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RESEARCH ARTICLE

The COVID-19 crisis, Herd Immunity, and "Vaccine Apartheid" in the Age of Anthropocene

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Abstract

The coronavirus pandemic has led to millions of deaths around the world. In many countries, it has also exposed long-standing inequities and injustices in health care, income distribution, labour market practice, and social protection for the poor, women, indigenous peoples, and other marginalized segments of the population. The disproportionate casualties among vulnerable populations have also exposed predatory corporate practices, such as the refusal to share vaccine patents with low-income countries (LIC) in the Global South. World Health Organization (WHO) Director-General Tedros Adhanom Ghebreyesus has warned that this "vaccine apartheid" could lead to the further spread of more dangerous forms of virus variants, and that global solidarity and collaboration may be the only viable approach to current and future pandemics.[1] Scientists have long warned that the continued destruction of the environment and ecological diversity would lead to future waves of cross-species (zoonotic) viral pandemics, due to the elimination of "natural borders" that once existed between human and non-human species. In the last several decades alone, humanity has suffered from five major zoonotic pandemics: AIDS, SARS, MARS, Ebola, and COVID-19.[2] This Special Issue focuses on a select group of Asian countries in order to critically examine the impact of socio-legal inequities in state-centric policies upon domestic populations, including indigenous peoples, and to explore the possibility of international collaborative strategies for controlling the spread of deadly viruses and their variants in the coming years and decades, in Asia and beyond.

Keywords: COVID-19; World Health Organization (WHO); vaccine apartheid; indigenous peoples; Cuba; vaccine untouchables; vaccine genocide

1. Introduction

In May 2021, World Health Organization (WHO) Director-General Tedros Adhanom Ghebreyesus declared that humanity had entered a stage of "vaccine apartheid," in which the inequitable production of vaccines and their disproportionate distribution could lead to the unnecessary deaths of millions of people.[3] The Global Union Federation (GUF), an international federation of trade unions, urged an end to this "vaccine apartheid" that continues to kill indigenous peoples and vulnerable populations throughout the world.[4] The UN Special Rapporteur for Indigenous Peoples, Jose Francisco Cali Tzay, warned that indigenous people and other vulnerable populations have been hit hardest by the pandemic and were most likely to suffer due to inadequate access to vaccines in years to come.

[1] World Health Organization (2020).
[2] Nebehay & Shields (2020).
[3] Shields & Farge (2021).
[4] "Global Union Federations in Asia Pacific Urge to End the "Vaccine Apartheid" (2021).

In August 2021, Brazil's indigenous federations filed an urgent petition to the International Criminal Court (ICC) to investigate Brazilian President Jair Bolsonaro over his government's genocidal policies against them. Bolsonaro had once notoriously observed: "It's a shame that the Brazilian cavalry hasn't been as efficient as the Americans, who exterminated the Indians [in the US]."[5]

Today the US leads the world with more than 1 million deaths, including disproportionate causalities among indigenous populations within its borders.[6] The absence of a universal health-care programme, high costs of medical care, limitations of privatized health coverage, chronic shortage of nursing and physicians, and chronic health and economic racial disparities have all contributed to the extreme vulnerability of America's indigenous peoples, particularly in Utah, Montana, New Mexico, and Wyoming, where the COVID-19 death rate for indigenous peoples has been five times higher than in the general population.[7] These elevated COVID-19 death rates among indigenous peoples have also been reported elsewhere in the world, including Colombia, Ecuador, Brazil, and other Amazonian regions in Latin America[8]; India, Bangladesh, Thailand, and the Philippines in Asia;[9] Australia and New Zealand in the Oceania[10]; as well as in Europe.[11] In surveying pandemic causalities, the Centers for Disease Control (CDC) observed that indigenous nations and peoples have been disproportionately affected by the COVID-19 all around the world.[12] Anne Nuorgam, Chair of the UN Permanent Forum on Indigenous Issues, made this plea to UN members: "[W]e urge Member States and the international community to include the specific needs and priorities of indigenous peoples in addressing the global outbreak of COVID 19."[13]

