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Claiming Spaces for Science: Scientific Exploration and the Canadian Arctic Expedition of 1913–1918

ABSTRACT

Exploration has always centered on claims: for country, for commerce, for character. Claims for useful scientific knowledge also grew out of exploration's varied activities across space and time. The history of the Canadian Arctic Expedition of 1913–18 exposes the complicated process of claim-making. The expedition operated in and made claims on many spaces, both material and rhetorical, or, put differently, in several natural and discursive spaces. In making claims for science, the explorer-scientists navigated competing demands on their commitments and activities from their own predilections and from external forces. Incorporating Arctic spaces into the Canadian polity had become a high priority during the era when the CAE traversed the Arctic. Science through exploration—practices on the ground and especially through scientific and popular discourse—facilitated this integration. So, claiming space was something done on the ground, through professional literature, and within popular narratives—and not always for the same ends. The resulting narrative tensions reveal the messy material, political, and rhetorical spaces where humans do science. This article demonstrates how explorer-scientists claimed material and discursive spaces to establish and solidify their scientific authority. When the CAE claimed its spaces in nature, nation, and narrative, it refracted a reciprocal process whereby the demands of environment, state, and discourse also claimed the CAE.

KEY WORDS: Canadian Arctic Expedition (1913–18), scientific exploration, Vilhjálmur Stefánsson, Rudolf Martin Anderson, Arctic exploration, Arctic science, Canada, history of field sciences

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The following abbreviations are used: CAE, Canadian Arctic Expedition; *NYT*, *New York Times*.

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INTRODUCTION

Canada's former prime minister, Robert Laird Borden, introduced *The Friendly Arctic*, Vilhjálmur Stefánsson's 1921 popular account of the Canadian Arctic Expedition of 1913–18 (CAE). The politician had a stake in the results. After all, Borden offered government sponsorship to Stefánsson and his crew; any achievement made in the Arctic reflected well on the prime minister's foresight and good judgment. And in fact, the story Borden narrated to introduce Stefánsson's massive book was chock full of success. Borden summarized, "As a result of the Expedition many thousands of square miles have been added to the territory of Canada, much interesting material of great scientific value has been secured, unknown areas of vast extent have been explored and many illusions with respect to Arctic conditions have been dissipated."[1] In other words, the CAE expanded Canadian territory and removed ignorance. Science had served the state beneficently.

Borden's just-so story obscured much. A fuller accounting of science and the CAE demonstrates more than hardships overcome by an indefatigable leader en route to claiming new lands for Canada and creating new knowledge for science.[2] This article investigates the CAE, using it as an example of scientific exploration more broadly to suggest ways that historians might critically treat similar expeditions. Drawing on scholarly insights in environmental history and history of science, I call attention to the importance of the

1. Rt. Hon. Sir Robert Laird Borden, "Introduction," in *The Friendly Arctic: The Story of Five Years in Polar Regions*, by Vilhjálmur Stefánsson (New York: Macmillan Company, 1921), xxiv.

2. The focus here centers on the nature of natural science, but in different hands the CAE's history could illuminate other contexts and ambiguities, such race and colonialism. Only one book has taken the entire CAE as its singular focus; it is valuable and deeply researched, but its author is not a historian and is the son of one of the expedition members, factors that limit its utility: Stuart E. Jenness, *Stefansson, Dr. Anderson and the Canadian Arctic Expedition, 1913–1918: A Story of Exploration, Science and Sovereignty* (Gatineau, QC: Canadian Museum of Civilization, 2011). Biographies have been the most common way the CAE has entered scholarship; see, for instance, Richard J. Diubaldo, *Stefansson and the Canadian Arctic* (Montreal: McGill-Queen's University Press, 1978); Stuart E. Jenness, *The Making of an Explorer: George Hubert Wilkins and the Canadian Arctic Expedition, 1913–1916* (Montreal: McGill-Queen's University Press, 2004); Gísli Pálsson, *Travelling Passions: Stefansson, the Arctic Explorer* (Hanover, NH: Dartmouth College, 2005); Barnett Richling, *In Twilight and In Dawn: A Biography of Diamond Jenness* (Montreal: McGill-Queen's University Press, 2012). The CAE does appear at the margins of other studies, such as Janice Cavell and Jeff Noakes, *Acts of Occupation: Canada and Arctic Sovereignty, 1918–25* (Vancouver: UBC Press, 2010); Trevor H. Levere, *Science and the Canadian Arctic: A Century of Exploration, 1818–1918* (Cambridge: Cambridge University Press, 1993); Morris Zaslow, *The Opening of the Canadian North, 1870–1914* (Toronto: McClelland and Stewart, 1971).

environment in shaping and sometimes confounding scientific and exploration work even as that work ultimately reimagined, incorporated, and circulated the environment among scientific and national discourses.[3] Further, because the CAE occurred during an important transitional period in polar exploration, it helps reveal the ways exploration as a cultural practice navigated scientific, economic, and political motives during a moment of notable change for science and the state.[4] The expedition illustrates especially well how exploration mixes culture, power, and science, because it contains a spectrum of activities encompassing everything from professional science to selfish grandstanding.[5]

Not wanting to replace Borden's just-so story with another one—say, of "pure" science corrupted by vanity or greed—this article shows that, like the poet Walt Whitman, the CAE contained contradictions and multitudes.[6]

3. The nexus of history of science and environmental history has become one of the more interesting intersections in both fields. For a summary and call for greater cross-fertilization, see especially, Sara B. Pritchard, "Joining Environmental History with Science and Technology Studies: Promises, Challenges, and Contributions," in *New Natures: Joining Environmental History with Science and Technology Studies*, ed. Dolly Jørgensen, Finn Arne Jørgensen, and Sara B. Pritchard (Pittsburgh: University of Pittsburgh Press, 2013), 1–17.The history of field sciences includes an evolving tradition that treats the natural environment as an influence. The best example is Robert E. Kohler, *Landscapes and Labscapes: Exploring the Lab-Field Border in Biology* (Chicago: University of Chicago Press, 2002). See also the special issue of *Osiris* on field sciences, especially Henrika Kuklick and Robert E. Kohler, "Introduction," in *Science in the Field*, ed. Henrika Kuklick and Robert E. Kohler, *Osiris*, 2nd series, 11 (1996). An approach similar to mine is Benjamin R. Cohen, "Surveying Nature: Environmental Dimensions of Virginia's First Scientific Survey, 1835–1842," *Environmental History* 11, no. 1 (Jan 2006): 37–69, esp. 45–55.For the circulation of environmental knowledge, see the synthesis in David N. Livingstone, *Putting Science in its Place: Geographies of Scientific Knowledge* (Chicago: University of Chicago Press, 2003), 135–78; and a relevant case study in Stephen Bocking, "Situated Yet Mobile: Examining the Environmental History of Arctic Ecological Science," in *New Natures: Joining Environmental History with Science and Technology Studies*, ed. Dolly Jørgensen, Finn Arne Jørgensen, and Sara B. Pritchard (Pittsburgh: University of Pittsburgh Press, 2013), 164–78.

4. Two classic studies of the Canadian North place the CAE at the transitional point between eras; see Levere, *Science and Canadian Arctic* (ref. 2); Zaslow, *Opening the Canadian North* (ref. 2).

5. Historians and geographers of exploration have examined the intermingling of exploration, science, and the broader culture often. See, for instance, Felix Driver, *Geography Militant: Cultures of Exploration and Empire* (Oxford: Blackwell, 2001); William H. Goetzmann, *Exploration and Empire: The Explorer and the Scientists in the Winning of the West* (New York: Knopf, 1967); Stephen J. Pyne, *Voyager: Seeking Newer Worlds in the Third Great Age of Discovery* (New York: Viking, 2010); Michael F. Robinson, *The Coldest Crucible: Arctic Exploration and American Culture* (Chicago: University of Chicago Press, 2006).

6. The Whitman reference, of course, comes from "Song of Myself": "Do I contradict myself? / Very well, then I contradict myself, / (I am large, I contain multitudes.)" For "purity" and science, see Steven Shapin, *Never Pure: Historical Studies of Science as If It Was Produced by People*

Explorers generally and the CAE specifically served many masters. Scientific exploration might be asked simultaneously to find new territory (a political claim), scout new resources (an economic claim), or discover simply what was unknown (a scientific claim). And the CAE touched on all of these and more. But these multiple claims and purposes did not always sit easily together, something especially manifest when individuals and their personalities animated and dominated the process. By analyzing the popular and scientific narratives produced, this article points to the ways discourse reflected and constructed the place of science for society, as well as the place of the Arctic for the modern state. This narrative production is always the case for exploration, and for Arctic exploration in this era particularly, the expectations from southern society flowed into, through, and then out of the Arctic.[7] I highlight these narrative tensions not to condemn the explorers for failing to live out some objective, disinterested, unattainable ideal but for the insights they reveal about the messy material, political, and rhetorical spaces where humans do science. With multiple purposes and influences before, during, and after the expedition, the CAE could not help but be chameleon-like, picking up the surrounding contexts. So, the expedition, like any other human enterprise, came to resemble its surrounding cultures.

To explain the CAE, I use "claiming space" as an organizing conceit and theoretical perspective.[8] The expedition operated in and made claims on many

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with Bodies, Situated in Time, Space, Culture, and Society, and Struggling for Credibility and Authority (Baltimore: Johns Hopkins University Press, 2010).

7. The southern or metropolitan expectations about the Arctic are ubiquitous in the literature. Scholars have, in fact, identified the theme of "Southern Dreams, Northern Realities" as one of the main elements of environmental history in the Canadian North, although the examples they deploy neither incorporate natural scientists nor include the era before the Second World War. See Peter R. Mulvihill, Douglas C. Baker, and William R. Morrison, "A Conceptual Framework for Environmental History in Canada's North," *Environmental History* 6 (Oct 2001), 621–22. For the ways science circulates in and beyond Arctic spaces, see Stephen Bocking, "Indigenous Knowledge and the History of Science, Race, and Colonial Authority in Northern Canada," in *Rethinking the Great White North: Race, Nature, and the Historical Geographies of Whiteness in Canada*, ed. Andrew Baldwin, Laura Cameron, and Audrey Kobayashi (Vancouver: UBC Press, 2011), 39–61; Bocking, "Situated yet Mobile" (ref. 3); Michael Bravo and Sverker Sörlin, "Narrative and Practice—An Introduction," in *Narrating the Arctic: A Cultural History of Nordic Scientific Practices*, ed. Michael Bravo and Sverker Sörlin (Canton, MA: Science History Publications, 2002), 3–32. For the Canadian cultural context of this gazing northward, see Sherrill E. Grace, *Canada and the Idea of North* (Montreal and Kingston: McGill-Queen's University Press, 2001).

