



# Taking the pulse of science diplomacy and developing practices of valuation

Tim Flink<sup>1,2,\*</sup>

<sup>1</sup>German Centre for Higher Education and Science Studies, Schützenstraße 6a, Berlin 10117, Germany and <sup>2</sup>Robert Merton Center for Science Studies, Humboldt-Universität zu Berlin, Unter den Linden 6, Berlin 10117, Germany

\*Corresponding author. E-mail: [tim.flink@hu-berlin.de](mailto:tim.flink@hu-berlin.de)

## Abstract

Science diplomacy has caught remarkable attention in public policy and academic research over the last fifteen years. However, the concept is plagued by a huge talk–action discrepancy: its public discourse has reached a problematic state of dazzling self-adulation, while it is unclear if and how the actual policies and associated organizations live up to these expectations. The article reconstructs three structural causes to explain the recent hype about science diplomacy. It further encourages actors to organize evaluations that ask whether and how actions of science diplomacy can be valuable. In this regard, a first set of fundamental principles is proposed for setting up an evaluative framework. In conclusion, the article advises science diplomacy actors from democratic states and institutions, from both academic research and public policy, to stop dreaming about soft power influence on authoritarian states and regimes but rather face new geopolitical realities.

**Key words:** science diplomacy; governance of science; critical discourse analysis; international relations; evaluations.

## 1. Introduction

With the concept of science diplomacy, a new public policy discourse has started to raise awareness among various groups of actors at the intersecting zones of science, technology, innovation (STI), higher education (HE), and foreign policy: that their actions greatly matter to each other. On this basis and tallying with a discourse on other concepts, such as grand societal challenges (Flink and Kaldewey 2018), actors called upon others to develop responses to exigent problems of cross-border reach. But science diplomacy goes beyond that calling. Actors invoke that dedicated international STI and HE collaborations should help nurture the international relations between actors even to the point of alleviating their tensions. Moreover, its proponents have promised either to accompany or to reform traditional diplomacy, encouraging official diplomatic actors to adapt to a style of communication cultivated within the science system or to integrate academic researchers as part of diplomatic missions, to win foreign societal favour by calling upon common scientific values and promoting common interests as well as to incorporate scientific expertise whenever necessary in complex scenarios. While these calls may well suggest an increase of scientific relevance to international relations, the discourse on science diplomacy equally stresses the importance of diplomatic work as an enabler, if not even a necessary condition of cross-border science collaborations.

For about twenty years, various governments of the Organisation for Economic Co-operation and Development world have engaged in the discourse on science diplomacy (Berg 2010; Flink and Schreiterer 2010; Ruffini 2020a; Schütte 2008; Yakushiji 2009).<sup>1</sup> In the USA, to provide a prominent example, the public discourse of science diplomacy meant

converting the positive reputation of science into soft power, as it was supposed to be exerted on societies abroad (Nye 2008), in particular to rehabilitate the US image that had been squandered by the Bush administration's previous approach to foreign affairs (Bollyky and Bollyky 2012; Gerges 2013). Thus, science diplomacy in the USA was mainly translated into an image campaign and into influencing activities.<sup>2</sup> For other states, science diplomacy was rather about marketing and branding their own STI and HE institutions internationally and—with it—yielding partnerships for bilateral and multilateral funding (mostly projects but also institutes and big research infrastructures) or attracting attention and foreign direct investment as well as overseas student (for empirical and comparative research, see Flink and Schreiterer 2010).

In these regards, governments started to reorganize their staff and programmes in the name of science diplomacy and by reframing existing actions according to the promises of this new discourse. Or at least policymakers and science funding managers from many states enjoyed that accustomed STI and HE activities gained more weight in lieu of the new discourse, and so it made perfect sense to some actors, especially HE-exchange as well as STI-performing and STI-funding organizations, that their marketing and branding activities received the additional label of science diplomacy (Flink and Schreiterer 2010; Epping 2020; Raev 2020).

In addition, following the Lisbon Treaty of 2009 and the European Union (EU)'s strategy towards consolidating its foreign policy (Misiroli 2010), the European Commission's Directorate General for Research and Innovation (DG Research) and the then newly founded European External Action Service (EEAS) as the EU's diplomatic corps also realized that aligning STI and foreign policy actions had much

strategic potential on offer (Flink and Rüffin 2019; Rüffin 2020): to win partners for the tackling of grand challenges and co-organizing complex and costly scientific undertakings together with the EU member states or to show coherence against other powerful states and regions in what seems to constitute a new multipolar and tensioned world order.

After the public discourse on science diplomacy was initiated, science diplomacy has arguably been stabilized by an ensemble of dedicated projects, organizations, and individual scholars as well as science managers.<sup>3</sup> These have been fostering awareness-raising and training activities via symposia, open days, workshops, scholars-in-residence programmes as well as face-to-face and online trainings. In addition, these actors succeeded in plateauing a discourse on science diplomacy via numerous case studies, publications and dedicated communication media as well as definitional work, coming rather from the realm of STI and HE policy than from foreign politics (Flink 2020; Ruffini 2020a; Rungius and Flink 2020).

