



The Effectiveness of Science Diplomacy between Adversarial States: Insights from US–Cuban and US–Iranian Science Collaborations

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Summary

The American Association for the Advancement of Science and the British Royal Society's science diplomacy taxonomy has received much criticism. Some argue that there is a lack of empirical evidence to underpin the taxonomy's three science diplomacy dimensions. This particularly applies to the third dimension, science for diplomacy, and its effectiveness. Others criticise the taxonomy for painting the picture of compliant scientists who would discard their academic ideals to support foreign policy objectives. Against the backdrop of these two points of criticism, this study investigates if scientists are willing to support political objectives through science collaborations. It also examines under which conditions science for diplomacy is effective. Using the epistemic community approach, expert interviews and a case study, the study argues that science for diplomacy is effective if it is promoted by a close-knit epistemic community and shows that scientists oppose the instrumentalisation of scientific collaboration for political purposes.

Keywords

science diplomacy – science for diplomacy – epistemic community – science collaboration – marine conservation – US–Cuban relations – US–Iranian relations

1 Introduction

The defining challenges of the 21st century are transnational and have a pronounced scientific dimension.¹ As a result, science and international scientific collaboration play an increasingly important role in global affairs, a trend that has led to the popularisation of science diplomacy since the early 2000s.

The most widely circulated, although not uncontested, taxonomy of science diplomacy is that of the American Association for the Advancement of Science (AAAS) and the British Royal Society (RS). In a seminal report from 2010, AAAS and RS define science diplomacy as a concept that can be applied to the role of science, technology and innovation (STI) in three dimensions of policy. These three dimensions are:

- Informing foreign policy objectives with scientific advice (science in diplomacy);
- Facilitating international science co-operation through diplomacy (diplomacy for science);
- Using science co-operation to improve international relations between countries (science for diplomacy).²

The report was the outcome of a meeting which AAAS and RS hosted in June 2009. This meeting brought close to 200 delegates, including government ministers, scientists, diplomats and policymakers, from around the world together to discuss ‘new frontiers in science diplomacy’.³ One of the meeting’s less publicised objectives was to explore how science could help reduce tensions between Western and Muslim-majority countries, ‘especially in the wake of 9/11 and the war on terror’.⁴ As has been the case for other public diplomacy initiatives, the push for science diplomacy was thus a direct response to a downturn in foreign perceptions towards the West.⁵

Some science diplomats — scientists in political positions and diplomats who seek to place STI as important dimensions in international affairs — attach

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2 RS and AAAS 2010, 15.

3 RS and AAAS 2010, 15.

4 Gluckman et al. 2017.

5 Melissen 2005, 9.

high expectations to science for diplomacy.⁶ They argue that by drawing on science's universal values — rationality, transparency, disinterestedness and deliberation — scientific co-operation can help create 'a non-ideological environment for the free exchange of ideas'.⁷ They further contend that this soft power of science is effective even where cultural, political or religious tensions are running high.⁸ In a world that is increasingly crisis-ridden, such rhetoric seems particularly promising, which is probably also why science for diplomacy is sometimes considered the 'most original' dimension of science diplomacy.⁹

In recent years, however, the concept and practice of science diplomacy has come under growing scrutiny. Of the many points of criticism that have been voiced against the AAAS–RS taxonomy, two are highlighted here because they depict the starting point of this study. First, some critics argue that there is a lack of empirical evidence to underpin the three science diplomacy dimensions that the AAAS–RS taxonomy proposes.¹⁰ This applies particularly to the science for diplomacy dimension and some science diplomats' bold claims about its effectiveness. According to Rungius and Flink, for instance, science's alleged ability to bring rival states closer together is based on 'a normative ideal surging on historical examples that are being taken out of context with real circumstances'.¹¹ Second, scholars like Fährnich argue that science diplomacy, and in particular its science for diplomacy dimension, paints 'the picture of compliant [scientists] who would [...] discard academic ideals to support political objectives within international affairs'.¹²

Against the background of these two points of criticism, this study seeks to first establish if scientists coming from the natural sciences and scientific managers are indeed willing to support political objectives through scientific collaboration. It does so by investigating what they perceive science for diplomacy and its goals to be and by examining when they consider these goals to be successfully achieved. Few studies have done this so far. Notable exceptions are Fährnich's study of scholars' experiences and perceptions of science diplomacy within the framework of the German 'Promote Innovation and Research in Germany' initiative and Proud's investigation into how scientists leading Horizon 2020 projects understand and engage with the concept of

6 Melchor 2020, 412.

7 RS and AAAS 2010, vi.

8 RS and AAAS 2010, 15.

9 Ruffini 2017, 12.

10 Penca 2018, 3.

11 Rungius and Flink 2020, 5.

12 Fährnich 2017, 693.

science diplomacy.¹³ The present study adds value to Fährnich's and Proud's work because it examines attitudes and experiences of scientists and scientific managers from adversarial states (USA, Cuba and Iran), which are likely to differ from those of European researchers.

Second, using an in-depth case study of a US–Cuban collaboration in marine conservation, this study aims to examine under which conditions science collaboration can help mitigate tensions between rival states. Past science diplomacy studies have at most addressed this question in passing. Rungius' in-depth study of Synchrotron-light for Experimental Science and Applications in the Middle East, for example, dedicates only two pages to the issue and concludes that the facility's alleged ability of bringing rival states together is grounded in overly positive media reporting rather than in empirical evidence.¹⁴

The remainder of this article is structured as follows: Section 2 presents the epistemic community approach (ECA) as the theoretical framework of this study, while Section 3 outlines the methods used. Section 4 then presents what scientists and scientific managers perceive science for diplomacy and its goals to be and investigates when they consider these goals to be successfully achieved. An in-depth analysis of an empirical case study of a US–Cuban science collaboration in Section 5 addresses the question of under which conditions science for diplomacy is effective. Finally, revisiting the ECA, the study concludes with a discussion of the main findings and their implications for the science diplomacy literature.

