Pandemic Solutionism

The Power of Big Tech during the COVID-19 Crisis[1]

Felix Maschewski, Anna-Verena Nosthoff

Abstract

In this article, we investigate how Big Tech companies have used the novel coronavirus disease (COVID-19) pandemic to increase their social, political, infrastructural, and epistemic power. We focus on four companies that were outspoken in their efforts to combat the virus: Alphabet (also known as Google), Apple, Facebook, and Amazon (GAFA). During the crisis, these companies evolved as adaptive entities that responded to the state of emergency by promptly rolling out various technological solutions, exemplifying what we call 'pandemic solutionism', that is, the belief in the potential to solve the complex virological crisis of COVID-19 through the integration of digital tools. We identify the activities of GAFA in pandemic solutionism in five key areas that can be defined as the dominant realms of Big Tech's involvement: (1) mapping COVID-19, (2) researching COVID-19, (3) tracing COVID-19, (4) treating COVID-19, and (5) managing COVID-19. In this context, we provide the first comprehensive overview of Big Tech's multifaceted engagement in researching COVID-19 based on wearable technologies, which have been actively promoted as potentially beneficial tools for detecting the coronavirus since the beginning of the crisis. Additionally, through a critical mapping of the multiple activities of selected Big Tech players during the pandemic, it becomes evident how unexpected societal disruptions can lead to the increased dominance by these players. As we demonstrate, Big Tech companies have been able to present themselves as saviours capable of acting more promptly than the state, pushing pandemic solutionism and taking up tasks without being burdened by democratic deliberations. In doing so, they have manifested their infrastructural power, which frequently (such as with contact tracing) establishes the normative framework in which political and social actions take place.

Etymologically, the term 'crisis' is derived from the Greek *krino* and means 'cut', 'select', or 'judge' (cf. Koselleck 2002: 237), and, "by extension, to measure, to quarrel, to fight" (ibid.); it refers to a situation that implies a decisive turning point in a temporary state of uncertainty in which different possibilities are considered. As Reinhart Koselleck writes, the "concept implied strict alternatives that permitted no further revision: success or failure, right or wrong, life or death, and finally, salvation or damnation". Before fanning out into different realms, including psychology, politics, and the economy, the term 'crisis' was particularly characterised by its use in the medical context. Here, it refers to the critical moment where a patient's life is at risk and their fate is decided; thus, the term has a unique time dimension. Against this backdrop, the COVID-19 crisis is a reminder of the original sense of 'crisis'. The early stages of the pandemic required swift medical, economic, and political decisions, while politicians often had to make decisions based on incomplete knowledge given the initial lack of insight into the nature of the virus. Thus, the COVID-crisis was a reminder of the origin of the term 'crisis' both in the sense that political decisions were based on incomplete knowledge and in the way these decisions were existential.

Furthermore, the pandemic has shown how a moment of crisis can create space for a renegotiation of sovereignty. More precisely, COVID-19 has indicated how a reassessment of sovereignty has taken place not only on behalf of governments, but also on that of private technology companies, who, as we show in the following, were involved in several existential decisions from the very beginning of the crisis. Political and private actors were required to promptly and actively respond to the crisis alike. Early on, the public, healthcare officials, and politicians called for digital solutions to better track and map the virus, with ambivalent outcomes (cf. Milan 2020; Whitelaw et al. 2020). In the existing research literature on the topic, both privacy-friendly and totalitarian misuses of tracking technology have been observed throughout of the pandemic (Dix 2020; Cassiano et al. 2021); ethical concerns about tracking technologies and their potential implications for large-scale surveillance have equally been discussed (Bigo 2021; Morely et al. 2022; Newell 2021) alongside discussions surrounding the specific form of governmentality reinforced by tracing apps (Engemann 2020; Bigo et al. 2021). In addition, numerous studies have rightfully focused on authoritarian regimes' misuse of technological tools (Eck et al. 2020, Kitchin 2020). Research on the legitimacy and forms of tracing technologies is beginning to grow, addressing important aspects of how technologies have been harnessed politically in response to the crisis. However, the role of private actors remains understudied. This holds specifically regarding the production of technological 'solutions' that states and authorities relied on (for an initial broad overview, see Lopez Solano et al. 2022; regarding public–private partnerships in Europe during the pandemic, see Storeng et al. 2021).

To address this gap, this article discusses how selected actors have actively contributed to both digital mapping and research practices since the beginning

of the COVID-19 pandemic. We chose some of the most powerful companies in the Western landscape and focused on four that have been outspoken in their efforts to beta the virus: Alphabet (also known as Google), Apple, Facebook, and Amazon (GAFA). During the crisis, these companies evolved as adaptive entities that responded to the state of emergency by quickly rolling out diverse technological solutions, culminating in what we call 'pandemic solutionism'. Our analysis shows that—next to the extent and forms of pandemic solutionism—Big Tech's increasing involvement in numerous branches of healthcare reveals both the existential status of these companies and our dependency on their infrastructures, especially during the crisis. Our analysis also outlines the complexity and density of their power in multiple areas of our lives, some of which (including health care) are only beginning to emerge as research topics (see Sharon 2018; Nosthoff & Maschewski 2019; 2022a; Gleiss et al. 2021). Furthermore, existing studies of digital capitalism have hitherto neglected the role that societal crises play in the formation, reproduction, and strengthening of Big Tech's power by focusing on portraying leading actors in digital capitalism as disrupting agents that provoke crises of established industries (as exemplified by the famous motto 'move fast and break things'; cf. Staab 2019; Zuboff 2019; Srnicek 2018).[2] This article attempts to respond to this shortcoming by assessing how unexpected societal disruptions can equally lead to an increase in power of Big Tech actors, using the pandemic as an example.

