5th Neureiter Science Diplomacy Roundtable

"Science & Technology and the Frontiers of 21st Century Trade Policy"

The Royal Society, London, UK
Thursday 5 October 2017

Introduction

The Neureiter Science Diplomacy Roundtables seek to address contemporary topics in science diplomacy by bringing together a diverse group of experts, practitioners, and thought leaders in an informal, not-for-attribution dialog that can make real contributions to science diplomacy practice. The roundtable was launched in 2012 by the American Association for the Advancement of Science (AAAS) in honor of Dr Norman Neureiter, the first science advisor to the U.S. Secretary of State. Since 2014, the roundtable has in alternate years been co-organized and hosted outside the United States in partnership with key science and technology (S&T) and public policy organizations, including the National Graduate Institute for Policy Studies in Tokyo.

For this, the 5th Neureiter Roundtable, the Royal Society and AAAS brought together 15 leaders from policy, diplomacy, trade, science, and industry in the United Kingdom and the United States to explore the trends and drivers changing the shape of international trade. Delegates participated in moderated discussions to highlight the role of advances in science and technology and their effect on the frontiers of a rapidly changing international trade system. In three sessions, the Roundtable examined 'The Changing Face of International Trade', 'The Use of Science and Scientific Evidence in 21st Century International Trade' and 'Building Internal Science and Technology Capability in Trade Organizations'.

Participants welcomed both the opportunity to discuss the topic of science and trade and the chance for different communities to interact. Two key themes emerging from the discussion were, firstly, how the concept of 'borders' is becoming increasingly blurred for many categories of current trade and requires further careful thought; and, secondly, while scientists might not have traditionally considered trade an area in which they would have much to contribute, it is now clear that their contribution is vital.

The discussion on international trade was particularly timely and relevant, given the ongoing efforts of the UK government to plan for Brexit, the central role of trade in the foreign policy priorities of the new U.S. Administration, and the possibility of a new free trade agreement between the UK and the United States. There was interest in exploring the topic further on both sides. The main points of the meeting are summarized below. This summary is non-attributable and does not reflect a consensus of those present or the views of the sponsoring organizations.

A Rapidly Changing Trade Landscape

Many participants asserted that the rules that govern global trade represent the realities of a past generation, not today. For example, the rules that underpin the World Trade Organization (WTO), including the General Agreement on Trade in Services (GATS), were negotiated and agreed in 1994, a year before the internet was commercialized and when it had less than two million users, instead of 3.7 billion users

today.[1] Economic policy discussions tend to be based on the current state of technology rather than what is on the horizon. The slow and difficult process of agreeing to changes to WTO rules or negotiating trade agreements does not reflect the pace of technological change, and can create the impression of negotiations being done “through the rear view mirror”.

Meanwhile there are rapid changes in how products are produced and how services are brought to the market. The world is becoming increasingly interconnected. Complex and integrated supply chains have rewritten how trade is conducted.

Traditional trade policy is oriented towards big companies but the actors in trade are constantly changing. Small and medium enterprises are growing and playing a larger role in the innovation ecosystem. Emerging economies such as China, India, Brazil and Russia are growing players. Traditional methods of innovation, such as in-house laboratories, are being supplemented by new approaches such as crowdsourcing. For example, General Electric ran a global competition to redesign a metal jet engine bracket, which was won by a young Indonesian engineer who was able to slash its weight by nearly 84% while preserving its integrity and mechanical properties.[2] This bracket was then 3D printed.

Other factors impacting the trade landscape are politics, ethics and regulations. These considerations may require agreements affecting trade to be reached outside the traditional trade structures. Cybersecurity, intellectual property, and the intersection of the two are also key concerns. It can be challenging to harmonize regulation. It may instead be easier for governments to align the objectives of their regulatory systems as well as provide certainty and stability for them. There is a need for the economic and trade policy machinery of nation states to adapt to the changing science and technology landscape. Given the direct impact of trade policy on local communities and individuals, there is also a need for public dialog on the issues involved.

Intangibles: The blurring distinctions between goods and services and the rise of data

Underpinning many of the changes in trade is the blurring of the distinctions between goods and services and the ever increasing importance of data. Often all three are combined in single ‘smart’ products like self-driving robotic vacuum cleaners.[3] These products include advanced software that enable them to navigate their environment, all the time collecting data which generates its own value when analyzed in aggregate.[4] This collected data can then lead to benefits to consumers by allowing developers to improve their products but can cause concerns around privacy.[5] It can raise other questions related to the rights of data subjects, the designation of country of origin with respect to the location collected vs. the location of the company, and the rights of the manufacturer to use or sell that data.