2. The World Trade Organization (WTO), intellectual property (IP) regimes, and "vaccine apartheid"

Since late 2020, life-saving vaccines have been made available to many countries, yet these vaccines have not been made available to, or equally distributed across, different states and regions. Multinational corporations in North Atlantic states have come to hold exclusive custody and exert monopoly over the production and distribution of these life-saving vaccines through use of the revolutionary "messenger RNA (mRNA)" biotechnology. The corporations that developed the IP of the vaccine technology include: (1) Pfizer-BioNTech of the US and Germany; (2) AstraZeneca of the UK; and (3) Moderna of the US.[14] The monopoly of the "product" patent of these mRNA vaccines has thus far reaped significant profit for these corporations. The IP right of the "product patent" was firmly built into the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement of the WTO, which was created in 1995 after many years of intense and often combative negotiations

[5] "Jair Bolsonaro is 2019's Racist of the Year: Here's Why" (2019).

[6] John Hopkins Coronavirus Resource Center (2022).

[7] Campbell & Levine (2022).

[8] Fox (2020); Gonzalez (2020); Teixeira (2021).

[9] "Bearing the Brunt: The Impact of Government Responses to COVID-19 on Indigenous Peoples in India" (2020). See also Bociago (2020); Chakma (2020); Kamal, Stamatopoulou, & Kain (2020); Salva (2020).

[10] McLeod et al. (2020); Yashadhana et al. (2020).

[11] Mobie (2020); "Tribal Health Board: Native Americans Hit Hard by COVID-19" (2020). See also Rogin (2020). The origin of the coronavirus has been disputed. Spanish virologists, for example, found the trace of the novel coronavirus in a sample of Barcelona's sewage water in March 2019, nine months prior to the COVID-19 outbreak in China. See Allen & Landauro (2020); Hatcher et al. (2020).

[12] United Nations (2021b).

[13] UN Department of Economics and Social Affairs (2020).

[14] The Johnson & Johnson vaccine does not use the mRNA technology. See Shea (2021).

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between the Global North and the Global South on the General Agreement over Tariffs and Trade (GATT).

The WTO's new IP agreement has, after sustained negotiations, come to replace the "process patent" right with the "product patent" right, restricting any other medical company from manufacturing the same drug through different, or even cheaper, manufacturing processes. Previously, the primacy of the "process patent" allowed the "third-party" research labs and drug firms in the Global South to "reverse-engineer" the drug production and innovate alternative production methods to manufacture the same drug. The primacy of the "process patent" right had helped eradicate the monopoly of the IP rights held by the West's powerful corporations and, at the same time, allowed the production of cheaper generic drugs to be shared among the populations of the Global South who otherwise could not access highly priced drugs patented and produced by drug companies of the Global North. The new "product patent" right adopted by the WHO thus served to eliminate the "innovative" endeavours previously conducted by research centres and medical labs of the Global South.

The new IP regime has also helped bring enormous wealth to North Atlantic private corporations in numerous ways. First of all, the privilege of the "product patent" allowed the pharmaceutical company to become a "rent-collecting" agency by monopolizing the product patent right, while denying others the right to manufacture the same drug cheaply and share it with low-income countries (LIC) in the Global South. By the end of 2021, for instance, Pfizer-BioNTech had earned more than $36 billion from vaccine sales alone, with other pharmaceutical corporations similarly reaping enormous profit from their COVID-19 vaccines.[15] Second, the new IP regime helped to create a complex, yet competitively outsourced, global supply chain for products. This phenomenon has been called the "disarticulation of production," in which each and every step of commodity production is supplanted by the complex regional network of the "global commodity supply chain." Pfizer-BioNTech has developed one of the most sophisticated instances of this global supply chain, with more than 40 production sites and facilities involving nearly 200 different suppliers globally.[16] AstraZeneca's vaccine production has spanned over 15 countries with 25 separate manufacturing facilities.[17] Another US biotech firm, Novavax, produced its own brand of vaccine through its own global supply chain, including Japanese and South Korean pharmaceutical conglomerates and other firms in the US and Europe.[18] The corporations that held IP rights began to exploit the competitive manufacturing process in relation to the vaccines and their global distribution.

