

The Ways and Means of ITER

Reciprocity and Compromise in Fusion Science Diplomacy

An InsSciDE Case Study

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This case explores the intricacies of governing the large controlled thermonuclear fusion experiment ITER currently being built in Cadarache, France. ITER is one of the world's largest technoscientific collaborations, yet its complex organization and cumbersome logistics have even its proponents admitting that things probably should have been done otherwise. This historical analysis delves into the decisions taken during the negotiation phases of the project, showing the importance of reciprocity and compromise to find solutions acceptable to the parties involved in this diplomatic and scientific "assemblage". How far can science diplomacy go before it affects technoscientific choices and practices? If the careful give-and-take of reciprocity between unequal powers is a hallmark of diplomacy, to what extent are possibly inefficient compromises needed to make a project such as ITER materialize at all?

Key words: fusion, Big Science, ITER, reciprocity, compromise

Image credit: ITER

Conclusions : Living with reciprocity and compromise

To achieve a sustainable international collaboration capable of achieving the world's first full-scale demonstration fusion reactor, the ITER project needed to accommodate several difficult tensions. A primary tension was between the overarching aims of the project itself, and the particular objectives of the national research teams and industries. Another important tension juxtaposed the will to create and share new scientific knowledge, and the construction of a working industrial machine. Meanwhile, the complex technoscientific endeavor had to draw on many different research “assemblages” including different stakeholders, research communities and rationalities.

To bring the project into being meant arranging for reciprocity in order to ensure both political and scientific participation. Committed to the principle that all parties would find equal gain in the project, despite their differing social, political and economic contexts, both state negotiators and scientific project managers strove to identify solutions which, if far from streamlined, were optimal in that they could be accepted by all parties. In this way, diplomatic and scientific decisions on ITER are entangled.

Necessary compromise shaped political decisions about siting and procurement, and continues to shape the everyday grind of backstage scientific and diplomatic work. All involved actors are affected. Organizational structure and, inevitably, practice flow from these principles of reciprocity and compromise, and the consequences of high-level decisions are dealt with on the floor, so to speak, at the different project sites. Science diplomacy, therefore, is not a formal process restricted to a designated period of pre-project negotiation. It takes place in continuous efforts by actors both front-stage and back-stage to keep the ITER show running.

With new parties South Korea (2003), China (2003), and India (2005) joining the project, ITER has become one of the largest scientific collaborations in the world, and may thus be seen as a successful compromise in view of the achievements of the project so far. The consequences of the entanglement between diplomatic and scientific decisions, however, continue to influence the ITER project today. Many organizational structures of the early period have remained, including the current in-kind system which resembles the original simultaneous task allocation procedure. Leadership issues as well as the management complexity of the geographical split between the Home Teams, ITER institutions and the ITER site itself have continued to haunt the project and affect its work. The decentralized organization, in particular, was one of the main points of discussion during the assessment in 2015; what was a factor of sustainability can also be seen as handicapping the project and risking its goals.

As pointed out by the Team ITER at InsSciDE's Warsaw Science Diplomacy School (WSDS21), judging whether ITER should be seen as a success or failure is a difficult endeavor indeed. Despite its imperfections, the ITER project is proceeding, and the relationships between the parties have so far survived very difficult geopolitical situations. The compromises made are considered by many actors as necessary to reach the aim. As G.S. Lee, Deputy Director

General of ITER (2015-2020) underlines: they had to “do it this way, deliver this way, or not do it... Either one is not very good, but the worst is not doing it”.

In the case of ITER, science and diplomacy cannot be seen as separate entities with fundamentally different sets of values. The project shows that it is important to be aware of the entanglements of diplomatic and scientific decision making, in order to understand the effects of compromises in both areas. If we see science, research and development as something that cannot be the subject of negotiation and compromise, then science diplomats risk misunderstanding the consequences of their decisions.

Enacting Soft Power:

Cartoons, Technodiplomacy and the 1890 British Ultimatum to Portugal

An InsSciDE Case Study

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The 1890 British Ultimatum to Portugal is usually presented both in Portuguese and European history as a strictly military, political and diplomatic conflict. We argue that it was also and above all an instance of (mostly hidden) techno-diplomacy: that is, behind the direct military, political and diplomatic clash were (veiled) conflicting British and Portuguese claims over railroad infrastructures spanning the African continent and securing its economic resources.

We use cartoons as primary sources to look at the events leading to the British Ultimatum from the perspective of a seldom-addressed layer of diplomatic communication: the unofficial visual representation of this diplomatic incident as appropriated by Rafael Bordalo Pinheiro, a politically committed and polyvalent Portuguese artist and journalist.

