Science as Catalyst for Deeper Arctic Cooperation? Science Diplomacy & the Transformation of the Arctic Council

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As a variety of challenges emerge in the Arctic, the demand for scientific and technological solutions is increasing. Due to the complex nature of the given challenges, cooperation in the fields of science and technology could serve profitable in order to tackle these issues. The impact of cooperation in Science and Technology however exceeds the purely practical dimension; it rather opens opportunities for closer political cooperation as well as requiring diplomatic efforts in order to establish cooperative structures. This chapter assesses the current state and possible future trajectory of scientific and technological cooperation within the Arctic Council by applying the concept of science diplomacy and assesses if scientific cooperation can assist in ameliorating political cooperation by creating an epistemic community. Examples will comprise the development of the Arctic Environmental Protection Strategy into the Arctic Council as well as the legally binding agreements.

Science and technology are among the fields where cooperation is most visible in the Arctic. A variety of initiatives within the Arctic Council (AC) such as the Sustainable Development Working Group (SDWG), the Emergency Prevention, Preparedness and Response (EPPR) or the Arctic Monitoring and Assessment Programme (AMAP) represent sub-units within the AC that show at least the symbolic significance of scientific cooperation within the Council.

The AC has introduced the Agreement on Enhanced International Arctic Scientific Cooperation[1], a legally binding agreement, in order to strengthen scientific relations in the Arctic. This agreement will represent one of the major objectives of the United States' AC chairmanship from 2015 to 2017 (State Department, 2015). This results from the high demand for scientific solutions of Arctic policy areas – mitigating the negative effects of climate change, achieving environmental protection and improving maritime security, to mention a few examples. As these challenges affect all Arctic states and cooperation in areas of science and technology proves profitable for states in combating these challenges, the Arctic states show a high degree of interest in scientific topics. In addition, the high degree of influence of indigenous groups in the Arctic Council and their specific knowledge production could fortify their roles in scientific cooperation. As Briggs (2005: 110) describes, indigenous knowledge should not only be regarded as alternative to Western knowledge, but also as complement. Within the Arctic Council (AC), this could lead to an emerging transfer of indigenous knowledge.

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Scientific and technical cooperation provides a number of opportunities to states. First, there is mutual advantage from improved technological solutions to central Arctic issues. For example, in the field of Search and Rescue (SAR), the improvement of crucial infrastructures is facilitated by the combination of the respective states' scientific capabilities in developing technological means for SAR and improved analysis of the situation through research on sea ice and ocean dynamics.

Second, states can emerge as knowledge leaders by providing specific knowledge on these issues, the transfer of technologies that could assist with solutions, and assuming an active role in research communities through agenda-setting. For example, Finland pursues an engaged research policy in the Arctic to emerge as a leader in knowledge and technology and eventually profit economically from this form of engagement (Prime Minister's Office 2013: 23). Arctic strategies of various states contain insight in to which form of scientific cooperation is desired – joint research centers, technology transfer and common solutions to imminent problems such as climate change are central.

Third, and most prominently in this chapter, scientific cooperation holds potential as an instrument to achieve deeper institutional integration and cause positive spillover effects on other issues. I argue that science and technology serve as a viable means to address not only urgent challenges but will cause a strengthening of cooperative institutions as a whole. In this regard I will also assess which obstacles science diplomacy has to overcome in order to be effective and where scientific cooperation reaches its limits, or even could affect cooperation negatively.

Concepts that are applicable to this argument are the "Soft Power" concept by Joseph Nye (2004, 2011), epistemic communities and most prominently the concept of science diplomacy, which describes scientific cooperation as a diplomatic instrument for improving relations and establishing cooperation. Deeper integration and strengthening of an institution, in this case the Arctic Council, can be approached through neofunctionalist approaches (Haas, 1958, Rosamond, 2015) that describe institutional integration as a consequence of spillover effects of cooperation in one sector, creating a more comprehensive institution as a whole. This applies especially to the case of science diplomacy, where scientific cooperation is created with the endeavor to achieve deeper political cooperation.

