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Introduction: Just Needham to Nixon? On Writing the History of “Science Diplomacy”

ABSTRACT

This introduction examines the growing interest in science diplomacy and the parallel lack of in-depth historical studies on this new concept. In particular, we first show how the recent attention toward science diplomacy has led to a proliferation of hagiographic accounts reflecting the urgency to support its growth rather than truly investigate its ancestry. We then turn to consider how our historical understanding of science diplomacy could be improved, and how this knowledge could equally be of significance to science diplomacy practitioners today.

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KEY WORDS: science diplomacy, historiography, scientific diplomacy, soft power, international relations, imperialism, decolonization

Ever since 2009, when Barack Obama was sworn in as the forty-fourth US President, the buzzword “science diplomacy” has filled the corridors of power of many world administrations. The term broadly identifies the promotion of

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The following abbreviation is used: AAAS, American Association for the Advancement of Science.

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trans-national scientific collaborations and exchanges as a way to establish or improve cooperative and cordial relations between nations.¹ And in a world divided over migration, trade, environment, religion, and more (and now in the midst of a global health crisis with the COVID-19 pandemic), government officials and reporters alike increasingly perceive science diplomacy as a promising device in international affairs. Diplomats turn to science diplomacy too, believing that the sciences play a positive role in shaping economic prosperity and social progress, nationally and globally. Scholars follow suit, curious to know more about this phenomenon and its present and future potential.

Science diplomacy's past manifestations have attracted some interest too, featuring as a key research item in the agenda of the Historical Commission on Science, Technology and Diplomacy. Established in 2017 by the Division of History of Science and Technology of the International Union of History and Philosophy of Science and Technology (IUHPST), the commission has since then sponsored novel research on this subject, and to some extent this collection displays what this promotion has achieved so far.

The papers in this issue contribute to ongoing debates on science diplomacy with two overlapping ambitions. First, they seek to explore science diplomacy's past in its own right, conscious of the fact that its promoters have so far mobilized its history mainly in an effort to advocate for it. The resulting narratives have thus provided an often simplistic, hagiographical reconstruction of a far more complex historical phenomenon. The essays in this collection offer instead a critical perspective on key moments in history when international scientific collaborations have been pivotal to shaping international affairs—though not necessarily as these advocates would claim.

Second, while covering different periods and geographical locations, the special issue sheds light on science diplomacy's role in international affairs. In particular, the contributors seek to show how the encounter between scientists and diplomats deriving from the promotion of international scientific collaborations and exchanges has shaped novel transnational power relations built around the practical applications of science as well as connected to its cultural influence. They thus reveal the need for a more persuasive narrative than the currently

1. The former Chief International Officer at the American Association for the Advancement of Science, Vaughan Turekian, has defined it as “the use and application of science cooperation to help build bridges and enhance relationships between and amongst societies, with a particular interest in working in areas where there might not be other mechanisms for engagement at an official level.” See Pierre-Bruno Ruffini, *Science and Diplomacy: A New Dimension of International Relations* (Cham, SZ: Springer, 2017), II.

prevailing view of science diplomacy as an empowering-for-all device—benefiting scientists, diplomats, and other stakeholders alike. Indeed, some even show how ancestral forms of science diplomacy played a part in colonial, post-colonial, and imperial projects, therefore aligning to hegemonic ambitions.

THE BUZZWORD AND ITS HISTORY

Science diplomacy became a buzzword only in the early twenty-first century, mainly as a promotional device elaborated in a specific milieu within the US foreign affairs community. Especially during the “aughts,” segments of the State Department and allied national scientific organizations made a conspicuous effort to claim science diplomacy as a novel and benign tool in foreign relations by promoting it, defining it, and writing about its history. Notably, this happened in the midst of a tumultuous period punctuated by the Twin Towers attack, the second Iraqi conflict, the Darfur crisis, Operation Enduring Freedom, the crushing of Georgian independentism, the war in Somalia, and the Libyan insurgency. While conflicts and crises appeared and vanished from world maps (redefining borders and relations between nations), a cohort of veteran US diplomats perceived the promotion of collaboration in science and technology as a countervailing force in war-depleted regions and other areas of the world, working well as a “soft power” device.²

Key to this move toward science diplomacy was the creation of the new State Department position of science and technology adviser during the Bill Clinton administration. In 2000, Secretary of State Madeleine Albright assigned the post to Norman P. Neureiter, a University of Rochester graduate (and former Texas Instruments scientist), who retained it for the following three years. From 2005, a number of learned societies in the USA (especially the American Association for the Advancement of Science, AAAS, but also the National Academy of Sciences and the National Research Council) lobbied for more science diplomacy in foreign affairs.³ In 2008, the AAAS Center for

2. Soft power consists of approaching international relations through persuasion rather than coercion. Political scientist Joseph Nye coined the term, which found application especially in the promotion of cultural activities across borders. Joseph Nye, *Soft Power: The Means to Success in World Politics* (New York: Public Affairs, 2004).