To shed light on the dynamic surrounding pandemic solutionism, we first explore the most prominent examples and delineate how Big Tech has played a role in responding to COVID-19. We follow critical data studies' views on "the ways in which data are generated, curated, and how they permeate and exert power on all manner of forms of life" (Iliadis & Russo, 2016). Methodologically, we broaden this perspective by investigating the data extracted as well as the actors extracting the data; i.e. the activities of Big Tech in selected realms, a trajectory that we have elsewhere termed 'critical Big Tech studies' (Maschewski & Nosthoff 2022).[3] To this end, identify the activities of the most prominent tech giants––GAFA––in pandemic solutionism in five key areas that emerged from our analysis as the

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2   To be precise, Srnicek (2018) focuses on the dotcom crash to explain the dominance of Big Tech, yet, analyses that go beyond considering the fragility of financial markets have remained limited.

3   We envision 'Critical Big Tech Studies' as a 'field that studies the political power and political impact of Big Tech as much as a field that critically deconstructs the narratives of Big Tech, that is, their reproduction of AI mythology, etc. What we conceive of as particularly vital is the critical analysis of how they establish private–public partnerships, such as with nation-states, research institutions, health institutions, the educational sector, etc., and thereby strengthen their own infrastructural power. (Maschewski & Nosthoff 2022b)

dominant realms of Big Tech's involvement: (1) *mapping COVID-19,* (2) *researching COVID-19,* (3) *tracing COVID-19,* (4) *treating COVID-19,* and (5) *managing COVID-19.* In this context, we provide the first comprehensive overview of Big Tech's multifaceted engagement in researching COVID-19 based on wearable technology. Focusing on wearables is especially fruitful for our analysis as smart watches have been actively promoted as potentially beneficial tools for detecting the coronavirus early on.

Subsequently, through a critical mapping of the multiple activities of Big Tech players, we analyse how these companies have mobilised the pandemic to increase their social, political, and infrastructural power. Indeed, after numerous scandals and congressional hearings, the pandemic has given these tech giants a chance to present themselves as the leading lights of a new, digitalised healthcare branch. As we argue, the pandemic has also provided these companies ample opportunities to regain credibility for solutionist narratives that were discredited following the so-called 'techlash', which arose in the aftermath of the Cambridge Analytica scandal (Smith 2018). Thus, the cutting-edge products and services that these companies are employing to relaunch their old idealised (self-)image will likely entrench their positions of power within what Shoshana Zuboff has famously termed 'surveillance capitalism' (Zuboff 2019)–a form of capitalism that instrumentalises and exploits user data for the sake of the market and monopolistic power, thereby creating 'asymmetries of knowledge' (Zuboff 2020) and enabling them to colonise even remoter regions.

Before we delve into the activities of Big Tech in detail, we will briefly re-examine a moment of crisis, which, bearing in mind Koselleck's definition, can be seen as having given rise to a 'turning point' at the beginning of the COVID-19 pandemic.

Renegotiating Technological Sovereignty in a Time of Crisis: Pandemic Solutionism

A key moment in which technological sovereignty was renegotiated during the global COVID-19 crisis occurred on April 10, 2020, when Apple and Google announced simultaneously on their websites that there had never been "a more important moment" to "work on solving one of the most urgent problems in the world".[4] The two monopolists announced that they would jointly develop an interface for so-called contact tracing, a technology for tracing coronavirus infections via smartphone based on Bluetooth technology. According to the tech giants' shared promise, "[t]hrough close cooperation and collaboration with developers, governments, and public health providers, [we] hope to harness the power of

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4   https://covid19.apple.com/contacttracing

technology to help countries around the world".[5] In other words, engineers from California set out once again to save humanity through technological tools. The solutionist character of the narrative was particularly reflected in the opening sentences of the statement: "Across the world, governments and health authorities are working together to find solutions to the COVID-19 pandemic, to protect people and get society back up and running. Software developers contribute by crafting technical tools to help combat the virus and save lives".[6]

In retrospect, this scene stands out as the epitome of what we term pandemic solutionism, partially drawing on Evgeny Morozov's (2013) much-discussed concept of solutionism. Morozov (2013: 5) defines 'solutionism' as a Silicon Valley-based mindset that recasts 'all complex social situations either as neatly defined problems with definite, computable solutions or as transparent and self-evident processes that can be easily optimized—if only the right algorithms are in place'. On this basis, by 'pandemic solutionism', we refer first to the widespread belief in the possibility of solving the complex virological crisis of COVID-19 through the integration of digital tools alone, or at least in playing a significant role in resolving the crisis through technological means. Second, we allude to the instrumentalisation of the pandemic to accelerate the production of these solutions. It is worthwhile noting that the belief in pandemic solutionism was shared by governments worldwide to varying degrees during the COVID-19 pandemic: Apple's and Alphabet's cooperation on contact-tracing occurred when solutionist promises were not alien to the US, the European Union (EU), and global politics; for instance, the EU promoted 'digital solutions during the pandemic', citing efforts by Facebook and Google (Alphabet) and emphasising their good relations with Big Tech in their shared response to the crisis (cf. European Union 2020). Furthermore, only a few weeks before Apple's and Google's announcement regarding contact tracing, the then-US president made it equally clear that he believed in pandemic solutionism. "I want to thank Google", Donald Trump said at a media conference, thanking the company for having developed a website for comprehensive COVID-19 testing with '1,700 engineers' (New York Times 2020). Trump was referring to a new website developed by Alphabet and its subsidiary Verily (companies, which, as we will elaborate on later, have been at the heart of developing diverse forms of pandemic solutionism). The website, Trump was convinced, "is going to be very quickly done, unlike websites of the past, to determine whether a test is warranted and to facilitate testing at a nearby convenient location" (New York Times 2020). The president was seemingly convinced that Alphabet's endeavours would help everyone, everywhere: "We cover this country and large parts of the world" (ibid.)