This chapter will therefore investigate the role of the AC's cooperative scientific programs not only in the narrow framework of scientific cooperation, but also in the wider framework of science as an instrument of deeper institutional integration and for strengthening the Council. In this regard it is however also important to include the possible concerns scientific cooperation may cause – transfer of technologies may be perceived as compromising sovereignty and, in some issues, even security. I will assess however how science can work as a positive narrative of transformation of the Council, as a measure of building trust and confidence and if science diplomacy seems a viable option to strengthen the Council's role in Arctic politics. In doing this, I will explain the existing initiatives for cooperation in science and technology, evaluate national strategies and policies in this issue and assess if these build a framework that is necessary for stronger cooperation and if this could incite a transformation process within the Arctic Council. The assessment will be based on the theoretical framework consisting of neofunctionalist

integration theories and the concepts of soft power, epistemic communities and especially science diplomacy.

Neofunctionalist Integration Theory and Epistemic Communities

Institutions often play an important role in the production, collection and cultivation of knowledge. As Young (2004: 217) states, institutions and regimes shape knowledge production by agenda-setting, framing issues and concentrating resources on areas of particular interest. However, states should not be perceived as 'black boxes', as civil society actors can influence knowledge production as well. Furthermore, they can establish policy frameworks and construct analytic models that improve knowledge production. However, Young (2004: 220) does not reduce the influence of institutions to agenda-setting, but acknowledges their importance in defining contents and topics. In addition, knowledge production is represented more in public through institutions, therefore applying knowledge production to public issues and creating policy frameworks.

Such institutions can trigger a stronger institutional integration in other areas than knowledge production, and knowledge production serves as a base for more comprehensive integration. Theoretically, this could be explained through neofunctionalist theories, although neofunctionalist scholars have especially focused on the European Union as a prime example of institutional integration (e.g. Haas, 1958). However, the theory applies to a variety of institutions that attempt to achieve deeper integration. As Heininen's (2012) analysis of the Arctic strategies proves, strengthening the Arctic Council is an objective of the majority of Arctic nations, therefore integration theories such as neofunctionalism prove to be useful to explain a possible route to a stronger institutionalization. Neofunctionalism describes integration as a steady process with a variety of actors included, attempting to achieve mutually positive results through cooperation (Niemann & Ioannou, 2015: 197). Regional integration differs from cooperation as it is understood as a comprehensive procedure that does not only include intergovernmental cooperation in an issue area, but common policies in a number of areas. While the AC is clearly an intergovernmental rather than a supranational institution, advancing regional integration of the Arctic by adopting common policies in an increasing variety of policy fields could be serviceable to improved intergovernmental cooperation. When applying neofunctionalist theories on the AC, one needs to be cautious to limit the extent of these theories, as integration will never reach quite as deep as in the case of the EU. The argument for applying neofunctionalism in this case is because it perceives cooperation in one area as initiating cooperation in other areas through so-called spillover effects, for example, scientific cooperation may cause cooperation in other sectors. (Fritsch & Franke, 2004; Lieber, 2000) Haas (1958: 292) describes spillovers as a consequence of domestic policy development and the perception of actors within states, that aspects of these developments could be governed more effectively on an international level. Likewise, cooperation on supranational levels in one area, for example industrial policy, increases the interest of discussing labor policy on a supranational level as well. As knowledge production in the Arctic comprises areas of environmental security and protection, resource extraction and maritime security, such spillovers are likely to occur.

This process of creating and collecting knowledge turns institutions into epistemic communities. An epistemic community, as defined by Haas (1992: 3) is "a network of professionals with

recognized expertise in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue-area." According to Haas, these communities share normative principles and beliefs, causal beliefs, notions of validity and common practices. However, they are not reduced to scientific communities. Epistemic communities can be understood as communities of shared thoughts and norms based on the notion of science as a means of creating knowledge. Haas also describes epistemic communities as "thought collectives". The importance of epistemic communities lies in their possibility to influence policy makers. Haas describes this as a causal process, as epistemic communities influence the behavior of policy-makers, who in consequence turn to influence other policy-makers in order to increase policy coordination. Epistemic communities therefore serve an important role in the building of comprehensive institutions, which also underlines the significance of the concept in science diplomacy. Cross (2013: 155) extends the groups of persons compiling an epistemic community to diplomats, military officials, lawyers and more, assessing that these groups have the power to influence common policies as well. Cross describes professionalism as the constitutive element of epistemic communities rather than science. Of utmost importance for a functional epistemic community is its inner constitution, internal cohesion leads to a strengthening of the community and in consequence the community can execute its influence on policy processes more strongly (Cross, 2013: 146).

