

# SCIENCE DIPLOMACY REVIEW

Vol. 4 | No. 3 | December 2022

## EDITORIAL

### **What New Dimensions Are Needed for Science Diplomacy?**

*Joy Y. Zhang, Bhaskar Balakrishnan, Ravi Srinivas and Trude Sundberg*

## ARTICLES

### **Empires of the Mind and Trickle-Down Science: COVID-19 and the History of Global Scientific Relations**

*Greg Whitesides*

### **The Hegemonic Paradox of Science Diplomacy and Its Contemporary Challenges: Lessons from the COVID Pandemic**

*Joy Y. Zhang*

### **Partaking Indian Traditional Medicine System in Global Diplomacy**

*Sneha Pal, Sweta Bawari and Devesh Tewari*

### **Water-Related Science Diplomacy: A Silver Lining to Sino-Indian River Sharing?**

*Lei Xie*

*(Continued on outside back cover)*

# SCIENCE DIPLOMACY REVIEW

Vol. 4 | No. 2 | December 2022

## EDITORIAL

- What New Dimensions Are Needed for Science Diplomacy?** 1  
*Joy Y. Zhang, Bhaskar Balakrishnan, Ravi Srinivas and Trude Sundberg*

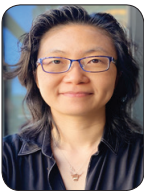
## ARTICLES

- Empires of the Mind and Trickle-Down Science: COVID-19 and the History of Global Scientific Relations** 5  
*Greg Whitesides*
- The Hegemonic Paradox of Science Diplomacy and Its Contemporary Challenges: Lessons from the COVID Pandemic** 17  
*Joy Y. Zhang*
- Partaking Indian Traditional Medicine System in Global Diplomacy** 31  
*Sneha Pal, Sweta Bawari and Devesh Tewari*
- Water-Related Science Diplomacy: A Silver Lining to Sino-Indian River Sharing?** 45  
*Lei Xie*
- Re-imagining Science Diplomacy: Learnings from a Bottom-Up Water Security Project** 59  
*Trude Sundberg*
- Ukraine Situation and Challenges to Science Diplomacy** 67  
*Bhaskar Balakrishnan*
- Science Diplomacy Higher Education: Today and Tomorrow** 79  
*Mark Robinson, J. Simon Rofe and Katharina E. Höne*
- Strengthening Multilateralism through Science: A Review** 95  
*Sneha Sinha*

# The Hegemonic Paradox of Science Diplomacy and Its Contemporary Challenges: Lessons from the COVID Pandemic

---

Joy Y. Zhang\*



Joy Y. Zhang

The COVID-19 pandemic underlined the importance of science diplomacy in combating global health inequality and in promoting transnational solidarity in a coordinated response to the virus. Yet it also accentuated an epistemological struggle in global politics (Irfan, Jackson and Arora, 2021; Tung, 2022; Zhang and Datta Burton, 2022). This is to say, while the pandemic seems to have re-affirmed the efficiency and necessity of top-down socio-political enforcement of public health measures (e.g. mask-wearing, vaccination and restriction of movement), it also made visible the social skepticism and resistance towards a hegemonic global technology of control (Zhang, 2021; Ascione, 2022). Recognising the postcolonial public sentiment towards technological support is important. Through a historical examination of how *science for diplomacy* is practiced and a contemporary analysis of China's and the US' vaccine diplomacy, this paper argues that, for science diplomacy to be effective in a postcolonial world, a corresponding paradigm shift of science diplomacy is needed. More specifically, this paper points out that to overcome the embedded 'hegemonic paradox' in traditional science diplomacy, one needs to shift from the conventional (or hegemonic) mindset of 'prescribing solutions'. Instead, we need a decolonial approach that does not nullify the agency of local communities but bases its episteme on the lived experiences of these communities. Relatedly, this would underline the importance of going beyond state-led initiatives and

---

\* Director, Centre for Global Science and Epistemic Justice, University of Kent, UK

bringing 'Track II diplomacy' from the background to the foreground.

Vaccines have become emblematic of such power struggles (Hofmanner, 2022). On the one hand, vaccine diplomacy is deployed by countries such as the US and China as a proxy competition for global influence (Kumar, 2022; Tung, 2022; Leigh, 2021). On the other hand, both countries have encountered social backlash in recipient communities. As the paper demonstrates, China's vaccine diplomacy represents a vaccination success but a diplomatic failure. It is a vaccination success for, in 2021, China accounts for 'nearly half of all doses' of the COVID-19 vaccine delivered globally (Mallapaty, 2021). Yet despite projecting itself as an alternative global leader, China had little success in turning its vaccine diplomacy into gaining sympathy or friendliness among recipient countries in the Global South (Zhang, 2021). For example, LAPOP's Americas Barometer 2021 suggested that in Latin America, trust in the Chinese government fell from 47 per cent in 2018/19 to 38 per cent in 2021 (Nolte, 2022). In Asia, some who have received China's vaccine considered it to be an 'inferior' product (Marlow, Mangi and Lindberg, 2020; Butt, 2021). Similarly, the conventional political rhetoric of 'the U.S. swoops in to save the day' embedded in the US's vaccine diplomacy was 'greeted with knowing cynicism' in Latin America and, to President Biden's frustration and perhaps puzzlement, with African countries' rejections of additional American donations (Weeks, 2021, Abutaleb, 2021). To interpret this social skepticism and resistance as merely vaccine hesitancy that is related to safety concerns or to public understanding of science, in general, is an oversimplification. As I have argued elsewhere, in many Global South communities' vaccine hesitancy is not only reactive but also

'selective'. This is to say public reservation to a particular inoculation programme may not necessarily be a blanket vaccine denial, but a selective rejection of the social conditions that the vaccines are rolled out (Zhang, 2021). The second half of the paper explains in greater detail how the presence of 'choice' within Global South communities has been a crucial yet largely ignored factor in the success of vaccine diplomacy, particularly in light of the growing decolonial mentality that emphasises self-determination and individual agencies in these regions.