For this paper, it is irrelevant that this promise was greatly exaggerated and the website was at best a rough draft, and that the wide availability of testing more wishful thinking than reality at the time. Far more interesting was the attitude of

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5   Ibid.

6   Ibid.

elected politicians: In the event of a pandemic, the White House trusted (or was evidently dependent) on the tech elite, so much that it seemingly regained belief in its 'solutionist ethic' (Nachtwey & Seidl 2020) after the tech clashes of years past. The situation thus pointed to a huge gap in state sovereignty (cf. Clover 2021), which the Silicon Valley corporations filled determinedly. Moreover, some of the most experienced and powerful technology companies in the Western hemisphere were by no means naive when they entered the stage, as they had been expanding into the healthcare sector for years (cf. Sharon 2018; Nosthoff & Maschewski 2019) after gathering expertise in tracking using smartphones and wearables. Finally, at the height of the first wave of the coronavirus, the decisive moment seemingly arrived for them to assert themselves as pioneers of a data-driven healthcare system while presenting themselves as saviours. Big Tech seemingly followed a well-known motto: *Never let a serious crisis go to waste.*

Alphabet: Mapping, Researching, Tracing, and Managing COVID

To exemplify Big Tech's endeavours during COVID-19 and their myriad forms of pandemic solutionism ranging from *mapping, researching, tracing,* and *treating* to *managing COVID-19,* it is helpful to examine the activities of one of the most determined companies in the industry: Alphabet. Early on, the company pursued numerous initiatives to help combat the spread of the virus, covering almost all of the aforementioned areas, and focusing specifically on managing, treating, mapping and researching COVID-19. While government institutions dithered, the tech giant, in collaboration with its subsidiary Verily, got down to business developing a website, the one that Trump alluded to at a time when the site hardly existed to help US states and regions coordinate testing.[7] In collaboration with local authorities, Alphabet bypassed bureaucratic hurdles to quickly open testing stations. Owing to its own certified testing laboratory, the tech company was able to offer drive-through COVID screenings to the public and establish itself as a beacon of hope on the crisis response map. Since then, it has continued to expand its operations to more towns and cities, offering more than 350 testing sites. While acknowledging several setbacks and concerns about data protection, an internal report from April 2021 claims that the venture has tested nearly 3.9 million people.[8] To participate in the tests, people first need to 'donate' sensitive health data to Alphabet, including information on their history of treatments, illnesses, and the doctors they have consulted in the past. Initially, even a Gmail account was necessary. Verily has also begun studies into immune system responses to

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7   https://www.projectbaseline.com/studies/covid-19/

8   https://verily.com/2020-impact-report/

COVID-19[9] and the distribution of antibodies[10] among the population by drawing in part upon data from the screenings. More specifically, people who test positive for the virus during the screenings are offered the chance to 'contribute to crucial research' led by a 'dedicated study team'.[11] Verily states that 178,000 participants opted to be part of its 'Baseline COVID-19 Research Programme', which assesses the impact of the pandemic on mental health and wellbeing.[12]

Alphabet's move to join the forces of combating COVID-19 was rather unsurprising to those who have witnessed Big Tech's multifaceted entrance into the healthcare market in recent years. It is helpful to give a short overview of its many projects to understand Alphabet's role in this: Alphabet has invested relentlessly in both start-ups and established companies in the healthcare sector—the most prominent example being Alphabet's acquisition of Fitbit in 2019 (cf. MacCall 2020)—and has conducted research on smart contact lenses and surgical robots. With a venture focused on artificial intelligence (AI) called DeepMind, it has worked to develop algorithms for predicting disease progression to organise bed occupancies in clinics (cf. Powles & Hodson 2017). Additionally, the company recently launched an AI-powered assist tool to identify skin conditions (although the tool contains several problematic biases).[13] To be sure, such AI applications are promising (cf. Davenport et al. 2019). However, they also require an enormous amount of patient data. In recent years, Google has obtained millions of data records on disease progression through partnerships with external healthcare providers, often without patients' knowledge or consent (Pilkington 2019).

