

The Royal Society – Written evidence

The Royal Society welcomes the opportunity to submit evidence to the House of Lords Select Committee on Soft Power and the UK's Influence. The Royal Society is the national academy of science in the UK; it is a self-governing Fellowship of many of the world's distinguished scientists. This response draws on the advice of ten Fellows, including three former Foreign Secretaries of the Royal Society and its current Foreign Secretary, Professor Martyn Poliakoff CBE FRS.

1. Summary

This response draws on the Royal Society's recent international work and concludes that:

- The UK is not exploiting fully the UK's science strengths and the reputation of its science institutions as a source of soft power on the international stage. The scientific values of rationality, transparency and universality can enable science to be used to build constructive international relations and should be an important part of soft power.
- Science diplomacy, as an arm of soft power, has the potential to help defuse complex and tense geopolitical situations by providing opportunities to build apolitical partnerships in developing and emerging economies.
- The UK Government has a role to play in minimising barriers to science cooperation, e.g. visa regulations and security controls, and providing diplomatic assistance, e.g. contract negotiations and intellectual property agreements; as do initiatives that champion scientific freedom and access.
- The FCO should develop a strategy that explicitly sets out a vision for how science cooperation should feature in UK foreign policy and how this vision should be implemented across Government. The role of the FCO/BIS Science and Innovation Network and British Council are instrumental here.
- There need to be more effective mechanisms and spaces for dialogue between policymakers, academics and researchers working in the foreign policy and scientific communities to identify projects and processes that can further the interests of both communities.
- The global influence of the European Union, the degree to which it legislates for the UK, and the progressive development of the European Research Area provide imperatives and opportunities for the UK to continue to help shape European policy. Interactions between UK and European scientists and institutions are strong and provide a useful, but presently underexploited, source of soft power.
- Science cooperation requires funding. The UK should continue to participate in large international scientific initiatives, such as the EU's Horizon 2020 programme and ICSU's Future Earth initiative, both of which have the potential to become truly global.
- National science academies and learned societies are an important source of independent scientific advice to national and international policymakers, and in deploying science for soft power.
- With its Fellowship drawn from across the Commonwealth, the Royal Society can play a leading role in the UK's Government's renewed focus on these 54 nations.
- Capacity building in science programmes can contribute to soft power.

2. Introduction

2.1 The term "**soft power**" is interpreted as a power that "builds on common interests and values to attract, persuade and influence."¹ Science has always played a role in the development of hard power capabilities, such as military technologies, but science cooperation is also a source of soft power because it is attractive both as a national asset and as a universal activity that transcends national interests. **The scientific values of rationality, transparency and universality can enable science to be used to build constructive international relations and should be an important part of soft power.**

¹ Joseph S. Nye, *Soft Power: The means to success in world politics* (New York: Public Affairs, 2004)

- 2.2 Throughout its history, the Royal Society has demonstrated leadership in using science as a source of soft power, or science for diplomacy, promoting and facilitating international scientific collaboration during times of diplomatic or military tension. During the American War of Independence in the eighteenth century, Benjamin Franklin, a Fellow of the Royal Society (FRS), arranged that American warships should not interfere with Captain Cook on his last voyage. In the Napoleonic Wars soon after, the then-President of the Royal Society, Sir Joseph Banks, used his influence in England and France to ensure that explorers of the two nations were not obstructed by the conflicting armed forces, and that French scientists should continue to be elected Fellows of the Royal Society; and in the 20th century, the Royal Society played a leading role in ensuring that scientific links between the UK and the Soviet Union continued despite the tensions of the Cold War.²
- 2.3 The Royal Society's mission to support international scientific exchange goes back even further. Philip Zollman became Foreign Secretary of the Royal Society in 1723, nearly 60 years before the British Government appointed its first Secretary of State for Foreign Affairs. Zollman's role was to maintain regular correspondence with scientists overseas to ensure that the Royal Society's Fellows remained up-to-date with the latest ideas and research findings.
- 2.4 The 2010 publication of *New Frontiers in Science Diplomacy*³ articulated the importance of science diplomacy and international scientific cooperation to the Royal Society's work. The theory and practice of soft power underpin much of its current international portfolio, whether through policy studies, capacity building, or bilateral and multilateral engagement. Where opportunities arise, the Royal Society will promote scientific cooperation between countries where there have been tensions or recent conflict.