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[1] https://www.bu.edu/ilj/2015/11/24/mode-1-mode-2-or-mode-10-how-should-internet-services-be-classified-in-the-global-agreement-on-trade-in-service/; http://www.internetlivestats.com/internet-users/

[2] https://www.ge.com/reports/post/77131235083/jet-engine-bracket-from-indonesia-wins-3d-printing/

[3] http://www.irobot.co.uk/Home-Robots/Vacuuming

[4] At $2.8 trillion in 2014, global flows of data exerted a larger impact on world growth than traditional goods flows: https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-globalization-the-new-era-of-global-flows

[5] https://www.theguardian.com/technology/2017/jul/25/roomba-maker-could-share-maps-users-homes-google-amazon-apple-irobot-robot-vacuum

Participants raised other considerations that extend beyond the convergence of goods, services, and data. Existing metrics fail to capture other intangibles that are traded. Participants highlighted that the wider contributions of research activity may not be well accounted for. For example, knowledge and R&D services are increasingly becoming more important in trade discussions.[6] At the same time, higher education exchanges and international students are "traded" assets which are not traditionally accounted for. For example, over the 2015-16 academic year there were 1,043,839 international students enrolled in the United States[7] and 438,010 in the UK.[8] This exchange of students creates significant relative advantages in higher education, which bring short-term economic gains and long-term impact, such as through the creation of alumni networks and connections to the host country[9]. These connections can lead in the long term to future preferential behavior, such as decisions to invest.

Redefining Borders, Markets and Risk in the 21st Century

The increasing importance of data in trade poses a challenge to the notion of national borders, and the role of data as a public good may help to redefine traditional concepts of what constitutes a market and the boundaries around it. A growing demand for the localization of data (e.g. storing data in the country where it is collected, in order to minimize risks from hackers etc.) and the hardware it is stored on demonstrates how the role of borders is being redefined as jurisdictions overlap in the digital sphere.

The rise of "techno-nationalism" – a desire to reduce reliance on foreign technology and to promote domestic innovation in some countries – was discussed. This is especially evident in the digital sphere where the idea of a borderless internet governed on the principle of universal values is competing with concepts such as "internet sovereignty"[10]. Several participants felt that such an approach, if widely deployed, could lead to a fragmentation of the internet in years to come as countries effectively create their own digital ecosystems.

One participant suggested that we are in a period of "monopoly" by big technology companies, comparable to earlier periods characterized by the dominance of a small number of oil or railway companies, and that this has implications for our understanding of the current model of trade policy conducted between states.[11]

Participants highlighted the need to consider cultural differences that can affect how free trade and open markets are viewed, and how attitudes to science and technology and its exploitation can vary widely between countries, with implications for their regulatory environments. It is often disagreements between standards and acceptable risk that are central to trade disputes, and both can be used as a form of

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[6] The UK National Academies have recognised the need to reconsider the benefits research and innovation bring to the UK, the distribution of those benefits across the country and its population, and how best to measure these. Rather than simply refining the case for more investment overall, the need instead is to recognise and measure the wide-ranging impacts. To that end, the Academies are commissioning analysis on the distribution of benefits, to create new and compelling evidence to support future investment.

[7] https://www.iie.org/Why-IIE/Announcements/2016-11-14-Open-Doors-Executive-Summary

[8] https://institutions.ukcisa.org.uk/Info-for-universities-colleges--schools/Policy-research--statistics/Research--statistics/International-students-in-UK-HE/

[9] See the Russell Group's recent report on the economic impact of their universities: http://russellgroup.ac.uk/news/economic-impact-of-russell-group-universities/

[10] "Internet sovereignty" is the idea that each country has the right to control its domestic internet space in a similar way to how it controls its land, air and sea

[11] https://www.weforum.org/press/2015/09/ewto-needed-to-govern-the-internet-says-jack-ma/

competitive advantage.[12] The importance of relationships and trust in the process of trade negotiations was stressed, as well as the role that science can play in helping to maximize the benefits and minimize the risk involved.

Subnational policy makers also have a key role to play. For example, in many countries cities can set their own regulations on vehicle emissions, such as London, and U.S. states vary in their regulations around data and privacy, which can provide conditions that drive innovation.

There was some discussion as to whether there might be a role for science and technology to address the after-effects of disruptive technological change. The increase in data and the ability to analyze it might enable policy makers to better anticipate such changes and take action earlier to minimize the negative impacts as well as maximize the positive.

Integrating Science and Trade for the future

Scientists can have an important role in informing trade negotiations and policy by providing intellectual expertise, analyzing and solving problems, crafting clear and common definitions, and providing the sound evidence base that can help shape the agenda, including in contentious areas. As the Royal Society and AAAS have explored previously, science can contribute to foreign policy objectives and science cooperation can be used to help improved relations between countries.[13] Scientific collaboration can create trust which is crucial for successful negotiations but more needs to be done to increase communication between the often separate worlds of science and trade.

