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"TECHNO-DIPLOMACY" FOR THE TWENTY-FIRST CENTURY: LESSONS OF U.S.-SOVIET SPACE COOPERATION FOR U.S.-RUSSIAN COOPERATION IN THE ARCTIC

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Table of Contents

Introduction

Relations between the United States and the Russian Federation have been worse in the past two years than they have been at any moment since the end of the Cold War. Years of crushed hopes and unrealistic expectations compound the animosity from the ongoing crisis in Ukraine, leaving the bilateral relationship at a qualitatively new low.[1] Amidst the tensions in Europe and concerns over Russia's role in the conflict in Syria, however, the Arctic has remained a bright spot in the relationship. Both sides maintain that they wish to cooperate in the region and stress the importance of continuing warm relations in the high north even as the rest of the relationship ices over. The question for U.S. policymakers, therefore, is how to leverage the potential of Arctic cooperation to maximum effect.

Decades of cooperation in the civilian space sphere between the United States and the Soviet Union can provide useful guidance towards this goal. The two superpowers began formal scientific cooperation in 1958, and space cooperation began not long afterwards. Despite the fierce competition inherent between the U.S. and Soviet space programs, both countries also (rhetorically) stressed a cooperative approach from the beginning.[2] Understanding how the two Cold War enemies navigated the space relationship yields important lessons for how the United States and Russia should manage their relationship in the Arctic.

Cooperation and Techno-Diplomacy: Some Definitions

In a 1989 book of the same name, Glenn E. Schweitzer defines "techno-diplomacy" as follows:

> 1: the art and practice of conducting negotiations between countries with conflicting technological interests, 2: skill in handling scientific affairs without arousing hostility, 3: ability to resolve issues on the frontiers of science and technology in the direction of peace and not war.[3]

This definition is nearly thirty years old and circumstances have changed considerably (see below), but it remains largely applicable to current context. Military-technological competition is not at the center of the U.S.-Russian relationship, as it was in the relationship between the United States and the Soviet Union. However, fears of the other

[1] On the boom and bust cycles of post-Cold War U.S.-Russian relations, see Angela Stent, *The Limits of Partnership: U.S.-Russian Relations in the Twenty-First Century* (Princeton, NJ: Princeton University Press, 2014); Robert Legvold, *Return to Cold War*, 1 edition (Polity, 2016), 1.
[2] *U.S.-Soviet Cooperation in Space*, 15–17.
[3] Glenn E. Schweitzer, *Techno-Diplomacy: US-Soviet Confrontations in Science and Technology* (New York: Plenum Press, 1989), v.

side's technological capabilities remain a driving concern, especially with respect to cybersecurity.[4] With regard to the relationship in the Arctic, the latter two elements of the definition are particularly relevant. The current challenges in the Arctic are primarily scientific and technological, whether the question is combatting climate change through reducing black carbon or developing advanced technologies for offshore resource extraction. These issues, however, touch on core national security interests of both countries, and those interests are not always compatible.

The above definition hints at an idea that is worth making explicit. Techno-diplomacy is also the ability to cooperate on science and technology even when political relations are extremely difficult. While U.S.-Soviet space cooperation often reflected the overall state of the political relationship between the two countries, it continued during deeply desperate political times, such as the early 1980s.[5] Cooperation on science and technology was never a panacea for the relationship, but it is an area where productive bilateral contacts were maintained even during the more difficult years.

This notion of navigating tricky issues around science and technology despite competing interests leads to a larger question about what constitutes good cooperation. Interviews with American and Russian experts who have spent years engaged in scientific cooperation yielded a few basic guidelines. First, cooperation is not the same thing as aid or trade.[6] Instead, it must enhance the professional capabilities on both sides.[7] Relatedly, the participants must be engaged in the project for professional advancement, and therefore the topic should be of relevance to participants from both countries.[8] Projects must also be sustained and ongoing: a single meeting with a banquet is not cooperation.[9] It is "scientific tourism."[10] For productive cooperation, projects must have concrete goals and should allow for a wide base of cooperation, drawing people not only from government, but from other sectors as well.[11] Finally, and perhaps most importantly, politics is not a sufficient motivating factor for good scientific cooperation.[12] This was true during the Cold War, and it remains so today.[13]

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[4] James R. Clapper, "Statement for the Record: Worldwide Threat Assessment of the U.S. Intelligence Community," February 26, 2015, http://cdn.arstechnica.net/wp-content/uploads/2015/02/Clapper_02-26-15.pdf.
[5] *U.S.-Soviet Cooperation in Space*, 10; John Krige, Angelina Long Callahan, and Ashok Maharaj, *NASA in the World: Fifty Years of International Collaboration in Space*, First edition, 2013, 148.
[6] American Cooperation Expert, interview by Rachel S. Salzman, Personal Interview, February 2016, Washington, DC.
[7] Ibid.
[8] Ibid.; Vsevelod Borisovich Stepanitskii, interview by Rachel S. Salzman, Personal Interview, February 23, 2016, Moscow, Russia.
[9] American Cooperation Expert, interview; Stepanitskii, interview.
[10] American Cooperation Expert, interview.
[11] Stepanitskii, interview.
[12] Schweitzer, *Techno-Diplomacy*, 158.
[13] *U.S.-Soviet Cooperation in Space*, 45; American Cooperation Expert, interview.

Learning the Wrong Lessons: Is the Cold War Really the Right Frame?

The question of whether or not the contemporary crisis between Russia and the larger West is rightly considered a new Cold War is hotly debated among Russian and American experts and officials. Some warn we are right back to where we started before the Soviet Union collapsed, or that even if things are a bit different, the current situation is tantamount to a new Cold War, or soon will be.[14] Others shy away from the term, arguing that the dramatically different geopolitical context, the lack of ideological competition, and the inequality between the U.S. and Russian power make the Cold War term misleading.[15] In a globalizing world with diffusing political and economic power, these authors argue, the analogy of structured bipolar competition will teach all the wrong lessons.

Yet as Robert Legvold argues, it is possible to draw insights from the previous period of competition while still recognizing the dramatic differences between then and now.[16] In his book *Return to Cold War*, Legvold points out five ways the early Cold War (what he calls the "model") resembles the present crisis.[17] These include a belief that fault lies purely with the other actor and a sense of conflicting purposes rather than simply conflicting interests.[18] Most relevant to the my argument is what Legvold identifies as the fourth feature of the original Cold War that carries over to the present day:

> Cooperation, rare in any case, it is assumed, will be only "transactional," not transformational. On a few specific issues where sheer practicality encourages a joint effort, the transaction may be done, but with no

[14] George Bovt, "Who Will Win the New Cold War? | Opinion," *The Moscow Times*, March 31, 2015, http://www.themoscowtimes.com/opinion/article/who-will-win-the-new-cold-war/518322.html; Robert Legvold, "Managing the New Cold War," *Foreign Affairs* 93, no. 4 (August 2014), https://www.foreignaffairs.com/articles/united-states/2014-06-16/managing-new-cold-war; Dmitry Medvedev, "Speech by Dmitry Medvedev at MSC 2016," *Voltaire Network*, February 13, 2016, http://www.voltairenet.org/article190255.html; James Stavridis, "Are We Entering a New Cold War?," *Foreign Policy*, February 17, 2016, https://foreignpolicy.com/2016/02/17/are-we-entering-a-new-cold-war-russia-europe/; Simon Tisdall, "The New Cold War: Are We Going back to the Bad Old Days?," *The Guardian*, November 19, 2014, sec. World news, http://www.theguardian.com/world/2014/nov/19/new-cold-war-back-to-bad-old-days-russia-west-putin-ukraine; Dmitri Trenin, "Welcome to Cold War II," *Foreign Policy*, March 4, 2014, https://foreignpolicy.com/2014/03/04/welcome-to-cold-war-ii/; "From Cold War to Hot War," *The Economist*, February 14, 2015, http://www.economist.com/news/briefing/21643220-russias-aggression-ukraine-part-broader-and-more-dangerous-confrontation.