It will also provide advice to, and work with, UK and international policymakers and institutions on the relationship between science and diplomacy, in order to further the international objectives of the Royal Society and, where practicable, the UK. The Royal Society is part of a global network of science academies, capable of mobilizing the world's best science and scientists on issues of global concern, including those where political negotiations may be fraught.

3. International perspective

- 3.1 Recent years have seen a fresh surge of interest in science diplomacy, most noticeably in the US, the UK and Japan. The post of Science and Technology Adviser to the US Secretary of State was created in 2000, where science diplomacy was defined as the 'use of science interactions among nations to address the common challenges facing humanity and to build constructive knowledge-based international partnerships'⁴ The American Association for the Advancement of Science (AAAS) continues to lead science diplomacy thinking. In 2008, AAAS established a Centre for Diplomacy and in 2012 launched a quarterly journal, *Science and Diplomacy*⁵, the first of its kind. It has also signed a formal agreement with the Academy of Sciences for the Developing World (TWAS) to work on joint projects that build regional cooperation and networks, as well as increasing the capacity of foreign ministries, research ministries and international policy organisations to build science partnerships.⁶
- 3.2 Japan has placed significant emphasis on science diplomacy since the publication of their Council for Science and Technology Policy report in 2008, 'Towards the reinforcement of science and technology diplomacy', which identified four key objectives: negotiating the participation of Japanese scientists in international research programmes; providing scientific advice to international policymaking; helping to build science capacity in developing countries; and using science to project power on the international stage, in ways that increase Japan's prestige and attract inward investment. This last area is motivated, in part, by Japan's own recognition that its scientific and technological strengths are a key source of

² Melvyn Bragg, *In Our Time: The Royal Society and British Science*, episode 4.

³ <http://royalsociety.org/policy/publications/2010/new-frontiers-science-diplomacy/>

⁴ Nina Federoff 2009

⁵ <http://www.sciencediplomacy.org/>

⁶ http://www.aaas.org/news/releases/2011/1117aaas_twas_mou.shtml

strategic and economic value. In 2011, science and technology diplomacy was designated as an issue of national importance in the government's 4th Science and Technology Basic Plan.⁷120

3.3 In 2001, the UK government set up a Science and Innovation Network (SIN), with the aim of linking science more directly to its foreign policy priorities. SIN facilitates collaboration between UK and international research partners across a wide variety of policy and scientific agendas, including energy, climate change and innovation. Over 12 years, the SIN has expanded to include around 90 staff (a mix of UK expatriates and locally engaged experts) across 47 cities in 28 countries. SIN officers are typically located in UK embassies, high commissions or consulates, and work alongside other diplomats and representatives of bodies such as UK Trade and Investment. The place of science in UK foreign policy was further strengthened in 2009 by the appointment of the first Chief Scientific Adviser to the Foreign and Commonwealth Office (FCO). There are also UK science attachés in Beijing, Brussels, Washington and New Delhi. In London, there are science attachés posted to the embassies of Brazil, Canada, China, Russia and several European countries, who meet regularly as the London Diplomatic Science Club.

