Calibrating social theories of digital technology based on Japan's COVID-19 response: surveillance capitalism and cyber civilization

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1. Introduction

The COVID-19 pandemic significantly burdened public health systems across the globe. Digital technology was expected to greatly reduce this burden and guide countermeasures. After all, the use of big data had become engrained in all branches of science already by the 2010s (van Dijck 2014). However, scientists overestimated the impact of technological innovation on the progression of the epidemiological situation and underestimated the effects of virus mutations (Hirschi 2022, 77). This gap between the anticipated and actual contributions offers a valuable opportunity to refine our understanding of how digital technology is actually utilized in society.[1] The initially high expectations for digital technology's usefulness align with early predictions from the critical perspective of surveillance capitalism (Zuboff 2019), which suggested that the pandemic would accelerate pre-existing trends toward pervasive surveillance, regardless of their actual utility (Skelton 2020).

To better understand the overestimation of the usefulness of digital technology and provide a positive reassessment, this paper examines Japan's trajectory during the pandemic and how it was shaped by an application of digital technology that has been

[1] In the text, references are frequently made "from the perspective of X," where X represents a specific theory. This approach helps analyze the phenomena under study through the lens of that particular theoretical framework, allowing for a nuanced exploration of how digital technology is understood and critiqued from different theoretical viewpoints.

largely overlooked in the literature. Japan is noteworthy not only for its use of digital technology but also for how its perception evolved throughout the pandemic. As recently as summer 2021, Japan was perceived as underperforming among Asia-Pacific countries based on COVID-related deaths per capita, the primary metric of success in most public discourse (Tiberghien 2021). However, this perception changed significantly over time. By early February 2023, Japan exhibited a favorable outcome in cumulative COVID-related deaths per capita (55 COVID-related deaths per 100,000 people since 2020), similar to countries like South Korea (65) and even countries like Taiwan (70) and New Zealand (50) that had pursued a zero covid strategy for a long time (Glanz, Hvistendahl, and Chang 2023). Moreover, Japan excelled in terms of school closures, a metric that received little attention in international comparisons during the pandemic but, in hindsight, also appears as very important. According to the 2022 report of the OECD's Programme for International Student Assessment (PISA), 84,5% of Japanese students answered that their school buildings had been closed for three months or less. While Taiwan (90.2%) and South Korea (79.2%) achieved similar rates, all of these countries were clearly above the zero covid country New Zealand (58.1%) and the OECD average (49.5%) (OECD 2023, 28–29).

The paper proceeds as follows. Part 2 provides the empirical basis concerning how digital technology featured in the responses in China, South Korea, and Japan. The focus is on PCR testing and contact tracing, and the reactions when PCR testing and contact tracing alone became insufficient to limit the spread of the virus, which occurred in all countries sooner or later. In the case of Japan, a central idea of the country's Society 5.0 strategy proved key in refraining from formally declaring a lockdown. Part 3 identifies two arguments—epidemiological efficacy and rationality—used by experts consulting governments (specifically in New Zealand and Germany) to advocate for implementing an elimination strategy not only in their own countries but worldwide. This is surprising, given that the Chinese government aggressively claimed that efficiently implementing this strategy proved the superiority of its political system until late 2022. Since then, however, China has worked hard to erase from public memory that it pursued this strategy at all (Peltsch 2024). The paper holds that in the two arguments of epidemiological efficacy and rationality, a central critique from the perspective of surveillance capitalism can be discerned: the tendency to view society through the lens of social physics (Pentland 2014). Part 4 explains this in more detail

and simultaneously shows how the Society 5.0 dimension of Japan's response can alleviate some of these pessimistic outlooks, by consulting the perspective of cyber civilization (Kokuryo 2022b).[2] Part 5 draws a conclusion and also discusses the element of "self-restraint" (*jishuku*) in Japan's pandemic response in light of the recent positive reappraisal of conformity in German sociology (Nassehi, Anderl, and Felixberger 2023).

2. COVID-19 responses of three East Asian countries

The specifics of the Japanese pandemic response become clear when compared to that of China and South Korea. Their responses will be investigated first.

2.1. China

China's approach, known as the zero covid strategy, was marked by stringent lockdowns and a comprehensive surveillance system (Li et al. 2020). Introduced after the major outbreak in Wuhan, this strategy initially appeared to achieve sustainable containment of the virus. The implementation of "health code" app solutions enabled both the tracing of infection chains and, where necessary, the verification of recent negative PCR tests (Liang 2020). However, as time passed, the situation became more complex, with lockdowns required in several Chinese cities during the winter 2020/2021 (Myers 2021). With more infectious variants emerging, rigorous monitoring of infection chains became increasingly difficult, and lockdowns of several weeks or even months became more frequent. The lockdown of Shanghai in spring 2022 was particularly shocking to the international public, including the large foreign community in the city (Zhu, Xu, and Li 2022). Despite this, some argued that the lockdown of Shanghai "minimized disruptions elsewhere" (Mahoney 2023, 16), predicting that, even as the world learned to live with the virus, China would move towards a "48-hour or 72-hour testing regime" (Mahoney 2023, 17), permanently maintaining zero covid. This prediction, however, was disproved by developments in late 2022. The continued adherence to the zero covid strategy led to widespread economic disruptions and eventually to open protests that demanded the abdication of the Chinese Communist

[2] For an English exposition, see Kokuryo (2022a).

