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ESSAY

The Coming Arctic Boom

As the Ice Melts, the Region Heats Up

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U.S. Navy safety swimmers stand on the deck of the USS New Hampshire after it surfaced through thin ice in the Arctic Ocean. (Lucas Jackson / Courtesy Reuters)

The ice was never supposed to melt this quickly. Although climate scientists have known for some time that global warming was shrinking the percentage of the Arctic Ocean that was frozen over, few predicted so fast a thaw. In 2007, the Intergovernmental Panel on Climate Change estimated that Arctic summers would become ice free beginning in 2070. Yet more recent satellite observations have moved that date to somewhere around 2035, and even more sophisticated simulations in 2012 moved the date up to 2020. Sure enough, by the end of last summer, the portion of the Arctic Ocean covered by ice had been reduced to its smallest size since record keeping began in 1979, shrinking by 350,000 square miles (an area equal to the size of Venezuela) since the previous summer. All told, in just the past three decades, Arctic sea ice has lost half its area and three quarters of its volume.

It's not just the ocean that is warming. In 2012, Greenland logged its hottest summer in 170 years, and its ice sheet experienced more than four times as much surface melting as it had during an average year over the previous three decades. That same year, eight of the ten permafrost-monitoring sites in northern Alaska registered their highest-ever temperatures, and the remaining two tied record highs. Hockey arenas in northern Canada have even begun installing refrigeration systems to keep their rinks from melting.

Not surprisingly, these changes are throwing the region's fragile ecosystems into chaos. While tens of thousands of walrus, robbed of their ice floes, are coming ashore in northwest Alaska, subarctic flora and fauna are migrating northward. Frozen tundras are starting to revert to the swamplands they were 50 million years ago, and storms churning newly open waters are eroding shores and sending the homes of indigenous populations tumbling into the sea.

No matter what one thinks should be done about global warming, the fact is, it's happening. And it's not all bad. In the Arctic, it is turning what has traditionally been an impassible body of water ringed by remote wilderness into something dramatically different: an emerging epicenter of industry and trade akin to the Mediterranean Sea. The region's melting ice and thawing frontier are yielding access to troves of natural resources, including nearly a quarter of the world's estimated undiscovered oil and gas and massive deposits of valuable minerals. Since summertime Arctic sea routes save thousands of miles during a journey between the Pacific Ocean and the Atlantic Ocean, the Arctic also stands to become a central passageway for global maritime transportation, just as it already is for aviation.

Part of the reason the Arctic holds so much promise has to do with the governments surrounding it. Most have relatively healthy fiscal balance sheets and, with the exception of Russia, predictable laws that make it easy to do business and democratic values that promote peaceful relations. The Arctic countries have also begun making

remarkably concerted efforts to cooperate, rather than fight, as the region opens up, settling old boundary disputes peacefully and letting international law guide their behavior. Thanks to good governance and good geography, such cities as Anchorage and Reykjavik could someday become major shipping centers and financial capitals -- the high-latitude equivalents of Singapore and Dubai.

Of course, while Arctic warming is a *fait accompli*, it should not be taken as a license to recklessly plunder a sensitive environment. If developed responsibly, however, the Arctic's bounty could be of enormous benefit to the region's inhabitants and to the economies that surround it. That's why all the Arctic countries need to continue their cooperation and get to work establishing a shared vision of sustainable development, and why the United States in particular needs to start treating the region as an economic and foreign policy priority, as China is. Like it or not, the Arctic is open for business, and governments and investors have every reason to get in on the ground floor.

MUCH ADO ABOUT NOTHING

Just a half decade ago, the scramble for the Arctic looked as if it would play out quite differently. In 2007, Russia planted its flag on the North Pole's sea floor, and in the years that followed, other states also jockeyed for position, ramping up their naval patrols and staking out ambitious sovereignty claims. Many observers -- including me -- predicted that without some sort of comprehensive set of regulations, the race for resources would inevitably end in conflict. "The Arctic powers are fast approaching diplomatic gridlock," I wrote in these pages in 2008, "and that could eventually lead to . . . armed brinkmanship."