8. Spatial concepts in history of science are best summarized in Diarmid A. Finnegan, "The Spatial Turn: Geographical Approaches in the History of Science," *Journal of the History of Biology*

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spaces, both material and rhetorical, or, put differently, in several natural and discursive spaces. On a fundamental level, space refers to the natural environment—the actual territory in the Arctic the CAE moved through and claimed for Canada. In that physical space, too, the explorer-scientists conducted scientific observations and experiments while interacting with nature. While they claimed territorial space, elements of the environment—the ice and weather, sea and rocks, bugs and bears—made their own claims on the scientists, shaping science's processes and products. Beyond these immediate material spaces, the CAE operated within various rhetorical spheres. Even before the expedition's launch, its leader and supporters claimed spaces in the public's and institutions' attention to gain support for the endeavor. Justifying the significance of the enterprise—before and after—required Stefánsson and others to claim its value, whether for science, economics, or politics. Compared with the natural spaces through which the explorer-scientists trekked, these discursive spaces were placeless, not tied in any meaningful way to the actual ground or sea on which the expedition was ostensibly focused. Still, these rhetorical spaces revealed much, and their myriad diversity helps expose just how many influences worked within the CAE experience. Whether cultivating press coverage, writing scientific reports, or constructing popular narratives, writers about and from the CAE claimed distinct rhetorical spaces to make particular claims about the Arctic and the CAE's place in its physical and intellectual territory. So, claiming space was something done on the ground, through professional literature, and within popular narratives—and not always for the same ends. This article demonstrates how explorer-scientists claimed material and discursive spaces to establish and solidify their scientific authority.[9]

The article makes its own claims by analyzing four elements. First, a short background on the CAE's origin reveals the ways that Stefánsson used science to sell the expedition's importance, mobilizing it as valuable rhetorical tool to

41, no. 1 (Summer 2008): 369–88; Livingstone, *Putting Science* (ref. 3). My approach is similar to Stephen Bocking, who used natural spaces, political spaces, and disciplinary spaces in his study of post–World War II Arctic science. "Disciplinary spaces," with its main emphasis on producing scientific knowledge, is somewhat too narrow to contain the public narratives by and about the CAE scientists. See Bocking, "Science and Spaces in the Northern Environment," *Environmental History* 12, no. 4 (Oct 2007): 867–94.

9. Establishing scientific authority, of course, is a central theme in history of science. For the classic statement, see Thomas F. Gieryn, "Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists," *American Sociological Review* 48, no. 6 (Dec 1983): 781–95.

solicit support. In addition, as part of the campaign to gain financial backing, Stefánsson claimed Arctic territory prior to leaving the United States or Canada, effectively positing territorial claims before establishing whether any such territory existed (and in fact much of that imagined land did *not* exist).[10] Here, material space was claimed in discursive space, showing one paradoxical way the two were entwined. Second, the Arctic environment served multiple roles for the CAE. It was the setting for their work; it was their object of study; and it shaped the expedition's labor, perceptions, and accomplishments. This section more than the others brings an environmental history perspective to show how material spaces were fundamental, an active force, to scientific exploration. Third, although at times the CAE maintained it simply sought out new things to study in a disinterested way, this section demonstrates the ways future regional development structured much of their activity. A vision of mostly empty, hostile, Arctic space transformed into busy, friendly, even industrial space so guided their work that at times their reports resembled promotional tracts, not scientific treatises, how-to instructions, not naturalists' guides.[11] Fourth, the final section interrogates the narratives produced by and about the CAE in both scientific and popular forms to show how explorer-scientists used this discourse to secure new knowledge and establish authority. Their discursive claims figured centrally from the expedition's origins through the mission and in the years following. In these rhetorical spaces, explorers made claims for and about science and the Arctic in which they marked out personal and scientific arguments. Here, even more than the previous section, the multiplicity of CAE motives reveal themselves in shifting boundary work of explorer-scientists, especially as Stefánsson reframed the significance and purpose of exploration.[12] These four sections integrate the history of science and environmental history to explain the CAE anew and point toward the ways scientific exploration functioned both in the field and in discourse.

10. This claim for land is explained in Levere, *Science and Canadian Arctic* (ref. 2), 379.

11. In an intriguing analysis of "copper stories" in the Central Artic, Emilie Cameron points out that the CAE initiated a tradition of reports about the people in the area "deeply informed by a particularly colonial interweaving of anthropological, economic, legal, and scientific interests." The colonial nature of the CAE's Arctic gaze set a standard and wound throughout its multi-disciplinary investigation. See Emilie Cameron, "Copper Stories: Imaginative Geographies and Material Orderings of the Central Canadian Arctic," in *Rethinking the Great White North: Race, Nature, and the Historical Geographies of Whiteness in Canada*, ed. Andrew Baldwin, Laura Cameron, and Audrey Kobayashi (Vancouver: UBC Press, 2011), 181.

12. Gieryn, "Boundary-Work" (ref. 9).

BACK TO THE ARCTIC

Fresh from a triumphant return after four years exploring the Arctic and locating an "uncontaminated" race of "blond Eskimos," the Canadian-born and Harvard-trained anthropologist Vilhjálmur Stefánsson confidently approached leading American scientific institutions with a plan. If they would fund it, he would move beyond ethnology and lead the most sophisticated expedition ever conducted, fill in maps' unknown spaces, and perhaps discover a new Arctic continent. Natural science would be his polestar.[13]

The pairing of science and exploration had long been fraught with ambiguity. Geographer Felix Driver argued that the history of field sciences largely derived from attempts through the eighteenth and nineteenth centuries to differentiate what he characterized as "sober science" from "sensational discovery," personified as the "adventurous explorer" versus the "scientific traveler."[14] This tension between adventure and science continued as the twentieth century beckoned. Historian Michael F. Robinson deployed an effective metaphor, suggesting that in the nineteenth century science and exploration were married, but by the dawn of the twentieth century an estrangement led to separation. Exploration rooted in science established authority back home, and throughout the nineteenth century explorers called on it to serve public functions, to enlighten audiences. Robinson suggested, however, that by the 1910s explorers abandoned the pretext of being scientists because the means and goals of exploration had become rooted in different motivations, such as developing "manly character" against the elements. Now, entertaining audiences more than enlightening them was the day's order. The abandonment of science by exploration was not complete, however. Although Stefánsson worked hard to assert his character outside scientific bona fides, as can be seen in *The Friendly Arctic*, the expedition taken as a whole seriously engaged the scientific enterprise. As Robinson points out, science professionalized and specialized at this time, something reflected in the professional training of the CAE members. Through all these developments and more, Robinson sees the gap between "scientist" and "explorer" widening so

13. "Uncontaminated" comes from "Stefansson Party on Hand for Start," *NYT*, 9 Jun 1913, but it was a common sentiment expressed ubiquitously in the press, such as in these initial stories: V. Stefánsson, "Stefansson's Story of Finding a New White Race," *NYT*, 15 Sep 1912; "Wants Eskimo Saved from Our Religion," *NYT*, 30 Sep 1912; "Anderson Also Saw White Eskimo Tribe," *NYT*, 2 Nov 1912. For Stefánsson's plans, see "Stefansson to Seek Arctic Continent," *NYT*, 15 Nov 1912.

14. Driver, *Geography Militant* (ref. 5), 1–3, quotations from 1.

far as to constitute a complete break.[15] But for the CAE generally the ambiguity remained. Although adventurous discovery certainly animated various moments and discourse, much of the CAE's work operated within scientific paradigms. These tensions and ambiguities were present from the expedition's origins.

From 1908 to 1912, Stefánsson and Rudolf Martin Anderson, an American zoologist who later immigrated to Canada, together explored the Arctic region between the Mackenzie River Delta and Coronation Gulf.[16] Like many Arctic explorers, Stefánsson wished to return north. He needed money, and a good story could secure requisite financial support. To construct this story, Stefánsson had to promise would-be sponsors that a new expedition would be worthwhile. The promise of new land met that need and captured public imagination. Discovering such a land mass had become the default goal for Arctic exploration, because while Stefánsson and Anderson had been in the Arctic, explorers had finally been to the North Pole and thus removed the exploration prize that had occupied the exploring fraternity for much of the previous half-century. But even in this new context, triumphantly finding land was not enough. Just months before Stefánsson and Anderson returned, Cyrus C. Adams, the secretary of the American Geographical Society, presciently explained that more discovery in polar regions would be slower, more painstaking, and scientific.[17] As if taking a direct cue, Stefánsson pitched his new expedition primarily as one for natural science and only secondarily for finding new lands. By framing it namely as a scientific endeavor, Stefánsson signaled that science asserted preeminent authority.

Stefánsson promoted the expedition in multiple ways though, because potential patrons were attracted to the Arctic for myriad reasons. Seldom one to undersell himself, he boasted, "If this expedition is successful, it will close forever the geographical chapter of discoveries on this earth, which was begun by Columbus. I am going to try to wipe a vast area of 1,000,000 square miles off the face of the unexplored map." In addition to settling whether

15. Robinson, *Coldest Crucible* (ref. 5), 1–14. The marriage-estrangement metaphor appears on 3–4; "manly character" appears throughout.

16. The expedition's official report appears as Vilhjálmur Stefánsson, "The Stefánsson-Anderson Arctic Expedition of the American Museum: Preliminary Ethnological Report," *Anthropological Papers of the American Museum of Natural History*, vol. 14, pt. 1 (New York: [American Museum of Natural History,] 1914); the popular account is, Vilhjálmur Stefánsson, *My Life with the Eskimo* (1913; reprint, New York: Collier Books, 1962).

17. Cyrus C. Adams, "What Is Left for the Explorer to Discover?" *NYT Magazine*, 17 Mar 1912; "Stefansson to Seek" (ref. 13).

an undiscovered Arctic continent existed, his crew would determine the extent of the continental shelf and gather oceanographic, meteorological, ethnological, geological, and zoological data—serious scientific work.[18] To solidify this project as a scientific endeavor, Stefánsson initially gathered financial support from the National Geographic Society and the American Museum of Natural History, but their resources were too small for his ambitious plans. The Canadian government expressed its support for sponsoring Stefánsson's expedition so that, should the hypothetical continent appear, it might be "annexed to the Dominion." Historian of science Trevor Levere pointed out that the Canadian government required science that paid political dividends to justify their investment. Canadian interest, then, was rooted in political expediency.[19]

Nevertheless, the government of Canada hedged its bets to make certain the expedition would yield worthwhile results even if the state added no new lands. The expedition would perform scientific reconnaissance by assembling a multidisciplinary group of talented explorer-scientists—"the largest staff of scientists ever taken toward either pole," the *New York Times* proclaimed. "It will investigate a larger number of sciences than any other, and the programme . . . is the most ambitious yet attempted by a polar expedition." As portrayed by journalists, the CAE was initiating a new era. Just as the expedition launched, Stefánsson framed the CAE's heady aspirations for the Royal Geographical Society, "The ambition of the expedition is to become a comprehensively scientific one. It desires not only to discover new things, but also to study so well as opportunities allow any new thing that may be discovered, and to study also any old thing already discovered which has not as yet been sufficiently studied, and, which falls in the way of the expedition in the

18. "Stefansson Gets Peary's Captain," *NYT*, 21 May 1913. Stefánsson most thoroughly explained the expedition's evolving purposes in "The Canadian Arctic Expedition," *Geographical Journal* 42, no. 1 (1913): 49–53.