3. See, on this, Edward W. Lempien, “Research and Foreign Policy Experts Visit AAAS to Explore the Future of Science Diplomacy,” 2 April 2012, www.aaas.org/news/research-and-foreign-policy-experts-visit-aaas-explore-future-science-diplomacy (accessed June 2020).

Science Diplomacy was established, and from March 2012, its quarterly review *Science & Diplomacy* was published online.⁴ The following year, a meeting at the AAAS of State Department officials, including Neureiter, marked the consolidation of a decade-long project.⁵ And from 2014, the normalization of relations between the US and Cuba, anticipated by the signing of a memorandum of understanding between the AAAS and the Cuban Academy of Sciences, and epitomized by Obama's speech in Havana, further confirmed the merits of the new approach to foreign policy.⁶

Obama's successor, Donald Trump, delayed in appointing a new State Department science and technology adviser, and his anti-science and climate change stances paved the way for a contraction of government-led science diplomacy initiatives. Nevertheless, by the time he was elected, two decades of fervent advocacy from science diplomacy's boosters had contributed to more precisely delineate it. In 2009, one of Neureiter's successors, the molecular biologist Nina V. Fedoroff, defined it as "the use of scientific collaborations among nations to address the common problems facing 21st century and to build constructive international partnerships."⁷ The following year a joint Royal Society/AAAS meeting coined the three definitions of science diplomacy that have proved most durable, namely *science in diplomacy* (use of experts in diplomatic relations), *diplomacy in science* (mobilizing diplomats in the promotion of transnational scientific projects); *science for diplomacy* (using science as "soft power" or political capital in foreign affairs).⁸ Although long lasting, these definitions have also produced some dissatisfaction within scholarly and practitioner communities, and many claim science diplomacy to be today still a fluid concept in search of a successful definition.⁹

4. Vaughan P. Turekian and Norman P. Neureiter, "Science and Diplomacy: Past as Prologue," *Science and Diplomacy* 1, no. 1 (2012).

5. Lempinen, "Research and Foreign Policy Experts Visit AAAS" (ref. 3).

6. Sergio Jorge-Pastrana, Marga Gual-Soler, and Tom C. Wang, "Promoting Scientific Cooperation in Times of Diplomatic Challenges: Sustained Partnership between the Cuban Academy of Sciences and the American Association for the Advancement of Science," *MEDICC Review*, 20 (2018): 23–26.

7. Nina V. Fedoroff, "Science Diplomacy in the 21st Century," *Cell* 136 (2009): 9–11.

8. Royal Society/AAAS, *New Frontiers in Science Diplomacy. Navigating the Changing Balance of Power* (London: Royal Society, 2010); https://royalsociety.org/~/media/Royal_Society_Content/policy/publications/2010/4294969468.pdf (accessed Jul 2020).

9. A recent appraisal is in Peter D. Gluckman, Vaughan C. Turekian, Robin W. Grimes, and Teruo Kishi, "Science Diplomacy: A Pragmatic Perspective from the Inside," *Science and Diplomacy* 6 (2017). Various other works discuss these aspects: Davis Lloyd and Robert G.

Aside from promoting and better defining it, one technique US advocates used to advertise science diplomacy was to mobilize the past in its favor. Neureiter and one of his successors, Vaughan Turekian, were among the first to write a history of science diplomacy as a prologue to its present and bright future. This historical narrative thus colored science diplomacy with a hagiographic tinge, its distinctive US lineage aligned to its potential growth. Moments in the recent history of US foreign policy with a science collaboration element, such as the 1972 visit of US President Richard Nixon to China that established diplomatic relations with the communist country for the first time, thus featured as landmarks.¹⁰

This narrative echoed a slightly less nationalistic one circulating after the 2010 Royal Society/AAAS meeting. It also brought forward the historical image of learned societies as the real science diplomacy initiators, emphasizing the efforts of Fellows of the Royal Society, and other members of the “Republic of Letters,” in establishing diplomatic relations within and through science. Other prestigious Royal Society fellows had taken over in the twentieth century by strengthening relations with the US (Charles Galton Darwin) and China (Joseph Needham), and by promoting pacifism (Bertrand Russell) and disarmament (Joseph Rotblat). The definition of the North Atlantic Treaty Organization as “instrumental in the history of science diplomacy” capped the portrayal, making it a distinctively Anglo-Saxon affair.¹¹

Meanwhile some of this literature awkwardly projected this ancestry into the deep past—for instance, suggesting that the collaboration between their leaders’ healers could “mend” relations between ancient Egyptians and Hittites.¹² And while aptly recalling the 1959 Antarctic Treaty as heralding the enmeshing of international scientific collaboration and the administration of global spaces, some contributors somewhat clumsily projected it into the future as part of an “holistic process for humanity,” taking it toward expert-based decision-making at global level.¹³

Patman, eds., *Science Diplomacy: New Day or False Dawn* (Singapore: World Scientific Publishing, 2015), and Ruffini, *Science and Diplomacy* (ref. 1).

10. Turekian and Neureiter, “Science and Diplomacy: Past as Prologue”

11. Royal Society/AAAS, *New Frontiers in Science Diplomacy*, 2. On the North Atlantic Treaty Organization, see Simone Turchetti, *Greening the Alliance: A History of NATO’s Science and Environmental Initiatives* Chicago: University of Chicago Press, 2018.