Party and President Xi Jinping (CNN's Beijing Bureau 2022). After the zero covid strategy was abandoned and PCR testing was all but stopped, a very large wave hit a population that was, for a large part, not sufficiently vaccinated. It is estimated that the number of COVID-related deaths resulting from this wave – between 68 and 110 deaths per 100,000 people – exceeded the totals experienced by any of the countries mentioned above throughout the pandemic (Glanz, Hvistendahl, and Chang 2023). Also, due to widespread lockdowns during the evaluation period, students in China could not even participate in the PISA 2022 examinations.

2.2. South Korea

In the eyes of many, South Korea provided an early example of success without resorting to lockdowns. The country managed to control an early outbreak in February 2020 through extensive PCR testing and digital contact tracing that made intensive use of citizens' private data. When most Western countries went into lockdown in mid-March 2020, American data scientist Thomas Pueyo (2020a), in his article "The Hammer and the Dance," described South Korea's approach as a universal model that could help avoid further lockdowns once the first wave had waned. Pueyo's description of the country's approach resonated well with the WHO Director-General's call to "test, test, test" to break the chains of infection (Farge and Revill 2020). From May 2020, data from credit card companies and communication companies was automatically integrated into the contact tracing system, reducing the burden on employees at these companies and health system personnel (E.-S. Kim 2023, 15).

However, by the end of 2020 the outcome was not as good as many expected. Following a resurgence in cases in late 2020, some regions had to take "unprecedented restrictions for weeks, including banning private gatherings of more than four people" (Reuters 2021). Beginning in 2021, scanning a QR code was made mandatory for entering buildings in many settings (E.-S. Kim 2023, 15); after the emergence of the Omicron variant in November 2021, providing a valid vaccine passport was made mandatory for taking part in much of public life (J. Kim 2021).

2.3. Japan

Early on, Japan faced a great challenge due to its limited PCR testing capacity. Because of this, Japan adopted a more selective approach to tracing, focusing on clusters rather than attempting to detect every possible chain of infection. In late March 2020, amid a rise in cases, two pillars were laid out in fighting the pandemic: (1) lessening the burden of public health centers, which were central for contact tracing, and (2) behavioral change among the population (Oshitani 2020, 55). If the number of infections in a region was rising, there should be calls for "self-restraint" (*jishuku*), particularly for not leaving the house unless necessary, and the "core" (*shutai*) of the cluster countermeasures should be moved towards the health system and care facilities (Oshitani 2020, 29). Persons with a higher a priori risk were supposed to be prioritized concerning PCR testing. This was complemented with monitoring stations where tests were easier accessible without a focus on a priori risk beginning in early 2021, but tracing and reducing the formation of clusters remained a central point of justifying the strategy (Nishimura 2022, 66–69).

The hope that public health centers could cope well with tracing was justified based on a tradition of managing tuberculosis outbreaks and their experience with both forward and backward contact tracing (Jindai, Furuse, and Oshitani 2020; Sena et al. 2023, 246). Although the contact tracing was carried out by phone, digital tools were expected to help in this. Prominently, the digital system HER-SYS (Health Center Real-time Information-sharing System on COVID-19) was introduced in May 2020 to speed up the processing of infection chain data and allow for better cooperation between health centers. Moreover, the contact tracing app COCOA (COVID-19 Contact Confirming Application), which applied the privacy-aware iOS/Android Bluetooth framework used in many Western countries, was introduced in June 2020. However, according to most observers, these solutions performed worse than expected. This contributed to the broader discourse that, especially in comparison with other East Asian countries, Japan had suffered a "digital defeat" (Kinai 2021).

However, it is with regards to behavioral change that Japan used digital technology in a very innovative way. In February 2020, members of the Novel Coronavirus Expert Meeting, based on tracing data gathered by field epidemiologists, concluded that focusing on clusters and their formation might not merely be a makeshift solution due to