2 Theoretical Framework

This study uses insights from the ECA to uncover under which conditions science for diplomacy is effective. At the ECA's core is the concept of epistemic communities (ECs), which are defined as 'networks of professionals with recognised expertise and competence in a particular domain and an authoritative claim to policy-relevant expertise within that domain or issue-area'.¹⁵ Such networks have a common set of normative, causal and principled beliefs, a shared notion of validity and a mutual policy enterprise or preference.¹⁶ Although ECs may consist of professionals from a variety of disciplines and backgrounds,

13 Fährnich 2017; Proud 2018.

14 Rungius, Flink and Riedel 2022, 247.

15 Haas 1992, 3.

16 Haas 1992, 3.

they remain distinguishable from other actors involved in policymaking by the combination of the above-mentioned characteristics.

The main argument of the ECA is that networks of knowledge-based experts can influence the policy choices of decision-makers under conditions of uncertainty and technical complexity because in such cases policymakers need adequate information about the situation at hand to make appropriate policy choices.¹⁷ Highly regarded experts are one source for this kind of information, which is why their ideas are 'increasingly important as maps or frames for decisionmakers' facing situations of high uncertainty.¹⁸ Their ability to provide adequate information in situations of uncertainty enables ECs to exert influence on policymakers in four different ways. First, ECs can illuminate cause-and-effect relationships; second, they can explain complex interlinkages between specific issues; third, they can help policymakers identify their interests through presenting particular issues in a specific way, also known as framing; and fourth, they can assist in formulating policies.¹⁹

According to the ECA, there are some conditions under which ECs have more influence on decision-makers. For example, it is assumed that members of an EC exert greater influence on policymakers if an issue concerns an area of low politics, such as ecology and environmental protection.²⁰ In these issue areas political stakes are lower, which makes it easier for experts to get involved in the policymaking process. In addition, ECs are supposedly also more influential if they succeed in consolidating bureaucratic power within the national administration,²¹ since this means that they have greater access to decision-makers.

This study assumes that most of the insights from the ECA also apply to contexts where political tensions are running high, although some of the framework's propositions might not sit well here. For example, in contrast to situations where political tensions are absent or generally low, it is likely that in contexts of extreme political tensions an issue which usually pertains to low politics, such as science collaboration, can easily turn into a question of high politics. This is because the general atmosphere of secrecy and suspicion between rival states creates a lot of uncertainty for policymakers. If this uncertainty is perceived as a potential threat to national security or interests, decision-makers are quick to securitise issues of low politics. Yet, even in such

17 Haas 2007, 792-793.

18 Haas 2007, 792.

19 Adler and Haas 1992, 375.

20 Haas 2007, 791.

21 Haas 1992, 4.

situations, ECs are likely to remain crucial because they can reduce uncertainty for decision-makers by providing them with arguments and evidence as to why certain issues of low politics between rival states, including science collaboration, are beneficial. As in normal political circumstances, to do so, members of an EC will have to frame scientific co-operation in a way that appeals to policymakers or underlines the urgency of the central issue of the collaboration.

3 Methods and Data

This study relies on an in-depth case study of one instance of US–Cuban collaboration on marine conservation and fifteen semi-structured expert interviews with USA, Cuban and Iranian natural scientists and scientific managers.

Two main considerations guided case selection. First, only such collaborations which took place in a particularly strained political context, persevered for a long period of time despite diplomatic tensions and were able to facilitate communication between estranged political communities were considered as case studies. These criteria were deduced from the science diplomacy literature where science for diplomacy is considered effective if science collaboration helps reinstate communication channels between states with particularly tense relations. According to the literature, this is more likely to happen if a collaboration lasts for a long period of time or is institutionalised, as this will facilitate relationship-building. For example, Davis and Patman tout the Weizmann Institute as an example of successful science for diplomacy because it helped establish communication channels between adversarial states on which policymakers later built to revive political relations.²² In doing so, Davis and Patman imply that the Weizmann Institute lay ‘the foundation [...] for the establishment of diplomatic relations’ between Germany and Israel after the Second World War.²³ In a similar vein, Ruffini as well as Müller and Bona argue that the European Council for Nuclear Research (CERN) can be considered an emblematic, in other words successful, example of science for diplomacy for bringing scientists from rival states together and forcing their governments to communicate with one another.²⁴ In some ways, science for diplomacy hence resembles what the broader diplomacy literature dubs ‘track two diplomacy’. As opposed to official or ‘track one diplomacy’, both ‘track two diplomacy’ and science for diplomacy are ‘unofficial attempts to resolve differences’ between

22 Turekian et al. 2015, 9.

23 Turekian et al. 2015, 9.

24 Ruffini 2017, 95; Müller and Bona 2018.

antagonistic parties.²⁵ Usually, these attempts are ‘facilitated by an important third party and involve individuals with close connections to their respective official communities’.²⁶

An online search for science collaborations that fit the above description of successful science for diplomacy only generated a few hits. The US–Cuban co-operation on marine science under investigation in this study was one of them. It fits the literature’s description as it took place between the USA and Cuba, two adversarial states, and persevered for more than ten years despite strong political tensions. Preliminary literature research also revealed that the collaboration had, at least to some extent, a role to play in creating communication channels between US and Cuban policymakers.²⁷