We claim that Bordalo Pinheiro's many cartoons, appearing in his satirical journal *Ponto nos iis*, acted as an instance of soft power by translating a complex web of techno-scientifically driven imperial interests into a simplified nationalistic narrative that effectively persuaded his readers that a political change was needed.

This case study highlights how often-disregarded sources such as cartoons may contribute to better understanding the scope of informal diplomacy. It draws attention to the fact that technoscience diplomacy is not always about cooperation nor does it always generate win-win situations: on the contrary, it often discloses strong tensions and asymmetries of power.

Keywords: Bordalo Pinheiro, Scramble for Africa, British Ultimatum, cartoons, soft power, technoscience diplomacy

Image credit: R. Bordalo Pinheiro, Álbum das Glórias, Sept. 1882

Conclusions: Cartoon Diplomacy as an Instance of Informal Technoscience Diplomacy

Although Bordalo Pinheiro's cartoons in *Pontos nos iis* are often taken lightly, almost as plain jokes, they hide a strongly structured political agenda. The British Ultimatum is a technoscientific driven event that uses diplomacy to solve territorial conflicts in the context of the Scramble for Africa. *Pontos nos iis* conveys to a wide audience a systematic criticism of the Portuguese monarch's inability to negotiate on the international stage and assert the nation's rights.

Bordalo Pinheiro's cartoons enact an instance of soft power as they aim at shaping the political preferences of the readers in a seductive and apparently relaxed way. In a period antedating documentaries, the journal presents an informal, comic diplomatic spectacle, often laying out a sequence of cartoons whose meaning emerges and is enhanced by a sort of cinematic staging, mimicking the careful preparation of scenarios in diplomatic negotiations.

Science and technology are often important players in political and diplomatic disputes. Although they are again and again overshadowed by restrictive political narratives, we believe that using a different lens, namely from history of science and technology and technoscientific diplomacy, allows us to take a fresh look at old historical narratives.

Looking at Bordalo Pinheiro's cartoons in *Pontos nos iis* from the renewed perspective of informal technoscience diplomacy makes it possible to add new layers to the understanding of the 1890 British Ultimatum at the European, colonial and national levels.

What are the lessons for European technoscience diplomacy?

To fully grasp the concept of technoscience diplomacy it is necessary to take into account not only its contemporary formal dimension, but also its informal "lives" in historical periods in which the concept did not exist, but its practice was, nonetheless, carried out.

The *longue durée* approach is, thus, critical to an encompassing definition of the concept, to seize both the different strategies deployed by practitioners to achieve their goals and the possible means available to reach them.

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Space Diplomacy in the Cold War Context:

How It Worked on the Soviet Side

An InsSciDE Case Study

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In the time of the Cold War, space diplomacy was an important instrument to cope with international tensions. It was both the means of overcoming conflicts, and the litmus test that demonstrated the current status of the relationship between two or more countries. Even if the Soviet space sector was more related to politics, both domestic and international, and much less to scientific interests and researchers' aspirations, the real space diplomats were scientists. They were able to establish a strong relationship with foreign partners, to maintain it using the bureaucratic apparatus of the Soviet system, and even develop it despite the pressures of the Cold War, as in the case of the Comet Halley international mission. The essential question we ask is: how did space scientists react and, contemporaneously, act as diplomats in this period of great international tension?

Key words: Soviet space program, aerospace industry, science diplomacy, space exploration, international cooperation, scientific collaboration

Image credit: www.roscosmos.ru/31867

Conclusions

Soviet scientists had been involved in space exploration since the 1940s and contributed to the development of the space program with essential research in astrophysics, geophysics, astronomy, geochemistry, biology and medicine. Thanks to the rapid development of rocketry during the Second World War and the demands of the Cold War, when scientific discoveries in the space sector became the necessary means for achieving and maintaining world leadership, space scientists assumed a fundamental role for the Soviet state. Close involvement in the national security sector and therefore the necessary subordination to the military-industrial complex had a strong impact on scientific activity. However, the "space" scientists managed to safeguard the primary character of science – universality – despite persistent resistance by the Soviet ruling class. The Iron Curtain in the space science sector turned out to be less impenetrable than official Soviet propaganda would have it.

On the international level, the ideological component of the relations between power and space scientists served mutual interests. On the one hand, scientific activity contributed to the prestige of socialism in the cutting-edge technological sector which enjoyed great visibility; on the other hand, it allowed the scientific community to expect further expectations from the political leadership for the development of science. However, the diplomatic vocation of space scientists seems to arise from the natural demands of science that escape any isolationist limitation. Science finds its pragmatic component in the objective need for collaboration in the sectors in which there is a lack of knowledge and experience (electronics and information technology) or simply funding (deep space exploration).