12. Vaughan Turekian, “The Evolution of Science Diplomacy,” *Global Policy* 9 (2018): 57.

13. Paul Arthur Berkman, “Evolution of Science Diplomacy and Its Local-Global Applications,” *European Foreign Affairs Review* 24 (2019): 6380; P.A. Berkman, Michael A.

To date only a few practitioners have challenged accounts naively depicting science diplomacy as a benign force in international relations largely molded in powerful English-speaking countries. One such challenge came in 2016 from the former EU commissioner for Research, Science and Innovation, Carlos Moedas, who gave greater emphasis to what he considered a foundational episode in the history of science diplomacy, namely the creation of the first European Nuclear Research Laboratory (CERN) in Geneva, that consolidated European science and the project for a politically united Europe.¹⁴

But it is plain to see that to really go beyond the promotional overtones of the “gray” literature advertising science diplomacy, this notion should feature more consistently in academic work. Indeed, repeated anecdotes and hagiography seem to have evaded (or only superficially addressed) key scholarly questions including: What historical actors, events, and processes does science diplomacy really encompass? How, why, and when have the promotion of science and international scientific collaboration become a prominent feature of international affairs? In turn, what pieces of historical evidence would justify the current emphasis on science diplomacy in international relations? And what did the term actually mean before the beginning of our century?

SKETCHING THE HISTORY OF SCIENCE DIPLOMACY

Existing historical narratives anachronistically project the term “science diplomacy” into the past as if its meaning and agency stayed intact through decades and centuries. But no ancient Egyptian, Hittite, or past FRS scholar ever used it in the way we do. Indeed, a Web of Science citation data search on “science diplomacy” as a scholarly topic shows its novelty in the realm of academic research as the fewer than 500 citations available are all firmly in the twenty-first century, with virtually no recorded citation before the year 2000 (see Fig. 1).

We could assume its usage outside academia to have started earlier, but even that is highly unlikely. Google *Ngram Viewer*, which detects in-text citations and relies on a wider corpus (also containing newspapers and other miscellaneous readings), shows no valid Ngram for the term “science

Lang, David W. H. Walton, and Oran Young, *Science Diplomacy: Antarctica, Science, and the Governance of International Spaces*, (Washington, DC: Smithsonian Institution, 2011).

14. Carlos Moedas, “Science and Diplomacy in the European Union,” *Science and Diplomacy* 5, no. 1 (2016).

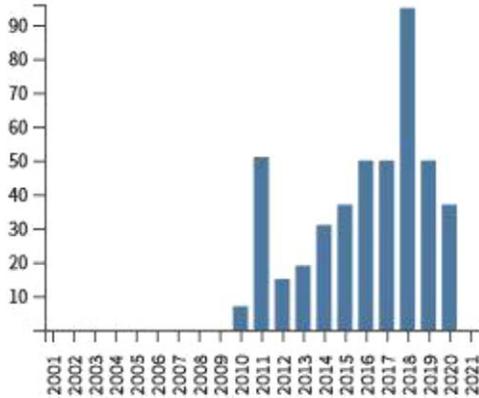


FIG. 1. Bar chart presents Web of Science data (sums of times cited by year) drawn from a basic search for “science diplomacy” in all search fields: 442 times cited in 227 publications. *Source:* Web of Science, <https://apps.webofknowledge.com> (accessed 23 Jun 2020).

diplomacy.”¹⁵ It is the notion of “scientific diplomacy” that appears instead, in the light of in-text citations, to have an historical lineage, since its usage extends back to publications in the late nineteenth century (see Fig. 2).

This raises a number of important questions, including whether scientific diplomacy is science diplomacy’s most likely ancestor, and if the two terms actually share the same meaning.

Terminological issues aside, the advocates’ recent reconstructions overlook a rich vein of historical studies that over the last twenty years has emphasized the importance of “scientific diplomacy” as a historical phenomenon, especially in shaping nineteenth-century Anglo-French relations.¹⁶ Twentieth-

15. It is important to note that the corpus utilized in Google Ngrams covers up through 2008. Later publications are still not included.

16. Elise Lipkowitz, “Corresponding in war and peace: The challenge of rebooting Anglo-French scientific relations during the Peace of Amiens,” in *Empires of Knowledge. Scientific Networks and the Early Modern World*, ed. Paula Findlen (New York, London: Routledge, 2019), 205–23. See also John Gascoigne, *Science in the Service of Empire: Joseph Banks, the British State and the Uses of Science in the Age of Revolution* (Cambridge: Cambridge University Press, 1998), esp. 153. In contrast, a *long durée* history of science diplomacy has yet to be written, although a recent suggestion that seventeenth-century scientific explorations already configured a “political and diplomatic game” involving colonial powers is enticing. See Ruffini, *Science and Diplomacy* (ref. 1), 17–21. See also Jerry Brotton, *Trading Territories: Mapping the Early Modern World* (Reaktion Books, 2019).