Second, case selection was based on the extreme case method.²⁸ According to this method, a case is selected because of its extreme value on the independent or dependent variable.²⁹ In this study, the value of the independent variable — the circumstances which may render science for diplomacy successful — is extreme due to US–Cuban diplomatic tensions. A considerable advantage of examining a single case is the great depth of analysis such a single case study offers.³⁰ Yet this depth comes at a cost as the findings from a single in-depth study cannot be generalised beyond the case(s) under investigation. They may, however, help further refine or generalise existing theories.³¹

The empirical material needed for the reconstruction of the case under examination in this study was triangulated from a variety of sources, such as newspaper articles, online commentary and two in-depth expert interviews. Both interviewees were scientific managers working in non-governmental organisations (NGOs), who were tasked with facilitating the US–Cuban collaboration on marine conservation. Thirteen additional interviews, which were originally conducted for a master thesis on science diplomacy,³² were used to find out what scientists and scientific managers perceive science for diplomacy to be, which goals it pursues and when these goals can be considered successfully achieved. In all but one interview, scientists and scientific managers who are or were involved in a US–Cuban or US–Iranian scientific collaboration were interviewed. It was assumed that since these scientists and scientific managers

25 Jones 2015, 24.

26 Jones 2015, 24.

27 EDF n.d.; N.i. 2015.

28 Gerring 2007, 101ff.

29 Seawright and Gerring 2008, 297.

30 Gerring 2004, 345.

31 Snow and Trom 2002, 164.

32 Rüländ 2019.

TABLE 1 Interviewee profiles

Area of Co-operation	Type of Institution	Number of Interviews	Nationalities Represented	Interview Code/Name of Interviewee
Marine Conservation	Science-based NGO	2	USA, Cuba	D. Whittle F. Bretos
Meteorology	University Research Institute	4 1	USA, Cuba	A. Robock O. Garcia R. Anthes J. Antuna-Marrero Interview #6
Public Health	University Industry	2 1	USA, Iran	M. Shahbazi J. Miller Interview #8
Cancer Research	University	3	USA, Iran	Interview #3 Interview #1 Interview #2
Hydrology	University	1	USA, Iran	Interview #4
Scientific Co-operation	NGO	1	USA	Interview #5

work under similar political circumstances as the two experts involved in the US–Cuban collaboration in marine science, their responses would complement the insights gained from the interviews conducted for the case study. The remaining interview was conducted with a science diplomat from the AAAS Center for Science Diplomacy (for a more detailed overview of the interviewee profiles see Table 1). The science diplomat, scientists and scientific managers responded to similar questions as the two interviewees who participated in the science collaboration under investigation in this study. All interviews were transcribed and analysed using a qualitative content analysis.

4 Scientists and Scientific Managers' Understanding of Science for Diplomacy

This section breaks down what the interviewed scientists and scientific managers from the USA, Iran and Cuba perceive science for diplomacy and its goals

to be and when they consider these goals to be successfully achieved. In addition, it puts their understanding of science for diplomacy in conversation with the AAAS–RS taxonomy as well as the broader literature on science diplomacy.

4.1 *What Does Science (for) Diplomacy Mean to and Look Like for Scientists?*

Some science diplomacy diplomats, such as New Zealand's former Chief Science Advisor Peter Gluckman, contend that the AAAS–RS distinction between the different science diplomacy dimensions might be useful for academic purposes,³³ but does not seem to matter in practice. For science diplomats like Gluckman the practice of science diplomacy seems to be restricted to foreign ministries and agencies with international responsibilities.³⁴ Scholars working on science diplomacy, in contrast, argue that science diplomacy initiatives also depend on the participation of scientific actors.³⁵ To find out if the distinction between the different science diplomacy dimensions matters for this latter actor category, scientists and scientific managers were asked what they consider science diplomacy to be. They were also requested to clarify whether they saw a difference between science diplomacy and science for diplomacy. When comparing interviewee answers, several things stand out. First, three out of fifteen interviewees had never heard of the two terms. This resonates with Proud's study on how scientists leading Horizon 2020 projects understand and engage with the concept of science diplomacy. In their study, Proud finds that the interviewed scientists are largely unfamiliar with the academic and policy language of science diplomacy.³⁶

Second, only three of the respondents indicated that they saw a difference between science diplomacy and science for diplomacy. Among the three individuals who did see a difference between science for diplomacy and science diplomacy was a senior official from the AAAS Center for Science Diplomacy. As such, they were very familiar with the AAAS–RS definition of science diplomacy. Another interviewee who answered the question positively was a scientific manager with a background in conservation science who collaborated with Cuban colleagues on environmental projects. They, too, have a relatively close relationship with AAAS dating back to 2015 and are thus well acquainted with the AAAS–RS science diplomacy taxonomy.³⁷ All other interviewees equated

33 Gluckman et al. 2017.

34 Gluckman et al. 2017.

35 Fährnich 2017; Ruffin and Rüländ 2022.

36 Proud 2018.

37 Korte 2015.

the two terms. For most of the respondents, science diplomacy seemed to be first and foremost what the science diplomacy literature identifies as science for diplomacy. For example, a scientific manager at the Environmental Defense Fund (EDF), a US-American science-based NGO, stated that science diplomacy 'is a way to create space for diplomacy through scientific collaboration'.³⁸ Another interviewee who took part in a US–Iranian cancer research collaboration defines science diplomacy in a similar way. According to them, science diplomacy is a means to strengthen diplomatic relations between countries in conflict by collaborating in 'innocuous areas' such as science.³⁹

Third, many of the respondents emphasised science diplomacy's role in building relationships and trust between states in conflict. The scientific manager of an international development group, who co-operated with Iranian public health experts to replicate the Iranian primary health-care system in the Mississippi Delta, pointed this out by describing science diplomacy as an opportunity for trust- and relationship-building.⁴⁰ Three other respondents also underlined that science diplomacy is a way to establish long-lasting relationships and to build bridges between people.