4. Three dimensions of science diplomacy

4.1 Although a fluid concept, science diplomacy can usefully be applied to the role of science, technology and innovation in three different ways:

- a) using science cooperation to improve international relations between countries and regions (science for diplomacy)
- b) facilitating international science cooperation (diplomacy for science);
- c) informing foreign policy objectives with scientific advice (science in diplomacy);

4.2 Building, nurturing and sustaining partnerships are important to all of these, and are central to science diplomacy, but it is the first category – science for diplomacy – that perhaps best illustrates the role of science in soft power.

a. Science for diplomacy

4.3 Examples of science for diplomacy tools include:

- Scientific cooperation agreements, which have long been used to symbolise improving political relations, for example between the United States and the USSR and China in the 1970s and 1980s. A science agreement was the first bilateral treaty to be agreed between the United States and Libya in 2004, after Libya gave up its biological, chemical and nuclear weapons programmes.
- New institutions can be created to reflect the goals of science for diplomacy. Perhaps the best example is the European Organisation for Nuclear Research (CERN), which was founded after World War II to help rebuild bridges between nations. CERN enabled some of the first post-war contacts between German and Israeli scientists, and kept open scientific relations with Russia and other Eastern bloc countries during the Cold War. SESAME, a similar initiative in the Middle East led by Sir Chris Llewellyn Smith FRS, involves the construction of a CERN-style particle accelerator, the region's first major international research centre, outside of the Jordanian capital, Amman. Scientists from Iran, Israel, Turkey, Cyprus, Bahrain, Pakistan and Egypt are working together on the project despite the difficult relations between some of their countries.
- Educational scholarships are a well-established mechanism for network-building and encouraging partnerships. For example, the Royal Society runs the high profile but modest Newton International Fellowships scheme, in partnership with the British Academy, to select the best early stage post-doctoral researchers from around the world, and offer them long-term support to carry out research and sustain relations with institutions in the UK.⁸

⁷ <http://www.sciencediplomacy.org/article/2013/rise-science-and-technology-diplomacy-in-japan>

⁸ www.newtonfellowships.org/

Science festivals and exhibitions, particularly linked to the history of science, can be an effective platform from which to emphasise the universality of science, and common cultural interests. China, India, Iran and other Islamic countries are particularly proud of their contributions to the history of science. The Royal Society is beginning to explore opportunities to use its extensive archives for (UK-based and travelling) exhibitions; recent examples include Spain and Qatar, with China as a future prospect.

4.4 Examples of the Royal Society's current science for diplomacy projects include:

- *The Commonwealth*

The Royal Society is particularly keen to develop its links with the Commonwealth. Its Fellowship is drawn from across the leading Commonwealth nations – with around 165 Fellows living in Commonwealth countries other than the UK. In November 2014, the Royal Society will host the first biennial Commonwealth Science Conference, the inaugural event in India, to engage the very best scientists, engineers and technologists from across its 54 countries. The conference will celebrate excellence in Commonwealth science, facilitate cooperation between scientists and inspire younger scientists in different Commonwealth countries. The Royal Society is presently raising funds for this Conference series.

With the UK Government's renewed focus on these 54 nations⁹, the Royal Society, as the UK's national academy and academy of science of the Commonwealth, can play a leading role in this area.

- The Atlas of Islamic-World Science and Innovation¹⁰

This project promotes science cooperation as an area where trust and cooperation between Europe and the Islamic world can be strengthened at a time when political relations are strained. The project takes the form of a unique partnership between the Royal Society, the Organisation of Islamic Cooperation (OIC), the British Council, Nature, the International Development Research Centre and Qatar Foundation, and is chaired by the OIC Secretary General. This complex multipartner project has attracted interest from government and scientific communities in the UK, Europe, US and OIC countries, and has to-date published reports on science and innovation in Malaysia, Egypt and Jordan.

- Mount Paektu geoscientific project in North Korea.

The Royal Society is currently supporting an unprecedented collaboration that offers a unique opportunity to open up engagement with North Korean scientists. Mount Paektu spans the border between China and North Korea but little is known about its North Korean side. However, in the 10th century it was responsible for one of the world's largest eruptions of the past few millennia; the eruption having profound consequences in East Asia with substantial ash fall reaching Japan. Following a recent earthquake swarm beneath the volcano, attention has turned to its current state.