But a funny thing happened on the way to Arctic anarchy. Rather than harden positions, the possibility of increased tensions has spurred the countries concerned to work out their differences peacefully. A shared interest in profit has trumped the instinct to compete over territory. Proving the pessimists wrong, the Arctic countries have given up on saber rattling and engaged in various impressive feats of cooperation. States have used the 1982 UN Convention on the Law of the Sea (UNCLOS) -- even though the United States never ratified it -- as a legal basis for settling maritime boundary disputes and enacting safety standards for commercial shipping. And in 2008, the five states with Arctic coasts -- Canada, Denmark, Norway, Russia, and the United States -- issued the Ilulissat Declaration, in which they promised to settle their overlapping claims in an orderly manner and expressed their support for UNCLOS and the Arctic Council, the two international institutions most relevant to the region.

The Arctic powers have kept that promise. In 2010, Russia and Norway settled their long-running maritime boundary disagreement near the Svalbard Islands, and Canada and Denmark are now exploring a proposal to split Hans Island, an uninhabited rock they disputed for decades. In 2011, the Arctic countries signed a search-and-rescue agreement brokered under the auspices of the Arctic Council; this past April, they began working on an agreement to regulate commercial fishing; and this summer, they are finalizing plans for jointly responding to oil spills. Some Arctic countries are even sharing one another's icebreakers to map the seabed as part of a process, established under UNCLOS, to demarcate their extended continental shelves. Although some sticking points remain -- Ottawa and Washington, for instance, have yet to agree on whether the Northwest Passage constitutes a series of international straits or Canadian internal waters and where exactly their maritime boundary in the Beaufort Sea lies -- the thorniest differences have been settled, and most that remain involve areas far offshore and concern the least economically relevant parts of the Arctic.

None of this cooperation required a single new overarching legal framework. Instead, states have created a patchwork of bilateral and multilateral agreements, emanating from the Arctic Council and anchored firmly in UNCLOS. By reaching an enduring *modus vivendi*, the Arctic powers have set the stage for a long-lasting regional boom.

A REGION OF RICHES

Most cartographic depictions conceal the Arctic's physical vastness. Alaska, which U.S. maps usually relegate to a box off the coast of California, is actually two and a half times as large as Texas and has more coastline than the lower 48 states combined. Greenland is larger than all of western Europe. The area inside the Arctic Circle contains eight percent of the earth's surface and 15 percent of its land.

It also includes massive oil and gas deposits -- the main reason the region is so economically promising. Located primarily in western Siberia and Alaska's Prudhoe Bay, the Arctic's oil and gas fields account for 10.5 percent of global oil production and 25.5 percent of global gas production. And those numbers could soon jump. Initial estimates suggest that the Arctic may be home to an estimated 22 percent of the world's undiscovered conventional oil and gas deposits, according to the U.S. Geological Survey. These riches have become newly accessible and attractive, thanks to retreating sea ice, a lengthening summer drilling season, and new exploration technologies.

Private companies are already moving in. Despite high extraction costs and regulatory hurdles, Shell has invested \$5 billion to look for oil in Alaska's Chukchi Sea, and the Scottish company Cairn Energy has invested \$1 billion to do the same off the coast of Greenland. Gazprom and Rosneft are planning to invest many billions of dollars more to develop the Russian Arctic, where the state-owned companies are partnering with ConocoPhillips, ExxonMobil, Eni, and Statoil to tap remote reserves in Siberia. The fracking boom may eventually exert downward pressure on oil

prices, but it hasn't changed the fact that the Arctic contains tens of billions of barrels of conventional oil that will one day contribute to a greater global supply. Moreover, that boom has also reached the Arctic. Oil fracking exploration has already begun in northern Alaska, and this past spring, Shell and Gazprom signed a major deal to develop shale oil in the Russian Arctic.