In the light of these sustained activities, now running for about fifteen years by explicit reference to the concept, science diplomacy has made it astonishingly far. However, as will be argued in this article, the reformative powers of the concept are likely to exhaust if actors remain on their current course. First, the inflationary use of science diplomacy will kick it into the long grass, i.e. the more it gets applied, the more it will dissolve into an anything-goes formula, mainly serving political window-dressing activities. Second, despite its stupendous campaigning and marketing of feel-good topics by charismatic and enthusiastic actors, science diplomacy is missing essential issues of STI and foreign affairs. In this regard, the public discourse with its campaigning for science diplomacy is decoupling from the actual actions of science diplomacy carried out by governmental actors, the latter of whom have to deal with more concrete geopolitical issues that hardly need specific marketing.

Following this argumentation, the article will elaborate that actors with governmental and management responsibilities are advised to having their concrete science diplomacy strategies and programmes evaluated. At the same time, those actors expediting the discourse on science diplomacy are advised to (re)turn to more pressing issues, in particular how actors should position themselves to patterns of international scientific collaborative and competitive behaviour vis-à-vis authoritarian states and regimes that violate human rights, democratic values and international norms of scientific interactions.

## 2. Science diplomacy—a victim of its own success?

Many scholars and policy practitioners that are working with the concept of science diplomacy agree to have witnessed a story of success in recent years, as many individual academic researchers, students, managers and policymakers as well as their various organizations could be reached via numerous activities. Therefore, these actors responded that they would have become aware as to why STI and international relations would increasingly matter to each other. At the same time, science diplomacy tells the narrative of science offering joint learning to defective politics bounded in *national* egoisms, while science diplomacy as its tool and driving forces should be popularized (Rungius and Flink 2020). To understand the

development of such growing perspective, the institutionalization of the discourse on science diplomacy must be taken into account in the light of three structural properties: how (1) globalization dynamics have specifically shaped the thinking in foreign, STI and HE policy, while (2) the logics of political agenda-setting have on their own terms unfolded effects on the discourse coalitions that (3) enjoyed vindication by actors using their scientific reputation and definitional as well as case-study work to verify that science diplomacy deserves to be supported.

### 2.1 Structural effects of globalization on STI and IR policies

Science diplomacy can be understood as a merger of a discursive development that in the late 1990s began moulding aspects of foreign, STI and HE policy into one conceptual fabric, which had been separated before. Until then, corresponding theories and empirical research on and concrete practices of foreign policy had been predominated by state-centrism, defining national security and socio-economic stability as the two priorities in settings that depended on structures of international collaboration, competition and conflict (Adler-Nissen 2015; Der Derian 1987; Sharp 2009). Accordingly, actors were distinguishable along specific functions within the boundaries of and functions for their states (and only sometimes did they go beyond these boundaries).

In parallel, until the late 1980s, the predominant STI policy discourse expressed and reaffirmed a rather state-centrist and market protectionist perspective. In scholarly communities of STI research, this thinking was best conceptualized by the concepts of *National Innovation Systems* (Freeman 1995; Nelson 1993), by the *linear model of innovation* (Balconi et al. 2010; compare Godin 2006) and particularly by the *social contract for science* (next to many other writings, see Guston and Keniston 1994). Often undergirded by the idea of societal functional differentiation, the science system was modelled and expected to produce basic and applied scientific knowledge or to educate students, while its main actors enjoy privileges of funding, societal reputation and non-intervention from the state, guaranteed by a repertoire of distributive and redistributive policies rather than regulative ones (Lowi 1972).

But the certainties of state-centrism and linear thinking as regards innovation processes fell increasingly apart for various reasons: the oil crises in the 1970s and stagflation in Western states, decreasing welfare state revenues, political crises of European integration, the end of colonial/imperial patronage and—with it—a balkanization of states and regions, a surprisingly swift erosion of the Eastern Bloc, and the maximum credible accident of Chernobyl, to name some causes. Thus, while the world society in the late 1980s had already gone ahead with offering and facing plenty of unpredictabilities (Skocpol et al. 1999), in the 1990s, these forces of change became even more apparent, hurling societies into an awareness of acceleration and incertitude (Beck 1992; Rosa 2013: 118, 132). Moreover, these developments were accompanied by the massive appearance of new actors on the level of policymaking, as novel social coordination mechanisms were introduced to govern changing societies, such as by new corporatist and network arrangements of actors, market-type competitions and hybrid variations of old steering and new

coordination within, among and beyond nation states (see [Kooiman 2003](#)).