19. "Give $45,000 to Aid Stefansson's Trip," *NYT*, 14 Jan 1913; "Stefansson's Polar Trip Is for Canada," *NYT*, 15 Feb 1913 (quotation); "Stefansson Off for Arctic Quest," *NYT*, 26 May 1913. Trevor Levere, "Vilhjalmur Stefansson, the Continental Shelf, and a New Arctic Continent," *The British Journal for the History of Science* 21, no. 2 (Jun 1988), 236. When Canada stepped in, the American institutions willingly relinquished their claims, stating they were only interested in science, demonstrating one way institutions presented science as a nonpolitical, transnational culture. See "Stefansson Accepts the Offer of Canada," *NYT*, 27 Feb 1913; "Praise Stefansson Plans," *NYT*, 3 Apr 1913. Also, see Canada's prime minister's perspective in Borden, "Introduction," in Stefánsson, *Friendly Arctic* (ref. 1), xxi. For how science is constructed as transcendent of national boundaries and a critique of such notions, see Livingstone, *Putting Science* (ref. 3); Bocking, "Indigenous Knowledge" (ref. 7), 39–61.

discharge of its ordinary work." Here Stefánsson marked the CAE as within the recognized boundaries of science as the revealer of "new things."[20]

In these public explanations, no one could miss that Stefánsson emphasized scientific aims superior to the subordinate goal of discovering land. Yet, Canada's financial, political, and institutional support certainly pulled the expedition into other orbits. Exploration and science—sometimes combined, sometimes separate—had long helped promote Canadian nationalism, and the CAE pushed this combination further. Historian Suzanne Zeller showed clearly that early Victorian science in Canada—especially what she termed "inventory science," such as geology and botany—not only provided material benefits to citizens but also furnished the intellectual tools and metaphors to envision a transcontinental nation as scientists fanned out west and north to identify, classify, and map Canada's land and resources.[21] As Zeller's scientists scattered hither and yon providing fodder for continental visions, others pushed on. The Royal Northwest Mounted Police asserted national authority in large part to monitor the commercial activities of hunters, trappers, whalers, and traders, as well as harassing indigenous populations.[22] But the central Arctic remained essentially state-less, and as explorers from other nations moved through the Arctic Archipelago and toward the North Pole, Canada fretted about its sovereignty claims. For instance, a Québécois explorer, J. E. Bernier, asserted a nationalist claim for Canada extending from the nation's eastern and western borders northward to the pole—known as the sector principle—first in 1907 and more famously in 1909.[23] This settled nothing.

So, by the time the CAE went north, the expedition served the Canadian state in several ways—at times synergistic, at other times diffuse—drawn from these historical trends and precedents. It would continue its "inventory science" for the nation and strengthen Canada's northern sovereignty claims,

20. "Stefansson Party on Hand" (ref. 13); Stefánsson, "Canadian Arctic Expedition" (ref. 18), 53. Plans were also summarized in Vilhjálmur Stefánsson, "The Canadian Arctic Expedition of 1913 to 1918," *Geographical Journal* 58, no. 4 (Oct 1921): 283–305, plans on 283–89.

21. Suzanne Zeller, *Inventing Canada: Early Victorian Science and the Idea of a Transcontinental Nation* (Montreal: McGill-Queen's University Press, 2009), esp. 3–9. On nationalism and science in Canada, also see Levere, *Science and Canadian Arctic* (ref. 2), 338–77.

22. A classic summary of activities can be found in Zaslow, *Opening the Canadian North* (ref. 2), 224–48.

23. Alan MacEachern, "J. E. Bernier's Claims to Fame," *Scientia Canadensis: Canadian History of Science, Technology and Medicine / Scientia Canadensis: review canadienne d'histoire des sciences, des techniques et de la medicine* 33, no. 2 (2010): 43–73.

wresting Arctic space from the United States and other intrusive nations.[24] The expedition seemed poised to accomplish much in making the North legible for the state and for science, a process political theorist James C. Scott sees as central to making places and people manageable by the state and typically resulting in disaster.[25] Nevertheless, the CAE's multiple purposes never reconciled. The expedition's very administrative structure reproduced this division, with Stefánsson given charge of a Northern Party with instructions to find new land in the Beaufort Sea and Anderson administering a Southern Party chosen to conduct scientific fieldwork in the Coronation Gulf region. Stefánsson's group was to report to Canada's Department of Naval Service, Anderson's to the Geological Survey of Canada within the Department of Mines. Stefánsson enjoyed overall command although he would spend most of his time far from the Southern Party.[26] These administrative divisions might have meant a symbiotic, efficient, and broad approach, but instead, it mostly meant divided authority, competing intentions, and willful contestations. Although fraught with tensions, perhaps those multiple purposes were not ultimately irreconcilable. Serving state purposes, scientific principles, and development agendas was not an uncommon combination for explorers. However, scientific exploration's multiple masters made it a shape-shifting endeavor from the start, and when things did not go as planned, these cleavages loomed larger. Both nature and people could throw things off track.

THE NATURE OF FIELDWORK

In June 1913, the CAE steamed north out of Esquimalt, British Columbia, on the brigantine whaler, the *Karluk*, initiating three- and five-year trips through

24. In *Acts of Occupation*, Cavell and Noakes (ref. 2) detail clearly how the CAE's aftermath pushed Canada into firmly establishing its northern sovereignty as a critical foreign policy initiative, largely because of Stefánsson pursuing various personal agendas. Robinson claimed that the Arctic had become a national landscape for the United States in the late nineteenth and early twentieth centuries; see Robinson, *Coldest Crucible* (ref. 5), 3. Although the CAE generated plenty of attention in the southern nation, its Canadian sponsorship helped stamp it with nationalism despite its crew being drawn from multiple nations. For the crew's nationalities, see Jenness, *Stefansson, Dr. Anderson* (ref. 2), 355–59.

25. On making places and people distant from centers of power "legible" for state purposes, see James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven, CT: Yale University Press, 1998).

26. Jenness, *Stefansson, Dr. Anderson* (ref. 2), 10.

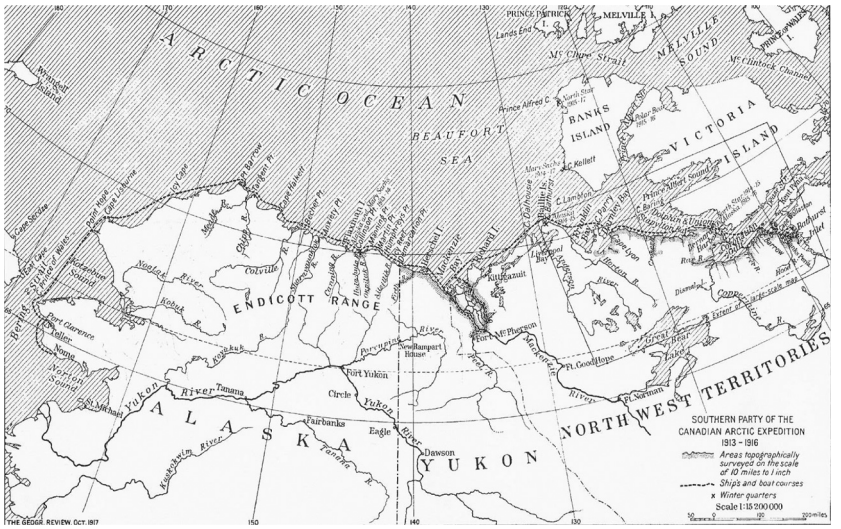

FIG. 1. General map of the area covered by the Southern Party, 1913–16.

Arctic land, water, and ice (Fig. 1).[27] Before departure, all expedition members gathered in Victoria, British Columbia, where Stefánsson delivered contracts that prevented men from publishing anything about their time in the Arctic for a year after their return. The clause allowed Stefánsson the power to shape the official and public narrative and guaranteed him exclusive publishing contracts, a financial requirement he needed because he forewent a salary. Furthermore, he demanded from the crew that all written information, including scientific notebooks or personal journals, be turned over to him after the expedition. These limitations outraged the scientists, convincing several that the expedition was morphing away from science and toward a publicity stunt to glorify Stefánsson. In July, at a subsequent stop in Nome, Alaska, expedition members raised a series of logistical concerns with Stefánsson, who answered them to no one's satisfaction. Later, in March 1914, at Collinson Point, Alaska, near the U.S.-Canada border where most of the party wintered, another confrontation occurred based on Stefánsson's relentless criticism of Anderson. More specifically, Stefánsson demanded equipment to support his party's exploration of the Beaufort Sea ice. Appropriating that equipment jeopardized the Southern Party's ability to fulfill their scientific obligations, and the scientists objected strenuously, drawing boundaries around their

27. The Northern Party stayed in the Arctic until 1918, but the Southern Party returned in 1916; some members moved between them.

own work as legitimate science while excluding Stefánsson's ice trip and characterizing it as a mere stunt. By this time, the expedition's scientists revolted against Stefánsson, opening an irreconcilable rift over priorities, personalities, and publicity that thereafter plagued the party.[28]

A second development magnified the CAE's problems. The season was bad; for the first time since the 1880s, no whaling ships made it out of the region during summer because of ice.[29] In August, north of Cape Smythe, Alaska, the *Karluk* became stuck in the ice and soon moved westward with the current. In mid-September, Stefánsson ordered part of the crew off the *Karluk* for a hunting trip. Almost immediately, the ship drifted out of sight, and the expedition's full contingent never reunited. Left behind were several scientists and crew members, personal belongings of those hunting, and a significant amount of food, supplies, and scientific equipment. In January 1914, the *Karluk* finally succumbed to the ice pressure and sank in the Chukchi Sea; the remaining members headed across the frozen sea. Ultimately, eleven died, eight on their way to and three at Wrangel Island awaiting rescue. In dramatic ways, the natural world reshaped and limited the expedition's possibilities for the first but not last time. Moving forward, the already fractured group confronted a challenging environment and set of tasks with fewer resources and personnel than planned.