Fourth, the interviewees identified historical examples in which science diplomacy or a mechanism which they equate with science diplomacy was used to improve strained diplomatic relations. In particular, the interviewees mentioned examples from the Cold War. For instance, two interviewees compared science diplomacy to ping-pong diplomacy. This latter term refers to an episode of US–Chinese rapprochement in the early 1970s that was facilitated by an exchange between US and Chinese table tennis players.⁴¹ Two other respondents stated that science diplomacy was used during the Cold War to improve relations with Russia.⁴²

4.2 *Science for Diplomacy's Goals and Effectiveness*

When asked what they consider the goal of science for diplomacy to be and when they consider it to be successfully achieved, the interviewees' answers were remarkably similar. Almost all underlined that science for diplomacy, which most of them continued to refer to as science diplomacy throughout the interviews, is successful if lasting relationships and trust have been established between the scientists involved in it. Two interviewees stressed that

38 Interview D. Whittle via Skype, 12 June 2019.

39 Interview #2 via Skype, 18 June 2019.

40 Interview J. Miller via Skype, 2 June 2019.

41 Lüthi 2008, 698-699.

42 Interview #4 via Skype, 13 June 2019; Interview D. Whittle.

both are the result of long-term efforts.⁴³ Several respondents suggested that science diplomacy is more likely to be effective if those engaged in it work on a problem or issue which is of mutual interest.⁴⁴ Two public health experts, who collaborated to replicate Iran's primary health-care system in the Mississippi, stated that science diplomacy can only be successful if the involved scientists have a basic understanding of the political and cultural context in which they work.⁴⁵ For another respondent, science diplomacy is successful if it helps establish channels of communication between states with limited diplomatic relations, such as the USA and Cuba.⁴⁶ This understanding of successful science for diplomacy is in line with Ruffini's as well as Davis and Patman's view on the topic, as all three underline the role of science collaborations in creating communication channels between adversarial states. A US-American professor of environmental science, who collaborated with Cuban colleagues on a GPS receiver, in contrast, thinks that science diplomacy succeeds when 'scientists can advance their scientific knowledge'.⁴⁷ If scientists can also transmit a certain political message in the process, they consider this to be a beneficial side-effect rather than science diplomacy's main *raison d'être*.⁴⁸

4.3 *Distinction from International Science Co-operation*

The interviewees' responses on the question of whether science diplomacy differs from science for diplomacy and what constitutes successful science for diplomacy provide a better understanding of how scientists and scientific managers view science diplomacy. Yet it is difficult to distinguish between international science co-operation and science diplomacy based on the interviewees' answers because trust- and relationship building, which they see as two hallmarks of science diplomacy, are also often the result of scientific collaboration. The only one to address the difference between science diplomacy and international science co-operation during the interview was the AAAS official. According to them, science diplomacy goes beyond international science co-operation because it is not only meant to advance science but 'to do something more than' that.⁴⁹ For the AAAS official, 'it is really about the

43 Interview #5 via telephone, 10 July 2019; Interview R. Anthes, 6 June 2019.

44 Interview #2; Interview J. Miller; Interview R. Anthes; Interview #3, Personal Communication, 7 June 2019.

45 Personal Communication Interviewee #8, 11 June 2019; Interview M. Shahbazi via telephone, 19 June 2019.

46 Interview D. Whittle.

47 Interview A. Robock via Skype, 4 June 2019.

48 Interview A. Robock.

49 Interview #5.

relationship, the diplomacy aspect of it' and 'the motivation [underlining] why a collaboration has formed'.⁵⁰ In the science diplomacy literature, it is likewise argued that science diplomacy can be distinguished from international science collaboration on the ground that the former 'necessarily involves state interests' while the latter does not.⁵¹ According to the AAAS official, only scientific collaborations which are started with science diplomacy in mind can thus be understood as such. As a science diplomat, it is unsurprising that the AAAS official underlines this diplomacy aspect.

To determine whether scientists and scientific managers distinguish international science collaboration and science diplomacy on similar grounds, the interviewees were asked what motivated them to become involved in a science collaboration with an adversarial state. When comparing their answers, three different motivations can be discerned. First, most of the scientists and scientific managers are dedicated to the advancement of science. A Cuban meteorologist, who co-operated with US colleagues to install a GPS receiver in Cuba, for example, stated that his motivation was 'to do the best possible scientific research'.⁵² Another interviewee equally affirmed that the purpose of the collaboration they were involved in with Cuba was purely scientific.⁵³ Second, seven of the scientists and three of the scientific managers from science-based NGOs indicated that the collaboration was philanthropically motivated. For instance, one Iranian respondent explained that they got involved in a collaboration to replicate Iran's primary health-care system in the USA to help Americans who were lacking adequate access to primary health care.⁵⁴ According to a US–Iranian interviewee, one of the main motivations for US–Iranian scientists to initiate science collaborations with Iran is a concern for the Iranian people's well-being.⁵⁵ One of the American professors, who co-initiated the GPS collaboration with Cuba, was also philanthropically motivated as they wanted to help the people in Cuba as much as they possibly could.⁵⁶ Lastly, several respondents stated that they became involved in collaboration for personal reasons. For example, a respondent said that they were initially interested in collaborating with their Cuban colleagues because they hoped that co-operation would offer them the opportunity to return to Cuba, where they were born and raised until their family emigrated to the USA.⁵⁷