To sum up, epistemic communities share common scientific understandings and norms, however, do not have to consist merely from scientists, but can comprise a broader array of members. Through common understanding they create knowledge and exert influence on policy-making processes, contributing to converging positions of states in the international system. If the Arctic Council thrives to substantially and sustainably develop Arctic policy, it needs to become a strong epistemic community.

Politics through Science: Soft Power and Science Diplomacy

Epistemic communities can be understood as a variation of science diplomacy, especially if science diplomacy works as a strong means of policy coordination. Exerting influence through science and common scientific understanding however comprises another aspect, the so-called "soft power" concept, as described by Joseph Nye (2004, 2011).

Soft power, as described by Nye, is a less coercive and more cooperative understanding of power. Soft power is used by states as a diplomatic mean to set agendas, shape preferences and influence interests in order to create common values and spread norms. However, soft power exceeds influencing states, it seeks to change perceptions via attraction and via spreading values. As Nye (2011: 83) describes, soft power is not only used by states, but also non-governmental actors or intergovernmental institutions can make use of the concept, influencing behavior and actions through attraction. As science and technology can serve as mean of soft power, technological development that is encouraged and facilitated by the Arctic Council could strengthen the Council as a whole, rendering influence in other policy fields possible, therefore also causing the desired spillover effects. In this case, soft power cannot only be exercised by states, but also indigenous groups come into play by delivering specific knowledge as form of power exertion.

In this article however, the question of how states and institutions exert power through soft power means is not central, although a prerequisite for the concept of science diplomacy. Science diplomacy, as the former Science and Technology Adviser to the U.S. Secretary of State, Nina Fedoroff, describes, "is the use of scientific collaborations among nations to address the common problems facing 21st century humanity and to build constructive international partnerships" (Fedoroff, 2009). Essentially, Fedoroff describes the creation of an epistemic community; science diplomacy can therefore be easily perceived as such a structure. The Royal Society (2010) describes three dimensions of science diplomacy, the three dimensions being science in diplomacy, diplomacy for science and science for diplomacy. The first dimension, science in diplomacy, focuses on the scientific consultations by experts for policymakers. This means that political bodies do not necessarily conduct their own research but review scientific debates and ongoing research in order to base policies on contemporary scientific debates. Therefore, politicians are required to have the ability to understand scientific debates as well as scientists need to formulate their findings in an accessible way.

The second dimension, diplomacy for science (Royal Society, 2010: 9), describes political and diplomatic initiatives in order to achieve joint research projects. Two facets of initiatives occur in this regard, either states set research agendas and align their diplomatic initiatives according to their objectives or they can facilitate the development of joint research, either following a top-down or a bottom-up approach. Diplomacy for science can serve as means to strengthen political ties with countries and regions where historically connections were on a low level; governments often assemble on the highest levels in order to achieve joint scientific programs.

Central for the analysis in this article however is the third dimension, science for diplomacy. Science for diplomacy describes the soft power approach states follow through strengthening their scientific capabilities, achieving additional attraction and in consequence developing the availability to shape preferences and policies. The Royal Society (2010: 11) distinguishes between multiple ways science can work for diplomacy. Most prominently, cooperation agreements and the creation of institutions are used as an instrument to promote deeper political ties through scientific collaboration. The Arctic Council serves as a good example for this dimension, as the cooperation on environmental protection within the Arctic Environmental Protection Strategy (AEPS) in consequence led to the foundation of the AC. The question arises if research programs in the framework of the Arctic Council can be used to strengthen the institution and improve its ability to shape interests and preferences, becoming more of a policy-making rather than a policy-shaping body (Kankaanpää & Young, 2012). This dimension is also a prime example for the spillover effects described in the neofunctionalist theory, as in this perspective science causes deeper integration through creating and strengthening institutions. In general, science is perceived as a positive element of cooperation. However, the danger remains that strongly diverging interests in scientific goals can hinder closer cooperation. Therefore spillover effects remain low.

Resulting from the theories and the concepts, this article will therefore analyze the scientific interests and strategies of Arctic states as well as the cooperative scientific programs within the Arctic Council before proceeding to assess how science diplomacy is perceived in Arctic policies and how scientific programs in the AC have caused spillovers into other policy fields. By analyzing current debates about the transformation of the AC, the science diplomacy perspective

will be added. The existing scientific programs will also be tested for their sufficiency to work as instruments for science diplomacy and strengthening the AC.