In other instances, Alphabet has simply collected patient data itself. Since 2015, Alphabet has even had its own in-house specialist for this kind of data collection alone: Verily (formerly Google Life Sciences), which was instrumental in setting up COVID-testing sites as well, conducts major health studies and even promises to 'redesign the future of health'.[14] To investigate disease development, Verily set up Project Baseline in 2017, a venture for conducting studies (in collaboration with Google) into both individual diseases (such as type-2 diabetes) and the lifestyles of entire age cohorts.[15] For its ongoing Health Study, which began in 2018, the company has provided 10,000 people with so-called 'study Watches' to measure their activity over four years—from the daily number of steps they take to the quality of their sleep.[16] Participants must regularly fill out surveys and submit them to clinical check-ups and tests, ranging from eye tests to blood samples, thus

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9   https://www.projectbaseline.com/studies/covid-immune-response/

10   https://www.projectbaseline.com/studies/covid-research/

11   Ibid.

12   Cf. https://verily.com/2020-impact-report/

13   https://blog.google/technology/health/ai-dermatology-preview-io-2021/

14   https://www.projectbaseline.com/shape-healthtech/

15   https://www.projectbaseline.com/

16   https://www.projectbaseline.com/studies/project-baseline/

offering the company a panoptic glimpse into countless aspects of their lives. As Project Baseline's website states, after having mapped the world through Google maps, the aim is to 'map human health'.[17]

A few years ago, companies had to enter into expensive partnerships with healthcare providers to gain access to valuable patient data. Owing to Google and Verily, Alphabet is coming to resemble a healthcare provider. At the same time, it is not only using its infrastructure, cloud services, AI, and datasets to conduct research, but is also growing its own business. Verily has expanded relentlessly in precision medicine, extending its corporate network and operating device-supported platforms (such as Onduo) that offer personalised, algorithmic health management through digital phenotyping and telemedicine applications.[18] In 2021, Verily even entered the insurance market through 'Granular Insurance',[19] thus joining the broader trend toward personalised, digitised insurance models (cf. McFall et al. 2018).

Throughout the pandemic, Verily launched Healthy at Work, a programme for companies and institutions to continuously screen their workforce for COVID-19; they even recently assessed the programme's effects on workforce health in an in-house study (cf. Poole et al. 2021). Thus, in addition to having emerged as a provider in COVID-19 early on by offering mapping and tracing technology and services, Alphabet engages in building tools for *managing COVID-19*. Healthy at Work operates as follows: Using an app, employees fill out a daily symptom survey, and on the grounds of predictive modelling, employers can monitor their health. Using cloud infrastructure, Verily also provides testing kits and polymerase chain reaction (PCR) testing, and can track both vaccine compliance and booster shots. Recently, it has been conducting 50,000 tests per week and has administered three million tests in total.[20] Since its launch in late 2020, the programme now has over 150,000 participating employees, including 20 clients such as the University of Alabama and Waymo, a self-driving car company.[21]

In addition to Verily's health mapping, Alphabet also engages in traditional mapping modes with its Google Health Division (a subsidiary of Alphabet dedicated to health services) and Google Maps, which is used to produce Google's COVID-19 Community Mobility Reports.[22] These reports have been utilised by numerous local authorities worldwide. Published every few days, they provide information about population movement trends by drawing on aggregated and anonymised location data from smartphone users, data that are normally used to show how busy certain locations (such as bars, cafés, and parks) are at different

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17   https://www.projectbaseline.com/

18   https://onduo.com/

19   https://granularinsurance.com/who-we-are/

20   https://verily.com/2020-impact-report/

21   https://verily.com/2020-impact-report/

22   https://www.google.com/covid19/mobility/

times of day. This illustrates how convenient services from the company can be turned into administrative tools, lending credibility to the necessity of their general tracking endeavours. A similar project offered by Google Health is the COVID-19 Open Data Repository, an easy-to-access collection of COVID-19-related information, that intends to "help public health professionals, researchers, policymakers, and others gain insight into the virus".[23] While the maps charted by Alphabet might appear as a helpful service to the average user, they are also a means of legitimising data accumulation by surveillance capitalists while enabling them to capture new territory in an exploratory fashion.

However, Alphabet and the GAFA companies more generally have not been content to simply analyse movement patterns; they also investigate ways to detect COVID-19 as early as possible. To this end, the summer of 2020 saw several studies developed around the sensory capacities of fitness trackers and smartwatches, exemplifying how several Big Tech actors are now also active in *researching COVID-19*. For several of these studies, users of wearable devices could become 'citizen scientists' by donating personal data, from their daily physical activity to their sleep cycles. Wearable-based studies on COVID-19 have remarkably that it is difficult to keep track of them, fuelling hopes that smart gadgets can be useful in fighting COVID-19 and other pandemics in the future (Amft et al. 2020).

It is worthwhile to review several of these studies to understand the extent of Big Tech's involvement in research and the breadth of their collaboration with research institutions worldwide. For instance, since acquiring Fitbit, Alphabet has cooperated with Scripps Research Institute in the context of the so-called 'Detect' study (Quer et al. 2021). The circle of participants is made as broad as possible. Any self-tracker who lives in the US can take part through various wearables (such as Apple Watch and Fitbit) and upload their bodily data directly via the MyData-Helps app. Symptoms are 'detected' early on, and individual data are 're-socialised' so that sources of infection can be recorded on maps and localised more precisely. A similar initiative was launched in Germany by the Roland-Koch-Institute (cf. Urban 2022), a German federal agency and a leading research institute responsible for disease control and prevention, where self-trackers can donate their data in the context of the Corona-Datenspende-App.[24] In this context, almost 550,000 users have donated their data as of July 2022.[25]

It is worth noting that 'Detect' is a remake of a previous study published in January 2020, which examined what is known as real-time flu tracking in approximately 200,000 Fitbit wearers; the study was conducted at a time when Fitbit had not yet been acquired by Alphabet (cf. Radin et al. 2020). Data on resting heart

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23   https://health.google/covid-19/

24   https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Corona-Datenspende.html

25   https://corona-datenspende.de/science/ (last accessed July 14th, 2022)

rate and sleep were recorded via the fitness bracelet, using which (according to the results of the Detect study) far more precise prognoses of influenza could be made than with conventional means. The tracking was not entirely objective though. The sleep data were not truly accurate, nor was it always possible to clearly distinguish between the more severe pulse associated with flu and that of everyday stress. However, the authors of the Detect study point to the great potential of wearable technology, which, with its increased distribution, should soon make more comprehensive, timelier monitoring possible. (ibid.)