[15] Jack Matlock, "THIS IS NOT A NEW COLD WAR," *Perspectives on Peace and Security*, May 29, 2015, http://perspectives.carnegie.org/us-russia/new-cold-war/; Matthew Rojansky and Rachel S. Salzman, "Debunked: Why There Won't Be Another Cold War," Text, *The National Interest*, (March 20, 2015), http://nationalinterest.org/feature/debunked-why-there-wont-be-another-cold-war-12450; Paul J. Saunders, "Seven Ways a New Cold War with Russia Will Be Different," Text, *The National Interest*, (March 11, 2014), http://nationalinterest.org/feature/seven-ways-new-cold-war-russia-will-be-differentt-10439.

[16] Robert Legvold, "Return to Cold War" (Carnegie Endowment for International Peace, Washington, D.C., April 20, 2016).

[17] Legvold, *Return to Cold War*, 2016, 31–40.

[18] Ibid., 33–37.

> expectation that anything else will follow, any more than that one's purchase of a pair of shoes implies ever more elaborate commercial ties.[19]

This is a fairly desolate picture, though not an inaccurate depiction of the Cold War climate. It does, however, miss some nuances. Space cooperation during the Cold War was an explicitly political effort, pursued by both sides either to gain leverage or produce positive political spillovers to the rest of the relationship; correspondingly it did poorly in times of political tension.[20] It did not, however, cease, and despite being a voluntary rather than necessary area of cooperation, it did produce positive spillovers within the scientific community in the form of new knowledge and increased personal contacts.[21] Scientific cooperation, therefore, is a good place to start when seeking models of cooperation from the Cold War era. It offers a counterexample to the bleakness of other transactional types of cooperation while still imparting valuable insight into how to navigate a tough and tense political environment. In other words, it offers the chance to draw the right lessons from an imperfect political analogy.

From "the Pearl Harbor of American Science" to the "Handshake in Space": U.S.-Soviet Space Cooperation

While human spaceflight became the paradigmatic example of U.S.-Soviet scientific cooperation, space began (and remained) as a fiercely competitive arena in the U.S.-Soviet relationship.[22] The Soviet launch of Sputnik on October 4, 1957 catalyzed fear in the United States that America was falling behind the Soviet Union in science and technology. This in turn led to concerns over falling behind in the nuclear sphere as well.[23] Reports at the time called the Sputnik launch a "'Pearl Harbor for American Science.'"[24] Public opinion interviews across the United States revealed dismay and alarm, as well as a "'determination to catch up – fast.'"[25] As a direct result of Sputnik, numerous federal programs and agencies, including the National Aeronautics and Space Administration (NASA), were created and funded in order to make the United States competitive on the new scientific

[19] Ibid., 37.
[20] *U.S.-Soviet Cooperation in Space*, 10–15.
[21] Krige, Callahan, and Maharaj, *NASA in the World*, 148; Charles R. Doarn et al., "A Summary of Activities of the US/Soviet-Russian Joint Working Group on Space Biology and Medicine," *Acta Astronautica* 67, no. 7–8 (October 2010): 657, doi:10.1016/j.actaastro.2010.05.011.
[22] Krige, Callahan, and Maharaj, *NASA in the World*, 127.
[23] Deborah D. Stine, "U.S. Civilian Space Priorities: Reflections 50 Years After Sputnik" (Washington, D.C.: Congressional Research Service, February 2, 2009), 1, https://www.fas.org/sgp/crs/space/RL34263.pdf.
[24] As quoted in Ibid., 4–5.
[25] Dodd L. Harvey and Linda C. Ciccoritti, *US-Soviet Cooperation in Space*, Monographs in International Affairs; (Miami: Univ. of Miami, 1974), 11.

frontier.[26] In many ways, the new "competition in scientific and technological skills came to represent a competition to determine the political superiority of capitalism versus communism."[27] Put another way, the quest for scientific advancement became wrapped up in the drive towards ideological supremacy.

Paradoxically, the political dimension of the competition led to a need for rhetorical support for cooperation. On the Soviet side, while Nikita Khrushchev hoped to exploit U.S. fears about Soviet dominance in science and technology to gain concessions in other areas (e.g. recognition of the German Democratic Republic), he also hoped to prevent renewed military confrontation with the West.[28] As a result, he strove to frame the new Soviet superiority in space as a reason to expect softer policies from the United States and a more peaceful relationship between the superpowers.[29] On the U.S. side, rhetoric about openness and cooperation also flowed freely. It was very important for the United States to appear in favor of collaboration, because it upheld the image of the United States as politically and scientifically open, in contrast with the closed system of the USSR.[30]

The roughly thirty years of U.S.-Soviet space cooperation saw periods of intense cooperation and deep competition. As politics and science evolved, so too did the focus and breadth of bilateral cooperation. What never changed, however, was the presence of both elements – cooperation and competition – in the bilateral relationship. The rest of this section explores areas where success was possible despite the competition, and the main arguments those opposed to cooperation mustered in making their case. It concludes with general lessons on how to navigate a delicate area to achieve maximum results.

The Good

On the scientific front, bilateral cooperation in planetary science and space life sciences produced results that neither side could have achieved alone.[31] Data exchanges in both areas, including cartographic lunar data and data on the effect of extended space flight on cardiovascular health and bone loss were especially useful.[32] In addition, cooperation gave

[26] Stine, "U.S. Civilian Space Priorities: Reflections 50 Years After Sputnik," 2; Harvey and Ciccoritti, *US-Soviet Cooperation in Space*, ix.
[27] Stine, "U.S. Civilian Space Priorities: Reflections 50 Years After Sputnik," 5.
[28] Bruce Parrott, *Politics and Technology in the Soviet Union* (Cambridge, Mass: MIT Press, 1983), 136–136.
[29] Ibid., 137. This was largely to do with internal Soviet politics, and especially Khrushchev's desire to prevent a military build-up that would empower the faction in favor of heavy industry over his preferred focus on light industry.
[30] Krige, Callahan, and Maharaj, *NASA in the World*, 130–131.
[31] *U.S.-Soviet Cooperation in Space*, 39.
[32] Ibid., 40–41.

U.S. scientists otherwise unobtainable insight and access to the closed Soviet space program.[33]

Of particular note is the work of the Joint Working Group (JWG) on Space Biology and Medicine. Created in 1971 and formalized in the 1972 agreement between U.S. President Richard Nixon and Soviet Prime Minister Alexei Kosygin, the JWG has operated nearly continuously since then.[34] At the time of its creation:

> The JWG was the only mechanism that allowed American and Soviet scientists to have face-to-face meetings at which they could present and discuss the results of ground-based investigations and flight experiments.[35]

The group produced multiple publications in both languages on areas of medicine and space biology, first in 1975 (three volumes) and then a later series of six books that were published between 1994 and 2009.[36] The group's research in space telemedicine provided the basis for improving the provision of healthcare in emergency situations, and the JWG itself served as a foundation for a joint telecommunication response to a large earthquake in Armenia in 1988.[37]

The most famous cooperative program between the United States and the Soviet Union is the so-called "handshake in space."[38] For 19 hours and 55 minutes, somewhere over West Germany, American astronauts and Soviet cosmonauts docked their vessels together and moved between the two ships, conducting experiments and sharing a meal.[39] In some ways, categorizing the Apollo-Soyuz Test Project (ASTP) is difficult, because it was simultaneously a success and a failure. On the positive side of the ledger, ASTP showed that large-scale cooperation was possible. It was the culmination of years of cooperative preparation for joint docking, beginning with a soft proposal of the idea by NASA Administrator Tom Paine to Soviet Academician Anatolii Blagonravov in 1969, at a time