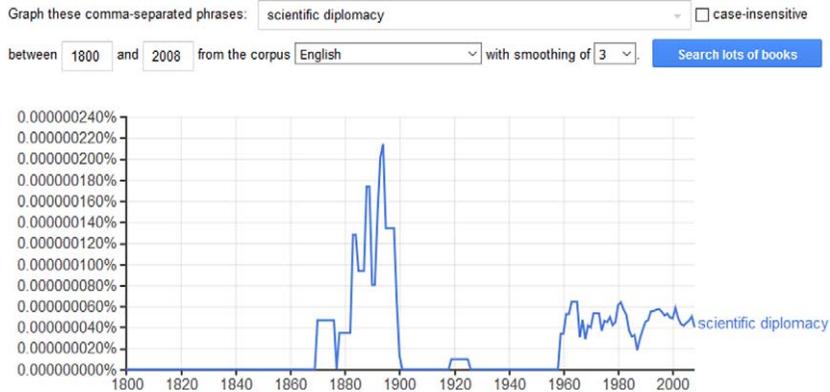


FIG. 2. Google Ngram Viewer on “scientific diplomacy” cited in works. Ca. 4,060 results in total (citations in books, magazines, newspapers between 1800 and 2000). A parallel basic search on “scientific diplomacy” in Web of Science returns only 28 fairly recent citations (in 27 publications), suggesting that the term was more popular in mainstream than scholarly literature.

century historians of science have also charted the growing significance of scientific collaborations in contemporary diplomatic affairs (even if they did not label these initiatives as science diplomacy) in light of their relevance in the transnational circulation of scientific knowledge.¹⁷

Moreover, given the key role of nuclear science and technology in shaping Cold War history, a number of scholars have recently looked at their diplomatic implications, drawing on an earlier tradition of studies on “atomic” diplomacy. The post-Hiroshima emergence of nuclear weapons as a decisive feature of international relations entailed a more prominent role in international affairs for those scientists involved in their production and in the provision of new knowledge on atomic energy.¹⁸ This scholarly work has

17. John Krige, ed., *How Knowledge Moves: Writing the Transnational History of Science and Technology* (Chicago: Chicago University Press, 2019). See also James A. Secord, “Knowledge in Transit,” *Isis* 95, no. 4 (2004), 654–72; Simone Turchetti, Néstor Herran, and Soraya Boudia, “Have we ever been ‘transnational’? Towards a history of science across and beyond borders,” *British Journal for the History of Science* 45, no. 3 (2012), 319–36.

18. John Krige and Kai-Henrik Barth, eds., “Global Power Knowledge: Science and Technology in International Affairs,” Special Issue, *Osiris* 21 (2006). On atomic diplomacy, see Gar Alperovitz, *Atomic Diplomacy: Hiroshima and Potsdam* (New York: Simon & Schuster, 1965). See also: J. Samuel Walker, “The Decision to Use the Bomb: A Historiographical Update,” *Diplomatic History* 14, no. 1 (1990): 97–114; Barton J. Bernstein, “The Atomic Bombing Reconsidered,” *Foreign Affairs* (Jan./Feb. 1995); B. Bernstein, “Roosevelt, Truman and the Atomic Bomb, 1941–1945,” *Political Science Quarterly* 90 (1975): 23–29.

produced new narratives challenging the naïve view of the diplomatic uses of science as consistently benign and peaceful. It has revealed instead how the sharing of atomic knowledge across borders through collaborations and exchanges helped especially the US (but also other countries) to build alliances in the post-WW2 years, especially by using collaborative projects as ways to inform the recipients' economic development and political stances.¹⁹ John Krige and Gabrielle Hecht, amongst others, have revealed the power imbalances and hegemonic ambitions associated with collaborations and exchanges in nuclear science and technology.²⁰

“Environmental” diplomacy, namely the emergence and development of international negotiations on the environment and environmental protection, is another area that has seen the scientists playing a prominent role in gathering data and providing expert advice. But scholars who have charted its history have never shown environmental diplomacy as consistently benign. From the early recommendations on oil spills at sea to the critical contributions to international agreements on global warming, they have displayed its ambiguity, and its combining genuine environmental aspirations with less candid goals such as, for instance, diverting attention away from Cold War tensions, evading Third World countries' demands for development, and deflating the impact of grassroots environmental movements in the political discourse.²¹

19. See, for instance: Angela Creager, “Radioisotopes as Political Instruments,” *Dynamis* 29 (2009), 219–40; Jonathan E. Helmreich, *Gathering Rare Ores: The Diplomacy of Uranium Acquisition, 1943–1954* (Princeton, NJ: Princeton University Press, 1986); M. Adamson, “The Secret Search for Uranium in Cold War Morocco,” *Physics Today* 70, no. 6 (2017): 55–60. Maria Rentetzi has even argued for a “diplomatic turn” in the history of science to explain the historical trajectory of organizations such as the International Atomic Energy Agency (IAEA). Maria Rentetzi, “Determining Nuclear Fingerprinting: Glove Boxes, Radiation Protection and the International Atomic Energy Agency,” *Endeavour* 41, no. 2 (2017): 39–50, on 40.