It is precisely this potential (alluded to by its predecessor study) that the 'Detect' study attempts to translate into reality. Hence, biometric variables (such as daily activity) are being used to expand the depth of surveillance. In addition to the 'Detect' study, Fitbit launched an in-house study, which, in a similar vein, assessed the possibility of wearable devices to identify potential COVID-19 symptoms early on (Natarajan et al. 2020). However, the reliance on wearables is precarious; it may result in a social pressure to adapt to the technology by users, citizens, and workers, as well as lead to algorithmic biases that can disadvantage marginalised groups (Colvonen et al., 2020).

Apple: Researching and Tracing COVID-19

In addition to Alphabet and its subsidiary Verily, another company is active in the realm of health tech research and focuses on COVID-19: Apple. As such, it is no surprise that one of the most prominent wearable-based COVID-19 studies was dedicated exclusively to the Apple Watch. In the 'Warrior Watch Study'[26] conducted through cooperation between eight New York City hospitals (specifically the Mount Sinai Health System), researchers discovered that the Apple Watch could detect possible signs of COVID-19 infection, that is, minimal changes in heart rate variability occur up to seven days before symptoms emerge (cf. Hirten et al. 2021).

While not exclusively focused on the Apple Watch, renowned medical research institutes, including Scripps Research and Stanford University, have performed similar studies on personal sensor data such as physical activity, resting heart rate, sleep, or even skin temperature (cf. Mishra et al. 2020; Alayj et al. 2021). Likewise, early on in the pandemic, the Zuckerberg San Francisco General Hospital began to investigate how wearable technologies could compensate for a lack of comprehensive tests (cf. Smarr et al. 2020). The 'Oura-Ring'—that measures both heart rate and breathing rate during sleep—diagnoses coronavirus infections even before symptoms arise. Hospital employees, who are at risk from constant contact with infected people, were equipped with the smart, tight-fitting device, resulting in interesting data. The aim of real-time tracking was initially to allow hospital

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26   https://www.mountsinai.org/about/covid19/warrior-watch-study

employees to act more quickly so that ailing employees could potentially be identified, checked, and treated in a more targeted manner.

Regarding Apple, researchers from the Seattle Flu Study and the University of Washington recently launched the 'Apple Respiratory Study',[27] a collaboration with Apple, to grasp the extent to which the Apple Watch 6 could predict respiratory illnesses such as COVID-19, particularly examining heart rate and oxygen levels in the blood. While such studies may appear to have stemmed from the COVID-19 crisis, they have had a long history of prevalence in Silicon Valley. For example, since 2019, Apple Watch users have been able to harness the company's proprietary Research app to donate their health data to a selected number of universities, hospitals, and institutions (such as the World Health Organization [WHO]) to support new scientific discoveries or the development of innovative products. This feature followed a broader trend. For example, in the Apple Heart Study, which was carried out as early as 2017 to 2018, more than 400,000 Apple Watch users had already contributed their data in cooperation with Stanford Medicine to analyse atrial fibrillation (Perez et al. 2019). This exemplifies how the narrative has shifted in recent years, with Apple rebranding itself as a company investing in global health care and the future of health, Apple Watch being the most iconic symbol of this transition. The wearable, indeed, is no longer presented as a device helping to optimise one's activity; instead, it seeks to optimise health, not just of individuals but of humanity overall (cf. Maschewski & Nosthoff 2019, 2022). Wearables have emerged as tools for societal tracking, pointing to the normalisation of tracking devices throughout society, fuelled by insurance models (cf. Mau 2019) and so-called 'wellness programmes' in companies.[28] Exposing one's intimate data is not seen as a flaw, but as part of the consumer experience and a more altruistic project in which donating individual data leads to a greater goal, recalling Zurawski's (2021: 92) observation that surveillance, in general, is increasingly coming to resemble a 'feature'; hence Apple's promotional claim that "the future of health research is you".[29] In line with this declaration, Apple CEO Tim Cook announced, as early as 2019, that if one were to look back at Apple's business in a few years, its greatest contribution would have been 'about health' (Gurdus 2019).

In addition to being active in *researching* COVID-19 with diverse partners and based on their wearable technologies, Apple, next to Alphabet, has also played a significant role in *tracing COVID-19*. For those following Apple's and Google's health research in recent years, their April 2020 decision to work together on COVID-19 contact tracing hardly came as a surprise.[30] As already alluded to in

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27   https://seattleflu.org/applerespiratorystudy

28   https://community.virginpulse.com/

29   https://www.apple.com/ios/research-app/

30   https://www.apple.com/newsroom/2020/04/apple-and-google-partner-on-covid-19-contact-tracing-technology/

the beginning, claiming that there was never "a more important moment to work together to solve one of the world's most pressing problems" by harnessing the power of technology, these tech companies did not wish to wait for government actors to create a contact tracing app based on their standards. Instead, in a technocratic and metapolitical fashion, they presented their own 'comprehensive solution': a proprietarily developed interface for enabling decentralised, anonymised data exchange via Bluetooth that now forms the basis for almost all national tracing apps. To be sure, this decentralised app, which is rooted in open source, is favourable to centrist models enabling state surveillance on a large scale. However, the fact that these companies—understood here as 'para-state agents' (Vogl 2021: 104)—created such a rigid, virtually inescapable standard underscores the source of their authority: their infrastructural power. Procedurally, and from the standpoint of democratic legitimacy, Apple's and Alphabet's decision and their dictate on the type of app that could be used at all was emblematic of a decision that was non-negotiable by nation-states, thus revealing Big Tech's *political* power (cf. Sharon 2020).

