

Fighting COVID-19: Lessons and Experience from the World's Largest Economies

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Abstract—The paper reviews the insights gained in combating COVID-19 in the US, Japan, and China. After evaluation and investigation, we found that China's and Japan's experience of fighting COVID-19 is commendable. The Chinese government and the Japanese administration have implemented highly effective governance and public health course of action to fight COVID-19. Government-led epidemic control with a staunch belief in science can roll out effective pandemic control strategies. In contrast, the US failed to react to COVID-19 effectively. The relaxed public health measures of ending shutdowns prematurely were not working. When the US keeps business open after the spring shutdown, COVID-19 cases are soaring. Such experiences inform us effective governance and a mandatory and stricter approach can better curb a pandemic than milder measures in handling a public health emergency. And China and Japan, where collectivistic culture reins, can better maneuver a public health crisis with collective efforts.

Keywords—COVID-19, China, Japan, US.

I. INTRODUCTION

THE United States (US) has been in the group of nations most influenced by the epidemic of COVID-19, the disease brought about by SARS-CoV-2. The US has accounted for about 22% of COVID-19 deaths, with 4% of the world's population [1]. Currently, the proportionate mortality rate is over 585 per million, which is correspondingly 2.4 and 5 times greater in comparison to Canada and Germany [2]. In contrast, China's COVID-19 deaths were lower than 10% of the US, with a population higher than four times that of the US [3]. And Japan has 252,317 cases and 3,719 deaths [1]. And according to projections from the Institute for Health Metrics and Evaluation at the University of Washington, by the end of January 2021, the US will lose more individuals to COVID-19 than military personnel in the Second World War [4]. Ethnic minorities are more likely to die from COVID-19 than whites by a factor of three [4]. As a result of COVID-19, the real domestic product (GDP) of the US decreased 31.7% annually in the 2nd quarter of 2020, as compared to an increase of 3.2% of that in China [5] and a decrease of 27.8% in Japan [6].

Aim

The state plays a pivotal role in maintaining health series and mitigating the severity of pandemics [7] and some state-centric approaches offer an example around the world [8]. This study aims to review how the world's three largest economies combat COVID-19 and propose a conceptual model of political governance during a public health emergency. A comparison

among the world's three largest economies will not be made as they belong to the different governance systems. The US has the world's largest economy in 2020, with a GDP of \$21.84 trillion while China comes second with a GDP of \$15.55 trillion and Japan comes third with a GDP of \$5.27 trillion [9]. Under the Trump administration, which prioritizes opening the economy while ignoring the control of the epidemic, China has moved swiftly to stop the virus [10] and Japan has successfully halted the advance of COVID-19.

II. METHODS

This study employed a retrospective literature review that integrates and compares evidence pertaining to the development of COVID-19, in particular the way China, Japan, and the US combat the epidemic. With the use of retrospective review methods when assessing the available evidence, prejudice can be reduced and therefore provides dependable findings from which inference can be drawn and best practices can be identified.

III. RESULTS

A. China's Process of Fighting Against COVID-19

1. A Whole-of-Government Top-down Governance Approach

President Xi Jinping is in charge of the COVID-19 response. He has chaired over 20 meetings and heard briefings, adjusted response measures, and made resolutions on strategic plans for reinforcing checking efforts and international collaboration. Also, he personally examined local society response and COVID-19 studies in Beijing and went to Wuhan to lead frontline workers to respond to the pandemic. Government departments at all levels have made well-orchestrated control efforts. Premier Li Keqiang went to Wuhan and scrutinized China Centers for Disease Control and Prevention (CDC). Local authorities and urgent commandment mechanisms chaired by local government officials were set up in regions, towns, and districts across the nation, forming a vertical system with centralized commandment and front-rank direction. Local authorities have effectively enforced all response measures [11].

2. A Whole Society Mobilization

"A targeted, law- and science-based approach was adopted and public health emergency response measures" were implemented [11]. Wuhan city was locked down to segregate

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and forestall the advancement of COVID-19 to other cities. The Huoshenshan hospital, the Leishenshan hospitals, and many Fang Cang hospitals were built in a couple of days. While the Wuhan city was lockdown, the city did two phases of screening of a community with 4.21 million households and checked every person to rule out all potential infection sources. The community-based line of defense was well organized. Citizens and habitants were deployed to help administer local communities. Strict security control and matrix-based administration were implemented. Task forces with permanent and casual village workers were organized, with officials at the sub-region/locality and group/small town levels, allied health professionals and primary health doctors all carried out their duties and worked as a team [11].