The 1913–14 winter demanded the group's adaptability to local conditions. The season yielded some but not many scientific results, and whatever the explorer-scientists achieved was neither planned nor accomplished as easily as expected. While the expedition's anthropologist, Diamond Jenness, spent the winter fully engaged in work with local Iñupiat families, the rest of the explorer-scientists worked on tasks mainly unrelated to their disciplinary expertise. Instead, they gained, in the words of the geographers, "as much experience as possible . . . in the modes of work and travel and the clothing, food, etc. best adapted to conditions in the Arctic, in order to be prepared for the work in the Coronation Gulf country." Besides this Arctic acclimation, they mapped the harbor at Collinson Point, Alaska, where they wintered—their "enforced stay," as they termed it, indicating their displeasure at not advancing further or being able to do their work in their icy first Arctic season. Meanwhile, although his numerous administrative tasks interfered with

28. Jenness' treatment of these events is accessible in *Stefansson, Dr. Anderson* (ref. 2), 15, 20–24, 28–32, 112–14. Gieryn, "Boundary-Work" (ref. 9).

29. "Alaska Ice Packs Heaviest in Years," *NYT*, 11 Dec 1913.

fieldwork, Anderson collected birds and mammals; a preliminary list included fifty-two distinct bird species and thirteen mammals. Frits Johansen collected invertebrates and even reared insects in makeshift conditions at the coastal camp.[30] Only when spring arrived did the scientists have the opportunity to closely examine the Canadian Arctic environment.

Because of conditions early in the season, they could not make it to the Coronation Gulf, so Stefánsson dispatched the topographical crew to the Mackenzie River Delta. Stefánsson rarely neglected a chance to vaunt the delta's potential. In a 1913 letter describing his plans to readers of the *Bulletin of the American Geographical Society*, he postulated that the Mackenzie "is likely to attain [in] some time a commercial importance second only to that of the St. Lawrence River. . . . As the Mackenzie may spring into an importance comparable with that of the Yukon, it seems that the charting of its delta and the sounding of its channels is a work of great practical value." Such was his and other Canadians' vision for the Mackenzie country and the North more generally. Indeed, Prime Minister Borden supported the CAE largely because its work might uncover potential for regional economic exploitation. So, when the topographical team of John J. O'Neill, John R. Cox, and Kenneth G. Chipman scouted, observed, and measured the delta, they did so in the service of science in the vanguard of practical state interests and fully consistent with Canada's Geological Survey's approach at the time.[31] This orientation was characteristic of the CAE and other expeditions that hoped to satisfy many interests, an approach common in exploration but not necessarily in natural science, which presented itself as disinterested.

30. Diamond Jenness, *Dawn in Arctic Alaska* (1957; reprint, Chicago: University of Chicago Press, 1985); Kenneth G. Chipman and John R. Cox, "Part B: Geographical Notes on the Arctic Coast of Canada," in *Report of the Canadian Arctic Expedition, 1913–19*, vol. XI: *Geology and Geography* (Ottawa: F. A. Acland, 1924), 5B (quotations); R. M. Anderson, "Canadian Arctic Expedition, 1913–14," in *Summary Report of the Geological Survey, Department of Mines for the Calendar Year 1914* (Ottawa: J. de. L. Taché, 1915), 163–66; Fritz Johansen, "Canadian Arctic Expedition," in *Summary Report of the Geological Survey, Department of Mines for the Calendar Year 1914* (Ottawa: J. de. L. Taché, 1915), 167. Additional details and data on insect-rearing are in Frits Johansen, "Part K: Insect Life on the Western Arctic Coast of America," in *Report of the Canadian Arctic Expedition, 1913–18*, vol. III: *Insects* (Ottawa: Thomas Mulvey, 1921), esp. 8K–16 K. Publications include both spellings, Fritz and Frits.

31. Vilhjálmur Stefánsson, "Stefansson's Expedition," *Bulletin of the American Geographical Society* 46, no. 3 (1914): 184–91, on 189; Borden, "Introduction" (ref. 1), xxi–xxv; Jenness, *Stefansson, Dr. Anderson* (ref. 2), 230–32. Morris Zaslow, *Reading the Rocks: The Story of the Geological Survey of Canada, 1842–1972* (Ottawa: Macmillan, 1975), esp. 262–307 for the period generally; the CAE is covered specifically in 319–25.

FIG. 2. Mackenzie River Delta where members surveyed in their first field season. Few trees and erosion patterns are shown.

Using Herschel Island as a basecamp, O'Neill, Cox, and Chipman spread out through the delta in spring and summer of 1914 (Fig. 2). Their reconnaissance sought to determine natural features of the Mackenzie River and its many branches to learn whether the river and its environs would support commercial development. Unfortunately for mining interests, the first season yielded no evidence of "mineralization."[32] The landscape received the bulk of their attention, including detailed descriptions of rock type, sand composition, and extent and elevation of islands. But also of particular note were tree species consisting of birch, poplar, and alder, all commonly found upstream, and willow found all the way to the coast. According to O'Neill, "Spruce is by far the most abundant and important tree in the delta; it is universal and not infrequently attains a diameter of 9 inches; the spruce near the tree-limit is about 25 feet in height and 5 inches in diameter." These details and many others like them illustrated the scientists' careful attention to the natural world. Moreover, given the scarcity of wood in this northern landscape, such information about size and limits provided valuable information for future planning.[33]

32. John J. O'Neill, "Canadian Arctic Expedition, 1914," in *Summary Report of the Geological Survey, Department of Mines for the Calendar Year 1914* (Ottawa: J. de. L. Taché, 1915), 115.

33. J. J. O'Neill, "Part A: The Geology of the Arctic Coast of Canada; West of the Kent Peninsula," in *Report of the Canadian Arctic Expedition, 1913–19*, vol. XI: *Geology and Geography* (Ottawa: F. A. Acland, 1924), 15A–16A, quotation from 16A. O'Neill's annual report in 1915 uses

The season's observations did not come easily. As with field scientists everywhere, environmental conditions challenged their ability to work and shaped their labor.[34] O'Neill's 1914 summary report to Ottawa superiors explained that "weather conditions rendered impossible other than a general investigation." For instance, in March, heading up the Firth River, O'Neill awoke in his tent unable to light a candle only to discover that snow deeply covered the entire tent; O'Neill and his companions used a frying pan to shovel their way to air, abandoned the tent, and returned two days later to find it buried beneath nine feet of snow. When O'Neill made a sled trip the next month, he found the snow "too soft" to reach his destination. By May, the Mackenzie River conditions made travel all but impossible. Only in June could the crew thoroughly explore and survey the river delta. Even then, the scientific work was laborious and time-consuming with numerous measurements and observations to make, and mosquitoes, changing weather conditions, and stifling river currents disrupting progress.[35] As geographer David N. Livingstone relates, scientists constructed the site of fieldwork through their reports, and these CAE explorer-scientists shaped it as a challenging, shifting site where knowledge was hard-won against the elements.[36]

Other parts of Arctic fieldwork created further obstacles for scientists and their instruments. Low temperatures—so characteristic of the Arctic experience—caused multiple problems. Travel in late fall and winter meant blizzards and darkness, as well as bitter cold, although during other seasons explorers might face "swampy tundra." Fundamentally and often, fieldwork was uncomfortable and required creative adaptation. As the topographers reported, "The discomfort of making observations at temperatures of 20 to 40 degrees below zero, F., can be greatly lessened if one is warmly dressed and all unnecessary delays are eliminated." Of course, delays could not always be eliminated, but to aid the effort, scientists constructed small observatories to protect field workers

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nearly identical language as the final report published; see J. J. O'Neill, "Geological Reports, Canadian Arctic Expedition 1915," in *Summary Report of the Geological Survey, Department of Mines for the Calendar Year 1915* (Ottawa: J. de. L. Taché, 1916): 236–41.

34. The environmental challenges of fieldwork are a recurring theme in Kohler, *Landscapes and Labscapes* (ref. 3). For knowing nature through labor, see Richard White, *The Organic Machine: The Remaking of the Columbia River* (New York: Hill and Wang, 1995), 3–29.

35. O'Neill, "Canadian Arctic Expedition" (ref. 32) 112 (first quotation); Jenness, *Stefansson, Dr. Anderson* (ref. 2), 226–27, 231; O'Neill, "Geology of the Arctic Coast" (ref. 33), 15A–18A, 15A (second quotation); O'Neill, "Geological Reports" (ref. 33), 237, uses precisely the same phrase.

36. Livingstone, *Putting Science* (ref. 3), esp. 47–48. See also Bocking's discussion of science situated in the field in "Situated Yet Mobile" (ref. 3), esp. 165–68.

and their instruments. Oil used to lubricate some instruments failed in cold weather, but unoiled equipment corroded when it warmed up. Meanwhile, the alternating warmth and cold damaged some parts. When using instruments, scientists needed to manipulate them with bare fingers, and so they had to wrap parts in surgeon's tape to protect themselves. Further, Chipman and Cox recommended hanging "heavily furred caribou skin mittens with the fur inside" around one's neck to quickly and "easily thrust" hands into their warmth. Since writing down observations neatly in a notebook was hard with cold fingers, they developed a system to "record the observations on a large scratch pad, or on a sheet of paper fastened to a board, and later to copy the data into a book." Most difficult, though, was lenses "fogging and freezing" from the scientists' breath and even the warmth coming from their hands, which could condense on lenses. In all, the nature of the Arctic interfered with the easy conduct of fieldwork in ways specific to the place (Fig. 3).[37]

Perhaps the most important findings they made while in the Mackenzie River Delta concerned the depth of the river's branches. Dividing themselves among the West, Middle, and East branches of the Mackenzie, the geographers made depth soundings from whaleboats and followed suggestions from indigenous people and rumors as they worked their way through seemingly endless channels. The East and West branches were only six feet deep, hardly enough to navigate for large ocean-going ships on which the commercial future floated. Furthermore, they reported some channels were "long, tortuous and shifting" or "excessively winding and crooked." The Middle Branch, while deeper, was not clear of sandbars or shoals. Most traffic sailed up the West Branch and took another channel over to the Middle Branch, a sign of the challenges to straightforward travel. Inland from the coast, the Mackenzie River could handle boats with a draft up to twenty feet, but getting there through the delta's shallow water and natural obstacles would prove challenging.[38] Nature would thwart the commercial future Borden desired and Stefánsson anticipated.

37. Chipman and Cox, "Geographical Notes" (ref. 30), 9B–10B, quotations from 24B (swampy) and 10B; Jenness, *Stefansson, Dr. Anderson* (ref. 2), 251; Rudolph Martin Anderson, "Recent Explorations on the Canadian Arctic Coast," *The Geographical Review* 4, no. 4 (Oct 1917): 241–66, at 244–45. Although the Arctic environment posed particular challenges, that is not to suggest more temperate climates rendered exploration and scientific fieldwork easy; see Cohen, "Surveying Nature" (ref. 3), esp. 45–55.

38. Chipman and Cox, "Geographical Notes" (ref. 30), 16B (first quotation), 17B (second quotation); Anderson, "Recent Explorations" (ref. 37), on 245; Rudolph M. Anderson, "Explorers Study Tides of Arctic," *NYT*, 1 Sep 1914.

FIG. 3. Taking transit observations during the first winter at Collinson Point, Alaska. Conducting such scientific observations in the cold taxed the men and equipment.