The paper is structured as follows: It first elucidates an embedded hegemonic paradox of science diplomacy through a brief historical review. This section highlights that the underlying mindset for both American and Chinese science diplomacy has been about 'hegemonic prescription of solutions'. Despite recent recognition of the importance of 'Track II diplomacy', the capacity for societal engagement remains low for both countries. This sheds light on the empirical examination in the subsequent section which identifies where and how vaccine diplomacy failed. Most prominently, through China's varied experience in the Philippines, Pakistan and Serbia, and through the US experience in Latin America and Africa and shifting domestic debates, the paper underlines how the perception of 'choice' and respect of (individual or collective) agency played a critical role in vaccine uptake and its associated diplomatic outcomes. Finally, the paper concludes with a section on what lessons can be drawn to reshape how we approach science diplomacy in the 21st century.

## **An Embedded Hegemonic Paradox of Science Diplomacy**

In its essence, science diplomacy is about recognising scientific power imbalance

across nation-states and using science as a vehicle to ameliorate the socio-political consequence of that power imbalance. In practice, as the Madrid Declaration on Science Diplomacy described, it refers to ‘a series of practices at the intersection of science, technology and foreign policy’ (S4D4C, 2019). Nations deploy science diplomacy to assert both their scientific prowess and their values globally, in which old friends get rewarded and new friends are made (Aspinall, 2022). However, a hegemonic paradox in science diplomacy is that while it purports to have levelling effects and to cultivate mutual appreciation between advantaged and less advantaged societies, in practice it often re-affirms and perpetuates power imbalances.

Modern science diplomacy consists of three separate strands (Royal Society and AAAS, 2010: 1) *Science in diplomacy*, which denotes incorporation of scientific expertise in foreign policy strategisation; 2) *Diplomacy for science*, which focuses on using diplomatic and policy leverage to promote transnational scientific collaborations; and 3) *Science for diplomacy*, which uses science to improve international relations, and employs both formal diplomatic effort (Track I diplomacy) and non-state actors (Track II diplomacy) to resolve socio-political tensions through scientific and technological exchanges. In this sense, science for diplomacy both resorts to and generates soft power (Turekian et al, 2015).

Science diplomacy is of course, not exclusive to Western countries. The People’s Republic of China is not new to science diplomacy. Yet similar to other non-Western emerging powers, China’s trajectory of science diplomacy has replicated rather than reformed the hegemonic logic. Arguably China’s science diplomacy can be traced to the 1970s with examples of the Tanzam Railway, which, along with China’s other

foreign aid initiatives at the time helped mainland China to get enough votes to be admitted into the UN. Yet despite its anti-imperialist intention, the project effectively adopted ‘colonial work models’ (Monson, 2018: 218). In 2011, Chinese officials declared that science diplomacy had become ‘the forefront’ of China’s foreign policy (Xinhua News Press, 2011). This is reflected in China’s expanding programmes of providing scientific expertise and relevant material supports to public health programmes in Africa and along its ‘One Belt and One Road’ initiative (Killeen et al, 2018; Montgomery and Qin, 2021). Yet as China is perceived by many as replicating neo-colonial behavior in these regions and lacking respect for local rights, the effects of its science diplomacy have been discounted (Ezekiel, 2022). This point is further discussed in the next section.

Historically, vaccine diplomacy has always been the best example of the third strand, ‘science for diplomacy’ and it is not immune from the hegemonic paradox. The creator of the world’s first vaccine, British scientist Edward Jenner famously stated that ‘the sciences are never at war’ before his French medical colleagues during the Napoleonic Wars. Jenner pioneered Track II science diplomacy by being an unofficial ambassador between the two warring countries (Hotez, 2014). France’s foreign policy also took advantage of Louis Pasteur’s rabies vaccine by building laboratories throughout its colonies to improve relations with local communities (Mihm, 2021). At the beginning of the 19th century, US President Thomas Jefferson deployed vaccine diplomacy to Indian tribes through the Lewis and Clark expedition. In the 20th century, the polio vaccine played a prominent role in US-Soviet science diplomacy in the cold war era (Hotez, 2017). However, as France’s colonial medical campaigns in Cameroon, the Central African Republic,

Chad, the Republic of the Congo and Gabon were perceived as coercive by the locals, distrust still overshadows present-day vaccine uptake (Lowe and Montero, 2021). Similarly, science historian Niels Brimnes' (2004, 200) study on colonial India's resistance to smallpox vaccination in the eighteenth and nineteenth centuries, cautioned a generalisation of resistance to (Western) 'medical benevolence' as 'popular resistance fed by prejudice, superstition and an ingrained aversion to change'. Instead, his study drew attention to the alienating side-effects of effectively dictating medical solutions to the indigenous population (Brimnes 2004: 200).

It is important to note that science diplomacy, in addition to its varied forms, has a wide range of social, political and economic goals. Every science diplomacy initiative should be evaluated in its own socio-political context. However, it is safe to say that the above discussion points to an irony embedded in a conventional logic that 'science is universal and unifying' and can be a vehicle to bridge socio-cultural divides (Gianotti, 2018). That is, it is not uncommon to paradoxically exacerbate alienation between two societies for being perceived as coercive or autocratic. The reason, as shown through the brief historical review above and further demonstrated in the analysis of COVID-19 vaccine diplomacy below, is a hegemonic logic of prescribing solutions without sufficient engagement with or respect for self-determination and (individual or collective) agencies in the recipient communities.