3. Unique Chinese Culture of Discipline

Chinese people have long-established customary obedience to authorities and social norms. In combating COVID-19, local governments used motto such as “staying at home is fighting against COVID-19,” “staying at home is your contribution to the country,” “to wear a mask is better than a ventilator,” “to lie at home is better than in an ICU,” and “the purpose of not visiting is to have relatives in the future” to solicit citizens’ cooperation at a moral level. Then Chinese people were driven and started to quarantine themselves. Citizens also oversaw each other to follow the mandatory quarantine policy [12].

4. Nationalism - Rally around the Flag

“After weathering the epidemic, the Chinese people have keenly realized that the CPC leadership is the most reliable shelter against storms. Their trust in and support for the Party have increased, along with their confidence in China's political system,” [11]. Many Chinese people feel honored by the way the Chinese government has combated COVID-19 [13]. During the pandemic, there were lots of coordination efforts between the Chinese government and the population. The government told residents of the latest situation of the pandemic daily. Localities set up feedback mechanisms and residents could inform the authority of the problems they face and get assistance immediately [11].

5. Application of Advanced Technology

Positioning technologies, satellite monitoring, droid, health screening and apps, hums, big data, and biometric authentication, autarchic vehicle, and mobile monitoring were all effective means in combating COVID-19 [14]. In China, BeiDou, the country’s own GNSS constellation, helped monitor patients and high-risk locations and thus contain the spreading of the virus. And the construction of makeshift hospitals has their progress closely watched by GaoFen, a variety of multispectral earth research spacecraft. Robots were utilized to forestall the proliferation of coronavirus by assisting in meals at health care facilities, vending rice, spraying disinfectants, and dispensing hand sanitizers. On health monitors and apps, the Chinese government cooperated with Alibaba and Tencent to begin a color-coded rating system that tracks thousands of people daily. Drones were used to transport both medical equipment and patient samples preventing contaminations of

medical samples in some of the high-risk areas. Biometric authentication and infrared temperature monitoring systems have been put in place in all major towns. CCTVs have also been located at most locations to ensure that people comply with quarantine orders. Only those citizens who have the green color code are permitted to drive along the way. WeChat is also utilized to collect data to combat COVID-19 [14].

B. US's Action of Combating COVID-19

1. Ineffective Federal Governance

The New England Journal of Medicine as one of the most reputable medical journals in the medical community has its editors called for Americans to dismiss leaders. “When it comes to the response to the largest public health crisis of our time, our current political leaders have demonstrated that they are dangerously incompetent” [15]. The US administration exercised a travel ban limited to non-US travelers from China on January 31, 2020, despite the virus was widely believed to be at hand in Italy, Iran, Spain, Germany, Finland, and the UK. Discriminating restrictions on travel from Europe were only executed on March 11, 2020. And therefore, there were probabilities for the virus spreading from Europe to the US and studies have demonstrated a large number of COVID-19 introductions to the US had microbe linkages spreading around in Europe [16]. Also, there was a lack of health protections for related occupations, and society spread. Reports have shown that there was a large number of cases among those working in health care and first responders and a lot of infections found in transports, depository, and other key industries and in occupations involving direct interaction with the public [16]. Moreover, there was an inadequate provision of personal protective equipment (PPE). Supplying PPE was delegated to state and municipal governments, large hospital networks, and clinics [16]. And the Trump administration had ignored government scientists or their recommendations altered, with the US House of Representatives released a report documenting 47 such instances [17]. CNN had reported that the lack of press briefings by the CDC on COVID-19 was due to pressure from the Trump administration [17]. Also, Trump suggested that if he were re-elected, he would dismiss a world-renowned infectious disease expert Anthony Fauci [17]. And in August 2020, now-removed guidance on the CDC’s website stated that “asymptomatic people no longer needed to be tested for the virus,” counter to the recommendations of public health experts under the guidance from the Trump administration [17]. It was apparent that the Trump administration’s handling of the epidemic is primarily responsible for which the pandemic is ravaging in the US. “The tragedy is that if science and common sense solutions were united in a national, coordinated response, the US could have avoided many thousands of more deaths this summer” [18].

