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# Strategic Arctic science: national interests in building natural knowledge – interwar era through the Cold War

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**Abstract**

From the 1930s through the 1950s—the decades bracketing the second and third international polar years—research in the physical and biological environmental sciences of the Arctic increased dramatically. The heroic, expedition-based style of Arctic science, dominant in the first decades of the twentieth century, gave way to a systematic, long-term, strategic and largely statefunded model of research which increased both Arctic presence and the volume of research output. Factors that made this change possible were distinct for each of the five circumpolar nation-states considered here. For Soviet leaders, the Arctic was an untamed land containing vast economic resources, all within reach if its long-sought Northern Sea Route became reality; Soviet officials sought environmental knowledge of this region with a range of motivations from economic and strategic concerns to enhancing the prestige of socialism. In contrast, United States officials largely ignored the Arctic until the outbreak of World War II, when military commanders quickly grasped the strategic importance of this region. Anxious that the Arctic might become a literal battleground between East and West by 1947, as the Cold War began, Pentagon leaders funded vast northern research programs, including in strategically located Greenland. Canadian leaders—while appreciating the national security concerns of its powerful southern neighbor—were even more concerned with maintaining sovereignty over its northern territories and gaining knowledge to assist its northern economic ambitions. Norway and Sweden, as smaller states, faced distinct challenges. With strong claims to Arctic heritage but limited resources, leaders of these states sought to create independent research strategies while, especially in the case of Norway, protecting their geopolitical interests in relation to the Soviet Union and the U.S. This article provides the first internationally comparative study of the multiple economic, military, political, and strategic factors that motivated scientific activities and programs in the far north, from the interwar period through World War II and the Cold War, when carefully coordinated, station-based research programs were introduced. The production of knowledge about Arctic's physical environment—including its changing climate—had little resemblance either to ideas of science-based 'progress,' or responses to perceived environmental concerns. Instead, it demonstrates that strategic military, economic, geopolitical, and national security concerns influenced and shaped most science undertakings, including those of the International Polar Year of 1932–1933 and the following polar year, the International Geophysical Year of 1957–1958.


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Scientific knowledge about the Arctic's physical properties—its physical environment—grew rapidly in the middle decades of the twentieth century. Most of this knowledge was gained through research, and the pace of change was tremendous. The International Geophysical Year of 1957–1958 was the largest-ever science program to occur on the planet, involving tens of thousands of scientists and their collaborators from 67 countries, using helicopters, jet airplanes, temporary and permanent research stations, sophisticated radio communications equipment and, in some cases, massive military logistic support. This was a stark contrast with the situation immediately after World War I, when most Arctic research was conducted on an individual, case-by-case basis, with fragile

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and impermanent funding. There were few Arctic specialists: in most countries, in the 1920s, they could be counted in single or double digits. Scientists went to the Arctic occasionally, when funding and circumstances allowed, and there was little national, let alone international, coordination. Even the second International Polar Year of 1932–1933 was poorly funded, due to the severe economic depression.

Earlier histories of Arctic science generally regarded geographical and scientific exploration of the Arctic as an on-going process of cumulative and progressive knowledge growth. They made occasional attempts at periodization and paid considerable attention to dramatic, much-trumpeted Arctic firsts, including discoveries of the Magnetic North Pole (1831) and the first successful expeditions that sailed the Northeast and Northwest Passages.[1] There was also a copious literature on the (claimed) attainment of the North Pole in 1909.[2] Some researchers recognized the dampening effect on research caused by World War I, and some explored the professionalization of polar science in the interwar period.[3] In addition, studies of the international polar years revealed intriguing patterns and distinct national styles, and recent accounts of Arctic research in several northern nations have yielded valuable insight into the various forces that drove it.[4]