The problem of the hegemonic paradox, embodied in conventional science for diplomacy projects, is more tangibly felt in an age of decolonial movements, which have given rise to a renewed consciousness of defending individual rights and indigenous agencies. In fact,

scholars from both international relations and science and technology studies have pointed out that in the contemporary world, science diplomacy has become ever more intertwined with public policies, and its efficacy hinges on the ability to engage with diverse communities (see Anderson and Adams, 2008; Brummer et al, 2022; Zhang and Datta Burton 2022). Yet, despite the fact that historically, 'science for diplomacy' emphasises the role of non-state actors and despite revived interest in Track II diplomacy in recent debates (see Turekian et al, 2015; Campbell, 2015; Boyd et al, 2019; Melchor, 2020; Montgomery and Colglazier, 2022), much of the practice and discourse of science diplomacy effectively remains restricted to elite actors and to state-to-state framing. For example, in a move to expand its Track II diplomatic outreach, the United States created new science diplomacy positions in the Silicon Valley to work with Big Tech companies, 'as pseudo-nation states' (Montgomery and Colglazier, 2022). In fact at the American Association for the Advancement of Science's founding of the Centre for Science Diplomacy in 2008, the emphasis on Track II diplomacy was clear. Its mission was to serve 'as a catalyst between *societies* where official relationships might be limited and to strengthen *civil society* interactions through partnerships in science and technology' (Campbell, 2015, emphasis added). Yet in recent years, its mission statement has been revised to 'strengthen interactions and partnerships between the scientific and diplomatic communities' (AAAS, 2022). As the paper later demonstrates, this reversal from relying on official and institutional channels aggravates the effects of the hegemonic paradox in science diplomacy. Studies on COVID responses have highlighted the importance of understanding and being empathetic to collective psychologies in Global South



communities (Blume, 2022), and the value of mobilising non-state actors (e.g. civil societies, scientists and social scientists) in ‘nesting’ science diplomacy with local norms and social mentalities, so to promote public health outcomes (Bentkowska, 2021; Paniagua, 2022).

In what follows, I draw attention to the top-down approach in both China’s and the US’s approach to COVID-19 vaccine diplomacy and the critical role of ‘choice’ in vaccine uptake. It is only through a close examination of how hegemonic paradox comes into being and its impact on real-world crises that we can start to identify how to overcome it.

## Coercive Inoculation or Vaccine Diplomacy? Reflections from the COVID Pandemic

At first glance, the US and China may provide an interesting contrast as global powers. While the US is commonly perceived as an ‘old’ global power with waning yet still significant soft power, China is an emerging economy that still struggles with a chronic image problem on the world stage. While the US, similar to other Western countries, has historical baggage of racial and colonial exploitation, China, although not without controversies, has been keen to project itself as more sympathetic to Global South countries. But, as this section demonstrates, the outcome of both countries’ vaccine diplomacy is discounted by the hegemonic paradox. That is, contrary to their aim of improving their respective image and gaining public confidence globally, in many cases, their vaccine diplomacy was met with social distrust and sparked further vaccine hesitancy.

China was very adept at marketing its inactivated virus vaccine and publicly staging its international deliveries in the early phase of the pandemic (Nolte,

2022). In contrast to the First World luxury associated with Pfizer and Moderna vaccine’s ultra- cold storage requirement, China seemed to offer more practical hope for resource- poor countries. In addition, different from many Western countries hoarding billions of doses of excess vaccines, China was among the first countries that shipped their vaccines worldwide.

At the state-to-state level, China’s vaccine diplomacy was successful in leveraging policy changes, such as pressuring small states to sever diplomatic ties with Taiwan (Horton and Parks, 2021), making Brazilian authorities re-invite Chinese telecommunications giant Huawei in the country’s 5G auction (Londono and Casado, 2021) and directing the Algerian government away from criticism on Xinjiang human rights issues (Smith, 2021).

Yet at the social level, for many Asian communities, China’s top-down vaccine diplomacy seems to re-confirm rather than revise the image of a coercive state. In extreme cases, it has reversed the willingness for vaccine uptake. For example, the Philippines, a key player in the South China Sea territorial disputes, has been one of China’s strategic targets for vaccine diplomacy. At the beginning of the pandemic, one survey found 94 per cent of the Filipino hospital staff were willing to take COVID jabs (Robels, 2021). Huang Xilian, the Chinese ambassador to the Philippines, was keen to publicise ‘many memorable “Firsts” that China’s vaccine diplomacy has achieved: ‘China was the first country to donate test kits, the first country to dispatch anti-pandemic medical expert team to the Philippines, and also the first country to issue special permit for the Philippine military air crafts and vessels to land and dock in China for the transportation of medical supplies’ (Embassy of PR China, 2022). The 600,000

doses of CoronaVac donated by China enabled the Philippines to kick off its national vaccine rollout on 1 March 2021 (DOH, 2021). However, despite the appeal from the hospital's director to 'separate the vaccine from our politics', when the Philippines government dictated that hospital staff would be given only Chinese vaccines, the Philippine General Hospital's Physicians Association announced that 95 per cent of hospital staff disapproved of being vaccinated with the China made product (Robels, 2021). Even in traditionally pro-China countries, China's official push for its vaccine had some backlash. In Pakistan, for example, Chinese vaccines were quick to receive approvals from Pakistani authorities. But in the first two months of its vaccine rollout, when China's Sinopharm vaccine was effectively the only choice, uptake was low. Those who were 'offered the Chinese vaccine felt they [were] being given an inferior product' (Marlow, Mangi and Lindberg, 2020). It is worth pointing out that at the time of this comment, clinical trials were still ongoing, and it would be at least another six months before efficacy data was circulated (Lee, 2021). Thus, Pakistan's reaction further underlined that China's vaccine diplomacy did not remedy but rather reignited social skepticism.