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[33] Krige, Callahan, and Maharaj, *NASA in the World*, 140.
[34] Doarn et al., "A Summary of Activities of the US/Soviet-Russian Joint Working Group on Space Biology and Medicine," 651; When Richard M. Nixon became U.S. president in 1968 he explicitly pursued a policy of increasing space cooperation, so it is no surprise that the JWG was formed during his tenure. See: Jennifer Ross-Nazzal, "Détente on Earth and in Space: The Apollo-Soyuz Test Project," *Magazine of History* 24, no. 3 (July 2010): 30, http://search.proquest.com/docview/727187838/abstract/EE5E44E5BCFF41ACPQ/2.
[35] Doarn et al., "A Summary of Activities of the US/Soviet-Russian Joint Working Group on Space Biology and Medicine," 653.
[36] Ibid., 657; The 1975 series was the culmination of a ten-year effort.. See *U.S.-Soviet Cooperation in Space*, 40.
[37] Doarn et al., "A Summary of Activities of the US/Soviet-Russian Joint Working Group on Space Biology and Medicine," 656.
[38] Kellie Morgan, "Celebrating Historic Handshake in Space, 40 Years Later," *CNN*, July 15, 2015, http://www.cnn.com/2015/07/15/world/space-handshake-anniversary/index.html.
[39] Ibid.; "NASA - The Apollo-Soyuz Mission," Other, accessed May 4, 2016, http://www.nasa.gov/mission_pages/apollo-soyuz/astp_mission_prt.htm.

when the U.S. government was seeking further potential areas of space cooperation.[40] On July 17, 1975, after years of careful negotiations and joint work in both countries, the Apollo and Soyuz crafts docked in space.[41]

The reason ASTP cannot be considered an unmitigated success, however, is that it failed to deliver on its ultimate promise. As an official NASA history of ASTP explains:

> Sometimes lost in the extensive coverage given the event by the media was the fact that the Apollo-Soyuz Test Project…was only a *first* step – an experiment. Implicit in the preparations for the first international rendezvous and docking was the idea that in the future manned space flight – both routine flights and rescue missions – could use the hardware concepts and mission procedures developed by the National Aeronautics and Space Administration and the Soviet Academy of Sciences.[42]

The problem was further steps were never taken, and so the experiment remained primarily an example of optics rather than scientific advancement. To a certain extent, ASTP was always more about politics than about science.[43] NASA scientists who worked on the project found more use in it than only optics, though, learning specifics about the Soviet space program and understanding the vastly different approaches their Soviet counterparts took to manned space flight.[44] However, because of changes in the political situation, ASTP became more of an end than the beginning it was intended to be.[45] As a result, its scientific contributions were meager.

The chill that hit after ASTP did not abate. Though the 1972 agreement was reauthorized in 1977, it was allowed to lapse 1982. The combination of the Soviet war in Afghanistan and the imposition of martial law in Poland, as well domestic political developments in both countries, meant there was no political will to renew it.[46] Nevertheless, some areas of cooperation continued. Most notably, the COSPAS (Soviet and allies) and SARSAT (United

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[40] Edward Clinton Ezell and Linda Neuman Ezell, *The Partnership: A History of the Apollo-Soyuz Test Project* (Washington: National Aeronautics and Space Administration : [for sale by the Supt. of Docs., U.S. Govt. Print. Off.], 1978), 8.
[41] Ibid., ix.
[42] Ibid.
[43] Krige, Callahan, and Maharaj, *NASA in the World*, 140.
[44] Ezell and Ezell, *The Partnership*, 354.
[45] Ibid., 355–356.
[46] *U.S.-Soviet Cooperation in Space*, 33. The demise of U.S.-Soviet cooperation in space was only one part of U.S. policy responses to the Soviet invasion of Afghanistan; the boycott of the 1980 Olympic Games in Moscow was part of the same policy family. This in some way parallels the steps the United States has taken to isolate Russia in the aftermath of the annexation of Crimea. As with the U.S. response in the late 1970s, which included both global and bilateral elements, so too has the U.S. response to the Ukrainian conflict affected both multilateral and bilateral elements of the U.S.-Russian relationship.

States and allies) systems, satellite-based search and rescue programs, united in 1982.[47] The program was allowed to continue despite the lapse because it was deemed humanitarian.[48] In 1985, U.S. Office of Technology Assistance reported that in the three years since it had been operational, COSPAS/SARSAT saved an estimated 400 lives.[49] In addition, some of the ongoing work of the JWG was allowed to continue, and the National Oceanic and Atmospheric Administration (NOAA) explored sharing hurricane data with the Soviet HYDROMET.[50] Overall, researchers from both sides pressed ahead, showing a determination to cooperate whether or not it was under a formal intergovernmental agreement.[51]

The continuation of those smaller programs points to perhaps the most important, and most amorphous, success story of U.S.-Soviet space cooperation: the increase in people-to-people links and sharing of knowledge and ideas. Though hard to measure, the ongoing contacts established between Soviet and American scientists as part of space cooperation were fundamental to both specific scientific successes and more general efforts to increase trust between the superpowers. In terms of specific successes, the Soviet willingness to share video of Alexei Leonov's 1965 spacewalk proved invaluable for American scientists in preparing for Edward White's spacewalk later that same year.[52]

On the more general issue, the contacts between Soviet and American scientists in the space programs were part of the broader importance of transnational networks of scientists during the Cold War. These groups, often involved in handling the nuclear threat, "provided opportunities for informal exchange of ideas that deviated from and in some cases ultimately influenced official policy."[53] In general, transnational networks played a fundamental role in opening the Soviet Union to new ideas.[54] Among the transnational groups working towards an end to the arms race and general nuclear responsibility, moments of political tension, such as the decline in relations following the Soviet invasion of Afghanistan, spurred an increase in contacts.[55] Space cooperation, while more official

[47] Krige, Callahan, and Maharaj, *NASA in the World*, 147.
[48] Doarn et al., "A Summary of Activities of the US/Soviet-Russian Joint Working Group on Space Biology and Medicine," 651.
[49] *U.S.-Soviet Cooperation in Space*, 75.
[50] Doarn et al., "A Summary of Activities of the US/Soviet-Russian Joint Working Group on Space Biology and Medicine," 651; *U.S.-Soviet Cooperation in Space*, 44.
[51] Krige, Callahan, and Maharaj, *NASA in the World*, 148.
[52] I am grateful to a former American diplomat for this information.
[53] Matthew Evangelista, "Transnational Organizations and the Cold War," in *The Cambridge History of the Cold War*, ed. Melvyn P. Leffler and Odd Arne Westad (Cambridge: Cambridge University Press, 2010), 401, http://universitypublishingonline.org/ref/id/histories/CBO9781139056106A023.
[54] For an in-depth discussion of the role of transnational networks in opening the Soviet Union, see Robert English, *Russia and the Idea of the West: Gorbachev, Intellectuals, and the End of the Cold War* (New York: Columbia University Press, 2000).
[55] Evangelista, "Transnational Organizations and the Cold War," 409.

than the other transnational scientific networks, operated in the same space of keeping lines of communication open and working together towards common, mutually beneficial aims.

The Bad

As the previous section demonstrates, bilateral space cooperation produced scientific breakthroughs and saved lives. It also brought the scientific communities closer together, improved trust in the scientific sphere, and allowed for the ongoing transmission of scientific ideas across otherwise closed borders. It was never easy, though, and throughout the Cold War the wisdom of cooperation with Soviets remained a hotly contested issue in American political circles. The main elements of the debate illustrate the perceived downsides and dangers of cooperation.