Facebook: Mapping COVID

As a third party that helped combat the pandemic, it is useful to consider Facebook, which has been particularly active in *mapping COVID-19*. Facebook developed a COVID-19 information centre for the Newsfeed to combat anti-vax fake news. Facebook's efforts in this realm were explicitly encouraged and promoted by the EU, quoting Facebook's activities, next to efforts by Google to 'launch new tools' to counter false information (cf. EU 2020). In addition to developing a smartwatch that will feature various health tools, the social network has targeted users with surveys to help researchers from Carnegie Mellon University and the University of Maryland produce a weekly 'Interactive Map' of self-reported symptoms for tracking the virus.[31] Every day, more than 50,000 people complete these surveys by providing information about their age and place of residence, and answering questions about whether they are experiencing symptoms (such as cough or fever), as well as feelings of anxiety or depression. Facebook does not receive the data from these surveys, thereby appearing as a rather neutral, altruistic actor here.

However, Facebook does not always play the role of an uninvolved medium. In line with the narrative of pandemic solutionism outlined earlier (which views complex epidemiological problems as being easily resolvable through the provision of additional data), the platform has expanded its proprietary Disease Prevention Maps, which early on played a role in promoting the narrative of pandemic solutionism.[32] Facebook's mapping project constitutes a different attempt at improving

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31   https://dataforgood.facebook.com/covid-survey/?region=WORLD

32   https://dataforgood.fb.com/tools/disease-prevention-maps/

'the effectiveness of health campaigns and epidemic response'[33] and was put into place as early as 2019 to track cholera in Mozambique. With newly developed tools such as 'colocation maps', 'movement maps', and 'network coverage maps', the company is recording how its users' movement radii and social contacts contribute to the spread of the virus, and whether existing lockdown measures are effective or need to be modified.[34] Meanwhile, the project's motto of 'Data for Good' sounds like a familiar solutionist promise.[35]

Facebook's CEO Mark Zuckerberg has treated the crisis as an opportunity to transform Facebook from a 'social' network into a collaborative research network. This is exemplified by his donation of $25 million to the research hub COVID-19 Therapeutics Accelerator, as well as by an ongoing networking effort that culminated in the launch of the COVID-19 Mobility Data Network. In this context, Facebook has managed to forge partnerships with leading universities globally, such as the Harvard School of Public Health and Princeton University, extending their network as far as the Bill & Melinda Gates Foundation. This 'nonpharmaceutical intervention'[36] aims to use real-time data provided by apps such as Facebook Messenger to track the spread of the virus more accurately and create predictive models to forecast the course of the crisis.

In the past, such data were chiefly used to identify user preferences, predict consumer behaviour, and target users with ads based on their movement (cf. Zuboff 2019). However, just as with Google's Mobility Reports, the surveillance-capitalist zeal for data collection is now being recast in an altruistic light. In Zuckerberg's words, which embody the narrative of pandemic solutionism reproduced by Silicon Valley actors throughout the COVID-19 pandemic, "The world has faced pandemics before, but this time we have a new superpower: the ability to gather and share data for good".[37] Evidence that Facebook's movement pattern maps have been helpful during the crisis remains largely absent. Notwithstanding, in February 2021, it began offering health organisations and governments up to $120 million worth of free ad space to promote initiatives such as vaccination campaigns.[38] The company is thus sparing neither expense nor effort to win over the public with its systems update. That said, in view of the recurring data leaks occurring at the same time (cf. Holmes 2021), it is plausible that the company has attempted to 'health-wash' its image.

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33   Ibid.

34   https://dataforgood.fb.com/docs/covid19/

35   https://dataforgood.fb.com/

36   https://visualization.covid19mobility.org/?date=2021-03-24&dates=2020-12-24_2021-03-24&region=WORLD

37   https://www.washingtonpost.com/opinions/2020/04/20/how-data-can-aid-fight-against-covid-19/

38   https://about.fb.com/news/2021/02/reaching-billions-of-people-with-covid-19-vaccine-information/

Amazon: Researching, Managing, and Treating COVID

Another well-known company has emerged at the intersection of health and tech during the pandemic: Amazon. While it is less research-oriented than business-like, it has begun to make a name for itself in digital well-being. Amazon's inter-ventions at times fall more implicitly under the category of *managing, treating, and researching COVID-19*, but they are substantial nevertheless for understanding the power shifts surrounding COVID-19 and the various dimensions of 'biosurveil-lance' (Reichert 2018) that have emerged from it. Moreover, the company is explic-itly active in treating COVID-19. During the pandemic, the world's self-proclaimed 'most customer-centric company' launched an entire line of new projects designed to have far-reaching effects. After acquiring the online pharmacy PillPack as early as 2018, in late 2020, Amazon announced further plans for Amazon Pharmacy, a service for prescription medications.[39] Establishing itself in this sector—which is already valued at $900 billion US dollars (cf. Neumann et al. 2020)—appears to be part of a long-term strategy that is continuously taking shape. Also, Amazon's cloud service, Amazon Web Services (AWS), has supported the biotechnology company AbCellera, which discovered two antibody treatments for COVID-19.[40]