50 Interview #5.

51 Copeland 2016, 630.

52 J. Antuña-Marrero, Personal Communication, 15 June 2019.

53 Interview D. Whittle.

54 Personal Communication Interviewee #8.

55 Interview #4.

56 Interview R. Anthes.

57 Interview O. García via telephone, 13 June 2019.

Another interviewee stated that they saw the collaboration, amongst other things, as an opportunity ‘to see a very unusual country and culture [...] and to meet colleagues’.⁵⁸

None of the respondents claimed that the collaboration was begun with science diplomacy in mind. Some explicitly underlined that science diplomacy was not the initial objective of their collaboration.⁵⁹ Yet a few admitted that they had hoped that co-operation would improve diplomatic relations somewhat, even if only marginally.⁶⁰ At the same time, all respondents vehemently emphasised that their collaboration was never politically motivated.⁶¹ As Melchor suggests, this vehemence might indicate that scientists and scientific managers are sceptical about science diplomacy practices and professionals for fear of being manipulated for political purposes.⁶² In fact, the scientists and scientific managers interviewed for this study underlined that a scientific collaboration with an adversarial state would be immediately shut down if anyone suspected that the involved scientists were pursuing a political agenda.⁶³ Nonetheless, most of the respondents identified their collaboration as science diplomacy.⁶⁴ They explained that although their collaboration never began as science diplomacy, in their opinion, it developed into it over time.⁶⁵ Hence, according to the interviewed scientists and scientific managers, scientific co-operation which does not begin with the explicit goal of science diplomacy can develop into this if it contributes to long-lasting trustful relationships between scientists.

Interestingly, when asked if they also saw themselves as part of a science diplomacy community, few of the interviewees agreed. Only two of the scientific managers perceived themselves to be part of such a community. Most of the scientists did not. They instead described themselves as ‘academic activists’ or saw themselves as part of a ‘health diplomacy community’.⁶⁶ At first glance, it might seem paradoxical that scientists consider their collaborations as science diplomacy, but do not self-identify as science diplomats. At second glance, however, this stance is less paradoxical, especially if one takes insights from the broader diplomacy literature into account. Here, the mixing of track

58 Interview R. Anthes

59 Interview #1 via Skype, 26 June 2019; Interview D. Whittle; Interview #2.

60 Interview R. Anthes; Interview M. Shahbazi.

61 Interview R. Anthes; Interview J. Miller; Personal Communication Interviewee #6, 9 June 2019.

62 Melchor 2020, 419.

63 Interview R. Anthes; Interview J. Miller.

64 Interview R. Anthes; Interview O. García; Interview D. Whittle; Interview #1; Interview #4.

65 Interview F. Bretos via Zoom, 17 June 2019.

66 Interview M. Shahbazi; Interview J. Miller.

one and track two diplomacy is seen as problematic because actors from the two tracks could be ‘confused in the minds’ of the conflict parties, which could then lead to a loss of credibility and independence for track two facilitators.⁶⁷ Most interviewees seemed to be aware of this. A majority of respondents explicitly rejected being equated with diplomats because they considered these figures to be political and did not want others to think they were involved in any form of politics. Given the strong polarisation of politics in the USA, Iran and Cuba, this does not come as a surprise. This indicates that it is easier for scientists to see political value in their scientific work, particularly in retrospect, than to reconcile their professional values with those of a political actor.

To sum up, the interviews demonstrate three things. First, as suggested by some science diplomacy scholars and science diplomats, the boundaries between science diplomacy and science for diplomacy do indeed blur in practice.⁶⁸ Second, science for diplomacy differs from international science co-operation in that it is set up with the motivation to do more than ‘just’ advance science. For science diplomats like the AAAS official, ‘doing more than just science’ means that scientists and scientific managers contribute to a diplomatic or policy goal. Scientists and scientific managers, however, do not want to be instrumentalised for such purposes. Instead, for them, science diplomacy is more than science collaboration because it enables them to contribute to a humanitarian or philanthropic purpose. According to scientists and scientific managers, it is successful if it contributes to the establishment of long-lasting relations between scientific peers who work on an issue of mutual interest. Third, and in line with Rungius, van Langenhove and Proud’s findings,⁶⁹ science for diplomacy can either be the intentional aim of political actors who see it as an opportunity to strengthen diplomatic relations through science or the unintentional side-effect of long-lasting science co-operation.⁷⁰

5 US–Cuban Collaboration in Marine Conservation: Science Transcending Politics?

To determine under which conditions science for diplomacy can help mitigate political tensions, this section looks at an instance of science collaboration between the USA and Cuba, two states whose relations have been fraught

67 Jones 2015, 24.

68 Copeland 2016, 628; Penca 2018, 3.

69 Rungius, Flink and Riedel 2022, 246; van Langenhove 2016, 2; Proud 2018, 6.

70 Van Langenhove 2016.

for decades. The collaboration in question started over 20 years ago and was initiated by two US-American, science-based NGOs, the EDF and The Ocean Foundation (TOF). Since the early 2000s, these two NGOs have continuously supported Cuban scientists and policymakers in preserving the country's unique marine environment.⁷¹ The EDF mainly co-operates with Cuban policymakers, managers, scientists, fishermen and community leaders to improve fisheries management and protect shark populations.⁷² TOF, in turn, collaborates with Cuba and neighbouring countries to develop research projects aimed at protecting marine ecosystems and to contribute to the scientific understanding of the region's natural resources.⁷³