One of the most persistent arguments against cooperation was a sense that the United States was more dedicated to cooperation than were the Soviets. The Soviets were consistently either late or entirely remiss in providing data in agreed data exchanges, such as during the International Geophysical Year in 1958 or during the related weather data exchange project in 1964.[56] They also refused to cooperate with U.S. efforts to regulate space via the United Nations.[57] The debate over the 1971 cooperation agreement between NASA and the Academy of Sciences of the USSR (AN SSSR) further demonstrates this point. The 1962 Dryden-Blagonravov Agreement had been very general in its terms, and the Soviets wished to see similar language in the 1971 agreement despite the lack of follow through on the 1962 agreement.[58] The Soviet desire for maneuverability in the agreements suggested to some in the United States that their counterparts were more interested in the image of cooperation than in its implementation.

Part of the reason for Soviet hesitancy to engage in deep cooperation may have been related to the structure of their space program. In the United States, there is a clear division between the civilian and military arms of the space program. By contrast, the Soviet space program was overseen primarily by the military.[59] There was no clear distinction between its military and civilian programs, and this frequently impeded cooperation.[60] This general

[56] Krige, Callahan, and Maharaj, *NASA in the World*, 130.
[57] Harvey and Ciccoritti, *US-Soviet Cooperation in Space*, 41–43. Part of the concern was that the UN committee was heavily weighted towards Western states. The USSR did eventually join.
[58] *U.S.-Soviet Cooperation in Space*, 25. In 1971, NASA prevailed, and the language was quite specific.
[59] Ibid., 94.
[60] Ibid., 9.

secrecy, combined with Soviet control over scientists, made cooperation very cumbersome.[61]

The Soviets, however, were not the only ones concerned about military (and other) secrets. Another major argument mustered by those opposed to cooperation with the Soviet Union was concern over technology transfer.[62] Here there were three major issues: defining sensitive technology; determining who had jurisdiction over decision-making about projects involving potentially sensitive technology; and how sensitive technology could or could not be used in a given cooperative project.[63] The result was a bureaucratic maze that increased in complexity in tandem with the scale of a proposed project.[64]

Related to the specific fears about technology transfer were broader concerns about the utility and benefit for the United States of cooperation with Soviet scientists. There was a significant mismatch in technological capabilities between the two countries, and the United States was very far ahead; this was one of the reasons that Sputnik was such a shock to the American body politic.[65] Some in the United States were concerned, therefore, that scientific cooperation raised the risks of technology transfer and legitimating inferior Soviet capabilities while not bringing sufficient benefit to the American side.[66] This was true in particular for ASTP, but it was also a more generalized complaint.[67]

These problems often overwhelmed efforts to cooperate, especially in the early years of the space age. The overarching issue was a certain mismatch between rhetoric and reality. The Soviets would express interest in cooperation and even agree to a specific project, such as communication via the satellite Echo as a trust-building measure, and then fail to follow through.[68] Both sides were also prone to linking cooperation in space with gains in other areas, stopping productive cooperation or coordination in service of unrelated foreign policy aims.

The Lessons

The preceding analysis suggests three deceptively simple lessons:

(1) Think Small

[61] Ibid., 37; Krige, Callahan, and Maharaj, *NASA in the World*, 131.
[62] *U.S.-Soviet Cooperation in Space*, 84.
[63] *Ibid., 86.*
[64] Ibid., 91.
[65] Harvey and Ciccoritti, *US-Soviet Cooperation in Space*, 11.
[66] *U.S.-Soviet Cooperation in Space*, 75.
[67] Krige, Callahan, and Maharaj, *NASA in the World*, 142.
[68] Harvey and Ciccoritti, *US-Soviet Cooperation in Space*, 45.

This has to do with both scale and scope. From the scale perspective, cooperative projects with fewer agencies involved go more smoothly and are less likely to get tangled in bureaucracy and politics. Consider the example of the ongoing work of the JWG as compared to ASTP, which was a big show with little spillover. Projects that included joint missions and hardware were much more complicated to justify and sustain.[69] The scope argument is related: simple projects with clearly defined and limited aims, such as data exchanges or cooperative data analysis towards a specific investigation were more successful.[70] On both counts, increased visibility of a project often worked against its success.[71]

(2) Find Complementarities

The scientists polled in the Office of Technology report from 1985 that has served as a backbone for this analysis all stressed that the most successful projects were those where each side brought something distinct to the table.[72] Examples discussed above include the joint work on mapping the moon and work using the Soviet data on the effect of extended space flight on living organisms. These were successful in large part because the results produced would have been unreachable but for the cooperation. This relates to the broader discussion above about defining cooperation: good cooperation comes from both sides finding the work to be scientifically and professionally beneficial.

(3) Have Clear Scientific Objectives

This should go without saying, but it does not because ultimately the question of official scientific cooperation is one of foreign policy priorities.[73] Choosing to commit government resources to a joint project – whether the issue is simple data sharing or something more ambitious – is a choice that this partnership is worth it. Governments are unlikely to make that choice without a belief that the partnership will not only yield scientific gains, but will also pay political dividends. The trick, therefore, is to hold two simultaneously competing ideas at once. Know that politics is part of the goal, but ignore that, and focus on the science. Emphasize concrete scientific deliverables over unquantifiable political gains.[74]

[69] *U.S.-Soviet Cooperation in Space*, 45.
[70] Ibid.
[71] Ibid., 81.
[72] Ibid., 45.
[73] Ibid., 77.
[74] Scientists may choose to frame their proposals in terms of political benefit in hopes of gaining support for a project, but this recommendation is targeted more at politicians, who should not propose "scientific cooperation" that does not have actual scientific objectives.

Each of these guidelines has pitfalls, and in some ways they work at cross-purposes. For example, visibility is bad for project sustainability and success, but good for public relations and raising money. Similarly, political gains are likely to be higher when project participants have more contact with one another, but these projects are harder to manage than simpler efforts like data exchanges. Nevertheless, keeping the competing demands in balance is crucial for successful scientific cooperation. The point is not that successful scientific cooperation must be divorced from politics altogether. Instead, the lesson is that, especially in times of political tension, cooperation will yield the most benefit (both scientific and otherwise) if science takes the lead.

The Arctic: The New Space?

In a 2016 speech at the Institute for European, Russian, and Eurasian Studies at The George Washington University, Ambassador Mark Brzezinski referred to the Arctic as "the new space."[75] It is not a bad comparison. As with space, the Arctic is a new scientific and political frontier that is simultaneously cooperative and competitive. Climate change has rendered accessible huge swaths of sea, leading to competition over access to resources, fish, and shipping lanes, to mention just the primary issues. Interest comes not only from the eight Arctic states (those with maritime or land borders in the Arctic), but also from other major trading states, including China, Japan, and South Korea.[76] At the same time, the enormous difficulty of operating in the harsh Arctic environment and the challenge of global warming itself mandate a cooperative approach. The major Arctic powers continue to emphasize that the Arctic should not be affected by political strains elsewhere.[77]

The Arctic also poses a similar concern over militarization. Even before the Soviet Union launched Sputnik in 1957, the United States had sponsored an amendment at the United Nations calling for peaceful use of space.[78] Now, although all Arctic states have publically committed to taking a peaceful approach to the Arctic, concerns abound over the recent increase in Russian military infrastructure in its Arctic zone, and some in the West call for NATO to take a larger role in the region.[79] On a related theme, the contemporary