limited PCR testing capacity, but could actually be a viable priority instead of comprehensively tracing all chains of infection (Nishiura and Kawabata 2020, 60–62, 65–71). This was because an analysis of the obtained tracing data provided the insight that virus clusters particularly emerged in humid environments. Reflecting this, the national pandemic strategy devised in late March 2020 by virologist Oshitani Hitoshi explicitly stated that neither the epidemiological model for SARS nor that for influenza viruses was applicable during this pandemic. This led to the widely communicated call to avoid the "3Cs": closed spaces, crowded places, and close-contact settings, which would help reduce the emergence of infections in the first place. Thomas Pueyo, in an update to his "The Hammer and The Dance" article in November 2020, called this approach "contrafection," i.e., reducing the (effective) contagiousness of the virus when people meet (Pueyo 2020b).[3] Aerosol and droplet simulations of a variety of settings on the supercomputer Fugaku were carried out since April 2020, and helped in reducing infection risk when environments and the behavior of people in them were adapted accordingly. The results were communicated through mass media and propagated through institutional channels, such as the Ministry of Education, Culture, Sports, Science and Technology (MEXT) did towards schools (Monbu Kagakushō 2021). The aerosol and droplet simulations as well as their rollout closely aligned with the technique of data assimilation into spatial models according to Japan's Society 5.0 strategy, which has been articulated as a cyber-physical system spanning all of society with Fugaku as its computational core (Kümmerle 2023). The simulations won the Gordon Bell Special Prize for High Performance ComputingBased COVID-19 Research 2021 (RIKEN 2021).

Unlike China and South Korea, Japan never introduced mandatory QR codes or vaccine passports to enter buildings on a larger scale.

3. Elimination strategy and the Asia-Pacific

Correctly referring to the mortality numbers at that time, Shibuya Kenji and two

[3] Providing an information-theoretic foundation, Pueyo reformulated the Japanese government's call to avoid the 3Cs as follows: "Avoid crowded, confined, close, clamorous communication" (2020b).

other Japanese health experts at King's College in London in early February 2021 highlighted that Japan had the "second worst record in the Western Pacific region". However, in stark contrast with how the situation would actually develop, they judged that Japan was a "threat to the health security of the entire region". They suggested that Japan should adopt a "'zero covid' strategy that eliminates community transmission," which "would also contribute to regional elimination of COVID-19 in the years ahead" (Shimizu, Tokuda, and Shibuya 2021, 1–2). While this suggestion may seem absurd in hindsight, Shibuya and his colleagues merely suggested the same as the "Asia-Pacific Zero COVID Coalition" that was formed in late January 2021. Its founding members being Australia, New Zealand, Singapore, Taiwan, Thailand, and Vietnam, the initiative advocated that "Asian-Pacific countries should lead the world on zero covid" (EndCoronavirus.org 2021). Its mere existence, as well as its resonance with suggestions of well-recognized experts like Shibuya, serves as a case in point that there was a strong discursive connection between an elimination strategy and the Asia-Pacific region.

The two sections of this part follow two experts who held formal positions in advising the governments of New Zealand and Germany, respectively, and argued for the adoption of an elimination strategy not only in their country, but worldwide. The former, epidemiologist Michael Baker, made the argument on the grounds of epidemiological efficacy, the latter, global technology diplomacy expert Maximilian Mayer, made the argument on the grounds of rationality.

3.1. Epidemiological efficacy

In an interview for an article from early 2023, Michael Baker remembered that "It was quite a revelation that China was able to stop transmission in 2020 in Wuhan," and that this "was the proof of concept" for him (Cortez 2023). Although New Zealand went into lockdown as most Western countries in early 2020, Baker helped draft the strategy to eliminate all community transmission by early summer (M. G. Baker, Wilson, and Anglemyer 2020). For many, New Zealand became a positive point of reference in order to argue for the viability of an elimination strategy.

Building on this success and international acclaim, Baker in the British newspaper

The Guardian in late January 2021 argued that "All countries should pursue a Covid-19 elimination strategy". Although vaccination had already begun in most countries, he considered it merely an addition: "The rollout of effective vaccines will make Covid-19 elimination easier to achieve. Effective vaccines working in combination with other public health measures have been crucial to the successful elimination of diseases such as polio and measles in many countries. […] It also still works if vaccines provide only limited long-term protection. For example, if vaccines are poorly effective at preventing onward transmission then elimination methods could supplement that limitation." (M. Baker and McKee 2021). Although Baker called elimination "a good interim strategy while we identify an optimal long-term approach", he emphasized that "It is sustainable", and that "If the virus mutates, elimination still works. The major methods used for Covid-19 elimination (border management, physical distancing, mask wearing, testing and contact tracing) are relatively unaffected by virus mutations (though testing could theoretically be less effective if the virus changed markedly, and outbreak control would become more difficult with more infectious variants)." (M. Baker and McKee 2021) The possibility that outbreak control for more infectious variants could require measures that were unacceptably harsh in democracies, but not in autocracies, thus also requiring different "interim solutions", was not considered. Moreover, the idea that a legal system can prohibit sanctions on individuals that appeared necessary for elimination – a position held by many politicians in Japan and health experts like Oshitani – was implicitly delegitimized.

Moving forward to September 2021, when zero covid was still in place in New Zealand but protests were spreading in the face of prolonged lockdowns, Baker judged that "One of the main benefits of the elimination strategy is that it keeps […] options open" (Normile 2021); less than one month later, the country finally moved away from it (Wiles 2021). A statement by Baker in an article on lessons from the pandemic from January 2023, after zero covid had disastrously failed even in China, hints at just how much he – and most likely many other health experts arguing for elimination – must have been aware of basic epidemiological difficulties for elimination even as they advocated for it: "I think we had a reasonable chance of doing it. But the opportunity is very early on in a pandemic. Once there's global distribution, you've got a huge challenge" (Cortez 2023).