Then there are the minerals. Now, longer summers are providing additional time to prospect mineral deposits, and retreating sea ice is opening deep-water ports for their export. The Arctic is already home to the world's most productive zinc mine, Red Dog, in northern Alaska, and its most productive nickel mine, in Norilsk, in northern Russia. Thanks mostly to Russia, the Arctic produces 40 percent of the world's palladium, 20 percent of its diamonds, 15 percent of its platinum, 11 percent of its cobalt, ten percent of its nickel, nine percent of its tungsten, and eight percent of its zinc. Alaska has more than 150 prospective deposits of rare-earth elements, and if the state were its own country, it would rank in the top ten in global reserves for many of these minerals. And all these assets are just the beginning. The Arctic has only begun to be surveyed. Once the digging starts, there is every reason to expect that, as often happens, even greater quantities of riches will be uncovered.

The coming Arctic boom will involve more than just mining and drilling. The region's Boreal forests of spruces, pines, and firs account for eight percent of the earth's total wood reserves, and its waters already produce ten percent of the world's total fishing catch. Converted tankers may someday ship clean water from Alaskan glaciers to southern Asia and Africa.

The Arctic's unique geography is an asset unto itself. Viewed from the top of the globe, the region sits at the crossroads of the world's most productive economies; Icelandair has started offering circumpolar service between Reykjavik, Anchorage, and St. Petersburg, and planned underwater telecommunications cables will link Northeast Asia, the northeastern United States, and Europe. The Arctic's high latitudes make the region a good place to expand existing ground stations for satellites in polar orbits. With some of the world's most powerful tides, the Arctic has spectacular hydropower potential, and its geology holds tremendous capacity for geothermal energy, as evidenced by Iceland's geothermal-powered aluminum smelting industry. Cool temperatures also make the Arctic an attractive place to construct data-storage centers, like the one Facebook is building in northern Sweden. A vault dug into the cool bedrock of the Svalbard Islands stores hundreds of thousands of plant seeds for preservation.

As the sea ice melts, once-fabled shipping shortcuts are becoming a reality. The Northwest Passage, which runs through the Canadian archipelago, remains choked with ice. But in 2010, for the first time in recorded history, commercial vessels -- four of them -- sailed from northwestern Europe to Northeast Asia via the Northern Sea Route, which passes through the Arctic Ocean above Eurasia. That number jumped to 34 in 2011 and to 46 during last year's Arctic summer. Although the Northern Sea Route has a long way to go before it siphons off a meaningful portion of traffic from the Suez and Panama Canals, it is no longer just a mariner's fantasy; it is an increasingly viable seaway for tankers looking to shave thousands of nautical miles off the traditional routes that go through the Strait of Malacca and the Strait of Gibraltar. It also provides a new export channel for warming farmlands and emerging mines along Russia's northern coast, where some of the country's largest rivers empty into the Arctic Ocean. Recognizing the route's promise, the Russian Ministry of Transport recently established a Northern Sea Route office in Moscow to handle shipping permits, monitor marine weather, and install new navigational aides along the passage. As the sea ice melts further, a route passing directly over the North Pole and avoiding the Russian coast altogether will also open.

FISCALLY FIT

Of course, natural resources and favorable geography alone aren't enough to make a region economically viable: just consider the Middle East. But the Arctic has much more going for it. For one thing, most of the countries with territory above the Arctic Circle are in relatively good fiscal shape. Denmark, Norway, Finland, and Sweden all have debt-to-GDP ratios under 54 percent, and Russia's is just 12 percent. Although the United States holds 75 percent of its GDP in debt, it has so far been shielded from high interest rates due to the dollar's role as a global currency reserve, and Alaska, for its part, runs budget surpluses and has earned a AAA credit rating from Standard & Poor's. At 84 percent, Canada's debt-to-GDP ratio is higher, but the country is exceedingly stable, with the World Economic Forum in 2012 ranking the Canadian banking system as the soundest in the world for the fifth consecutive year. Iceland is still grappling with the fallout from the 2008 collapse of its financial system, but it is recovering at record speed. In 2012, the country's GDP rose by 2.7 percent and unemployment declined to 5.6 percent. The general fiscal health of the Arctic countries means the region boasts an attractive environment for private capital, especially in comparison with other resource-rich frontiers.