[75] Mark Brzezinski, "The Arctic Executive Steering Committee: Insights and Outlook" (Institute for European, Russian, and Eurasian Studies, The Elliott School of International Affairs, The George Washington University, April 4, 2016), https://www.gwu.edu/~ieresgwu/assets/docs/Brzezinski.pdf.
[76] Didi Kirsten Tatlow, "China and the Northern Rivalry," *The New York Times*, October 5, 2012, http://rendezvous.blogs.nytimes.com/2012/10/05/china-and-the-northern-great-game/.
[77] Heather Exner-Pirot, "Northern Expert Proposes New Rule – Put up or Shut up with Your Arctic Conflict Theory | Eye on the Arctic," *Eye on the Arctic*, October 20, 2015, http://www.rcinet.ca/eye-on-the-arctic/2015/10/20/northern-expert-proposes-new-rule-put-up-or-shut-up-with-your-arctic-conflict-theory/.
[78] Harvey and Ciccoritti, *US-Soviet Cooperation in Space*, 1.
[79] Dmitry Gorenburg, "Russian Interests and Policies in the Arctic," *War on the Rocks*, August 7, 2014, http://warontherocks.com/2014/08/russian-interests-and-policies-in-the-arctic/; David Barno and Nora Bensahel,

relationship in the Arctic also presents concerns over technology transfer. These come not just from the perspective of dual use technology, but also because some of the Western sanctions on Russia directly target extractive technologies for use in Arctic drilling.[80]

It is, of course, not a perfect analogy. Arctic governance, while porous, is far more structured than was space governance in its early days. There is an accepted piece of international legislation, the United Nations Convention on the Law of the Sea (UNCLOS), which governs the Arctic and which all Arctic states follow.[81] There is also clear jurisdiction in the Arctic. Each country has an exclusive economic zone (EEZ) extending 200 nautical miles from the end of its territory.[82] To the extent that resources are in the EEZ, they are not up for grabs when climate change makes them more technically accessible.[83] While outer space has been formally governed by international law since the 1960s, there is no similar recognition of exclusive zones, nor is there is a single universal piece of legislation.[84] Finally, the Arctic has not become a symbol of global ideological competition and is not nearly as intertwined with American identity as was the space program during the Cold War.[85] As a result, both competition and cooperation in the area yield fewer perceived public relations and political dividends.

Nevertheless, sufficient similarities remain to make comparing cooperation in space and cooperation in the Arctic worthwhile. Both pose great technological challenges. Both occur in a wider context of profound political tension. And both present profound scientific opportunity for those willing to engage the other side. The remainder of this section explores the Russian and American approaches to the Arctic and explores how the lessons discussed above can be applied in this new context.

"The Anti-Access Challenge You're Not Thinking About:," *War on the Rocks*, May 5, 2015, http://warontherocks.com/2015/05/the-anti-access-challenge-youre-not-thinking-about/.

[80] Alexei Lossan, "Russia Admits Lack of Technologies for Offshore Oil Production," *Russia Beyond the Headlines*, September 28, 2015, http://rbth.com/business/2015/09/28/russia_admits_lack_of_technologies_for_offshore_oil_production_49605.html; James Marson and Selina Williams, "Sanctions Bite Massive Gas Project in Russian Arctic," *Wall Street Journal*, August 27, 2015, sec. Business, http://www.wsj.com/articles/sanctions-bite-massive-gas-project-in-russian-arctic-1440667802; Kevin McGwin, "The Arctic in the Time of Sanctions," *The Arctic Journal*, August 10, 2015, http://arcticjournal.com/politics/1747/arctic-time-sanctions.

[81] The United States is the only Arctic country that has not ratified UNCLOS, but it follows it de facto. See below for further discussion of this point.

[82] "United Nations Law of the Sea," 1982, pt. V, Article 57 (p. 44), http://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf.

[83] Jørgen Staun, "Russia's Strategy in the Arctic" (Copenhagen, Denmark: Institute for Strategy, The Royal Danish Defence College, March 2015), 7, http://www.fak.dk/publikationer/Documents/Russias%20Strategy%20in%20the%20Arctic.pdf.

[84] "Space Law Treaties and Principles," *United Nations Office for Outer Space Affairs*, accessed May 9, 2016, http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html. There are, however, national space laws, which overlap with international space law.

[85] This is not entirely true in the Russia case. See below for further explanation.

Russia in the Arctic

For Russia, the Arctic is both strategically and historically important. From a physical and strategic perspective, Russia hosts 50 percent of the entire Arctic coastline.[86] It also has the most populous and most developed Arctic among the five littoral Arctic states.[87] The majority of the country's nuclear fleet is based in Murmansk, and the Arctic provides Russia's only northern access to open water.[88] The region is also home to about twenty five percent of Russian domestic fishery production.[89] From an historical perspective, the Arctic has long played an important role in how the Russians define themselves; it was an indication of maritime prowess during the Imperial era, and a show of scientific and technological superiority during the Soviet era.[90]

As part of military planning and industrialization, the Russian Arctic witnessed an enormous boom in infrastructure and development throughout the Soviet era. Since 2008, when Russia published its first Arctic strategy since 2001, the government has been reinvesting in modernizing the decaying Soviet infrastructure.[91] Investment increased noticeably after Putin began his third presidential term in 2012.[92] Experts are divided as to whether this is indication of militarization of the Arctic or a continuation of the effort to modernize old Soviet infrastructure.

Part of the debate over how to interpret the flurry of activity in Russia's Arctic comes from Russia's dual track political approach to the region. The government takes a simultaneously cooperative and competitive attitude towards the Arctic. The Danish analyst Jørgen Staun identifies the two strands as geopolitics/International Relations realism and international law and negotiation/International Relations liberalism.[93] Russian analyst Alexander Sergunin takes a similar approach, labeling the two competing strategies as interest-based

[86] Heather Conley and Caroline Rohloff, "The New Ice Curtain: Russia's Strategic Reach to the Arctic," CSIS Europe Program (Washington, D.C.: Center for Strategic and International Studies, August 2015), viii, http://csis.org/files/publication/150826_Conley_NewIceCurtain_Web.pdf.
[87] Marlène Laruelle, *Russia's Arctic Strategies and the Future of the Far North* (Armonk, N.Y.: M.E. Sharpe, 2014), 47.
[88] Conley and Rohloff, "The New Ice Curtain: Russia's Strategic Reach to the Arctic," 78; The Harriman Institute at Columbia University, *Conference on US-Russia Relations in the Arctic: Panel One: Setting the Scene*, sec. 3 (Caitlyn Antrim), accessed May 9, 2016, https://www.youtube.com/watch?v=d9ALLpJIYZU.
[89] A.N. Marchukov, "Major Contradictions in Russian-American Relations," in *Mezhdunarodnoe sotrudnichestvo v Arktike: problemy bezopasnosti i razvitiia / Nikitin, A. I., ; editor.*, ed. A. V. Zagorskii and A.I. Nikitin (Moskva: ROSSPEN, 2013), 67.
[90] Laruelle, *Russia's Arctic Strategies and the Future of the Far North*, 25–26.
[91] Ibid., 5; Sovet Bezoposnosti Rossiiskoi Federatsii, "Osnovy gosudarstvennoi politiki Rossiiskoi Federatsii v Arktike na period do 2020 goda i dalneishuiu perspektivu," September 18, 2008, http://www.scrf.gov.ru/documents/98.html; Conley and Rohloff, "The New Ice Curtain: Russia's Strategic Reach to the Arctic," 36–38; The Harriman Institute at Columbia University, *Setting the Scene*, sec. 4 (Alexander Sergunin).
[92] Conley and Rohloff, "The New Ice Curtain: Russia's Strategic Reach to the Arctic," 73.
[93] Staun, "Russia's Strategy in the Arctic," 8.