3.2. Rationality

Another way to argue for zero covid was to make the point that it was purely rational, or, equivalently, to argue that opposition to it was irrational. While this may appear as having no argument at all, the argument can be constructed indirectly as the claim that other countries who pursued elimination had, supposedly in a purely rational manner, learned from the experience with the SARS epidemic. It is worth noting that (1) this positive framing is the exact inversion of Western discourses on East Asians as bearers of disease during the SARS epidemic from 2002 to 2003 (Kong 2019; 2024) and that (2) this involves an interpretation of strategies where even the experts who designed these strategies may not reach a clear consensus of what they were aiming at concretely.[4]

Still, the argument for rationality by referring to responses of countries in the Asia-Pacific was, in a theoretically rather refined way, made by Maximilian Mayer, a German scholar of global technology diplomacy. According to an interview, Mayer had been contacted by the German Ministry of the Interior in February 2020 as an "Asia scholar" (*Asien-Wissenschaftler*) (Brauns 2020). It is notable that already before the pandemic, he had developed the argument "that the responses to Chinese digital innovations tend to fall in a self-referential trap. Drawing on Edward Said's problematization of how Western discourses portray other cultures and societies as different and problematic (Said 1985; Palat 2000)", he argued that "today's intellectual reflex is akin to 'digital orientalism'." (Mayer 2020, 177) It is worth noting that this should be clearly distinguished from the case of Baker, who saw China's reaction as the "proof of concept" for a strategy he designed based on his own epidemiological expertise. Mayer did not claim epidemiological expertise, but rather, as an "Asia scholar", claimed expertise on how to make sense of strategies adopted by countries in the Asia-Pacific.[5]

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[4] Two texts co-authored by Michael Baker use different categorizations. M. G. Baker, Nick Wilson, and Blakely (2020) distinguish between an exclusion strategy, an elimination strategy, a suppression strategy, a mitigation strategy, and having no substantive strategy. Meanwhile, Oliu-Barton et al. (2022) contrast elimination with mitigation but call to "overcome the dichotomy between elimination and mitigation." As this paper proceeds genealogically, it reproduces the categories of the actors themselves, specifically Maximilian Mayer and his co-authors.

[5] This raises questions concerning the cooperation of experts in interdisciplinary

In an unpublished report uploaded to *researchmap* (dated March 4 2020) with the title "Learning from Wuhan — there is no Alternative to the Containment of COVID-19" (Kolbl and Mayer 2020)[6], he and his co-author focused on China, arguing that most other East Asian countries that appeared successful were taking similar measures. However, they grouped Japan together with the US and Iran and stated that "it becomes obvious that [these three countries] have all given up on containing the virus and are heading for the most horrendous scenario, many times worse than what we could see at any time in Wuhan, this time not in one city, but possibly throughout the entire territory." (Kolbl and Mayer 2020, 22) Concerning elimination, they were hesitant: "it is unlikely that we are able to eradicate the virus once and for all. Many experts, including from WHO, have said this, and all data coming in confirms it." (Kolbl and Mayer 2020, 14) More optimistically, and in complete accordance with the perspective of "digital orientalism" that Mayer had already developed, they wrote that "The good news is that, if we are willing to shed our orientalist attitude with regards to China, we can focus on their experience, benefit from it and use the tools they developed." (Kolbl and Mayer 2020, 14) It is with this stance that Mayer and the co-author of the report became part of the official Covid Task Force of the German Ministry of the Interior in mid-March 2020, where he provided the expertise on testing and tracing strategies. According to another member, there were no virologists in the group at the beginning (Bude 2022, 247).

Neither the report of the Task Force (Bundesinnenministerium 2020), nor an article by Mayer and another Task Force member in April (Feldner and Mayer 2020), explicitly argued for virus elimination. Rather, both highlighted the successes of East Asian democracies, in the former case the PCR testing infrastructure of South Korea, in the latter case the digital tracing application in Taiwan.

This stance had substantially changed by November 2020. Mayer now clearly judged

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settings, which are beyond the scope of this paper but have been prominently captured by Collins and Evans (2007) in their book *Rethinking Expertise* using the concept of "interactional expertise."