The importance of the goal of solving scientific problems common to all scientists, regardless of their national origin, also went beyond political and ideological conflicts and contributed to the efficiency of scientific diplomacy. The strong push towards international partnerships due to the sheer enthusiasm of people devoted to science, passionate about their projects and enthusiastic to share research results with Western colleagues in the name of human progress should not be underestimated. This said, the idea of scientific universalism rooted in Russian cosmism was widely exploited by Soviet propaganda. Scientific officials, such as Keldysh, were able to manipulate this vocation of scientists to build strong alternative diplomatic ties rather than official ones that were more subject to the international political situation.

Despite important advantages that the scientific community of space derived from the Soviet system, it also suffered a series of inconveniences imposed by the regime. Research topics were often selected based on the needs of national security managed by the VPK and on its political and propaganda impact that was normally associated with piloted flights. By participating in space exploration which had many military purposes and in the manufacturing of advanced technologies in the interests of national security, scientists were bound by obligations of secrecy even at the cost of purely scientific research projects remaining undisclosed to the international scientific community for the sole reason that they were related to space. Finally, international collaborations, joint projects and even the careers of individual scientists remained "hostage" to the international political situation. Despite these limitations, which to a certain extent also existed in the United States, scientists found ways to exist and coexist in the extremely complex and complicated Soviet

aerospace sector, skilfully navigating the maze of political, military and scientific institutions by transforming the disadvantages into precious opportunities to be exploited.

The French Academy of Sciences:

Understanding the Role of Academies in Deploying Science Diplomacy

An InsSciDE Case Study

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The strategy of diversification of a national Science Diplomacy can be supported by the Academies which structure a significant part of a country's scientific life. Academies' international activities offer a relay for the initiatives taken by state diplomacy. Beyond the network constituted by their members, national and foreign, academies have typically become, since the last quarter of the 20th century, actors pursuing their own international policy combining universal values and the will to promote the science of their own country. In order to rely on this resource, national diplomacy (or in the future a European Union diplomacy) must understand the characteristics of these institutions, which are the result of a long-term historical construction, and also envision the benefits of supporting their joint action and networking. Several features have evolved considerably since the latter part of the 20th century. Diplomats will do well to become familiar with their Academies' culture, recognize their specific objectives and take into account their strengths and weaknesses regarding international action. The example of the French Academy of Sciences cannot be generalized to all such institutions. It is nevertheless a case study that allows us to understand the main elements structuring the international action of these unique actors of science diplomacy.

Key words: French Academy of Sciences, diplomacy, national academies, networks, human rights

Image credit: Académie des sciences, Facebook 12 Nov. 2019

Conclusions

France's Academy of Sciences has long taken a very significant, albeit discreet, role in France's science diplomacy, even before this term was recognized. Given its initiatives and its longstanding role in fields combining science and new technologies, the Academy can even be seen to have set the stage for what at the beginning of the 21st century is called Innovation Diplomacy.

Since its foundation in 1666 the Academy of Sciences has exercised international influence through specific initiatives towards counterparts and direct links established by its members. No permanent structures were born until a significant number of foreign national academies or scientific institutions sought to establish closer relations or sign cooperation agreements. First a Committee (1982) then a Department of International Relations (1992) was set up, responding in the latter case to the Minister of Foreign Affairs' interest in such exchanges and future perspectives. The Committee had focused on relations between high-level representatives, organizing bilateral colloquia with consular involvement. The Department added a greater range of actions in light of the new focus and financial support from the Ministry: summer schools abroad, formal cooperation agreements.

Among the science diplomatic actions by the Academy has been aid to scientists victims of human rights violations. Broaching this required a debate on the compatibility of a "political" role for an Academy that from its very start had established soft power through "influence and attractiveness". The decision in 1978 to shoulder responsibility for addressing individual violations opened the way to coordinating the actions of many French organizations to support scientific freedoms. Meanwhile, however, deliberation was needed to balance Academy-wide positioning and public communication, as in the case when three Soviet scholars were elected as foreign associates while physicist Yuri Orlov was on trial in Moscow.

Working hand-in-hand with French diplomatic representation, and without being totally dependent on it, the Academy takes a complementary role with its international activities. By 2003 the Academy resolutely considered itself to have a "foreign policy", defined in favor of developing relations with the academies of emergent powers and elevating former colonial relationships to the status of more equal partnership.

Counterbalancing the creation of centralized academies that could overshadow or weaken national organs, the 1990s saw the Academy strongly engaged in reinforcing a diverse European network through the federation of national academies into organizations such as ALLEA (All European Academies). In this way France's Academy furthermore strengthens science diplomacy shared by European countries. This model could certainly be an inspiration for developing new voices of influence: the European Union could be

encouraged to fully take into account the asset of these networks by promoting their development, financing them and establishing partnerships with them.