As the crew discovered first in the Mackenzie River Delta, survey methods in the Arctic were anything but easy, because the typical method of triangulating between known positions was difficult since there were "few accurately known positions and triangulation is usually not feasible." Latitude was relatively easy to determine if the altitude was known and related to the sun or Polaris, the North Star. However, longitude proved far more complicated, because weather conditions made it impossible for them to observe occultation of stars during two of their three Arctic winters. Generally, longitude was established by using chronometers, but those instruments needed to be

checked for accuracy, a process that required measuring local mean time at a known location over several days. Since explorers needed to move frequently, such a test was impractical. Nevertheless, in spring, the topographers faithfully recorded their movements over the Arctic coastline, establishing longitude and latitude every fifty miles (and sometimes closer) and using compass and pace traverse methods in between. Surveying placed the CAE on the map by creating or correcting the map itself. During winter and after returning to Ottawa, topographers computed and plotted their work.[39] Such segmented work showed one way scientific fieldwork moved across space and time during its production. Constituting scientific knowledge gathered from the field required adapting to less than ideal natural circumstances and waiting for more favorable times or places to calculate results.

The CAE's reports on the Mackenzie River Delta offered many environmental details but perhaps not as much hope for the easy economic development that Stefánsson may have expected and Ottawa may have wanted. Nature's presence affected the expedition in multiple ways, from sinking the *Karluk* to fouling the instruments. Nevertheless, they did their work, endeavoring to accurately represent Arctic nature even as that very nature shaped their observations of it, challenging the faithfulness of science's reconstruction of the natural world. As their scientific work continued in new locales, other factors shifted the CAE's focus and results, further complicating scientific exploration.

SCIENTIFIC EXPLORATION AND INCORPORATING THE ARCTIC

The delta had only been a preview; the main feature for the scientists lay east in the Coronation Gulf, which the Southern Party had been trying to reach for a year (Fig. 4). While the Northern Party headed north to search for land in the Beaufort Sea, the main scientific corps arrived in the gulf by late August 1914. Unfortunately, they could not immediately begin fieldwork, as more pressing matters of survival demanded their attention. The geographers Chipman and Cox reported,

39. Chipman and Cox, "Geographical Notes" (ref. 30), 7B–9B, quotation from 7B. Their report conveys the process of determining from conflicting accounts whether certain features actually existed, such as "Clerk Island," which they determined did not exist, and the Melville Mountains, which they scoffed at as mere gravel hills on 19B–20B and 23B–24B, respectively.

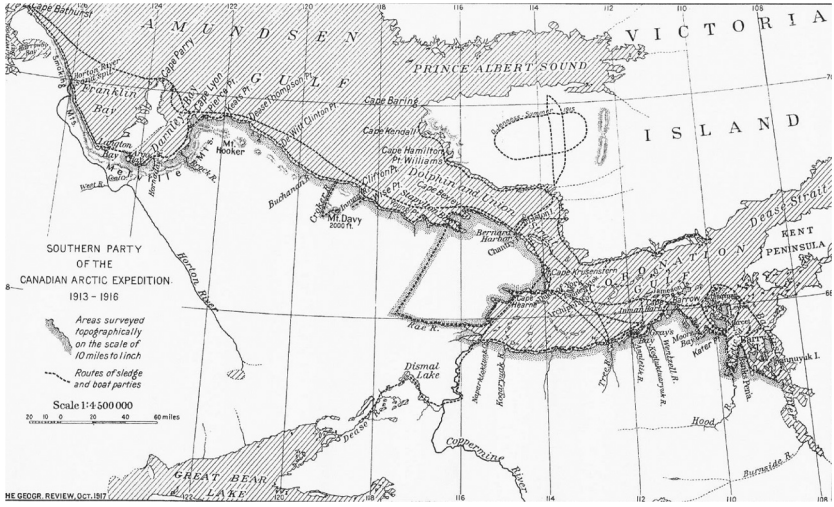

FIG. 4. Detailed map of the Coronation Gulf region where the Southern Party conducted most of their scientific work.

> [W]e were so short handed that the autumn months were necessarily spent in building a house and shed, securing meat for ourselves and twenty-one dogs, and in getting everything ready for the winter. We were unable to undertake any geographical work along the coast, for the freeze-up was late and not until the middle of November was travel along the coast practicable. At that time of year the days are so short, the light so poor, and storms so frequent, that work at any distance from the base is not feasible.[40]

Their time in the field, especially since supplies sank with the *Karluk*, depended first on securing a base that would allow them to survive the winter. So, finally at the gulf, material conditions there further delayed their work. It is worth emphasizing how these particular obstacles—scant light, coastal travel restrictions, food scarcity—derived from particularities of place, of this Arctic geography. Few other locales provided such a combination.

The scientists' work, especially the geologist O'Neill's, always toggled between intrinsic and economic values. Learning about the Arctic geological structures was a scientific goal in and of itself, but Canadian sponsors always recognized, even hoped, that such investigations might yield significant economic data.[41] Politically, to integrate the economic with the scientific was an easy sell. Scientifically, it proved harder to integrate; in fact, O'Neill's final

40. Chipman and Cox, "Geographical Notes" (ref. 30), 6B.
41. Stefánsson, "Canadian Arctic Expedition" (ref. 18), 51.

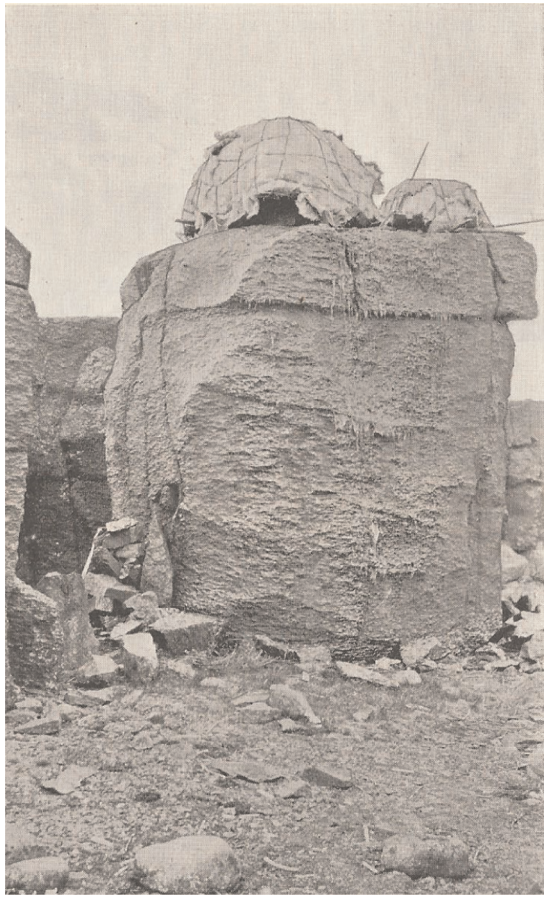

FIG. 5. Basaltic amygdaloid bearing copper, a key finding of the geological reconnaissance.

report could not integrate these multiple purposes of geological reconnaissance and mineral prospecting. The bulk of its pages surveyed rocks and fossils—clear scientific work without commercial motives—across the geographic range covered by the expedition. However, O'Neill separated out a chapter, "Deposits of Native Copper in Arctic Canada," that focused on potentially valuable mineral deposits.[42]

From the planning stages, the CAE targeted these northern copper deposits that had been known—barely and vaguely—since the eighteenth century (Fig. 5). Before the expedition launched, the *New York Times* reported that

42. O'Neill, "Geology of the Arctic Coast" (ref. 33), esp. 53A–73A.

the "only practical benefit" of the expedition would be locating "copper deposits which are known to exist in Victoria Island."[43] This characterization inscribed the notion that science—on this expedition or any other—should not be practical, that practical work came only as a *byproduct* of scientific exploration. Ultimately, O'Neill thoroughly accounted for the area's geology and reported on various deposits: two confirmed from firsthand observation, two more described by white explorers, and two more reported by local Natives that merited further investigation. Based on what he saw directly, O'Neill estimated six billion tons of copper-bearing rocks, although most of it low grade. In his official report, he claimed that in the Bathurst Inlet area, there was "probably . . . an important reserve of copper ore," and in the Coppermine River region "it seems highly probable that parts of this district contain workable and even rich deposits."[44] Confirming the *Times*' earlier prognostication, Anderson called the deposits the "most important result" of the geological reconnaissance through Bathurst Inlet and constituted "certainly a great reserve of copper ore," as amygdaloidal rocks were "impregnated over wide areas with native copper."[45] These impressive geological findings met important expectations (Fig. 6).

Doing the work and writing the report were revealing acts in and of themselves, showing how scientific fieldwork was a social effort and political act. O'Neill relied in part on Inuit informants during some of his reconnaissance. In one location, he learned of copper deposits that were below the water surface, knowledge he could only obtain from local people since when he visited, the area was beneath ice. At another time, he obtained a 35-pound piece of native copper from Mupfa, the only named Native person in the report, who described it being much larger when he first found it, but "the Eskimos had been cutting pieces from it to make spears, knives, ice-picks, etc." (Fig. 7).[46] Chipman and Cox also reported that the indigenous population

43. O'Neill offers a brief summary of previous explorers' reports and observations in ibid., at 53A–56A; see also, "Stefansson Accepts" (ref. 19).

44. O'Neill, "Geology of the Arctic Coast" (ref. 33), 56A, 71A (quotation); 62A reported six billion tons; Anderson reported two billion tons in "Recent Explorations," 260 (ref. 37). O'Neill also reported quartz and black iron ore in "Geology of the Arctic Coast," (ref. 33), 70A.

45. Anderson, "Recent Explorations" (ref. 37), 260. Also, Rudolph M. Anderson, "Stefansson's Men Come from Arctic; He Keeps at Task," *NYT*, 17 Aug 1916, 1.

46. O'Neill, "Geology of the Arctic Coast" (ref. 33), 71A (below water), 60A (quotation). The party's anthropologist discussed copper as a trade commodity and found the common name at the time, "Copper Eskimos," suitable owing to the use of copper in their tools; see [Diamond

FIG. 6. Map showing the geological exploration conducted by the Southern Party.

FIG. 7. Mupfa, the only indigenous assistant named in the geological report, here is cutting block of talc-chlorite schist for pots and lamps. Expedition members relied on the Native population's knowledge and labor.