What needs to be highlighted is the absence of choice in the two cases, which turned China's science diplomacy into a reminiscence of technological imperialism. As I argued previously (see Zhang, 2021), what China and the two recipient countries' governments miscalculated is that the minute a technical solution is perceived as being 'imposed' upon a population, it ceases to be a practice of science diplomacy but turns into hegemonic oppression.

This point can be further demonstrated through a counter-example of the persistent popularity of Chinese vaccines in Serbia. As part of its extended 'Health Silk Road'

along its Belt and Road Initiative in Central and Eastern Europe, Serbia was not only among the first to receive vaccines, but almost a year after the roll-out began, China's Sinopharm jab remained the most sought-after jab (Leigh 2021, Aspinall, 2022). The think-tank Belgrade Fund for Political Excellence observed that even 'the suspicion that people who receive the Chinese vaccine will not be able to travel freely to EU countries did not discourage Serbian citizens from getting the shot' (Vladisavljev, 2021). In fact, the perceived lack of support from the EU and other Western manufacturers played a key role in the Serbian embrace of Chinese alternatives (Milenkovic, 2021). Yet it is also very important to highlight that at the beginning of the vaccine roll-out, Serbia was also 'the only country in Europe where citizens can freely choose which shot they wish to receive'. This included Pfizer-BioNTech, Oxford-Astrazeneca, China's Sinopharm and Russia's Sputnik V (Euronews, 2021).

Some may argue that the level of individual autonomy in the case of vaccines in recipient countries is a matter of domestic politics rather than part of the donor country's foreign policy. However, effective science diplomacy has always involved and should involve working *with* partner countries to 'nest' a technical option into local society, rather than parachuting it in with instructions (Bentkowska, 2021). In other words, for the exportation of technical solutions to be a practice of science diplomacy rather than a hegemonic imposition, it cannot be limited to state-to-state deal-makings, but necessarily needs to be able to speak to social context. The discussion around the US vaccine diplomacy further reinforces this point.

In comparison to China, the US had a 'late start' in vaccine diplomacy (Kumar, 2021). When the Biden administration



turned to this issue in the second half of 2021, the US also had reputational damage to repair. Similar to other Global North countries, American hoarding of vaccine doses was seen as exacerbating global inequality. Given the rampancy of virus mutation and expanding influence of China and Russia, political observers urged that the US 'must' step up its science diplomacy to plug humanitarian crises and 'must become the Vaccine Arsenal of Democracy' (Shah, 2021; Castro, 2021).

Yet Biden's pledge to double the US' donation to more than 100 countries to achieve the goal of vaccinating 70 per cent of the global population within a year soon met with setbacks (Miller, 2021). In May 2021, political scientist Greg Weeks (2021) observed that US vaccine diplomacy in Latin America was failing and cautioned that instead of employing the old rhetoric of 'the U.S. swoops in to save the day', vaccines should be framed in 'a broader policy of engagement' (Weeks, 2021). While Biden was openly frustrated at South Africa turning down US donations, other African countries like Naibia, Zimbabwe, Mozambique, and Malawi also asked to hold off sending more shots because they could not use the supplies they had (Chutel and Fisher, 2021). Donations of soon-to-expire vaccines and flawed supply chains were part of the problem (Economist, 2021). As many studies have shown, much of vaccine skepticism in Africa was rooted in deep-seated distrust of medical authorities associated with coloniality (see Lederer, 1998. Bachynski, 2018, Noko, 2020).

Zain Rizvi, research director at Public Citizen, a US organisation working on equitable vaccine access, observed that the hegemonic paradox embedded in American vaccine diplomacy soon turned the focus to realising American vaccination targets. The challenges in African countries were 'weaponized' to shift the blame to

marginal groups (Abutaleb, 2021). In a *Washington Post* interview, he said, 'you don't say Canada doesn't deserve vaccines because there are hesitancy challenges... but somehow it's acceptable to do that on the African continent' (Rizvi in Abutaleb, 2021). A recent study by the University of Tokyo among 600 Japanese also suggested that in case of trust deficiency, having vaccine options promotes vaccine uptake (Aoki, 2022). Similarly, a July 2022 article published in the Proceedings of the National Academy of Science in the US has demonstrated that vaccine choice is an 'essential component' in getting over vaccine hesitancy in America (Hughes, 2022). In fact, following this finding, US authorities approved Novavax, a protein vaccine developed through a more 'classic' approach in comparison to mRNA-based vaccines (e.g. Pfizer/BioNTech and Moderna) and adenovirus carrier ones (e.g. Johnson & Johnson and AstraZeneca). The vaccine carried the hope that the diversification of choice would incentivise uptake (Lowe, 2022). To paraphrase Saad B. Omer, Director of the Yale Institute for Global Health's comment on vaccine diplomacy's setback in Africa, why should the US be surprised that they needed a more empathetic approach in these countries when respecting differentiated preferences and individual agency was also key to mitigate vaccine hesitancy in the US? Communities in the Global South are arguably more sensitive at being dictated to either by a Western power, another Global South power, or their own government (Zhang and Datta Burton, 2022). One should be also reminded that Cote d'Ivoire became 'a model for managing vaccine hesitancy' after additional financial support from the World Bank enabled the country 'to diversify its vaccine supply sources' along with better distribution logistics and awareness-raising (World Bank, 2021).