To these developments, the twenty-first century has added new information and communication technologies that seem to reaffirm a general societal consciousness that living in a global village also increases the likelihood of being affected by whatever happens even in the world's most remote places ([Robinson 2009](#)). These turbulent times (and attempts to answer them), challenging social taken-for-granted assumptions and certainties ([Bauman 2013](#); [Beck et al. 1994](#)), also found expression in a wellspring of new concepts that have described an increasing diversification of actors and blurring of actors' categories. Transferred to STI and foreign policy, governmental actions do not get clearly distinguished anymore from non-governmental responsibilities, while scientific expertise has spawned and can be sought after almost at discretion. At the same time, actors of both spheres have started to promote the idea that their core elements, i.e. STI and international relations, matter to each other and to other fields due to the cross-cutting nature of internationalization and science ([Drori et al. 2003](#)). While new concepts like science diplomacy or grand challenges express such awareness of cross-cuttingness, they also invoke the immediate overcoming of functional systemic and national boundaries, if pressing issues were to be successfully solved. In other words, these concepts argue that in the light of exigent global circumstances, it is almost irresponsible to rest comfortably among members of one's own peer group, such as academic researchers, managers or policymakers ([Flink 2020](#); [Flink and Kaldewey 2018](#); [Irwin et al. 2021](#)).

## 2.2 The agenda-setting powers of science diplomacy

The discursive success of science diplomacy can be attributed to the fact that the concept has become an integral part of pivotal agenda setting by various governments and international organizations ([Fedoroff 2009](#); [Flink and Ruffin 2019](#); [Ruffini 2020a](#)). In many cases, the concept served as a means of legitimizing existing as well as new international STI and HE programmes. Particularly, the European Commission has promoted the concept via research and development activities, as is being showcased by the Horizon 2020 consortia EL-CSID, S4D4C and InSciDE that have been running in overlapping sequences from 2016 to 2022 as well as by their newly founded European Alliance on Science Diplomacy.

While agenda setting is generally known to be a crucial phase in policymaking ([Baumgartner et al. 2006](#); [Kingdon 1995](#))—because issues must make it to the point of winning decision-makers' attention—the use of language in such phases often entails discursive spill-over effects.<sup>4</sup> In the case of science diplomacy, agenda setting by US and European actors triggered a much broader discourse than expected: learned societies and academies, research and mobility funding agencies, universities, public research institutes as well as individual academic researchers (especially formerly active academics that now engage in science policy/management) keep highlighting and campaigning for the relevance of science diplomacy by discussing its many cases of alleged success on numerous events reaching from small national and multilateral workshops to huge international conferences.<sup>5</sup> Moreover, the three afore-mentioned EU-funded projects offered massive

training in various formats, while others were designed as interactive workshops on issues of international STI.

This massive outreach to the STI management and policy community allows for questioning the actual impact of this discourse on policies. Whereas it is astonishing how easily STI concepts travel across organizations ([Flink and Peter 2018](#); [Irwin et al. 2021](#)), hitherto science diplomacy has not stirred significantly more actions in the field of international STI policymaking and administration. Almost all interviewed science attachés and counsellors on both national and EU levels, thus staff that are mainly responsible for the actual science diplomacy activities ([Flink and Ruffin 2019](#); [Flink and Schreiterer 2010](#)), do not even associate with the rather affirmative calls of the public discourse ([Degelsegger-Marquez et al. 2019](#); [Ruffini 2020b](#))—some do not even think of themselves as science diplomats. Rather, they point to their *traditional* role as matchmakers for preparing bilateral and multilateral exchange and funding in STI, which primarily serves national interests in innovation and HE: prosperity and security. Only few staff admit that the recent public discourse has been welcomed but only primarily as a means of networking and for governmental window-dressing purposes vis-à-vis other organizations. Thus, it remains unclear whether recent agenda setting by the community of self-proclaimed science diplomats can win over governmental and EU decision-makers as well as other public servants in the fields of STI, HE and foreign policy, to keep the flow of discourse and deliver on its promise of changing modes of international science and diplomacy.

## 2.3 Academic reification of public discourse on science diplomacy

The first hype of the science diplomacy discourse was accompanied by attempts of policy entrepreneurs to define the concept and, therewith, set the playing field of its public discourse ([Flink 2020](#); [Penca 2018](#); [Rungius and Flink 2020](#)). In succession of a gathering of policymakers and consultants from foreign and STI policy, the [Royal Society \(2010\)](#) concluded that science diplomacy should be best subdivided into three dimensions that ultimately call for integrating three means–ends relationships between science and politics: (1) science in diplomacy translates into expertise and science-based advice to issues of international affairs and thus relevant for diplomacy; (2) diplomacy for science essentially means international political activities that help actors of science and science policy operate across borders and (3) science for diplomacy circumscribes soft power, track-2 and civil society activities carried out by scientific individuals and organizations, for example during tensioned political relations, for branding reason and for winning the favour of others abroad by use of the positive and apolitical image of science. Originating from and spreading in the Anglo-American context first, this report is believed to have unfolded a major impact on the public discourse about science diplomacy ([Ruffini 2020a](#)).