Jenness], *Report of the Canadian Arctic Expedition, 1913–18, volume XII: The Copper Eskimos* (Ottawa: F. A. Acland, 1923), 42 (name), 44 (trade).

spent the summer searching for copper in the Coppermine River country.[47] Clearly, local people paid attention to local copper deposits for use in their own economic and cultural strategies. Although keenly interested in the deposits, O'Neill's report did not discuss compensating indigenous groups for their assistance or the seemingly inevitable future mining endeavors, sure to push the Inuit to the margins.[48]

That indigenous usufruct rights did not enter into the CAE's reports is not surprising, and that science helped reify this vision of northern development resonates with earlier and ongoing scientific and cultural practices in Canada to incorporate the nation's peripheries.[49] Indeed, the entire enterprise symbolized the assumptions that undergirded Canadian northern policy and identity: economic development was presumed and pursued, while Native claims were subsumed and neglected.[50] Throughout the lengthy report on Pleistocene deposits, tertiary fossils, and Precambrian granite, O'Neill peppered statements that reveal these assumptions, or perhaps more accurately, these statements projected this vision and helped make it a self-fulfilling reality. Because of the geological layering in one place, "[p]rospecting would . . . be a very easy matter." Assessments of copper deposits elsewhere hinged on whether they were of "economic importance" or likely to lead to "profitable development" or were "workable" or "paying."[51] "When the country is ultimately opened up, to a much greater degree than at present," Anderson explained to the American Geographical Society, "and developed for its timber resources in the more southerly portions and possibly for mineral wealth farther north, the game of the country may by proper conservation become a valuable asset and the fur industry still remain of importance in vast regions which may have no other use."[52] The scientists

47. Chipman and Cox, "Geographical Notes" (ref. 30), 24B.

48. In fact, mining developed slowly in the area, and the Inuit relationship to it was complicated. Although wary of environmental harms, local Inuit at times welcomed the potential economic boost mining promised. After World War II, they did express strong concerns about their rights to the minerals, effectively using the area's minerals as a way to assert Native land rights. See Cameron, "Copper Stories" (ref. 11), 184–86.

49. Zaslow, *Opening the Canadian North* (ref. 2); Zeller, *Inventing Canada* (ref. 21).

50. Although the topics are distinct, John Sandlos argues this very point in his study of wildlife conservation in the Northwest Territories. Conservation was about promoting non-indigenous commercial interests and controlling Native populations. Sandlos, *Hunters at the Margin: Native People and Wildlife Conservation in the Northwest Territories* (Vancouver: UBC Press, 2007).

51. O'Neill, "Geology of the Arctic Coast" (ref. 33), 61A (prospecting), 62A (economic, profitable), 71A (workable, paying).

52. Anderson, "Recent Explorations" (ref. 37), 248.

plainly assumed future economic development without interference or obstacles and without considering the existing population's right to the place.[53] The Arctic's resources lay available, awaiting development and incorporation into the commercial state.

Just so, O'Neill's report built to a conclusion that had little to do with scientific observation. In his final section titled "Conditions Governing Prospecting and Mining," the geologist went to great lengths to sell the region, an emergent theme in published CAE work. Its climate would not "prohibit settlement." If the ore turned out to be valuable enough, "[u]nderground mining could be carried on throughout the whole year without much inconvenience." Power was available from waterpower, local coal deposits, and known oil in the not-too-distant Mackenzie Valley. Transportation remained difficult, but O'Neill expected that "aeroplanes" and even "hydro-aeroplanes" could surmount this challenge. Finally, he expected that "[r]eindeer could be raised in herds sufficiently large to furnish a sure meat supply to any mining industry, that might be instituted."[54] So, in the end, O'Neill turned to the bottom line: the possibility of profit and settlement promoted by state and capitalist logic.

Whereas O'Neill imagined an Arctic future with mining coexisting alongside domestic reindeer production, the geographers Chipman and Cox paid closer attention to different resources on the ground. Their official report, "Geographical Notes on the Arctic Coast of Canada," was replete with careful attention not just to the landscape features but to resources useful for survival. A typical assessment, in this case of an island at the mouth of the Coppermine River, read: "It is a good fishing ground, and when we were there in the spring, herds of caribou were continually visible." They distinguished specifically between areas where caribou were present or absent, identifying location and seasons they witnessed (or not) the animals. Another reason for the geographers' interest in wildlife that could feed them came from Stefánsson, who asserted that

53. An American scientist, Chester A. Reeds, agreed with the presumed development but noted that scientists would need to apply their ingenuity to find a route to ship the copper the nearly two thousand miles necessary to market; see "Scientists Welcome News of Stefansson," *NYT*, 18 Aug 1916.

54. O'Neill, "Geology of the Arctic Coast" (ref. 33), 71A–73A, quotations 72A, 73A. Anderson thought water transportation and short railroads would be sufficient; Anderson, "Recent Explorations" (ref. 37), 260. Stefánsson became a significant proponent of domesticating reindeer and especially musk ox in a scheme that failed rather spectacularly; see Diubaldo, *Stefansson and the Arctic* (ref. 2), 127–60; Sandlos, *Hunters at the Margin* (ref. 50), 113–26. In later years, Stefánsson also promoted air travel in the Arctic. See Levere, *Science and Canadian Arctic* (ref. 2), 423.

in the "friendly Arctic" one could live off the country easily. Indeed, he claimed this method of Arctic exploration would prove at least as valuable as his discoveries of land. Although Stefánsson paid the most attention to hunting seals on the ice, Chipman and Cox's attention to scarcity or abundance of caribou and fish must be seen as part of the necessity of harvesting local food resources if newcomers were to settle the North. Again and again, they identified lakes full of fish, valleys full of caribou, and vistas of grass or trees.[55]

Chipman and Cox's notes furnished particularly useful information for future developments. Separate sections on harbors, climate, and wood all read as advice for future visitors or residents. They went so far as to describe the best clothing: they preferred clothing from Inuit groups living further west to combat the cold and the "penetrating wind [that] blows almost continuously." They included a section on transportation detailing dog teams and their finicky eating habits: "Dogs from the interior want fish for food and will not at first eat seal meat, whereas those from the coast want seal meat only."[56] It is difficult to read these descriptions as anything other than seemingly authoritative advice about settling the Arctic, not the "comprehensively scientific" assessments the expedition had promoted at the outset.

Interspersed in the reports are some favorable comments on the landscape's aesthetics, showing that these men could pull back from their microscopes and surveying equipment to see the sometimes grand landscape. The Croker River offered a "deep and strikingly picturesque canyon" three hundred feet deep, surprising and pleasing the men (Fig. 8). Later, the geographers assessed Cape Krusenstern favorably, too: "the country is for the most part grass covered and far more pleasant to the eye than the desolate coast of Dolphin and Union Strait." Such comments revealed judgments unrelated to scientific interest or economic potential. After months and years in these sometimes bleary landscapes, the explorer-scientists appreciated relief. Perhaps, too, they wished to assure readers that all was not icy, barren lands.[57]

Throughout their explorations, the CAE scientists interpreted nature, the Arctic, and science in ways that reflected larger scientific, political, and

55. Chipman and Cox, "Geographical Notes" (ref. 30), 18B–29B, 24B (quotation); Vilhjálmur Stefánsson, "'Living Off the Country' as a Method of Arctic Exploration," *Geographical Review* 7, no. 5 (1919): 291–310; Stefánsson, *Friendly Arctic* (ref. 1), 6.

56. Chipman and Cox, "Geographical Notes" (ref. 30), 29B–34B, 32B (first quotation), 34B (second quotation).

57. Anderson, "Recent Explorations" (ref. 37), 256 (first quotation); Chipman and Cox, "Geographical Notes" (ref. 30), 20B (second quotation).

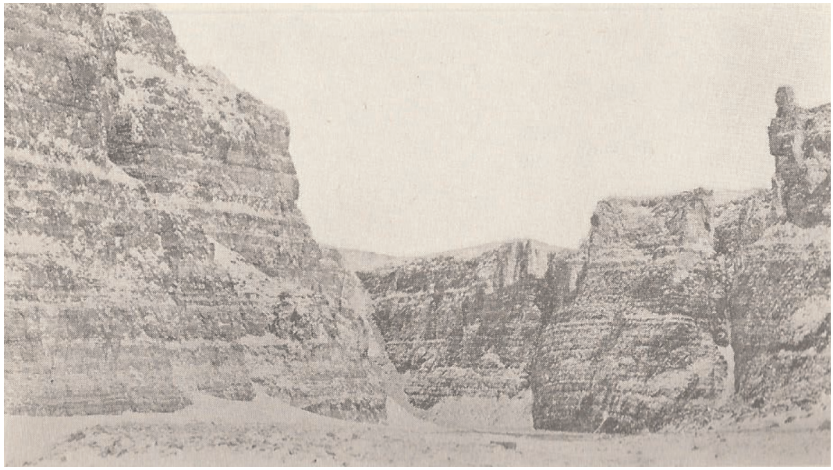

FIG. 8. Croker River canyon, which expedition members described as "strikingly picturesque," a rare aesthetic judgment.

intellectual trends. Their practices extended how scientists in Canada had identified, inventoried, and mapped the land in earlier times in ways that allowed Canadians to envision a continental nation, something especially important in the nationalism of the Great War era.[58] Indeed, the war pushed Canada to invest further in science.[59] Pushing to the Arctic represented an important new stage for the Canadian state to assert its national claims and priorities. The CAE furthered science as a foundational force in Canada's understanding and management of northern lands and for generating new knowledge that would be circulated beyond the Arctic's boundaries. The CAE scientists' work brought multiple disciplines of natural science to the Arctic and in turn brought the Arctic into the annals of natural science with their field specimens, government reports, and journal articles.[60] But just as much, the

58. This was the central theme in Zeller, *Inventing Canada* (ref. 21), although not extending into the twentieth century. David MacKenzie, ed., *Canada and the First World War: Essays in Honour of Robert Craig Brown* (Toronto: University of Toronto Press, 2005), contains many essays that explore the nationalism of the era.

59. Rod Millard, "The Crusade for Science: Science and Technology on the Home Front, 1914–1918," in *Canada and the First World War: Essays in Honour of Robert Craig Brown*, ed. David MacKenzie (Toronto: University of Toronto Press, 2005), 300–22.

60. This sort of circulation of scientific knowledge is a centerpiece of many studies. For a synthesis of this concept, see Livingstone, *Putting Science* (ref. 3), 135–78; for a practical example using the Arctic, see Bocking, "Situated Yet Mobile" (ref. 3), in which he argues that scientific research produced in the Arctic bore the imprint of the place on it (i.e., it was situated), yet for

CAE scientists distributed scientifically framed perspectives on promoting the region. Even though they faced place-specific challenges to their work (e.g., darkness, coldness), they sought to incorporate the Arctic's nature into the Canadian state and global economy. The pretty landscapes, the plans for domestic reindeer, the envisioned transportation network to connect mines and markets—all of these and more spoke to the attempt to normalize Arctic spaces for the North American population, commercial, and cultural centers in southern metropoles. The narratives produced about the CAE extended this effort much further and in doing so complicated the place of science in discursive spaces.