2. State Cooperation and Alliances

State solidarity was shown in the combat against COVID-19. For example, New York, New Jersey, Connecticut, Pennsylvania, Rhode Island, Delaware, and Massachusetts established a seven-state congregation to coordinate the

reopening of the state's economy, finding protective equipment, and preventing spillovers [19]. Likewise, the Western States Pact, an agreement among California, Oregon, and Washington was formed to share procurement capacity, specifics, strategies, and manufacturing to combat COVID-19 and coordinate the reopening of the economy [20]. States were not the only partners in collaboration during the crisis; local governments play a role in coordination. For example, in Florida, Hillsborough County, and its cities of Tampa, Temple Terrace, and Plant city coordinated policies on commercial and beach shutdown, and mask mandates [19]. The Major Metros Task Force was formed by the chairman of the city councils of the four biggest towns in Tennessee [19]. Five provinces in Southeastern Texas joined an alliance on testing and screening [21]. Although public health officials urged that wearing a mask can effectively combat COVID-19, not all states have implemented mask mandate; for example, Alaska, Arizona, Florida, Georgia, Idaho, Mississippi, Missouri, Nebraska, Oklahoma, South Dakota, and Tennessee do not have statewide mask mandate [22]. Similarly, not all states have enforced stay-at-home orders. For example, in Arkansas, Iowa, Nebraska, North Dakota, and South Dakota, residents were not told to stay at home. On March 23, there were 9 throughout the state orders, on March 26, there were 21 throughout the state orders and then on March 30, there were 30 throughout the state orders [23].

3. Reopening the Economy Too Soon

In spite of CDC's warning about a rebound of COVID-19 infections across the country had the economy reopen prematurely, President Trump insisted to reopen the economy. He emphasized once and again the necessity to get back to work to restore the US economy, Trump said: "I'm not saying anything is perfect. And yes, will some people be affected? Yes. Will some people be affected badly? Yes. But we have to get our country open, and we have to get it open soon" [4]. Infection cases rebound as the economy reopened. For example, Indiana, Kansas, and Nebraska allowed the reopening of some businesses in early May 2020 although the number of infections piled up. An infectious diseases specialist at John Hopkins University said: "The vast majority of Americans have not been exposed to the virus, there is not immunity, and the initial conditions that allowed this virus to spread really quickly across America haven't really changed" [24]. To strike a balance between health and economic concerns, the Trump administration appears to assign the economy a higher priority.

C. Japan's Action of Combating COVID-19

1. Effective Governance

The World Health Organization (WHO) Director-General Tedros Adhanom Ghebreyesus commended Japan's management of COVID-19 satisfactory [25]. The government responded early to the management of COVID-19. On January 30, 2020, Prime Minister Shinzo Abe set up the Japan Anti-Coronavirus National Task Force to supervise the government's response to COVID-19 [26]. On February 27, 2020, Abe asked for the provisional closure of all Japanese schools until early April 2020 [26] and thus prevent the transmission of infection.

On April 7, Abe announced the state of emergency at the right time to curb the epidemic [27].

2. Localized Epidemiology System and Cluster Administration

Public health centers are located in proximity all around the country, a locally governed office funded by the government and staffed by physicians and a multidisciplinary health care team and it serves as the first contact point for patients suspected of contracting c. These centers manage patient triaging, cluster surveillance, contact tracing, COVID-19 testing, and isolating the riskiest cases [28]. These centers allocated patients to a network of hospitals in accordance with symptoms severity and resource availability while arranging mild symptoms cases to stay at home and free up hospital beds for more severe cases. And the Japanese government focuses on tracking down unrecognized cases. Analysis of COVID-19 cases revealed that a majority of patients did not infect others, but a limited number of cases are highly infectious thus forming infectious clusters. Resources were then allocated to investigate the highly infectious clusters [29]. Therefore, such services have successfully curbed the spread of COVID-19 at the nascent stage [28].