Several Arctic countries possess sizable sovereign wealth funds, financed by royalties from their oil and gas production, resources that they can use to help finance infrastructure projects to stimulate development in the region. At more than \$700 billion, Norway's sovereign wealth fund is the world's largest. Russia's National Welfare Fund stands at \$175 billion. Alaska's Permanent Fund is worth \$45 billion and allows the state to charge no income taxes; it even hands out an annual dividend to every resident. If governments think strategically, these reserves could fund the transportation and energy skeletons around which the Arctic's growing economy could mature.

With the glaring exception of Russia, the Arctic countries also boast predictable legal systems and clear regulations that are conducive to investment. The United States, Denmark, Norway, Iceland, Finland, Sweden, and Canada all rank in the top 20 on the World Bank's Ease of Doing Business Index. Thanks to the legal certainty provided by strong state institutions, these countries have little trouble attracting foreign capital; unlike with other frontier economies, investors can be pretty confident that the North American and Nordic governments will not nationalize private assets, demand kickbacks, or issue arbitrary court rulings.

BOUNTY HUNTING

No region so rich in resources, both real and man-made, can avoid attracting the attention of China for long. Indeed, right on cue, Beijing has begun a concerted effort to make inroads in the Arctic -- especially in Iceland and its semiautonomous neighbor, Greenland -- with far-reaching geopolitical implications. In May, the Arctic Council granted observer status to China, along with India, Italy, Japan, Singapore, and South Korea.

China sees Iceland as a strategic gateway to the region, which is why Premier Wen Jiabao made an official visit there last year (before heading to Copenhagen to discuss Greenland). China's state-owned shipping company is eyeing a long-term lease in Reykjavik, and the Chinese billionaire Huang Nubo has been trying for years to develop a 100-square-mile plot of land on the north of the island. In April, Iceland signed a free-trade deal with China, making it the first European country to do so. Whereas the United States closed its Cold War-era military base in Iceland in 2006, China is expanding its presence there, constructing the largest embassy by far in the country, sending in a constant stream of businesspeople, and dispatching its official icebreaker, the Xue Long, or "Snow Dragon," to dock in Reykjavik last August.

Greenland's main attraction, meanwhile, lies underground. In addition to iron ore and oil, the island sits on top of massive deposits of rare-earth elements, the global supply of which China dominates. Greenland may be home to fewer than 60,000 people, but the island has hosted a number of Asian delegations over the past few years. Last September, then South Korean President Lee Myung-bak came to attend the signing of an agreement between a South Korean state-owned mining company and a Greenlandic one. He was preceded by China's then minister of land and resources, Xu Shaoshi, who was also there to sign cooperation agreements. So far, these joint ventures have mostly been exploratory in nature, but they may soon yield megaprojects that feed resource-hungry markets in Asia.

Ever since Denmark granted it home rule in 1979, Greenland has been moving down the path to full autonomy, and in 2009, it gained control over its judicial system and natural resources. The local government has used that freedom to strike up commercial relationships with China, South Korea, and other countries. If foreign investment on the island continues at its current pace, local revenues could someday displace the \$600 million annual subsidy that Greenland receives from Copenhagen, which could enable Greenland to demand political independence. Voters on the island endorsed this trajectory in March, when the pro-development Siumut Party won a plurality in Greenland's parliament. While equatorial microstates may soon disappear into the rising sea, Greenland might well become the first country born from climate change.

Meanwhile, the Arctic countries have been investing in their own icy backyards. Russia has led the way with enthusiastic presidential leadership and a number of state programs committed to spurring infrastructure investment along its northern coast. In Canada, the governments of the Yukon Territory, the Northwest Territories, Nunavut, and Quebec have established development offices to attract investment. In May, when Canada assumed the chairmanship of the Arctic Council, it appointed the head of its Northern Economic Development Agency as the country's senior Arctic official, instructing him to steer an Arctic Council policy of "development for the people of the north." For years, Norwegian companies have been launching joint ventures with their Russian counterparts to develop oil and gas projects around the Barents Sea. Alaska, meanwhile, has enacted pro-growth policies, such as lowering oil and gas taxes and selling more leases on state lands.