Debates on US vaccine diplomacy also highlighted that it may paradoxically suppress rather than incentivise cross-nation synergy. In fact, prior to the COVID-19 pandemic, Africa was a 'hegemonic priority' in US global health diplomacy for at least 20 years (Fideler, 2020). The decisions on what gets prioritised and how, not only deepened African countries' dependency on high-income countries, but also generated criticisms over the effective approach of 'securitizing' health to protect developed countries against the spread of infectious disease (Fideler, 2020). Global inequality exposed by the COVID pandemic and the Western government's inability to move beyond a Eurocentric view of global health has led global public health scholars to call for a 'decolonisation' of US health diplomacy. Instead of conventional 'top-down global health governance and programming', the US should learn to 'enter the global stage with humility to learn from and work with countries as equal partners' (Irfan, Jackson and Arora, 2021). This echoes Ghanaian historian of medicine Samuel Adu-Gyamfi's (2021) rebuff of Western framing of slow vaccine rollout as an African failure, and argued that Africa does not need Western elite's lecturing on vaccination, rather 'it needs an autonomous public health system' that can 'name their own public health goals'. In other words, while the US may be frustrated at the slow progress of its vaccine diplomacy, African institutions may also feel frustrated. Similarly, with China's aggressive campaign of promoting its own vaccines over international competitors, doctors in the Philippines and the general public in Pakistan had their own choice delimited and were subjugated to hegemonic interests.

To be sure, social resistance to vaccines is shaped by a range of factors. The

success of science diplomacy also hinges on a number of issues. The lesson is not to draw a linear connection between the two, rather, draw attention to China's and the US' shared ignorance of the importance of respect for the agency and their shared lack of interest in societal engagement in their vaccine diplomacy. This ignorance makes visible the hegemonic paradox embedded in science diplomacy and its real-world implications. That is, it may further hinder rather than facilitate vaccine uptake while also exacerbating societal divides. Some may defend parachuting instructions into a foreign population as a pragmatic approach in times of crisis with limited resources. But previous studies have shown that societal engagement is even more paramount in the effective delivery of collective response in a crisis, especially when society's compliance and cooperation are needed (Gálvez-Rodríguez *et al.*, 2019; French, 2011; Han *et al.*, 2020). Respecting agency is different from offering whatever a group may want or from total anarchy. It is about seeing each other as equals in finding the course of collective action. Science diplomacy should be the emissary rather than the closure of that decision process.

## A Paradigm Shift for Science Diplomacy?

Arguably, the COVID-19 pandemic has, more than climate change, brought science diplomacy and its real-time social consequences to the global public. With the increasing recognition that global challenges need to be addressed collectively across cultural and political divides with the aid of technical advancements, science diplomacy will only become more central to international politics. Yet modern science diplomacy remains a Western-centric discourse with an embedded hegemonic paradox. As rightly pointed out by Sinha

and Goveas (2021), the 'claim that science diplomacy is universal is debatable', for most of the existing discussions on how science diplomacy can and should be done are formulated by Western science authorities, chiefly in the US and the UK (see also Adamson and Lalli, 2021; Irfan, Jackson, and Arora, 2021). Although non-Western countries such as China are active players in this realm, it mainly follows and reinforces a linear vision of science and political authorities and superiorities. As such, as this paper argues, science diplomacy embodies a hegemonic paradox. That is to say, while it purports to bridge international socio-political divides through collaborative knowledge production and application, in practice, it perpetuates structural violence and social inequities across the globe. COVID vaccine diplomacies from China and the US, as analysed in this paper, are the latest example of this hegemonic paradox. 'A truly global/inclusive outlook on science diplomacy' remains to be developed (Sinha and Goveas, 2021; ECHOES, 2020).

The call for a decolonial approach to science diplomacy is not new. But what would a decolonised science diplomacy look like? There is and shouldn't be a conclusive answer to this. As the paper has underlined earlier, similar to all political and scientific endeavours, the appropriateness of any science diplomacy initiatives necessarily needs to be organised, carried out and assessed in its specific context. Thus, instead of attempting to compile a list of broad-brush principles, I consider a more modest approach that focuses on key areas for further action would be more useful for practitioners. More specifically, this paper carries two action points. One is to take the agency of partner countries seriously by replacing a top-down 'solution prescription' mentality with a willingness to work with partner countries into 'nesting' technical options

into their social context. To break away from 'unidirectional and Eurocentric approach' to science diplomacy, the first step would be to be able to be responsive to the societal concerns and desires of partner countries (Anderson in ECHOES, 2020, 9). Naturally, being responsive does not mean to accommodate all requests unconditionally, but it refers to the diplomatic willingness and capacity to work with relevant communities on how science diplomacy can be better delivered. Relatedly, a diversification of actors could also help future science diplomacy avoid the hegemonic paradox. Allowing expertise from non-state actors (e.g. civil societies, scientists and social scientists) to play a more prominent role in shaping the delivery of (Track II) science diplomacy would be key. This would also help science diplomacy to be better embedded in multiple aspects of societies, rather than initiatives led by national authorities.

But the discussion in this paper is far from exhaustive. Thus in lieu of a conclusion, this paper ends with an invitation, an invitation for more research and discussion on how science diplomacy can be better conceptualised for the 21st century. A paradigm shift does not necessarily mean a radical overturning of principles. Rather it requires the courage to re-examine power structures and make adjustments when it no longer reflects circumstances.

## References

- Abutaleb, Y. 2021. 'President Biden said South Africa has turned down vaccine doses. But the issue is more complicated than that', *The Washington Post*, Nov 29, Retrieved from <https://www.washingtonpost.com/health/2021/11/29/president-biden-said-south-africa-has-turned-down-vaccine-doses-issue-is-more-complicated-than-that/>.