SECURING NARRATIVES AND KNOWLEDGE

Although the Southern Party scouted copper and surveyed coastlines and the Northern Party searched for land in the Beaufort Sea—deeply place-specific activities—some of the most critical aspects of the expedition took place not in Arctic spaces but in the discursive spaces of media accounts, personal narratives, and specialized scientific literature. Narratives make meaning, and the CAE's scientific and personal narratives produced knowledge and constructed meaning about the Arctic.[61] And that meaning was woven with the threads of place, science, and personalities. From that, the explorer-scientists created a tapestry of an ordered, legible Arctic. The CAE deployed numerous narrative strategies to establish as credible and useful their Arctic experiences and the knowledge they obtained and created during their northern sojourns. With their words, the explorer-scientists needed to construct credibility based on first-person accounts and scientific practice, as well as to establish the worthiness

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that new knowledge to function in a global scientific community, it had to be generalizable and circulate (i.e., it had to be mobile). CAE scientists participated in this precise dynamic—and its attendant tensions—a half-century before the scientists Bocking studied went north.

61. Historians of science have demonstrated how narrative allowed scientists to establish their credibility and to circulate their knowledge from specific field sites to metropoles where it could be further mobilized. Meanwhile, environmental historians have shown how narratives impose an order on the natural world. See, Bravo and Sörlin, "Narrative and Practice" (ref. 7); Livingstone, *Putting Science* (ref. 3); Bocking, "Situated yet Mobile" (ref. 3), 164–78; William Cronon, "A Place for Stories: Nature, History, and Narrative," *Journal of American History* 78, no. 4 (1992): 1347–76; and Liza Piper, "Introduction: The History of Circumpolar Science and Technology," *Scientia Canadensis: Canadian History of Science, Technology and Medicine / Scientia Canadensis: review canadienne d'histoire des sciences, des techniques et de la medicine* 33, no. 2 (2010): 1–9, esp. 7–9

of the endeavor at a time when publics were growing skeptical of exploration's value, when a world war commanded attention, and when technological change began rendering the Arctic more easily known.[62]

From the expedition's inception, Stefánsson envisioned a strategy that would ensure public attention in case of land discoveries. During planning stages, he proposed to stay in frequent contact with the press, detailing a plan to bring "a wireless apparatus having a range of 1,000 miles . . . to keep almost in constant touch with the rest of the world." Stefánsson expected a chain of wireless stations that could relay the messages to the press back in the centers of power in Ottawa, New York, and London. Although he suggested a practical reason for this relay system—alerts for coming storms—it is impossible not to believe that the main goal was to keep the CAE in the public eye. Eventually, the calculated weight (eleven tons), along with two men who would be useless for anything else, and the need for eight additional wireless stations were all deemed too onerous to keep the CAE wired to the world. Despite not establishing this technological tether, Stefánsson and the rest of the party remained in the public's eye, especially in the United States, throughout the expedition's duration. That the United States followed the CAE so closely suggests that the expedition's significance lay beyond Canadian nationalism; in fact, scientific exploration transcended national boundaries and ideals. From 1913 to 1918, dozens and dozens of articles reported on the CAE, focusing primarily on rumors of missing explorers and reports on new discoveries and achievements.[63]

But press stories that claimed public attention were not the most significant narratives. For a government scientific expedition, a clear outlet for the explorer-scientists was the official *Report of the Canadian Arctic Expedition, 1913–18*, a planned 14-volume inclusive compendium of which two volumes (Stefánsson's and Anderson's overviews) never appeared. In addition, such specialist journals as the American Anthropological Association's *American Anthropologist*, the American Association for the Advancement of Science's

62. Robinson, *Coldest Crucible* (ref. 5), on growing skepticism; for how technology reshaped the Arctic, see Marionne Cronin, "Technological Heroes: Images of the Arctic in the Age of Polar Aviation," in *Northscapes: History, Technology, and the Making of Northern Environments*, ed. Dolly Jørgensen and Sverker Sörlin (Vancouver: UBC Press, 2013), 57–81; Marionne Cronin, "Polar Horizons: Images of the Arctic in Accounts of Amundsen's Polar Aviation Expeditions," *Scientia Canadensis: Canadian History of Science, Technology and Medicine / Scientia Canadensis: review canadienne d'histoire des sciences, des techniques et de la medicine* 33, no. 2 (2010): 99–120.

63. "Stefansson Accepts" (ref. 19); "Stefansson Gets Peary's Captain" (ref. 18); "Stefansson Off for Quest" (ref. 19); Diubaldo, *Stefansson and the Arctic* (ref. 2), 2. The *New York Times* published approximately 100 articles about the CAE between 1913 and 1918.

Science, the American Geographical Society's *Geographical Review*, and the Royal Geographical Society's *Geographical Journal* all published articles by or about the CAE in the years immediately surrounding the expedition.[64] These publications represented scientific authority, confirmed for the CAE its professional status, and demonstrated the diverse intellectual and geographic range of attention accorded to the expedition's activities. In their pages, CAE authors rehearsed their findings and positioned themselves in on-going intellectual conversations about the natural world, specifically Arctic places and the living creatures that inhabited them. Further, these reports and articles created narratives of knowledge production and scientific practice. This was how science was done once scientists returned from the field, establishing their credibility and staking their scientific claims in professional discourse.

Yet these official reports did not fully display the contested meanings of Arctic science for the North American public. Instead, more than any other source, Stefánsson's personal narrative mediated the perception and consumption of the CAE's accomplishments. This was not unusual, for personal narratives had long been (and remain) central devices in the culture of exploration. Adventure—for instance, discovering new lands and surviving dangerous situations—drove typical exploration narratives. Explorers themselves or their contemporaneous biographers pitched expeditions as heroic, with explorers deploying skill and suffering for the production of geographic information.[65] Although they might be capable scientists, few explorers mastered both genres—exploration narratives *and* scientific reports.

Stefánsson was a special case, for he could bridge (or undermine) the gap between adventure and science. He once wrote, "To do a unique thing in polar

64. For example, D. Jenness, "The Ethnological Results of the Canadian Arctic Expedition, 1913–1916," *American Anthropologist* 18, no. 4 (1916): 612–15; "Report of the Canadian Arctic Expedition, 1913–18," *Science* 51, no. 1311 (1920): 167–69; Anderson, "Recent Explorations" (ref. 37); Stefánsson, "Canadian Arctic Expedition of 1913 to 1918" (ref. 20), 283–305. Among the scientists, Johansen was exceptional in writing an article for *Canadian Forestry Journal*, a publication he considered pitched to a "popular" audience; Frits Johansen, "The Forest's Losing Fight in Arctic Canada," *Canadian Forestry Journal* 15 (1919): 303–05. He used the term "popular" to describe this publication in Frits Johansen, "Part C: General Observations on the Vegetation," in *Report of the Canadian Arctic Expedition, 1913–18, volume V: Botany* (Ottawa: F. A. Acland, 1924), 49C.

65. Robinson, *Coldest Crucible* (ref. 5), esp. 4–7; Elizabeth Baigent, "'Deeds Not Words'?: Life Writing and Early Twentieth-century British Polar Exploration," in *New Spaces of Exploration: Geography of Discovery in the Twentieth Century*, ed. Simon Naylor and James R. Ryan (London: I. B. Tauris, 2010), 23–51.

exploration was one of my dreams; to organize a comprehensive scientific expedition was another dream, no less cherished."[66] Such was the bifurcated obsessions and personality of the explorer: he wanted to be first and most adventurous *and* advance science. He brought with him scientific bona fides with graduate study at Harvard alongside his particular gift for self-promotion. His writing was both authoritative and self-serving. As such, ambiguity increased. At times, Stefánsson strongly promoted exploration's more adventurous emphasis on finding new lands and meeting the natural challenges traveling on the ice entailed; however, when it suited his purposes, he also downplayed that by emphasizing the more mundane scientific work as the CAE's central mission. This tension was present from the beginning. A 1913 *New York Times* headline captured it well: "Explorer Denies Stating that an Unknown Continent Is His Quest—Trip Mainly Scientific."[67] In the same headline and breath, Stefánsson could represent both a commitment to science and his own singular adventurousness. In many ways, that was the puzzle of both Stefánsson's and the CAE's relationships to science, relationships forged and claimed in various discursive spaces.

Compared with any of the volumes of the governmental *Report* or Anderson's summary of the Southern Party's scientific accomplishments in *Geographical Review*, Stefánsson's accounts in professional journals sounded breezy. Yet, he could deliver critical scientific assessments. The most important of these were soundings for depth and tidal observations, both furnishing practical information for future navigation and of great interest to the Canadian government and naval officials. He also corrected previous errors of geography, reported many details about northern wildlife, and noted coal found on Banks Island. In publishing these scientific findings, he fulfilled what he described as "the essence of the code of the scientist to publish at once for the use of the world every secret, whether of fundamental principle or of technique."[68] Despite this "code," Stefánsson wanted to push beyond the scientific genre's limitations.

66. Stefánsson, "Canadian Arctic Expedition of 1913 to 1918" (ref. 20), 286.

67. "Stefansson Ship Ready for Arctic," *NYT*, Jun 15, 1913. The quoted passage was a subheadline.

68. Vilhjálmur Stefánsson, "The Activities of the Canadian Arctic Expedition from October, 1916, to April, 1918," *Geographical Review* 6, no. 4 (1918): 354–69, esp. 358–59 and 364. Also, Vilhjálmur Stefánsson, "Letter from Mr. Stefánsson," *Geographical Journal* 52, no. 4 (1918): 250–52. Quotation from Stefánsson, *Friendly Arctic* (ref. 1), 31. Levere best judges Stefánsson's scientific contribution and shortcomings in "Vilhjalmur Stefansson" (ref. 19).

Indeed, taken as a whole, it seems clear that Stefánsson's interests lay not in educating scientists about the Arctic but in crafting counter-narratives with other audiences—the general public, government officials, even posterity—mainly in mind. Rewriting Arctic exploration as a friendly endeavor represented an approach befitting his iconoclast identity and his lifelong mission to make the North legible and attractive for his metropolitan audiences. Still, it was an odd choice, for the heroic polar narrative remained wedded to the environmental challenge the Arctic presented.[69] So, by rendering the Arctic "friendly," Stefánsson reduced the challenges he overcame. Nevertheless, the CAE experience bolstered his Arctic, place-based authority so that readers believed his claims in *The Friendly Arctic* and his influential follow-up, *The Northward Course of Empire* in 1922, a book that praised the cold as a crucible for improving civilization and that promoted northern resource development.[70]

It might be argued that the scientists, too, promoted the region—consider O'Neill's favorable mineral reports, for instance. Yet Stefánsson pursued through his narrative claims not simply an argument that extraction and development could come to the Arctic but that the North was fundamentally open and merely required people to approach with a different mindset. It was a claim not rooted in material conditions, but in psychology.

Stefánsson's ambiguous relationship with science and the CAE scientists presented a challenge in marshalling his claims in popular articles in *Harper's* and *Maclean's* and in his book, *The Friendly Arctic*.[71] Science enjoyed critical

69. The role of this is explained well by Cronin in discussing how aviation altered these dynamics; see especially, Cronin, "Technological Heroes" (ref. 62), 64–74.