(new realist) and value-based (new liberal).[94] The two approaches are driven by two different competing interests: asserting national sovereignty and promoting economic development.[95]

For the moment, the more cooperative approach dominates.[96] While there are concerns about increased use of SNAP exercises, much of the Russian military build-up in the Arctic can be seen as primarily defensive.[97] Further, since the military is in many ways the only sector with the capacity to oversee the modernization of the Arctic, it is dangerous to over-interpret their dominant presence in the region.[98]

Where the cooperative approach is not dominant, however, is in the realm of rhetoric. Russian political rhetoric in general has gradually become more anti-Western since 2004, with a significant deterioration in the period immediately following the annexation of Crimea in February 2014.[99] On the Arctic, a gap remains between the stridency of the rhetoric and actual policy follow through.[100] However, the region does play a prominent role in the overall rhetorical strategy of renewing Russia as a great power with full national and international sovereignty; it can therefore sometimes get tied in to the more pugilistic elements of the political rhetoric aimed towards the Russian domestic audience.[101] Danger remains that the rhetorical construction of the Arctic as bulwark of sovereignty against the incursion of Western powers will infect international relations in the Arctic, as it has elsewhere in the relationship.[102]

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[94] The Harriman Institute at Columbia University, *Setting the Scene*, sec. 4 (Alexander Sergunin).
[95] Ekaterina Klimenko, "Russia's Evolving Arctic Strategy: Drivers, Challengesand New Opportunities," Policy Paper (Solna, Sweden: Stockholm International Peace Institute (SIPRI), September 2014), 1, http://books.sipri.org/files/PP/SIPRIPP42.pdf; Sergei Medvedev, "The Kremlin's Arctic Plans: More Gutted than Grand," *PonarsEuarasia - Policy Memos*, June 7, 2016, http://www.ponarseurasia.org/memo/kremlin-arctic-plans-more-gutted-grand.
[96] Brzezinski, "The Arctic Executive Steering Committee: Insights and Outlook"; European delegation to NATO, interview by Rachel S. Salzman, In Person, March 2016, Brussels, Belgium; Pavel Gudev, interview by Rachel S. Salzman, In Person, February 25, 2016, Moscow, Russia; Staun, "Russia's Strategy in the Arctic"; Andrei Zagorski, interview by Rachel S. Salzman, E-mail, February 2016.
[97] On the increase of SNAP exercises, see The Harriman Institute at Columbia University, *Conference on US-Russia Relations in the Arctic: Military Issues - Assessing Future Threats*, sec. 1 (Nora Bensahel), accessed May 12, 2016, https://www.youtube.com/watch?v=d9ALLpJIYZU; On the build up as primarily defensive, see European delegation to NATO, interview.
[98] The Harriman Institute at Columbia University, *Setting the Scene*, sec. 1 (Marlene Laruelle).
[99] For more on Russian political rhetoric, see Rachel S. Salzman, "BRICS in Russian Foreign Policy before and after the Onset of the Crisis in Ukraine" (Ph.D., Johns Hopkins University, 2015), especially chap. 4, unpublished.
[100] Zagorski, interview.
[101] On the Russian conception of sovereignty, see Andrei Zagorski, "Russian Approaches to Global Governance in the 21st Century," *Internationale Spectator* 45, no. 4 (2010): 32, doi:10.1080/03932729.2010.527099; on the role of the Arctic in the general narrative, see Laruelle, *Russia's Arctic Strategies and the Future of the Far North*, 10.
[102] Zagorski, interview.

The United States of America in the Arctic

Although the United States is an Arctic nation, it does not have nearly as developed an Arctic identity as has Russia. The United States has a much smaller Arctic territory, and that territory is not contiguous with the majority of the country. During the Cold War, the United States had active security concerns in the region because of the shared maritime border with the Soviet Union along the Bering Strait. Since the end of the Cold War and the collapse of the Soviet Union, however, the U.S. military has focused primarily on other theaters.[103] Since the interest during the Cold War was driven primarily by strategic concerns and the larger geopolitical context rather than Arctic-specific issues, the topic dropped in U.S. political priorities during the 1990s.[104]

President George W. Bush was the first to oversee publication of a formal Arctic Strategy in January 2009, just days before Barack Obama assumed the presidency.[105] The 2009 Bush Arctic strategy continued to be the umbrella for the new Obama administration's Arctic policy until the publication of a new strategy in May 2013.[106] Even though President Obama did not publish his own Arctic strategy until his second term, however, his administration's interest in the region was evident earlier. In 2011, then-Secretary of State Hillary Clinton and then-Secretary of the Interior Ken Salazar became the first U.S. cabinet members to attend an Arctic Council meeting since the forum's creation in 1996.[107] The occasion was the Arctic Council ministerial in Nuuk, Greenland and the signing of the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic, the first binding treaty negotiated under the auspices of the Arctic Council.[108] With the United States at the helm of the Arctic Council until April 2017, the region is now near the top of the administration's agenda, with a planned ministerial in Fairbanks, Alaska in 2017.[109] Obama has also created an Arctic Executive Steering Committee (AESC) and appointed Admiral Robert J. Papp as the first ever Special Representative for the Arctic.[110]

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[103] Ronald O'Rourke, "Changes in the Arctic: Background and Issues for Congress," R41153 (Washington, D.C.: Congressional Research Service, March 26, 2016), 58–59, https://www.fas.org/sgp/crs/misc/R41153.pdf.
[104] Franklyn Griffiths, "Environment in U.S. Discourse on Security: The Case of the Missing Arctic Waters," in *National Security and International Environmental Cooperation in the Arctic: The Case of the Northern Sea Route*, ed. Willy Østreng (Dordrecht Boston: Kluwer Academic, 1999), 193.
[105] O'Rourke, "Changes in the Arctic," 6.
[106] Ibid.; Executive Office of the President, "National Security Strategy for the Arctic Region," May 2013, https://www.whitehouse.gov/sites/default/files/docs/nat_arctic_strategy.pdf.
[107] O'Rourke, "Changes in the Arctic," 52.
[108] "Agreements - Arctic Council," *The Arctic Council*, July 7, 2015, http://www.arctic-council.org/index.php/en/our-work/agreements.
[109] Brzezinski, "The Arctic Executive Steering Committee: Insights and Outlook."
[110] Ibid.; Bureau of Public Affairs Department Of State. The Office of Website Management, "Retired Admiral Robert Papp to Serve as US Special Representative for the Arctic," Press Release|Press Statement, *U.S. Department of State*, (July 16, 2014), http://www.state.gov/secretary/remarks/2014/07/229317.htm.

Under the leadership of Admiral Papp and Ambassador Brzezinski, the United States is pursuing three overarching goals in the Arctic:

1. Advance United States security interests
2. Pursue responsible Arctic stewardship
3. Strengthen international cooperation[111]

These priorities align with, but are not the same as, the "focus areas" of the U.S. chairmanship of the Arctic Council. In that arena, the stated goals are as follows:

1. Improving economic and living conditions for Arctic communities
2. Arctic ocean safety, security, and stewardship
3. Addressing the impacts of climate change[112]

Both sets of goals emphasize environmental issues and the wellbeing of Arctic indigenous communities; unlike Russian goals in the Arctic, economic development is not an explicit aim. Indeed, President Obama has taken an explicitly scientific approach to the region, housing the AESC in the White House Office of Science and Technology.[113] There are security concerns in the region and various arms of the defense establishment are reviewing and updating their Arctic strategies.[114] However, the overwhelming public message from the U.S. administration is that the issues in the Arctic are not primarily about traditional hard security, and that the administration intends to take a cooperative approach to the region.[115] This stands somewhat in contrast to the mixed messages that the Russian leadership sends in both words and deeds on the issue.

Role of the Other Arctic States

The focus of this paper is primarily on the U.S.-Russian bilateral relationship, and more particularly on U.S. policy towards the Soviet Union and Russia. Cooperation in the Arctic, however, takes place through both bilateral and multilateral forums, most importantly the Arctic Council. It is worthwhile, therefore, to take a moment to consider the viewpoints among Arctic Council members more broadly.