There has never been any direct collaboration between North Korea and China, and data that may have previously been collected by North Korean scientists have not been shared internationally. In the summer of 2012, scientists from Imperial College London and Cambridge University went to North Korea to discuss a collaboration to monitor, image and better understand the hazards associated with Mount Paektu, in partnership with the Institute of Volcanology of the North Korean Earthquake Administration. Research is now underway with monitoring equipment deployed on the North Korean side of the volcano for data collection over the next year. Future collaboration could involve North Korean scientists being trained in the UK and possibly even reciprocal exchanges in the longer term. This collaboration was politically inconceivable: it would not have taken place without the

⁹ www.gov.uk/government/speeches/the-commonwealth-is-back-at-the-heart-of-british-foreign-policy

¹⁰ www.royalsociety.org/policy/projects/atlas-islamic-world/

Royal Society's facilitation as a co-signatory of both an MOU and research agreement, and its undertaking of political, scientific and legal due diligence.

- 4.5 The Royal Society's experience shows that **science diplomacy, as an arm of soft power, has the potential to help defuse complex and tense geopolitical situations by providing opportunities to build apolitical partnerships in developing and emerging economies.**

b. Diplomacy for science

- 4.6 Flagship international projects, such as the Large Hadron Collider at CERN, carry enormous costs and risks but are increasingly vital in areas of science that require large upfront investments in infrastructure beyond the budget of any one country. These projects are the visible examples of everyday, bottom-up collaboration that takes place between individual scientists and institutions. The scientific enterprise is now premised on the need to collaborate and connect. This was articulated in the Royal Society's 2011 report *Knowledge Networks and Nations*¹¹¹²⁴, which explored trends and developments in global science as well as different models of, and barriers to, collaboration.
- 4.7 Collaborations are no longer based purely on historical, institutional or cultural links. This creates an opportunity for the foreign policy community. Science can be a bridge to communities where political ties are weaker, but to develop relationships in these areas, scientists may require diplomatic assistance, whether in contract negotiations, intellectual property agreements or dealing with visa regulations. The Royal Society is currently providing this kind of support to the collaboration between UK volcanologists and their North Korean counterparts mentioned above.
- 4.8 At a multilateral level, the Royal Society is a member of the International Human Rights Network of Academies and Scholarly Societies and has been an active supporter of scientific freedom and access¹². The Royal Society is also a member of the ICSU Committee on the Freedom and Responsibility in the Conduct of Science¹³, which advocates the Universality of Science so that scientists are not discriminated by virtue of citizenship, religion, political opinion, ethnic origin, race, or gender. Through this Committee, the Royal Society supports the free communication between, and association with, other scientists and can help scientists overcome barriers to cooperation, sometimes in spite of political impasse.
- 4.9 Whilst independent, the Royal Society cooperates with the FCO, BIS and other government departments, the British Council, UK Research Councils and other learned societies on the UK's international science effort. Whilst this cooperation is constructive, it is not always efficient. The FCO could usefully develop a strategy that explicitly sets out a vision for how science cooperation should feature in UK foreign policy and how this vision should be implemented across Government. This should include how science could feature more prominently in the British Council's cultural relations narrative (alongside the arts and education): with offices in six continents and over 100 countries, it has huge potential to use science as a source of soft power. The role of the FCO/BIS Science and Innovation Network is also instrumental here: the Network provides a high quality level of service by providing in-country intelligence, identifying expertise, brokering partnerships, and delivering on-the-ground logistical support and advice. SIN officers develop an in-depth understanding of the policies, people and priorities of their host countries, and identify collaborative opportunities for UK scientists, universities and high-tech firms – a service that is critical to the UK's prosperity agenda.

There also need to be more effective mechanisms and spaces for dialogue between policymakers, academics and researchers working in the foreign policy and scientific communities to identify projects and processes that can further the interests of both communities.