- Adamson, M, Lalli, R. 2021. 'Global perspectives on science diplomacy: Exploring the diplomacy-knowledge nexus in contemporary histories of science'. *Centaurus*. 63: 1-16. <https://doi.org/10.1111/1600-0498.12369>.
- Adu-Gyamfi, S. 2021. 'Please stay out of Africa, Tony Blair', *The Post*. December 6, Retrieved from <https://unherd.com/the-post/please-stay-out-of-africa-tony-blair/>.
- American Association for the Advancement of Science (AAAS) 2022. 'About Us – Centre for Science Diplomacy', AAAS, Retrieved from <https://www.aaas.org/programs/center-science-diplomacy/about>.
- Anderson, W. and Adams, V. 2008. 'Pramoedya's chickens: Postcolonial studies of technoscience'. In E.J. Hackett et al. (ed.), *The Handbook of Science and Technology Studies*, p London: MIT Press. pp.181-204.
- Aoki, N. 2022. 'Vaccine Choice, Trust in Institutions, and the Intention to Get Vaccinated Against COVID-19: Evidence From an Online Experiment'. *Journal of Behavioral Public Administration*, 5, <https://doi.org/10.30636/jbpa.51.275>.
- Ascione, G. 2022. 'The Shifting Epistemological Horizon of the Pandemic', *Science, Technology & Society*, <https://doi.org/10.1177/09717218221102928>.
- Aspinall, E. 2022. 'The Rise of Vaccine Diplomacy', British Foreign Policy Group, July 23, Retrieved from <https://bfp.org.uk/2021/07/the-rise-of-vaccine-diplomacy/>.
- Bachynski, K. 2018. 'American medicine was built on the backs of slaves. And it still affects how doctors treat patients today', *Washington Post*, 4 June. <https://www.washingtonpost.com/news/made-by-history/wp/2018/06/04/american-medicine-was-built-on-the-backs-of-slaves-and-it-still-affects-how-doctors-treat-patients-today/>.
- Bentkowska, K. 2021. 'Response to governmental COVID-19 restrictions: The role of informal institutions', *Journal of Institutional Economics*, 17, 729-745.
- Blume, AW. 2022. *Colonialism and the COVID-19 Pandemic: Perspectives from Indigenous Psychology*, Berlin: Springer.
- Brimnes N. 2004. 'Variolation, vaccination and popular resistance in early colonial south India'. *Medical History*, 48, 199-228.
- Brummer, K. Harnisch, S. Oppermann, K and Panke, D. 2022. *Foreign Policy as Public Policy?: Promises and Pitfalls*, Manchester: Manchester University Press.
- Butt, M. et al. 2021. 'Why Have Immunization Efforts in Pakistan Failed to Achieve Global Standards of Vaccination Uptake and Infectious Disease Control?' *Risk Management and Healthcare Policy*, 13, 111-124.
- Campbell, CA. 2015. 'US Science Diplomacy with Arab Countries' in LS. Davis and RG. Patman (ed) *Science Diplomacy: New Day or False Dawn?* London: World Scientific Publishing.
- Castro, J. 2021. 'America Must Become the Vaccine Arsenal of Democracy' *The Diplomat*, April 30, Retrieved from <https://thediplomat.com/2021/04/america-must-become-the-vaccine-arsenal-of-democracy/>.
- Chutel, L. and Fisher, M. 2021. 'The next challenge to vaccinating Africa: Overcoming skepticism', *The New York Times*, December 1, Retrieved from <https://www.nytimes.com/2021/12/01/world/africa/coronavirus-vaccine-hesitancy-africa.html>.
- Department of Health (DOH), the Philippines. 2021. 'DOH NTF grateful to hospitals and vaccines as PH inoculates 756 on first day of COVID-19 vaccine rollout, 2 March, Retrieved from <https://doh.gov.ph/doh-press-release/DOH-NTF-GRATEFUL-TO-HOSPITALS-AND-VACCINEES-AS-PH-INOCULATES-756-ON-FIRST-DAY-OF-COVID-19-VACCINE-ROLLOUT>.