Attached to Diplomacy:

French and German Explorers and the Birth of the Science Attaché Before the First World War

An InsSciDE Case Study

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The figure of the scientist attached to a diplomatic mission appeared before the First World War, not after the Second as is commonly thought. Although such attachments were few in number and confined to a narrow circle, they shed light on a major historical feature of scientific diplomacy pertinent right up to the present day: the will and ability of scientists to mobilize diplomats. In a climate of competition, scientists indeed “politicized” the stakes underlying their research voyages abroad, in order to obtain the official recognition and immunity conferred by the status of diplomatic attaché. In the decades preceding the First World War, the rivalry between France and Germany proved to be fertile ground for both field research and the production of science attachés.

Key words: Archaeology; geography; ethnology; diplomatic mission; scientific mission; commerce; nationalism

Image credit: Bibliothèque nationale de France (gallica.bnf.fr)

Conclusions: Immunizing Science

Our study has revealed that the role of “scientific attaché” emerged (under different designations according to context) much earlier than previously thought, and that its source did not lie precisely in government. In the decades preceding the First World War the appointment of a scientific attaché was requested more often by scientists than by diplomats. Such requests were made in order to confer a diplomatic character on a scientific undertaking conducted abroad. Scientists as well as their supporting scholarly and (often private) funding network expected that an attaché would gain protective immunity and official recognition by host authorities and the legitimacy to mobilize, as needed, their own state representatives *in situ*. To gain attaché status, scientists essentially offered increased state prestige through the extraction of resources to enrich the collections of national museums; they promised, too, better commercial penetration through the construction of useful knowledge. Their requests to gain immunity were thus a form of instrumentalization of diplomacy in the service of scientists, in a mutually beneficial relationship whose terms were defined by the scholars themselves.

In France, the collective request for diplomatic status initiated in 1878 by Charles Wiener went unheeded. In Germany, by contrast, Egyptologists and Orientalists won their case. While scholars on both sides leveraged the argument of political competition between nations, it was not the weight of this argument that made the difference, but the institutional context. French authorities supported the establishment of scientific institutions abroad and included scholars in the consular corps, whereas the German authorities favored, at least initially, the accreditation of a handful of extra-diplomatic scientific attachés. In the same period, Europe received short-term scientific attachés from the USA and Uruguay.

These experimental configurations were interrupted by the First World War, before being profoundly transformed during the conflict. At that time, reinforced cooperation between allies through the exchange of scientific attachés became seen as an arm likely to hasten victory over the enemy camp. Science and diplomacy thus formed a new alliance, which would be strengthened again during the Second World War. The establishment in the aftermath of the Second World War of the science attaché program as we know it still today was marked by all these experiences, including those of the late 19th century. The wide margin of maneuver given to most science attachés who entered embassies in the 1950s and 1960s left them free to balance their personal scientific work, their work for the national scientific community and work for their diplomatic masters. Across the years, science attachés’ missions were distinguished more by the specific balance found than by the substance of the work achieved.

Science as Power in the Scramble for Africa:

Europe's Utilization of Scientific Networks in the Diplomatic Colonization of Africa in the Late Nineteenth Century

An InsSciDE Case Study

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The establishment of scientific networks by José Vicente Barbosa du Bocage, a nineteenth-century Portuguese zoologist, influenced diplomatic negotiations over Portugal's colonial claims in Africa. These networks first allowed Bocage to attain important political positions, most notably the direction of the Portuguese Ministry of Foreign Affairs. Once in that capacity, Bocage's relations with multiple actors facilitated high-profile colonial negotiations that reinforced Portugal's claims during the Scramble for Africa.

Bocage's knowledge of African geography acquired via his scientific studies and at the head of the Lisbon Geographical Society gave him a thorough understanding of the stakes and opportunities of defining European spheres of influence in Africa. Moreover, his prominent positions in overlapping scientific, colonial, and diplomatic networks allowed him to place knowledgeable Portuguese personalities at the center of colonial discussions with powerful rival countries, such as France and Germany, and ultimately seize some colonial victories for Portugal.

This case shows that scientific experts and politicians subscribed in the past the use of science for political and colonial-diplomatic ends in order to gain competitive advantage over rivals. Such case points to the diversity of ways in which science and diplomacy interact, and makes clear that political cooperation among distinct states is not always its desired outcome.