The Arctic Council is comprised of eight member states (Canada, Russia, the United States, Iceland, Denmark, Sweden, Finland, and Norway), groups representing Arctic indigenous

[111] Executive Office of the President, "National Security Strategy for the Arctic Region," 2.
[112] "U.S. Chairmanship - Arctic Council," *The Arctic Council*, accessed April 28, 2016, http://www.arctic-council.org/index.php/en/about-us/arctic-council/u-s-chairmanship.
[113] Brzezinski, "The Arctic Executive Steering Committee: Insights and Outlook." In September 2016, the United States will also host the first-ever Arctic Council ministerial for science, further underscoring the perspective this administration takes on the region.
[114] O'Rourke, "Changes in the Arctic," 68.
[115] Brzezinski, "The Arctic Executive Steering Committee: Insights and Outlook."

peoples, and twelve Observer states. Of the eight member states, Canada, Russia, the United States, Norway, and Denmark (via Greenland) have Arctic coastlines. Iceland, Sweden, and Finland have territory or territorial waters in the Arctic, but do not directly border the region.

There are a number of crosscutting issues among the Arctic states. Of the five littoral Arctic states, only Russia is not a member of NATO. NATO itself is a controversial topic among its Arctic member states, and the Alliance has no common position on the Arctic.[116] The spectrum of positions runs from Norway, which would prefer more NATO engagement in the Arctic, to Canada, which is very opposed to the idea because of its position on sovereignty over waters in its Arctic archipelagos.[117] On this particular issue, the Canadian and Russian positions are fairly well aligned, but that amity does not extend to all issues of Arctic cooperation. Finally, Norway is the only littoral state that does not have an overlapping claim on the extent of its continental shelf. As the United Nation Commission on the Limits of the Continental Shelf (CLCS) sorts through the other claims, there is a (small) danger of conflict.[118]

There are also regional European tensions that can spill into relations in the Arctic. Most significantly, the region around the Baltic Sea has witnessed a number of close military encounters between Russia and NATO since the beginning of the crisis in Ukraine.[119] This has a negative effect on relations between Finland and Sweden (primarily) and Russia, beyond the general downturn in the relationship the between Russia and the West over the past two and half years. While the states in the Arctic Council all take a primarily cooperative view of the high north, these overlapping multilateral tensions can impact bilateral U.S.-Russian relations if not managed appropriately.

Finally, it is important to mention that science in the Arctic is already mostly multilateral. As discussed in a later section, there is ongoing bilateral cooperation between the United States and Russia in the region, but for the most part, science is handled as a multilateral concern. The lessons proffered below, however, are equally applicable to a multilateral context.

[116] Osman Askin Bak, "The High North: Emerging Challenges and Opportunities" (Brussels, Belgium: NATO Parliamenary Assembly Committee on Science and Technology, October 11, 2015), 1, http://www.nato-pa.int/Default.asp?SHORTCUT=4020.
[117] European delegation to NATO, interview.
[118] Bak, "The High North: Emerging Challenges and Opportunities," 12.
[119] Thomas Frear, Łukasz Kulesa, and Ian Kearns, "Dangerous Brinkmanship," Policy Brief (European Leaders Network, November 2014), 1, http://www.europeanleadershipnetwork.org/medialibrary/2014/11/09/6375e3da/Dangerous%20Brinkmanship.pdf.

Challenges to U.S.-Russian Cooperation

Bilateral cooperation in the Arctic between the United States and Russia is possible, but it is not as straightforward as it might appear. While the two countries have multiple coinciding interests in the region, they prioritize those interests differently. As discussed in the preceding sections, the main Russian priorities in the Arctic are projecting national sovereignty and promoting economic development. The primary U.S. concerns have to do with human and environmental security. The Americans care about economic development, and the Russians have serious concerns about the degradation of the environment in the Russian Arctic. However, the mismatch in how the two countries emphasize these issues has the potential to hinder cooperation, especially to the extent that it drains the political will to cooperate on a given problem.

Mismatches in priorities are not the only difficulty. The U.S. presidential elections also present a major challenge to cooperation. Traditionally, election years have been terrible for the bilateral relationship. Given the continued tensions between the two countries over the ongoing conflicts in Syria and Ukraine, the 2016 cycle is unlikely to be different.[120] In parsing the likely the effects of the election on cooperation, there are two levels: potential effect on cooperation in the Arctic specifically, and projected impact on the relationship as a whole.

On the Arctic, if Hillary Clinton wins the presidency, she is likely to continue with the main themes outlined by the Obama administration. She is on record as opposing drilling in the Arctic and has extensive policy proposals on how to battle climate change, suggesting that she agrees with the Obama policy priorities in the region.[121] To the extent that cooperation with Russia is ongoing on these issues, Clinton is likely to support its continuation. Donald Trump, on the other hand, has shown dislike for Russian activities in the Arctic but little interest in climate change.[122] The presumptive Republican nominee for president has not spoken much on the Arctic and his campaign website does not include climate change as an

[120] While Russia does not have a presidential election this year, it does have a parliamentary election that the leaders will be watching closely.
[121] David Roberts, "Hillary Clinton's Climate and Energy Policies, Explained," news, *Vox*, (May 9, 2016), http://www.vox.com/2016/5/9/11548354/hillary-clintons-climate-and-energy-policies-explained. On drilling, she is more of a climate conservative than Obama.
[122] Arne O. Holm, "Editorial Comment: What Happens If Donald Trump Makes Decisions about the Arctic?," *High North News*, March 3, 2016, http://www.highnorthnews.com/editorial-comment-what-happens-if-donald-trump-makes-decisions-about-the-arctic/.

area of concern.[123] However, the inconsistency of his campaign statements makes extrapolating likely policy choices on specific issues very difficult.[124]

To a certain extent, the same difficulty exists in attempting to predict how a Trump victory would affect the overall tenor of the bilateral relationship. On the one hand, Trump has spoken out against Russian aggression in Ukraine.[125] On the other hand, he has portrayed himself as someone able "to do a deal" with President Putin and has questioned the utility of NATO for U.S. interests.[126] Further, some Russian analysts see Trump as the better option, both because Putin has suggested that he admires Trump and also because Hillary Clinton is seen as firmly biased against Russia.[127]

In the democratic primary debates and in her public statements, Clinton has repeatedly criticized Russian foreign policy and President Putin.[128] She was also the public face of the now defunct "Reset" that Barack Obama attempted during his first presidential term, an effort that bore fruit but which is unpopular in hindsight. Finally, Clinton is very unpopular with the Russian leadership.[129] Nevertheless, Secretary Clinton, if only by virtue of her previous cabinet role, also understands the nuances of international affairs and