Scientists can directly help shape the trade agenda through greater involvement in the setting of international standards. This is an independent, multi-stakeholder, non-governmental process, and there is potential for technical challenges to be resolved by scientists outside of formal diplomatic channels.[14] Participants emphasized that it is crucial to recognize and value the engagement of scientists. Standards can be one way to develop the much-needed common language between both the science and trade communities. Challenges for scientists' participation in standards setting is a lack of training, a lack of incentives for scientists to participate, and the difficulty for countries lacking a strong science base to participate in the processes.

Shared standards can help to facilitate trade, and these should take into account the variations that exist between capabilities and between nations and regions, for example whether standards are based on the best equipment or that which is more accessible, which may be less precise.

Policymakers and trade negotiators often have limited technical information on emerging technologies and processes such as advanced manufacturing and virtual reality, which can be critical to understand future trends in trade and the private sector. Scientists working together with the trade community can help to better understand the impacts of these technologies, particularly in national discussions. There is a need for robust scientific advice to inform international trade, for example by placing a well-connected S&T advisor in trade departments or organizations or through establishing a scientific advisory council to provide

[12] For example, in the case of genetically modified organisms, see: https://www.ictsd.org/bridges-news/biores/news/a-review-of-wto-rules-and-gmo-trade

[13] https://royalsociety.org/~/media/Royal_Society_Content/policy/publications/2010/4294969468.pdf

[14] https://www.iso.org/developing-standards.html

advice to those making decisions on funding and investment.[15] Scientists and technical experts involved in trade policy and standards setting will be more successful in building trust with policymakers if they possess or learn effective communications and engagement skills.

There can be value in having scientists present during trade negotiations to provide clarity and help facilitate consensus on technical issues. However, some argued that more value would come from scientists supplying the necessary input, especially around standards and risk toleration, rather than being directly involved in the negotiations. Many participants noted the value in considering the role of science in trade negotiations and expressed interest in UK-US collaboration on this topic. One participant even issued a challenge to develop a strategic plan for integrating science into trade. The Royal Society and AAAS could help to identify potential avenues for further exploration.

Advances in technology can even play a role in facilitating the process of trade negotiations. For example, the slow process of translation in multilateral forums like the WTO, where there may be over 30 languages, could be improved by translation techniques based on machine learning. These could speed up negotiations, provide greater accuracy and create conditions for effective conversation.

Future opportunities and next steps

It is clear that science and technology must have a central role in future trade policy. Throughout the day participants noted the range and diversity of opportunities that are available to further the discussions held during the 5th Neureiter roundtable. There are many building blocks in place in both the U.S. and UK and between the two countries that can be used for further ensuring that scientific and technological advances are at the heart of how trade policy is done and what is traded. There is ample evidence that there should be dialog between key science and technology communities from industry and academia and government departments dealing with trade policy. All of us have the responsibility to ensure that such dialog continues and gets turned into action.

[15] In November 2017, Dr Mike Short was announced Chief Scientific Adviser for the UK Department for International Trade. http://www.theiet.org/membership/member-news/45a/mike-short.cfm

Annex 1 – List of participants

- John Alty, Director General of Trade Policy, UK Department for International Trade
- Karan Bhatia, Vice President and Senior Counsel, Global Government Affairs & Policy, General Electric
- Richard Catlow FRS, Foreign Secretary, Royal Society
- Amanda Chessell FREng, IBM Distinguished Engineer
- Robin Grimes FREng, Chief Scientific Adviser, UK Foreign and Commonwealth Office
- Alex Halliday FRS, Physical Secretary and Vice-President, Royal Society
- Andy Hopper FRS, Head of the Computer Laboratory, University of Oxford and Treasurer and Vice-President, Royal Society
- Kaye Husbands Fealing, Professor and Chair, School of Public Policy, Ivan Allen College of Liberal Arts, Georgia Tech
- The Baroness Brown of Cambridge (Julia King) FREng FRS
- Pippa Malmgren, Founder, DPRM Group, Co-founder H Robotics, and Non-Executive Director, UK Department for International Trade
- John Neuffer, President & CEO, Semiconductor Industry Association
- Federico Ortino, Consultant, Clifford Chance LLP and Reader in International Economic Law, King's College London
- Michele Ostraat, Research Center Leader, Aramco Services Company
- Ric Parker, Former Director of Research & Technology, Rolls-Royce plc
- Scott Steedman, Director of Standards, BSI Group

Staff Participants

- Luke Clarke, Senior Policy Adviser, Royal Society
- Claire Craig, Chief Science Policy Officer, Royal Society
- Thomas Goldsmith, Policy Adviser, Royal Society
- Jo Dally, Head of Policy, Royal Society
- Niamh McMahon, Senior Policy Adviser, Royal Society
- Mahlet Mesfin, Deputy Director, Center for Science Diplomacy, AAAS
- Elizabeth Surkovic, Head of Policy, Royal Society
- Tom Wang, Chief International Officer and Director, Center for Science Diplomacy, AAAS
- Rapela Zaman, Director of International Affairs, Royal Society