Third, the new TRIPS and IP obligations empowered multinational drug companies to shape state policies and government programmes through their contractual agreements. Pfizer-BioNTech, for example, forced the Brazilian government to wave sovereign immunity against the firm, including no penalty assessed for late product delivery, and the adjudication of potential legal disputes in the US courts, not in Brazilian courts. Furthermore, BioNTech prevented Brazil from donating excess vaccines and/or receiving donated vaccines from other states and/or external parties. The Brazilian government was also contractually obligated from revealing contractual contents without the prior written consent by the drug company.[19]

Fourth, the IP regime also indemnified the drug firm in relation to any civil lawsuits involving patent infringement. Pfizer-BioNTech's agreement with Colombia helped shield

[15] *Ibid.*
[16] Pfizer (2021).
[17] Kansteiner & Sagonowsky (2021).
[18] *Ibid.* See also Beusekom (2021).
[19] Busby & Milorance (2021).

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the company from lawsuits involving the drug's serious side effects in the country.[20] The drug firm further required the Colombia government to pay for potential patent infringement lawsuits brought against the firm in Colombia.[21] Fifth, the global commodity chain and its disarticulated production process significantly fragmented and weakened working-class solidarity, thereby eradicating the potential formation of global worker alliances necessary to empower organized labour, trade unions, socialist institutions, environmental protection agencies, and progressive political activists across the globe.[22]

Lastly, as stated earlier, the IP rights regime led to the creation of vaccine apartheid and further perpetuated the unequal distribution of life-saving vaccines throughout the world. The vaccines produced by powerful transnational corporations have gone to affluent states and their allies, including the US, the UK, European states, Israel, Japan, and a few other wealthy states. Within these wealthy countries, life-saving vaccines have not been equally distributed across the different sectors of populations, including indigenous peoples and other marginalized groups who had been historically discriminated against within the states. As the papers included in this Special Issue reveal, Palestinians, ethnic groups, and religious minorities in various Asian regions have not had equal access to life-saving vaccines. Similarly, many states in Africa, South and Southeast Asia, and Latin America have faced significant deficits of access to the vaccines. The end game of the COVID-19 pandemic, according to WHO Director-General Ghebreyesus, can only be attained by vaccinating the entire global population.[23] He has criticized both the wealthy states in the Global North and the privileged classes in the Global South for hoarding vaccines, including booster shots, rather than sharing them with various sectors of the marginalized population within/across different states and regions.[24]

This vaccine apartheid has also ensured the creation of marginalized and "disposable" populations of "vaccine untouchables" in the state and global peripheries. Their presence contributes to the potential future emergence and global spread of transmuted virus variants, from which transnational corporations could possibly profit even further by their continuous investment, research activities, and proprietary IP invention of new booster shots and future generations of life-saving vaccines. The system of vaccine apartheid continues to reflect predatory corporate policies that can be viewed as a form of "vaccine genocide" against indigenous peoples, the poor, and other vulnerable populations around the globe.

3. Law and Society Association (LSA) and CRN33 panel on "COVID-19 and Herd Immunity in Asia in the Age of Anthropocene: The State and Corporate Responses to the Pandemic"

Several weeks after WHO Director-General Ghebreyesus noted the egregious impacts of "vaccine apartheid" upon indigenous and other vulnerable populations around the globe, the 2021 Annual Meeting of the LSA was held in Chicago, Illinois, featuring panel sessions organized by a group of socio-legal scholars specialized in Asia. The East Asia Law and Society Collaborative Research Network (CRN33) organized the sessions under the theme of "COVID-19 and Herd Immunity in Asia in the Age of Anthropocene: The State and Corporate Responses to the Pandemic." Nine papers had been chosen for presentation,

[20] *Ibid.*

[21] *Ibid.*

[22] Prashad (2018).

[23] United Nations (2021a). WHO Director-General Ghebreyesus specifically stated that "70% of the population of every country … [must be] vaccinated by the middle of next year" for the pandemic to end in 2022.

[24] Doctors Without Borders (2021). For instance, the US was accused of hoarding nearly 500 million excess COVID-19 vaccine doses, along with Canada and other European states.

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contributing to critical discussions of COVID-19 and its impacts upon various domestic populations, as well as potential strategies, including international collaboration, to address crucial issues raised by the pandemic. Two prominent scholars specialized in socio-legal issues of Asia agreed to serve as panel discussants, including University of Hawaii Law Professor Mark Levin and University of Arkansas Law Professor Rob Leflar, who was also the National Taiwan University Visiting Professor at the time of the LSA conference. Panellists included legal scholars, legal practitioners, and sociopolitical researchers specialized in multiple Asian states and regions, including South Korea, Japan, Vietnam, Thailand, Taiwan, Myanmar, People's Republic of China, Afghanistan, Uzbekistan, Syria, Palestine, and Israel. Prior to submission of their papers, invited scholars were asked to address the following three key issues in their presentations.