- ECHOES, European Colonial Heritage Modalities in Entangled Cities (2020) European Policy Brief: Heritage Diplomacy – A Way Forward in for Colonial Heritage in Europe. Hull: ECHOES. [https://projectechoes.eu/wp-content/uploads/ECHOES\\_Policy-Brief\\_Heritage-Diplomacy\\_January-2020.pdf](https://projectechoes.eu/wp-content/uploads/ECHOES_Policy-Brief_Heritage-Diplomacy_January-2020.pdf).
- Economist. 2021. ‘Why are African countries destroying covid-19 vaccines?’ The Economist, August 12 Retrieved from <https://www.economist.com/the-economist-explains/2021/08/12/why-are-african-countries-destroying-covid-19-vaccines>.
- Ezekiel, IP. 2022. *Beyond the rhetorics of colonialism and neocolonialism: an Afro-science diplomacy perspective*, STG Policy Briefs, 2022/18 Retrieved from <http://hdl.handle.net/1814/74768>.
- Embassy of PR China. 2021. Chinese Ambassador Huang Xilian says China is supplying nearly 10 million doses of vaccines to the Philippines in August, Embassy of the People’s Republic of China in the Republic of the Philippines, August 20 Retrieved from <https://www.fmprc.gov.cn/ce/ceph/eng/sgdt/t1900680.htm>.
- Euronews. 2021. ‘Which vaccine should I choose? Serbia gives citizens choice of four coronavirus jabs’, *Euronews*, February 24, Retrieved from <https://www.euronews.com/2021/02/24/which-vaccine-should-i-choose-serbia-gives-citizens-choice-of-four-coronavirus-jabs>.
- Fideler, D.P. (2020) ‘Africa, COVID-19, and International Law: From Hegemonic Priority to the Geopolitical Periphery?’ In Z. Yihdego et al. (eds.), *Ethiopian Yearbook of International Law 2019*, Ethiopian Yearbook of International Law 2019, pp. 31-48.
- French, P.E. (2011), “*Enhancing the legitimacy of local government pandemic influenza planning through transparency and public engagement*”, *Public Administration Review*, 71, 253-264.
- Gálvez-Rodríguez, M.d.M., Haro-de-Rosario, A., García-Tabuyo, M. and Caba-Pérez, C. (2019), “*Building online citizen engagement for enhancing emergency management in local European government: the case of the November 2015 Paris attacks*”, *Online Information Review*, 43, 219-238.
- Gianotti, F. 2018. ‘Science is universal and unifying’. World Economic Forum. 18 January. <https://www.weforum.org/agenda/2018/01/science-is-universal-and-unifying>.
- Han, E., et al. 2020. ‘Lessons learnt from easing COVID-19 restrictions: an analysis of countries and regions in Asia Pacific and Europe’, *The Lancet*, 396, 1525-1534.
- Hoffmanner, A. (2022) ‘Postscript: Vaccine Crumbs and Science and Technology Studies’. *Science, Technology and Society*’ <https://doi.org/10.1177/percent2F09717218221102502>.
- Hotez PJ (2014) “Vaccine Diplomacy”: Historical Perspectives and Future Directions. *PLoS Negl Trop Dis* 8(6): e2808.
- Hotez, PJ. 2017. ‘Russian–United States vaccine science diplomacy: Preserving the legacy’. *PLoS Neglected Tropical Disease* 11(5): e0005320.
- Horton, Chris, and Ken Parks. 2021. “Paraguay Says Chinese Vaccine Offers Tied to Dumping Taiwan.” *Bloombergquint*, March 24. Retrieved from <https://www.bloombergquint.com/global-economics/paraguay-says-offers-of-chinese-vaccine-tied-to-dumping-taiwan>.
- Hughes, Mark T; et al (2022) ‘The importance of offering vaccine choice in the fight against COVID-19’. *Proceedings of the National Academy of Science of the United States of America*, 118 (43) e2117185118.
- Irfan, A. Jackson, C. and Arora, A. 2021. ‘We Must Enhance – but Also Decolonize – America’s Global Health Diplomacy’, *Scientific American*. April 5, Retrieved from <https://www.scientificamerican.com/article/we-must-enhance-mdash-but-also-decolonize-mdash-americas-global-health-diplomacy/>.

- Killeen OJ, Davis A, Tucker JD, Mason Meier B. (2018) Chinese Global Health Diplomacy in Africa: Opportunities and Challenges. *Global Health Governance*, 12, 4-29.
- Kumar, KB. 2021. 'America Can Still Deliver on Global Vaccine Diplomacy' *The National Interest* on December 28, Retrieved from <https://nationalinterest.org/feature/america-can-still-deliver-global-vaccine-diplomacy-198595>.
- Lederer, S. 1998. *Subjected to Science: Human Experimentation in America before the Second World War*. Baltimore, MD.: Johns Hopkins University Press.
- Lee, YN. 2021. 'Six vaccinated countries have high Covid infection rates. Five of them rely on Chinese vaccines'. CNBC news, July 7, Retrieved from <https://www.cnbc.com/2021/07/08/five-vaccinated-countries-with-high-covid-rates-rely-on-china-vaccines.html>.
- Leigh, M. 2021. 'Vaccine diplomacy: soft power lessons from China and Russia?' *Bruegel Blog*, 27 April Retrieved from <https://www.bruegel.org/blog-post/vaccine-diplomacy-soft-power-lessons-china-and-russia>.
- Londoño, E. and Casado, L. 2021. 'Brazil Needs Vaccines. China Is Benefiting', *The New York Times*, March 15. Retrieved from <https://www.nytimes.com/2021/03/15/world/americas/brazil-vaccine-china.html>.
- Lowe, D. 2022. 'The Novavax Vaccine, Finally'. *Science (Blog)*. June 7, Retrieved from <https://www.science.org/content/blog-post/novavax-vaccine-finally>.
- Lowes, S. and Montero, E. 2021. 'The Legacy of Colonial Medicine in Central Africa', *American Economic Review*, 111, 1284-1314.
- Mallapaty, S. 2021. 'China's COVID vaccines have been crucial – now immunity is waning', *Nature*. 14 October Retrieved from <https://www.nature.com/articles/d41586-021-02796-w>.
- Marlow, I. Mangi, F. and Lindberg, KS. 2020. 'China is struggling to get the world to trust its vaccines', *Bloomberg*, December 29. Retrieved from <https://www.bloomberg.com/news/features/2020-12-28/china-s-struggling-to-get-the-world-to-trust-its-covid-vaccines>.
- Melchor, L. 2020. 'What Is a Science Diplomat?' *The Hague Journal of Diplomacy*, 15, 409-423.
- Mihn, S. 2021. 'Vaccines Have United Rival Nations in the Toughest of Times' *Bloomberg Opinion*, May 4. Retrieved from <https://www.bloomberg.com/opinion/articles/2021-05-04/vaccine-diplomacy-in-history-smallpox-polio-covid-19#xj4y7vzkg>.
- Milenkovic, A. 2021. 'One year on, China's Sinopharm vaccine proves most popular jab in Serbia', CGTN. December 24, Retrieved from <https://newseu.cgtn.com/news/2021-12-24/One-year-on-China-s-Sinopharm-vaccine-is-most-popular-jab-in-Serbia-16g75eYhmfe/index.html>.
- Miller, Z. 2021. 'Biden doubles US global donation of COVID-19 vaccine shots'. Associated Press Sept 22. Retrieved from <https://apnews.com/article/united-nations-general-assembly-joe-biden-pandemics-business-united-nations-e7c09c1f896d83c0ed80513082787bd3>.
- Montgomery, K. and Colglazier, EW. 2022. 'Emerging Technologies and Science Diplomacy', *Science & Diplomacy*, February 16, Retrieved from <https://www.sciencediplomacy.org/editorial/2022/emerging-technologies-and-science-diplomacy>.
- Montgomery, K. and Qin, G. 2021. 'The Global Nature of Science, Technology and Innovation: An interview with Ambassador Qin Gang, China's Ambassador to the U.S.' *Science & Diplomacy*, December 17, Retrieved from <https://www.sciencediplomacy.org/conversation/2021/global-nature-science-technology-and-innovation-interview-ambassador-qin-gang>.