Yet Juneau has struggled in the face of obstructionism on the part of the federal government, which has kept federal lands closed and forces developers to navigate a burdensome permitting process and endure unending regulatory uncertainty. At this point, Alaska's leaders would prefer that the federal government just get out of the way. Washington's unhelpful attitude epitomizes its generally passive Arctic policy. While the rest of the world has already awoken to the region's growing importance, the United States still seems fast asleep, leaving the playing field open to more competitive rivals.

ARCTIC AWAKENING

The good news is that it's not too late to play catch-up. The first and most obvious place for the United States to start is to finally join the 164 other countries that have acceded to UNCLOS. Ironically, Washington had a hand in drafting the original treaty, but Senate Republicans, making misguided arguments about the supposed threat the treaty poses to U.S. sovereignty, have managed to block its ratification for decades. The result has been real harm to the national interest.

UNCLOS allows countries to claim exclusive jurisdiction over the portions of their continental shelves that extend beyond the 200-nautical-mile exclusive economic zones prescribed by the treaty. In the United States' case, this

means that the country would gain special rights over an extra 350,000 square miles of ocean -- an area roughly half the size of the entire Louisiana Purchase. Because the country is not a party to UNCLOS, however, its claims to the extended continental shelf in the Beaufort and Chukchi seas (and elsewhere) cannot be recognized by other states, and the lack of a clear legal title has discouraged private firms from exploring for oil and gas or mining the deep seabed. The failure to ratify UNCLOS has also relegated the United States to the back row when it comes to establishing new rules for the Arctic. Just as traffic through the Bering Strait is growing, Washington lacks the best tool to influence regulations governing sea-lanes and protecting fisheries and sensitive habitats. The treaty also enshrines the international legal principle of freedom of navigation, which the U.S. Navy relies on to project power globally.

No wonder everyone from the head of the U.S. Chamber of Commerce to the president of the Natural Resources Defense Council to the chairman of the Joint Chiefs of Staff (along with every living secretary of state) has argued that the United States should ratify UNCLOS. It is far past time for the Senate to follow their advice. Skeptical Senate Republicans have stood in the way of ratification, arguing that the treaty would place limits on U.S. sovereignty. But that argument is a red herring, since the United States already follows all of the treaty's guidelines anyway, and ratifying it would in fact give Washington new rights and greater influence. There are probably enough votes from moderate Republicans for the treaty to pass, if the president decided to make ratification a priority.

More broadly, Washington needs to continue developing a coherent approach to the Arctic, as other countries have already done. This May, the White House published the National Strategy for the Arctic Region. The document is a promising start, and it goes a long way toward updating the thin National Security Presidential Directive that the George W. Bush administration issued in 2009. In devising the strategy, the Obama administration deserves credit for reaching out to the Alaskan government, and especially to indigenous populations, whose voice and experience are critical. But the United States is late to the game, and there is still much work to be done in thinking through a national approach to the Arctic and developing the capabilities to project power there.

For starters, the United States needs to increase its presence in the Arctic. That, in turn, will require building icebreakers, since none of the U.S. Navy's current surface ships are powerful enough to navigate in the Arctic. Here again, the United States lags behind its Arctic neighbors: Russia owns 30 icebreakers, some of them nuclear-powered, and Canada has 13. Even South Korea and China, which lack Arctic coastlines, own new icebreakers. The U.S. Coast Guard has only three: one is inoperative, one was commissioned in 1976 and is on its last legs, and one is more of a floating research lab than a military tool.

Yet even if Congress appropriated the money to build icebreakers tomorrow, due to the Merchant Marine Act of 1920 (also known as the Jones Act), which requires ships traveling between U.S. ports to be built in the United States, the Coast Guard estimates that it would take a decade for the United States' moribund shipyards to construct a single new vessel -- by which time the Arctic summer sea ice would likely have already disappeared. Congress should relax this protectionist law to allow the Coast Guard and the navy to procure foreign-built ships or lease privately built American ones, at a fraction of the cost.