First, they were asked to elaborate the pre-existing social, political, and medical inequities, and fragility of government policies affecting indigenous peoples, the poor, women, and other underrepresented groups prior to the pandemic. Second, given that the destruction of the environment could lead to future waves of zoonotic, cross-species viral pandemics, the panellists were asked to examine any specific proposals to help preserve the ecological diversity in their respective states. Third, as global solidarity and close international collaboration is the key to responding effectively to both current and future pandemics, the presenters were asked to explore any collaborative strategies and programmes to be undertaken in order to build global solidarity, including collaboration with other governments and international organizations.

This Special Issue includes four of those papers, examining the COVID-19 pandemic strategies undertaken by Asian countries and proposals to continue collaboration in addressing the pandemic. In the first paper, "Vaccine Policy Failure: Explaining Thailand's Unsuccessful Containment of COVID-19 in the Third Wave," Piyasuda Pangsapa elucidates the dynamics of Thailand's "puzzling" transformation from 2020, when it was viewed as an international COVID-19 response vanguard, to 2021 and beyond, when Thailand came to experience many COVID-19 crises and disasters. Pangsapa argues that this tectonic shift did not occur in response to the cumulative impact of the pandemic, but was largely due to the following factors: (1) the "overconfidence" of the Thai government following the successful containment of the virus during the first and subsequent waves from 2020 to 2021; (2) deep socioeconomic divisions existing since the 1980s due to highly concentrated sociopolitical power among Thai's oligarchs, including the military, which has ruled the country since 1962; (3) significant gaps in economic and financial development between urban centres and rural regions; and (4) income and class gaps between the rich and the poor in Thailand, affecting the adaptability of the marginalized sectors to the pandemic, as Thailand has the worst wealth inequality in the Association of Southeast Asian Nations (ASEAN). Pangsapa argues that the effects of socioeconomic inequities and discriminatory policies have been felt most acutely by indigenous peoples and ethnic minorities (i.e. "hill tribes"), as well as by migrant labourers and political refugees who continue to remain stateless by law. The government had instituted a universal health-care programme in 2001 and has begun to explore international co-operation with other governments, including Cuba, which indicates some positive signs.[25] Nevertheless, due to few or no legal safeguards against discriminatory practices, disparities in the quality of care, and lack of governmental planning and logistics in securing adequate vaccines to the populations, Pangsapa argues that Thai's vulnerable populations, especially indigenous women and children, have continued to suffer during the recent wave of COVID-19.

In the second paper, "Coloniality and Necropolitics in the Age of COVID-19: The Question of Palestine," Robin Gabriel examines the situation of indigenous Palestinian

[25] Ministry of Foreign Affairs, Kingdom of Thailand (2021a); Ministry of Foreign Affairs, Kingdom of Thailand (2021b).

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peoples *within the state of Israel* and their exclusion from Israeli health-care and vaccination programmes. Gabriel shows that the medical inequities experienced by Palestinians during the COVID-19 pandemic were the result of coloniality (*Quijano*) as manifested by both the Israeli state and the Palestinian Authority (PA). Through an examination of the intersections of Israeli state law, international law, and PA policy, Gabriel maps the ways in which the medical disaster was not solely a product of the pandemic itself, but also reflected larger legacies of material, epistemic, and ontological colonial intervention. Pointing to the instrumentality of the signing of the 1993 Oslo Accords by the PA, which further codified the sociopolitical disenfranchisement of Palestinian peoples, Gabriel argues that Israeli border securitization continues to restrict, if not "completely" prevent, the free movement of doctors, health-care workers, as well as crucial and life-saving supplies of drugs and medical equipment in and out of the West Bank and Gaza. Israel has also continued to withhold monetary means, including taxes, and to restrict the allocation of budgets necessary for Palestinian public health sectors. Further, the agreement between the PA and Israel has continued to prevent Palestinians from engaging in collaborative, transnational initiatives, including the "COVID-19 Vaccines Global Access Facility" (COVAX), which was supported by the WHO, as well as the Global Alliance for Vaccines and Immunization (GAVI) and other international organizations. GAVI was originally created by the Gates Foundation in 1999 and is currently co-leading COVAX, and its vaccine pillar, the Access to COVID-19 Tools (ACT) Accelerator, in order to procure and distribute COVID-19 vaccines to Palestine and other marginalized regions in the Middle East and other countries around the world. Despite these international collaborative efforts, Gabriel contends that the ultimate route to alleviation of these inequalities lies in the liberation of Palestine from coloniality itself, both internally and externally, with one key example of such practices being the development of mutual aid networks and collaborative solidarity, thereby circumventing the pseudo-state structures of the PA. Gabriel views this as one of the many ways to envision liberation from the strictures of state bureaucracies and to eliminate Israel's domination over its indigenous Palestinian populations.