Keywords: African geography; geographical societies; colonialism; scientific networks; Berlin Conference of 1884

Image credit: Biblioteca Nacional de Portugal

Conclusions: An Instrumental Role for Science in Diplomacy in the Nineteenth Century

In the 19th century, scientific experts could accrue significant political and diplomatic power thanks to the scientific networks they forged. Bocage's case shows how he ascended to positions of power because he had established scientific networks of collaborators in the Portuguese colonies, especially in Africa. At a time in which few of the Portuguese elite had direct knowledge of the African reality, and although Bocage never travelled to the continent, he was in a privileged position because he received first-hand information through his colonial collaborators.

Scientific networks could rapidly propel a political career. Bocage's political rise was meteoric. In less than a decade, and despite having previously little political experience, he joined parliament, headed two ministries, and conducted delicate diplomatic negotiations with European colonial powers that had important consequences for the organization of a new Portuguese Empire in Africa.

The utilization of scientific knowledge for political and diplomatic purposes was not perceived as problematic. While Minister of the Navy and Overseas Territories, Bocage even created in 1883 the Cartography Commission, a state organism that coordinated, compiled and analyzed scientific studies of African geography for colonial purposes. Such organism continued to assist Portuguese colonial policy, including military interventions, for several decades.

The utilization of science as a political and diplomatic instrument may have been a common occurrence in the past, especially to gain competitive advantage from rivals. The utilization of scientific knowledge in state affairs in the nineteenth century was perceived as a tool to promote efficiency and progress. Scientific studies provided evidence of the political decisions which could maximize gains, while lowering any costs and concessions. At the same time, optimistic views of science as a trustworthy means of producing answers to complex problems led to its association with notions of progress and well-being of nations, as well as its inhabitants.

Although the colonial gains for Portugal in the Berlin Conference of 1884 were far removed from its enormous ambitions, they were still remarkable for a nation whose rivals had much more political and economic power. After the Berlin Conference, Bocage continued to lead the Portuguese Ministry of Foreign Affairs for one more year, conducting negotiations with France for the demarcation of the borders of Portuguese Guinea as well as of the odd Cabinda exclave, hundreds of kilometers north of the bulk of the colony of Angola.

The use of geography and diplomacy was not exclusive to Portugal, but to all European colonial powers in Africa. The scientific and diplomatic colonization of Africa preceded the effective occupation of the continent and the exploitation of its resources. This scientific-diplomatic process had long-term consequences, since most of now independent African states retain the borders that were defined in colonial times, and these are often at the center of disputes between neighboring countries.

Dealing with the Plague in Oporto, 1899

Building a European Health Diplomacy: A Comprehensive Approach

An InsSciDE Case Study

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In July 1899, the plague raged in the Atlantic city of Oporto. From the very start, the crisis was global. The plague had been appearing for several years in various world regions. An outbreak three years earlier in Mumbai had caused international concern, suggesting that Europe could be affected next and leading to an International Sanitary Conference held in Venice in 1897. Oporto was the first European port to be hit by the plague at epidemic scale. Portugal was criticized for failing to apply preventive measures in the spirit of the Venice Convention. But this international and diplomatic outcry did not prevent scientific cooperation to combat the plague on the ground.

Oporto is an emblematic local case of the control of epidemics, unfolding during the first contemporary globalization that took off during the 1870s. Can one speak of the existence of European health diplomacy at that time? In this perspective, does the compartmentalization of approaches by "scientific" and "diplomatic" actors, interests, or communities make any sense?

The story of Oporto reveals, at different spatial and temporal scales of epidemic risk management, the various advantages of diplomatic policies and practices to strengthen European health diplomacy in a globalized world.

Key words: Plague, Europe, global health diplomacy, stakeholders, governance

Image credit: Pasteur Institute Nha Trang

Conclusions: Looking for Europe in Health Diplomacy

Starting with the first International Sanitary Conference in 1851, the increasingly global character and specific features of epidemic/health diplomacy are easy to identify: global governance of epidemic hazards (normative work targeting universal rules and practices but implying division of the world into different health regions; certain ground operations); diversity of stakeholders (state representatives, private interests, politics, physicians and scientists, commercial stakeholders); co-construction of the diplomatic agenda engaging political, economic, and scientific dimensions; systemic impacts of overlapping public health and epidemic measures (for instance, effects on both departure and arrival ports). But what was European in this epidemic/health diplomacy?

The scientific field of international hygiene was above all Eurocentric, dealing with "American yellow fever", "Asian cholera" and the "Eastern plague" and aiming to prevent the spread of imported diseases to Europe. Consequently, Europe's health regulations differed at first from those of the rest of the world. Later, the world was divided into health regions based on general health indicators not only limited to epidemic hazards. Meanwhile the European Powers (mainly Britain, France, Germany, Russia) were involved in international health cooperation and in setting international public health agreements; they had the clear consciousness of accomplishing what they named a "civilizing mission". In an age defined by the ideology of progress, this mission fed both a European identity and imperial conquest. Moreover, for France, the fight against epidemic diseases offered another golden opportunity to carry out her own "universal mission". During the French Third Republic (1871-1940), the Pasteur Institute was a welcome tool for the Quai d'Orsay to reinforce French influence on the international stage. Beyond that, observing intertwining technical and international relations should allow a better understanding of the deep structures – both technical and scientific – of the "European order".