3. Self-Discipline in Social Distancing

The Japanese government advocated social distancing, the three Cs, referring to avoiding "closed spaces with poor ventilation, crowded places with many people and close range" conversation. At government request, Japanese voluntarily wear a mask and avoid close physical contact such as in Karaoke or pubs. The customs of bowing during greetings limit physical contact. Social distancing is adopted as the most important strategy instead of mass testing [30]. There was no mandatory lockdown. Neither the government may mandate that people stay indoors, and those who do not comply with the government's request do not need to pay a fine [27]. And the government simply asks people to "cooperate with the government in not going out and not opening business" [31]. Most Japanese complied with the government's request and those that failed to do so were considered un-Japanese. In some cases, where noncompliance occurs, the government then publicly shame and blame those irresponsible. For example, a shopping mall in Tokyo that stayed open was ridiculed as the killer mall and the staff working there was treated as a traitor [31]. Social distancing can then successfully halt the spread of COVID-19.

IV. PROPOSED MODEL OF GOVERNANCE DURING A PUBLIC HEALTH EMERGENCY

Following the line of action of public health emergency administration [12], [32], this paper proposes a model of governance during a public health emergency as shown in Fig. 1.

China's experience has shown to be effective and widely acclaimed by WHO [33]. The goal of China's combat against COVID-19 was saving lives and protecting people's health [11]. Such values of lives above all else should form the core of

governance during a public health emergency. With a staunch belief in science and strong public health measures, China successfully stopped COVID-19 within a couple of months, and thus achieves the objective of saving lives and protecting people's health.

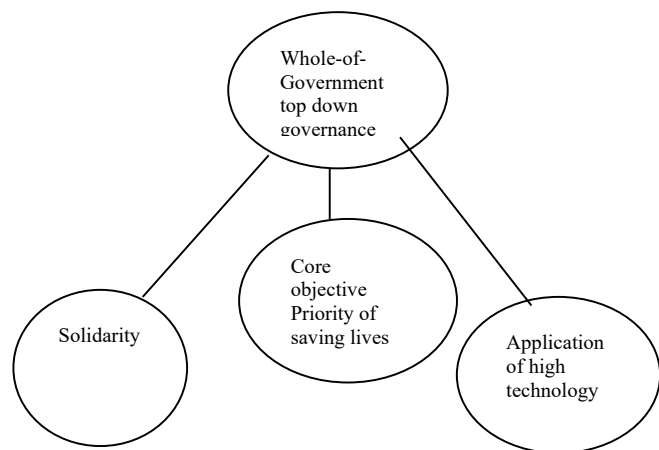


Fig. 1 Model of Governance during a Public Health Emergency

A whole-of-government top-down governance approach should be adopted during a public health emergency. A centralized command of the war against the epidemic, contracting tracking down and seclusion of infected patients should be adopted, as opined by Fineberg, the president of the Palo Alto, California-based Gordon and Betty Moore Foundation [34]. Likewise, Dr. Anthony Fauci said that a consistent way to fight the epidemic is highly desirable. Fauci said: "We need some fundamental public health measures that everyone should be adhering to, not a disjointed, one state says one thing, another state says another thing" [35]. In this respect, China made a centrally directed, top to bottom, whole-of-government effort to test, isolate, and treat every case to increase detection and cure rate. One of the key decisions was to lockdown Wuhan city, which is unprecedented in history. Here, the top leaders of the Chinese government had made a risky choice: in case the infection in Wuhan went out of control, many Wuhan citizens would be sacrificed. After the city's lockdown, the Chinese government launched a whole society mobilization, such as the People's Liberation Army came to the rescue in addition to medical teams across all cities and provinces went to Wuhan to assist in healing COVID-19 patients. Moreover, the Chinese government had converted many sports stadiums into Fang Cang hospitals and built two makeshift hospitals in a couple of days. The purpose of those makeshift hospitals was to treat those with asymptomatic and mild symptoms of COVID-19, as a majority of infected was asymptomatic. Such patients have not admitted to negative pressure rooms in hospitals as the efficacy of care was not optimal for those COVID-19 patients. With concerted efforts of government officials at all levels, the infection in Wuhan was successfully controlled. Upon managing the infection in Wuhan, the Chinese government then rolled out coordinated efforts to lower infection rates across all provinces. For

example, mandatory testing orders and health codes were implemented to reduce the infection rates. Those citizens without mandatory testing would not obtain a health code and therefore cannot go anywhere in the city. This would discourage those without mandatory tests to go anywhere and thus limit the chance of infections. This approach has proved to be highly effective.