Amazon established the telemedicine platform Amazon Care, a service that offers comprehensive medical care on a 24/7 basis.[41] Through messaging or video chat, employees throughout the US can receive diagnostic advice from doctors on COVID-19, as well as on any other illness. Additionally, members can receive a COVID-19 test. Patients are able to schedule house calls or arrange for medical care at their workplace. The stated goal is to make medical treatment smoother, more immediate, and more efficient by making waiting rooms and pharmacy visits superfluous and to develop more "customer-centric ways for patients to get the health care services, products, and medications they need" (Landi 2021). The company therefore effectively responds to patients' needs to be treated remotely in a time of 'social distancing', thus preparing for potential future pandemics. This round-the-clock monitoring is being sold by the company as part of a new therapy model, which it is pitching as "healthcare built around you".

In addition to Amazon Care, the company introduced a fitness tracker in the summer of 2020, called Amazon Halo, to compete with market leaders such as Apple Watch and Google's Fitbit.[42] This device can also be used by users to participate in studies tracking the coronavirus; it employs AI built for new dimen-sions of health analysis. Halo includes features such as the measurement of steps,

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39   https://pharmacy.amazon.com/

40   https://aws.amazon.com/de/blogs/industries/finding-enduring-solutions-to-the-evolv
ing-covid-19-crisis/

41   https://amazon.care/

42   https://www.amazon.com/Amazon-Halo-Fitness-And-Health-Band/dp/
B07QK955LS

heart rate, and skin temperature. Moreover, it offers a type of 3D scan to provide a body-fat analysis twice as accurate as leading at-home smart scales: Users need to upload photos of their naked selves into the Amazon cloud, which are used to generate simulations of their body, thereby promising to deliver a 'more complete picture' of their health.[43] Commentators assessed the device as "the most invasive tech we've ever tested", noting the voice-recording feature that harnesses 'affective computing' to draw conclusions about the emotional state of its wearers and how they are perceived by others (cf. Fowler et al. 2020). User emotions, allegedly detectable from the voice (from happiness to frustration) are being recorded and analysed in real time, ostensibly to improve wearers' mental well-being and inter-subjective communication.

Amazon has already assembled broad knowledge of its customers' preferences and consumption habits and knows when people are at home (cf. West 2019). During the COVID-19 crisis, however, the company expanded its surveillance to the body and mind. Pursuing a threefold intervention (Amazon Pharmacy, Amazon Care, and Amazon Halo), it constructed an all-encompassing digital health system and a comprehensive ecosystem in which diverse aspects of life were permeated with surveillance-capitalist tools. The extent of their efforts is, last but not least, reflected in Amazon's AWS Diagnostic Development Initiative launched in 2020, a "20 [million dollar] commitment to accelerate research and innovation to advance the collective understanding and detection of COVID-19 and other infectious diseases in order to mitigate current and future outbreaks".[44]

Big Tech Becoming "Environmentalitarian" During COVID-19

This article's overview of the endeavours of four of the largest Western technology companies illuminates how GAFA have long ceased functioning as mere businesses. Instead, they have become tightly woven infrastructures that gather data on our online behaviours, preferences, and traits, information on which we physically depend ever more profoundly, as evident by their entry into the healthcare sector. Against this backdrop, the pandemic has prompted transformations that were already in motion, causing them to be aggressively pursued by tech companies seeking to expand their operations. Regarding their many activities in health tech, and specifically in combating COVID-19 (ranging from *tracing COVID-19, mapping COVID-19, and managing COVID-19* to *researching* and *treating COVID-19*) in collaboration with subsidiaries, research networks, and on the basis of wearable technologies, these companies are reinventing themselves as cartographers of the body. Moreover, they have arisen as adaptive entities

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43   https://www.youtube.com/watch?v=qohYemzkGg0

44   https://aws.amazon.com/de/government-education/nonprofits/disaster-response/
     diagnostic-dev-initiative/

and tight-woven ecosystems that have been highly responsive to the situational demands of the pandemic, instrumentalising the uncertainty of the situation and the lack of a clear political strategy at their ends (cf. Du et al. 2022).

GAFA companies have not only benefited immensely from the increased social dependency on digital infrastructures throughout the pandemic—from online meetings to online education (cf. Klein 2020)—they have also been instrumentalising the crisis to become active agents that shape how countries react to it, thereby laying the groundwork for playing an even greater role in similarly precarious circumstances in a potentially pandemic-struck future. They do so by assembling sensitive healthcare data that only they have access to and that only they can leverage when needed, thereby cultivating a monopoly on data knowledge and extending their position as 'data-driven intellectual monopolies' (Rikap and Lundvall 2020) in the realm of health. This results in a two-fold epistemic asymmetry: First, the involvement of GAFA gives rise to, as Stefania Milan (2020) argues in a more general context, the epistemic question of "which 'other' nonstandard ways of knowing and being in the world in [terms of] infrastructure, dynamics and governance" are neglected at the expense of datafied and proprietary forms of knowledge produced by Western Big Tech companies (and their implicit rationales) to 'solve' the crisis. Second, it is crucial to mention that the platform companies themselves will be able to dictate the conditions of cooperation with research institutes now and in the future, and will control access to proprietary data, algorithms, and knowledge, culminating in epistemic power. As Shoshana Zuboff (2019, 11) remarks: "Surveillance capitalism operates through unprecedented asymmetries in knowledge and the power that accrues to [become] knowledge. Surveillance capitalists know everything *about us*, whereas their operations are designed to be unknowable *to us*. They accumulate vast domains of new knowledge *from us,* but not *for us*".