There is no wide-ranging comparative assessment of Arctic science encompassing the mid-twentieth century and the region as a whole, and there have been few attempts to understand the extraordinary growth after WWII.[5] This article offers the first fully comparative international perspective on how research programs to increase understanding of the Arctic's physical and biological environment were conceived, promoted, and carried out in the Soviet Union, the United States, Canada, Norway, and Sweden between the late 1920s and the late 1950s.[6] It embraces a transnational approach that historian Patricia Seed has called 'a world of comparative possibility.'[7] In each of these countries, leaders placed a premium on achieving better scientific understanding of Arctic environments, and economic, geopolitical, and national security concerns clearly influenced the production of this knowledge.[8] At much the same time, the adoption of new mathematical and analytic approaches moved the environmental sciences from descriptive to predictive mode, allowing researchers to discern rhythms and regularities in polar phenomena that mattered for strategic and national security aims.[9]

## Making Arctic science modern: towards a circumpolar view

Before World War II shattered Europe, only the Soviet Union supported robust research programs focused on its far north: scientist-manned icebreakers were plowing the frozen Arctic Ocean by the mid-1930s, while well-manned research expeditions occupied ice islands in the high Arctic, sending back meteorological, oceanographic and ionospheric observations to well-supported institutions further south, including the Arctic Institute in Leningrad. By contrast, there was little systematic Arctic research in the West in the interwar period, perhaps even less than before 1920, during the era of well-known scientist-explorers such as Fridtjof Nansen (leader of Norway's famed *Fram* expedition of 1893–1896), Sweden's S.A. Andrée (who failed to reach the North Pole in a hot air balloon 1897), and the Manitoba-born, New York-based anthropologist and Arctic visionary, Vilhjalmur Stefansson.[10] Indeed, when the remains of the Andrée expedition were discovered in 1930 and repatriated to Stockholm, one of Sweden's most

[1] The tradition of chronicling explorers and discoveries runs deep; see for instance F. Nansen, *In Northern Mists: Arctic Exploration in Early Times*, London, 1911; F. von Hellwald, *Im ewigen Eis*, Stuttgart, 1881; C.R. Markham, *The Lands of Silence: A History of Arctic and Antarctic Exploration*, Cambridge, 1921; J. Mirsky, *To the Arctic! The Story of Northern Exploration from Earliest Times to the Present*, second revised ed., London, 1949; L.P. Kirwan, *A History of Polar Exploration*, New York, 1960; G.H. Liljequist, *High Latitudes: A History of Swedish Polar Travels and Research*, Stockholm, 1993. On the search for the Northwest passage and the Magnetic North Pole, see e.g. A.G.E. Jones, The voyage of H.M.S. Cove, Captain James Clark Ross, 1835–36, *Polar Record* 5 (1950) 543–556; F. Mowat, *Ordeal by Ice: The Search for the Northwest Passage*, Toronto, 1973; P. Berton, *The Arctic Grail: The Quest for the North West Passage and the North Pole, 1818–1909*, New York, 1988. An early example of more recent contextualized accounts is J. Cawood, The magnetic crusade: science and politics in early Victorian Britain, *Isis* 70 (1979) 492–518.

[2] A good account of the quest to reach the North Pole, and how the two competing claims of discovery by Robert Peary and Frederick Cook have been handled in historiography and media, is B. Henderson, *True North: Peary, Cook, and the Race to the Pole*, New York, 2005.

[3] P. Roberts, *The European Antarctic: Science and Strategy in Scandinavia and the British Empire*, New York, 2011.

[4] C. Lüdecke and J. Lajus, The second International Polar Year 1932–1933, in: S. Barr, C. Lüdecke (Eds), *The History of the International Polar Years (IPYs): From Pole to Pole*, Berlin, 2010; I. Krupnik, G.K. Hovelsrud, et al., Polar societies and social processes, in: I. Krupnik, et al. (Eds) *Understanding Earth's Polar Challenges: International Polar Year 2007–2008*, Edmonton, Alberta, 2011, 311–334; and J.M. Shadian, M. Tennberg (Eds), *Legacies and Change in Polar Sciences: Historical, Legal and Political Reflections on the International Polar Year*, Farnham, 2009.