20. See G. Hecht, *Being Nuclear. Africans and the Global Uranium Trade* (Cambridge, MA: MIT Press, 2012).

21. See, for instance, Stephen Macekura, *Of Limits and Growth: The Rise of Global Sustainable Development in the Twentieth Century* (Cambridge: Cambridge University Press, 2015). See also: Rachel Emma Rothschild, *Poisonous Skies: Acid Rain and the Globalization of Pollution* (Chicago: University of Chicago Press, 2019); J. Brooks Flippen, “Richard Nixon, Russell Train, and the Birth of Modern American Environmental Diplomacy,” *Diplomatic History* 32, no. 4 (2008): 613–38; Kurkpatrick Dorsey, *Whales and Nations: Environmental Diplomacy on the High Seas* (Seattle: University of Washington Press, 2013); D. Olšáková, “The International Biological Program in Eastern Europe: Science Diplomacy, Comecon and the Beginnings of Ecology in Czechoslovakia,” *Environment and History* 24, no. 4 (2018): 543–67; Stephen Brain, “The Appeal of Appearing Green: Soviet-American Competition and Cold War Environmental Diplomacy,” *Cold War History* 16, no. 4 (2016): 443–62.

A number of scholars have also explored science diplomacy–related questions in global health and agriculture, revealing the hegemonic ambitions associated with specific international scientific projects.²² Moreover, even when correctly emphasizing the importance of scientific collaborations for the administration of Antarctica and other “global commons,” a similar ascendancy has come to the fore in scholarly literature. No doubt that the Antarctic Treaty system has successfully established long-term peace at the South Pole. But its implementation ratified the exclusion of a number of countries (as well as the UN) from the administration of the frozen continent, leaving it in the hands of an exclusive “club” of colonizing states.²³

Studies on scientific internationalism complicate further the simplistic perception of scientists and diplomats as always working in symbiosis to transform international relations, since it identifies alternative (even competing) spheres of diplomacy-making. Scientists eager to set up their own international organizations have often represented internationally the interest of specific groups and organizations within their own disciplines.²⁴ In so doing they tend to duplicate or even rival the work of government agencies that have their own agendas in setting international collaborative projects. Tensions have existed, for instance, between inter-governmental and non-governmental scientific organizations promoting marine and polar science projects.²⁵ Recent work also points to the strains within non-governmental, scientist-led organizations

22. On agriculture, see Nick Cullather, “Miracles of Modernization: The Green Revolution and the Apotheosis of Technology,” *Diplomatic History* 28, no. 2 (2004): 227–54. On health and medicine, see Simone P. Kropf and Joel D. Howell, “War, Medicine and Cultural Diplomacy in the Americas: Frank Wilson and Brazilian Cardiology,” *Journal of the History of Medicine and Allied Sciences* 72, no. 4 (2017): 422–47.

23. See Adrian Howkins, *Frozen Empires: an Environmental History of the Antarctic Peninsula* (New York: Oxford University Press, 2017). See also S. Turchetti, Simon Naylor, Katrina Dean, and Martin Siegert, “On Thick Ice: Scientific Internationalism and Antarctic Affairs, 1957–1980,” *History and Technology* 24 (2008): 351–76.

24. E. Crawford, T. Shinn, and S. Sörlin, “The Nationalization and Denationalization of the Sciences: An Introductory Essay,” in *Denationalizing Science. The Context of International Scientific Practice*, ed. E. Crawford, T. Shinn, and S. Sörlin (Dordrecht: Kluwer, 1993), 1–37, on 23–25; see also Robert Fox, *Science Without Frontiers: Cosmopolitanism and National Interests in the World of Learning, 1870–1940* (Corvallis: Oregon State University Press, 2016). On scientific universalism, see Geert J. Somsen, “A History of Universalism: Conceptions of the Internationality of Science from the Enlightenment to the Cold War,” *Minerva* 46 (2008): 361–79.

25. See, on this, Aant Elzinga and Catharina Landström, eds., *Internationalism and Science* (London: Taylor Graham, 1996).

devoted to non-proliferation, such as Pugwash, deriving from the presence of scientists appointed by their national governments.²⁶

Science diplomacy is also rooted in what history scholars have traditionally labeled “cultural diplomacy,” and there is a rich literature emphasizing its rise from the 1930s, especially due to the role of American foundations in shaping international exchanges in the arts and culture (the sciences included). Not exclusively animated by the compassionate philanthropism their representatives advertised, these foundations took on these international roles in part to shape political synergies and alliances through collaborations that would reinforce specific ideologies and worldviews.²⁷ Audra J. Wolfe’s recent work, claiming a convergence between the US administration’s diplomatic agenda during the Cold War and the promotion of science internationally, is the latest contribution to this strand of critical studies.²⁸ In light of her work, one might even see some science diplomacy initiatives as re-fashioning traditional Cold War cultural diplomacy operations rather than innovating international relations in the way that its advocates portray.