The United States also has no Arctic deep-water port, no military aviation facility in the region, and no comprehensive network for monitoring Arctic shipping, which would prove especially useful in the Bering Strait, the 55-mile-wide chokepoint between the Pacific and Arctic oceans. The federal government should build on the real progress that Alaska has made in these areas on its own over the last few years. Washington need not spend as much as it did building the canals, bridges, dams, and roads that opened up the American West, but some minimum investments would help the United States compete in the region.

Finally, the United States needs to reinvigorate its Arctic diplomacy. Following in the footsteps of other countries in the region (as well as Japan and Singapore), it should appoint a high-level diplomat as an Arctic ambassador to represent U.S. interests in such forums as the Arctic Council. By dispatching junior diplomats to Arctic meetings where other countries are represented by their foreign ministers, as Washington sometimes does, the United States sends a clear message: that the region doesn't matter. In May, Secretary of State John Kerry attended an Arctic Council meeting, just as Secretary of State Hillary Clinton had done before him, and the practice should continue. To remind Americans that they live in an Arctic nation, President Barack Obama should highlight the Arctic in an address to Congress, the way Canadian Prime Minister Stephen Harper and Russian President Vladimir Putin have done before their legislatures.

More engagement could even improve U.S.-Russian relations. According to the 1867 treaty by which the Russian empire sold Alaska to the United States, the two countries were "desirous of strengthening, if possible, the good understanding which exists between them," and then U.S. Secretary of State William Seward hoped the purchase would do just that. Good relations have eluded the United States and Russia for many of the decades that followed, but today, the Arctic could become the source of the cooperation that Seward foresaw. In the Bering Sea, Russia and the United States possess common objectives, and there is ample room for cooperation on policing foreign fishing fleets, responding to oil spills, and aiding navigation.

A NEW KIND OF DEVELOPMENT

Climate change is transforming the Arctic from a geopolitical afterthought into an epic bounty ripe for this century's entrepreneurs. Countries should continue their commitment to the peaceful course they have charted there so far. But policymakers need to get serious about establishing a shared vision of how to harness the Arctic's resources. Economic development need not mean environmental disaster. Indeed, the opening up of the Arctic offers a once-in-a-lifetime opportunity to develop a frontier economy sustainably.

For such an approach to catch on, countries will have to strike the right balance between environmentalism and exploitation. One way to blend capitalism with conservationism is to value nature as a form of capital and price the environment into development decisions, as programs that manage fisheries by allocating catch shares have done and as programs that protect forests by creating tradable securities have done, too. For this tactic to work in the Arctic, there needs to be a full accounting of the available resources, which is why it is so important for governments, nongovernmental organizations, and others to conduct a comprehensive census of the region's natural resources and biological diversity. As better scientific baselines are established, governments can make informed decisions about development, balancing the risks to this sensitive environment with their other economic and national security priorities. The goal should be to find a middle ground between the environmental activists who want to immediately turn the Arctic into a nature preserve and the "Drill, baby, drill!" crowd, which prizes resource exploitation above all else.

In Alaska, this means allowing oil and gas projects to proceed on a case-by-case basis but using some of the profits to create a more diversified economy. Otherwise, the state risks becoming just another petro-colony laid low by the resource curse. Alaska should invest its considerable wealth in its underdeveloped university system, finance ambitious infrastructure projects, and create policies that attract talented immigrants and encourage them to start new businesses, such as renewable energy ventures. The model to follow is Norway, which took advantage of an oil windfall to fund a progressive state and kick-start its renewable energy sector. Such an approach would be deeply Alaskan, too, consistent with the state constitution's order that Alaska "encourage the settlement of its land and the development of its resources by making them available for maximum use consistent with the public interest."

The Arctic presents an extraordinary opportunity to rewrite the rules of the game for developing a frontier economy. But the time to start doing so is now, before a Deepwater Horizon-like oil spill stains the Arctic and its appeal. With the Arctic heating up faster than many predicted, it is a matter of not if but when the summer sea ice will be gone and the region will open up to widespread development. If managed correctly, the Arctic could be both a carefully protected environment and a major driver of economic growth -- with enormous benefits for both outsiders and the inhabitants of this prime real estate.

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