Solidarity is the key to combat COVID-19. China has adopted a whole society mobilization. All cantons and towns launched a level-1 emergency response [11]. Around 50,000 medical personnel provided their help in the epicenter of the COVID-19, the Wuhan city [36]. Mass media broadcasted health education messages such as washing hands and maintaining social distance (State Council Information Office of the People's Republic of China). Community staff and volunteers disseminate COVID-19 prevention measures to its residents and offer daily services such as purchasing food [11, p.4]. Residents were happy to comply with the social distancing measures, the mask mandate, closing schools, shutting businesses, and entertainment [11]. Likewise in the US, states formed an alliance in the combat against COVID-19. Both China and the US demonstrated that solidarity was effective in fighting the pandemic. And in Japan, residents voluntarily complied with the government's request.

Finally, the application of high technology is essential in fighting COVID-19. As quoted in [12], President Xi said: "We should encourage the use of big data, artificial intelligence, cloud computing and other technologies to play a supporting role in epidemic detection, virus traceability, prevention and control, resource allocation and other aspects" [37]. Big data analytics has enabled automatic contact tracing and in combination with facial recognition technology, security cameras, telecommunication tracking, and tracing of passenger information. The "GPS tracking, facial recognition software, and public temperature detection" has permitted high technological diseases surveillance to detect those that may breach quarantine orders [38]. Also, health code apps require citizens to provide their information pertaining to the subjection to infected individuals or high-risk areas, travel information, and health standing. And citizens have then obtained a QR code – green/orange/red – according to their estimated risk of infection. Those who were not assigned a green code are not allowed to enter stores, offices, or stations that have the surveillance software in place. Thus, these health code apps assisted officials to relax shutdown requirements whenever necessary [38]. Likewise, cloud live broadcast provided prompt dissemination of pandemic-relation data, enhanced the connection with residents, and fostered the trustworthiness of the government [39]. The Chinese experience of fighting COVID-19 highlighted the application of high technology is a crucial factor of success. But privacy concerns pertaining to personal data collection and accuracy of such personal data are problems to be handled after the pandemic, and governments need to pay attention to the ethical issues that arise therein. Extensive data collection may be needed to stop the spread of the virus. For example, special apps were used to track individuals' contact details, especially with those infected or

recuperated from the illness. One reason might be that the collection of personal data is justified until the epidemic is over. But once the instance of establishing surveillance, one has to wonder the way to remove that surveillance power from governments and corporations. One may conjecture whether clauses on limits of organizations' data collection are built. The ancillary uses of the vast amount of tracking data may tempt corporations to keep on that information, in light of the financial profits that come with the data. For instance, in the US, Google and Apple and in China, Baidu and Alibaba have a collection of personal data associated with tracking individuals. The potential of such tracking apps in compromising privacy and liberty warrants an effective monitoring of the utilization of such technologies by users and civil society groups. Moreover, it remains unresolved that whether EU data protection and privacy rules would demand the corporations to dispose of such personal data once it is not required. There are caveats about cases of abuse of data collection. Corporations that have collections of personal data and their oversight have to consider the ethical issues especially when individuals are less agreeing to the way their data are misused for other purposes. It is certainly plausible to gloss over certain norms and regulations such as data privacy in an emergency when it is time to safeguard people's lives. But one has to stay on guard for what is ensuing after the global health emergency [40].

V. DISCUSSION AND CONCLUSION

This paper reviews the sessions and happenings in combating COVID-19 in the US, Japan, and China. After evaluation and examination, we found that China's and Japan's experience of fighting COVID-19 is commendable. The Chinese government and the Japanese administration have implemented highly effective governance and public health course of action to fight COVID-19. Government-led epidemic control with a staunch belief in science can roll out effective pandemic control strategies. Under the direction of President Xi Jinping, China launched the Leading Group for Novel Coronavirus Prevention and Control chaired by Premier Li Keqiang, with its major task to implement epidemic control work in badly hit regions. Xi personally gave instructions to more than 100,000 officials countrywide and traveled to Wuhan to inspect and gave instructions at the frontline for compendious, organized, and judicious implementation, underpinned by scientific research and solutions [14]. In the same vein, Japan set up the Japan Anti-Coronavirus National Task Force to supervise the government's actions to the epidemic [26]. And the national guidelines for COVID-19 testing and treatment was based on a scientific meeting group led by Dr. Wakita Takiyaji, Director of the National Institute of Science who grouped together epidemiology experts and medical personnel to advise on the government's response to COVID-19 [26]. In the US, the administration set up a White House Coronavirus Task Force chaired by Vice President Pence to manage testing and public health efforts to combat COVID-19 [41]. Despite a high-level meeting group, President Trump ignored and sidelined CDC with regard to COVID-19 health advice, he even dissolved the White House pandemic team sometime after assuming office in