A second typology that gets used in researchers' and practitioners' contexts on science diplomacy was borne by the first comparative empirical research on states' approaches in science diplomacy ([Flink and Schreiterer 2010](#)). Borne by mixed methods, i.e. document research, interviews and on-site observations, this research found that governmental and other publically funded administrative actors (i.e. research funding and performing entities) at the intersection of foreign and international STI policymaking are mainly following three

strategic approaches: to gain *access* to other resources abroad (knowledge, finances and talent), to engage in *promotion* activities (i.e. branding one's own performance and institutions of STI and HE) and to exert *influence* on other actors by use of STI and HE. These actual policy activities do not fully correspond with all three aspirational dimensions laid out by the [Royal Society \(2010\)](#). In fact, the mainstream of governmental actors is using science diplomacy to advance its national innovation capacities, while competing with other states. In this regard, governmental actors promote their activities to hedge foreign direct investment or to encourage partners abroad to invest in joint STI activities. Countries such as Great Britain also try to attract overseas students so that universities can make a profit from their fees or to compensate for lack of domestic talent. In addition, actors often employ science diplomacy measures to influence other governments and societies abroad (*ibid.*; [Flink and Rüffin 2019](#); [Sabzalieva et al. 2021](#); [Szkarlát 2020](#)).

These definitions and heuristics of science diplomacy might have helped actors navigate through a wide range of initiatives or to connect with other actors and reframe as well as showcase their own activities as part of a larger science diplomacy movement ([Aukes et al. 2019](#)). Hence, acts of defining science diplomacy reified the concept as part of the intersecting discourse of STI and foreign policy, while widening its frame almost to the point that it has become an anything-goes formula integrating almost everything that is related to international STI and HE. In tacit accordance with these and other definitional attempts (see also [Gluckman et al. 2017](#)), numerous showcases—often these are written in the style of scientific case studies—have repeatedly highlighted the importance of science diplomacy: for the sake of evidence-based foreign affairs, for promoting international STI and HE as well as for advancing an *ersatz diplomacy* by academic channels across regional and especially national borders (see [Davis and Patnam 2015](#); [Giovani et al. 2020](#); [Polejack 2021](#); [Tanczer et al. 2018](#); [Young et al. 2020](#)). Most authors frame their individual cases as success stories that ease tensions and overcome ideological boundaries. They avail themselves of scientific communication means and media and a scientific style of writing ([Billig 2008](#); [Ogbor 2000](#)). In this regard, an image of august scientificness gets mythified and reified to underline the wholeheartedness of actors' ventures in science diplomacy.

### 3. Coming to terms: towards evaluating science diplomacy

Pointing to exigent conditions and calling for change belongs to the standard 'framing repertoire' of discourse coalitions ([Hajer 1993](#)), in particular in phases of agenda setting that might be followed by proposals for new policies or an institutional reconfiguration. In these phases, the accompanying of academic writing, such as via commentaries<sup>6</sup> and other media outlets ([Weingart 1998](#)), often provides temporary stabilization of public attention to such coalitions, so that academia inevitably becomes part of a discourse coalition. But whether changes on actors and their actions within and across their very functional systems actually occur in the light of a new agenda-setting discourse can only be answered empirically ([Bauer et al. 2012](#)). In political systems, indications of change

are often provided when field-specific policies alter financially or programmatically and certainly when new policies are established or existing ones are terminated. These indications of change are not only interesting for political science and adjacent research fields, but they are most relevant for policymakers themselves: because decisions on how to take further actions must be embosomed in a veil of rationality ([Drori et al. 2003](#); [Meyer and Rowan 1977](#)), granted that 'rationality' is a social construct in itself that is granted by actors in their institutional fields who dispense legitimacy to each other ([Phillips et al. 2000](#)).

Crafting international STI policies is challenging, at least due to four structural properties. First, scientific outputs are borne by serendipity. In this regard, STI funding and regulations become no more than bets into an often non-projectable future ([Gillies 2015](#); [Sarewitz and Pielke 2007](#)), while policymakers are expected to promise certainties and societal improvement. Second, due to the independence and unruliness of actors from the science system that self-regulates its professional standards, normative principles of scientific valuation and communication can only hardly be set by actors from the political system ([Braun 1998](#); [van der Meulen 1998](#)). Thus, public science can hardly be steered by external actors and logics. Third and specifically important for science diplomacy, the structural properties of international relations provide even less certainties for actors to plan policies, despite facilitating institutions of diplomacy and regardless of an almost uninhibited cross-border communication (see [Rathbun 2007](#)), particularly between members of academic research ([Schott 1991](#)). Fourth, while cooperative and non-cooperative (e.g. competitive) patterns of behaviour can be observed among actors in science and in other systems, these patterns often coexist in complementary or conflicting ways (in this context, see [Schunz et al. 2018](#)). For example, scientific actions and aspirations, aiming to tackle a common problem of international if not global dimensions, can be undermined by national governmental self-interests, in which STI is employed as a source of competitive advantage vis-à-vis other national rivals ([Archibugi and Filippetti 2015](#)). Just the other way round, scientific research can be highly competitive even to pathological levels, although academic researchers and their institutions were funded by policies that aim to foster cross-border integration and collaboration.