Therefore, in light of the scholarly literature available, we would suggest that we are a long way away from understanding exactly what constitutes science diplomacy as a novel phenomenon, its historical origins, and why we should see it as a consistently benign device in international relations. To move closer to such an understanding we suggest revisiting the existing scholarly literature that so far has covered the diplomacy of scientific exchanges and collaborations.

We would also welcome future inquiries that do not take for granted the origins of science diplomacy, describing it as the brainchild of enlightened North American and European officials and scientists, and take into account instead scientific collaborations and exchanges promoted in other continents

26. Alison Kraft and Carola Sachse, eds., *Science, (Anti-)Communism and Diplomacy* (Leiden: Brill, 2019). To some extent, there is also some reluctance in the scientific community about understanding international collaborations as diplomacy by other means. See Amaya Moromartin, “How Do You Dare Call Us Diplomats,” *Nature* 543 (2017): 289.

27. Giuliana Gemelli and Roy M. MacLeod, *American Foundations in Europe: Grant-Giving Policies, Cultural Diplomacy, and Trans-Atlantic Relations* (Dordrecht: Peter Land, 2003); on its connection to secret services, see Francis Stonor Saunders, *The Cultural Cold War: The CIA and the World of Arts and Letters* (New York: The New Press, 2013). See also Brit Shields, “Mathematics, Peace, and the Cold War: Scientific Diplomacy and Richard Courant’s Scientific Identity,” *Historical Studies in the Natural Sciences* 46, no. 5 (2016): 556–91; and Roberto Lalli, *Building the General Relativity and Gravitation Community during the Cold War* (Cham: Springer, 2017).

28. Audra J. Wolfe, *Freedom’s Laboratory: The Cold War Struggle for the Soul of Science* (Baltimore: Johns Hopkins, 2018).

and world regions, especially in the Global South. This is one reason why, during the 25th International Congress of History of Science and Technology (Rio de Janeiro, Brazil, 2017), we proposed to its General Assembly that the IUHPST Division of History of Science and Technology establish a new Historical Commission on Science, Technology and Diplomacy. The commission has since then contributed to increasing scholarly exchanges through dedicated conferences and symposia at a number of annual meetings on the history of science and on science and technology studies, with a view to considering science diplomacy as a truly global and transnational phenomenon . . . yet to be fully explored.²⁹

These activities have also made us more aware of the importance of forging interpretations capable of embracing new perspectives. For example, upon the Commission's establishment, we liaised with scholars of the Institute for International Relations of the University of São Paulo with the aim of establishing a collaborative framework in understanding key features of trans-continental science diplomacy.³⁰ These exchanges made us more alert about the dialogue between scholars, also from different disciplines and continents. Our first conference took place in Copenhagen in 2019, and saw the participation of scholars from Asia, Latin America, and Africa. We have plans for meeting more scholars in Beijing (China) in 2021, in an effort to promote an historical understanding of science diplomacy from a perspective emphasizing Asian views as well as cross-regional cases.

Meanwhile, some of us have contributed to a variety of other projects, including the H2020 InsSciDE (Inventing a shared Science Diplomacy for Europe) and the first Innovation and Science Diplomacy School (in São Paulo, Brazil).³¹ We have also sought to better understand what ties together past, present, and future aspects of science diplomacy through constructive exchanges with the promoters of other European projects advocating the re-casting of science diplomacy as a tool to address global challenges.³²

29. See the commission website: <https://diplomacy.science.blog/>. The first commission conference, "Diplomats in Science Diplomacy," took place at the Niels Bohr Institute on 19–20 July 2019. The Max Planck Institute for the History of Science has recently organized a conference series on "Science, Technology and Diplomacy during the Cold War and Beyond" (www.mpiwg-berlin.mpg.de/page/cold-war-series-2019-20).

30. Thanks to the funding from the São Paulo Research Foundation (FAPESP) in the context of the SPRINT initiative (<http://www.fapesp.br/en/10571>).

31. See www.insscide.eu/and_innscidsp.com/.

32. See, in particular, the EU project S4D4C at www.s4d4c.eu/.

WHO WINS AND WHO LOSES? DISPLAYING A NOVEL APPROACH THROUGH CASE STUDIES

Some of the articles in this collection were first presented at the symposium sponsored by the Commission for the 2018 London meeting of the European Society for the History of Science. They aim to provide a more persuasive view on the history of what we now call science diplomacy, starting with cases of scientific collaboration and exchanges that have influenced international relations. Above all, one of the most problematic tropes of the current literature is the naïve portrayal of science diplomacy as empowering-for-all, which rules out its most problematic past uses in defining or addressing power imbalances within and between states (large and small), and at local and global levels. As a whole, this special issue demonstrates the limitations of this approach and the need for scholars to be more inquisitive about past science diplomacy initiatives.

In particular, the authors reveal that the cross-boundary dialogue between scientists and diplomats defines new power structures, nationally and internationally, operating at a transnational level, and that scientific collaborations and exchanges play a pivotal role in strengthening these structures. In this way, the articles display not only the need to fill a knowledge gap on the history of science diplomacy, but also the search for a theoretical approach allowing to better frame how these power structures work.