As a consequence, the interventions of Big Tech go way beyond simply managing the effects of the current crisis. Instead, at certain points, Big Tech decided *politically on* which infrastructure societies and states needed to rely on to handle the pandemic, implicitly focusing on potential future crises as well. Indeed, several technology oligopolies not only built the tools to help politics combat the pandemic; they also played an active role as nonrepresentative, non-elected political agents deciding on matters of public concern, thus lending credence to recent research that has portrayed Big Tech actors not only as economical, but as prominently political actors (cf. Seemann 2021; Vogl 2021; Srivastava 2021). As seen from our critical mapping of tech giants' numerous activities, their practices allow them to expand their business operations and revenue streams, or to develop services that virtually they alone can provide due to their financial resources and data reserves. Furthermore, they use their practices to subtly extend their power and give rise to what could be termed 'Big Health Tech': the expansion of monopolist data extractivism into healthcare (cf. Nosthoff & Maschewski 2022a).

Ultimately, the crisis has widened the field of possibility for Big Tech companies to practice and experiment with what we have elsewhere and more generally described as 'surveillance-capitalist biopolitics' (Nosthoff & Maschewski 2022a), a form of data extraction aiming to govern both the individual body and the body politic. Such a form of biopolitical governance is no longer limited to a governance of bodies mediated by the state in a classical Foucauldian sense. Instead, private actors now increasingly define health standards and deviations from the norm, as exemplified by the myriad projects of Alphabet's Verily. Surveillance-capitalist biopolitics can hence be defined as a culmination of cybernetic control techniques and capitalist market mechanisms that constantly enables and requires new forms of individual behavioural adaptation, leading to unequal exposure to surveillance and targeting. These forms of adaptation rely on datafied regulatory measures of the body; that is, the feedback-based mediation of correlated, biometric target values. They channel their effectiveness less often through static regulations and transparent norms and more so through fluid, personalized transcripts that operate in real time and on the grounds of proprietary algorithms (cf. ibid.). It is important to note that surveillance-capitalist biopolitics often leads to a platform-economic, epistemic asymmetry that manifests in companies' ability to develop products and services exclusively and monopolistically, and to control access to bodily knowledge. Such biopolitics is usually entirely or partially privatized in public-private partnerships (ibid.). In this process, as Erich Hörl (2021) aptly points out with reference to Foucault's concept of "environmentality", the medium (in this case, mostly wearable tech) itself becomes increasingly "environmentalitarian" (2021: 122). This could equally be said of technology companies themselves. As such, Big Tech and the media they develop are part of a "new apparatus of capture [...] whose principle is the capture and control of reality itself." (Hörl 2021: 109) Thus, by delivering the structures of our communication as well as our bodily existence (given their multifaceted expansion into healthcare) in a time of 'social distancing', they increasingly form the sine qua non of our reality, providing the digital conditions of possibility for crisis response(s) and subsequently benefiting from renegotiations of sovereignty in moments of uncertainty.

Although a promotional video for Verily's Project Baseline calls on viewers to "make your mark on the map of human health",[45] this might be seen as more accurately describing the behaviour of tech giants. Indeed, as political scientist Will Davies (2018: 186) describes the logic of platformisation in relation to GAFA, "the ultimate objective of Internet companies [...] is to provide the infrastructure through which humans encounter the world. [...] When the mind wants to know something, it will go to Google; when it wants to communicate with someone, it will turn to Facebook. When we want to be somewhere else, we click on Uber, and when we simply want something, Amazon will make it arrive". A similar logic can

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45   https://www.youtube.com/watch?v=FQSSovdC7fY

now be observed in health care and health research, where Big Tech excessively invests in providing new digital infrastructure. Dominance in this respect could, as discussed in the article, already be seen during COVID-19 in a different context. Indeed, Apple's and Alphabet's cooperation to provide the binding infrastructure for many COVID-19-tracing apps has shown their infrastructural power and at times the non-negotiability of their political choices.

During the COVID-19 crisis, tech companies have been able to present themselves as saviours that can act more quickly than the state, pushing pandemic solutionism and taking up tasks without being burdened by the processes of democratic deliberation. In doing so, they have manifested their infrastructural power, which frequently (such as with contact tracing) establishes the normative framework in which political and social actions take place. At the same time, they have continued to deepen their probing of everyday life and the individual and social body while selling the public digital colonisation (or 'data colonialism' as Nick Couldry and Ulises Mejias [2019] term it) and surveillance-capitalist biopolitics (cf. Nosthoff & Maschewski 2022), disseminating solutionist narratives that have been reproduced in politics.

Developments that appear understandable or necessary during a pandemic can quickly take on a life of their own. From GAFA's solutionist standpoint, no amount of data collection will ever be enough. Lack of adequate regulations will prompt such companies to use opportunities to acquire more data about the world and us. Hence, the increasing involvement of tech actors in health care and health research calls for critical mapping that outlines their extending spheres of influence alongside the meticulous legal monitoring of their activities on behalf of regulatory bodies, as well as the critical assessment of their solutionist narratives, especially in a time of prolonged crisis. Given the developments outlined in this paper, it is imperative to not forget that 'crisis'—stemming from *krinein*, as Koselleck (1973: 196f.) reminds us—also etymologically implies 'critique'.

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