The EDF first got engaged in Cuba in 2000. That year, the organisation had hired a scientist in Miami who was supposed to support its efforts to end over-fishing in the South-East Atlantic.⁷⁴ This scientist argued that the EDF's efforts would be fruitless unless Cuba was included. The country's participation was essential, he argued, because many fish populations are migratory and fisheries management in Cuba thus also affects the status of fish populations in the USA. The EDF therefore decided to send a delegation to Cuba to establish contacts on the island state. Daniel Whittle, an environmental lawyer, and scientific manager at the EDF's regional office in North Carolina, came along on this first trip to attend an international conference of the Cuba Marine Research and Conservation Program (CubaMar), which is one of TOF's projects. In addition to speaking on a panel about US marine and coastal law, he used this opportunity to 'initiate conversations with Cuban scientists on potential collaborative projects on fisheries and marine protected areas'.⁷⁵ This trip led to many new contacts, which the EDF used and expanded in the following years. All of these were approved by the Cuban government, to which the EDF would turn first whenever it wanted to initiate a new collaboration. As a result, and because there are few independent NGOs in Cuba, the Ministry of Science, Technology and Environment (CITMA) became the EDF's primary partner. At the time, CITMA was keen to work with science-based organisations like TOF and the EDF because — as one Communist Party official told Whittle in 2007 — they 'are interested in science, not law or policy'.⁷⁶

71 Interview D. Whittle; Interview F. Bretos.

72 Interview D. Whittle.

73 TOF 2022.

74 Interview D. Whittle.

75 D. Whittle, Personal Communication, 19 August 2019.

76 Interview D. Whittle.

At the CubaMar conference, Whittle met Fernando Bretos, who was then working for the Center for Marine Conservation in the USA.⁷⁷ At that point in time, Bretos had already worked on a project on Cuba for several months.⁷⁸ This project required him to travel there regularly and provided him with the opportunity to establish contacts with Cuban conservation scientists and biologists. As a second-generation US–Cuban, who is fluent in Spanish, it was much easier for Bretos to build trusting relationships with Cuban scientists than for his US colleagues. Owing to his language and intercultural skills, he forged strong professional bonds with a group of Cuban marine biologists, who at the time were working on a research project in the Guanahacabibes Peninsula, on his second trip to Cuba.⁷⁹ This research project was originally initiated by the then-director of the Center for Marine Research (CIM) of the University of Havana. Its objective was to protect marine turtles against natural predators and poachers as well as monitor their nesting activities on the beaches of the Guanahacabibes Peninsula.⁸⁰ When Bretos learned about the project upon his second trip to Cuba, he was immediately keen to support it.⁸¹ Because the Cuban scientists involved in the project were facing great difficulties securing funding for their efforts, he offered to get TOF — where he was by then working — involved. With the approval of the Cuban marine biologists, the NGO joined the project in 1999 and supplied ‘much-needed funding, expertise, and equipment for the sea turtle monitoring’.⁸² To advance the project, Bretos and one of his Cuban colleagues decided to create workshops on the issue of sea turtle conservation three years into the TOF–CIM co-operation. The first in a series of workshops took place in 2002 and brought together international experts to support the monitoring project in Guanahacabibes. Subsequent workshops focused on the development of CIM’s wildlife tagging and community education work in and around Guanahacabibes, improving the livelihoods of former sea turtle fishermen and exchanging the latest science and conservation strategies.⁸³ These workshops not only earned the project the recognition of the Cuban government, but also helped Bretos establish a strong relationship with the University of Havana, which continues to this day.⁸⁴

77 The centre was later named the Ocean Conservancy.

78 Interview F. Bretos.

79 Siciliano et al. 2018, 45.

80 Siciliano et al. 2018, 45.

81 Interview F. Bretos.

82 Siciliano et al. 2018, 46.

83 Siciliano et al. 2018, 47–48.

84 Interview F. Bretos.

Well aware of Bretos' dense local network on the island, the Cuban government turned to him when it decided to approach 'some influential people in the US', 'to [suggest they] have a US–Cuban–Mexico initiative around marine science and conservation'.⁸⁵ Together with then-Vice President of the Ocean Conservancy, David Guggenheim, and Teresita Borges from CITMA, Bretos helped to create the Trilateral Initiative for Marine Science and Conservation in the Gulf of Mexico in 2007.⁸⁶ Since then the initiative has developed a multinational programme to restore coastal and marine resources shared by the three nations in the Gulf of Mexico, but initially it began as a meeting of a group of Cuban and American scientists in Cancún, Mexico. The programme's original objective was to take 'joint marine research and conservation activities between the US and Cuba to a new level' and to establish 'a framework for collaboration' between the two countries.⁸⁷ Bretos and his collaborators chose Mexico as a venue because relations between the USA and Cuba were particularly tense during the early 2000s and they hoped that the involvement of a third neutral country would facilitate co-operation.⁸⁸

Since its beginnings in 2007, the initiative has regularly organised workshops during which different working groups, consisting of policymakers and scientists, discuss various topics related to marine conservation. At the initiative's first meeting, in June 2007, Whittle and Bretos crossed paths again. Recognising the initiative's potential to foster 'dialogue and collaboration between experts in the US and Cuba', Whittle agreed to fund the programme through the EDF.⁸⁹ Over time, this intensified collaboration between the EDF, TOF, CIM, CITMA and the Trilateral Initiative facilitated the coalescence of a close-knit and like-minded conservationist EC. This EC shares a specific set of values at whose core is the conviction that environmental and especially marine protection should not be restricted because of political tensions. The community also has a common causal belief which is based on the assumption that Cuba's and the US marine ecosystems are strongly interconnected and that the effects of climate change thereon can only be mitigated through bi- and multilateral co-operation. Based on their common value system and causal beliefs, the members of the conservationist EC, moreover, have a clear policy preference for more US–Cuban science collaboration to preserve the marine ecosystems of the wider South-East Atlantic. With most of the EC's

85 Interview D. Whittle.

86 Guggenheim and Fernández Chamero 2007, 32.

87 Guggenheim and Fernández Chamero 2007, 1.

88 F. Bretos, Personal Communication, 20 August 2019.

89 D. Whittle, Personal Communication.

members trained in marine and environmental sciences, the community's validity tests are further largely based on the scientific method.