70. A biography that especially praises Stefánsson's northern vision is William R. Hunt, *Stef: A Biography of Vilhjalmur Stefansson* (Vancouver: UBC Press, 1986). Vilhjálmur Stefánsson, *The Northward Course of Empire* (New York: Harcourt, Brace, 1922). See Sverker Sörlin, "Commentary: Vilhjalmur Stefansson, *The Northward Course of Empire* (1922)," in *The Future of Nature*, ed. Libby Robin, Sverker Sörlin, and Paul Warde (New Haven, CT: Yale University Press, 2013), 153–56.

71. Stefánsson wrote a six-part series of virtually identical articles that appeared in *Harper's* in the United States and *Maclean's* in Canada; only the *Harper's* versions are cited here: Vilhjálmur Stefánsson, "Solving the Problem of the Arctic: A Record of Five Years' Exploration: Part I," *Harper's Magazine* 138 (Apr 1919): 577–90; "Solving the Problem of the Arctic: Ways and Means of Life on the Ice, Part II," *Harper's Magazine* 138 (May 1919): 721–735; "Solving the Problem of the Arctic: Drifting to Banks Island—The Arrival of the *Mary Sachs*: Part III," *Harper's Magazine* 139 (Jun 1919): 36–47; "Solving the Problem of the Arctic: Hunting Caribou and Building Snow Houses: Part IV," *Harper's Magazine* 139 (Jul 1919): 193–203; "Solving the Problem of the Arctic: Our First Discovery of New Land: Part V," *Harper's Magazine* 139 (Aug 1919): 386–98; "Solving the Problem of the Arctic: Conclusion—Further Discoveries of New Land: Part VI," *Harper's Magazine* 139 (Sep 1919): 709–20.

authority in the North American and European cultures in which the CAE's results circulated, and accordingly and necessarily, Stefánsson praised science's intrinsic value and importance. In *The Friendly Arctic*, for instance, he claimed that when he first chose to head north, "like a typical explorer, I was brave and prepared to fight the best fight I knew how and to die if necessary for the advancement of science." Later in that volume, he further explained how sacrifice was necessary to advance science, a theme common in polar explorers' literature. Replying to critics who questioned whether the loss of men with the *Karluk* could be rationalized, Stefánsson compared scientists to soldiers in the Great War and believed that both sacrifices mattered: "I never could see how any one can extol the sacrifice of a million lives for political progress who condemns the sacrifice of a dozen lives for scientific progress. For the advance of science is but the advance of truth, and 'The truth shall make you free.'" Such passages announced that science—"the advance of truth"—accepted death in its pursuit.[72] Although melodramatic here, Stefánsson confirmed science's merit and indirectly praised the work the CAE had done. His direct praise, however, was comparatively muted: "The competent specialists of that section [i.e., the Southern Party] secured during the next two years a fund of information and a mass of specimens such that had we achieved no other scientific results than those gathered by the complement of the *Alaska*, the expedition could be considered to have added material to the sum of knowledge."[73] Obviously, Stefánsson knew how to use science's currency to establish credibility.

Yet Stefánsson also marginalized science and, in doing so, minimized the CAE scientists' contributions. At one point, Stefánsson excerpted his field journal and its scientific readings and notations to show how tedious science was for a popular audience to read, arguing "[f]ull reproduction of such notes would be tedious in a book intended for general reading, although it is really these that constitute the larger part of the scientific information gained." So he largely excluded science from the narrative spaces he controlled. In addition, some scholars have argued that scientific explorers lacked requisite manliness. Exploration itself—the adventure, the unknown, the danger—proved one's

For some reason, I cannot enter the correct quotation mark; this is facing the wrong way.

72. The theme of sacrifice in polar exploration is explored well in Rebecca M. Herzig, *Suffering for Science: Reason and Sacrifice in Modern America* (New Brunswick, NJ: Rutgers University Press, 2005), 64–84.

73. Stefánsson, *Friendly Arctic* (ref. 1), 22 (first quotation), 73 (second quotation), 275 (third quotation).

heroism, not collecting botanical specimens or surveying rocks.[74] Stefánsson's months-long ice trips presented greater challenges to overcome with skill and toughness—with modern manliness. Although at times he might vaunt the value of science, Stefánsson could just as easily characterize his companions as "scientific tenderfeet." To tout his own toughness, he reported, "In general my polar experience has been nearly free from the hardships that most impressed me in the books I read before going North. . . . My face gets slightly frozen nearly every day but one gets so used to that that it calls for no comment, and my diaries do not show more than one or two references to it per year."[75] Seemingly he alone possessed the stamina, the ability, and the general wherewithal to withstand the challenges of Arctic nature—its coldness, its ferocious polar bears, its unsettledness—to not only survive but to achieve great things such as finding land no one else could.[76] Such stories, although rooted in actual Arctic places and experience, functioned more specifically in the narrative spaces of print culture where Stefánsson was indisputably skillful.[77] The heroic narrative about living off the land, surviving desperate deprivation, and finding and claiming new lands resonated as familiar tropes to readers of exploration literature. And no one will argue that *The Friendly Arctic* was far more compelling to read than Volume IV of the *Report of the Canadian Arctic Expedition, 1913–18* on Botany, Part A of which focused on Freshwater Algae and Freshwater Diatoms. Thus, science faded into the background of Stefánsson's public discourse.[78]

74. Stefánsson, *Friendly Arctic* (ref. 1), 194–96, quotation from 195. Baigent argued, "The dedication of naval officers to science (at which they were amateurs) increased their nobility and materially increased their chances of becoming heroes, but it did not do the same for professional scientists," in "Deeds Not Words" (ref. 65), 32. See also, Lisa Bloom, *Gender on Ice: American Ideologies of Polar Exploration* (Minneapolis: University of Minnesota Press, 1993), esp. 114–17. Marionne Cronin's work on polar aviation demonstrates how technology threatened heroism and masculinity and thus required reframing traditional exploration narratives; see "Technological Heroes" (ref. 62) and "Polar Horizons" (ref. 62).

75. Stefánsson, *Friendly Arctic* (ref. 1), 30 (first quotation), 490–91 (second quotation). Technically, he was quoting the *Karluk*'s captain, Bob Bartlett, about "scientific tenderfeet," but it is clear from the context that Stefánsson agreed with the assessment.

76. *The Friendly Arctic* is replete with stories of Stefánsson's skill and stamina, including an encounter with a polar bear so close that when he shot it, the "blood spattered my boots" (ref. 1, 213).

77. Important context is in Janice Cavell, "Arctic Exploration in Canadian Print Culture, 1890–1930," *Papers of the Bibliographical Society of Canada* 44, no. 2 (2006): 7–43.

78. Charles W. Lowe, "Part A: Freshwater Algae and Freshwater Diatoms," in *Report of the Canadian Arctic Expedition, 1913–18*, vol. IV: *Botany* (Ottawa: F. A. Acland, 1923). Other examples of the detailed scientific topics could be found throughout many of the report volumes.

Thus, the CAE bounced around in the discursive world, nearly unmoored from actual material spaces. In 1913, the English-speaking world read about the CAE as the most scientific expedition ever sent to the Arctic, prepared to discover new environments and make new knowledge. By 1921 when *The Friendly Arctic* appeared, that public was treated to something else: a well-written argument extolling the virtues of the North. Stefánsson's message—his mission—was simple: "if you are of ordinary health and strength, if you are young enough to be adaptable and independent enough to shake off the influence of books and belief, you can find good reason to be as content and comfortable in the North as anywhere on earth." Regardless of the argument's merits—and the tragedy of the *Karluk* certainly offered a counterpoint to Stefánsson's claim—it was not a scientific conclusion; it was boosterism. However, in *The Friendly Arctic*'s conclusion, Stefánsson returned to science. "It is difficult to summarize briefly scientific work," he began. In fact, "[t]he very diversity and volume of the scientific results of the expedition makes the task of summarizing them really hopeless." And so he left it, claiming in effect that the expedition's narrative was properly about him and the "friendly Arctic" and the future that awaited them both. Stefánsson imagined playing a significant role in developing northern spaces, although his next escapade failed spectacularly.[79] In the end, and in something of an about-face from when he proclaimed the expedition's purpose to be mainly scientific, he marked a boundary against science. Instead, it became a promotional pitch about the "friendly Arctic."[80]

Multiple narratives arose out of the CAE and its work. Although all of them emerged from real environments and real scientific practices that were remarkably similar, the narrative practices of governmental reports, scientific journals, and popular writing rendered the CAE and the Arctic knowable—but in

79. Cavell and Noakes, *Acts of Occupation* (ref. 2), 139–72; Diubaldo, *Stefansson and the Arctic* (ref. 2), 161–86; Levere, *Science and Canadian Arctic* (ref. 2), 423; Jennifer Niven, *Ada Blackjack: A True Story of Survival in the Arctic* (New York: Hyperion, 2003); and other sources detail Stefánsson's plan for colonizing Wrangel Island. He sent forth a small expedition in 1921, but only one survived. This debacle did much to undermine Stefánsson's reputation in Canada.

80. Stefánsson, *Friendly Arctic* (ref. 1), 278 (first quotation), 686–87 (second quotation). Gísli Pálsson termed this particular rhetoric "arcticality," a discursive strategy he described as representing "the Arctic as both the home of howling, exotic wilderness (the source of 'strange' knowledge and ancient wisdom) and a semi-domestic, 'friendly' space." See Gísli Pálsson, "Arcticality: Gender, Race, and Geography in the Writings of Vilhjalmur Stefansson," in *Narrating the Arctic: A Cultural History of Nordic Scientific Practices*, ed. Michael Bravo and Sverker Sörlin (Canton, MA: Science History Publications, 2002), 275–309, quotation on 277.

myriad forms. In the end, perhaps, it is this very multiplicity that merits our attention, for it reminds us that boundary work is ever present as scientists make their claims about the physical world in rhetorical spaces, and such demarcation depends on audience and purpose, and the CAE served many.

CONCLUSION

Exploration has always centered on claims: for country, for commerce, for character. Claims for useful scientific knowledge also grew out of exploration's varied activities across space and time. The history of the Canadian Arctic Expedition of 1913–18 exposes the complicated process of claim-making. In making claims for science, the explorer-scientists navigated competing demands on their commitments and activities from their own predilections (such as their desire to be adventurous, to promote development, or to practice disciplined science) and from external forces (such as an autonomous natural world, a modern state, or an expectant reading public). Incorporating Arctic spaces into the Canadian polity had become a high priority during the era when the CAE traversed the Arctic. Science through exploration—practices on the ground and especially through scientific and popular discourse—facilitated this integration. When the CAE claimed its spaces in nature, nation, and narrative, it refracted a reciprocal process whereby the demands of environment, state, and discourse also claimed the CAE.

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