To reduce these uncertainties, actors often take to evaluations and assess their own as well as other actors' positions and policies in the light of previous and current performance or as regards future scenarios ([Sanderson 2002](#)). In STI policy-making, evaluations are either employed to distribute new or to redistribute existing resources ([Whitley 2003](#); [Biester and Flink 2015](#)), to realign programmes and rearrange staff, or to encourage intra-organizational learning ([Mytelka and Smith 2002](#)).

Since the discourse on science diplomacy was hardly backed by empirical evidence about the actual functioning and logics of its actions and organizations—as was also lamented by policy actors in various expert interviews—there is a growing need for evaluations that can support further decisions. Thus and beyond the common catch-cry that there are 'no more international affairs without S&T, and no S&T without internationality' ([Flink and Rüffin 2019](#): 104), a set of four evaluation principles will be outlined, followed by a

concluding outlook of further topics that science diplomacy actions may be well applied to.

### 3.1 Proper evaluations based on organized scepticism

Whereas the public discourse on science diplomacy has delivered ample cases that are supposed to verify and showcase its own marvels, policy actors will learn more from having science diplomacy evaluated in non-affirmative, impartial, distanced and organized sceptical ways (Merton 1973). Similar to surveying the impact of marketing<sup>7</sup> initiatives, these evaluations can ask about the potential effects that the public discourse on science diplomacy has on its actors and policies: ministries or research funding agencies that publically position themselves to science diplomacy might want to know what reactions their activities evoke, no matter if these reverberate from external actors or from their own staff. Alternatively, such evaluations can assess the functioning of actors and policies that concretely perform acts of science diplomacy without necessarily meaning the afore-mentioned marketing activities.

However, assessing science diplomacy actions is complex, not least because it must be essentially designed comparatively in order to better target at conclusive points of interest: assessing effectiveness and efficiency with regard to resource investments that are dedicated to strategic goals in science diplomacy (Flink and Schreiterer 2010; Gluckman et al. 2017; the Royal Society 2010) can only work if time sequences, *specific* targets and other units are used as comparative references: what a sufficient amount of staff actually means can only be answered relative to past development, to specific goals or to similar others that are operating in the same field. For example, are other actors, no matter if regarded as competitors, collaborators or simply those alongside deploying more and differently qualified and equipped staff for similar tasks and for pursuing similar goals? Do comparable actors actually follow similar goals or different ones? Has an actual increase in staff or international funding led to the fulfilment of strategic goals? Are actions anticipative and innovative or do they mainly follow beaten tracks?

Whereas these types of questions, i.e. concerning resource investments and instruments in the light of strategic goals and vis-à-vis comparable reference points, might reverberate the standard repertoire of summative or formative evaluations, their actual realization requires sophisticated evaluative performance. Institutional arrangements and scales of investments can be entirely different, and thus, they are hard to compare. For example, the political coordination of scientific organizations can be hard to compare in a country specifically for the sake of assessing the coherence of national science diplomacy strategies. In some states, the steering of scientific organizations, no matter if performing or funding actors are concerned, is allowed, while it would mean an affront to the constitutionally guaranteed independence of science in other states. Stating that one science diplomacy initiative or approach is well or poorly coordinated compared to others would require deep knowledge and qualitative assessments about many national institutional STI policy arrangements at once.

Similar challenges of comparison would need to be tackled when assessing science advice mechanisms in foreign policy. Whether these should take the form of personal chief science

advisors or of organizational bodies, such as dedicated agencies, and how these advice mechanisms should be actually operating is hard to assess comparatively, as entire systemic settings would need to be compared too.

Nonetheless, for policymaking in the nexus of international STI and foreign affairs, it is worth having these and similar questions evaluated.

### 3.2 Questions of reciprocity and fair distribution

Diplomacy is regarded a tool that helps mediate actors' interests across borders (Jönsson and Hall 2005). Actors keep promising that science diplomacy nurtures cross-border collaborations in specific, because it would establish a nexus between an overarching system of values that is believed to be inherent to the moral economies of science—disinterestedness and universalism are usually invoked as its prime values—and the quasi-cosmopolitan ideal of actors paying mutual respect to each other's positions regardless of different provenance, beliefs and interests (deconstructed by Rungius and Flink 2020). Apart from the fact that such affirmations present a motley collection of incommensurable actors' categories, i.e. academic researchers, diplomats, managers and policymakers, evaluating science diplomacy cannot presuppose that these systems actually provide for specific norms that get internalized by actors to structure their behaviour. Rather, science diplomacy actions must be assessed empirically as regards the question if they are held fair by all involved participants.