European identity was nourished by epidemics' provision of representations of the "Other" – and vice-versa (Frank 2004). The working class districts of Oporto with their crowded alleys were assimilated to the "East", as the home of epidemics. Their atmosphere, the rumors, the denial of the plague, the attacks on medical staff, all defied the imagination according to the French consul: "You wouldn't think you were in Europe", Outrey wrote. Here, an imagined Europe followed the arrow of hygiene and progress, embodied by the new hope born of bacteriology. It was a Europe that could control the plague in the same way as Albert Calmette did, showing off to journalists upon his return to Paris the plague bacillus that he kept in a tin box on the edge of his mantelpiece.

Fifty years later, French Minister of Health Paul Ribeyre proposed the creation of a European Public Health Community, based on the model of the European Coal and Steel Community. This "White Pool" would have been supranational, supporting an integrative vision of the European Communities, for a federal Europe. The Oporto crisis in 1899, halfway between the first International Sanitary Conference of 1851 and the White Pool project in 1952, reveals the great diversity of paths taken by the diplomatic administration and foreign policy in the face of health and epidemic issues, contributing to shaping

different kinds of European Health Diplomacy: from *de facto* European to European by design.

The Role of Data in Global Vaccination Governance:

A Matter for Health Diplomacy

An InsSciDE Case Study

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Vaccination has become a global concern as intergovernmental actors such as the World Health Organization (WHO) have reinforced their efforts to foster transnational collaboration on vaccine-preventable diseases. As the ongoing COVID-19 pandemic has once more made visible, such global efforts are challenged by the contingent nature of national immunization programs. These divergences between the global and the local, we show, are sidelined and resolved diplomatically in WHO data practices. We conceptualize data practices as a form of health diplomacy and their infrastructures (such as the Joint Reporting Form, JRF) as constitutive of global health governance and diplomacy. Based on interviews with global health actors and an extensive documentary analysis, we show how datafication is both an effect of and a means for health diplomacy. We further discuss some of the political implications of datafication, such as rendering political problems into technical ones.

Key words: Vaccination, data, global health, metrics, WHO, JRF

Image credit: iStock.com/photojog

Conclusions: The Politics of Datafication

The WHO cannot prescribe how countries collect and use data, or organize their public health system. Faced with the scientific problem of lack of accuracy, and the political problem of lack of mandate, the WHO implemented a new technical tool to obtain data on vaccination coverage rates. The Joint Reporting Form (JRF) was developed and published by the WHO and UNICEF in 1998. All member states agreed to send their coverage data in this Excel sheet, which became *the* dominant infrastructure for gathering and calculating coverage rates globally.

The JRF is flexible enough to allow for local variety, yet standardized enough to create 'objective' numbers viewed as reliable and trustworthy. It helps to translate the contingencies of governing immunization in different countries into a technical form that aligns different interests toward WHO's overarching goal of reducing and managing infectious diseases. It set standards as to what data shall be collected, but not how that data shall be collected. It is this sensitivity to context and its mediation between global standards and local practices that made the JRF a successful diplomatic tool. Given the high level of member state compliance with annual reporting, the implementation of the JRF constitutes a case of successful global health diplomacy for data sharing.

Part of the success of JRF was due to its transformation of a political problem into a seemingly technical one. In this practice of health diplomacy, the persistence of local idiosyncrasies in data collection is framed not as an issue to be resolved politically (for instance through amendment of the IHR), but rather as 'technical uncertainty' hindering 'good data collection'. The foregrounding of technicalities legitimizes and enables shared health diplomacy practices. But it also reduces political interventions on national immunization systems to seemingly technical exchanges between public health experts.

Data practices are indeed an intervention on member state practices, leading to a subtle alignment with WHO norms — not only of data production, but also of immunization. Furthermore, datafication can lead to a (re)distribution of power among stakeholders. Data practices lend legitimacy to the expert technical interventions by the WHO, but also to the WHO itself as a political authority.