- 4.10 All collaborative science requires funding. The EU framework programmes and now Horizon 2020 are good examples of how significant pots of money have enabled significant collaboration between EU

¹¹ <http://royalsociety.org/policy/projects/knowledge-networks-nations/report/>

¹² For example, in 2002, the Society supported a statement against a boycott on international cooperation with Israeli scientists during the Israel-Palestine conflict.

¹³ <http://www.icsu.org/about-icsu/structure/committees/freedom-responsibility>

countries and now, increasingly, third countries. With an €80 billion budget, Horizon 2020 has the potential to become the first truly global science initiative, and a significant source of soft power. Global platforms for research cooperation – such as the International Council for Science’s (ICSU) new 10 year Future Earth programme – will similarly mobilise thousands of scientists, while strengthening partnerships with policy-makers and other stakeholders to provide sustainability options and solutions in the wake of Rio+20. It is critical that the UK continues to participate in large-scale funding programmes and regional and global platforms for cooperation.

c. Science in diplomacy

- 4.11 The effective use of scientific advice in foreign relations requires international policymakers to have a minimum level of scientific literacy, or at least access to others who have it. It also requires scientists to communicate their work in an accessible and intelligible way, which is sensitive to its wider policy context.
- 4.12 National science academies and learned societies are an important source of independent scientific advice to national and international policymakers, and in deploying science for soft power. The Royal Society, as one of the oldest and most prestigious academies, has world-leading scientific capital and significant political capital: it works unilaterally, regionally and globally with other science academies to strengthen scientific advice to governments, and nurture scientific collaboration with the UK.
- 4.13 The global influence of the European Union, the degree to which it legislates for the UK, and the progressive development of the European Research Area provide imperatives and opportunities for the UK to continue to help shape European policy. Interactions between UK and European scientists and institutions are strong and provide a useful, but presently underexploited, source of soft power. The Royal Society works with its sister academies in the EU through European Academies Science Advisory Council (EASAC)¹⁴ on wide-ranging policy issues, such as carbon capture and storage, and crop genetic improvement technologies for sustainable agriculture. EASAC is an important institution for soft power at the European level.
- 4.14 Similarly, at the G8 level, the G8+5 science academies have met annually since the UK’s G8 Presidency in 2005 to produce joint statements on issues of importance to the G8. This year, the Royal Society hosted the first ever meeting of G8 Science ministers and national academies as part of the UK’s 2013 G8 Presidency¹⁵; a meeting where agreement was reached on a number of open science issues that had been difficult to negotiate bilaterally.
- 4.15 The Royal Society also advises international institutions on global scientific issues through its membership of the InterAcademy Council (IAC), the IAP global network of science academies, the International Council for Science (ICSU) and other bodies, and seeks to build its own links with intergovernmental organizations (including the OECD, Organisation for the Prohibition of Chemical Weapons (OPCW), and UN agencies).
- 4.16 International institutions are beginning to take science advisory systems seriously. The EU has established a Chief Scientific Adviser to the Commissioner¹⁶ and the UN Secretary General has set up an international scientific advisory board¹⁷ reporting directly to him. In 2001, the UN Conference on Trade and Development (UNCTAD) agreed to set up a science diplomacy initiative to improve ‘the provision of science and technology advice to multilateral negotiations and the implementation of the results of such negotiations at the national level’.¹⁸ Its focus has been on building the capacity of scientists and diplomats from developing countries to participate in international negotiations.¹⁹

¹⁴ <http://www.easac.eu/>

¹⁵ <http://royalsociety.org/news/2013/science-ministers-and-national-academies/>

¹⁶ <http://www.nature.com/news/first-eu-chief-scientific-adviser-named-1.9412>

¹⁷ <http://www.nature.com/news/unesco-to-set-up-un-science-advisory-board-1.10884>

¹⁸ UNCTAD 2003

¹⁹ <http://stdev.unctad.org/capacity/diplomacy.html>

4.17 The Royal Society has a long history of building science capacity in Africa, promoting science cooperation between UK and African researchers and building the capacity and profile of African science academies²⁰. In doing so, African researchers and academies can become vital contributors to research and evidence-based policymaking in their own countries, as well as enhance their national and continental voice in international debates. Capacity building in science programmes can contribute to soft power.