In the third paper, "Trust, Democracy, and Hygiene Theatre: Taiwan's Evasion of the Pandemic," Robert B. Leflar examines the multiplicity of geopolitical factors, cultural principles and precepts, and governmental innovations on health-care measures, all of which contributed to Taiwan's records of effectively preventing COVID-19 infections and deaths, far exceeding the performances of such Western states as the US, all EU countries, and many Asian democratic societies. Specifically, Leflar's critical analysis attributes Taiwan's "success" to the relative isolation of its geopolitical locationality, the preparedness for the pandemic due to its bitter encounters with the 2003 SAR infection and disasters, and politically "nuanced" exclusions from the WHO's mantle of global health governance that contributed to the development of its own "self-help" programmes and "self-governing" health-care policies. While Taiwan was one of the WHO's original founders and was later ousted from its membership due to the multiplicities of geopolitical factors, Taiwan's self-initiated swift actions, according to Leflar, played an important part of effectively responding to the potential dangers of COVID-19 with much urgency, well before the WHO's announcements on pandemic prevention and policy recommendations. Leflar's analysis also focuses on Taiwan's unique "cultural factors," including Confucian values of respect for hierarchical authority, public support for governmental guidance in health-care recommendations, as well as the community-based solidarity in engaging in proper hygienic practices such as the mask-wearing and other public health safety measures. As having spent much of the period of the pandemic as a visiting professor in Taiwan, Leflar has had the firsthand observation of the interplay of geopolitical factors, culturally imbedded community actions, and socio-legal development that had led to one of the lowest COVID-19 causalities in the world. Since Taiwan's COVID-19 containment has been less dependent on vaccines but rather on the effective solidarity of, and close

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collaboration with, multiple sectors of government agencies and civil society, the author calls Taiwan one of the most effective "disciplined democracies" in Asia and beyond.

In the fourth paper, "A Comparative Study of Socio-Legal Scenarios in the COVID-19 Pandemic: Focusing on Asian Responses," Kunihiko Yoshida begins with a critical overview of how multiple Asian states have historically dealt with the waves of zoonotic cross-species virus pandemics. After examining the multiplicity of responsive scenarios adopted by Asian states in dealing with the COVID-19 pandemic, Yoshida offers policy recommendations and research objectives for dealing with future pandemics. Japan's historical disaster recovery legislation is reviewed in relation to two essential principles: (1) the protection of vulnerable populations during disasters and (2) the establishment of public assistance protocols during the recovery process. Yoshida then identifies three governance scenarios that have been predominantly enacted in the current pandemic in Asia: (1) identification and control; (2) herd immunity without policy adjustments; and (3) periodic lockdowns and hasty openings. Finally, Yoshida presents a series of recommendations regarding factors that Asian governments should take into account in dealing with the challenges they are likely to encounter in future pandemics—situations that are sure to arise, according to the WHO and scientists around the globe. These suggestions include: (1) ensuring a framework for effectively detecting, identifying, tracking, and isolating infected individuals, while paying special attention to patients' privacy protections; (2) establishing sufficient medical care for the infected, improving public health, promoting vaccination, and adopting other measures in infection prevention; (3) promoting international health-care programmes, including promotion of the COVAX Facility offered by the WHO and international organizations; (4) restructuring the legal system of IP regimes to ensure that the most vulnerable populations and the least-privileged countries have access to new medicines and vaccines; and (5) examining the means of protection of vulnerable populations, including indigenous peoples, during post-disaster reconstruction, while following and seeking global justice rather than nationalist justice.