Data practices and their infrastructures not only result from but also enable health diplomacy: the JRF shapes ongoing exchanges, mediates between local practices and global standards, and also helps to make diplomatic relations more durable. We have shown that health diplomacy rests not only on carefully negotiated formal rules like the IHR determining how data and information should be shared, but also on routines developed between different levels of governance. Foreign policy officials hardly play a role in those everyday diplomatic practices of routine data production and sharing. It is rather epidemiologists and statisticians who act as diplomats and who, through seemingly technical exchanges of data, subtly contribute to an alignment of standards. Yet in order to be successful such data infrastructure needs to be sensitive to local contexts, just as this new generation of health diplomats needs both technical and foreign policy skills to successfully collaborate. The shift to public health experts now acting as (data) diplomats has important political implications: they are much less accountable than are foreign policy actors appointed by elected officials.

Facing the diversity of delivery systems, vaccination schedules, and cultures of care and medicine, intergovernmental and supranational health diplomacy focused on developing cross-cutting data practices that could improve knowledge, health status and immunization governance. The seemingly technical focus, however, should not mask the power dimensions of the datafication of health diplomacy, such as providing the WHO with expert and political authority.

Science Diplomacy in the Field

An Immersion in the Life of Science Counselors of the European Union

An InsSciDE Case Study

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Abstract: The posting of science attachés to diplomatic representations abroad is a tool particularly suited to the implementation of a science diplomacy strategy. The European Commission embarked on this practice by the end of the last century and today there are twelve science counselors stationed in European Union (EU) delegations worldwide. All of them were interviewed for this study, the first to date devoted to the particular profile and missions of the EU's science counselors. Our investigation revealed their essential cross-cutting missions: promoting the European framework research programs, and coordinating enhanced foreign-facing initiatives with Member States' own science attachés. This case study examines and discusses the science counselors' contribution to the implementation of European-level science diplomacy.

Key words: EEAS, science counselor, science attaché, EU delegation

Image credit: @eu_EEAS

EU Science Counselors: Essential Missions, Policy Benefits and Remaining Questions

Beyond the specificities of local contexts and of host countries' relationships with the EU, two essential cross-cutting missions of EU SCs emerged from this case study. First, a central mission is to promote and support the FPs, as flagship products and powerful tools of the international projection of the Union's research policy. Second, SCs are invested in the field with a mission of coordination: they organize the exchange of information with their counterparts representing MSs and seek to set up joint actions addressing institutions and potential partners in host countries.

From a policy perspective, we drew evidence of significant benefits that may be obtained by the EU from assigning S&T-dedicated agents to its diplomatic missions. SCs bring added value by supporting the international projection of the EU's research policy and the targeted outcomes in terms of influence. From their position in the field, SCs are able to understand the opportunity environment, feel the local atmosphere and grasp unspoken content, which is so useful for informing headquarters' decisions. We also identified an important policy challenge deriving from the EU architecture. Depending on their size and their resources, MSs undoubtedly have different interests and needs in interacting on the ground with the EU SCs. Strengthening SC coordination with MSs' science counselors could mirror, and likewise contribute to, the fine tuning desired by the EC between the S&T policy initiatives emanating respectively from the national levels and from the Union level.

Finally, we wondered about the fact that responses gathered in our survey did not identify areas where SCs would compete with or stand in opposition to MS science counselors. Observing the discrepancies between the declarations by our targets and some empirical results previously published in the literature, we suggested the existence of a social-desirability bias. The apparent discrepancy could also arise from our choice to turn first and foremost to the EU SCs in place. We supplemented the information gathered from these key witnesses by interviewing other Commission officials, present or past, but still staying within the "EU house". We asked EU's SCs to compare themselves to national personnel, but we did not ask national science counselors how they related to EU' SCs, nor how they valued the latter's contribution in the field. Additional research could obtain such a 360° view and complete the insight gained from the EU network of SCs' self-assessment of activity, impact and effectiveness.

Science Diplomacy in the Republic of Letters:

The Naturalist Abbé Correia da Serra

An InsSciDE Case Study

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“The Abbé’s diplomatic ability consists principally in affecting to be anything but a diplomat. He introduces himself as a familiar acquaintance, to talk literature and philosophy, as a domestic intimate, to gossip over a cup of tea”.

Memoirs of John Quincy Adams, in Davis 1993, 60.

The Abbé Correia da Serra (1751–1823) was a leading figure of the Portuguese Enlightenment, who spent most of his life outside Portugal due to political and religious persecutions. He was a naturalist recognized by European botanical luminaries for his innovative ideas and particularly for his mediating skills as a catalyst in the communication between different scientific communities.

Based on Correia da Serra’s life story and extensive correspondence we argue that his scientific accomplishments cannot be disentangled from his diplomatic activities, first as a member of the Portuguese Legation in London (1801), then as Ambassador of Portugal to the United States of America (1816-1820). Their conjoint analysis enables us to detect three varieties of science diplomacy in the practice of Correia da Serra: informal, formal, and imagined.