5. Concluding remarks: what the UK Government can do to support science as soft power

A UK strategy for science diplomacy

5.1 The UK has a positive story to tell on science with considerable strength and prestige in the international scientific arena. The Scientific Century (2010)²¹ showed how, with just 1% of the world's population, the UK provides 3% of global funding for research, 7.9% of the world's papers, 11.8% of global citations, and 14.4% of the world's most highly cited papers. The UK is a heavyweight, but it is not yet using this strength to its full advantage.

The UK Government should treat science as not just intellectual or economic capital. The UK can still go further in exploiting its scientific expertise to further its diplomatic aims. The FCO should develop a strategy that explicitly sets out a vision for how science cooperation should feature in UK foreign policy and how this vision should be implemented across Government.

Creating an infrastructure for science diplomacy

5.2 The FCO could usefully place greater emphasis on science within its strategies and draw more extensively on scientific advice in the formation and delivery of policy objectives. The FCO/BIS Science and Innovation Network and the post of FCO Chief Scientific Adviser (CSA) are critical for integrating science across FCO priorities and developing stronger links with science-related policies in other government departments. It is encouraging to see that a new department now supports the FCO CSA role, and that a deputy CSA has also been employed.

5.3 Other mechanisms to help build stronger links could include:

- ensuring messages about the value of science are promulgated throughout foreign ministries and embassies, including to all Heads of Mission;
- incorporating science policy training into induction courses and training for foreign ministry staff, and specialist diplomatic training for dedicated science officers;
- involving more scientists in foreign ministries to advise at senior and strategic levels;
- encouraging the recruitment of science graduates as part of the general intake for the foreign service;
- encouraging secondments and pairing between diplomats and scientists;
- encouraging independent scientific bodies to provide science policy briefings for foreign ministry and embassy staff.

Practical barriers to scientific exchange

5.1 An important set of constraints to science diplomacy are regulatory barriers, such as visa restrictions and security controls. Immediately after September 11 2001, more stringent travel and visa regimes in countries like the US and the UK severely limited the opportunities for visiting scientists and scholars, particularly from Islamic countries. Although efforts have been made to unpick some of these strict controls, there are still significant problems with the free mobility of scientists from certain countries. Such policies shut out talented scientists, hinder opportunities to build scientific relations between countries, and often hold up progress in UK-based research. Security controls can also prevent

²⁰ <http://royalsociety.org/about-us/international/capacity-building/>

²¹ http://royalsociety.org/uploadedFiles/Royal_Society_Content/policy/publications/2010/4294970126.pdf

collaboration on certain scientific subjects, such as nuclear physics and microbiology. These policies are based on concerns over the dual use potential of some scientific knowledge. However, it is important to take into consideration the diplomatic value of scientific partnerships in sensitive areas to help rebuild much needed trust between nations.

Widening the circle of science diplomacy

- 5.2 Scientific organisations can play an important role in diplomacy or soft power, particularly when formal political relationships are weak or strained. The scientific community may be able to broker new or different types of partnerships. The range of actors involved in these efforts should expand to include non-governmental organisations, multilateral agencies and other informal networks. A nation's scientific diaspora is also strategically important, as scientists based overseas are often keen to retain a close involvement with their country of birth.
- 5.3 There need to be more effective mechanisms and spaces for dialogue between policymakers, academics and researchers working in the foreign policy and scientific communities, to identify projects and processes that can further the interests of both communities. Foreign policy institutions and think tanks can offer leadership here by devoting intellectual resources to science as an important component of modern day diplomacy.

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Acting on behalf of the Royal Society's Foreign Secretary, Professor Martyn Poliakoff CBE FRS
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