4. Conclusions

As the pandemic continued to plague Asia and many regions across the globe, two panel sessions at the 2001 LSA conference were organized by the East Asia Collaborative Research Network (CRN33) in May 2021 in Chicago, Illinois, US. This Special Issue of the *Asian Journal of Law and Society* was proposed to critically examine socio-legal strategies of a select group of Asian countries in dealing with the current pandemic while also exploring the possibility of international collaborations to address future pandemics. The four papers selected for inclusion in the Special Issue established that, while the COVID-19 pandemic created substantial health disasters in many countries around the world, the crisis also helped expose many long-standing inequities and injustices in the provision of health care, wealth and income disparities, and socio-legal discrimination against marginalized sectors, including indigenous peoples, migrant groups, and rural minorities, among others. Further, such factors as the corporate practice of "vaccine apartheid," corporate refusals to share the vaccine recipe, and the IP regime's TRIPS-WTO restriction further exacerbated the pandemic by preventing equitable production and distribution of life-saving vaccines throughout the world.

Despite multiple obstacles to developing international solidarity in addressing the pandemic, there have emerged new developments in international collaboration and co-operation. For example, despite the Thai government's difficulties in effectively coping with the most recent rise in Covid infections and thus failing to prevent deaths among vulnerable sectors of its population, the Thai government has recently announced that Thai's Siam Bioscience has formed a joint venture with Cuba's Center of Molecular

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Immunology (CIM) in developing and producing news drugs, including vaccines, as well as medicines for the treatment of lymphoma, kidney, and autoimmune diseases in Thailand.[26] The Government of Iran has also recently announced the signing of an agreement with Cuba to produce the Soberana-2 vaccine in Iran, one of several vaccines developed by Cuba. Cuba has already sent millions of doses of its Abdala vaccine to the Government of Vietnam and shared its Soberana-2 vaccine with other Asian countries.[27] The People's Republic of China (PRC) recently announced that they also signed an agreement with Cuba to co-produce a vaccine called Pan-Corona in Yongzhou, Hunan Province.[28] In addition, Cuba has sent their medical teams to assist Covid-affected countries in Latin America, Europe, the Caribbean, Africa, Asia, and the Middle East.[29]

The Cuba Solidarity Campaign, a labour-based nonprofit organization in the UK, has been promoting collaborative international efforts between Cuba and many countries around the globe in order to deconstruct the IP regime of "vaccine apartheid" created by North Atlantic states and their pharmaceutical firms.[30] Cuba also joined the summit held by Global South states to further its international collaboration in relation to COVID-19 vaccine technology, pooling manufacturing capacities so as to increase vaccine and medical equipment production, as well as organizing collective disobedience to challenge the Big Pharma monopoly enforced through the WTO.[31] Given Cuba's collaborative efforts with many countries of the Global South and its historical contribution to global health for more than 60 years, it is not surprising that the countries in the Global South as well as in the Global North have tried to bring an end to the long history of US trade and economic sanctions against Cuba. In June 2021, in the UN General Assembly, a total of 184 states, including US allies in the EU such as Italy, voted in favour of a resolution demanding the end of US economic and trade blockades against Cuba that had been in existence since 1961. It is relevant to note that Cuba had met the request to send a team of 50 medical personnel to Lombardy, the worst-Covid-affected region, in northern Italy. The global support for ending the US embargo against Cuba was not unusual, as this near-unanimous vote had taken place for 29 years in a row. The US and Israel, however, voted against the anti-Cuban blockade resolution.[32]

Today, Cuba's 30,000 medical doctors are working in 67 states and have deployed 70,000 health-care workers to 94 countries around the globe. And since 1960, Cuba has sent 400,000 medical staff to 164 countries around the globe. Cuba's medical internationalism has been well known in the Global North and the Global South, as Cuba has provided more medical personnel than all G8 countries combined.[33]

The papers presented and discussed by the CRN33 Panels at the 2021 LSA Conference also identified devastating impacts of neoliberal programmes and globalization policies. Environmentally unsustainable corporate projects and the ecological destruction of ancestral homelands of indigenous peoples in Asia and across the globe have led to the elimination of the natural and ecological borders that once existed between human and non-human species, thereby leading to potentially frequent occurrences of cross-species, zoonotic virus pandemics in coming years and decades. In the last several decades alone, the world has suffered multiple cross-species virus pandemics.