[6] The report is now classified as an "academic text" and has been uploaded in the same form onto the homepage of the University of Bonn, Mayer's current institution (cassis_de 2020).

that East Asian countries had, building on the experience with SARS, actually pursued the principle of eradication all along, and with the success that they could now live without lockdowns – at least without prolonged ones. Mayer co-authored two texts aimed at a general public together with Chinese studies scholar Marina Rudyak, and sociologist Marius Meinhof who was conducting research on China (Rudyak, Mayer, and Meinhof 2020a; Mayer, Rudyak, and Meinhof 2020).[7] One of the articles co written by Mayer, Rudyak and Meinhof, titled "Containment instead of eradication – why the Europeans still find it hard to learn from East Asia in matters of COVID", posited that "[f]rom the outset, experts in Europe and East Asia adopted different strategies. After the experience with SARS in 2003, East Asian countries pursued the 'principle of eradication.' [...] [In Europe], epidemiologists presented the familiar 'influenza model' [...] The fact that these two radically different models to the pandemic exist is hardly ever mentioned in Euro-American discourse. Taiwan, South Korea, Vietnam, China and Mongolia are seldom mentioned, or their success in combating the pandemic is dismissed with general references to insularity or autocracy." (Rudyak, Mayer, and Meinhof 2020b, 24) They also stated that Australia and New Zealand were now also pursuing such a strategy, highlighting the viability in culturally Western countries. It is worth noting that since SARS did not have any significant impact on Japan, the authors could leave it out of the discussion while maintain consistency of their narrative.

The other article was titled "Corona and the epidemic orientalism – why we still do not want to learn from Asia" and made an attempt at explaining the causal and temporal dynamics of pandemic responses in East Asia in more detail. The article asserts with certainty that "After the experience of the Sars epidemic in 2003, the threat posed by the virus was hardly doubted by the population in East Asia. No one questioned epidemiological expertise on how to deal with Sars-Cov-2. Eradicating it, not simply slowing down its spread, was declared the top strategic goal." (Mayer, Rudyak, and Meinhof 2020) This text mentions Japan twice. The first mention positively likens Japan's outcome to South Korea and Taiwan: "In both countries, similar to Japan, there

[7] For direct quotations from Rudyak, Mayer, and Meinhof (2020a), this paper refers to the translation of one of these articles that appeared in *CATSarena*, the newsletter of the Centre for Asian and Transcultural Studies of Heidelberg University (Rudyak, Mayer, and Meinhof 2020b).

was no lockdown at all." The second mention is more critical, both towards Japan and South Korea, not concerning their outcome, but concerning the explanations of these outcomes. Mayer and the other authors contend that "[t]he 'pandemic nationalism' that is emerging in China and, to a lesser extent, also in Japan and South Korea, explains national success against Corona with the superiority of the political system or cultural attitudes." (2020)[8] What is implied here is the idea that medical and technological basis of the elimination strategy could well be deployed worldwide, and that not doing so – or at least not trying to do so – would amount to overemphasizing the relevance of politics and culture in pandemic responses. Mayer and his co-authors make references to the (supposed) self-referential trap of orientalism in some variations,[9] peaking in the claim that "There are no rational arguments for ignoring the elimination strategy". This stance leaves no room for Oshitani Hitoshi's position that SARS-CoV-2 required an approach distinct from SARS, who built on his own experience in fighting the SARS epidemic as a regional advisor to the World Health Organization (Stafford 2005). References to Australia and New Zealand again served to highlight that elimination strategy was viable even in culturally Western countries.

Consistent with these positions, Maximilian Mayer, two other members of the former Covid Task Force of the Ministry of the Interior (Bude 2022, 252), and ten other experts founded the interdisciplinary initiative NOCOVID. Announced on January 18

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[8] In the case of Japan, Mayer and his co-authors most likely referred to statements similar to that of then-Vice Prime Minister Asō Tarō on the (supposedly) "high cultural level of the people" (*mindo ga takai*) in Japan. This had also been reported in German media, sometimes critically (Blaschke 2020).

[9] "From the very beginning, pandemic policy in Europe was characterized by such a mechanism of exclusion – an epidemic orientalism. East Asia, especially China, was described as the antithesis of us; the outbreak of infection seemed distant to us, the measures there strange. And backward anyway. This created a dichotomy: our liberal self versus the authoritarian other, our love of freedom versus their spirit of collectivity." – "From a philosophical point of view, we are taking a step back from our self-image as an enlightened society that allows for diverse positions and brings them into dialogue with one another. Europe's idealized self-image as a place for the rational exchange of well-founded opinions is shattered by Orientalism" (Mayer, Rudyak, and Meinhof 2020).

2021, its position paper stated that "we learn from other countries that consequent elimination as the strategic goal leads to the lowest damage for the society" (NO-COVID 2021, 2). The primary partners for cooperation were "leading experts from Australia and New Zealand"; the only other countries mentioned explicitly were Finland and Taiwan (NO-COVID 2021). This shows that the scientific justification was, in a positive sense, removed from all cultural or political assumptions, and the elimination strategy appeared as universally applicable.

4. Calibrating social theories of digital technology

Building on the three outcomes of China, South Korea, and Japan (part 2), and on the fundamental mispredictions of these outcomes from the viewpoints of epidemiological efficacy and rationality by influential experts (part 3), a fine-tuning of social theories of digital technology becomes possible. This allows for a better understanding of how digital technology can be used in the short- to mid-term in a manner that is both efficient and ethical.