Scientific Cooperation Within the Arctic Council

This section will describe the variety of scientific initiatives that exist in the Arctic Council. Especially important in this regard is the policy-making process of the two legally binding agreements that have been achieved in the framework of the AC – the Agreement on Aeronautical and Maritime Search and Rescue[2] (Arctic Council, 2011) and the Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic[3] (Arctic Council, 2013). These agreements signified a major success since they were the first legally binding agreements issued by the Arctic Council, which represents a deeper integration in a neofunctionalist understanding. In addition, they comprise two of the more dominant fields in Arctic scientific interest – maritime security and marine environmental protection. Both agreements allow the question of the role of science diplomacy in Arctic policy making processes, therefore they will serve as the basis of the analysis. The analysis will also be based on three interviews with experts on Arctic science diplomacy.[4] However, it is important to clarify in advance that science diplomacy and the creation of an epistemic community is a continuous process. Especially the dimension of science for diplomacy needs to be strengthened to conduct effective science diplomacy and strengthen the AC as an institution. At this time the soft power narrative overshadows the creation of an epistemic community, as states attempt to achieve scientific cooperation in the Arctic by fortifying their own position.

From its founding onward, the Arctic Council had a strong scientific component; its predecessor, the Arctic Environmental Protection Strategy (AEPS) revolved mainly around the protection of environment. While the AEPS did not include an outspoken scientific focus, its focus encouraged scientific activity in the Arctic at least, as the foundation of the International Arctic Science Committee (IASC), a non-governmental organization with the purpose to "encourage and facilitate international consultation and cooperation for scientific research concerned with the Arctic" proves (IASC, 1990: 4). Initiatives like the IASC, or the University of the Arctic (UArctic), a community of primarily research institutions in Arctic states, highlight the endeavors for scientific cooperation in the High North. Albeit not having a political nature, the significance for science policies of these institutions is given through their influence in establishing research structures and the conduct of research in a variety of policy-relevant areas.

Investigating the institutional establishment process of the AC discloses multiple aspects of science diplomacy and the creation of epistemic communities. The creation of the AEPS followed an initiative by the eight Arctic States in order to reduce pollution, mitigate climate risks and guarantee sustainable development in the Arctic (AEPS, 1991). The AEPS however was considered as too narrow for discussing the wide range of issues in the Arctic, and particularly from the Canadian side where endeavors to strengthen Arctic cooperation as a whole were sought, which resulted in the foundation of the AC through the Ottawa Declaration in 1996.

The AC therefore represents a classic case of a spillover, resulting from the framework of AEPS, however with a more comprehensive approach to cooperation. Bloom (1999: 712) describes two objectives of the AC: environmental protection and sustainable development. Both these areas depend on scientific work, therefore encourage scientific cooperation. A special aspect of

scientific cooperation in the AC is the inclusion of indigenous knowledge. Indigenous groups are included strongly in agenda-setting and shaping objectives, albeit not possessing full membership status. "The Arctic Council's effectiveness is significantly enhanced by this innovative approach to indigenous peoples" (Nowlan, 2001: 34).

Therefore it becomes visible that the development process of the AC, although not openly formulated so, was shaped by science diplomacy from the beginning. One key component of scientific cooperation within the AC is the working groups, collectives of scientists and policy-makers that cooperate in order to tackle important Arctic issues. Four working groups, which are still in existence today within the AC, were founded in order to oversee the work of AEPS in different areas. Two have since been added. Today's working groups within the AC are the Arctic Contaminants Action Program (ACAP); the Arctic Monitoring and Assessment Programme (AMAP); the Conservation of Arctic Flora and Fauna (CAFF); the Emergency Prevention, Preparedness and Response (EPPR); the Protection of the Arctic Marine Environment (PAME); and the Sustainable Development Working Group (SDWG). Especially crucial in this regard was the Arctic Monitoring and Assessment Programme (AMAP).