In 2010, the work of the two NGOs began to go beyond 'pure' scientific collaboration as the EDF became a broker between the Cuban and US governments amidst the Deep Horizon oil spill. That year, a giant oil spill in the Gulf of Mexico, unprecedented in size and scope, threatened to pollute Cuban waters. When the spill occurred, members of the US Coast Guard were unable to communicate with their Cuban counterparts because of the bad diplomatic relations between their respective governments.⁹⁰ At this point in time, they could only communicate through the US State Department and the Cuban Ministry of Foreign Affairs. Due to this bad line of communication, Cuban officials did not know how far the oil slick had spread in the Gulf and became increasingly worried that it would eventually reach Cuba's pristine waters. They turned to the EDF and asked the NGO for information on the issue. The EDF, in turn, used this as an opportunity to organise a meeting at the US State Department to draw the government's attention to the fact that a direct line of communication with Cuba was of utmost importance to prevent the degradation of natural habitat. In addition, the EDF also used the media — which covered the Deep Horizon disaster extensively — to appeal to the US government. In widely circulated newspapers, such as *The New York Times*, the organisation demonstrated how connected Cuba's and Florida's marine ecosystems are and 'why more diplomacy was needed on environmental matters'.⁹¹ Because they framed the issue as an environmental emergency which needed to be addressed by political decision-makers in the USA and Cuba, the organisation did not get any pushback from conservative hardliners in Florida, clearing the way for the US government to establish communication channels with Cuba amidst the oil spill.

In 2011, as part of the US government's efforts to improve communication with Cuba, Whittle was able to take a delegation, including the chair of President Obama's oil spill commission, to the island. That same year, the US government also permitted him to bring a senior US official from the National Oceanic Atmospheric Administration (NOAA) to a floating-boat workshop in Cuba. This was extremely unusual, as until that point in time few high-level US officials had obtained permission to visit the island state.⁹² Helping to reinstate communication channels between the USA and Cuba amidst the Deep

90 Interview D. Whittle.

91 Interview D. Whittle.

92 Interview D. Whittle.

Horizon disaster made Whittle aware that what the EDF was doing ‘was part of a bigger picture’.⁹³ Encouraged by the EDF’s successful campaign for more US–Cuban co-operation in marine conservation and President Obama’s less confrontational stance towards Cuba, the NGO expanded its lobbying efforts in 2012, asking Obama to ease visa regulations for Cuban scientists in an open letter. This was the second letter that the EDF had addressed to the president. In 2008, when President-Elect Obama first began to talk about the easing of diplomatic relations with Cuba, the EDF sent him a letter on behalf of US philanthropic foundations to encourage him to expand opportunities for environmental collaboration between US and Cuban NGOs. In doing so, the organisation emphasised that such collaborative efforts have the potential to build bridges between US-American and Cuban communities.⁹⁴ Bretos, who much like the EDF, realised that his scientific work in Cuba could serve ‘as a political tool’, used the Trinational Initiative to bring together a senior official from NOAA and the Cuban Senator for Protected Areas in 2013.⁹⁵ Together, said NOAA official and Senator agreed to create a network of marine protected areas in the Gulf of Mexico, the so-called RedGolfo, even before their respective governments had officially resumed diplomatic relations.

These contacts between Cuban and US officials brokered by the EDF and the Trinational Initiative ‘planted the seeds for diplomatic negotiations’, which then occurred in 2015.⁹⁶ Earlier, in late 2014, President Obama and Fidel Castro had announced that their governments would restore full diplomatic relations, therewith introducing a new era in US–Cuban relations. When diplomatic relations improved, NOAA officials, led by the senior official who first came to Cuba on the EDF-organised trip in 2011, started to communicate with their Cuban counterparts to signal their willingness to collaborate on protecting areas off the north-west coast of Cuba and in the Gulf of Mexico.⁹⁷ In November 2015, these contacts facilitated the signature of the first US–Cuban Accord on environmental protection in decades. Shortly after, officials signed another agreement on marine protected areas and, in 2017, eventually an additional, more formal, one on oil spills.

93 Interview D. Whittle.

94 EDF 2008.

95 Interview F. Bretos.

96 Interview D. Whittle.

97 Interview D. Whittle.

6 Discussion and Conclusion

This study set out to contribute to the science diplomacy literature in two ways. First, it aimed to find out what scientists and scientific managers perceive science for diplomacy and its goals to be and when they consider these goals to be successfully achieved. Based on fifteen expert interviews, the study showed that scientists and scientific managers rarely distinguish between science diplomacy and science for diplomacy. In addition, it revealed that for these two actor groups, science diplomacy is successful if it contributes to the establishment of long-lasting relations between researchers who work on an issue of mutual interest. Their understanding of success considerably differs from that of the interviewed science diplomat from AAAS, because for the latter science diplomacy is only successful if it contributes to a specific diplomatic or policy goal. The threshold for science diplomacy to be considered successful is thus more easily reached for scientists and scientific managers than it is for science diplomats such as the AAAS official. This might indicate that the concept of science diplomacy is not yet well established beyond science diplomat circles and is still open to interpretation for scientific actors. Depending on an individual's or group's experiences and general outlook on science and politics, science diplomacy might thus come to mean different things in different contexts.