By calling attention to the historical dimension of science diplomacy, a quite novel term associated with a recent professional practice, it is possible to detect in the past many instances in which science was used as a tool for diplomacy by a variety of actors. The *longue-durée* perspective helps us understand how science diplomacy is built and how it came of age.

Key words: Teacup diplomacy, Enlightenment, science for diplomacy, soft power

Image credit: Portraitist Domenico Pellegrini (1759-1840)

Conclusions: The Abbé's Three Science Diplomacies and Their Impact on the Geopolitical Order

Through three varieties of science diplomacy – informal, formal, and imagined – Correia da Serra helped to mold a new geopolitical order, both real and imaginary. Vis-à-vis the Portuguese government as ambassador in Washington he exercised functions which may be dubbed **formal diplomacy for science**. Vis-à-vis the American philosopher presidents and the American government his scientific credit helped build a strong diplomatic role, that is, **the success of his formal science diplomacy was grounded in informal science for diplomacy**.

Correia da Serra developed his influence through field trips, education of young scientists, advice on university organization and discussions on the scientific agenda of the new country; he weighed on new geopolitical constructions through his “teacup diplomacy.” His proximity to the high spheres of American government was such that Correia da Serra acted as a double agent, not in the usual sense of a Portuguese diplomat secretly serving the United States of America but, on the contrary, as someone considered a citizen of the world by his peers, who furthermore dreamt of becoming a founding father of the new political American Hemisphere. In this last instance, Correia da Serra, together with Jefferson, were scientist diplomats enrolled in the practice of generating geopolitical and scientific imaginaries.

Correia da Serra's diplomatic activities show why the history of science diplomacy is relevant. By calling attention to the historical dimension of science diplomacy, a quite novel term associated with a recent professional practice, it is possible to detect in the past many diverse instances in which science was used as a tool for diplomacy by a variety of state and non-state actors, and as part of formal or informal networks. By calling attention to the plasticity of the concept of science diplomacy, the *longue-durée* perspective helps us understand how science diplomacy is built and how it came of age.

Beyond strict historical interest, case studies such as the one addressed here may be used as tools to address important contemporary questions such as: Are science and technology important for diplomacy? Is diplomacy important for the development of science and technology? How should we deal with hybrid spaces and practices involving scientists, engineers, and diplomats? Have science, technology, and diplomacy equivalent power in negotiations? Why is science diplomacy particularly suitable to illustrate the concept of soft power?

Blood Diplomacy:

Values and Standards in a Vital Public Health Infrastructure

An InsSciDE Case Study

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Human blood is essential for a vast range of therapeutic treatments, in the form of transfusions and the administration of medicinal blood products. The issue of blood safety is thus a preeminent public health issue, and national healthcare policy always seeks to ensure a pristine and secure blood supply. Blood safety is also the object of international and supranational collaborative efforts, interrelated with the governance of blood supply as a vital infrastructure. We examine the ethical values promoted in international cooperation around the circulation of human blood products and around setting common safety standards, and discern the interactions of an informal health diplomacy. The dynamic character of blood supply infrastructure manifests underlying tensions in the policy shaping processes, throwing light on the complex negotiations of blood diplomacy.

Key words: Health, health diplomacy, blood safety, blood supply, infrastructure, WHO

Image credit: World Health Organization

Conclusions

This case study explores the dynamic character of blood supply as infrastructure in order to contextualize international/supranational initiatives and policies. We came across tensions in the implementation of common values, such as the debate over voluntary vs. paid blood donation. We also followed the processes that led to advanced collaborations targeting the enhancement of blood safety. Discerning formal and informal processes of health diplomacy in the interactions between international public health actors, we attempted to depict a broader picture of blood safety policy making. We paid attention to the interrelation of multiple stakeholders and a variety of international actors in the processes of adopting norms and guidelines as well as developing blood safety standards. Considering these processes, we pointed to the importance of advancing international scientific cooperation through its institutionalization and its impact in advancing blood safety.

The stated objective of health diplomacy to respond to health challenges addresses the long-standing inequalities in accessing safe blood at a global level. Programs of international development assistance aiming at promoting global health include activities to increase the availability of safe blood in low- and middle-income countries. Recent critiques argue that the conditions placed on aid programs utilize standard practices from wealthy countries that do not translate to the developing world. Practices like centralizing blood banks or using only unpaid volunteer donors could create barriers that increase the cost of a unit of blood and would lead to long-term reliance on external funding. This approach would negatively affect the sustainability of already fragile national health systems, especially in low-income countries. As these processes involve power relations and diverse interests, there is need for diplomatic coordination to counteract the fragmentation of aid programs and to reconsider the local needs against the assumed catholicity of standards.