AMAP is monitoring developments in climate change in the Arctic region, scientifically analyzing the collected data and producing policy-relevant assessments of the data (AMAP, 2010: 5). This is a classic case of science in diplomacy, with stakeholders in the working group defining common objectives in order to reach science-based policy recommendations. SAOs are strongly involved in shaping the objectives of working groups as they are attempting to achieve policy results from the findings. Therefore, reducing the working groups only to scientific influence on policy-making would fall short of their full scope of opportunities in scientific and political cooperation. AMAP openly attempts to attract researchers from Arctic nations to work in the program and strongly encourages scientific cooperation (AMAP, 2010: 10). Therefore it also represents the diplomacy for science dimension, where an institution that exists due to political efforts increases opportunities for research and cooperation in scientific sectors.

Working groups like the AMAP symbolized the merging of scientific and political cooperation. The institutional structure within these working groups, combining policy-makers in the form of SAOs[5] with scientists in order to achieve scientific influence on policies as well as set a scientific political agenda in order to strengthen policies, shows a politicization of science. As the Arctic Council was formed in order to achieve a deeper forum for cooperation, the working groups however remained central in its institutional structure. This could be interpreted as a spillover effect and explain the transformation from AEPS into the AC as a result of science for diplomacy.

However, as Koivurova assesses (2010: 148), cooperation remains de facto on a low level, also after the creation of the AC. Young (2005: 11) argues that different results delivered by working groups "played a role both in framing and in highlighting issues on the Arctic agenda." As stated above, working groups have a strong scientific influence in their work. However, politics shape the scientific goals as well as scientific outcomes influence future policies. Working groups therefore highlight the strong connection between science and policy, which is manifested in the politicized setting of scientific goals. However, their impact on visible political cooperation should be estimated rather low. Based on the example of the Arctic Climate Impact Assessment (ACIA), a program within the AMAP, Nilsson (2007, 2009) describes how political battles on

scientific programs can also hinder deeper cooperation, highlighting problems of working groups.

Scientific cooperation therefore poses one of the main pillars of the AC and assumes at least a minor role in strengthening political cooperation by connecting SAOs from the Arctic states in order to set scientific goals. According to Sergunin (2015), the AC possesses an important role as an intersection between science and policy, as within the working groups of the AC produce scientific outcomes for political purposes. In this understanding, two dimensions of science diplomacy are visible, science in diplomacy, as scientists are consulting political bodies and influencing decision-making processes, and diplomacy for science, as the AC as an intergovernmental institution facilitates scientific cooperation through the creation of the working groups and task forces.

By investigating the institutional building of the AC and processes within the working groups, one can determine three key aspects of science diplomacy. First, working groups, by consulting the SAOs, serve an important body for scientific contributions to policy-making in an international organization. Science in diplomacy is strengthened through working groups, as their assessments shift agendas and objectives. Second, as could be seen in the case of ACIA, the Arctic Council as an intergovernmental institution facilitated scientific cooperation by setting an institutional framework and connecting science to policy. This is a case where diplomacy for science is visible. Third, by connecting scientists and policy-makers, shared norms and understandings of problems such as climate change are created and shared scientific understanding is developed. This form of cooperation creates epistemic communities within the AC, while cooperation of the working groups creates an understanding of the AC as a comprehensive epistemic community (Bertelsen, 2015). This in consequence provokes the question if shared norms and understandings can lead to spillovers in other issue areas.

In order to investigate if scientific cooperation within the AC and the working groups can create spillovers, the examples of the Oil Spill Agreement as well as the SAR Agreement can be used. As these agreements represent the first legally binding documents produced by the eight Arctic states that happen to be members of the AC, they signify a progress in the institution-building process of the Arctic Council. As its foundational document, though, the Ottawa Declaration (1996) cannot be considered a treaty: the AC's legal status was a debated question. Furthermore, it weakened the standing of the institution as the AC represented an intergovernmental cooperation forum rather than a full-fledged political institution. Therefore legally binding agreements within the AC represent a sign of deeper institutional integration and accelerate institution building since they improve the position of the AC within Arctic governance. Investigation of the agreements is important for two reasons. First, the influence of science could reveal aspects of the third dimension of science diplomacy, science for diplomacy. Even though the agreements only cover specified issue areas, their status as legally binding documents improve political processes in the Council as a whole, therefore, they can be regarded as successful cooperation between science and policy in order to improve intergovernmental relations. In order to assess how the agreements fit into the science for diplomacy pattern, it is important to investigate their scientific as well as their political dimensions.