Second, using the ECA, this study sought to identify conditions under which science diplomacy can be successful, or to phrase it differently, help mitigate political tensions between rival states. To do so, the study analysed a US–Cuban collaboration in marine conservation that can be considered a successful instance of science for diplomacy both from scientific actors' and the AAAS official's point of view, as it laid the foundation for long-lasting relations between scientists and scientific managers from the USA and Cuba, but also established communication channels between policymakers from two rival states, thus doing more than 'just advance science'. The in-depth analysis of this case study reveals six conditions that were decisive for the collaboration's success in bringing the USA and Cuba closer together.

First, in line with what has been proposed in Section 2, the rapprochement between the Cuban and US governments in the field of marine protection resulted from the continued efforts of an EC consisting of Cuban and US conservation scientists, scientific managers and policymakers sympathetic to the scientists' values. This close-knit and like-minded EC is more effective in promoting a common policy enterprise than individual scientists on their own because a strong coalition of scientific actors is better equipped

to help sceptical policymakers understand that science collaboration on a topic of mutual and vital interest is, more often than not, beneficial for all involved parties.

Second, the in-depth analysis of the collaboration in marine protection indicates that science collaborations between states, and adversarial ones in particular, are more likely to be successful if they focus on issues of low politics, for example environmental protection. Bretos and Whittle, the two main drivers of the US–Cuban collaboration studied in this article, confirmed this in their interviews.⁹⁸ Whittle, for instance, said that the environment ‘can be used for diplomacy’ and that Cuba ‘wanted a way to interact with the US and [...] thought that [...] the environment was one of the better and easier ways to do that’.⁹⁹ This finding resonates with the broader diplomacy scholarship, which sees the domain and scope of diplomatic practices ‘rapidly expanding [...] beyond traditional “high issues” of foreign policy’, with low politics playing an increasingly important role.¹⁰⁰ A possible explanation as to why science for diplomacy might be more successful in areas of low politics is that the political stakes are less high and decision-makers thus less suspicious of scientists’ activities. This might soon change, however, as global challenges such as climate change, public health and security become more and more interconnected and the boundaries between low and high politics consequently begin to blur.

A third condition that was important for the collaboration’s success was Bretos’ Cuban background as well as his language and intercultural skills. During the co-operation, he effectively acted as a broker between his American and Cuban colleagues. Thanks to his Cuban background and proficiency in Spanish, it was easier for him to win his Cuban colleagues’ trust and to navigate Cuba’s bureaucracy and political system.

Fourth, it was crucial that both TOF and the EDF were able to establish good relations to policymakers within the US and Cuban governments. On the US side, the EDF’s access to the State Department was key to draw the government’s attention to the lack of communication with its Cuban counterparts amidst the Deep Horizon oil spill. Its co-operation with NOAA prior to President Obama’s election was essential to revive official communication channels through the US agency and its Cuban counterparts in 2011. A factor that helped the EDF and TOF gain the attention of US government agencies

98 Interview F. Bretos; Interview D. Whittle.

99 Interview D. Whittle.

100 Cooper, Heine, and Thakur 2013, 6.

was their experience in lobbying and advocating policymakers on behalf of the environment. This resonates with research on other public forms of diplomacy, which are believed to be more effective if they include non-governmental agents and rely on local networks.¹⁰¹ Such agents and networks are often savvy users of public diplomacy tools, as circulating information, advertising campaigns and appeals to public opinion through the media are part and parcel of their daily business.¹⁰² On the Cuban side, in turn, both NGOs' connections to several government ministries were crucial for the collaboration's success because without these they would not have been able to work in Cuba's restrictive political system.

Fifth, the collaboration was successful in bringing the USA and Cuba closer together because it resonated with the USA's less confrontational approach towards Cuba at the time. Following President Obama's election, some political actors in the USA perceived the US–Cuban collaboration on marine conservation as a way to revive diplomatic relations with Cuba. Both Bretos and Whittle underlined that the channels their collaboration had brokered over the years were only able to 'provide space for negotiations on more difficult issues' between the USA and Cuba because, following President Obama's election, US policy towards Cuba had generally changed.¹⁰³ Obama's reconciliatory stance towards Cuba thus opened a unique window of opportunity for science diplomacy.

Finally, and as suggested in Section 2, by framing US–Cuban marine collaboration as the only means to preserve both countries' marine ecosystems, the EDF-TOF alliance was able to convince US policymakers that the benefits of such co-operation outweigh its drawbacks. This framing also helped appease more sceptical policymakers, like conservative hardliners in Florida, who tend to be particularly critical of engagement with Cuba.

To conclude, and in line with what science diplomats have claimed for some time now, the case study under investigation in this article shows that science collaborations and scientists' advocacy can indeed lay the groundwork for the establishment of communication channels which policymakers may leverage for diplomatic purposes. At the same time, it also indicates that science diplomats' claims about the seemingly all-encompassing soft power of science collaboration might be overly optimistic. Recognising that the activities of the science-based NGOs alone would probably not have contributed to

101 Melissen 2005, 16; Sending, Pouliot and Neumann 2015, 19.

102 Guilbaud 2020, 190.

103 Interview D. Whittle.

an improvement of US–Cuban relations if the country’s respective heads of state had not also been generally more receptive to political engagement at the time, it seems appropriate to assume that science for diplomacy’s effectiveness depends on the specific context and thus may vary with time and space.¹⁰⁴

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104 Copeland 2016, 629.

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