenomenon keeps Big Brother and his beliefs immoveable.

(3) Legitimacy. There isn't much in terms of legitimacy that can be deduced from *1984*, because law as such does not exist in Oceania. People are arrested not based on legitimacy but on the going moral principles of the authorities, no matter how repugnant. The difference between legal principles and moral ones is ambiguous, but such considerations exceed the objectives of this essay and are not discussed here.

Given the information above, it can be said that the worrisome features found in the real world of digital contact tracing are also seen in Orwell's dystopian science fiction. Aside from the question of legitimacy, mass surveillance and social pressure form the basis of the society of Oceania.

It is notable that the power of Big Brother far exceeds that listed above. His ability to manipulate statistics, language, and even history are far beyond that of real-world authorities. However, as described by the main characters Winston and O'Brien, the biggest difference lies in how the people acknowledge him:

> At the apex of the pyramid comes Big Brother. Big Brother is infallible and all-powerful. Every success, every achievement, every victory, every scientific discovery, all knowledge, all wisdom, all happiness, all virtues, are held to issue directly from his leadership and inspiration. (Orwell, 1983, Page 169)
>
> You hate him. Good. Then the time has come for you to take the last step. You must love Big Brother. It is not enough to obey him: you must love him. (Orwell, 1983, Page 233)

The quotes above tell us to what extent the people of Oceania are devoted (or expected to be devoted) to Big Brother. The most distinctive difference between Big Brother in Orwell and its modern-day counterpart lies in the mental orientation of the citizens. The good news for us is that residents of the real world have the right to question and object to what the authorities are up to, at least to some extent.

Much would remain to be considered if Big Brother was emerging as a reality in our society. However, the novel hints at the characteristics of a future society where such a reality comes into being. It would be naïve to say that such features are completely irrelevant to our future, and it is important to educate ourselves and to raise questions as to current developments.

Conclusion

So, is digital contact tracing contributing to creating a modern Big-Brother? This essay studied the essence of digital contact tracing and the potential threat of it by extending into the world of *1984*. Although the app was implemented in fifty countries, the innovation remains ambiguous in terms of its impact and its objectives. First of all, the purpose of contact data can be categorized into the following: 1) to change the voluntary behavior of the citizens, 2) to research the current health status of citizens, and 3) to restrict behavior. The second highlight is that there is a gradation in the functions of digital contact tracing according to the objectives it is devoted to. It is important to understand the objectives and potential capacity of contact data so the topic does not become one of a choice between mass surveillance vs the uncontrolled spread of coronavirus. Finally, digital contact tracing can expand state power by potentially standardizing mass surveillance, expanding the legitimacy of authority reaching into personal data, and triggering social discrimination. Thus, I conclude, it is reasonable to say that digital contact tracing has the potential to accelerate the creation of a Big Brother framework.

In terms of comparing the modern Big Brother with its literary equivalent, several differences can be pointed out. The lack of abilities such as manipulating facts distinguishes the digital contact tracing from the figurehead in the book. The potentially bad apple behind contact tracing is the designer of the app who may oblige higher powers that harbor sinister intent. Therein lies the danger. In this sense, the seeds of the core elements such as relentless mass surveillance and the ability to apply social pressure can be felt throughout the digital contact tracing process. If these measures were to contribute massively to wipe out the disease, their seeds might grow into creating the world that we all thought only to exist in the novel. As this global pandemic brings change to society, we need to acknowledge the potential outcome of novel policies and keep them under vigilant observation.

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