- Monson, J. 2018. 'Liberating labour? Constructing anti-hegemony on the Tazara railway in Tanzania, 1965-76' in Alden, C. Large, D and Soares de Oliveira, R. (Eds) (2008) *China Returns to Africa A Superpower and a Continent Embrace*. Hurst, p 197-219.
- Noko, K. 2020. Medical colonialism in Africa is not new. *Aljazeera*, 8 April. <https://www.aljazeera.com/opinions/2020/4/8/medical-colonialism-in-africa-is-not-new>.
- Nolte, D. 2022. 'Relativizing the success of China's "vaccine diplomacy"'. German Council on Foreign Relations. Feb 1, Retrieved from <https://dgap.org/en/research/publications/relativizing-success-chinas-vaccine-diplomacy>.
- Paniagua, P. 2022. 'Elinor Ostrom and public health', *Economy and Society*, DOI: 10.1080/03085147.2022.2028973.
- Robels, R. 2021. 'Scepticism Over China's Sinovac Jab as Philippines Rolls Out Coronavirus Vaccination Programme'. *South China Morning Post*, March 1. Retrieved from <https://www.scmp.com/week-asia/politics/article/3123643/scepticism-over-chinas-sinovac-jab-philippines-rolls-out>.
- Royal Society and AAAS (American Association for the Advancement of Science). *New Frontiers in Science Diplomacy. RS Policy Document 01/10*. London: Royal Society.
- S4D4C (Using Science For/In Diplomacy for Addressing Global Challenges). 2019 *The Madrid Declaration on Science Diplomacy*, Madrid: S4D4C. Retrieved from <https://www.s4d4c.eu/wp-content/uploads/2019/04/madrid-declaration-1.4.pdf>.
- Sha, S. 2021. 'Why the U.S. Must Lead in COVID-19 Vaccine Diplomacy'. *Homeland Security Today*, August 13, Retrieved from <https://www.hstoday.us/subject-matter-areas/coronavirus/column-why-u-s-must-lead-in-covid-19-vaccine-diplomacy/>.
- Smith, A. 2021. 'Russia and China are beating the U.S. at vaccine diplomacy, experts say', *NBC News*, April 2, Retrieved from <https://www.nbcnews.com/news/world/russia-china-are-beating-u-s-vaccine-diplomacy-experts-say-n1262742>.
- Sinha, S. and Goveas, S. 2021. 'Science Technology and Innovation (STI) Diplomacy: A View from the South', *InsSciDE Science Diplomacy Ally Talk*. [www.inssci.de.eu/news-media/news-and-events/article/guest-article-global-south-perspective-on-sd-discourse](http://www.inssci.de.eu/news-media/news-and-events/article/guest-article-global-south-perspective-on-sd-discourse).
- Tung, Nc. 2022. 'US-China COVID-19 vaccine diplomacy competition in Vietnam: where vaccines go, influence may follow', *Australian Journal of International Affairs*, DOI: 10.1080/10357718.2022.2077302.
- Turekian VC et al. 2015. 'The Emergence of Science Diplomacy' in LS Davis and R.G. Patman, Robert (ed.), *Science Diplomacy: New Day or False Dawn?*. London: World Scientific Publishing. Pp. 3-24.
- Vladisavljev, S. 2021. 'Why Serbia Embraced China's COVID-19 Vaccine'. *The Diplomat*, 1 Feb Retrieved from <https://thediplomat.com/2021/02/why-serbia-embraced-chinas-covid-19-vaccine/>.
- Weeks, G. 2021. 'U.S. vaccine diplomacy in Latin America is failing'. *The Global Americans*, 27 May Retrieved from <https://theglobalamericans.org/2021/05/u-s-vaccine-diplomacy-failing/>.
- World Bank. 2021. *COVID-19 Vaccines: From rejection to Shortage, how Côte d'Ivoire Became a Model for Managing Vaccine Hesitancy*, World Bank, 7 September. Retrieved from <https://www.worldbank.org/en/news/feature/2021/09/07/covid-19-vaccines-from-rejection-to-shortage-how-c-te-d-ivoire-became-a-model-for-managing-vaccine-hesitancy>.
- Xinhua News Press. 2011. 'Jin Xiaoming: Science Diplomacy Is Already at the Forefront of China's Foreign Policy Strategisation' *The State Council of the People's Republic of China Website* 28 August. Retrieved from [http://www.gov.cn/jrzq/2011-08/28/content\\_1934792.htm](http://www.gov.cn/jrzq/2011-08/28/content_1934792.htm).

Zhang, JY. 2021. 'Will health diplomacy of the South balance global inequality?' *Georgetown Journal of International Affairs*, 22, 287-294.

Zhang, JY. and Datta Burton, S. 2022. *The Elephant and the Dragon in Contemporary Life Sciences: A Call for Decolonising Global Governance*. Manchester University Press.