The lack of a theoretical framework for science diplomacy within the realm of International Relations (IR) may be responsible for the current dominance of simplistic views evading the question of power structures and imbalances. Carolin Kaltofen and Michele Acuto have recently argued that since international relations is concerned with theoretical questions, especially those concerning “the problem of order and the modern states,” “extensive and theoretically explicit interaction” framing science diplomacy has yet to be featured in the field.³³ To address these shortcomings, they have

33. Carolin Kaltofen and Michael Acuto, “Science Diplomacy: Introduction to a Boundary Problem,” *Global Policy* 9, no. 3 (2018): 8–14. A more comprehensive treatment of these issues is featured in: Gabriella Paar-Jakli, *Networked Governance and Transatlantic Relations: Building Bridges through Science Diplomacy* (City: Routledge, 2014); Tim Flink and Ulrich Schreiterer, “Science Diplomacy at the intersection of S&T policies and foreign affairs: Toward a typology of national approaches,” *Science and Public Policy* 37, no. 9 (2010): 665–77; and Birte Fähnrich, “Science Diplomacy: Investigating the Perspective of Scholars on Politics–Science Collaboration in International Affairs,” *Public Understanding of Science* 26, no. 6 (2017): 688–703. There is also a flourishing literature emphasizing “non-logocentric” diplomacy practices (see, for instance, Costas M. Constantinou, “Visual Diplomacy: Reflections on Diplomatic Spectacle and

suggested embracing a theoretical approach introducing science diplomacy as a “boundary” problem. Recognizing that scientific collaborations and exchanges mark an encounter between scientists and diplomats, they have framed it as one between different cultural approaches and epistemic traditions. They consider science diplomacy an effort to overcome these differences through pragmatic interaction.³⁴

Although this approach has merits, the emphasis on the “epistemic” leads Kaltofen and Acuto to pay less attention to the equally important connection between “epistemic” and “normative” that underpins recent sociology of knowledge approaches and informs studies in the history of science. In particular, recent literature posits the uniqueness of modern science in co-producing new knowledge and social and political order.³⁵ So, the cross-boundary dialogue between scientists and diplomats defines and changes the administration of international affairs in ways that affect power relations within and among nations.

The articles in this collection pave the way to the further elaboration of this theoretical framework from a sociology of knowledge perspective by showing the co-construction of *infrastructures* shaping the transmission of knowledge across borders through collaborative schemes. The incremental transformation of traditional diplomacy practices through this co-construction entails the creation of hybrid structures (i.e., scientific-diplomatic offices within foreign affairs organizations) and figures (i.e., scientific attachés employed in consulates) to coordinate scientific collaborations and exchanges. In turn, transnational organizations with a scientific and diplomacy focus (e.g., IAEA, UN, World Health Organization, World Meteorological Organization, etc.) put the promotion of science at the center of international relations.

For instance, focusing on early twentieth-century ocean science, Sam Robinson shows the discipline’s importance to national fishery organizations

Cinematic Thinking,” *The Hague Journal of Diplomacy* 13, no. 4 [2018]: 388–409), and science diplomacy has been featured in journals such as *Diplomacy and Statecrafts* and *Diplomatic History* (e.g., Elizabeth Chalecki, “Knowledge in Sheep’s Clothing: How Science Informs American Diplomacy,” *Diplomacy and Statecraft* 19 [2008]: 1–19; Ryan A. Musto, “Cold Calculations: The United States and the Creation of Antarctica’s Atom-Free Zone,” *Diplomatic History* 42, no. 2 [2018]: 640–68).

34. Kaltofen and Acuto, “Science Diplomacy: Introduction to a Boundary Problem” (ref. 33), 10. See also Caroline Wagner, “The elusive partnership: Science and foreign policy,” *Science and Public Policy* 29, no. 6 (2002): 409–17.

35. See Sheila Jasanoff, “The Idiom of Co-Production,” in *States of Knowledge: The Co-Production of Knowledge and Social Order* (London, New York: Routledge, 2006), 1–12.

and how ministries and foreign affairs departments of various European states sought ways to better coordinate these studies internationally through the International Council for the Exploration of the Sea (ICES). A similar coordination features in Simone Turchetti's article, which focuses instead on the collaboration between Second World War allies. The case is one of (often hush-hush) diplomatic negotiations taking place in the corridors of embassies and consulates through the mobilization of scientists, embassy clerks, military men, state officials. This network materializes the fabric of routine diplomacy work defining agreements on the circulation and exchange of (applied) scientific knowledge.

Contingently, the essays in this collection raise the question of what made science diplomacy attractive to diplomats and organizations devoted to foreign affairs. This collection reveals this interest to originate in two distinct features. First, the promotion of international collaborations represented a means to share knowledge and products deemed useful to more than one country for economic, military, or other reasons (knowledge relevant to fishery industries in Robinson's case, or to win the conflict in Turchetti's study). Second, the promotion of initiatives aiming at providing new knowledge, especially on the natural world and deemed universally valid, can be a politically attractive way to indirectly administer foreign affairs. In particular, universalizing scientific claims about the present and future of humankind (also identified as "sociotechnical imaginaries"³⁶) can play an important role in their administration, thus indirectly empowering those who promote studies associated with these imaginaries. In this case science diplomacy's appeal does not derive from *pragmatic* ambitions but rather from its *cultural* influence.