Yet, while fairness is one of the most complex issues in both practice and justice theory (see, e.g., Rescher 2002), at least a minimum, i.e. an economic level of fairness can be applied: that no involved sovereign actor should experience disadvantages concretely resulting from an activity that can be associated with science diplomacy. If such a principle is applied, the second question is, if at least one involved party should profit more from a science diplomacy activity than the other. In collaborative encounters that run more than once and allow tit-for-tat games, this principle can be regarded fair by the involved parties. In competitive settings, however, it can mean relative advantages for one vis-à-vis the other and might be regarded as unfair. On a third level, all involved parties would benefit from a science diplomacy activity, no matter if collaborative or competitive settings are concerned (see also Rabin 1993). Subjects of these considerations can be all sorts of actors (policy, science and other parts of society) from at least two states (or international organizations). In addition, the likely consequences of actions—positive and negative ones—can be estimated as immediate output (e.g. reputation gains, establishment of multilateral funding programmes or concrete scientific evidence/technology applied to tackling international challenges) and further outcome/impact (future gains from cross-border funding programmes, implications of scientifically informed decisions, etc.). However, the most important aspect is that actions would never thrust any involved actor into an unfavourable position, in particular not when interactions are founded on an asymmetrical basis of resources, e.g. in collaborative settings between actors from the Global North and the Global South. Here, asymmetry needs to be differentiated: On the structural level of national STI systems, it relates to the fact that research performing actors and beneficiaries of HE do not possess the same resources than others. Especially in competitive settings, some countries, i.e. their governments and their STI actors are

in a less favourable position to attract and seize international attention than others, to ameliorate their STI capacities via foreign investment and international collaborations and ultimately to use STI in foreign affairs. But how far do we get in comparing states as regards questions of fair distribution via science diplomacy activities, if organizations and individuals are not even taken into account? Looking at the international STI relations of a country from the Global South does not mean that its very researchers or universities are necessarily in an underprivileged position (Boshoff 2009; Parker and Kingori 2016). Again, evaluations and comparative empirical research are much needed in the field of science diplomacy, the latter of which is almost inexistent.<sup>8</sup>

### 3.3 Between collaboration and competition

Amidst the public promises that science diplomacy should foster collaboration and offer concerted solutions to grand challenges, evaluators of its actions cannot ignore the competitive (and sometimes even conflicting) sides of international STI policy, while only some have (Flink and Ruffin 2019; Flink and Schreiterer 2010; Watermeyer and Olssen 2016). Nowadays, it is almost politically incorrect to acknowledge the competitive side of national innovation systems and international governance systems such as the EU's research policy, which still primarily aims to boost its companies' industrial competitiveness (Flink 2016; Mitzner 2020).

With regard to evaluating science diplomacy, actors should clarify to themselves whether they want to assess (their own and others') actions in order to gain competitive advantages, foster collaborations, yield both at the same, or if one can serve as a means to the other's end. It is essential for actors to acknowledge that competition and collaboration often structure policy and scientific actions simultaneously (e.g. aiming at collaborations with partners abroad while being in competitive rivalry with others who want the same). In addition, while policymakers can opt for competitive strategies of action, funded academics might not buy into such strategic goal but reinterpret it as a way of collaborating with others. Even the contrary is possible: policy actions can be designed to strengthen international scientific collaborations, while they get reinterpreted by academics to serve their competitive and reputational ends (Anderson et al. 2007; Flink and Peter 2018). In this respect, assessing science diplomacy actions should not encourage actors to cherish false illusions, e.g. believing in altruistic solutionist collaborations, whilst wishing away competition which is structuring international relations just as well.

### 3.4 Towards a more careful use of STI concepts

As a concept, science diplomacy finds itself embedded next to many other programmatic descriptions in the vector of STI, HE and foreign policies. Actors assessing current or future policy actions in this zone are well advised to consider if it is worthwhile to label and frame actions as science diplomacy. Because introducing concepts often triggers more than strategic frontstage talk that actors use for bounding and tailoring purposes (Calvert 2006; Flink and Peter 2018; e.g. Maasen and Weingart 2000). Concepts also make inroads into the identity work of individuals and collective groups (Flink and Kaldewey 2018). In this regard, using science diplomacy—just as well as other

popular concepts in STI and foreign policymaking—should always meet concerns that concepts can unfold structuring and sometimes unintended effects on individual and collective behaviour, which can be systemically risky: while academic researchers can also engage as concerned citizens and experts in exigent issues that societies undoubtedly face, their key function is to produce scientific knowledge and not to serve as ersatz diplomats. Commending a more careful use of concepts, thus, follows the observation that contemporary STI concepts unfold more affirmative appeal, i.e. they provide less opportunities for scientific actors to abnegate calls for societal and political engagement. The introduction of adjacent concepts such as innovation diplomacy or knowledge diplomacy points into the same problematic direction of raising expectations of SIT-related actions (HE, and innovation-oriented research and entrepreneurship) by appealing to the allegedly superior values of related groups of actors.