[123] "DONALD J. TRUMP POSITIONS," accessed May 23, 2016, https://www.donaldjtrump.com/positions.
[124] On Trump's inconsistencies, see: Max Boot, "Does Donald Trump Have Any Convictions?," *Commentary Magazine*, August 18, 2015, https://www.commentarymagazine.com/politics-ideas/campaigns-elections/donald-trump-convictions-inconsistency/; David Fahrenthold, "20 Times Donald Trump Has Changed His Mind since June," *Washington Post*, accessed May 23, 2016, https://www.washingtonpost.com/news/post-politics/wp/2015/08/17/20-times-donald-trump-has-changed-his-mind-since-june/; Timothy Noah, "Will the Real Donald Trump Please Stand Up?," *POLITICO*, July 26, 2015, http://www.politico.com/story/2015/07/will-the-real-donald-trump-please-stand-up-120607.html.
[125] Holm, "High North News – Editorial Comment."
[126] Donald Trump, "America First" (Mayflower Hotel, Washington, D.C., April 27, 2016), http://time.com/4309786/read-donald-trumps-america-first-foreign-policy-speech/; Leonid Bershidsky, "Trump Would Be Pals With Putin. Trump's Guy, Not So Much.," *Bloomberg View*, March 4, 2016, https://www.bloomberg.com/view/articles/2016-03-04/trump-s-national-security-adviser-is-no-admirer-of-putin; Philip Rucker and Robert Costa, "Trump Questions Need for NATO, Outlines Noninterventionist Foreign Policy," Washington Post, *Post Politics*, (March 21, 2016), https://www.washingtonpost.com/news/post-politics/wp/2016/03/21/donald-trump-reveals-foreign-policy-team-in-meeting-with-the-washington-post/.
[127] Eugene Bai, "Donald Trump: Neither a Friend nor Enemy for Russia," *Russia Direct*, May 10, 2016, http://www.russia-direct.org/analysis/donald-trump-neither-friend-nor-enemy-russia; Fred Pleitgen, "Donald Trump's Foreign Policy Speech Earns Praise in Russia," *CNN*, April 29, 2016, http://www.cnn.com/2016/04/28/politics/donald-trump-russia-putin/index.html.
[128] "Transcript: Democratic Presidential Debate in Brooklyn," *The New York Times*, April 15, 2016, http://www.nytimes.com/2016/04/15/us/politics/transcript-democratic-presidential-debate.html; Kenneth Rapoza, "Clinton Stokes Fears Of Russians Coming To The Baltics, When They're Actually Leaving," *Forbes*, February 7, 2016, http://www.forbes.com/sites/kenrapoza/2016/02/07/hillary-clinton-stokes-the-baltics-fear-of-russia/; Ryan Teague Beckwith, "Read the Transcript of the Democratic Debate in Charleston," *Time*, January 17, 2016, http://time.com/4183952/democratic-debate-full-text-hillary-clinton-bernie-sanders/.
[129] Michael Crowley and Julia Ioffe, "Why Putin Hates Hillary," *POLITICO*, July 25, 2016, http://www.politico.com/story/2016/07/clinton-putin-226153.

diplomacy.[130] It is likely, therefore, that while she might have interpersonal difficulties in effecting cooperation with Russia, she would pursue it as a matter of U.S. national security and global interests.

There is one final challenge to sustained scientific cooperation: money. In general, politics is a much weaker link in determining scientific cooperation than money.[131] The two issues, however, are interlinked: when political relations with Russia sour, the willingness of both government and private foundations to fund projects also withers. With regards to cooperation in the Arctic in particular, the problem is doubly difficult in the United States because of the generally low interest in the region (though this is changing). As regards general Arctic funding, one positive sign is the Obama administration's proposed FY2017 budget, which asks for landmark levels of funding for Arctic related issues and has Mt. Denali on the cover.[132] As noted above, Arctic science is largely multilateral, so the final budget (should one pass) could indirectly facilitate scientific cooperation with Russia. As of now, however, the financial picture is grim.

Optimizing Cooperation

The above caveats aside, cooperation is possible, and ongoing. The main question, therefore, is how to optimize that cooperation going forward in order to achieve maximum positive spillovers.[133] Here, the lessons derived from space cooperation can help show the way, if adapted properly.

1) Do No Harm

The first lesson of U.S.-Soviet space cooperation was to think small, because of the bureaucratic headaches involved in bigger projects. This recommendation holds true for Arctic cooperation, but it is better understood as do no harm. The United States and Russia have multiple long-standing cooperative efforts in and around the Arctic. These include the Area V Working Group, which focuses on issues of nature conservation (not limited to the Arctic), and the Shared Beringia Heritage Program between the National Parks Service and the Ministry of Natural Resources and the Environment. These are small, inexpensive

[130] Steve Clemons, "Where Does Hillary Clinton Stand on China and Russia?," *The Atlantic*, April 14, 2015, http://www.theatlantic.com/international/archive/2015/04/where-does-hillary-clinton-stand-on-china-and-russia/390471/.
[131] American Cooperation Expert, interview.
[132] Brzezinski, "The Arctic Executive Steering Committee: Insights and Outlook"; Office of Management and Budged, "Budget of the United States Government, Fiscal Year 2017" (Washington, D.C., February 2016), https://www.whitehouse.gov/omb/budget/Overview.
[133] Note that, as per the requirement that politics not lead the way, the first goal is scientific spillovers, with the hope that increased cooperation leads to political spillovers down the line.

programs that keep experts from both sides engaged on issues of mutual interest. A core guideline for cooperation, therefore, is to insulate these and similar projects. This means not allowing them to be used as leverage to extract gains elsewhere in the relationship and maintaining sufficient funding for their operations to continue. Small projects like this will not save the U.S.-Russian relationship, nor is that their goal. Instead, focusing on maintaining the lower level projects ensures that when relations do improve, some lines of communication are still operating. These smaller efforts also have the benefit of operating below the radar, making them less vulnerable to media scrutiny and political manipulation.

2) Let Science be the Guide

Similar to the latter two recommendations in the section on space cooperation, finding complementarities is key for U.S.-Russian cooperation in the Arctic. There has never been a better time for the United States and Russia to collaborate on the scientific challenges the Arctic presents. These include both combatting climate change and dealing with impact that global warming has already wrought on the region. Oil prices are far below what they need to be to make resource extraction in the Arctic economically attractive, lessening the conflict between Russia's drive towards extraction-based economic development and the U.S. focus on the environment. Cooperation, however, should be dictated by where scientists from the two countries can do the most good. On the political side, the task is to facilitate that cooperation through sufficient funding and removing bureaucratic hurdles (such as the requirement that the National Security Council approve all travel to Russia), and then get out of the way. Some promising projects are already in their infancy, such as a series of workshops on reducing black carbon, but there are other opportunities and areas of mutual interest.[134] The key is to allow these projects to flourish, and the way to do that is to encourage scientists from both countries to figure out for themselves where it makes sense to collaborate.

3) Have Clear and Mutually Beneficial Concrete Objectives

Cooperation for cooperation's sake, even if interesting to both parties, is insufficient. To justify the funding and diversion of personnel, projects need goals that meet the needs of both parties. To a certain extent, these goals will flow from the search for complementarities discussed above. It is worth highlighting two potential areas of cooperation, however, in order to suggest a place to start.

[134] For example: "Compendium of Materials from a Russian-American Workshop at the Presidium of the Russian Academy of Sciences" (U.S. National Academies-Russian Academy of Sciences Workshop on Challenges of Black Carbon, Moscow, Russia, 2012).

Two areas that both the United States and Russia have mentioned as core practical concerns are deteriorating infrastructure (especially due to melting permafrost) and limited telecommunications. There are also efforts on both sides to map the physical geography of the region. These are all areas where cooperation could be hugely mutually beneficial, and each comes with clear metrics of success. They address core concerns about safety, support the treaty on search and rescue as well as on oil spill response by improving base conditions for responding to crises, and are sufficiently workaday to allow technocrats and scientists to do the bulk of the work once the leadership gives the green light. Just as cooperation on joint docking systems motivated the Soviets to increase their collaboration with NASA because it offered potential safety benefits for Soviet cosmonauts, so too would cooperation on improved infrastructure, telecommunications, and cartography offer clear benefits to both nations.

Conclusions

Scientific cooperation in the Arctic is by no means a remedy for the very strained political relationship between the United States and Russia, nor is it meant to serve as such. However, as U.S.-Soviet space cooperation demonstrates, scientific cooperation can make strides even when politics are dark. The Arctic benefits, further, from being a place where cooperation already predominates, and where both nations seem committed to keeping the tensions of the rest of the relationship at bay. The challenge is navigating the tense rhetoric, and allowing the experts room to operate unfettered.

U.S.-Soviet space cooperation was most successful in times when political tensions between the two superpowers were low. Nevertheless, the promise of cooperation and the efforts to find areas to coordinate, even at very rudimentary levels, throughout the 1960s and during the lapse in the 1980s, was a powerful symbol. Cooperating in the Arctic, as long as it is real cooperation and not just symbolic, can help the United States and Russia maintain a solid base for the relationship as the two countries come together to help solve one of the core challenges of our age.

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