[5] Exceptions include, in addition to Roberts's, *The European Arctic* (note 3), R.M. Friedman, Å spise kirsebær med de store, in: E.A. Drivenes, H.D. Jølle (Eds), *Norsk polarhistorie 2: vitenskapene*, Oslo, 2004, 331–420; S. Sörlin, Field coproduction of climate knowledge and the rise and fall of Hans Ahlmann's "Polar Warming," *Osiris* 26 (2011) 66–88; P.W. Lackenbauer and M. Farish, The Cold War on Canadian soil: militarizing a northern environment, *Environmental History* 12 (2007) 921–950; C.J. Ries, On frozen ground: William E. Davies and the military geology of northern Greenland 1952–1960, *The Polar Journal* 2 (2012) 334–357.

[6] "Arctic" was a term first mostly used in the English language and dominated British and North American discourse, from which it spread, particularly after World War II. In the Scandinavian countries, "the North" was never termed "Arctic," and in Russian there were likewise different terms. Indeed, what constituted *northern*, *far northern*, *the high north* and *Arctic* in the twentieth century differed from nation to nation, by time period, and distinct transnational perceptions. For instance, while the Swedish town of Kiruna, north of the Arctic Circle, was comfortably in-country for Sweden, linked by road and rail lines, it was Arctic for U.S. policymakers seeing strategic access to recordings of Soviet atomic tests; see following discussions.

[7] C.A. Bayly, S. Beckert, M. Connelly, I. Hofmeyr, W. Kozel and P. Seed, AHR conversation: on transnational history, *American Historical Review* 111(2006) 1440–1464, 1444. As these historians note, transnational history allows focus "on a whole range of connections that transcend politically bounded territories and connect various parts of the world to one another. Networks, institutions, ideas, and processes constitute these connections, and though rulers, empires, and states are important in structuring them, they transcend politically bounded territories" (1446). See also A. Iriye, *Global and Transnational History: The Past, Present, and Future*, Basingstoke, 2012 and A. Tsing, *Friction: An Ethnography of Global Connection*, Princeton, 2005.

[8] Denmark was among those nations with Arctic interests (given its possession of Greenland), and significant Danish research took place from the 1930s through the 1950s in cultural and linguistic fields. But in the natural sciences, as discussed below, much work was carried out in collaboration with US scientists; see M. Heymann, et al., Exploring Greenland: science and technology in Cold War settings, *Scientia Canadensis* 33 (2010) 11–42.

[9] Indigenous contributions to environmental knowledge are crucial for still broader assessments of Arctic science; on integrating native and Western understanding of the far north, see S. Grant, Inuit history in the next millennium: challenges and rewards, in: K. Abel, K.S. Coates (Eds), *Northern Visions: New Perspectives on the North in Canadian History*, Toronto, 2001, 91–106; see also J. Cruikshank, *Do Glaciers Listen? Local Knowledge, Colonial Encounters, and Social Imagination*, Vancouver, 2005 and U. Wråkberg and K. Granqvist, Decolonizing technoscience in northern Scandinavia, *Journal of Historical Geography* 44 (2014) 81–92. On competing styles and structures of knowledge, and competing claims of authority, see C. Sawchuk, An Arctic republic of letters in early twentieth-century Canada, *Nordlit* 23 (2008) 273–292.

[10] U. Wråkberg, Polarområdenes gåter, in: E.A. Drivenes, H.D. Jølle (Eds), *Norsk Polarhistorie*, Vol. 1, Ekspedisjonene, Oslo, 2004, 15–49; E.A. Drivenes, H.D. Jølle (Eds), *Into the Ice: The History of Norway and the Polar Regions*, Oslo, 2006; P. Horensma, *The Soviet Arctic*, London, 1991; R.M. Friedman, *The Expeditions of Harald Ulrik Sverdrup: Contexts for Shaping an Ocean Science*, La Jolla, 1994; G. Pálsson, *Travelling Passions: The Hidden Life of Vilhjalmur Stefansson*, transl. from Icelandic by K. Kunz, Winnipeg, 2005.