4.1. Surveillance capitalism

In her influential book *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*, economist Shoshana Zuboff (2019) critiques the promise of modeling and optimizing human behavior ever more closely as "social physics," a concept framed as a "new science" by MIT data scientist Alex Pentland (2014). As sociologists of knowledge have critically pointed out, both the term and the idea can be traced back to French statistician Adolphe Quetelet; even in its new form, the approach does not overcome the positivistic assumptions connected to natural science at that time (Adolf and Stehr 2018). However, as Zuboff has highlighted, Pentland's approach to modeling behavior holds significant appeal among surveillance capitalists, creating an "instrumentarian collective" (Zuboff 2019, 416–44). Since big data usage had already become ingrained in all branches of science by then (van Dijck 2014), it is hardly surprising that not only data scientist Thomas Pueyo, but the World Health Organization as an institution supported the idea of modeling and optimizing the behavior of all individuals in a society. Contributing to data collection by undergoing

a PCR test at the right time became a new ethical norm for being a good citizen, as government interventions were legitimized based on data-driven projections (Green and Fazi 2023, 118–19). From this, it is also understandable why COVID-related deaths per capita became the main metric for a successful response, and why Japan was initially considered heavily underperforming.

Social physics helped advance the "epidemiological gaze" on individuals (Fuller 2022, 232), and the positive connotation of having a situation that can be modeled clarifies why Michael Baker considered the imposition of lockdowns as something that kept "options open" (Normile 2021) even in the face of opposition. From Zuboff's perspective, it makes sense that he did not account for possible constraints imposed by democratic political systems, as she describes Chinese surveillance capitalists as essentially using the same mechanisms as Western ones (2019, 388–397). Clearly distinguishing surveillance capitalists such as Alibaba from the state itself, Zuboff argued that only with the social credit score system in China will "the state assume the role of the behaviorist god" (2019, 394).

Maximilian Mayer, an expert of global technology diplomacy, most likely understood these distinctions well. In an article in the South China Morning Post in January 2020, he argued that "surveillance capitalism works similarly everywhere" (Mahoney and Mayer 2020) in an article in the *Southern China Morning Post* in January 2020, and even linked this article in the document from March 4, 2020 on the response in China (Kolbl and Mayer 2020, 14). Using his own notion of "digital orientalism", he could build on the general theory of Zuboff while maintaining that her special judgment of the Chinese social credit score system is irrational.[10] Already before the pandemic, Mayer had made the case that digital authoritarian practices (Michaelsen and Glasius 2018) were spreading globally (2020, 185); during the pandemic, this allowed him to consistently make the case that Asia-Pacific had merely "learned" from the SARS

[10] It was through explicit reference to Mayer's notion of "digital orientalism" that Josef Gregory Mahoney – who, together with Mayer, served as co-editor for the special issue on "China's Cyberpower and its Impact" in the *Journal of Chinese Political Science* – in June 2022 justified the multi-month lockdown of Shanghai that had just ended and judged that the zero covid strategy may well be continued indefinitely, at least in China (2023, 17).

epidemic and were rolling out the surveillance technology necessary for elimination on a purely rational basis. His argument resonated well with the broader notion that Asia-Pacific countries should be the avant-garde for countermeasures worldwide, as evidenced by his membership in the German NOCOVID initiative and further interviews in the press (Brauns 2020; Husmann 2021).

The financial aspects of Zuboff's theory of surveillance capitalism were also highly important, as evidenced by the high appreciation of South Korea's response. Using the formula "2019 = 1919 + 1929," the report from the Task Force of the German Ministry of the Interior emphasized that the pandemic had the potential to be not only a health catastrophe (like the Spanish Flu) but also an economic catastrophe (like the Great Depression) if control was lost (Bundesinnenministerium 2020, 13–14). Referring to this financial dimension of the pandemic, it has been argued that the South Korean government's call for personal sacrifice for the good of the country, by providing personal data, resembled the widely remembered gold-collecting campaign after the Asian financial crisis in 1997 and the tradition this practice drew on (Kusakabe et al. 2022, 131). While domestically calling for sacrifices, the government actively promoted "How Korea responded to a pandemic using ICT" (The Government of Korea 2020) to an international audience, which was interpreted as a sign of competence. A Korean Studies scholar in Germany explained that Koreans merely traded off a certain degree of privacy for an efficient public health response (Lee 2021). Possibly unknown to this scholar, this echoed Pentland's call for a "New Deal on Data," whose key would be to "treat personal data as an asset; individuals would have ownership rights in data that are about them" (2013, 83). During the pandemic, Zuboff's suspicion that this empowerment narrative of the "instrumentarian collective" provided little protection against the excesses of surveillance capitalism proved to be true.

Examining how the epidemiological situation in South Korea developed and how it was received by the domestic public raises questions about the actual usefulness of the data donation. Not only was South Korea's final outcome concerning the metrics inspected in this paper similar to that of Japan, but the approval rating of the South Korean public concerning the country's COVID response dropped significantly from 86% in the spring of 2020 to 66% in the spring of 2022, only slightly above the levels in various countries like the US (57%), Japan (58%), and the UK (59%) (Alliance of Democracies Foundation 2020; 2022). On the other hand, only 35% of the Japanese

public, in hindsight, judged that their "government has done too much to limit people's freedoms during the coronavirus crisis," whereas for South Korea, it was 52%, the same ratio as in the US (Alliance of Democracies Foundation 2023, 59). While surveillance capitalists have little interest in highlighting the questionable usefulness of the data donation by the South Korean people, judging what actually constituted a good response in a democracy requires critical research that does not simply call for the use of "more" data.