## 4. Conclusion and forward-looking remarks

Science diplomacy, as was argued, will lose conceptual strength if advocates keep revving up their marketing engines and expand the scope and ambit of the concept, such as for promising an alleged empowering of the Global South or for using it as a means of expressing increased relevance of science education in both domestic and international politics. Too many promises in the name of science diplomacy cannot be lived up to anymore, neither by actors of the science system nor by actors from the political system (Flink 2020; Penca 2018; Rungius and Flink 2020). To provide a bold example: if science diplomacy was taken seriously according to the normative principles that its proponents have laid out, for example, in the Madrid Declaration on Science Diplomacy (2019), many bilateral and multilateral STI funding initiatives would have to be stopped instantly, as some of the involved parties disrespect liberal democratic and scientific norms (Tang 2019).<sup>9</sup> In addition, it is more than doubtful that collaborations with systematically fraudulent scientific actors, authoritarian states or dubious private companies are successful acts of science diplomacy, let alone that these actions would transplant august scientific or liberal democratic values into these actors. Rather, they seem to be perilous Faustian bargains (Tiffert 2020; see also Flink 2020). One should not forget that normatively stylized concepts, such as science diplomacy, can get easily used by non-democratic and dubious corporate actors for reasons of front-stage talk, i.e. to seize public legitimacy, to spread disinformation and whitewash actions. For example, on 20 April 2021, the international magazine *Foreign Policy* wanted to invite to a 'virtual dialogue on science diplomacy', but as it turned out, the tobacco company Philip Morris had intended to sponsor the event and to send its international vice president of strategic and scientific communications on the panel who describes her job as 'to translate the robust science behind the company smoke-free alternatives into information policymakers and the public can easily understand'.<sup>10</sup> While the science diplomacy community immediately reacted to the event and put this liaison of a journal and a tobacco company to shame until the event was cancelled, one can also argue that it had been the massive expansion of the concept of science diplomacy in the first place that paves the way for such dubious actors. In particular, this is possible when agenda setting uses topics that

turn out to be popular anyway: calling for international collaborations among enthusiastic scientists, philanthropists and responsible policymakers as well as STI managers might not need an extra motivation in the name of science diplomacy, while it is unclear if implementing science advice mechanisms in foreign policy relies much on the public discourse about science diplomacy.

With this in mind, the article suggested that decision-makers, in particular with executive and administrative powers, are advised to assess the value of science diplomacy actions rather than engaging improvidently in its public discourse, granted that the latter can be part of the former (e.g. as a means of influencing and promotion). Taking stock and assessing the quality of concrete governmental science diplomacy actions and their organizational conditions is what matters now. Because it is the concrete diplomatic wheeling and dealing as well as the public financing of international STI for collaborative scientific and competitive market purposes that provides the necessary condition and breeding ground of any further action associated with science diplomacy. This is the most central aspect of a functioning science diplomacy or to put it upfront: if responsible organizations do not check whether they invest sufficiently into resources, competent staff, training and inter-organizational coordination in the light of strategically set goals, their science diplomacy actions will run the risk of being dysfunctional. The danger is that there will be a growing gulf between talk and action, in which responsible actors can be disrespected as unreliable partners. Thus, the main challenge for policy actors is to organize unadorned evaluations of resource investments, while clarifying their strategic goals correspondingly. In this regard, the discussion of a set of evaluations principles in this article was to demonstrate that assessments of science diplomacy structures are value-laden themselves, and therefore, actors are advised to bethink themselves of what they actually want from the concept and what they can expect from their own organization. Needless to say, these assessments provide an orientation to actors where they stand internationally and if their institutional arrangement makes sense.

In order not to waste the conceptual potential of science diplomacy, policy actors need to address political challenges that democratic states are facing now and in the near future: authoritarianism and new international threats of conventional and new hybrid types (Conrad 2021; Fouskas and Gökay 2018) pose a problem for STI policymaking and, in particular, for scientific collaborations (Baykal and Benner 2020). First, because one should not forget that international research collaboration can also help advance the technological capabilities of authoritarian governments to remain powerful, to control and oppress their own citizens, and build up agency and resilience against foreign influence, not least by increasing their economic market shares worldwide (Edler et al. 2020). Second, because issues of research integrity<sup>11</sup> cannot be addressed without risking political affronts (Anderson and Steneck 2011). While state governments already face these challenges, science diplomacy actions and its discourse should be employed more to work out better strategies and engage in joint reflections between policymakers and the science community on how to position themselves. Political realism, i.e. upholding STI funding to being wired and connected with societies in foreign countries, or scientific idealism, i.e. a quasi-cosmopolitan idea of collaboration irrespective of

provenance, should not be used as normative blanket clauses but must remain essentially contested anchor points for those who engage in and discuss science diplomacy. Needless to say, the much-trumpeted tackling of the world's grand societal challenges, in particular climate change, cannot be discussed separately from pressing issues of authoritarianism. Because the ultimate question confronting advocates of science diplomacy is whether or not and how to deal and even collaborate with tyrants in a world that is conjointly facing existential deterioration.