The SAR Agreement, signed at the Nuuk Ministerial Meeting in 2011, resulted out of the need for improved maritime security due to increased activity in Arctic waters. While vessels operating

in the Arctic Ocean need to be prepared for extreme conditions, their number continues to increase as a result of the economic potential of the region. However, due to technological limitations, satellites cannot operate in the Arctic (Linden-Vørnle, 2015). In that perspective, SAR has become a vividly debated topic in the AC.

Rottem (2013: 286) describes Russia as the driving force behind the SAR Agreement, as the Northern Sea Route is a central aspect of Russia's Arctic policy grounded in sovereignty and security considerations. SAR was also emphasized in the 2008 Ilulissat Declaration, which described the need to strengthen the capabilities of the five Arctic Ocean states that considered themselves to be stewards of the Arctic Ocean (Arctic Five, 2008). While the motivation for the SAR Agreement is predominantly political, there is an important scientific dimension within the agreement. Article 9 emphasizes the need for knowledge exchange and calls especially for the mutual use of advanced technologies in order to improve SAR. Another important aspect is the inclusion of experts during exercises to increase the effectiveness of SAR (Arctic Council, 2011). However, science still assumes a minor role in the agreement; working groups did not have any substantial influence on the process of reaching the agreement. It is however important to outline the general interdependence between SAR, the military as well as coast guards and technology, as SAR is highly dependent on advanced technologies, and the agreement poses an opportunity to deepen cooperation in research and development of these. Linden-Vørnle (2015) describes aerial surveillance technologies as one field where cooperation seems especially viable for cooperation, as these technologies are seen as necessity in improving SAR capabilities. The lack of visible scientific influence in the SAR Agreement however affects the view on science diplomacy in a variety of aspects. Foremost, the utility of science for diplomacy might be questioned. Second, the meaning of such agreements for science diplomacy might be undermined. And finally, it proves limits to cooperation and the positive effects on regional integration.

Similar observations can be made for the Oil Spill Agreement. Rottem (2016: 165) describes it as "a symbol of Arctic cooperation" rather than "a practical mechanism". As in the SAR Agreement, working groups are not specifically included in the process of the Oil Spill Agreement although Rottem (2016: 164) sees the opportunity for the EPPR to take over the tasks defined in the agreement. However he acknowledges that the main decisions will occur on the policy-level rather than through scientific consultations as within the Oil Spill Agreement, especially environmental regulations assume a key role. In this regard, policy coordination is central in the implementation of the program. Another similarity is that neither agreement establishes a formal body in order to observe the implementation of the agreements. This could be a consequence of what Sergunin (2015) describes as an unwillingness to accelerate institution building in the Arctic and/or an anxiety on the part of the Arctic states to 'observe' too closely one another in the Arctic region.

Slow institution building processes pose a general obstacle for functioning science diplomacy, as science and technology contribute to policy but cannot reach the desired effects under the dominant narrative of science for diplomacy. Investigation of the structures of the AC leave the assumption that the two other narratives of science diplomacy, science in diplomacy and diplomacy for science are more prominent in the intersection of science and policy. As the agreements have shown however, there is a willingness to strengthen the Council as an

institution, albeit in a reduced manner. It is difficult to assess if this could be interpreted as spillover effects, and even if that is the case, the extent of those effects is rather minor. However, science and technology can become important driving forces for further cooperation in the Arctic as they prove to be crucial in main working areas of the AC.

The Science Cooperation Agreement could increase the role of science and technology in Arctic policy drastically and add a new dimension to science diplomacy in the Arctic. As the concluding section of the article will assess, national states follow strong interests regarding scientific cooperation, in some cases this could even be interpreted as soft power ambitions.