Several papers in this collection focus on how transnational scientific collaborative work gained traction in international affairs because of its appeal within the context of a specific cultural and ideological milieu. David Aubin's article demonstrates how important nineteenth-century international scientific congresses were to the Belgian public officials who agreed to host them, as they sought to capitalize, politically, from the siting of these congresses in Brussels, and gain a more prominent role in the international arena by their display of "modern" values. Giulia Rispoli and Doubravka Olšáková consider instead how the superpowers' Cold War ambitions shaped international scientific

36. S. Jasanoff, "Future Imperfect: Science, Technology and the Imaginations of Modernity," in *Dreamscapes of Modernity. Sociotechnical Imaginaries and the Fabrication of Power*, S. Jasanoff and Sang-Hyun Kim (Chicago: University of Chicago Press, 2015), 1–27, on 6.

activities focusing on the earth and the global environment. In particular, they show that in the context of the confrontation between blocs, not only did ambitious scientific programs with a global reach shape international research on the biosphere, but also indirectly influenced foreign policy, publicly displaying the limitations of competing scientific approaches (and associated ideologies) proposed by the scientists of the two superpowers.

In one of the case studies discussed in this special issue, science diplomacy's pragmatic and ideological ambitions actually co-exist. As Europe plunged into the Great War, philosopher Henri Bergson hoped to convince US President Woodrow Wilson to join France and her allies by claiming that such a coalition would save universal civilization—a civilization for which, in Bergson's eyes, science in general, and international scientific collaboration more specifically, were archetypes. Geert Somsen thus convincingly reveals that Bergson's "science" (or "philosophy") diplomacy aimed to persuade the president to join the war effort rather than embrace peace.

In light of other papers in this collection, we also expect the history of science diplomacy to run far deeper in the past, and far wider geographically than what is actually the case today. Prior emphasis on a selected number of cases results in an overly narrow understanding of science diplomacy's significance in modern and contemporary history centered on few nations and actors—often in hegemonic positions. Several articles in this collection show instead a more robust historical analysis of science diplomacy to encompass the contribution of smaller states (Aubin and Robinson trace the origins of science diplomacy in Brussels, Stockholm, and Christiania [Oslo]),³⁷ as well the role of science diplomacy in the making and unmaking of empires.³⁸ Lino Camprubi's essay considers how critical diplomacy negotiations on conservation measures worked, in fact, as means to re-configure power relations between colonized and colonizing states in post-colonial regimes. The project for a World Wildlife Fund park in the Doñana wetlands is the veritable legacy of this thus-far unexplored "ecological diplomacy" exercise, in which future

37. On small states, see also the *Centaurus* special issue, "Global Perspectives on Science Diplomacy: Diplomatic history and history of science in dialogue" (in press), with Matthew Adamson and Roberto Lalli as the guest editors.

38. On science in cultural borderlands, see Fa-ti Fan, "Science in Cultural Borderlands: Methodological Reflections on the Study of Science, European Imperialism and Cultural Encounter," *East Asian Science, Technology and Society* 1, no. 2 (2008): 213–31. On colonial enterprises, see David Bernstein, *How the West Was Drawn: Mapping, Indians, and the Construction of the Trans-Mississippi West* (Lincoln: University of Nebraska Press, 2018).

(and futuristic) scenarios brought scientists and diplomats closer to their ambition to address global issues allegedly deserving international coordination and regulations. In so doing, the universal quality of conservation projects assisted officials and conservationists alike in establishing a new arena for cross-country negotiations, at times keeping vested neo-colonial interests hidden.

Through the papers in this collection, we thus posit that present science diplomacy initiatives draw on a much older and more complex phenomenon than the one discussed in the promotional literature. We also show how science diplomacy evolved over time, changing dramatically through the co-construction of infrastructures dealing with the collaborative activities shaping the transmission of knowledge across borders. Some of the papers in the issue emphasize the practical benefits deriving from this circulation, and others the ways in which diplomats were inspired by global, cosmopolitan models of governance exploiting the cultural influence of science. But a much richer and nuanced historical account of the origins and further development of science diplomacy awaits to be written. Therefore, this collection reveals the importance for historians of science to engage more with the writing of its history. We hope that the reading will inspire many who wish to follow up in this exploration.

We equally hope that our preliminary exploration will help those who wish to use science diplomacy as a device shaping future international relations. We are persuaded that science diplomacy can be a transformative device in international affairs, and especially in tackling global challenges. But we are equally wary of its simplistic understanding as a “win-win” option, since it reiterates a naïve understanding of the role of science and scientists in past international relations, and an equally problematic understanding of uneven distributions of power between countries and world regions. The historical accounts that follow teach us a great deal more about past ambitions (open and at times hidden) in the use of science diplomacy. These critical narratives may therefore help science diplomacy practitioners understand how past science diplomacy initiatives may have been decisive in framing the power relations and, at times, the imbalances that exist today—the same very imbalances that future science diplomacy exercises wish to address.