In February 2022, the Intergovernmental Panel on Climate Change (IPCC) reported that the continued destruction of the environment and the further eradication of biodiversity

[26] Thai News Service (2021).
[27] Frank (2021).
[28] Yaffe (2021).
[29] Acosta (2021).
[30] Sarkar (2022).
[31] "Summit for Vaccine International Hails a 'New International Health Order'" (2021).
[32] United Nations (2021c).
[33] Ballard (2020).

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might have reached a non-reversible tipping point in the creation of ongoing anthropogenic disasters in Asia, Africa, and beyond.[34] Not only has the impact of such human-induced disasters included more frequent occurrences of zoonotic virus pandemics, but it has also involved rising sea levels, deforestation, desertification, species extinction, powerful monsoons and other seasonal disruptions, and the further destruction of global ecosystems. It is therefore critically imperative for socio-legal scholars specialized in Asia to pay close attention to the impact of anthropogenic disasters and ecological consequences in coming years and decades in our increasingly interdependent world.

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References

Acosta, Nelson (2021) "Cuban Doctors Head to Italy to Battle Coronavirus," *Reuters*, 3 March.

Allen, Nathan, & Inti Landauro (2020) "Coronavirus Traces Found in March 2019 Sewage Sample, Spanish Study Shows," *Reuters*, 26 June.

Ballard, Barclay (2020) "How Cuba's Doctors are Helping the World Fight COVID-19," *EuropeCEO*, 13 July.

"Bearing the Brunt: The Impact of Government Responses to COVID-19 on Indigenous Peoples in India," *International Working Group for Indigenous Affairs (IWGIA)*, 10 September,

Beusekom, Mary Van (2021) "NOVAX COVID Vaccine Shows 90.4% Efficacy Against Infection," *Center for Infectious Disease Research and Policy (CIDRAP)*, 16 December.

Bociago, Robert (2020) "For the Philippines' Mangyans, COVID-19 Extends a Long History of Discrimination," *Mongabay*, 7 August.

Busby, Mattha, & Flavia Milorance (2021) "Pfizer Accused of Holding Brazil 'to Ransom' Over Vaccine Contract Demand," *The Guardian*, 10 September.

Campbell, Alexia Fernandez, & Carrie Levine (2022) "Native Americans, Hit Hard by Covid-19, Faced Major Barriers to Vote," *The Center for Public Integrity*, 5 November.

Chakma, Trimita (2020) "A Rapid Assessment Report: The Impact of COVID-19 on Indigenous and Tribal Peoples in Bangladesh," *International Working Group on Indigenous Affairs (IWGIA)*, 10 August.

Dennis, Brady, & Sarah Kaplan (2022) "5 Takeaways from the Latest United Nations Climate Change Report," *Washington Post*, 28 February.

Doctors Without Borders (2021) "US Must Stop Hoarding Excess COVID-19 Vaccine Doses," 11 October.

Fox, Michael (2020) "Brazil's Indigenous Peoples Fight COVID-19 in Their Territories Amid Government Neglect," *The World*, 4 September.

Frank, Mark (2021) "Cuba Kicks Off COVID-19 Vaccine Exports with Shipment to Vietnam," *Reuter*, 15 September.

"Global Union Federations in Asia Pacific Urge to End the 'Vaccine Apartheid'" (2021) *Education International*, 26 November.

Gonzalez, Luisa (2020) "Coronavirus Threatens the Survival of Colombia's Indigenous Wayuu," *NBC News*, 13 August.

Hatcher, Sarah M., Christine Agnew-Brune, Mark Anderson, et al. (2020) "COVID-19 Among American Indians and Alaska Native Persons—23 States, January 31-July 3, 2020: Morbidity and Mortality Weekly Report," *CDC*, 28 August.

[34] Dennis & Kaplan (2022).

https://doi.org/10.1017/als.2022.16 Published online by Cambridge University Press