4.2. Cyber civilization

One important dimension of how to use data that cannot be straightforwardly connected to individuals can be found in the Japanese pandemic strategy. To make sense of this, Jiro Kokuryo's *On Cyber Civilization: Governing the Potluck Economy* is particularly useful because it emphasizes the relevance of altruism (2022b, 9–10). As the call to avoid the 3Cs (closed spaces, crowded places, and close-contact settings) was based on the specifics of the SARS-CoV-2 virus, the mechanism that Thomas Pueyo called contrafection (Pueyo 2020b) could work "at scale" in reducing clusters during this pandemic if people adapted their behavior. The classification of settings where clusters formed easily, the simulation of aerosol and droplet dynamics in various configurations of these settings on the supercomputer Fugaku, and the dissemination of improvements to these settings through mass media and institutional channels utilized personal data only after it was highly aggregated. For the "data assimilation" operation in the Society 5.0 cyber-physical system to become effective (Kümmerle 2023), it was necessary to assume that members of the public were surveilling each other to ensure they followed the suggestions derived from the simulations. This delegation from health authorities to the public was a matter of trust – and it is precisely trust, not money, that the theory of cyber civilization considers the primary measure of wealth (Kokuryo 2022b, 41).[11] Mutual, but non-totalitarian, surveillance and homogenization of behavior

[11] More specifically, Kokuryo holds that there is a transition from modern industrial civilization, where the central technology is energy, wealth is represented primarily by money, and the governance structure is that of the market, towards cyber civilization, where the central technology is digital technology, wealth is primarily represented by trust, and the governance structure is that of the platform (2022b, 36, 41).

can be understood as the generalization of "self-restraint" (*jishuku*) in leaving one's home unless necessary, which had been stipulated as a central part of behavioral change in Oshitani's strategy if infections were rising in a region (Oshitani 2020, 29).[12] In terms of the potluck economy envisioned by Kokuryo, the willingness to engage in self-restraint when necessary was something that members of the Japanese public were expected to provide in order to obtain trust during the pandemic.[13]

Appreciating the relevance of self-restraint in Japan's pandemic response from the perspective of cyber civilization requires two considerations. The first concerns ontology. The concept of self-restraint in Japan inherently blurs the definition of the "self," i.e., the subject that should restrain itself (Kariya 2022, 131–65). However, philosopher of technology Benjamin Bratton has pointed out that "individuation itself" (Bratton 2021, 66) can place too much of a burden on society in times of crisis, highlighting that an appropriate "sensing layer" of society should not focus solely on individuals (Bratton 2021, 41–46). Accommodating this decentering of agents away from individuals in the theory of cyber civilization should not be a fundamental problem, since a flexible definition of capitalism has to include companies and various institutions as agents (Kocka 2024, 20).[14] The second consideration concerns traceability, one of the main structural changes in the transition towards cyber civilization.[15] For Kokuryo, greatly increased traceability would help in "freeing business models from their spatio-temporal limitations" (2022b, 79). However, the

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[12] In the ideal form, this would have made all people consistently adapt their behavior to their environments in order to reduce "infection events" to a minimum – it was such infection events that Pueyo's "Swiss Cheese Strategy" aimed to minimize (2020b).

[13] On potluck and trust, see (Kokuryo 2022b, 180–81). The fact that some restaurants refused to comply with municipal requests but were not shut down demonstrates that trust is contextual and usually not lost entirely.

[14] This judgment is made by social historian Jürgen Kocka in his work *Capitalism: A Short History* (2024, 20). It concerns what Kokuryo calls the modern industrial civilization.

[15] The four main structural factors in the transition towards cyber civilization are network externalities, zero marginal cost, traceability, and behavior as a complex system with outcomes that are hard to predict (Kokuryo 2022b, 12–13).

aerosol and droplet simulations using spatial digital models on the supercomputer Fugaku were based on the assumption that complete traceability was not necessary. While Fugaku at the center of Society 5.0 had only limited computational resources, the team was pleased in hindsight that they managed to "provide the appropriate information with the appropriate timing" for optimizing settings and behavioral adaptation (rikenchannel 2023). An appreciation of space is necessary for capturing the relevance of culture for human behavior (Dünne et al. 2006). Taking into account the limitations of traceability would also make cyber civilization compatible with discussions of the "Internet of Places" (Takagi 2023).[16]