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## Notes

1. In recent years, it has numerous been highlighted that science diplomacy was a centuries-old practice coevolving with scholars that cross national borders and represent their country of origin. Apart from the fact that such truisms are articulated with strategic intent, i.e. conjuring a legacy of the concept itself, actors' explicit bearing on the concept of science diplomacy, let alone a dedicated discourse using this or similar terms, cannot be traced before the millennial years (Flink 2020).
2. One should not underestimate that science diplomacy also helped reaching out to states and scientific actors in order to start joint STI collaborations, as organizations such as the AAAS, the National Academy of Sciences and policymakers from the US governmental departments sincerely believe in the values of international scientific collaborations and scientific advice to foreign policymaking (Fedoroff 2009; Holdren 2009).
3. In Europe, the first research project on science diplomacy was funded by the German Ministry of Education and Research from 2008 to 2010, comparing the governmental approaches to science diplomacy in six highly industrialized countries. Almost 10 years later, the European Commission funded the three collaborative projects: EL-CSID ([www.el-csid.eu](http://www.el-csid.eu); 2016–2019), InsSciDE (<https://www.insscide.eu>; 2018–2021) and S4D4C ([www.s4d4c.eu](http://www.s4d4c.eu); 2018–2021). While the first project was to compare the German take on science diplomacy with that of other states, the latter three projects are also supposed to showcase and promote science diplomacy activities of the EU.
4. For example, Flink (2016) reconstructed how the institutionalization process of the European Research Council (ERC) required suppressing the use of the concept 'basic research', which until the first millennial years had still been a clear political no-go in EU research policy. But while a discourse coalition managed to circumnavigate 'basic research' by introducing 'frontier research' and arguing during legislative decision-making for its European added value, the term itself became programmatic, shaping the ERC's policy ever since and influencing researchers in the way they design and present their actual research undertakings.
5. Few weeks after its launch in September 2020, a massive open online course, developed by the S4D4C consortium, was taken by more than 5,000 participants worldwide. Further on-site and virtual workshops, summer schools and conferences of the two EU projects S4D4C and InsSciDE attracted another couple of thousand people from academic research (mostly on doctoral and postdoctoral level), from public science management and policymakers, altogether from around 160 countries and international organizations. These numbers result from impact assessments and

online surveys of the two projects, which include demographic data of persons that took part in workshops, online training and conferences.

6. In a post-structuralist understanding of discourse (e.g. Jäger 2001), it makes no difference if academic contributions are borne by affirmative or critical positions towards specific subjects.
7. Marketing research has shown numerous times, however, that effects, such as changing attitudes towards products and services, or buyers' decisions, can hardly be assessed and causally attributed to marketing or concrete advertisement activities (Pergelova et al. 2010).
8. The social dimensions of international research collaborations and their political conditions, in particular with respect to integrating the Global South to the world society of academia, are per se severely uncharted by academic research (Collyer et al. 2019; Kraemer-Mbula et al. 2020; Skupien 2019). This is also reflected in the debate on science diplomacy, where the Global South has only been broached recently. Recently published in 2021, a special issue of the journal *Frontiers in Research Metrics and Analytics* entitled 'Science Diplomacy and Sustainably Development: Perspectives from Latin America' is featuring 15 articles on all sorts of STI policy-related topics, reaching from countries' perspectives towards the financing of women in science (Bonilla et al. 2021; Echeverría King et al. 2021; Jarquin-Solis and Mauduit 2021; Soler 2021). Yet, the special issue rather uses science diplomacy as an umbrella term, a token and makeshift for raising political awareness about all kinds of STI and HE issues, rather than a concept that offers substantial eigenvalue or that really touches upon concrete foreign policymaking. Last but not least, *Science and Public Policy* announced the launch of a special issue on science diplomacy and the Global South, which will be co-edited by Pierre-Bruno Ruffini and Derya Buyuktanir Karacan.
9. However, some funding programmes and organizations for 'refugee scientists', 'displaced scientist' or 'scientists in exile' often require a minimum cooperation with those governments that had actually given the unfortunate reason of these programmes.
10. The original invitation that the author and other scholars and activists on science diplomacy received cannot be found on the magazine's website anymore, as the event was cancelled due to immense public pressure. Next to a storm of protest on Twitter, a blog post can be found that deconstructs the tobacco company's strategy; see <https://blogs.bmj.com/tc/2021/04/17/who-should-we-trust-on-science-diplomacy-and-covid-recovery-not-big-tobacco/> (last access on 4 August 2021).
11. To name some aspects, the challenges for integer research are concealments of scientific data production, non-collegial behaviour, misconduct and fraud, issues all of which are continuously problematic to the entire science system, no matter if democracies or non-democratic states are concerned.

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