Conclusion: National Approaches and the Transformation of the Arctic Council

Science and technology assume prominent roles in the respective Arctic national strategies. As Heininen (2012: 41) assesses, "is either explicitly mentioned as a priority, or an objective, by all of the Arctic strategies." For example, Canada views science and technology as "an important foundation for Canada's Northern Strategy priorities and provide the knowledge necessary for sound policy and decision-making" (Government of Canada, 2009: 24). The Canadian strategy formulates the objective of becoming a leader in scientific issues and strengthens its Arctic position through assuming a leading role in science and technology. Canada therefore follows a classic soft power approach, but also calls for a stronger inclusion of the AC in scientific matters. Similarly, the United States regards science and technology as important aspects of Arctic cooperation. The strategy of the U.S. chairmanship in the Arctic Council from 2015 to 2017 emphasizes the role of the Scientific Cooperation Task Force (SCTF) in completing the Agreement on Enhanced International Arctic Scientific Cooperation which would represent a major achievement of the chairmanship in common science and technology policy, and in this regard could strengthen political cooperation within the AC (State Department, 2015).

The Nordic countries are considered as smaller military powers; therefore their ability to exercise hard power is considered limited. For this reason they regard science and technology as important issues of cooperation and mean of exerting influence. Within the official documents (Kingdom of Denmark, 2011, Norwegian Ministry of Foreign Affairs, 2014, Prime Minister's Office, 2013, Government Offices of Sweden, 2011) Nordic states highlight the importance of scientific cooperation and express their respective endeavors to become and remain leading science nations in the Arctic. A soft power approach is also visible in Russia's Arctic strategy, and as Sergunin and Karabeshkin (2014: 356) describe, Russia attempts to improve the scientific capabilities in general, and particularly in the Arctic. However, Konyshev and Sergunin (2014: 83) assess that Russia lacks technological knowledge and scientific capabilities to become a leader in these issues. This could pose a great example for the science for diplomacy narrative. By including Russia in the Arctic science community through working groups, tensions have remained low although the relations between NATO and Russia have reached a nadir. Extended Arctic scientific cooperation could also be a motivation for Russia and other states to engage in cooperative security measures.

Another interesting aspect of Arctic science diplomacy, as stated above, is the inclusion of indigenous knowledge, which gives indigenous populations the opportunity to assume more

influential roles particularly in issues which concern their safety and quality of lives. This could serve as a base for more research on the role of indigenous knowledge in science diplomacy.

In the beginning I asked if science and technology could become driving forces for a transformation of the Arctic Council and if the AC could become an epistemic community. One of the major opportunities will be an effective implementation of the Science Cooperation Agreement that would institutionalize cooperation in science and technology and could cause spillover effects in other areas. The slow pace of institution-building, caused by differing strategic goals of the respective member states in the Arctic, will remain one of the major obstacles, however increased cooperation could however accelerate this process. Spillover effects so far have been low, which results from the nature of the AC as intergovernmental institution. Still, deeper institutional cooperation, especially in the working groups, is becoming visible, and the working groups have experienced an increased influence on policy. Science therefore can assume an important role in the process of institutional integration and strengthening the role of an institution in policy-making processes. In addition, the strong scientific approach of the Arctic states puts science to the center of attention, which is manifested in the Science Cooperation Agreement. As states follow mainly soft power approaches in the Arctic, science might even become more prevalent, and so could science diplomacy. Science diplomacy also could profit from the fact that scientific cooperation is easy to achieve at a low cost but neglecting serious divergences between Arctic states will likely have a negative impact on any form of cooperation.

However, it is important to clarify that science diplomacy and the creation of an epistemic community is a steadily evolving process. Especially the dimension of science for diplomacy needs to be strengthened to conduct effective science diplomacy and strengthen the AC as an institution. At this time, the soft power narrative overshadows the creation of an epistemic community, as states attempt to achieve scientific cooperation in the Arctic in order to assume a stronger leading position in shaping the Council's future development. To sum up, science diplomacy figures to assume a much greater role in Arctic futures and common science policies can lead to an epistemic community in the Arctic which in consequence strengthens cooperation as a whole. Science can build trust, create common values and therefore cause spillovers. However, there is a need for stronger support from the policy side that science can cause significant changes and transform the Arctic Council.

Notes

1. Hereinafter Science Cooperation Agreement.
2. Hereinafter SAR Agreement.
3. Hereinafter Oil Spill Agreement.
4. Interviews conducted between November 12-13 2015 in Arhus, Denmark, with Alexander Sergunin (Sergunin, 2015), Rasmus Bertelsen (Bertelsen, 2015), and Michael Linden-Vørnle (Linden-Vørnle, 2015).
5. During the period of AEPS, this position was denominated as Senior Arctic Affairs Official (SAAO), the term SAO derived with the foundation of the AC.

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