"Jair Bolsonaro is 2019's Racist of the Year: Here's Why" (2019) *Survival International*, 14 November.
John Hopkins Coronavirus Resource Center (2022) https://coronavirus.jhu.edu/map.html (accessed 8 April 2022).
Kamal, Sultano, Elsa Stamatopoulou, & Myrna Cunningham Kain (2020) "International Chittagong Hill Tracts Commission: Indigenous Peoples in Chittagong Hill Tracts Experiencing Human Rights Violations," *International Working Group on Indigenous Affairs* (IWGIA), 26 June.
Kansteiner, Fraiser, & Eric Sagonowsky (2021) "What Does It Take to Supply COVID-19 Vaccines Across the Globe? Here's How the Leading Players Are Working It," *Fierce Pharma*, 3 March.
McLeod, Melissa, Jason Gurney, Ricci Harris, et al. (2020) "COVID-19: We Must Not Forget About Indigenous Health and Equity," 10 *Australia and New Zealand Journal of Public Health* 253–6.
Ministry of Foreign Affairs, Kingdom of Thailand (2021a) "Thailand and Cuba Explore Cooperation on COVID-19 Vaccine Development," 18 June.
Ministry of Foreign Affairs, Kingdom of Thailand (2021b) "The Thai Ambassador to Cuba with Residence in Mexico City Met with Cuba's Vaccine Research Centers and Pharmaceutical Companies," 9 December.
Mobie, Nora (2020) "Native American Tribes Have Been Hit Harder by COVID-19: Here is Why," *Great Falls Tribune*, 5 August.
Nebehay, Stephanie, & Michael Shields (2020) "Indigenous People Especially 'Vulnerable' to Coronavirus Pandemic, WHO Warns," *Reuters*, 20 July.
Pfizer (2021) "Manufacturing and Distributing the COVID-19 Vaccine," https://www.pfizer.com/science/coronavirus/vaccine/manufacturing-and-distribution (accessed 23 December 2021).
Prashad, Vijay (2018) "In the Ruins of the Present," *Tricontinental Institute for Social Research*, 1 March.
Rogin, Josh (2020) "State Department Cables Warned of Safety Issues at Wuhan Lab Studying Bat Coronavirus," *Washington Post*, 14 April.
Salva, Ana (2020) "The Coronavirus Pandemic Has Put Asia's Indigenous Communities Under Serious Pressure," *Equal Times*, 9 October.
Sarkar, Saurav (2022) "Labor Must Rise Against Vaccine Apartheid," *Labornotes*, 2 February.
Shea, James (2021) "Johnson & Johnson Vaccine: How Is it Different?" *VCU News*, 3 May.
Shields, Michael, & Emma Farge (2021) "WHO Chief Urges COVID-19 Vaccine Makers to Advance Doses for COVAX, *Reuters*, 18 May.
"Summit for Vaccine International Hails a 'New International Health Order'" (2021), *Progressive International*, 21 June.
Teixeira, Fabio (2021) "In Brazil's Amazon, Indigenous People Fear Surge in COVID-19 Deaths," *Reuters*, 19 January.
Thai News Service (2021) "Thailand: Thai Ambassador to Cuba with Residence in Mexico City Met with Cuba's Vaccine Research Centers and Pharmaceutical Companies," 10 December.
"Tribal Health Board: Native Americans Hit Hard by COVID-19" (2020) *AP*, 26 June, https://apnews.com/article/0f44f46abf994293acded741ff0dd403 (accessed 8 April 2022).
UN Department of Economics & Social Affairs (2020) "COVID-19 and Indigenous Peoples," https://www.un.org/development/desa/indigenouspeoples/covid-19.html (accessed 8 April 2022).
United Nations (2021a) "'Consistent Evidence' of Omicron's Spread vs Delta: WHO's Tedros," 20 December.
United Nations (2021b) "Indigenous Peoples Have Been Disproportionately Affected by COVID-19: Senior United Nations Official Tells Human Rights Council," UN Human Rights Office of the High Commissioner (UNHRC), 28 September.
United Nations (2021c) "UN General Assembly Calls for US to End Cuba Embargo 29th Consecutive Year," *UN News: Global Perspective Human Stories*, 23 June, https://news.un.org/en/story/2021/06/1094612 (accessed 8 April 2022).
World Health Organization (2020) "COVID-19: Virtual Press Conference," 20 July.
Yaffe, Helen (2021) "Cuba's Five COVID-19 Vaccines: The Full Story on *Soberana* 01/02/Plus, *Abdala*, and *Mambisa*," *LSE*, 31 March.
Yashadhana, Aryati, Mellie Pollard-Wharton, Anthony B. Zwi, et al. (2020) "Indigenous Australians at Increased Risk of COVID-19 Due to Existing Health and Socioeconomic Inequities," 1 *The Lancet Regional Health: Western Pacific*, 1 August.

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