An instructive example of why limited traceability can be beneficial is seen in how Japan handled school closures. While the Ministry of Education provided guidelines on improving hygiene, the final decision on whether to close a school (or a class where there had been an infection) was made at the municipal level. This allowed for better risk tradeoffs to avoid cluster formations rather than focusing solely on preventing all infections. On the other hand, the much better traceability of infected individuals in the Chinese pandemic response actually became a fundamental problem for decision-making, leading to harmful inflexibility in adjusting countermeasures in 2022. This situation provides an interesting parallel to what Fukuzawa Yukichi, whom Kokuryo has drawn upon, wrote in 1875 in his *Outline of a Theory of Civilization*. Fukuzawa explained that both Japan and China were only half-civilized by Western standards but made an important distinction concerning the distribution of power. While the centers of worldly and spiritual power were divided between the shogunate and the emperor in Japan, the emperor remained the center of both worldly and spiritual power in China (Fukuzawa 2010, 32–37). While Kokuryo contrasts Western individualism with Eastern altruism (2022b, 9), refinements of the theory should pay close attention to the very different trajectories of Japan and China through the pandemic, particularly to the distribution of power inside and between platforms. Considerations for privacy, which greatly distinguished the responses of Japan and China from each other, may be addressed from the perspective of contextual integrity (Nissenbaum 2011).

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[16] If companies and other institutions could provide semantically rich digital models/twins, this would greatly increase traceability of behavior in spatial arrangements.

5. Conclusion

After describing the trajectories of China, South Korea, and Japan throughout the pandemic, this paper has shown how their outcomes defied the prediction that the elimination strategy was superior. This insight adds depth to understanding the trajectories of zero covid countries Taiwan and New Zealand, whose strategies are often rationalized as follows: aiming for elimination was preferable until pharmaceutical interventions, such as vaccines, became available, after which moving away from elimination became a viable alternative. In this narrative, China supposedly made the mistake of not pursuing vaccination earnestly enough and sticking to zero covid for too long due to political reasons (Cortez 2023). However, this narrative is overly simplistic. Influential experts in late 2020 and early 2021 justified elimination from the viewpoint of epidemiological efficacy and rationality and considered the countries in the Asia-Pacific as the avant-garde for achieving elimination worldwide. They did not see vaccination as a gamechanger. That the arguments of Michael Baker and Maximilian Mayer appeared as consistent and convincing demonstrates that the response to the COVID-19 pandemic, despite many regional variations, was significantly influenced by the dominance of social physics as described and feared by Shoshana Zuboff. Building a global infrastructure for epidemic surveillance that is reliable will prove difficult until it is better understood how the above-mentioned misjudgments during the COVID-19 pandemic were made.

Such a judgment may appear overly critical. Yet, it aligns well with the perspective of virologist Oshitani Hitoshi, the architect of Japan's pandemic strategy. Two years into the pandemic, in an interview in March 2022, he felt validated in his opposition to mass testing: "early on, the West and the WHO emphasized the need to 'test, test, test,' which would, supposedly, allow containment (*fūjikome*) of the virus." However, he had considered this to be "absolutely mistaken" from the beginning and suspected that Western specialists had too much faith (*shinpō shisugiteiru*) in science (Sena et al. 2023, 262). As can be ascertained from documents and interviews from 2020, Oshitani justified the focus on clusters as a conscious decision to avoid seeking a formal model and instead utilize what was at hand, describing it as a "bricolage" following ethnographer Claude Lévi-Strauss (1962) (Kawai 2021, 136–39). That the perspective

of cyber civilization appears to fit well to the strategy is likely because Jiro Kokuryo—also referencing Lévi-Strauss—calls for modularizing processes and providing interfaces in a way that can easily become part of a bricolage (Kokuryo 2022b, 105). Because of this, the Japanese pandemic response may be an early yet paradigmatic case study for further developing the theory of cyber civilization.

While scholars of Chinese and Korean studies in the West could easily refer to epidemiological efficacy and rationality to understand their countries' pandemic responses well into 2021, appreciating the importance of self-restraint in Japan's pandemic response has proved much more difficult for Japanese studies scholars. The ethnographically grounded study by Borovoy (2022) explains how self-restraint worked mostly constructively without hiding specific ethical problems it brought about, such as the emergence of vigilante "self-restraint police." Other studies, like Wright's, have argued that the Japanese response relied on "peer pressure, stigma, and social coercion," and on "government appeals to ethno-nationalist identity" (2021, 453, 466). According to Wright, appeals to self-restraint enabled "an effective lockdown that was impossible to implement by legal means," particularly due to low trust in the government (2021, 458, 465). Such research on the Japanese response, primarily conducted early in the pandemic, helped normalize formal lockdowns in the rest of the world, including by governments who relied on experts whose advice, as it turned out, proved to be untrustworthy.

However, when considering recent trends in sociology, at least in Germany, the idea of self-restraint should not be considered merely a substitute for formal regulation, even if there are side effects that have hitherto appeared as problematic. When thinking about how to cope with limited resources and the consequences of climate change, conformity should receive a positive re-evaluation (Nassehi 2023, 3). The question of individuation arises similarly to how it did in the Japanese pandemic response. The theory of cyber civilization may help analyze how to think about trust concerning these issues.

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