2017 [42], which ultimately undermine the US's effort in fighting COVID-19. In short, government-led effort underlined by scientific efforts as demonstrated in China and Japan can effectively ward off COVID-19. In addition, Chinese people and Japanese are very self-disciplined and readily accepted mask-wearing, an indispensable public health measure to ward off the virus. Chen said: "Compliance was very high. Compare that with the US, where even in June and July, when the virus was surging, people were still refusing to wear masks. Even in late September, President Trump still treated Joe Biden's mask-wearing as a weakness to be ridiculed" [43]. Culture matters in fighting COVID-19. US individualistic culture champions an individual to act for oneself, make their own choices, and thus an individual's interest and concern take priority over the needs of the group or the society. In Japan and China, where the collectivist culture takes precedent, the rights of the group and community come before individuals' interests [44]. Amid a public health crisis, individuals will take into account the best interest of the group and would readily and willingly adopt mask-wearing, social distancing, and stay-at-home measures. The response in the US was unwelcome. Many people disobeyed lockdowns, mask mandate, and social distancing. Protests and rallies are prevalent in Texas, Indiana, and Wisconsin [45]. China and Japan, where collectivistic culture reins, can better handle a public health emergency with collective efforts. In this sense, amid a collectivist culture, whole-society mobilization and solidarity are essential to fight the epidemic. For example, community workers in China "built the first line of defense against COVID-19," according to Xinhua News Agency, and they provide support of daily necessities and health checks for people with fever, pregnant women, and those quarantined at home [46].

China's outbreak can be considered as the worst in Asia and yet China took drastic public health measures to stamp out the virus, with travel and movement restrictions, tracking individuals, enforcing quarantine orders, and testing and monitoring immensely [47]. Similarly in Japan, the government requested residents to stay at home, wear a mask, and maintain the social distance that can combat effectively the Covid-19. Such mandatory measures or quarantine requests in China and Japan respectively can ward off the dangerously spreading virus. In contrast, the US failed to react to COVID-19 effectively. The relaxed public health measures of ending shutdowns prematurely were not working. When the US keeps business opens after the spring shutdown, COVID-19 cases are soaring. The US has over "100,000 daily new coronavirus cases on November 4". Every state at present has over "four daily new cases per 100,000 people" [48]. Such experiences inform us that a mandatory and stricter approach can better curb a pandemic than milder measures in handling a public health emergency.

According to Harvard T H Chan School of Public Health, "The evidence suggests that ineffective national policies and responses, especially as compared to those of other wealthy nations or compared to the intricate preparation and planning by previous administrations of both parties, have been driving the terrible toll of COVID-19 and its inequities in the US" [49]. US President Trump should not blame China for sending the

virus, but instead, face the hard numbers and control the pandemic. As President Trump was quoted in the Time magazine: "We want to get rid of this mess that China sent us," he continued, and the magazine commented: "returning to his instinct to blame China for the spread of the virus. Now that the virus is here, it's the country's responsibility to track and control it. That first means facing the hard numbers it produces" [50]. By blaming China, President Trump instituted travel bans early on to passengers from China, although the virus was "already known to be present in Italy, Iran, Spain, Germany, Finland, and the United Kingdom" Subsequent study "found repeatedly" that "the great majority" of the virus coming to the US originated from only "European strains" [50]. That was a tragic mistake of President Trump. The COVID-19 has proven to be a source of friction between China and the US. But rather that should be a perfect occasion for greater cooperation between the world's largest and the second-largest economies. The only hope is pinned on the incoming Biden administration. The common threat that is posed by the virus could provide an opportunity for China and the US to cooperate to tackle it together and alongside others.

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